Oracle® Fusion Middleware

Administrator's Guide for Oracle Access Management

11*g* Release 2 (11.1.2.2) for All Platforms

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Oracle Fusion Middleware Administrator's Guide for Oracle Access Management, 11*g* Release 2 (11.1.2.2) for All Platforms

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Preface

This guide provides information on daily administration and policy configuration tasks using Oracle Access Management.

Audience

This document is intended for Administrators who are familiar with the following concepts:

- Oracle WebLogic Server concepts and administration
- LDAP server concepts and administration
- Database concepts and administration (for policy and session management data)
- Web server concepts and administration
- WebGate and mod_osso agents
- Auditing, logging, and monitoring concepts
- Security token concepts
- Integration of the Policy store, Identity store, and familiarity with Oracle Identity Management and OIS might be required

Documentation Accessibility

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Related Documents

For more information, see the following documents in the Oracle Fusion Middleware 11*g* Release 2 (11.1.2.2) documentation set:

- *Oracle Access Management 11g Release 2 (11.1.2.2) Release Notes*

- Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management—Explains how to use the Oracle Universal Installer and the WebLogic Configuration Wizard for initial Access Manager 11g deployment. Installing 11g WebGates for Access Manager is also covered.
- Oracle Fusion Middleware Administrator's Guide for Oracle Access Management—Explains how to manage configuration and policies for Access Manager, Security Token Service, Identity Federation, Mobile and Social, and Identity Context.
- Oracle Fusion Middleware Developer's Guide for Oracle Access Management—Explains how to write custom applications and plug-ins to functions programmatically, to create custom Access Clients that protect non-Web-based resources.
- Oracle Fusion Middleware Upgrade Guide for Java EE—For information about the types of Java EE environments available in 10g and instructions for upgrading those environments to Oracle Fusion Middleware 11g.
- Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management
- Oracle Fusion Middleware Performance and Tuning Guide
- Oracle Fusion Middleware Administrator's Guide—Describes how to manage a secure Oracle Fusion Middleware environment, including how to change ports, deploy applications, and how to back up and recover Oracle Fusion Middleware. This guide also explains how to move data from a test to a production environment.
- Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Identity Management—For a step-by-step guide to deployment.
- Oracle Fusion Middleware High Availability Guide—For high availability conceptual information as well as administration and configuration procedures for Administrators, developers, and others whose role is to deploy and manage Oracle Fusion Middleware with high availability requirements.
- Oracle Fusion Middleware WebLogic Scripting Tool Command Reference—Provides a section on customized Oracle Access Management commands in the chapter "Infrastructure Security Custom WLST Commands".
- Oracle Fusion Middleware Security and Administrator's Guide for Web Services—Describes how to administer and secure Web services.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's New in This Guide?

This chapter describes changes and updates to this book. See the following sections for details.

- Product Enhancements for Oracle Access Management 11.1.2.2.0
- Product Enhancements for Oracle Access Management 11.1.2.1.0
- Product Enhancements in Oracle Access Management 11.1.2.0.0
- Product and Component Name Changes with 11.1.2

Product Enhancements for Oracle Access Management 11.1.2.2.0

This list of enhancements has been developed for this Oracle Access Management 11.1.2.2.0 release. Where applicable, links to the documentation are included.

- Using Multi-Data Centers and How Automated Policy Synchronizaton Works
- Delegating Administration
- OAuth Service

  The Oracle Access Manager OAuth 2.0 Service provides a standards compliant OAuth 2.0 authorization server with support for both 3-legged and 2-legged OAuth flows and enables the OAuth 2.0 Client and the OAuth 2.0 Resource Server roles. It also provides support for mobile OAuth 2.0 clients (such as native applications on mobile devices) and includes built-in support for mobile application registration and device identification during the OAM OAuth 2.0 mobile flow ensuring trusted access from mobile devices and built-in server side single sign-on. It is ideally suited for enterprise scenarios that may require higher levels of security during an OAuth flow and would benefit from built-in OAM integrations provided by the OAM OAuth 2.0 service.
- Introduction to Application Domain and Policy Creation
- Administering Identity Federation As An Identity Provider
- Managing Oracle Access Management Oracle Access Portal
- Using the New Oracle Access Management Console

  Policy Management Enhancements include:

  - Right click menu items available for all search result tables
  - Duplicate Resources, Authentication Policies, Authorization Policies and Token Issuance Policies and create new objects using the duplicate (Copy of)
  - Search for the Host Identifier from the Resource page

  - New Administrator tab in the Application Domain edit screen
  - New Advance Rules tab (with Pre-Authentication and Post-Authentication sub tabs) in Authentication Policy
- For Granular Timeout and cookie-based session management, see Maintaining Access Manager Sessions
- SHA2 encryption for all WebGate servers
- Configuring Policy Ordering
- Using Application Initiated Authentication
- Configuring Persistent Login (Remember Me)
- Coexistence enhancements
- Support added for Internet Protocol version 6 (IPv6)

Product Enhancements for Oracle Access Management 11.1.2.1.0

The following list outlines the enhancements available with Oracle Access Management 11.1.2.1.0.

- Newly certified integrations described in:
  - Chapter 53: Outlook Web Application (OWA) 2010
  - Chapter 54: Microsoft Forefront Threat Management Gateway (TMG) 2010
  - Chapter 55: SAP Enterprise Portal v6.0 and v7.0
  - Oracle Fusion Middleware Third-Party Application Server Guide for Oracle Identity and Access Management (WebSphere Portal)
- Authentication POST Data preservation and restoration is explained in: "Configuring Authentication POST Data Handling" on page 19-116.
- Long URL handling is explained in "Long URL Handling During Authentication" on page 19-122.
- Step up authentication is described in "Creating and Managing Step-Up Authentication" on page 19-48.
- Language selection on Login page is described in "Choosing a User Login Language" on page 2-12.
- Configurable Webgate Request Context Cookie Expiry Time is explained in:
  - Table 16–2, " User-Defined WebGate Parameters"
  - "OAMRequestContext" on page 18-26

Product Enhancements in Oracle Access Management 11.1.2.0.0

Oracle Access Management 11.1.2.0.0 provides new functions and enhancements outlined in following topics.

- November 2012 Book Refresh
- August 2012 Book Refresh
- Access Management Services
- Access Tester

- Attribute Type Authorization Condition
- Deprecation
- Detached Credential Collection
- Dynamic Multi-Factor/Multi-Step Authentication
- Identity Context
- Integration with Third Party Products
- LDAP Search Filters in Identity Conditions
- Leverage SubjectAltName Extension Data/Integrate with Multiple OCSP Endpoints
- Mobile and Social
- Multiple Identity Store Support
- OpenSSO Support
- Password Policy Management
- Query String Name and Value Parameters in a Resource Definition Pattern
- Resource Type TokenServiceRP for Non-Browser Client-enabled Webgate
- RESTful Services
- Shared Secret Key: Access Client and Software Developer Kit Enhancement
- Token Issuance Policy for Mobile and Social
- Tuning Performance
- User-Defined Parameters: 11g Webgate

November 2012 Book Refresh

The following information has been added or updated:

- Chapter 1: Added "System Requirements and Certification".
- Chapter 2: Removal (redundant) has altered chapter numbers.
- Chapter 3: Moved password policy, refocused for ECC, into Chapter 16 with other authentication details.
- Chapter 6: Added descriptions of loggers to:
  - Table 8–3, " Oracle Access Management Server-Side Component Loggers"
  - Table 8–4, " Oracle Access Management Shared-Service Engine Component Loggers"
  - Table 8–5, " Oracle Access Management Foundation API Component Loggers"
- Chapter 12: Re-focused for 11g OAM Agents (Webgates and Access Clients).
- Chapter 13:
  - Combined console and remote registration for 11g OAM Agents.
  - Moved "Configuring 11g WebGates and Authentication Policy for DCC" to chapter 16.
- Chapter 15:
  - Added "Introducing Access Manager Credential Collection and Login".

- Chapter 16: Relocated authentication details with other shared policy components:
  - Combined console and remote registration for 11g OAM Agents.
  - Added "Introducing Access Manager Credential Collection and Login"
  - Refocused and moved from chapter 3: "Managing Global Password Policy"
  - Moved "Configuring 11g WebGates and Authentication Policy for DCC" from chapter 3.
- Chapter 17:
  - Added "Understanding Remote Policy and Application Domain Management".
  - Added "Managing Policies and Application Domains Remotely".
- Chapter 20: Relocated OpenSSO Agent registration and management details here.
- Chapter 20: Relocated OSSO Agent registration and management details here.
- Chapter 22: Expanded 10g OAM Agent details to include console and remote registration updates, and logout with Access Manager.
- Appendix A: Relocated to relevant logout configuration details.

August 2012 Book Refresh

This book has been updated to address reported issues. Global updates include cosmetic changes and updated screens.

See Also: The following topics are new or updated in this release.

- Table 20–17, " Fresh OSSO Installation: Protected Policy Response (Header)" for details about obtaining subscriber DN information from Oracle Internet Directory.
- Table 19–13, " Parameter Details for Various Plug-ins"
- Section 31.3.1, "Creating Remote Identity Provider Partners" for details about defining OpenID 2.0 IdP partners for federation.

Access Management Services

Several previously separate access products of the Oracle Identity Management portfolio are combined into one product: Oracle Access Management.

See Also:

- Chapter 1, "Introducing Oracle Access Management"
- Part IV, "Managing Access Manager Settings and Agents"
- Part VII, "Managing Oracle Access Management Identity Federation"
- Part IX, "Managing Oracle Access Management Mobile and Social"
- Part XII, "Using Identity Context"

Access Tester

The Access Tester can validate the connections in the pool and make cache flush (SYNC_INFO) requests to be sent over a connection that is already established; instead of using out-of-band connection for cache flush requests.

See Also: Chapter 21, "Validating Connectivity and Policies Using the Access Tester"

Attribute Type Authorization Condition

Authorization conditions enable you to implement dynamic security policies and resulted in changes to the Policy Configuration interface in the Oracle Access Management Console:

- Authorization Conditions: The earlier constraint class is renamed as a Condition Type. Conditions contain no Allow or Deny specification; however, new Rules specify Allow or Deny access options.

  See Also: "Introduction to Authorization Policy Rules and Conditions" on page 20-49

- A new condition type: Attribute.

  See Also: "About Attribute Conditions" on page 20-65

- Use of Implied Constraints option in policies is replace, allowing you to create particular condition types by instantiating those and selecting rules.

  See Also: "Introduction to Authorization Policy Rules and Conditions" on page 20-49

Deprecation

Standard Authentication Modules (LDAP, Kerberos, and X509) are targeted for deprecation in future releases. Oracle strongly recommends using native or custom Plug-ins rather than standard Authentication Modules.

See Also:

- Table 19.7, "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28
- Oracle Fusion Middleware Developer's Guide for Oracle Access Management if you want to create custom authentication plug-ins.

Detached Credential Collection

Detached credential collection is an additional capability of the 11g Webgate (OAM Agent). This is required for secure dynamic multi-factor/multi-step authentication. You can easily enable the 11g Webgate to use as a DCC; or continue using the embedded credential collector (ECC) in the OAM Server.

See Also: "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109

Dynamic Multi-Factor/Multi-Step Authentication

Multi-factor authentication requires a custom authentication plug-in to transmit information to the back-end authentication scheme several times during the login process. All information collected by the plug-in and saved in the context will be available to the plug-in through the authentication process. Context data can also be used to set cookies or headers in the user's login page.

See Also:

- Oracle Fusion Middleware Developer's Guide for Oracle Access Management

Identity Context

Identity Context leverages the context-aware policy management and authorization capabilities built into the Oracle Access Management platform. Identity Context secures access to resources using traditional security controls (roles and groups) as and dynamic data established during authentication and authorization (strength, risk levels, device trust, and so on).

See Also: Chapter 48, "Using Identity Context"

Integration with Third Party Products

Details of integrating Access Manager with third-party products have moved from the earlier Oracle Fusion Middleware Integration Guide for Oracle Access Manager to this book. The following integrations are supported:

See Also: Part XIII, "Integrating Access Manager with Other Products"

- Chapter 49, "Integrating RSA SecurID Authentication with Access Manager"
- Chapter 50, "Configuring Access Manager for Windows Native Authentication"
- Chapter 51, "Integrating JBoss with Access Manager"
- Chapter 52, "Integrating Microsoft SharePoint Server with Access Manager"

LDAP Search Filters in Identity Conditions

Access Manager authorization conditions accept a list of users, groups, and LDAP search filters as part of allowed or denied identities. LDAP search filters provide a simple way of specifying a target identity population without having to reorganize or create new groups in the identity store (directory server). This brings to Access Manager 11g, parity with Oracle Access Manager 10g.

See Also: "About LDAP Search Filter Support in Identity Conditions" on page 20-57

Leverage SubjectAltName Extension Data/Integrate with Multiple OCSP Endpoints

Access Manager support for personal identity verification (PIV) cards (a United States Federal smart card), is to use FASC-N and EDIPI attributes from the SubjectaltName extension to map the user during X.509 authentication. While multiple OCSP providers are not supported, you can use an OCSP Gateway or write a custom authentication plug-in that uses the OSDT OCSP APIs to validate against multiple OCSP providers.

See Also:

- "Example: Leveraging SubjectAltName Extension Data and Integrating with Multiple OCSP Endpoints" on page 19-44

Mobile and Social

Mobile and Social serves as an intermediary between a user seeking to access protected resources, and the back-end Oracle Access Management and Oracle Identity Management services that protect those resources. Mobile and Social services' pluggable architecture enables Administrators to add, modify, and remove Identity and Access Management services without having to update user installed software.

> **See Also:** Part IX, "Managing Oracle Access Management Mobile and Social"

Multiple Identity Store Support

Administrators can install multiple user identity stores for Access Manager. Each identity store can rely on a different LDAP provider. Each authentication module (or plug-in within an authentication step) can be configured to use a specific user identity store.

> **See Also:**
>
> - "Using Multiple Identity Stores" on page 5-5
> - "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28

OpenSSO Support

Access Manager supports Web and Java Agents deployed on Web or J2EE containers. Each OpenSSO Agent is a filter that is plugged into the container (Oracle WebLogic Server, JBoss, Apache, and so on) that hosts applications.

Access Manager provides an OpenSSO Proxy to handle requests for resources protected by OpenSSO Agents. The Oracle-provided OpenSSO Proxy facilitates single sign-on to OpenSSO Agent-protected applications by enabling communication between the agent and the OAM Server.

> **See Also:**
>
> - Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
> - Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management

Password Policy Management

Access Manager enables password policy management through the Oracle Access Management Console. The global password policy applies to Access Manager users when the Password Policy Validation Module is implemented. The password policy is stored within the policy store and applies to all resources protected by Access Manager.

> **See Also:**
>
> - "Managing Global Password Policy" on page 19-97
> - "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109

Query String Name and Value Parameters in a Resource Definition Pattern

The Policy Model supports Query String Name and Value Parameters in a Resource Pattern Definition:

See Also:

- "About Query String Name and Value Parameters for Resource Definitions" on page 20-22

Resource Type TokenServiceRP for Non-Browser Client-enabled Webgate

A TokenServiceRP type resource represents resources for, and is based on, the Token Service Relying Party (required for non-browser clients such as Identity Connect).

See Also: "Managing TokenServiceRP Type Resources in Application Domains" on page 38-32

RESTful Services

Oracle Access Management supports programmatic RESTful services.

See Also: Oracle Fusion Middleware Developer's Guide for Oracle Access Management

Shared Secret Key: Access Client and Software Developer Kit Enhancement

Custom Access Clients developed using the Access Manager 11g Access Software Developer Kit support the 11g Shared Secret Key Per Agent (Webgate or Access Client) security feature. Each agent has its own secret key that is shared between the Access Client and the OAM Server to encrypt or decrypt the host-based Access-Client-specific OAMAuthnCookie. Even if one Access Client is compromised, the impact is limited to that particular Access Client; no other Access Clients are affected.

Note: There is no impact to existing 10g ASDK users. Oblix class wrappers can be modified to create Access Client instances with 10g mode transparently. However, to operate in 11g compatible mode, Oracle java APIs should be used.

Access Manager 11g Pure Java ASDK provides both Oracle Java APIs (in oracle.security.am.asdk packages) and Oblix Java APIs (in com.oblix.access packages). Access Manager 11g Pure Java Access Clients:

- Communicate with OAM Servers using Oracle Java APIs and either Oracle Access Protocol version 3 (or version 4 which supports Shared Secret Key Per Webgate security feature)
- Communicate with 10g Servers using Oblix Java APIs and Oracle Access Protocol version 3 only (with no support for SSKPA)

See Also: Oracle Fusion Middleware Developer's Guide for Oracle Access Management

Token Issuance Policy for Mobile and Social

A Token Issuance Policy is required for clients for Mobile and Social performing authentication and authorization.

See Also: Part IX, "Managing Oracle Access Management Mobile and Social" for details about Mobile and Social Authentication Service

Tuning Performance

A survey of topics is provided to help tune a deployed Oracle Access Management environment to ensure optimal performance and stability.

> **See Also:** Oracle Fusion Middleware Performance and Tuning Guide

User-Defined Parameters: 11g Webgate

11g Webgate works with browser clients. However, there are cases where a non-browser (Representational State Transfer (REST) client needs to access HTTP resources and perform authentication and authorization.

> **See Also:**
>
> - "About 11g Webgate Functionality for Mobile and Social" on page 15-5
> - Part IX, "Managing Oracle Access Management Mobile and Social"
> - Oracle Fusion Middleware Developer's Guide for Oracle Access Management

Product and Component Name Changes with 11.1.2

Oracle Access Management provided some product and component name changes, as shown in the following table.

Item	In Oracle Access Management 11.1.2	In Oracle Access Management 11.1.1
Services	Access Manager	Access Manager
	Identity Federation	N/A
	Security Token Service	Security Token Service
	Mobile and Social	N/A
	Identity Context (always enabled)	
Agents	Webgate (OAM Agent)	Webgate (OAM Agent)
	Access Client (OAM Agent)	Access Client (OAM Agent)
	OSSO Agent	OSSO Agent
	OpenSSO Agent	N/A
Console Names	Oracle Access Management Console	Oracle Access Manager Console
Administrators	Administrator or Oracle Access Management Administrator	Oracle Access Manager Administrator
Agent and Application Domain Registration	Oracle Access Management Console	Oracle Access Manager Console
Policy Creation	Remote registration tool for automated Agent registration, Application Domain creation with default security policies.	Remote registration tool
Authorization	Conditions and Rules	Constraints

Part I

Introduction to Oracle Access Management

Part I of this book provides an introduction to Oracle Access Management. It contains information on the available services as well as instructions on how to start using the Oracle Access Management Console. This part contains the following chapters.

1

Introducing Oracle Access Management

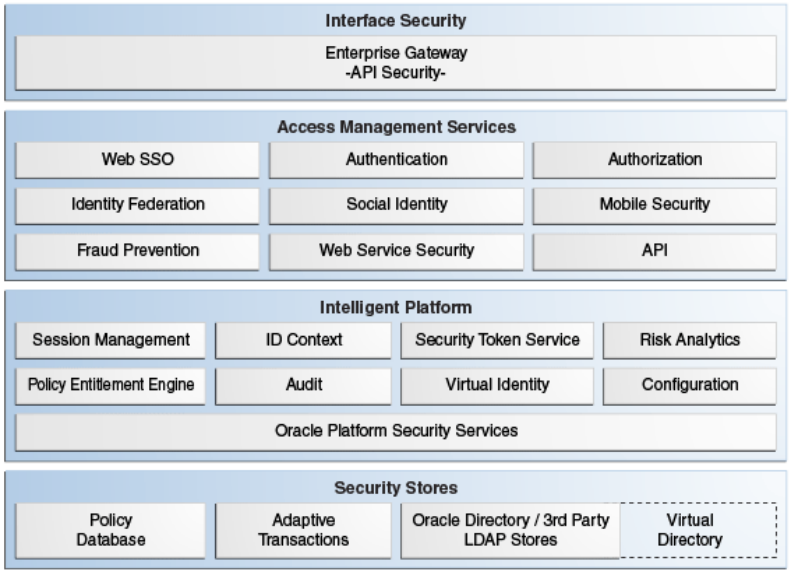
This book provides information on Oracle Access Management, the enterprise-level security platform, and how to administer and configure it. Oracle Access Management includes Oracle Access Management Access Manager (Access Manager) and its incorporated services: Identity Federation, Mobile and Social, Security Token Service, Identity Context and Access Portal.

This chapter provides a high-level overview of the Oracle Access Management architecture and these services.

1.1 Understanding Oracle Access Management Services

Oracle Access Management is a Java, Enterprise Edition (Java EE)-based enterprise-level security application that provides a full range of Web-perimeter security functions and Web single sign-on services including identity context, authentication and authorization; policy administration; testing; logging; auditing; and more. It leverages shared platform services including session management, Identity Context, risk analytics, and auditing, and provides restricted access to confidential information. Many existing access technologies in the Oracle Identity Management stack converge in the Oracle Access Management stack as illustrated in Figure 1–1.

Figure 1–1 Oracle Access Management Overview



Overview of Oracle Access Management software

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Starting with release 11.1.2, Oracle Access Management includes these services.

- Oracle Access Management Access Manager (Access Manager) is described in "Using Oracle Access Management Access Manager" on page 1-3 and the following parts of this guide.
  - Part II, "Managing Common and System Configurations"
  - Part III, "Logging, Auditing, Reporting and Monitoring Performance"
  - Part IV, "Managing Access Manager Settings and Agents"
  - Part V, "Managing Access Manager SSO, Policies, and Testing"
  - Part VI, "Registering and Using Agents with Access Manager"
  - Part XIII, "Integrating Access Manager with Other Products"
- Oracle Access Management Identity Federation (Identity Federation) provides cross-domain single sign-on support using open federation protocol standards such as SAML and OpenID. Beginning with release 11.1.2, Identity Federation is tightly integrated with Oracle Access Management out of the box. This new Oracle Access Management service includes a streamlined user interface and administration experience. For more information, see the chapters listed in Part VII, "Managing Oracle Access Management Identity Federation."
- Oracle Access Management Security Token Service (Security Token Service) provides token validation and generation to facilitate access to services across security domains and beyond organizational boundaries. Essentially the service acts as a trust-broker that receives and validates client requests and generates appropriate tokens for a requested resource. For more information, see the chapters listed in Part VIII, "Managing Oracle Access Management Security Token Service."
- Oracle Access Management Mobile and Social (Mobile and Social) acts as an intermediary between a user seeking access to protected resources, and the back-end Identity and Access Management services that protect the resources.

Mobile and Social extends security and compliance to mobile platforms and simplifies integration with Social Identity services including Facebook and Google. Mobile and Social RESTful enables Identity and Access Management infrastructure and includes platform-specific developer kits for leading mobile platforms that enables developers to easily access security services and enable single sign-on across native and mobile browser-based applications. For more information, see the chapters listed in Part IX, "Managing Oracle Access Management Mobile and Social."

- Identity Context provides context-aware security policy management that enables Administrators to control the level of security imposed in an application delivery environment through security frameworks provided by Oracle Identity Management. For more information, see the chapters listed in Part XII, "Using Identity Context".

OpenSSO 8.0 and Sun Access Manager 7.1 have also converged into Oracle Access Management 11.1.2. For more information, see:

- Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
- Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management

With the 11.1.2.2 release, Oracle Access Management has integrated Oracle Access Portal, a hosted single sign-on proxy service that enables Web applications with Oracle's form-fill single sign-on technology. For more information, see Part XI, "Managing Oracle Access Management Oracle Access Portal."

1.2 Using Oracle Access Management Access Manager

Oracle Access Management Access Manager (Access Manager) is the former (standalone) product named Oracle Access Manager. Access Manager provides the Oracle Fusion Middleware 11g single sign-on (SSO) solution. It operates independently (as described in this book) but can also operate with the Access Manager Authentication Provider as described in the *Oracle Fusion Middleware Application Security Guide*.

Note: For information on the differences between Access Manager 11g, 10g and other software, see:

- "Comparing Access Manager 11.1.2 and 10g" on page 25-5
- "Comparing Access Manager 11g SSO versus OSSO 10g" on page 24-2
- "Introduction to OpenSSO, Agents, Migration and Co-existence" on page 23-1

Access Manager SSO allows users and groups to access multiple applications after authentication, eliminating the need for multiple sign-on requests. To enable SSO, a Web server, Application Server, or any third-party application must be protected by a WebGate (or mod_osso instance) that is registered as an agent with Access Manager. Administrators then define authentication and authorization policies to protect the resource. To enforce these authentication policies, the agent acts as a filter for HTTP requests.

> **Note:** WebGates are agents provided for various Web servers by Oracle as part of the product. Custom access clients, created using the Access Manager SDK, can be used with non-Web applications. Unless explicitly stated, information in this book applies equally to both.

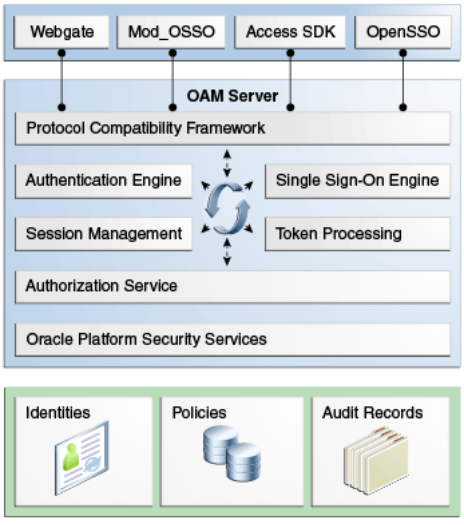
You can also integrate any Web applications currently using Oracle ADF Security and the OPSS SSO Framework with Access Manager. (See Appendix A, "Integrating Oracle ADF Applications with Access Manager SSO.") The following sections contain more details on Access Manager.

- Architecting Access Manager
- Deploying Access Manager

1.2.1 Architecting Access Manager

Access Manager 11g sits on an instance of Oracle WebLogic Server and is part of the Oracle Fusion Middleware Access Management architecture. While providing backward compatibility and co-existence with existing solutions, Access Manager 11g replaces and converges the earlier technologies Access Manager 10g and Oracle Application Server SSO (OSSO) 10g. Figure 1–2 illustrates the primary Access Manager 11g components and services. The Protocol Compatibility Framework interfaces with OAM WebGates, mod_osso agents, and custom Access Clients created using the Access Manager Software Developer Kit (SDK).

Figure 1–2 Access Manager 11g Components and Services



Access Manager 11g Components

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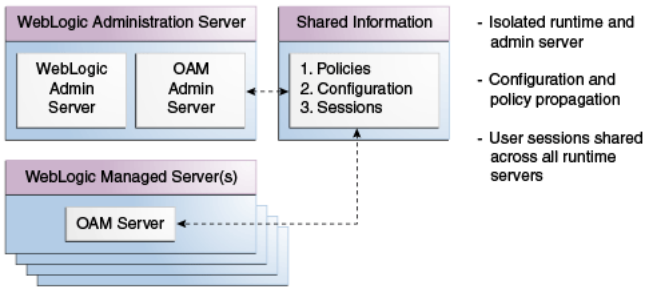
Figure 1–3 illustrates the distribution of Access Manager components.

Figure 1–3 Access Manager 11g Component Distribution



Access Manager 11g component distribution

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The Oracle Access Management Console resides on the Oracle WebLogic Administration Server (referred to as AdminServer). WebLogic Managed Servers hosting OAM runtime instances are known as OAM Servers. Information shared between the two includes:

- Agent and server configuration data
- Access Manager policies
- Session data (shared among all OAM Servers)

1.2.2 Deploying Access Manager

Table 1–1 describes the types of deployments in which Access Manager might be installed by your enterprise.

Table 1–1 Access Manager Deployment Types

Deployment Type	Description
Development Deployment	Ideally a *sandbox*-type setting where the dependency on the overall deployment is minimal
QA Deployment	Typically a smaller shared deployment used for testing
Pre-production Deployment	Typically a shared deployment used for testing with a wider audience
Production Deployment	Fully shared and available within the enterprise on a daily basis

During initial installation and configuration of Access Manager in your deployment, you create a new WebLogic Server domain (or extend an existing domain). Regardless of the deployment size or type, in a new WebLogic Server domain, the following components are installed using the Oracle Fusion Middleware Configuration Wizard.

- WebLogic Administration Server

> **Note:** In an existing WebLogic Server domain, the WebLogic Administration Server is already installed and operational.

- Oracle Access Management Console deployed on the WebLogic Administration Server
- A WebLogic Managed Server for Oracle Access Management services

- Application deployed on the Managed Server

  See Also: "Understanding Oracle WebLogic Server Domains" in the *Oracle Fusion Middleware Understanding Domain Configuration for Oracle WebLogic Server* guide provides information about Oracle WebLogic Server administration domains.

Once the domain is configured, additional details are defined for OAM Servers, Database Schemas, (optional) WebLogic Managed Servers and clusters, and the following store types:

- **Policy Store**: The default policy store is file-based for development and demonstration purposes, and is not supported in production environments. All policy operations and configurations are performed directly on the database configured as the policy store in production environments.

  See Also: "Managing the Policy and Session Database" on page 5-25

- **Identity Store**: The default Embedded LDAP data store is set as the primary user identity store for Access Manager.

  See Also: "Managing OAM Identity Stores" on page 5-4

- **Keystore**: A Java keystore is configured for certificates for Simple or Certificate-based communication between OAM Servers and WebGates during authorization. The keystore bootstrap also occurs on the initial AdminServer startup after running the Configuration Wizard.

  See Also: "Managing the Policy and Session Database" on page 5-25

1.3 Features of Access Manager 11.1.2

The following sections provide details on the features available (and not available) in Access Manager 11.1.2.

1.3.1 Features In Access Manager 11.1.2

Table 1–2 provides an overview of Access Manager 11.1.2. For a list of names that have changed with 11.1.2, see "Product and Component Name Changes with 11.1.2" on page lxv.

Table 1–2 Features in Access Manager 11.1.2

Access Manager 11g	Description
Oracle Identity Management Infrastructure	Enables secure, central management of enterprise identities.
Policy Enforcement Agents	Resides with the relying parties and delegate authentication and authorization tasks to OAM Servers. ▪ 11g OAM Agents, Chapter 16 ▪ 10g OAM Agents and the Pre-configured IAMSuiteAgent (10g OAM Agent), Chapter 25 ▪ OpenSSO Agents, Chapter 23 ▪ 10g OSSO Agents (mod_osso), Chapter 24 **Notes**: Nine Administrator languages are supported. Unless explicitly stated, the term "Webgate" refers to both an out of the box Webgate or a custom Access Client. See Chapter 15 for an introduction to agents.
Server-side components	▪ OAM Server (installed on a WebLogic Managed Sever),
Console	Oracle Access Management Console provides access to all services and configuration details. See Chapter 2.
Protocols for information exchange on the Internet	Front channel protocols exchanged between Agent and Server: HTTP/HTTPS. Back channel protocols: Authenticated clients can perform session operations using enhancements in the Oracle Access Protocol (OAP).
Proxy	Provides support for legacy systems ▪ OAM Proxy supports legacy Access Manager implementations by acting as a legacy Access Server. "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security" on page 14-6 "Introduction to OAM Proxy Metrics and Tuning" on page 12-9 ▪ OSSO Proxy supports OSSO Agents by acting as the legacy OSSO Server. See Chapter 24. ▪ Oracle-provided OpenSSO Proxy handles requests for resources protected by OpenSSO Agents. See Chapter 23. See Also: About the Embedded Proxy Server and Backward Compatibility and the new Part XI, "Managing Oracle Access Management Oracle Access Portal."
Cryptographic keys	**Note**: One key is generated and used per registered mod_osso or 11g Webgate. However, one single key is generated for all 10g Webgates. ▪ During 11g agent registration, one per-agent secret key shared is generated for encrypting and decrypting SSO cookies between 11g Webgate and OAM Server. See Chapter 16. ▪ During 10g agent registration, a global shared secret key is generated across all of Access Manager 11g (all Agents and OAM Servers). See Chapter 25. ▪ During OSSO agent registration, One key per partner shared between mod_osso and OSSO server. See Chapter 24. ▪ OpenSSO Agent Host- or Domain-based key stored locally in Agent bootstrap file on the Agent host. See Chapter 23. ▪ During OAM Server registration, one server key is generated.
Keys storage	▪ **Agent side**: A per-agent key is stored locally in the Oracle Secret Store in a wallet file ▪ **OAM Server side:** Per- agent keys, and server keys, are stored in the credential store on the server side

Table 1–2 (Cont.) Features in Access Manager 11.1.2

Access Manager 11g	Description
Encryption / Decryption (The process of converting encrypted data back into its original form)	Introduces client-side cryptography and ensures that cryptography is performed at both the agent and server ends: 1. Webgate encrypts obrareq.cgi using the agent key. **Note**: obrareq.cgi is the authentication request in the form of a query string redirected from Webgate to OAM Server. 2. OAM Server decrypts the request, authenticates, creates the session, and sets the server cookie. 3. OAM Server also generates the authentication token for the agent (encrypted using the agent key), packs it in obrar.cgi with a session token (if using cookie-based session management), authentication token and other parameters, then encrypts obrar.cgi using the agent key. **Note**: obrar.cgi is the authentication response string redirected from the OAM Server to Webgate. 4. Webgate decrypts obrar.cgi, extracts the authentication token, and sets a host-based cookie.
Policy Store	Database in production environments; file-based in demonstration and development environments, as described in "Managing the Policy and Session Database" on page 5-25.
Applications	An application that delegates authentication and authorization to Access Manager and accepts headers from a registered Agent. **Note**: External applications do not delegate authentication. Instead, these display HTML login forms that ask for application user names and passwords. For example, Yahoo! Mail is an external application that uses HTML login forms.
SSO Engine	Manages the session lifecycle, facilitates global logout across all relying parties in the valid session, and provides consistent service across multiple protocols. Uses Agents registered with Access Manager 11g: ■ Authentication with the default embedded credential collector occurs across the HTTP (HTTPS) channel ■ Authentication with the optional detached credential collector occurs across the Oracle Access Protocol (OAP) channel ■ Authorization occurs across the Oracle Access Protocol (OAP) channel See: Chapter 18
Session Management	■ Global session specifications are enabled for all Application Domains and resources. In addition, Application Domain-specific session overrides can be configured. See Chapter 17.
Policies	Registered agents rely on Access Manager authentication, authorization, and token issuance policies to determine who gets access to protected applications (defined resources). See: Chapter 20
Client IP	■ Maintains this client's age, and includes it in the host-based cookie: OAMAuthnCookie for 11g Webgate (or ObSSOCookie for 10g Webgate)
Response token replay prevention	■ Include `RequestTime` (the timestamp just before redirect) in obrareq.cgi and copy it to obrar.cgi (the authentication response string redirected from the OAM Server to Webgate) to prevent response token replay.

Table 1–2 (Cont.) Features in Access Manager 11.1.2

Access Manager 11g	Description
Multiple network domain support	Access Manager 11g supports cross-network-domain single sign-on out of the box. Oracle recommends you use Oracle Federation for this situation.
Cookies	Host-based authentication cookie: ▪ **11g Webgate, One per agent**: OAMAuthnCookie_*host:port_random_number* set by Webgate using the authentication token received from the OAM Server after successful authentication. **Note**: A valid OAMAuthnCookie is required for a session. ▪ **11g Webgate, Transient**: OAM_REQ is scoped to the OAM Server. OAM_REQ is set or cleared by the OAM Server if the Authentication request context cookie is enabled. Protected with keys known to the OAM Server only. This cookie is configured as a high availability option to store the state about the user's original request to a protected resource while his credentials are collected and authentication is performed. ▪ **10g Webgate**, One ObSSOCookie for all 10g Webgates. ▪ **One for the OAM Server**: OAM_ID, which is scoped to the OAM Server. OAM_ID is generated by the OAM Server when the user is challenged for credentials and submitted to the server on every redirect to the server. See Chapter 18.

Centralized log-out	▪ The `logOutUrls` (10g Webgate configuration parameter) is preserved. 10g logout.html requires specific details for Access Manager 11g. See Chapter 25.
	▪ 11g Webgate parameters are new:
	`Logout Redirect URL`
	`Logout Callback URL`
	`Logout Target URL`
	See Chapter 22.

1.3.2 Features Not In Access Manager 11.1.2

Table 1–3 lists several features provided in Access Manager 10g but not included in Access Manager 11.1.2.

Table 1–3 Features Not Available In Access Manager 11.1.2

Unavailable or Unsupported Feature
Extensibility framework required for building custom authorization plug-ins.
Authorization for mod_osso-protected resources

1.4 System Requirements and Certification

Refer to the system requirements and certification documentation on Oracle Technology Network (OTN) for information about hardware and software requirements, platforms, databases, and other information.

The system requirements document covers information such as hardware and software requirements, minimum disk space and memory requirements, and required system libraries, packages, or patches:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-requirements-100147.html

The certification document covers supported installation types, platforms, operating systems, databases, JDKs, and third-party products:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

1.5 Installing Oracle Access Management

The following sections contain information and links regarding Access Manager installation and post-installation tasks.

- About Oracle Access Management Installation
- About Oracle Access Management Post-Installation Tasks

1.5.1 About Oracle Access Management Installation

The *Oracle Fusion Middleware Supported System Configurations* document provides certification information on supported installation types, platforms, operating systems, databases, JDKs, and third-party products related to Oracle Identity Management 11g. You can access the *Oracle Fusion Middleware Supported System Configurations* document by searching the Oracle Technology Network (OTN) Web site:

`http://www.oracle.com/technology/software/products/ias/files/fusion_certification.html`

Using the Oracle Fusion Middleware Configuration Wizard, the following components are deployed for a new domain:

- WebLogic Administration Server
- Oracle Access Management Console deployed on the WebLogic Administration Server (sometimes referred to as the OAM Administration Server, or simply AdminServer)
- A Managed Server for Oracle Access Management
- An application deployed on the Managed Server

See Also:

- Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management

OracleAS 10g SSO deployments can be upgraded to use Oracle Access Management 11g SSO. After upgrading and registering OSSO Agents, authentication is based on Access Manager 11g Authentication Policies. However, only OAM Agents (Webgates/Access Clients) use Access Manager 11g Authorization Policies. Over time, all mod_osso agents in the upgraded environment should be replaced with Webgates to enable use of 11g Authorization policies.

For details about co-existence after the upgrade, see *Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management*:

1.5.2 About Oracle Access Management Post-Installation Tasks

Each WebLogic Server domain is a logically related group of Oracle WebLogic Server resources. WebLogic administration domains include a special Oracle WebLogic Server instance called the Administration Server. Usually, the domain includes additional Oracle WebLogic Server instances called Managed Servers, where Web applications and Web Services are deployed.

During initial deployment, the WebLogic Administrator userID and password are set for use when signing in to both the Oracle Access Management and WebLogic Server Administration Console. A different Administrator can be assigned for Oracle Access Management, as described in "Specifying the Oracle Access Management Console Administrator" on page 2-3. Administrators can log in and use the Oracle Access

Management Console for the post-installation tasks documented in Table 1–4.

Table 1–4 Oracle Access Management Post-Installation Tasks

Service	Requirements
Access Manager	Enable Access Manager Service. Register: ■ Data Sources ■ OAM Server instances ■ Agents for Access Manager ■ Application domains and policies that protect resources Configure: ■ Common Settings, including Session-timing ■ Certificate Validation ■ Common Password Policy Configure Access Manager Settings.
Identity Federation	Enable Identity Federation Service Configure Federation Settings Register Identity Provider and Service Provider partners
Security Token Service	Enable Security Token Service Service. Configure Security Token Service Settings. Register Endpoints Create Token Issuance and Validation Templates Register Partner Profiles and Partners
Mobile and Social	Enable Mobile and Social Service Configure Mobile and Social

2

Getting Started with Oracle Access Management

This chapter describes the initial steps needed to start your servers and log in to the Oracle Access Management Console. All tasks presume that Oracle Access Management 11.1.2 is deployed as described in the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.

This information is organized in the following sections.

- Starting and Stopping Servers in Your Deployment
- Specifying the Oracle Access Management Console Administrator
- Using the New Oracle Access Management Console
- Configuring with the Command-Line Tools
- Logging, Auditing, Reporting and Monitoring Performance
- Configuring Oracle Access Management Login Options

2.1 Starting and Stopping Servers in Your Deployment

The Oracle Access Management Console is deployed on the WebLogic Administration Server (AdminServer) thus, Oracle Access Management Administrators can access it only when the AdminServer is running. If the Oracle Access Management Console is protected by a WebGate, the OAM Server must also be running. And the Node Manager must be started before the other servers. The following sections have more details.

- Starting Node Manager
- Starting and Stopping WebLogic AdminServer
- Starting and Stopping Managed WebLogic Servers and Access Manager Servers

2.1.1 Starting Node Manager

Node Manager is a Java utility that allows you to perform common operations tasks for a Managed Server, regardless of its location with respect to its Administration Server. Node Manager must be running before you can start and stop the WebLogic AdminServer, or WebLogic managed servers hosting OAM Servers.

After installing and configuring Oracle Identity Manager, configure the Node Manager for use with the WebLogic Administration Console (AdminServer) or Oracle Enterprise Manager Fusion Middleware Control. This configuration is done only once,

as described in "Configuring the Node Manager" in *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager*.

Following this configuration, ensure that the Node Manager is up by running the `startNodeManager.sh` script. Oracle WebLogic Administration Server does not do this automatically.

```
$WLS_HOME/server/bin/startNodeManager.sh
```

> **See Also:** *Oracle WebLogic Server Administrator Guide* for details.

To start or stop Node Manager

1. Change to your $WLS_HOME/server/bin directory.
2. **Enable Start Scripts**: Run `setNMProps` to start the stack and instruct Node Manager to enable the use of start scripts (`StartScriptEnabled=true`):

   ```
   ./setNMProps.sh
   ```

3. **Start Node Manager**:

   ```
   ./startNodeManager.sh
   ```

2.1.2 Starting and Stopping WebLogic AdminServer

Starting the WebLogic AdminServer the first time can take 12-15 minutes or more. This process must not be interrupted or terminated as policy data might be corrupted. The following procedure describes starting and stopping the WebLogic AdminServer using the scripts located in your `$DOMAIN_HOME/bin` directory.

- **Unix**: `startWebLogic.sh` or `stopWebLogic.sh`
- **Windows**: `startWebLogic.cmd` or `stopWebLogic.cmd`

> **WARNING: If startWebLogic.cmd (Windows) or startWebLogic.sh (Linux) is stopped for any reason (whether accidently or because of a system crash or reboot), policy data might be corrupted. This would require removal and recreation of the domain and running the RCU again to recreate the OAM schema.**

To start or stop AdminServer

1. Navigate to your `$DOMAIN_HOME/bin`.
2. **Start AdminServer**:
   - **Unix**: `./startWebLogic.sh`
   - **Windows**: `run startWebLogic.cmd`
3. **Stop AdminServer**:
   - **Unix**: `./stopWebLogic.sh`
   - **Windows**: `run stopWebLogic.cmd`

2.1.3 Starting and Stopping Managed WebLogic Servers and Access Manager Servers

You can perform all start and stop operations for managed WebLogic Servers hosting Oracle Access Management Servers (OAM Servers) from either a command prompt, the Oracle WebLogic Server Administration Console or the Oracle Enterprise Manager

Fusion Middleware Control. The following procedure describes starting and stopping the OAM Server using the scripts located in the `$DOMAIN_HOME/bin` directory (.sh scripts for Unix systems; .cmd scripts for Windows Systems).

- **Unix**: `startManagedWebLogic.sh` or `stopManagedWebLogic.sh`
- **Windows**: `startManagedWebLogic.cmd` or `stopManagedWebLogic.cmd`

Both the Managed Server name and the AdminServer URL are required for these operations. For example, if the managed server is named *oam_server1* and the AdminServer URL is http://*examplewlsadminhost.example.com:7001*, the start and stop commands run on a Unix system would look like these:

```
startManagedWebLogic.sh oam_server1 http://examplewlsadminhost.example.com:7001

stopManagedWebLogic.sh oam_server1 http://examplewlsadminhost.example.com:7001
```

To start or stop OAM Servers

1. Navigate to `$DOMAIN_HOME/bin`.
2. **Start OAM Server**.
   - **Unix**: `./startManagedWebLogic.sh` *MANAGED_SERVER_NAME ADMIN_SERVER_URL*
   - **Windows**: run `startManagedWebLogic.cmd` *MANAGED_SERVER_NAME ADMIN_SERVER_URL*
3. **Stop OAM Server**.
   - **Unix**: `./stopManagedWebLogic.sh` *MANAGED_SERVER_NAME ADMIN_SERVER_URL*
   - **Windows**: run stopManagedWebLogic.cmd *MANAGED_SERVER_NAME ADMIN_SERVER_URL*

2.2 Specifying the Oracle Access Management Console Administrator

A single default LDAP group, the WebLogic Server `Administrators` group, is set in the Default User Identity Store (Embedded LDAP) designated as the System Store. The LDAP group, when assigned to a specified user, grants full system and policy configuration privileges. Specifying a different LDAP group prohibits WebLogic Administrators from logging in to Oracle Access Management Console or from using administrative command-line tools.

> **Note:** Unless explicitly stated, the term Administrator in this guide refers to the Oracle Access Management Administrator.

During initial deployment with the Oracle Fusion Middleware Configuration Wizard, the Administrator userID and password are set. These credentials grant access to the:

- Oracle Access Management Console to register and manage system configurations, security elements, and policies.
- WebLogic Server Administration Console to view the Summary of Server Configuration (Cluster, Machine, State, Health, and Listening Port) of deployed OAM Servers within the WebLogic Server domain, and also to Start, Resume, Suspend, Shutdown, or Restart SSL on these servers. See the WebLogic Server Administration Console, see *Oracle Fusion Middleware Administrator's Guide* for more information.

- Custom Administrative command-line tools (including the WebLogic Scripting Tool and Remote Registration Tool) provide an alternative to the Oracle Access Management Console for a specific set of functions. See Section 2.4, "Configuring with the Command-Line Tools" for more information.

Initially, administrative users must log in to the Oracle Access Management Console using the WebLogic Administrator credentials set during initial configuration. However, your enterprise might require independent sets of Administrators: one set of users responsible for Oracle Access Management administration and a different set for WebLogic administration. For information on this, see "Managing the Administrators Role" on page 5-22.

Note: Concurrent configuration updates are not supported. Only one Administrator is allowed to modify the system configuration at any given time. Administrators performing updates concurrently will result in an inconsistent state within the Oracle Access Management Console's system configuration.

2.3 Using the New Oracle Access Management Console

The newly-designed Oracle Access Management Console provides administrative access to Oracle Access Management services and configuration. The following sections describe features of the Oracle Access Management Console.

- Logging In
- Signing Out
- Understanding the Controls
- Accessing Online Help
- Conducting A Search

Note: If you have Oracle Identity Navigator installed to access multiple consoles from one URL, see the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Navigator*.

2.3.1 Logging In

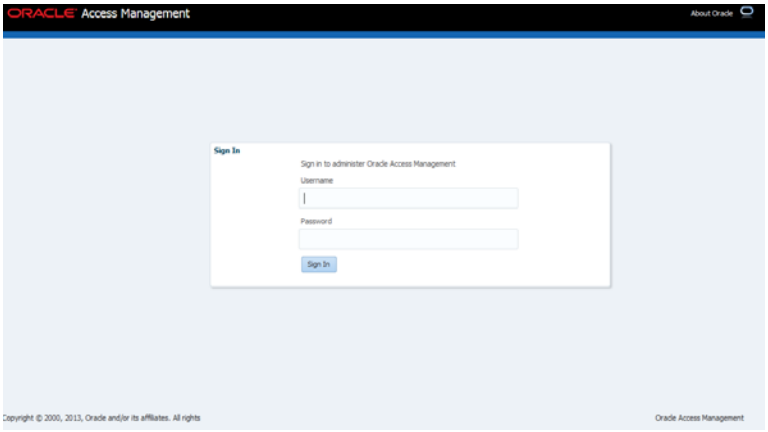
When accessing the Oracle Access Management Console, the WebLogic Server (AdminServer) host and port must be specified in the URL. Let's assume the following sample URL, https://*examplewlsadminhost.example.com:7001*/oamconsole. In this URL, the following is true.

- HTTPS represents the Hypertext Transfer Protocol (HTTP) with the Secure Socket Layer (SSL) enabled to encrypt and decrypt user page requests and the pages returned by the Web server
- *examplewlsadminhost.example.com* refers to fully-qualified domain name of the computer hosting the Oracle Access Management Console (AdminServer)
- *7001* refers to the designated bind port for the Oracle Access Management Console, which is the same as the bind port used for AdminServer (the WebLogic Server Administration Console)
- /oamconsole/ refers to the Oracle Access Management Console Log In page

Note: If you specify an OAM Server host and port (as you would to access the ODSM console), the AdminServer redirects to the managed server which produces a 404 Not Found error.

When navigating to the oamconsole URL, the default Oracle Access Management Console Log In page is displayed - as in Figure 2–1.

Figure 2–1 Default Oracle Access Management Console Log In Page



Note: Ensure that you use the correct administrative credential to log in. Initially, the LDAP group for the Oracle Access Management Console Administrator is the same as the LDAP group defined for the WebLogic Server Administration Console (`Administrators`) and the common Default System User Identity Store store is the WebLogic Embedded LDAP.

To log in to Oracle Access Management Console

1. In a browser window, enter the URL to the Oracle Access Management Console using the appropriate protocol (HTTP or HTTPS). For example:

   `https://`*`hostname`*`:`*`port`*`/oamconsole/`

2. On the Log In page, enter the Oracle Access Management Console Administrator credentials. For example:

   Username: *Admin_login_id*

   Password: *Admin_password*

   Language: English (see "Choosing a User Login Language")

3. Click the Login button.

   - **Successful**: The Oracle Access Management Console Welcome page is displayed.
   - **Not Successful**: See "Administrator Lockout" on page E-6.

   See Also: "Specifying the Oracle Access Management Console Administrator" on page 2-3

2.3.2 Signing Out

The Sign Out link appears in the upper-right corner of the Oracle Access Management Console, as shown in Figure 2–2. You click the Sign Out link to conclude your session. Oracle recommends that you also close the browser window after signing out.

Figure 2–2 Signing Out of the Oracle Access Management Console

To sign out of Oracle Access Management Console

1. Click the Sign Out link in the upper-right corner of the console.
2. Close your browser window.

2.3.3 Understanding the Controls

The Oracle Access Management Console is a Web-based program that provides function controls for system and policy configuration as well as page-level tabs and controls.

> **Note:** Concurrent configuration updates are not supported. Only one Administrator should be allowed to modify the system configuration at any given time. Administrators performing updates concurrently will result in an inconsistent state within the system configuration.

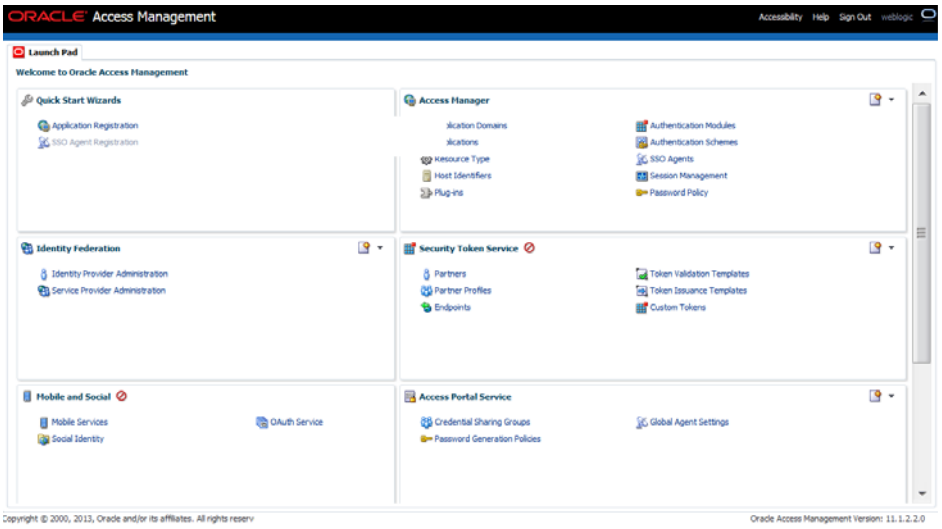
This section provides a quick introduction to orient you to the Oracle Access Management Console.

- Using Tabs and the Launch Pad
- Understanding the Elements on a Page
- Selecting Controls in the Oracle Access Management Console

2.3.3.1 Using Tabs and the Launch Pad

The new Oracle Access Management Console Launch Pad provides quick access to the configuration and service pages. When a Launch Pad link is clicked, a new tab opens (in line with the default Launch Pad tab) that includes the fields applicable to the link's function. Figure 2–3 provides a look at the Oracle Access Management Console Launch Pad as it appears immediately after successfully logging in.

Figure 2–3 Oracle Access Management Console Launch Pad



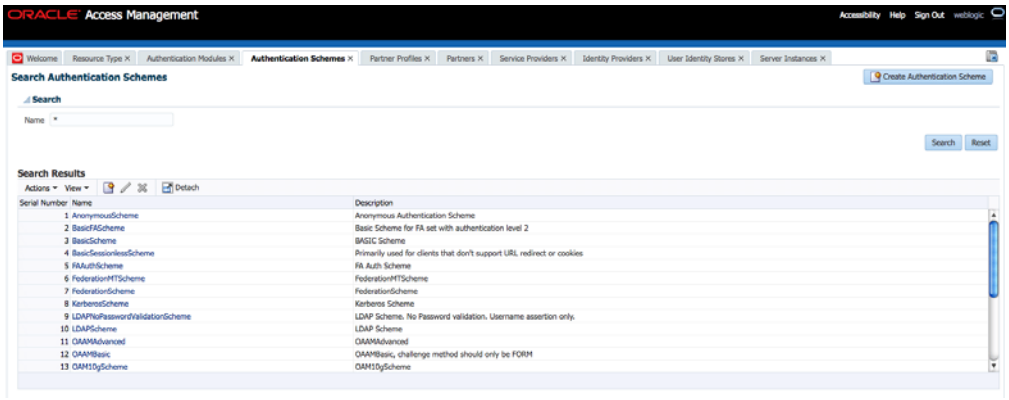
The Launch Pad is divided into panels that include one or more links that you can click to initiate certain tasks. Table 2–1 contains links to the sections of this guide that contain information on these shortcuts.

Table 2–1 Welcome Page Sections and Shortcuts

Section	Shortcuts
Quick Start Wizards	▪ Application Registration is a configuration wizard for an application that will be protected by Access Manager. See Managing Access Manager SSO, Policies, and Testing. ▪ SSO Agent Registration is a configuration wizard for an entity that acts as access client, enabling SSO across protected resources. See Registering and Using Agents with Access Manager.
Access Manager	See Managing Access Manager SSO, Policies, and Testing.
Identity Federation	See Managing Oracle Access Management Identity Federation.
Security Token Service	See Managing Oracle Access Management Security Token Service.
Mobile and Social	See Managing Oracle Access Management Mobile and Social.
Access Portal	See Managing Oracle Access Management Oracle Access Portal.
Configuration	See Managing Access Manager Settings and Agents and Managing Access Manager SSO, Policies, and Testing.

Like the Launch Pad, any clicked shortcut appears as a named tab under the Oracle Access Management banner. The tab of the active page is white. Only the active page is visible and generally provides a work space where you can add, view, or modify related settings. Up to ten pages (tabs) can be open simultaneously. Figure 2–4 illustrates multiple pages open at the same time. You can see named tabs for each page and controls to access pages that are concealed (or to close the active page or close multiple pages). The controls that you can use to close the open pages are described in Table 2–2.

Figure 2–4 Tabs of Open Content Pages



Note: Each page is displayed only once. No warning is issued if you attempt to open the same page multiple times.

Table 2–2 Controls for Closing Pages

Page Control	Definition	Description
	Close Active Page	Click this button to close the active page. **Note**: Closing a page before clicking Apply might discard any changes or additions without warning.
	Close Multiple Pages	▪ Click this button to initiate closing multiple open pages. ▪ In the dialog box that appears, click the box beside the name of each page you want to close. ▪ Click OK to complete the action. **Note**: Closing a page before clicking Apply might discard any changes or additions without warning.

2.3.3.2 Understanding the Elements on a Page

Pages in the console contain one or more graphical user interface elements as described in Table 2–3.

Table 2–3 Page Elements and Descriptions

Page Element	Description
Named tab	Identifies each open page in the console. See Figure 2–1.
Page controls	Enables you to close one or more pages. See Table 2–2.
Apply button	Submits changes or additions made to the page.
Named text box	Enables you to enter relevant details in the named field using the keyboard.
Checkbox	Enables you to choose one of several options. For example, you can tick a checkbox to define a state (Enabled vs. Disabled) or a security mode (Open vs. Simple vs. Cert).
Tables	Displays current specifications or space for new specifications. Tables have independent command buttons independent from page-level and option buttons.

Table 2–3 (Cont.) Page Elements and Descriptions

Page Element	Description
Command buttons for tables	Enables you to:  Add a fresh row or definition to the table.  Remove the selected row or definition from the table.
Drop down lists (list)	Found on certain pages to provide a menu of choices from which to choose when supplying information.

2.3.3.3 Selecting Controls in the Oracle Access Management Console

Table 2–4 describes how to select the desired node or instance and other commands and page controls in the Oracle Access Management Console. The usual selection guidelines apply.

Table 2–4 Selection Tasks and Controls

Task	Control	Description
Activate	Click mouse button	Click to activate the desired: ■ Function tab: System Configuration, Policy Configuration, Browse, Search ■ Named tab on a page to reveal related lower-level settings to view or modify: Resources and Responses, for instance. ■ Named Page tab to reveal (activate) the page ■ Text field to enter information on a page ■ Page Control (close or close all buttons as described in Table 2–2)
Open	Click Item, Select Open command button	Click the item, click the Open command button: ■ Resource Type name ■ Host Identifier definition name ■ Authentication scheme name ■ Resource name in an Application Domain ■ Authentication policy name in an Application Domain ■ Authorization policy name in an Application Domain ■ Agent instance name ■ Server instance name ■ User identity store instance name ■ Database instance name ■ Authentication module name ■ System utility name
Highlight	Drag cursor	Drag the cursor across text in a box to highlight its content.

Table 2–4 (Cont.) Selection Tasks and Controls

Task	Control	Description
Select	Click mouse button	Click the desired item on which to operate. For example, click the desired: ▪ Icon, node, or instance name in the navigation tree (Shared Components is one example) ▪ Search Button: Initiates a search based on specified criteria ▪ Menu name and command to take action on the selected item in the navigation tree ▪ Command button to take immediate action: Menu and tool bar buttons Close page buttons (Table 2–2) ▪ Command Button on a Page or Table: Apply: Submits additions and changes on the active page. Table or section buttons (Table 2–3)  Add a new row.  Remove the selected row. ▪ Links: Help, and Sign Out are examples

2.3.4 Accessing Online Help

At any time while using the Oracle Access Management Console, you can click the Help link at the top of the page to get more information. Online Help topics link to information in an online version of this book.

Generally speaking, topics that are displayed by selecting Help in the Oracle Access Management Console appear in only English and Japanese languages. Online Help is not translated into the ADMIN languages.

You can click the Welcome tab to display a list of topics that describe actions you can take. For specific help topics, use the following procedure.

To locate a specific help topic

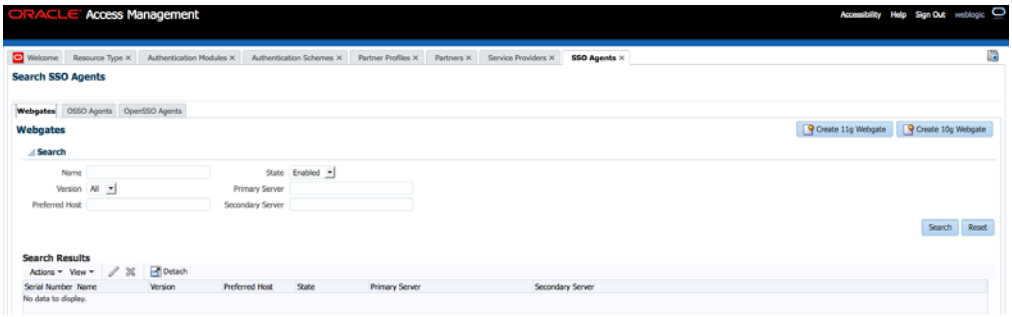
1. From the Oracle Access Management Console, click a tab.
2. Click Help in the upper-right corner of the console.
3. Review the page that appears in a new window and select one of the following links to:
   - **More**—Click this link to view more information.
   - **How?**—Click this link to see steps to perform a task related to your help search.
   - **Contents**—In the left Help pane, expand Contents to see all help topics as well as all topics in the online manual.
   - **Search**—Displays a search window where you can enter your help search criteria.
4. Click the following buttons, as needed:
   - **View**—Displays a set of viewing options.
   - **Arrows**—Return to the previous page or go forward to the next page.

- **Printer Icon**—Prints the page.
- **Envelope Icon**—Emails the page.

2.3.5 Conducting A Search

The Oracle Access Management Console provides search controls for specific elements such as Agents, Application Domains, and Resources. Figure 2–5 is a screen shot of a Search page used for SSO Agent searches.

Figure 2–5 SSO Agent Search Page



Search pages differ depending on the entity you are trying to find. In all searches, you can leave a field blank to display everything or use a wildcard (*) character if you do not know the exact name you seek. Some search controls include the ability to save your search criteria. From the search results table, you can choose an item to open for viewing or editing.

Note: The search tool is case insensitive.

2.4 Configuring with the Command-Line Tools

Several command-line tools are available to perform various tasks using the keyboard rather than the Oracle Access Management Console. After using these commands, the configurations will be available in the console.

- Remote registration tool, `oamreg`, enables remote registration of Agents, and creation of default Application Domains.

  See Also: Chapter 16, "Registering and Managing OAM 11g Agents"

- Upgrade Assistant (UA) enables you to transfer OSSO 10g configuration to Oracle Access Management

  See Also:

  - Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management

- Oracle WebLogic Scripting Tool (WLST) provides a number of custom OAM command-line alternatives for tasks you can perform in the Oracle Access Management Console.

  See Also: Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

2.5 Logging, Auditing, Reporting and Monitoring Performance

Logging is the mechanism by which components write messages to a file. These messages can be logged at different levels of granularity. Oracle Access Management components use the same logging infrastructure and guidelines as any other component in Oracle Fusion Middleware 11g. Administrators can monitor performance and log messages for Access Manager and Security Token Service using Oracle Fusion Middleware Control.

In Oracle Fusion Middleware, auditing provides a measure of accountability and answers to the "who has done what and when" types of questions. Oracle Access Management uses the Oracle Fusion Middleware Common Audit Framework to support auditing for a large number of user authentication and authorization run-time events, and administrative events (changes to the system). The Oracle Fusion Middleware Common Audit Framework provides uniform logging and exception handling and diagnostics for all audit events. For more information, see Part III, "Logging, Auditing, Reporting and Monitoring Performance".

See Also: Oracle Fusion Middleware Performance and Tuning Guide

2.6 Configuring Oracle Access Management Login Options

The following sections contain information on configuring user login options.

- Choosing a User Login Language
- Configuring Persistent Login

2.6.1 Choosing a User Login Language

Oracle Access Management supports language selection through a drop down list of languages on the login form combined with use of the OAM_LANG_PREF language preference cookie. Table 2–5 lists the supported languages and applicable language codes.

Table 2–5 Language Codes For Login Pages

Language Code	Language	Administrators
ar	Arabic	
cs	Czech	
da	Danish	
de	German	German
el	Greek	
en	English	English
es	Spanish	Spanish
fi	Finnish	
fr	French	French
fr-CA	Canadian French	
he	Hebrew	
hr	Croatian	
hu	Hungarian	

Table 2–5 (Cont.) Language Codes For Login Pages

Language Code	Language	Administrators
it	Italian	Italian
ja	Japanese	Japanese
ko	Korean	Korean
nl	Dutch	
no	Norwegian	
pl	Polish	
pt-BR	Brazilian Portuguese	Brazilian Portuguese
pt	Portuguese	
ro	Romanian	
ru	Russian	
sk	Slovak	
sv	Swedish	
th	Thai	
tr	Turkish	
zh-CN	Simplified Chinese	Simplified Chinese
zh-TW	Traditional Chinese	Traditional Chinese

To accomplish a very specific login experience, implement a custom login page using the customization facilities in Oracle Access Management as described in *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

> **Note:** Prior to the release of 11.1.2.1, Oracle Access Manager relied on the Browser Language preference (Accept-Language HTTP Header) to determine the language in which the login page was rendered. The default, if the language could not determined, was English (en-us). This behavior is supported going forward until existing applications have migrated to the 11.1.2.1 model.

This section provides the following topics:

- Selecting A Language for Oracle Access Management Login
- Understanding the Language Preference Cookie
- Propagating Language Preference and Application Integration
- Configuring Your Language Preference

2.6.1.1 Selecting A Language for Oracle Access Management Login

Oracle Access Management provides the language selection methods described in Table 2–6. The order of these items in the table illustrate the preference order. The preference order can be configured using WLST. See Configuring Your Language Preference for details.

Table 2–6 Oracle Access Management Language Selection Methods

Method	Description
Server Override	Allows the OAM Server to determine the language. It is intended to support scenarios where the User Agent cannot reliably indicate its language preference(s) or where the administrator needs to override other selection mechanisms for operational reasons.
Preference Cookie	A domain cookie (similar to ORA_FUSION_PREFS) that contains the user's language preferences. It is intended to allow lang preferences maintained by an application(s) personalization facilities to be used. Note: Multiple DNS domain support for the Preference Cookie is a limitation today. The solution will include Resource Webgates using the OAM Front-Channel protocol in combination with local resource cookie enhancements to manage preference cookie semantics across DNS domains. See Also: "Understanding the Language Preference Cookie"
Browser Language	Allows User Agents (Browsers, REST Clients, HTTP Clients) to specify the user's language preference via an HTTP Accept-Language header.
Default Language	Used if Oracle Access Management cannot determine the user's language preference based on the specified selection mechanisms.

Language preferences are disabled until explicitly enabled. By default, the login form does not include the list of language values until the application locales are specified.

Note: Language Selection is only available in the ECC login page; it is not currently available in the DCC login page.

2.6.1.2 Understanding the Language Preference Cookie

The language preference cookie, OAM_LANG_PREF is a domain scoped cookie as described in Table 2–7.

Table 2–7 OAM_LANG_PREF Cookie

Parameters	Description
Name	OAM_LANG_PREF
Domain	Domain-scoped cookie
Path	/
Value	[*Cookie version*] [*separator*] [*UTF-8 BASE64(name-value pairs)*] For example: `v1.0~kqhkiG9w0BAQQFADCB0TELM`
ExpirationTime	Persistent | Session (default) – Specified in OAM configuration
Secure Flag	No
preferredLanguage	BCP47/RFC4647. Specifically, the value space should conform to what is formally called the "language priority list".
defaultLanguageMarker	true (reconcile cookie with application maintained preferences) | false (read from cookie).
Cookie Lifecycle	Oracle Access Management and other applications can perform create, read, update, and delete operations.

2.6.1.3 Propagating Language Preference and Application Integration

Oracle Access Management will propagate the language selected by the user to applications as described in Table 2–8.

Table 2–8 Application Integration for Language Preference

Method	Description
HTTP Accept-Language Header	This enables application to integration without code change. This is a major advantage over the other options. We can expect this to be good for most applications that respond to the browser locale setting. This is the standard practice in internationalizing a Web application. We expect this to be able to become the standard option for all ADF based products, as well as any application that responds to browser locale. **Note**: OAM Agents ensure that the Accept-Language reflects the language selected. Also, ServletFilters could be used to make this happen.
Access Manager Policy Response	Access Manager stores the language selection in the attribute langPref in the session namespace. For instance: `$session.langPref`. This attribute can be passed to downstream applications using an HTTP Header and/or Cookie through the Access Manager Policy Response. The name of the Header and/or Cookie is a deployment time assignment.
Preference Cookie	When the language selected during login differs from the value stored in the Preference Cookie, Oracle Access Management will update the "`preferredLanaguage`" parameter in the Preference Cookie with the newly selected language and set the defaultLanguageMarker" parameter to "`false`".
IdentityContext	The language preference can be propagated as a custom claim in the IdentityContext. Select "oracle:idm:claims:session:attributes" as the claim name and then specify the session attribute using the following notation: "`preferredLanguage=$session.langPref`. The claim will be created with the name of "`oracle:idm:claims:session:attributes:preferredLanguage`" and value equal to the session's `langPref` attribute.

2.6.1.4 Configuring Your Language Preference

Use the `configOAMLoginPagePref` WebLogic Scripting Tool command to configure the login page language preferences. Information regarding this WLST command can be found in the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

2.6.2 Configuring Persistent Login

With Access Manager, a user needs to re-authenticate after a period of session inactivity defined by the Idle Timeout parameter (default is 15 minutes) and once the session expires, due to the value of the Session Lifetime parameter (default is 8 hours). New with this release, the Persistent Login functionality offers administrators the option to skip user re-authentication for a considerably longer period of time should the user opt in - allowing a user two weeks or a month significantly improves convenience. Persistent Login (sometimes referred to as Remember Me or Keep Me Signed In) can be enabled or disabled with the period of time being configurable. It is disabled by default.

Persistent Login is enabled in the `oam-config.xml` global configuration file. The appropriate Application Domain must also explicitly allow Persistent Login. When enabled globally, the user login page will have a Keep Me Signed In checkbox and, when checked, the user receives an RMToken. Once the user's session expires or times out, a user with an RMToken will not be challenged if the resource is in the Application Domain that allows Persistent Login and if its authentication level is adequate. If the user tries to access a resource in an Application Domain that has not

opted in, the user will be challenged for credentials even if the authentication level is adequate. (If the user does not opt in when logging in, reauthentication will be prompted after a session expiration or inactive timeout.)

> **Note:** If the Application Domain 'Session Idle Timeout' is specified, Persistent Login cannot be enabled.

The following behaviors are pertinent to the Persistent Login functionality.

- If enabled for the user logged in to Access Manager from a device browser, closing and reopening the browser does not require reauthentication within the defined Persistent Login time period
- Session activities will be reflected in the Audit data.
- When the time period expires, the end user is asked to authenticate again.
- When attempting to access applications from a different device (or even a different process/browser in the same device), the end user will be asked to authenticate again.
- When the user clicks log out, the OAM_RM token is deleted and they user must log in again. Session termination by an administrator will have the same effect.
- As the OAM_RM token is based on credentials entered at the time of token creation, any event that changes the password status will invalidate the token and force the user to re-authenticate. This includes:
  - Password expiration
  - Password reset by administrator
  - Password changed by the user on a different device
  - User deleted or locked by the administrator
- To address a stolen device scenario, the administrator can terminate all sessions for all devices/browsers of a user. The user will need to re-authenticate but has the option to enable Persistent Login on the login page
- Application triggered re-authentication forces the user to re-authenticate even if Persistent Login is enabled as the application is intentionally challenging the user before doing a sensitive operation.
- When a user navigates from an application which allows Persistent Login to one that does not, although the user is logged in automatically, the application which does not allow Persistent Login will challenge the user to enter credentials.
- Persistent Login is not available in application triggered login pages.

The following sections have additional details.

- Enabling Persistent Login
- Troubleshooting Persistent Login

2.6.2.1 Enabling Persistent Login

Follow this procedure to enable Persistent Login. The feature is not enabled by default.

1. Enable Persistent Login globally by running one the following WLST command.

- For WebLogic Server, run Oracle_IDM1/common/bin/wlst.sh using configurePersistentLogin(enable="true", validityInDays="30", maxAuthnLevel="2", userAttribute="obPSFTID")
- For WebSphere Application Server, go to $IDM_HOME/common/bin/wsadmin -connType SOAP -port SOAP_PORT -user WAS_ADMIN -password WAS_ADMIN_PASSWORD and run Oam.configurePersistentLogin(enable="true", validityInDays="30", maxAuthnLevel="2", userAttribute="obPSFID")

2. Create a new Authentication Scheme for Persistent Login using the values in the following table.

   Details can be found in Section 19.9, "Managing Authentication Schemes." The 'Keep me signed in' check box will be displayed only when accessing a resource protected by this scheme.

Attribute	Value
Name	PersistentLoginScheme (or any name)
Description	any description
Authentication Level	2
Challenge Method	FORM
Challenge Redirect URL	/oam/server/
Authentication Module	LDAPPlugin
Challenge URL	/pages/login.jsp
Context Type	default
Context Value	/oam
Challenge Parameters	enablePersistentLogin=true

3. Click the Application Domains link in the Launch Pad.
4. Click the Application Domain for which you will use this PersistentLoginScheme and change its Authentication Scheme as documented in this sub procedure.

   Details are in Section 20.7, "Defining Authentication Policies for Specific Resources."

   a. Click the Authentication Policies tab in the appropriate Application Domain.
   b. Change the Authentication Scheme for the Protected Resource Policy to PersistentLoginScheme. This allows persistent login for this policy.

   Note: The Public Resource Policy should not be modified.

5. Click the Application Domain under which you will create a Response for all configured Authorization Policies as documented in this sub procedure.

   There may be multiple authorization policies and this needs to be done for all. Details are in Section 20.9.4, "About Constructing a Policy Response for SSO."

   a. Click the Authorization Policies tab in the appropriate Application Domain.
   b. One at a time, click an Authorization Policy in this Application Domain to open its configuration tab.

c. Click Responses.

d. Click Add to create an Authorization Response in the Application Domain.

e. Enter the following values in the displayed Add Response pop-up and click Add.

Attribute	Value
Type	Session
Name	allowPersistentLogin
Value	true

Perform this procedure for all Authorization Policies before moving on to the next step.

6. Access a resource protected by this scheme.

   The 'Keep me signed in' checkbox is displayed on the login page.

7. Provide valid credentials and select 'Keep me signed in'.

8. Close and re-open the browser.

9. Access the same resource.

   You will be logged in automatically without asking for credentials.

Note: Persistent Login can also be enabled and disabled using WLST. See the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for details on the `configurePersistentLogin` command.

2.6.2.2 Troubleshooting Persistent Login

When enabling Persistent Login using WLST, an LDAP attribute named `obpsftid` is defined to store the Persistent Login properties. When the user is locked, this attribute needs to be updated but the `oamSoftwareUser` does not have sufficient LDAP rights over it. Use the following procedure to give oamSoftwareUser permission.

1. Copy the LDIF data below and paste it into a file that you will save as `oam_user_write_acl_users_obpsftid_template.ldif`.

```
################################################################################
# Copyright (c) 2010, 2011, Oracle and/or its affiliates. All rights reserved.
#
# NAME: idm_idstore_groups_acl_template.ldif
#
#
# DESCRIPTION:
#
# This file provides appropriate ACLs to user and group containers.
#
#
# SUBSTITUTION VARIABLES:
#
# %s_UsersContainerDN%  : The container in which users reside
# %s_GroupsContainerDN% : The container in which groups reside
#
################################################################################
dn: %s_UsersContainerDN%
```

```
changetype: modify
delete: orclaci
orclaci: access to attr=(obUserAccountControl, obLoginTryCount, obLockoutTime,
oblastsuccessfullogin, oblastfailedlogin, obpasswordexpirydate, obver,
obLastLoginAttemptDate, oblockedon) by
group="cn=orclFAOAMUserWritePrivilegeGroup,%s_GroupsContainerDN%"
(search,read,compare,write) by group="cn=orclFAUserReadPrivilegeGroup,%s_
GroupsContainerDN%" (search,read,compare) by
group="cn=orclFAUserWritePrivilegeGroup,%s_GroupsContainerDN%"
(search,read,compare,write)
-
add: orclaci
orclaci: access to attr=(obUserAccountControl, obLoginTryCount, obLockoutTime,
oblastsuccessfullogin, oblastfailedlogin, obpasswordexpirydate, obver,
obLastLoginAttemptDate, oblockedon, obpsftid) by
group="cn=orclFAOAMUserWritePrivilegeGroup,%s_GroupsContainerDN%"
(search,read,compare,write) by group="cn=orclFAUserReadPrivilegeGroup,%s_
GroupsContainerDN%" (search,read,compare) by
group="cn=orclFAUserWritePrivilegeGroup,%s_GroupsContainerDN%"
(search,read,compare,write)
```

2. Do the following in the created `oam_user_write_acl_users_obpsftid_template.ldif`.
   - Replace %s_UsersContainerDN% with User Search Base.
   - Replace %s_GroupsContainerDN% with Group Search Base.
3. Change to the OID directory and run ldapmodify.

```
$ setenv ORACLE_HOME <OID_INSTALL_LOCATION>
$ cd $ORACLE_HOME/bin
$ ./ldapmodify -h <LDAP server> -p <LDAP port> -D <bind DN> -w <bindpassword>
 -v -f oam_user_write_acl_users_obpsftid_template.ldif
```

Part II

Managing Common and System Configurations

Part II provides information about managing common system configuration details for Oracle Access Management. It contains the following chapters.

3

Managing Common Services and Certificate Validation

This chapter explains how to configure properties that are used in common by the services integrated into Oracle Access Management.

This chapter contains the following sections:

- Configuring Oracle Access Management
- Enabling or Disabling Available Services
- Managing Common Settings
- Managing Certificate Validation and Revocation

3.1 Configuring Oracle Access Management

This section introduces the Oracle Access Management options and settings collectively called Configuration. Unless explicitly stated, these Configuration options are shared by all Access Manager servers and services in the domain. Figure 3–1 shows the Configuration options defined in the new Oracle Access Management Console.

Figure 3–1 Oracle Access Management Configuration Options

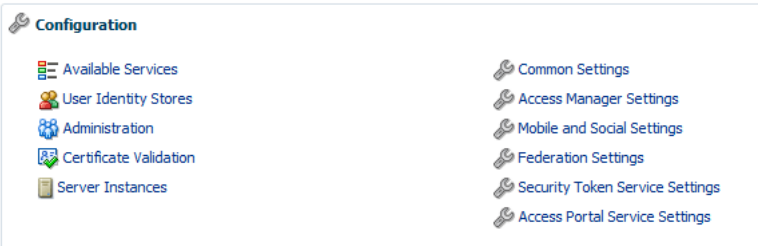


Table 3–1 describes the Configuration options. The items listed apply to all services in the suite.

Table 3–1 Configuration Options

Node	Description
Available Services	See "Enabling or Disabling Available Services" on page 3-2.
User Identity Stores	See "Managing OAM Identity Stores" in Chapter 5, "Managing Data Sources."
Administration	See Chapter 4, "Delegating Administration."

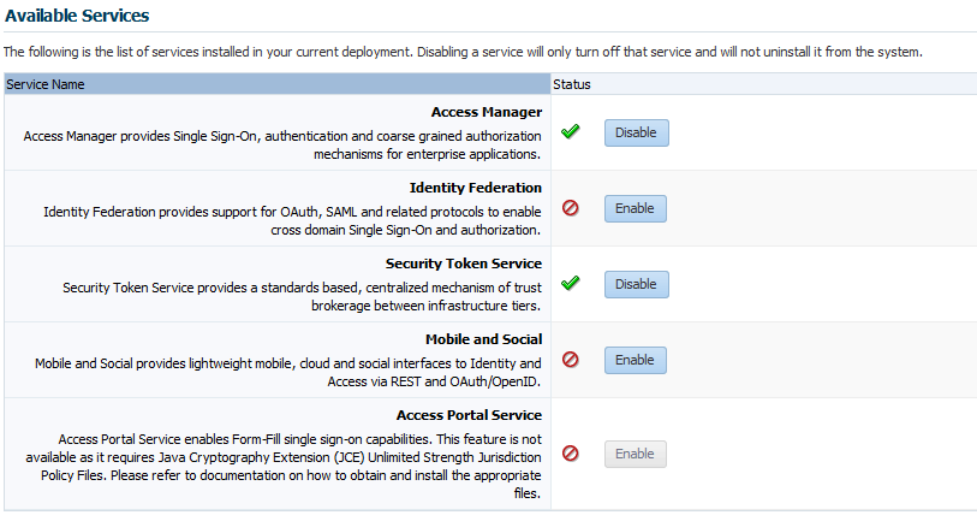
Table 3–1 (Cont.) Configuration Options

Node	Description
Certificate Validation	Provides access to the certificate revocation list and OCSP/CDP settings. See: "Managing Certificate Validation and Revocation" on page 3-7.
Server Instances	Provides access to all registered OAM Server instances. See: Chapter 6, "Managing Server Registration"
Common Settings	Provides configurations that apply to all Oracle Access Management services including Session properties, Oracle Coherence, Auditing, and Default and System Identity Stores. See: "Managing Common Settings" on page 3-4.
Access Manager Settings	Provides access to Access Manager operation configurations. See "Managing Common and System Configurations"
Mobile and Social Settings	Provides access to configurations for Oracle Access Management Mobile and Social. See "Managing Oracle Access Management Mobile and Social"
Federation Settings	Provides access to configurations for Oracle Access Management Identity Federation. See Chapter 5, "Managing Data Sources"
Security Token Service Settings	Provides access to configurations for Oracle Access Management Security Token Service. See "Managing Oracle Access Management Security Token Service"
Access Portal Settings	Provides access to configurations for Oracle Access Portal. See "Managing Oracle Access Management Oracle Access Portal"

3.2 Enabling or Disabling Available Services

Figure 3–2 shows the Available Services page of the Common Configuration section, which provides the status of services, and controls to enable or disable a service. Initially, only Access Manager services are enabled. Oracle Access Management Administrators must enable a service in the Oracle Access Management Console to use the related functionality. The exception to this is Identity Context, which is enabled by default and does not have any controls to disable it.

Figure 3–2 Available Services



A green check mark in the Status field beside the service name indicates the service is enabled. A red circle with a line through it indicates that the corresponding service is disabled.

Table 3–2 Common Services

Service	Description
Access Manager	Access Manager functionality is enabled by default. Access Manager Service is required to set SSO policies, configure Access Manager, as well as Common Configuration, and when REST Services are enabled. Default: Enabled No other services are required for Access Manager and Common Configuration.
Identity Federation	Must be enabled to manage the federation partners. Default: Disabled **Note**: The Access Manager service must also be enabled because Identity Federation is another authentication module. See Also: Part VII, "Managing Oracle Access Management Identity Federation".
Security Token Service	Enable this service to use Security Token Service functionality. Default: Disabled Access Manager service is not required. See Also: Part VIII, "Managing Oracle Access Management Security Token Service".
Mobile and Social	Mobile and Social Services can be deployed in either of two ways: ▪ As part of Oracle Access Management, where Access Manager is enabled by default and Mobile and Social must be enabled manually to operate together with Access Manager. ▪ Oracle Access Management and Mobile and Social only. Here only Mobile and Social is enabled by default to work on its own (or use a remote Access Manager). See Also: Part IX, "Managing Oracle Access Management Mobile and Social"
Access Portal	Must be enabled to manage Access Portal. Default: Disabled See Part XI, "Managing Oracle Access Management Oracle Access Portal"

Prerequisites

WebLogic AdminServer must be running.

See Using the New Oracle Access Management Console.

To enable or disable a service

From the Oracle Access Management Console Launch Pad, click Available Services under Configuration.

1. Click Enable beside the desired service name (or confirm that the Status check mark is green).
2. Click Disable beside the desired service name (or confirm that the Status check mark is red).

3.3 Managing Common Settings

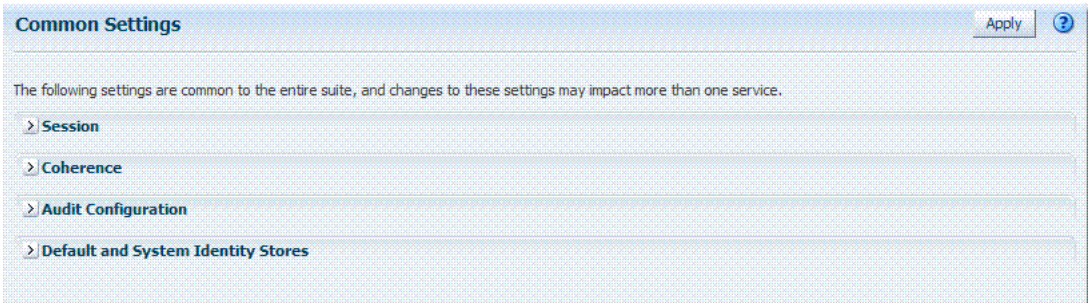
The Common Settings apply to all OAM Server instances and services. This section provides the following topics:

- About Common Settings Pages
- Managing Common Settings

3.3.1 About Common Settings Pages

Common Settings apply to all services within the suite. Figure 3–3 shows the named sections on the Common Settings page, which can be expanded to reveal related elements and values.

Figure 3–3 Common Settings Page (Collapsed View)



Oracle Access Management Administrators can control and specify parameters used by the entire suite, not just a single service, as introduced in Table 3–3.

Table 3–3 Common Settings

Tab Name	Description
Session	Session configuration refers to the process of managing the lifecycle requirements of a session, and notification of events to enable global logout. Global logout is required for OSSO Agents (mod_osso) to ensure that logging out of a session on any entity propagates the logout to all entities. See Also: "Managing Common Settings" on page 3-5.

Table 3–3 (Cont.) Common Settings

Tab Name	Description
Coherence	Common Oracle Coherence settings shared by all OAM Servers differ from those for individual OAM Servers. However, in both cases Oracle recommends that you make no adjustments to these settings unless instructed to do so by an Oracle Support Representative. See Also: "Managing Common Settings" on page 3-5.
Audit Configuration	Oracle Access Management supports auditing for a large number of administrative and run-time events, uniform logging and exception handling, and the diagnostics of all audit events. Oracle Access Management auditing configuration is recorded in `oam-config.xml`. See Also: "Managing Common Settings" on page 3-5 and "Using the Oracle Access Management Console for Audit Configuration" on page 9-22.
Default and System Identity Stores	This section identifies the default identity and system stores, which can be one in the same (or different). See Also: "Managing Common Settings" on page 3-5.

See Also: Details for other operations common to all OAM components:

- Chapter 8, "Logging Component Event Messages"
- Chapter 12, "Monitoring Performance and Health"

3.3.2 Managing Common Settings

Users with valid Oracle Access Management Administrator credentials can perform the following task to display the Common Settings page and perform changes. Included in each main step is a reference to more information elsewhere in this book.

Prerequisites

The OAM Server must be running.

To manage common settings

1. From the Launch Pad, click Common Settings.
2. **Session**:
   a. On the Common Settings page, expand the Session section.
   b. Click the arrow keys beside each list to increase or decrease session lifecycle settings as needed:

      Session Lifetime (minutes)
      Idle Timeout (minutes)
      Maximum Number of Sessions per User

   c. Database Persistence: Check the box to enable Database Persistence for Active Sessions (or clear it to disable Database Persistence).
   d. Click Apply to submit your changes.
   e. See Also: Chapter 17, "Maintaining Access Manager Sessions".
3. **Coherence**: See "Viewing Common Coherence Settings" on page 3-6.
4. **Audit Configuration**:
   a. Open the Audit Configuration section.

b. In the Audit Configuration section, enter appropriate details for your environment:

Maximum (Log) Directory Size
Maximum (Log) File Size

Filter Enabled
Filter preset (select from the list to define verbosity of audit data)
Audit Configuration Table: Use Add (+) or Delete (x) buttons to specify users.

c. Click Apply to submit the Audit Configuration (or close the page without applying changes).

d. See Also: Chapter 9, "Auditing Administrative and Run-time Events".

5. **Default Store and System Stores**:

a. Expand the Default and System Identity Stores section.

b. Click the name of the System Store (or Default Store) to display the configuration page.

c. See "Setting the Default Store and System Store" on page 5-21 for more information.

3.3.3 Viewing Common Coherence Settings

Figure 3–4 shows the Common Settings page with the coherence section expanded.

> **Note:** Oracle strongly recommends that you do not alter these settings without the assistance of Oracle Support.

Figure 3–4 Common Coherence Settings

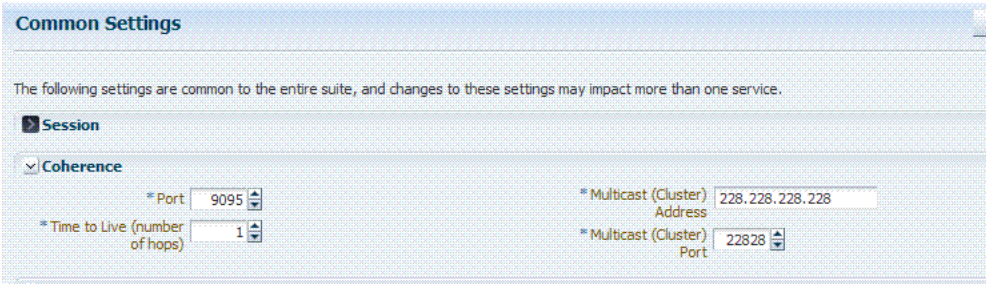


Table 3–4 describes these settings.

Table 3–4 Common Coherence Settings

Element	Description
Port	Value between 1 and 65535 is supported.
Cluster Address	Value between 224.1.255.0 to 239.255.255.255 is allowed.
Time to Live	Value between 0 and 255 is supported.
Cluster Port	Value between 1 and 65535 is supported.

To view Common Coherence settings

1. From the System Configuration tab, expand the Common Configurations section, and double-click Common Settings.
2. On the Common Settings page, expand the Coherence section.
3. Close the page when you finish; do not make any changes.

3.4 Managing Certificate Validation and Revocation

The Certificate Validation module is used by the Security Token Service to validate X.509 tokens and to verify whether or not the certificates have been revoked. It supports the following options.

- A Certificate Revocation List (CRL) is a list of certificates (identified by serial numbers) that have been revoked. Revoked certificates are listed with a reason, an issue date, and the issuing entity. (In addition, each list contains a proposed date for the next release.) Entities presenting these (revoked) certificates should no longer be trusted. When a potential user attempts to access a server, the server allows or denies access based on the CRL entry for the particular user. For more information, see Section 3.4.1, "Managing Certificate Revocation Lists."
- The Online Certificate Status Protocol (OCSP) was developed as an alternative to CRLs. OCSP specifies how the client application that requests information on a certificate's status will obtain it from the server that responds to the request. An OCSP responder can return a signed response signifying that the certificate specified in the request is either *good*, *revoked* or *unknown*. If the OCSP cannot process the request, it returns an error code. For more information, see Section 3.4.2, "Enabling OCSP Certificate Validation."
- A CRL Distribution Point extension (CDP extensions) contains information regarding the location of Certificate Revocation Lists (CRLs) and OCSP servers. You can use the Administration Console to define these points. For more information, see Section 3.4.3, "Enabling CRL Distribution Point Extensions."

The following sections provide more information.

- Additional OCSP Configurations
- Using the configureOAMOSCSPCertValidation WLST Command

3.4.1 Managing Certificate Revocation Lists

Users with Oracle Access Management Administrator credentials can use the following procedure to enable the CRL functionality and import a current Certificate Authority Certificate Revocation List (CA CRL).

Prerequisites

Have your CA CRL ready to import.

To import Certificate Revocation Lists

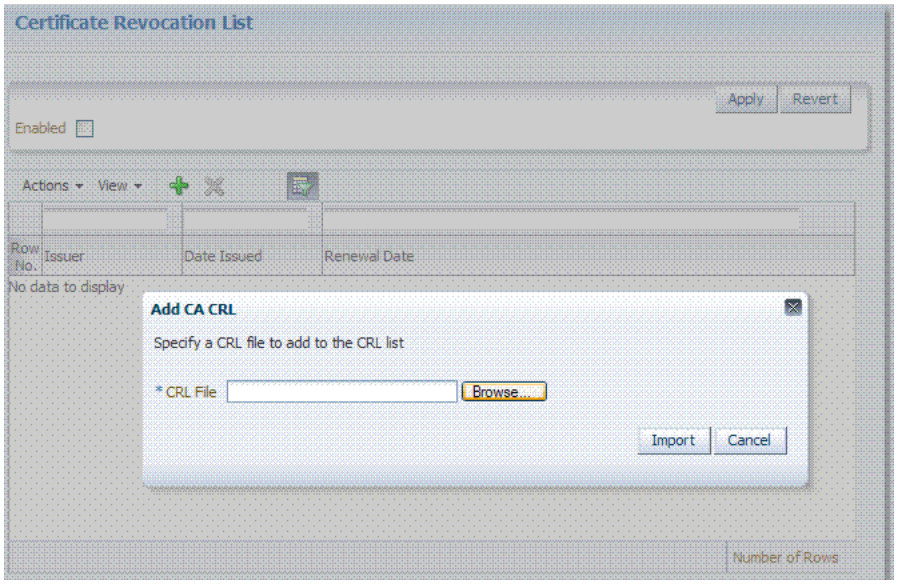
1. Under the Configuration section of the Oracle Access Management Console, click Certificate Validation.

   The Certificate Revocation List tab is displayed.
2. Confirm that the Enabled box is checked.
3. Add or remove a CRL.

- **Add**: Click the Add (green plus sign) button, browse for the CRL file, select it, and click Import.
- **Remove**: Click the name of the list in the table, click the Delete (x) button, and confirm when asked.

Figure 3–5 is a screenshot of the pop-up window used to add a CA CRL to the CRL List using the Administration Console.

Figure 3–5 Certificate Revocation List Dialog Box



4. Click Apply to save the configuration.
5. Proceed to "Enabling OCSP Certificate Validation".

> **Note:** To search for CRLs in the table, enable Query by Example from the View drop-down. Enter filter strings in the header fields displayed and hit Enter.

3.4.2 Enabling OCSP Certificate Validation

Users with Oracle Access Management Administrator credentials can use the following procedure to enable the OCSP.

Prerequisites

Have the URL of the OCSP service ready to import.

To enable OCSP certificate validation

1. Under the Configuration section of the Oracle Access Management Console, click Certificate Validation.

   The Certificate Revocation List page is displayed. Confirm that the Enabled box is checked.

2. Click the OCSP/CDP tab.

   a. Enable OCSP.

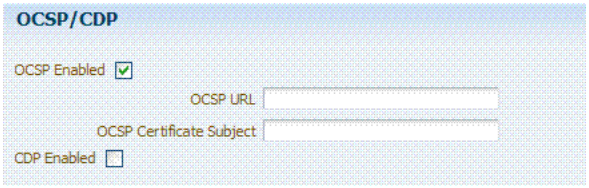
b. Enter the URL of the OCSP Service.

c. Enter the Subject DN of the OCSP Service.

d. Save this configuration.

Figure 3–6 illustrates how to add an OCSP URL using the Administration Console. See "Using the configureOAMOSCSPCertValidation WLST Command" on page 3-12 for details on how to do this using the WLST command.

Figure 3–6 OCSP/CDP Settings



3. Proceed to "Enabling CRL Distribution Point Extensions".

3.4.3 Enabling CRL Distribution Point Extensions

Users with Oracle Access Management Administrator credentials can use the following procedure to add CRL distribution points in issued certificates.

To enable CDP

1. Under the Configuration section of the Oracle Access Management Console, click Certificate Validation.

The Certificate Revocation List page is displayed. Confirm that the Enabled box is checked.

2. Open the OCSP/CDP tab.

a. Enable CDP.

b. Save this configuration.

Figure 3–6 illustrates this.

3.4.4 Additional OCSP Configurations

Support for HTTP Proxy and multiple OCSP Responder configurations have been added for this 11*g* Release 2 (11.1.2.2) version of Oracle Access Manager. Example 3–1 illustrates the current Certificate Validation Module configuration.

Example 3–1 Certificate Validation Module Configuration

```
<Setting Name="CertValidationModule" Type="htf:map">
      <Setting Name="certpathvalidationocspcertsubject"
          Type="xsd:string"></Setting>
      <Setting Name="certpathvalidationocspurl" Type="xsd:string"></Setting>
      <Setting Name="certvalidationcrlstorelocation"
           Type="xsd:string">/scratch/maymaria/installed/wlsHome/user_projects/
           domains/base_domain/config/fmwconfig/amcrl.jar</Setting>
      <Setting Name="defaulttrustcastorelocation"
           Type="xsd:string">/scratch/maymaria/installed/wlsHome/user_projects/
           domains/base_domain/config/fmwconfig/amtruststore</Setting>
      <Setting Name="defaulttrustcastoretype" Type="xsd:string">jks</Setting>
```

```
      <Setting Name="certpathvalidationcdpenabled"
           Type="xsd:boolean">false</Setting>
      <Setting Name="certpathvalidationcrlenabled"
           Type="xsd:boolean">false</Setting>
      <Setting Name="certpathvalidationocspenabled"
           Type="xsd:boolean">false</Setting>
</Setting>
```

The following sections contain configuration information for these new features.

- Using WLST to Configure HTTP Proxy
- Configuring Multiple OCSP Responders

3.4.4.1 Using WLST to Configure HTTP Proxy

The Oracle Access Manager OCSP checker can perform authentication against OCSP responders that are outside an enterprise's intranet via HTTP Proxy.

Use the `updateHTTPProxyConfig` WLST command to configure the proxy.

3.4.4.1.1 Using the updateHTTPProxyConfig WLST Command Online command that configures the OAM OCSP checker to use HTTP proxy.

3.4.4.1.2 Description Adds or updates proxy information.

3.4.4.1.3 Syntax `updateHTTPProxyConfig(proxyHost, proxyPort, conTimeOut)`

Argument	Definition
proxyHost	Mandatory. The host name of the proxy.
proxyPort	Mandatory. The port number of the proxy.
conTimeOut	Mandatory. The connection timeout in milliseconds.

3.4.4.1.4 Example

```
updateHTTPProxyConfig(proxyHost="hostname.example.com", proxyPort="8888",
  conTimeOut="600")
```

3.4.4.2 Configuring Multiple OCSP Responders

Certificate authentication currently supports authentication against a single OCSP responder as documented in "Enabling OCSP Certificate Validation" on page 3-8. Support for multiple OCSP responders has been added since the responder URL is now part of the certificate's Authority Information Access Extension. To support multiple OCSP Responders, the three lines of configuration in Example 3–2, "Multiple OCSP Responder Configuration" must be added to the top of the Certificate Validation Module configuration section (illustrated in Example 3–1).

Example 3–2 Multiple OCSP Responder Configuration

```
<Setting Name="CertValidationModule" Type="htf:map">
      <Setting Name="certpathvalidationocspurltocamap" Type="htf:map">
      <Setting Name="<url_value>" Type="xsd:string">
          <ocsp_responder_subject></Setting>
      </Setting>
      <Setting Name="useJDKOCSP" Type="xsd:string">false</Setting>
      ...
```

```
</Setting>
```

Configure the first and second lines to enable multiple OCSP responders.

- Set `certpathvalidationocspenabled` to true.
- Update the `certpathvalidationocspurltocamap` configuration. It is of type Map, the key is the OCSP Responder URL (URL Encoded) and the value is the OCSP Responder's Certificate subject.

```
<Setting Name="certpathvalidationocspurltocamap" Type="htf:map">
     <Setting Name=" http%3A%2F%2Flocalhost%3A9797" Type="xsd:string">
     emailAddress=sagar@pspl.com,CN=ps2436,OU=OBLIX-QA,O=PSPL,
     L=PUNE,ST=MAHA,C=MY</Setting>
</Setting>
```

- (Optionally) set values for `certpathvalidationocspcertsubject` and `certpathvalidationocspurl`.

The Responder URLs will be fetched first from the AuthorityInformationAccess extension of the user's X.509 certificate and second from Modules/Plugin (CertValidation). The Responder Subjects will be fetched first from the defined configuration map and second from the Module/Plugin (CertValidation) configuration. In cases where these configurations are not found, the OCSP validation will fail.

Configure the third line to provide backward compatibility for those who want to use JDK OCSP validation rather than the new OAM OCSP Checker. By default, the JDK OCSP Checker is enabled. When configuring the OAM OCSP Checker using the WLST command, the flag is set to false. For more information on the WLST command, see Section 3.4.5, "Using the configureOAMOSCSPCertValidation WLST Command."

Depending on the Certificate Validation Module configuration there are three different options as documented in Table 3–5.

Table 3–5

Configuration	OCSP Configuration (certpathvalidationocspenabled)	CRL Configuration (certpathvalidationcrlenabled)	JDK/OAM OCSP Configuration (useJDKOCSP)
No OCSP Checking Simple certificate validation is performed during OAM X-509 authentication	False	False	False
OAM OCSP X-509 authentication performs certificate validation with OCSP checking using the new OAM OCSP Checker.	True	True/False (does not matter)	False
JDK OCSP X-509 authentication performs certificate validation with OCSP checking using the JDK OCSP Checker.	True	True	True

To enable OCSP validation to be done using one configured responder URL, set the `certpathvalidationcrlenabled` and `certpathvalidationocspenabled` properties to true and set values for the `certpathvalidationocspcertsubject` and `certpathvalidationocspurl` properties. If these properties are not set, OCSP validation will be done using the responder URL defined within the user certificate's AIA Extension. If no URL is defined, OCSP validation will fail.

3.4.5 Using the configureOAMOSCSPCertValidation WLST Command

Online command that updates the OAM OCSP configuration including:

- Updates or adds an OCSP responder URL and subject details to the "certpathvalidationocspurltocamap"
- Clear the newly added configuration; for example, "certpathvalidationocspurltocamap"
- Set or unset the "useJDKOCSP" flag to enable or disable JDK OCSP

3.4.5.1 Description

Updates the OAM OCSP configuration by adding/modifying the OCSP responder URL and subject details in the certpathvalidationocspurltocamap property and enabling/disabling the use of the JDK OCSP Checker.

3.4.5.2 Syntax

```
configureOAMOCSPCertValidation(url, subject, clear (optional),
  display (optional), useJDKOCSP (optional))
```

Argument	Definition
url	Mandatory. Takes as a value the valid URL.
subject	Mandatory. Takes the details being modified.
clear	Optional. Takes a value of true or false.
display	Optional. Takes a value of true or false.
useJDKOCSP	Optional. Takes a value of true or false.

3.4.5.3 Examples

The following example enables the OAM OCSP and sets the Responder URL and subject.

```
configureOAMOCSPCertValidation(url="http://sample:9898",
    subject="cert-subject-detail")
```

The following example enables the OAM OCSP and updates the Responder URL and subject.

```
configureOAMOCSPCertValidation(url="http://sample:9898",
    subject="details changed/updated")
```

The following example disables and clears the OAM OCSP.

```
configureOAMOCSPCertValidation(url="http://sample:9898", subject="subject-detail",
clear="true")
```

The following example enables/disables the JDK OCSP.

```
configureOAMOCSPCertValidation(url="http://sample:9898",
    subject="details changed/updated", useJDKOCSP="true")
```

4

Delegating Administration

With this release of Oracle Access Manager, a System Administrator has the capability to delegate administration of Application Domains to other administrators. An Application Domain Administrator role has been developed towards this end.

This chapter contains details about delegating administration in the following sections.

4.1 Understanding Delegated Administration

Delegating administration allows a high-level administrator to grant responsibilities to other, more local administrators. This is useful in large organizations where it may be necessary to administer thousands or millions of users. When you delegate administration, you determine what rights you want to grant to another user.

A Super/System Administrator can grant the rights to administer an Application Domain to an Application Domain Adminstrator. An Application Domain Adminstrator can further delegate the rights to administer one or more of their Application Domains to other Application Domain Administrators. An Application Domain Administrator can create and edit Resources, Authentication Policies and Authorization Policies. These rights are scoped to one or more Application Domains.

4.2 Defining the Administrator Roles

Pre-defined, default roles are available after installing Access Manager. These administrative roles are hierarchical in nature with the parent (*super*) role having a super-set of privileges that can be assigned to child roles. The Access Manager System Administrator can administer the following:

- All Application and component policy objects (including Resources, Authentication Policies, Authorization Policies, and Token Issuance Policies)

- Shared components (including Authentication Schemes, Host Identifiers, and Resource Types)
- System configuration (including Common Configuration, Access Manager settings and Authentication Modules, Security Token Service Settings, Custom Tokens, Endpoints, Templates and Profiles, and Access Manager Agents and Security Token Service Partners)
- Agents and partners

System Administrators can delegate rights to administer one or more Application Domains to an Application Domain Adminstrator. An Application Domain Adminstrator can further delegate the rights to administer one or more of their Application Domains to other Application Domain Administrators.

Note: Only a Super or Global System Administrator can assign roles to users; users cannot further delegate that role to others.

Table 4–1 documents the default administrator roles.

Table 4–1 Roles for Delegating Adminisration

Role Name	Description
Super/System Administrator	Access to entire Oracle Access Management Console including policy creation and system configuration
Application Domain Administrator	Access to policy creation and resources in the specified Application Domain.

4.3 Delegating the Identity Store

The Access Manager System Identity Store is used to enforce authentication and authorization during the execution of administrative operations. The LDAP Directory defined as the System Identity Store will contain all the administrators having access to the Administration Console. An administrator can define a new User Identity Store and select one of the existing profiles as the System Identity Store but only the System Administrator can modify the current System Identity Store or switch to a new one.

When migrating to a new Identity Store, if users from the new store are assigned Access Manager roles, those privileges become active and are enforced by Access Manager. The administrator will be responsible for removing any delegated administration privileges for the new Identity Store and the Access Manager Administrator group will be mapped to the Administrator role of the new identity store.

Note: If the user currently logged in does not have the necessary administrator roles in the new system store, the Administration Console will log out or refresh so that it is compliant with the roles assigned to the current administrator.

4.4 Assigning Roles Using the Administration Console

The System Administrator can use the Oracle Access Management Console to assign roles to users or groups that cover specific Application Domains. Users can be assigned multiple roles as long as the functionality doesn't overlap. For example, if

user X is assigned Global Policy Administrator, the user cannot be granted Policy Administrator for the HR domain because the latter is a child of the former.

Note: Roles can be assigned only to users or groups from the system/default store.

From a high level:

1. When delegating administration for a specific policy object or a set of policy objects, the delegator selects the item(s) and assigns the user(s), group(s), LDAP Search Filter(s) or Domain System role(s) to it.
2. When delegating administration for all objects of a specific type, the delegator will select the user(s), group(s), LDAP Search Filter(s) or Domain System role(s) and grant the rights to administer the objects of that type to the selected. In this case, the administrator can't select objects for which administration is being delegated; the administrator will select a role that is granted to the appropriate delegatee with a specific right.

Note: Customers using Oracle Identity Manager (or Oracle Identity Manager XE) may want to define Enterprise Roles that are common to all of IDM and use OIM to assign users and groups to these Enterprise Roles. The Administration Console allows for this.

4.5 Default Administrators, Roles and Groups

A virtual Access Manager Administrator group is defined and mapped to the Domain Administrator role. The Access Manager Administrator group will be assigned the Access Manager roles in the following list.

- System Administrator encompasses the privileges to manage all system configurations and policy objects.
- System Administrator encompasses the privileges to manage System Configuration, Common Configuration, Access Manager Settings, Agents, Authentication Modules, Authentication Schemes, Host Identifiers, Resource Types, Federation Partners and Enterprise Single Sign-on policies. Additionally, Security Token Service Settings, Partners, Custom Tokens, Endpoints, Templates and Profiles can be managed.
- Application Domain Administrator encompasses the privileges to manage objects in an Application Domain.

The IDM Suite Navigator will define administrator roles that allow an administrator assigned with that role to perform similar administrative tasks in the different components of the IDM suite. For example, if the IDM Suite Navigator defines the IDM Suite Administrator role, an administrator assigned with that role would be granted with the following:

- OAM System Administrator Role
- OAAM Administrator Role
- OIF Administrator Role

4.6 Using the Container Security Framework and MBeans

MBeans that enforce authentication and authorization using the container security framework are published using the Portable JMX Framework.

- The Configuration Service MBeans are used for configuring the Certificate Validation Module, the STS Endpoints, Templates & Profiles, and the STS Settings & Custom Tokens.
- The Partner and Trust Store Service MBeans are used for managing the STS Partners.

At runtime, the JMX Framework will authenticate the client during the connection operation and ensure that the client belongs to the role specified in the MBean security annotations. Because of this, the Access Manager System Identity Store needs to be configured as an Authentication Provider in the security realm of the domain. Additionally, users accessing the MBeans will need to be assigned the following role depending on the container:

- WebLogic: Admin
- WebSphere: Admin or Configurator

4.7 Using the Remote Registration Utility

The Remote Registration Utility (RREG) is also governed by the roles assigned to the user invoking them. When using RREG to remotely register agents, the administrator provides credentials that allows the RREG client to successfully connect and authenticate to the RREG Access Manager Server; this, in turn, propagates the client's identity to the Access Manager components that will enforce the appropriate administration roles. The following might occur when running the RREG based on the administrator's role:

- In a creation operation:
  - **a.** A new agent entry can be provisioned.
  - **b.** A HostID for that Agent can be created.
  - **c.** An Application for that agent might be created.
  - **d.** Resources might be added to the new Application using the newly created HostID.
- In an update operation:
  - **a.** Agent settings can be changed.
  - **b.** A HostID for that agent can be changed.
  - **c.** An Application for that agent can be created if it does not exist.
  - **d.** Resources can be added to the Application.

The RREG administrator must be assigned roles to ensure successful completion of the administrative operations.

- The System Administrator role to create/update an Agent.
- The OAM Shared Component Administrator / System Administrator role to create/update an HostID entry.
- The OAM Domain Administrator role / System Administrator to create/update an Application and create/configure Resources.

After executing the RREG command, the administrator will be set as the delegated administrator for the created Application, Agent and HostID.

4.8 Auditing Reports

Auditing becomes even more critical when administration has been delegated to several users. All policy object and system configuration operations performed by administrators through the Administration Console or programmatically are logged and informational reports can be generated. For more information, see Chapter 9, "Auditing Administrative and Run-time Events."

5

Managing Data Sources

This chapter provides the steps to register and administer data sources using the Oracle Access Management Console. The information is common to all services available through the Oracle Access Management Console.

This chapter includes the following sections:

5.1 Introducing the Data Sources

The term *data source* is a Java Database Connectivity (JDBC) term used within Oracle Access Management to refer to a collection of user identity stores or a database for policies. Oracle Access Management supports several types of data sources that are typically installed for the enterprise. Each data source is a storage container for the various types of information documented in Table 5–1.

Table 5–1 Data Sources for Oracle Access Management

Data Source	Description
Database	A collection of information that is organized and stored so that its content can be easily accessed, managed, and updated. ■ Access Manager policy data, including password management data, must be stored in a database that is extended with the Access Manager-specific schema and registered with Access Manager. See "Managing the Policy and Session Database" on page 5-25. ■ Session Store: By default, Access Manager session data is stored within in-memory caches that is migrated to the policy store. In production environments, you can have an independent database for policy data and another for session data. For details about sessions and session data, see Chapter 17. ■ Audit Store: Audit data can be stored either in a file or in a separate database (not the policy store database). For information on auditing administrative and run time events, see Chapter 9.

Table 5–1 (Cont.) Data Sources for Oracle Access Management

Data Source	Description
User Identity Store	Central LDAP storage in which an aggregation of user-oriented data is kept and maintained in an organized way. (Access Manager does not include identity services; there is no native user, group, or role store.) The identity store must be installed and registered with Access Manager to enable authentication when a user attempts to access a protected resource (and during authorization, to ensure that only authorized users can access a resource). During the initial deployment process, described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management, the embedded LDAP store is used as the User Identity Store. Oracle recommends that you use only the Oracle Access Management Console or WebLogic Scripting Tool (WLST) commands for changes; do not edit oam-config.xml. By default, Access Manager uses the Embedded LDAP in the WebLogic Server domain as the user identity store. However, a number of other external LDAP repositories can also be registered as user identity stores. In this case, one store must be designated as the System Store that contains Administrator roles and users.
Oracle Access Management configuration data file: oam-config.xml	During the initial deployment process, described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management, Oracle Access Management configuration data is stored in an XML file: oam-config.xml. See "About the oam-config.xml Configuration Data File" on page 5-3.
Keystores	Several keystores are associated with Oracle Access Management services as described in "Introduction to Oracle Access Management Keystores" on page 5-27. ■ Embedded Java Keystore: Used for certificates for Simple or Certificate-based communication between OAM Servers and Webgates. The keystore bootstrap occurs upon initial AdminServer startup after running the Configuration Wizard. See: "About Access Manager Security Keys and the Embedded Java Keystore" on page 5-27 ■ Security Token Service Keystores: Access Manager and Security Token Service keystore should always be different. For more information, see "About Access Manager Keystores" on page 5-28. ■ Identity Federation Keystores: Keystore settings enable you to create aliases (a short hand notation) for keys in the keystore. See: "About Identity Federation Keystore" on page 5-30

Table 5–2 contains the Oracle Access Management services and links to information about the data sources used for each.

Table 5–2 Data Sources for Oracle Access Management Services

Service	Description
Access Manager	Access Manager supports multiple Identity Stores and provides SSO authentication using data sources: ■ "Managing OAM Identity Stores" ■ "Managing the Policy and Session Database" ■ "About the oam-config.xml Configuration Data File" ■ "About Access Manager Security Keys and the Embedded Java Keystore"
Identity Federation	Identity Federation supports multiple Identity Stores which can be assigned on a per Identity Partner basis. Each Identity Store must be registered with Access Manager. If no Identity Store is defined in the Identity Partner, the designated Default Store is used. ■ "Using Multiple Identity Stores" ■ "About Identity Federation Keystore" ■ "Administering Identity Federation As A Service Provider"

Table 5–2 (Cont.) Data Sources for Oracle Access Management Services

Service	Description
Security Token Service	Security Token Service uses only the designated Default Store for user identities. ■ "About Access Manager Keystores" ■ "Configuration overview: Identity Propagation with the Username Token". ■ Chapter 37, "Managing Security Token Service Certificates and Keys"
Mobile and Social	Mobile and Social provides its own Identity Directory Service configuration that points to directory servers for user authentication and/or user profile services. There is no dependency on the global data sources upon which Access Manager and other Oracle Access Management services rely. ■ Chapter 42, "Configuring Mobile Services"

See Also:

- "Managing Global Password Policy" on page 19-97 and "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-97
- "Setting the Default Store and System Store" on page 5-21
- Chapter 17 for details about sessions stored in-memory using Oracle Coherence and propagated to Oracle Database
- Chapter 9 for details about Audit data stored within audit files or a separate Oracle Database

The following sections contain additional details.

- About the oam-config.xml Configuration Data File
- About the Default LDAP Group

5.1.1 About the oam-config.xml Configuration Data File

Oracle Access Management provides an XML file (`oam-config.xml`) containing all Access Manager-related system configuration data. Any changes made to the Access Manager deployment configuration, including server and agent registration, are stored in oam-config.xml and are automatically propagated to each Access Manager server. Each Access Manager server has a local copy of the latest configuration XML file. Whether you have failover configured in a high-availability environment or not, all Access Manager servers always have the latest oam-config.xml file.

Oracle recommends not editing oam-config.xml directly. Manual changes to this file could result in lost data or overwriting of the file during data sync operations. However, if you must edit oam-config.xml, use the following guidelines:

- Back up oam-config.xml in: *$DOMAIN_HOME*/config/fmwconfig/ and store the copy in a different location for use if needed.
- Make your changes on the node running the AdminServer to minimize possible conflicts that another AdminConsole user might make.
- If Access Manager Servers are running, increment the configuration version number at the top of the file to associate your change and enable automatic propagation and dynamic activation across all OAM Servers. For example, see the next to last line of this example (existing value + 1):

```
<Setting Name="Version" Type="xsd:integer">
  <Setting xmlns="http://www.w3.org/2001/XMLSchema"
    Name="NGAMConfiguration" Type="htf:map:>
```

```
    <Setting Name="ProductRelease" Type="xsd:string">11.1.1.3</Setting>
      <Setting Name="Version" Type="xsd:integer">2</Setting>
  </Setting>
```

5.1.2 About the Default LDAP Group

The default LDAP group, `Administrators`, is set during initial deployment using the Oracle Fusion Middleware Configuration Wizard, as described in "Specifying the Oracle Access Management Console Administrator" on page 2-3.

5.2 Managing OAM Identity Stores

This section provides the steps you need to manage user identity store registrations using the Oracle Access Management Console.

- About User Identity Stores
- Using Multiple Identity Stores
- About the User Identity Store Registration Page
- Registering a New User Identity Store
- Viewing or Editing a User Identity Store Registration
- Deleting a User Identity Store Registration

> **Note:** Oracle recommends that you use the Identity Directory Service Profiles to access identity data stores rather than the legacy OAM ID Stores function as it will be deprecated in a future release. The Identity Directory Service is documented in Section 5.3, "Managing the Identity Directory Service User Identity Stores."

5.2.1 About User Identity Stores

A User Identity Store is a centralized LDAP repository in which an aggregation of Administrator and user-oriented data is stored and maintained in an organized way. Oracle Access Management supports multiple LDAP vendors, and multiple LDAP stores can be registered for use by Oracle Access Management and its services.

Oracle Access Management addresses each user population and LDAP directory store as an identity domain. Each identity domain maps to a configured LDAP User Identity Store that must be registered with Oracle Access Management.

During initial WebLogic Server domain configuration using the Oracle Fusion Middleware Configuration Wizard, the Embedded LDAP is configured as the one and only user identity store for Oracle Access Management. Within the Embedded LDAP, the Administrators group is created with `weblogic` seeded as the default Administrator.

See Also: *Oracle Fusion Middleware Securing Oracle WebLogic Server*

> **Note:** The Embedded LDAP performs best with fewer than 10,000 users. With more users, consider a separate enterprise LDAP server. In a highly available configuration, Oracle recommends that an external LDAP is used as the User Identity Store.

When a user attempts to access an Access Manager-protected resource, she can be authenticated against any store, not simply the designated Default Store. That said, there are a few considerations:

- **System Store**: Only one User Identity Store can (and must) be designated as the System Store. This is used to authenticate Administrators signing in to use the Oracle Access Management Console, remote registration tools, and custom administrative commands in WLST.

  Administrators using the Oracle Access Management Console or remote registration utility must have credentials stored in the System Store.

  Once you define a remote User Store as the System Store, you must change the `OAMAdminConsoleScheme` to use an LDAP Authentication Module that references the same remote user store (the System Store).

- **Default Store**: As the name implies, the LDAP store designated as the Default Store is the automatic choice for use by LDAP authentication modules unless you configure use of a different store for the module or plug-in.

  Security Token Service: Uses only the designated Default Store. When adding User Conditions to a Token Issuance Policy, for instance, the identity store from which the users are to be chosen must be Default Store.

> **Note:** Users attempting to access an Access Manager-protected resource can be authenticated against any user identity store that is registered and defined in the authentication scheme. Security Token Service uses only the Default User Identity Store

In the Oracle Access Management Console, User Identity Store registrations are organized under the Data Sources node (System Configuration tab, Common Configuration section). Administrators can register, view, modify, and delete User Identity Store registrations using either the Oracle Access Management Console or custom WLST commands described in Oracle Fusion Middleware WebLogic Scripting Tool Command Reference.

5.2.2 Using Multiple Identity Stores

Administrators can install and register multiple user identity stores for Oracle Access Management. Each identity store can rely on a different LDAP provider. When more than one identity store is registered, an Administrator must define:

- The System Store: Administrator logins occur against the System Store only.
- The Default Store: Comes into play during patching and when using Identity Federation, and Security Token Service.
  - Patching: Oracle recommends that before patching, you designate UserIdentityStore1 as the Default Store and also update LDAP Authentication Modules to use UserIdentityStore1(the Embedded LDAP of Weblogic Server). For more information see, *Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management*.
  - Identity Federation: Supports multiple identity stores, on a per IdP Partner basis. The specified identity store must be registered like any other store. If no identity store is defined in the IdP Partner, the Default Store is used. For details, see "Administering Identity Federation As A Service Provider" on page 31-2.

  - Security Token Service: An LDAP server is required for Security Token Service to map the Username token referencing the user to an LDAP User record, and thus use that record to populate the outgoing token. Ensure that the desired LDAP server is registered and configured as the Oracle Access Management Default Identity Store, as described in "Setting the Default Store and System Store" on page 5-21. For more information, see "Configuration overview: Identity Propagation with the Username Token" on page 35-18.

- The specific store to use with each LDAP authentication module or plug-in (and Form or Basic authentication schemes)

External LDAP repositories can provide user, role, and group membership information. A user's group memberships, for example, are calculated at login time and stored for the duration of the session. Information is used as follows:

- When evaluating policies during authentication
- When evaluating identities for authorization conditions in a policy
- When using LDAP to search for identities for conditions in an authorization policy

> **Note:** There is no way to flush a user's group memberships, information to force Oracle Access Management to recalculate it at a later date.

Registering user identity stores is required to provide connectivity with OAM Servers. After registering the identity store, Administrators can reference it in one or more authentication modules that form the basis for authentication schemes.

Oracle Access Management addresses each user population and directory as an identity domain. Each identity domain simply maps to a configured identity store name.

In the first Oracle Access Manager 11g release, users were identified using a simple user name/id field both internally and externally. Support for multiple identity realms requires cross-realm representation of a user or a group or any entity that resides within the identity store. This representation, referred to as a canonical identifier, serves as a unique identifier to various run time and administrative components of Oracle Access Management:

- **External Representation**: Qualifies the simple user name with identity domain information.

  For instance, in Oracle Access Management Console a table that lists user names includes a column that displays the identity domain of the respective user. Identity domains map to identity store names. All functional components (the console, Policies, Responses, Logging, Session management, Auditing, and so on) that display user information will begin to qualify the same with the identity domain information.

- **Internal Representation**: To support disambiguation, OAM stores and uses the fully-qualified name (or uses both fields, as-is, to form a composite key).

  For instance, The Session Management Engine does this to eliminate the need to store composite). In any case, the fully-qualified name is not visible.

Authorization Policy Administration

Authorization policy administration allows authoring of grants to users or groups. Administrators can search within specific identity stores, selecting certain users or

groups and granting or denying them access. Search results provide canonical identifiers for users and groups such that those values are stored as principals of the Identity Condition type of an Access Manager Authorization policy. The console displays the names and the Identity Store of origin.

Run Time

Authentication and Authorization relies on the Policy run time component. `OAMIdentity` is the runtime representation of the authenticated user and any groups that the user is a member of (if any). During policy evaluation, information present within the `OAMIdentity` is matched with what is stored as part of authorization policy's Identity Constraint. The domain is asserted as a Name Qualifier within the token.

For OAM Proxy, in addition to the existing OAM_REMOTE_USER header, a second OAM_IDENTITY_DOMAIN header is set on every request for an authenticated user, such that a consuming application can disambiguate the user if needed.

Sessions

Session Management searches inform Administrators as to the user Identity Store, which is listed in the search results table.

Auditing and Logging

The user Identity Store against which the user has been authenticated is accounted for during auditing and logging.

See Also:

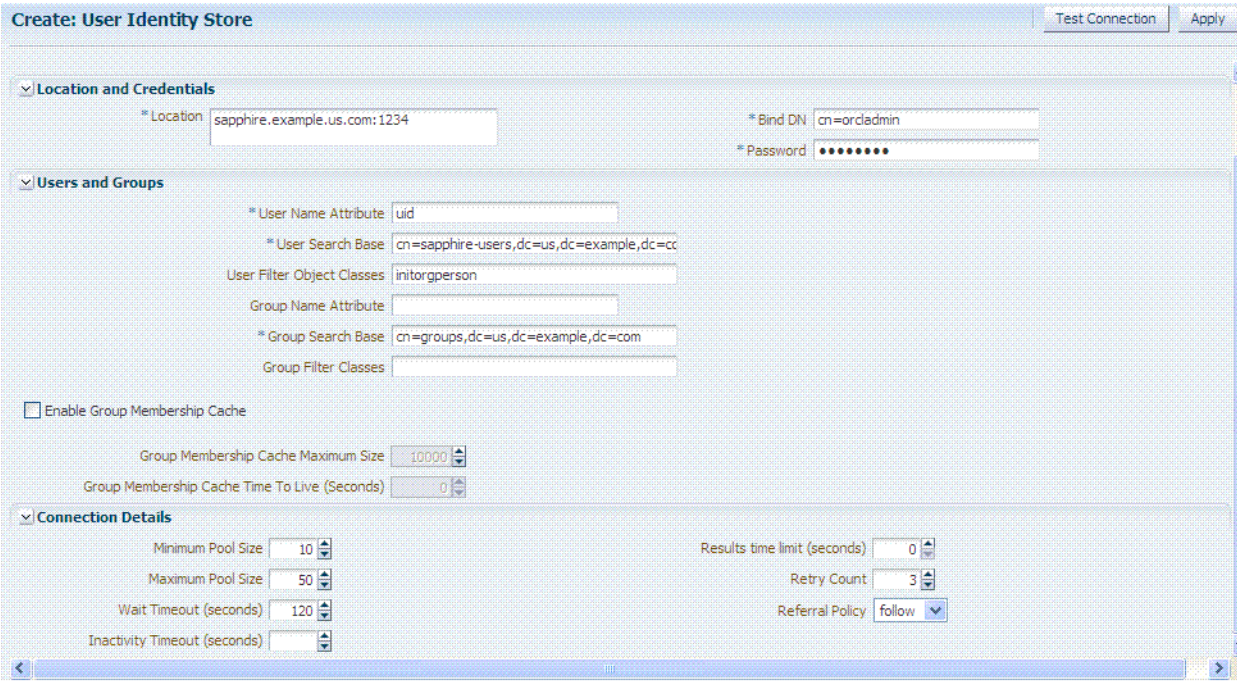
- "About the User Identity Store Registration Page"
- "Managing the Administrators Role" on page 5-22
- "Setting the Default Store and System Store" on page 5-21
- Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

5.2.3 About the User Identity Store Registration Page

This topic describes the various user identity store settings under the System Configuration tab.

Figure 5–1 illustrates the Create User Identity Store Page, which provides fields where you enter details for your store and default settings that you can edit for your environment. The Store Type drop-down list provides supported choices.

Figure 5–1 Creating User Identity Store Registration



Required settings are identified by the asterisk (*) on the page. Table 5–3 describes each element and is organized by element types.

Table 5–3 User Identity Store Elements

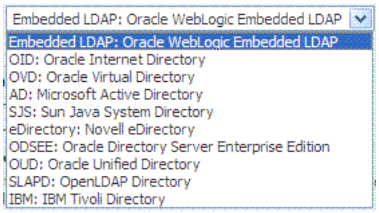
Elements	Description
Store Name	A unique name for this registration. Use up to 30 characters for the name.
Store Type	A list of all supported LDAP providers from which you can choose. You can have multiple identity stores, as described in "Using Multiple Identity Stores" on page 5-5.  See Also: Table 19–35, " Location of Oracle-provided LDIFs for LDAP Providers".
Description	Optional.
Enable SSL	Click to check this box and indicate that SSL is enabled between the directory server and OAM Server.
Location and Credentials	**Description**

Table 5–3 (Cont.) User Identity Store Elements

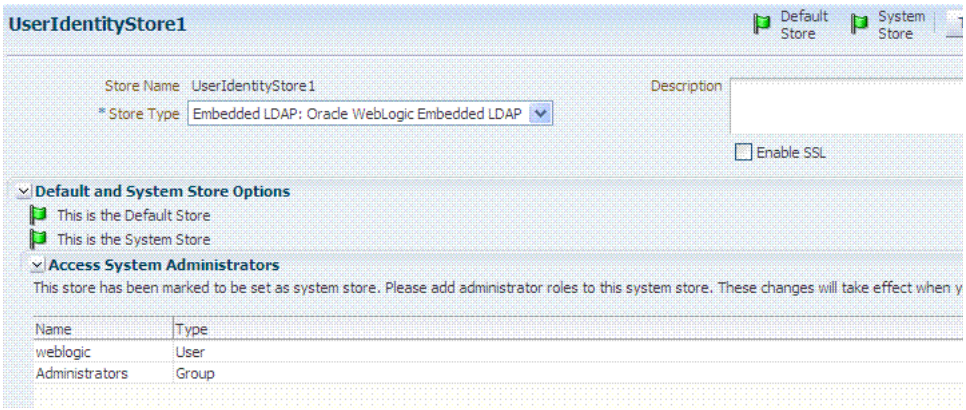
Elements	Description
Location	The URL for the LDAP host, including the port number. Oracle Access Management 11g support multiple LDAP URLs with failover capability. The Identity Assertion Provider fails over to the next LDAP URL based on the order in which these appear. Enter one (or more) LDAP URLs in *host:port* format, Multiple URLs must be separated by a space or new line. There is no need to specify ldap:// or ldaps://(which supports SSL_NO_AUTH) in the URL value: `localhost:myhost:7001` **Note**: The number of characters a supported URL can have is based on the browser version. Ensure that your applications do not use URLs that exceed the length that Oracle Access Management and the browser can handle.
Bind DN	The user DN for the connection pool over which all other BINDs occur. Oracle recommends a non administrative user with appropriate Read and Search privileges for the user and group base DNs. For example: `uid=amldapuser,ou=people,o=org`
Password	The password of the Principal, which is encrypted for security.
Users and Groups	**Description**
User Name Attribute	The attribute that identifies the username. For example: `uid`
User Search Base	The node in the directory information tree (DIT) under which user data is stored, and the highest possible base for all user data searches. For example: `ou=people,ou=myrealm,dc=base_domain`
User Filter Object Class	The object classes to be included in search results for users, in a comma-separated list of user object class names. For example: `user,person`.
Group Name Attribute	The attribute that identifies the group name. Default: cn
Group Search Base	Currently only static groups are supported, with the `uniquemember` attribute. The node in the directory information tree (DIT) under which group data is stored, and the highest possible base for all group data searches. For example: `ou=groups,ou=myrealm,dc=base_domain`
Group Filter Classes	The object classes to be included in the search results for groups, in a comma-separated list of group object classes. For example: groups,groupOfNames.
Enable Group Cache (size)	Boolean value for group cache: true or false. Default: true
Group Cache Size	Integer for the group cache size. Default: 10000
Group Cache TTL (seconds)	Integer (in seconds) for Time to Live for group cache elements. Default: 0
Connection Details	**Description**
Minimum Pool Size	The smallest size set for the connection pool. Default: 10
Maximum Pool Size	The greatest size set for the connection pool. Default: 50

Table 5–3 (Cont.) User Identity Store Elements

Elements	Description
Wait Timeout	The number (in seconds) that connection requests can wait before timing out in the event of a fully utilized pool. Default: 120
Inactivity Timeout	The number (in seconds) that connection requests can be inactive before timing out in the event of a fully utilized pool.
Results Time Limit (seconds)	The time limit (in seconds) for LDAP searches and bind operations on the connection pool. Default: 0
Retry Count	The number of time that the connection is retried when there is a connection failure. Default: 3
Referral Policy	One of these values: ▪ follow: Follows referrals during an LDAP search (Default) ▪ ignore: Ignores referral entries during an LDAP search ▪ throw: Results in a Referral Exception, which can be caught by the component user.

Figure 5–2 shows the Default and System Store designations. Notice the Access System Administrators section. You can add or remove Administrator roles only within the defined System Store and the store itself.

Figure 5–2 System Store Registration



See Also: Details about classifying users in Chapter 20, "Managing Policies to Protect Resources and Enable SSO"

5.2.4 Registering a New User Identity Store

Users with valid Oracle Access Management Administrator credentials can use this procedure to register a new user identity store using the Oracle Access Management Console.

After you register the identity store, you can reference it in one or more authentication modules that form the basis for authentication schemes. You can also reference a specific identity store within Identity Conditions in Authorization Policies.

See Also:

- "About the User Identity Store Registration Page" on page 5-7
- "Using Multiple Identity Stores" on page 5-5
- "Setting the Default Store and System Store" on page 5-21

Prerequisites

- Install the user identity store that you intend to register with Oracle Access Management.
- Extend the LDAP directory schema for Access Manager, as described in Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
- Create Users and Groups in the LDAP directory, as described in your vendor documentation.

To register a new user identity store definition

1. From the Oracle Access Management Console Launch Pad, click User Identity Stores.
2. Click Create.
3. Fill in the form with appropriate values for your deployment (Table 5–3), then click Apply to submit the registration.
4. **Test Connection**: Click the Test Connection button to confirm connectivity, then close the Confirmation window.
5. Close the registration page.
6. **Add Administrators**: See "Managing the Administrators Role" on page 5-22.
   a. In the navigation tree, double-click the store name to open the registration page.
   b. In the Access System Administrators section, click the + above the table.
   c. Fill in the Add System Administrator Roles dialog box (...).
   d. Click Apply.
7. **Set Default Store:** See "Setting the Default Store and System Store" on page 5-21.
8. Click Apply to submit the registration and close the page.
9. Configure one or more authentication modules or plug-ins to use this store, as described in:
   - "Native LDAP Authentication Modules" on page 19-25
   - "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28

5.2.5 Viewing or Editing a User Identity Store Registration

Users with valid Oracle Access Management Administrator credentials can view or modify the registration of a user identity store.

Prerequisites

The user identity store that you intend to register must be installed and running.

To view or modify a user identity store registration

1. From the Oracle Access Management Console Launch Pad, click User Identity Stores.
2. Click and open the desired User Identity Store registration page.
3. Modify values as needed (see Table 5–3).
4. Click Apply to update the registration (or close the page without applying changes).
5. **Test Connection**: Click Test Connection button to confirm connectivity, then close the Confirmation window.
6. **Set as System or Default Store**: See "Setting the Default Store and System Store".
7. **Manage Administrator Roles**: See "Managing the Administrators Role".
8. Configure one or more authentication modules or plug-ins to use this store, as described in:
   - "Native LDAP Authentication Modules" on page 19-25
   - "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28
9. Close the page when you finish.

5.2.6 Deleting a User Identity Store Registration

Users with valid Oracle Access Management Administrator credentials can use this procedure to delete a user identity store registration using the Oracle Access Management Console.

> **Note:** You cannot delete the Default Store or System Store registration.

To delete a secondary user identity store registration

1. Edit LDAP Authentication Modules that reference the store to be deleted (to ensure a valid identity store is referenced within the module).
2. From the Oracle Access Management Console Launch Pad, click User Identity Stores
3. Click and open the desired User Identity Store registration page to confirm it is the one to delete (and not a Default), then close the page.
4. Click the desired instance name and click the Delete button in the tool bar.
5. Click the Delete button in the Confirmation window (or click Cancel to dismiss the window and retain the instance).
6. Confirm that the definition is no longer listed in the navigation tree.

5.3 Managing the Identity Directory Service User Identity Stores

Identity Directory Service (IDS) is a flexible and configurable service used by Access Manager as the means for accessing multiple identity data stores. The purpose of IDS is to allow the management of users or groups from identity stores not deployed with Access Manager itself. The following sections contain the details.

5.3.1 Using Identity Directory Services

Identity Directory Service offers a consistent and rationalized technology to access identity stores that eliminates redundant configurations and simplifies Identity Management operations. IDS provides the following benefits:

1. Support for different types of user directories including integration with native user/password state managed by the directory.
2. Consistent administration user interface and a paradigm for working with different identity stores across Oracle Identity Management components.
3. Built in failover and load balancing capabilities.
4. Logical to physical attribute mapping and entity relationships.

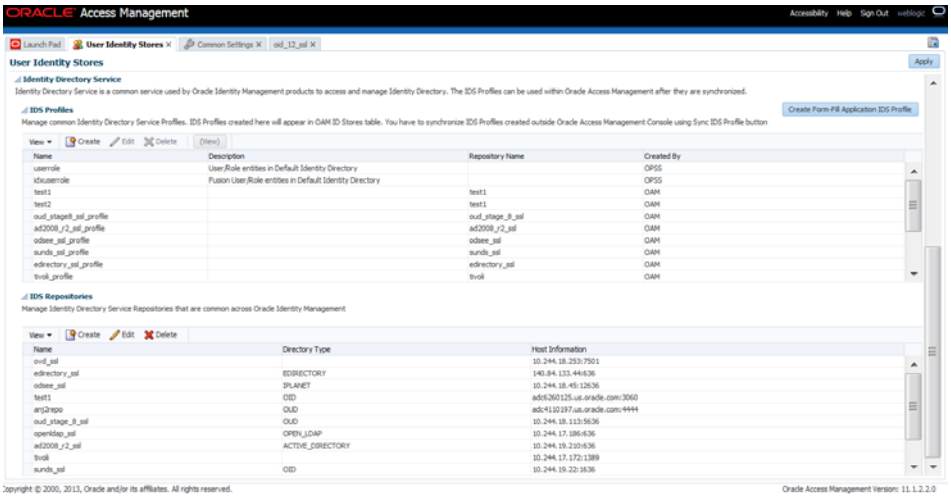
The following list of directory servers are among those supported.

- Microsoft Active Directory
- Novell eDirectory
- Oracle Directory Server Enterprise Edition
- Oracle Internet Directory
- Oracle Unified Directory
- Oracle Virtual Directory
- OpenLDAP
- IBM Tivoli Directory Server
- WebLogic Server Embedded LDAP

Note: Oracle recommends that you use the Identity Directory Service Profiles to access identity data stores rather than the legacy OAM ID Stores function as it will be deprecated in a future release.

Figure 5–3 is a screen capture of the Identity Directory Service console page.

Figure 5–3 Identity Directory Service Console Page



Note: Note this page contains the configuration panel for the legacy OAM ID Stores. Oracle recommends that you use the Identity Directory Service Profiles to access identity data stores rather than the legacy OAM ID Stores function as it will be deprecated in a future release.

Configuring an Identity Directory Service store involves configuring parameters for an IDS Profile and an IDS Repository. The IDS Profile specifies the full scope of traits for a particular type of identity store. It is the logical configuration for the repository and contains the following data.

- Entity definition
- Entity relationship definition
- Default operational configuration (including the tenant search/create base, the tenant filter, timeouts and cache configuration)

The IDS Repository configuration defines the actual location of the store. The IDS Repository is a physical configuration that containing the following data.

- Connection details (including the host machine, port number and credentials)
- Connection pool details
- High-availability/failover configuration
- Entity attribute mapping

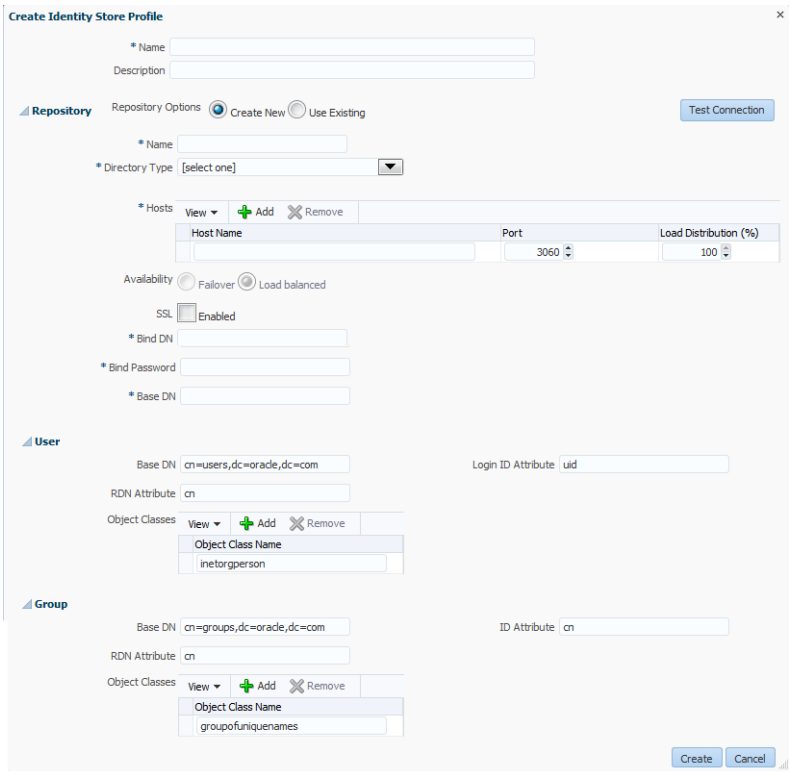
5.3.2 Creating an Identity Directory Service Profile

To create an Identity Directory Service profile, proceed as follows.

1. Click User Identity Stores from the Launch Pad.
2. Click Create under IDS Profile.

   The Create IDS Profile page is displayed as in Figure 5–4.

Figure 5–4 Create IDS Profile Page



3. Provide the following values for the new Identity Directory Service profile.
   - **Name** - Type a unique name for this User Profile Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
4. Configure the Repository properties by selecting Create New or Use Existing.

   Create New defines a new Repository object (that is, a reference to an LDAP directory server) for the Identity Directory Service connection. Click **Test Connection** after you have defined the values in the Repository section to verify they are correct. This option is only available when defining a new Identity Directory Service connection. **Use Existing** allows you to choose a previously defined Repository object by selecting it from the drop down menu.
   - (Repository) **Name** - Enter a new unique name to create, or choose an existing one from the menu. After entering a new name, configure properties for the Identity Directory Service connection.
   - **Directory Type** - Select the type of directory server software hosting the Repository; for example, *Microsoft Active Directory* or *Oracle Internet Directory*. If your directory is not listed, leave this field empty. If you are not defining a new Identity Directory Service connection or creating a new repository, this field is read-only.
   - **Host Information** - Contains information about the host computer on which the Identity Directory Service Repository is located. Add multiple hosts if the directory server is part of a cluster. Click **Add** to add a new host to the table. In the **Host Name** column type either the IP Address or the name of the computer (or virtual computer) on which the Directory server is running. In the **Port** column, type the port number that the directory server is configured

to use. If the hosts are part of a cluster, in the **Load Distribution** column type the load amount as a percentage that should be directed to each host. For multiple hosts, the amount should add up to 100%. To delete a host, select its row in the table and click **Remove**. If you are not defining a new Identity Directory Service connection or creating a new repository, this field is read-only.

- **Availability** - Choose **Failover** if the cluster is configured for failover operation, or choose **Load balanced** if the cluster distributes the load across multiple hosts. This field is read-only if you are using an existing repository.
- **SSL** - Select **Enabled** if the connection is configured for SSL. (See the *Oracle Fusion Middleware Application Security Guide* for SSL configuration details.)
- **Bind DN** - Type the distinguished name (DN) of the LDAP Administrator used to authenticate to the Directory server.
- **Bind Password** - Type the Bind DN password used to authenticate to the Directory server.
- **Base DN** - Type the base distinguished name (DN) where User and Group data is located.

5. Configure the User properties to configure the LDAP User object in Mobile and Social User Profile services.

   Note: These fields are read-only if using an existing Identity Directory Service connection.

   - **Object Classes** - Click **Add** to add a custom object class that represents people in an organization as defined on your directory server.
   - **RDN Attribute** - Type the relative distinguished name attribute (for example, *cn*) designated for the User object on the directory server.
   - **Base DN** - Type the base DN (in LDAP form) for the User object on the directory server.
   - **Login ID Attribute** - Type the LDAP attribute from which the login ID specifying the User will be extracted.

6. Configure the Group properties to configure the LDAP group object in Mobile and Social User Profile services.
   - **Object Classes** - Click **Add** to add a custom object class that represents a group of people in an organization as defined on your Directory server.
   - **RDN Attribute** - Type the relative distinguished name attribute (for example, *cn*) designated for the Group object on the directory server.
   - **Base DN** - Type the base DN (in LDAP form) for the Group object on the directory server.
   - **ID Attribute** - Type the LDAP attribute from which the ID designated for the Group object will be extracted.

7. Click Create.

   The profile is displayed in the IDS Profiles table.

5.3.3 Editing or Deleting an Identity Directory Service Profile

To edit or delete an IDS Profile, select the name in the table and click Edit or Delete on the tool bar. Editing the profile allows for additional configuration properties for the Identity Directory Service connection.

- **Name** - Choose an Identity Directory Service connection to associate with the User Profile Service Provider from the drop down menu.
  - If you choose either of the default Identity Directory Services (either `userrole` or `idxuserrole`) you cannot view or edit the configuration values.
  - If you choose an Identity Directory Service connection that you or another Administrator created, you can view and edit the configuration values as needed.
- **General and Repository** - Use the fields under this tab to edit the Directory Service and Repository configuration values that Mobile and Social uses to connect to the Directory Service.
  - **Repository Name** - Choose from the menu a repository to associate with the Identity Directory Service connection. After choosing a repository, configure its properties using the following form fields.
  - **Directory Type** - Displays the type of Directory server software hosting the Repository, for example *Microsoft Active Directory*, *Oracle Internet Directory*, and so on. This field is read-only.
  - **Host Information** - Displays information about the host computer where the Identity Directory Service Repository is located. Add multiple hosts if the Directory server is part of a cluster. Click **Add** to add a new host to the table. In the **Host Name** column type either the IP Address or the name of the computer (or virtual computer) that the Directory server is running on. In the **Port** column, type the port number that the Directory server is configured to use. If the hosts are part of a cluster, in the **Load Distribution** column type the load amount as a percentage that should be directed to each host. For multiple hosts, the amount should add up to 100%. To delete a host, select its row in the table and click **Remove**. If you are not defining a new Identity Directory Service connection or creating a new repository, this field is read-only.
  - **Availability** - Choose **Failover** if the cluster is configured for failover operation, or choose **Load balanced** if the cluster distributes the load across multiple hosts. This field is read-only if you are using an existing repository.
  - **SSL** - Select **Enabled** if the connection is configured for SSL. Otherwise clear the option box.
  - **Bind DN** - Type the distinguished name (DN) of the LDAP Administrator used to authenticate to the Directory server.
  - **Bind Password** - Type the Bind DN password used to authenticate to the Directory server.
  - **Base DN** - Type the base distinguished name (DN) where User and Group data is located.
- **Entity Attributes** - Use the fields under this tab to view or edit the attributes that Mobile and Social uses to navigate the corporate directory service schema. Click **Add** to add an attribute to the table or click **Remove** to delete an attribute.
  - **Name** - The attribute name.

  - **Physical Attribute** - The name of the corresponding physical attribute type in the underlying Repository.
  - **Type** - The attribute's data type.
  - **Description** - A brief description of the attribute.
  - **Sensitive** - Select to mark that the attribute contains sensitive information such as a password.
  - **Read-only** - Select to protect the attribute from modification.
- **Entities / User Properties** - Use the fields under the User sub head to configure how Mobile and Social interacts with the User entities on the LDAP server.
  - **Create Base** - Specifies the base DN (the top level of the LDAP directory tree) at which Users are defined.
  - **Search Base** - Specifies the search base DN for Users. Only entries at or below the search base DN are considered when processing the search operation.
  - **Create Object Classes** - Specifies the object class under which attributes associated with a person are stored.
  - **RDN Attribute** - Specifies the relative distinguished name attribute, for example *cn*.
  - **ID Attribute** - Specifies the attribute that uniquely identifies the User, such as the *uid* attribute or the *loginid* attribute.
  - **Filter Object Classes** - Specifies the object class by which to filter.
  - Attributes Configuration - Specify the User attributes that should be available to, and searchable by, the User Profile Service Provider.
    * **Used** - Specifies if the attribute is used for Users in the directory service.
    * **Attribute Name** - Specifies the name of the attribute as defined on the **Entity Attributes** tab.
    * **In Results** - Select if the specified attribute should be returned in search results.
    * **Searchable** - Select if the specified attribute should be available for search operations.
    * **Search Operator** - Select a search operator from the menu to restrict how the specified attribute is searched.
  - **Operations Configuration** - Select from **Create**, **Update**, **Delete**, and **Search** to enable those operations at the User entity level. Clear the option boxes to disable them.
- **Entities / Group Properties** - Use the fields under the Group sub head to configure how Mobile and Social interacts with the Group entities on the LDAP server.
  - **Create Base** - Specifies the base DN (the top level of the LDAP directory tree) at which Users are defined.
  - **Search Base** - Specifies the search base DN for Groups. Only entries at or below the search base DN are considered when processing the search operation.
  - **Create Object Classes** - Specifies the object class under which attributes associated with a Group are stored.

  - **RDN Attribute** - Specifies the relative distinguished name attribute; for example, *cn*.
  - **ID Attribute** - Specifies the LDAP attribute that uniquely identifies the Group.
  - **Filter Object Classes** - Specifies the object class by which to filter.
  - Attributes Configuration - Specify the Group attributes that should be available to, and searchable by, the User Profile Service Provider.
    * **Used** - Specifies if the attribute is used for Users in the directory service.
    * **Attribute Name** - Specifies the name of the attribute as defined on the **Entity Attributes** tab.
    * **In Results** - Select if the specified attribute should be returned in search results.
    * **Searchable** - Select if the specified attribute should be available for search operations.
    * **Search Operator** - Select a search operator from the menu to restrict how the specified attribute is searched.
  - **Operations Configuration** - Select from **Create**, **Update**, **Delete**, and **Search** to enable those operations at the Group entity level. Clear the option boxes to disable them.

- **Relationships** - Use the fields under this tab to configure the relationship between attributes for this Identity Directory Service.
  - **Name** - The relationship name.
  - **(From) Entity** - Choose **User** to select from User attributes or choose **Group** to select from Group attributes in the **(From) Attribute** column.
  - **(From) Attribute** - Choose the attribute from which you are mapping.
  - **Relation** - Choose the menu option that describes the relationship between the specified attribute in the **From** column and the specified attribute in the **To** column.
  - **(To) Entity** - Choose **User** to select from User attributes or choose **Group** to select from Group attributes in the **(To) Attribute** column.
  - **(To) Attribute** - Choose the attribute to which you are mapping.
  - **Recursive** - Select if the relationship extends down the directory tree to include nested child entities or up the directory tree to include parent entities.
- **Relationship Configuration** - Type the URI segment used to access the corresponding column in the Identity Directory Service. Use **Add** to add a new relationship or **Remove** to remove a configured relationship.
  - **Access URI** - Type a URI segment that will be used to access a corresponding data column in the Identity Directory service. For example, if `memberOf` is the Access URI, then:

    ```
    http://host:port/.../idX/memberOf
    ```

    would be the URI to access related entities of an entity with ID `idX`.
  - **Identity Directory Service Relation** - Choose the Directory Service relationship that is to be accessed by the **Access URI** segment. You can configure relationships on the **Relationships** tab in the **Identity Directory Service** configuration section provided that the Identity Directory Service *is*

not the pre-configured UserProfile Identity Provider. (You cannot configure Identity Directory Service relationships for the *UserProfile* Service Provider.)

– **Entity URI Attribute** - Type the JSON attribute name to be used in the URI response sent from the Mobile and Social server. For example, if *person-uri* is the specified entity URI attribute, the URI response would be as follows:

```
{ {"person-uri":uriY1, ...}, {"person-uri":uriY2, ...}, ... }
```

where `uriY1` and `uriY2` are the direct URIs to access each of the related entities.

– **Scope for Requesting Recursion** - Use Scope attribute values with the scope query parameter to retrieve a nested level of attributes in a relationship search. To access related entities recursively, type the value to be used. The Mobile and Social default configuration uses two scope attribute values: `toTop` and `all`. If the **Scope for Requesting Recursion** value is the attribute value `all`, then the following REST URI example is used to make the request:

```
http://host:port/.../idX/reports?scope=all
```

In this example, the URI returns the entities related to the entity with ID `idX`, as well as all further related entities.

5.3.4 Creating a Form-fill Application Identity Directory Service Profile

To create an Identity Directory Service Profile for a Form-fill Application, click the Create Form-fill Application IDS Profile button on the left of the User Identity Stores console page. (See Figure 5–3.)

Section 5.3.2, "Creating an Identity Directory Service Profile" and Section 5.3.3, "Editing or Deleting an Identity Directory Service Profile" contain definitions for most of the Form-fill attributes. Additional definitions for the Entity Search Bases section specific to this type of profile are listed below.

- User Search Base - Full DN for the node at which enterprise users are stored in the directory; for example, cn=Users,realm_DN.
- App Template Search Base - Full DN for the node from which searches for the Application Templates will begin.
- Top Search Base - Full DN for the node from which searches will begin; for example, cn=realm_DN.

5.3.5 Understanding the Pre-Configured Identity Directory Service Profile

Mobile and Social provides a pre-configured IDS Profile named UserIdentityStore1. This profile allows lookup and update tasks to be performed on directory objects using Mobile and Social.

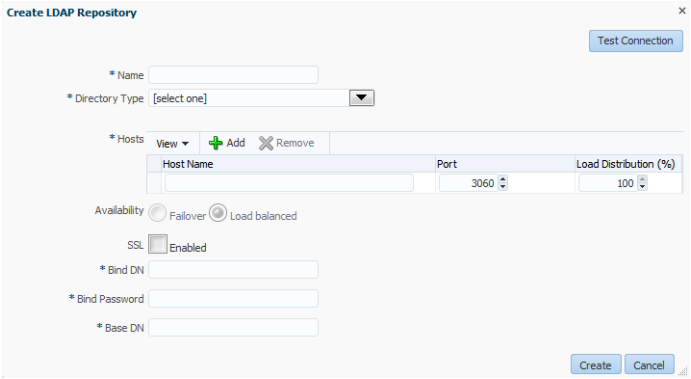
5.3.6 Creating an Identity Directory Service Repository

To create an Identity Directory Service repository, proceed as follows.

1. Click User Identity Stores from the Launch Pad.
2. Click Create under IDS Repository.

   The Create IDS Repository page is displayed as in Figure 5–5.

Figure 5–5 Create IDS Repository Page



3. Provide the following values for the new Identity Directory Service repository.
   - Name: the entry must be a unique.
   - Select the Directory Type from the drop down choices.
4. Click Add to configure the physical location of the repository (Host name, Port number and Load Weightage percentage).
5.
   - Availability - select Failover or Load balanced
   - SSL - select to enable
   - Bind DN
   - Bind Password
   - Base DN
6. Click Test Connection to confirm the values are correct.
7. Click Create.

   The profile is displayed in the IDS Profiles table.

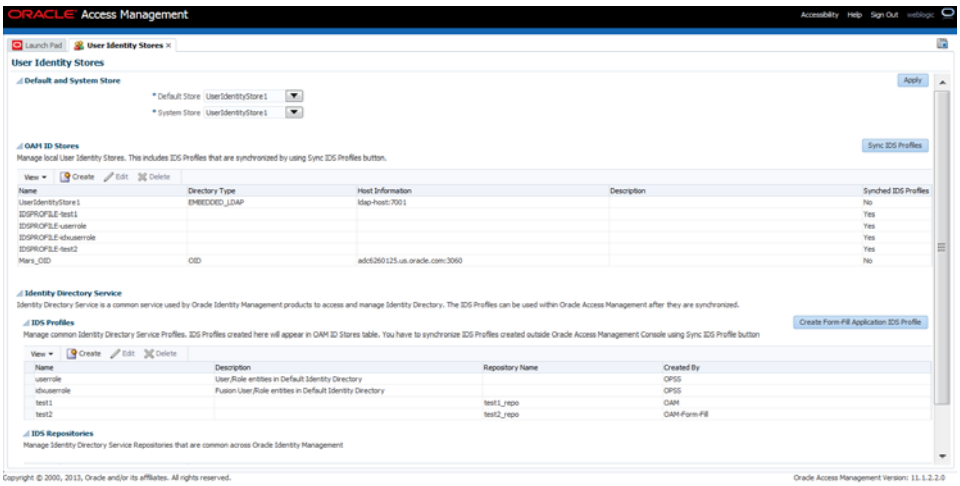
5.4 Setting the Default Store and System Store

Users with valid Oracle Access Management Administrator credentials can designate a user identity store registration as either the Default Store or the System Store. The Default Store is required for the Security Token Service and migration when patching. Administrator roles and credentials must reside in the System Store. You can define the appropriate store from the drop down menu. UserIdentityStore1 is the embedded LDAP store.

> **Note:** Changing the System Store impacts the entire identity management domain. For example, administrator login works only when the LDAP Authentication Module used by the `OAMAdminConsoleScheme` also uses the System Store. If you set another store as a remote store, ensure that the `OAMAdminConsoleScheme` is also modified to avoid a lockout.

You can modify the Default and System Identity Stores configurations from the User Identity Stores link on the Launch Pad. Figure 5–6 is a screen capture of the User Identity Stores page.

Figure 5–6 Common Settings: Default and System Identity Stores



The supported method of configuring the ID Store for a WebSphere installation is documented in the *Oracle Fusion Middleware Third-Party Application Server Guide for Oracle Identity and Access Management*. Additional information regarding store configurations can be found in the following sections.

- "Using Multiple Identity Stores"
- "Managing OAM Identity Stores"
- "Managing the Administrators Role"

5.5 Managing the Administrators Role

This section provides the following topics:

- About Managing the Administrator Role
- Managing Administrator Roles

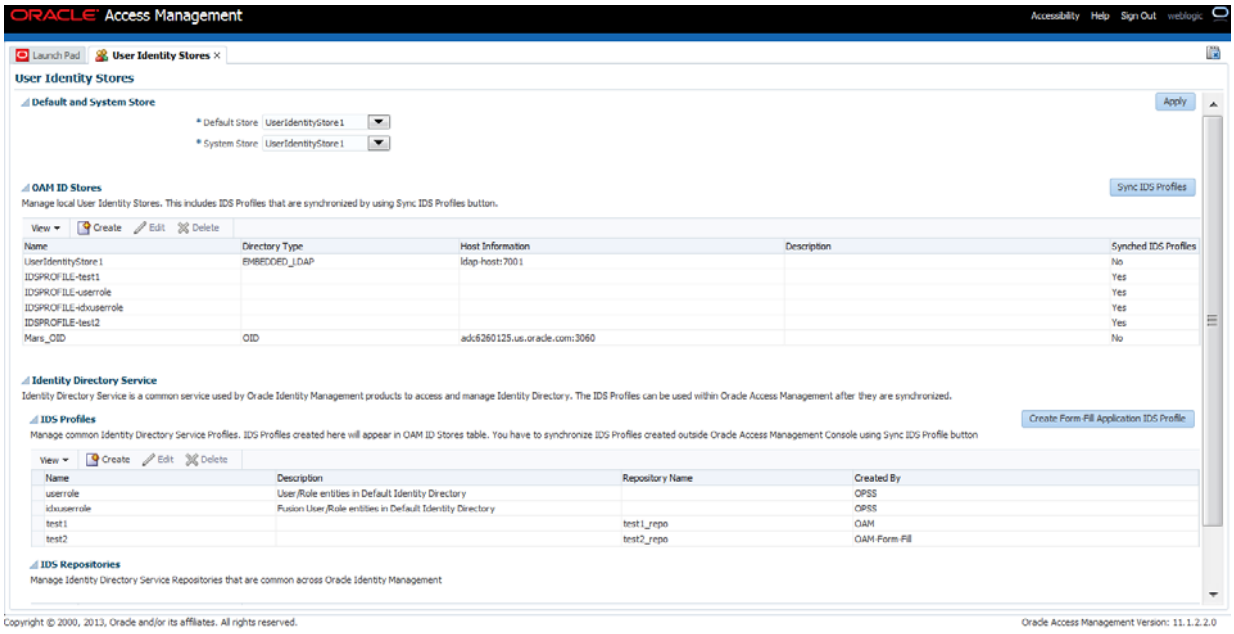
5.5.1 About Managing the Administrator Role

Administrator login works only when the Authentication Scheme (and assigned Authentication Module) used by the IAMSuiteAgent, also uses the System Store.

By default, the Administrators role for Oracle Access Management is the same as the WebLogic Administrators role (Administrators). You can register another User Identity Store (Oracle Internet Directory, for example); however, user `weblogic` must be defined with at least one user in the registered store to authenticate against.

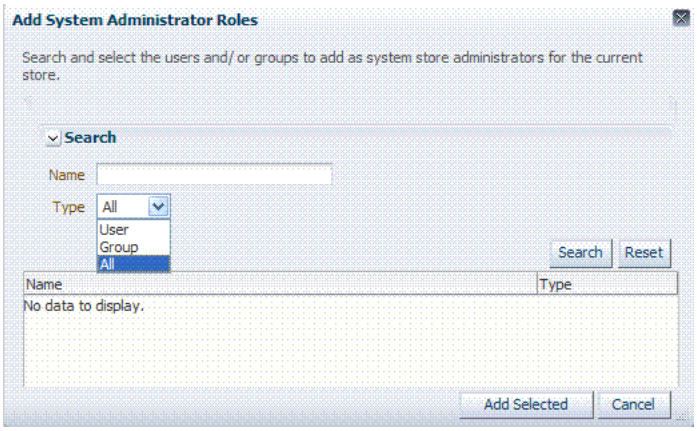
Your enterprise might require independent sets of Administrators: one set of users responsible for Access Manager and another for Security Token Service. All Administrator roles, users, and groups must be stored in the System Store. If the System Store changes, appropriate Administrator roles must be added to the new System Store. If, when editing an Identity Store registration, you designate a store as the System Store the Access System Administrator section opens on the page as shown in Figure 5–7.

Figure 5–7 System Store Registration with Access System Administrators Section



You can add new Administrator roles when adding or editing a User Identity Store registration. Figure 5–8 shows the page and controls to use.

Figure 5–8 Add System Administrator Roles



5.5.2 Managing Administrator Roles

The following procedure explains how to define or remove Oracle Access Management Administrator roles which must be stored in the User Identity Store designated as the System Store. First, define the desired LDAP group to use for Administrators and then ensure that your Administrators group is available in the group search base

Prerequisites

Setting the Default Store and System Store

To add or remove an Administrator role from the System Store

1. **View System Store Registration**: Perform the following steps (or find a different System Store in the Data Sources node to designate as the System Store).
   a. From the Oracle Access Management Console Launch Pad, click Administration.

      The registered System Store can not be changed from this page .

   b. Search the System Store to find configured administrators.
2. **Add User Roles**:
   a. Click the Grant (+) button above the Access System Administrators table to display the Add Users and Groups dialog box.
   b. Select User in the Type list and click the Search button.
   c. In the results list, click the desired User and then click the Add Selected button.
   d. Repeat as need to add desired Administrator User roles.
   e. Click Apply to submit user roles.
3. **Add Group Roles**:
   a. Click the Grant (+) button above the Access System Administrators table to display the Add Users and Groups dialog box.
   b. Select Group in the Type list and click the Search button.
   c. In the results list, click the desired Group and then click the Add Selected button.
   d. Repeat as need to add desired Administrator Group roles.
   e. Click Apply to submit Group roles.
4. **Remove Administrator Roles**:
   a. In the Access System Administrators table, click the row containing the user or group to remove.
   b. Click the Delete (x) button above the table.
   c. Confirm removal when asked.
   d. Click Apply to submit the removal.
5. Correct any authentication plug-ins that use the System Store (if this is a new store).

   This procedure is decscribed in "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28
6. **Test the New Role**: Close the browser window, then re-open it.
   a. Sign out of the Oracle Access Management Console and close the browser window.
   b. Start up the Oracle Access Management Console and attempt to log in using the previous Administrator role to confirm that this attempt fails.
   c. Log in using the new Administrator role to confirm that this attempt is successful.

      Login Failure: See "Administrator Lockout" on page E-6.

5.6 Managing the Policy and Session Database

This section includes the following topics:

- About the Database Store for Policy, Password Management, and Sessions
- About Database Deployment
- Configuring a Separate Database for Access Manager Sessions

5.6.1 About the Database Store for Policy, Password Management, and Sessions

Oracle Access Management requires a database to store Access Manager policy data, password management data, and Access Manager sessions in a production environment.

Note: At most, your deployment can have one policy store database (which serves password management) and one session store. By default, a single JDBC data source is used for both.

The following data is maintained in the policy store database by default:

- Policy data, including authentication modules and schemes, Application Domains, and policies.
- Password Management data, which includes password policy type for each configured User Identity store as well as the policy that governs password requirements, expiry, notification,
- Sessions, as a persistent backup to distributed in-memory storage

Note: The preferred mode for audit data storage in production environments is writing audit records to a stand-alone RDBMS database for audit data only. This is done using a separately configured audit store. The policy store is not used for audit data.

See Also: "Managing the Policy and Session Database" on page 5-25

5.6.2 About Database Deployment

Oracle requires a single database as the policy store in production environments. This single database can also be used to store session data. Using the database as the session store provides greater scalability and fault-tolerance (against a power event taking all servers down).

Note: You can have up to two databases: one policy database and one session database. Access Manager is agnostic with respect to the actual back end repository and does not manage this policy store configuration directly.

The policy database must be installed according to vendor instructions. The policy database is configured for use in a Oracle WebLogic Server domain using Oracle Fusion Middleware Configuration Wizard and policy store Database configuration template.

During initial deployment with the WebLogic Configuration Wizard, the following database details are requested:

- Database login ID and password
- Database Service name and location

An Administrator must extend the database with the Access Manager-specific schema using RCU, as described in Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management. Basic schema creation occurs when the RCU is invoked. The RCU prepares the database to accept Access Manager policy, password management, and session data.

Using the WebLogic Configuration Wizard you can register and test the connection to the database.

Actual Access Manager policy elements are created the first time the WebLogic AdminServer is started with the Oracle Access Management Console deployed.

> **See Also:** Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management

5.6.3 Configuring a Separate Database for Access Manager Sessions

Access Manager includes a data source named `oamDS` which is configured against the database instance extended with the Access Manager Schema. The following pre-defined Java Naming and Directory Interface (JNDI) names are used by the OAM Server to refer the data source.

```
jdbc/oamds (used by both the policy layer and session layer to access database)
```

You can use the following procedure to create a separate database instance for session data using the WebLogic Administration Console. There is no support for this action in the Oracle Access Management Console.

> **Note:** In this rare instance, Oracle recommends that you carefully edit oam-config.xml as described in Step 2f.

To create and use an independent database for session data

1. Install and configure the database for session data and then use RCU with the Access Manager-specific schema to set up the database as a session data store.
2. Create a new Data Source instance for session data:
   a. From the WebLogic Administration Console, Domain Structure panel, expand the domain name, Services node.
   b. Expand JDBC, Data Source.
   c. Create a new Data Source with the JNDI name `jdbc/oamsession`.
   d. Save the changes.
   e. Stop the OAM Servers and the AdminServer to avoid potential loss of data during the next step.
   f. In oam-config.xml, edit the value of the `DataSourceName` attribute to the one configured in step 1. For example:

      ```
      domain-home/config/fmwconfig/oam-config.xml
      ```

From:

```
<Setting Name="SmeDb" Type="htf:map">
  <Setting Name="URL" Type="xsd:string">jdbc:oracle:thin://amdb.example.
    com:2001/AM</Setting>
  <Setting Name="Principal" Type="xsd:string">amuser</Setting>
  <Setting Name="Password" Type="xsd:string">password</Setting>
  <Setting Name="DataSourceName" Type="xsd:string">jdbc/oamds</Setting>
</Setting>
```

To:

```
<Setting Name="SmeDb" Type="htf:map">
  <Setting Name="URL" Type="xsd:string">jdbc:oracle:thin://amdb.example.
    com:2001/AM</Setting>
  <Setting Name="Principal" Type="xsd:string">amuser</Setting>
  <Setting Name="Password" Type="xsd:string">password</Setting>
  <Setting Name="DataSourceName"
Type="xsd:string">jdbc/oamsession</Setting>
</Setting>
```

3. Restart AdminServer and OAM Servers.

5.7 Introduction to Oracle Access Management Keystores

This section provides the following topics:

- About Access Manager Security Keys and the Embedded Java Keystore
- About Access Manager Keystores
- About Identity Federation Keystore

5.7.1 About Access Manager Security Keys and the Embedded Java Keystore

Keystores are created and configured during Access Manager installation. The password and the key entries password were randomly generated.

The preferred keystore format is JKS (Java keystore). A Java keystore is associated with Access Manager behind the scenes and is used to store cryptographic security keys that are generated to encrypt agent traffic and session tokens:

- Every OAM Agent and OSSO Agent has a secret key that other agents cannot read.
- There is a key to encrypt Oracle Coherence-based session traffic.
- During agent and application registration, a key is generated for encrypting and decrypting SSO Cookies (for Webgates and mod_osso).

Administrators use the Oracle-provided `importcert` tool for several different procedures related to keystores, keys, and certificates, as described in Appendix C.

The WLST `resetKeystorePassword` method allows you to set the .oamkeystore password and any key entries with a password identical to the .oamkeystore password to a new value. See Oracle Fusion Middleware WebLogic Scripting Tool Command Reference.

Table 5–4 identifies the generated Access Manager cryptographic keys.

Table 5–4 Access Manager Keys and Storage

Keys and Storage	Description
Access Manager Cryptographic keys	▪ One per agent secret key shared between 11g Webgate and OAM Server One global shared secret key used by all your 10g Webgates ▪ One OAM Server key
Key storage	▪ **Agent side**: A per-agent key is stored locally in the Oracle Secret Store in a wallet file. Client keystore/scratch/clientTrustStore.jks and /scratch/clientKey.jks can be used. ▪ **OAM Server side:** .oamkeystore contains a per-agent key, and server key, are stored in the credential store on the server side.

Keystores are not accessible using the Oracle Access Management Console. You can manage keystores and certificates as described in Appendix C, "Securing Communication".

See Also: "About Identity Federation Keystore" on page 5-30

- "About Communication Between OAM Servers and Webgates" on page 6-4
- Oracle Fusion Middleware Administrator's Guide for details about the SSL automation tool and managing ports for WebLogic Server, Oracle HTTP Server, and Oracle Fusion Middleware

5.7.2 About Access Manager Keystores

Table 5–5 provides a summary of keystores used for Access Manager.

Table 5–5 Keystores for Access Manager and Security Token Service

Keystore	Description
System Keystore / Partner Keystore .oamkeystore	The container for keys and certificates associated with OAM Server instances (OAM secret keys and Security Token Service private keys for signing and encryption). The container for keys and certificates that are used to establish trust with partners, clients, and agents. The partner keys and certificates are stored in.oamkeystore with sensitive information encrypted. Only one System Keystore of type JCEKS can be present: .oamkeystore. $*DOMAIN_HOME*/config/fmwconfig/.oamkeystore The certificate alias and password can be configured using the Oracle Access Management Console. See Also: ▪ Table 36–1, " Security Token Service Settings" ▪ Chapter 37, "Managing Security Token Service Certificates and Keys"

Table 5–5 (Cont.) Keystores for Access Manager and Security Token Service

Keystore	Description
Trust Keystore amtrustkeystore	The Trust Keystore is used to validate keys and certificates presented by clients to establish trust in entities interacting with OAM Server instances. $*DOMAIN_HOME*/config/fmwconfig/amtruststore amtruststore is created during installation, and must include at least one trusted anchor. The Trust Keystore is managed by using the JRE's keytool application. Security Token Service can use a custom trust keystore. See Also: ■ "Managing the Trust Anchors Store (amtruststore)" on page 37-9 ■ "Using a Custom Trust Anchor Store for Security Token Service" on page 37-10
Certificate Revocation Lists (CRL) amcrl.jar	Certificate revocation information lists are stored in a ZIP archive on the filesystem. These are used by OAM Servers when performing CRL-based certificate revocation checking. amcrl.jar contains CRL files in the DER format: $DOMAIN_HOME/config/fmwconfig/amcrl.jar The OAM Server defines a notification listener for the Keystores and the CRL Zip file. Any changes to these files causes Security Token Service to reload the keystore/crl-zip at runtime, without requiring any restarts. amcrl.jar is created by installation and can be modified using the Oracle Access Management Console. See Also: ■ "Managing Certificate Validation and Revocation" on page 3-7 ■ "Managing Certificate Revocation Lists" on page 37-10
Oracle WSM Agent Keystore default-keystore.jks	The Oracle WSM Agent uses this keystore for various cryptographic operations. For these operations, the Oracle WSM Agent uses the keystore configured for Oracle WSM tasks. Oracle strongly recommends that the Oracle WSM Agent keystore and the Access Manager and Security Token Service keystore always be different. Otherwise, keys could be available to any modules authorized by OPSS to access the keystore and Access Manager/Security Token Service keys might be accessed. See Also: "About the Oracle Web Services Manager Keystore (default-keystore.jks)" on page 37-3
OPSS Keystore	For special cases where clients use referencing schemes such as SKI (as opposed to a certificate token being received as part of the web service request), the requester's certificates need to be populated in the OPSS Keystore. This is an uncommon scenario that requires manually provisioning keys to the OPSS keystore. See Also: ■ "About Agents and Security Token Service" on page 36-4 ■ Oracle Fusion Middleware Application Security Guide.

Table 5–5 (Cont.) Keystores for Access Manager and Security Token Service

Keystore	Description
.cohstore.jks	This is used to store the SSL Key and Certifcate that is used to encrypt SSL communication between Coherence nodes. For information on securing Coherence communications, see the *Oracle Coherence Security Guide*.

5.7.3 About Identity Federation Keystore

Identity Federation and Access Manager store key pairs and certificates that are used for digital signatures and encryption operations. Identity Federation uses keys to:

- Sign outgoing assertions
- Decrypt incoming XML encrypted data contained inside the SAML message

The following keystore is used to store the encryption and signing certificates:

```
$DOMAIN_HOME/config/fmwconfig/.oamkeystore
```

Identity Federation uses CSF to securely store keystore passwords, as well as server credentials such as HTTP Basic Authentication usernames and passwords.

See Also:

- "About Communication Between OAM Servers and Webgates" on page 6-4
- "Defining Keystore Settings for Federation" on page 32-5

5.8 Integrating a Supported LDAP Directory with Oracle Access Manager

This section describes post-installation enablement of a centralized LDAP store for use with Oracle Access Manager. Oracle Internet Directory is featured in this discussion. However, tasks are the same regardless of your chosen LDAP provider.

Oracle Access Manager addresses each user population and LDAP directory store as an identity domain. Each identity domain maps to a configured LDAP User Identity Store that is registered with Oracle Access Manager. Multiple LDAP stores can be used with each one relying on a different supported LDAP provider.

During initial WebLogic Server domain configuration, the Embedded LDAP is configured as the one and only User Identity Store for Oracle Access Manager. Within the Embedded LDAP, the Administrators group is created, with `weblogic` seeded as the default Administrator:

- Only the User Identity Store designated as the System Store is used to authenticate Administrators signing in to use the Oracle Access Management Console, remote registration, and custom administrative commands in WLST.
- Users attempting to access an OAM-protected resource can be authenticated against any store, not necessarily the only one designated as the Default User Identity Store.
- Security Token Service uses only the Default User Identity Store. When adding User constraints to a Token Issuance Policy, for instance, the identity store from which the users are to be chosen must be Default User Identity Store.

After registering a User Identity Store with Access Manager, administrators can reference the store in one or more authentication modules, which form the basis for Oracle Access Manager Authentication Schemes and Policies. When you register a

partner (either using the Oracle Access Management Console or the remote registration tool), an application domain can be created and seeded with a policy that uses the designated default Authentication Scheme. When a user attempts to access an Oracle Access Manager-protected resource, she is authenticated against the store designated by the authentication module.

For more information, see Oracle Fusion Middleware Integration Guide for Oracle Identity Management Suite.

6

Managing Server Registration

This chapter describes how to register the managed server instances that interact with Oracle Access Management. In this book, these managed servers are referred to as OAM Servers. You accomplish this task using the Oracle Access Management Console.

The following topics are included:

- Prerequisites
- Introduction to OAM Servers, Registration, and Management
- Managing Individual OAM Server Registrations

6.1 Prerequisites

Ensure that the following environmental considerations are met:

- A new Managed Server has been added to the domain using either the Oracle WebLogic Server Administration Console or WLST commands.
- The Oracle JRF Template was applied to the Managed Server (or cluster) if needed. For details, see *Oracle Fusion Middleware Administrator's Guide*.

Oracle recommends that you review "Introduction to OAM Servers, Registration, and Management".

6.2 Introduction to OAM Servers, Registration, and Management

The Oracle Access Management Console is a Java EE application that must be installed and run on the same computer as the WebLogic Administration Server. Other key applications that run on the WebLogic Administration Server include the WebLogic Server Administration Console and Enterprise Manager for Fusion Middleware Control.

> **Note:** The Oracle Access Management Console might be referred to as the OAM Administration Server. However, this is not a peer of the OAM Server deployed on a WebLogic Managed Server.

The Oracle Access Management runtime instance deployed on Oracle WebLogic Managed Servers is referred to as an OAM Server. Each OAM Server must be registered with Access Manager to enable communication with registered agents during authentication, authorization, and resource access.

Administrators can extend the WebLogic Server domain and add more OAM Server instances whenever needed, using either:

- The WebLogic Server Administration Console, after which you manually register the OAM Server instance using the Oracle Access Management Console
- The WebLogic Configuration Wizard
- Customized Oracle WebLogic Scripting Tool (WLST) commands as described in Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

The last two methods automatically register the OAM Server instance, which appears in the Oracle Access Management Console; no additional steps are required.

> **See Also:** Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.

This section introduces OAM Server instance registration and management using the Oracle Access Management Console:

- About Individual OAM Server Registrations
- About the Embedded Proxy Server and Backward Compatibility
- About 11g SSO, Legacy 10g SSO in Combination with OSSO 10g
- About Communication Between OAM Servers and Webgates

> **See Also:** Table 1–3 for a comparison of Access Manager 11g versus Oracle Access Manager 10g.

6.2.1 About Individual OAM Server Registrations

Administrators can add one or more Managed Servers to the WebLogic Server domain for Oracle Access Management.

When using the WebLogic Configuration Wizard, the OAM Server is automatically registered. However, if the configuration wizard was not used, the OAM Server must be registered manually to open a communication channel.

Alternatively. You can use custom WLST commands for OAM to display, edit, or delete a server registration Any changes are automatically propagated to the Oracle Access Management Console and to every OAM Server in the cluster.

> **See Also:** Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

Only OAM Servers are registered with Oracle Access Management. The Oracle Access Management Console (on the WebLogic Administration Server) is not registered with itself.

Regardless of the method used to register an OAM Server, details for each instance are located on the System Configuration tab, Common Configuration section in the Oracle Access Management Console, including:

- Server name, Host, Port
- Proxy: Performs as the legacy Access Server and defines the communication security mode. For more information, see:
  - About the Embedded Proxy Server and Backward Compatibility
  - About 11g SSO, Legacy 10g SSO in Combination with OSSO 10g

  - About Communication Between OAM Servers and Webgates

- Oracle Coherence: Provides a distributed cache for various OAM services, including session data.

Administrators can search for a specific instance registration, register a newly installed OAM Server, view, modify, or delete server registrations using the Oracle Access Management Console. For more information, see "About the OAM Server Registration Page" on page 6-5.

6.2.2 About the Embedded Proxy Server and Backward Compatibility

Oracle Access Management server-side components include Proxy servers to maintain backward compatibility with Oracle Access Manager 10g policy-enforcement agents (10g Webgates and Access Clients) and OracleAS SSO 10g mod_osso (known as OSSO Agents in 11g), as well as OpenSSO Agents.

Legacy 10g SSO: The OAM Proxy can accept requests from multiple Access clients concurrently and enables all Webgates and AccessGates (known as Access Clients in 11g) to interact with Access Manager. For more information, see "OAM Proxy Page" on page 6-6.

Legacy OracleAS 10g (OSSO): The integrated OSSO proxy handles token generation and validation in response to token requests during authentication using OSSO Agents with Access Manager. The OSSO proxy needs no configuration. Simply register the OSSO agent as described in Chapter 15 and Chapter 16.

> **See Also:** "About 11g SSO, Legacy 10g SSO in Combination with OSSO 10g"

6.2.3 About 11g SSO, Legacy 10g SSO in Combination with OSSO 10g

You can upgrade OracleAS SSO to use Access Manager SSO when you have a legacy deployment where Oracle Access Manager 10g is integrated and used in combination with OracleAS (OSSO) 10g.

After upgrading OSSO to use Access Manager 11g, you can have 10g Webgates operating with Access Manager 11g SSO the same deployment. In this situation, the OAM Proxy forwards requests to either the 10g Access Server or to Access Manager 11g as needed.

The Oracle Access Manager 10g ObSSOCookie is an encrypted session-based single sign-on cookie that is generated when a user authenticates successfully. The 10g ObSSOCookie stores user identity information, which you can cache if needed.

The integrated OAM Proxy supports the AES encryption algorithm of the 10g ObSSOCookie to enable backward compatibility with release 10g Webgates. The 10g Access Server can decrypt the cookie created by the OAM Proxy (and vice versa). This allows Access Manager 11g to perform authentication and Oracle Access Manager 10g to perform authorization (and vice versa).

> **Note:** An Access Manager 11g ObSSOCookie created by OAM Proxy is compatible with the 10g ObSSOCookie created by Access Server.

For more information, see "OAM Proxy Page" on page 6-6.

6.2.4 About Communication Between OAM Servers and Webgates

Communication modes for the OAP channel include:

- **Open**: Use this unencrypted mode if communication security is not an issue in your deployment.
- **Simple**: Use this Oracle-signed certificate mode if you have some security concerns, such as not wanting to transmit passwords as plain text, but you do not manage your own Certificate Authority (CA).
- **Cert**: Use if you want different certificates on OAM Servers and Webgates and you have access to a trusted third-party CA.

On each individual OAM Server registration, the security mode is defined on the Proxy tab, as described in "About the OAM Server Registration Page" on page 6-5.

Simple and Cert modes also require:

- Security passwords that are common to all OAM Servers and Webgates, as described in "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security" on page 14-6.
- Appropriately signed X.509 digital certificates, as described in Appendix C, "Securing Communication".

At least one OAM Server instance must be running in the same mode as the agent during agent registration. Otherwise, agent registration fails. After agent registration, however, you can change the communication mode of the OAM Server. Communication between the agent and server would continue to work as long as the Webgate mode is at least at the same level as the OAM Server mode or higher. The agent mode can be higher but cannot be lower. For example, of OAM Server mode is Open, agents can communicate in any of the three modes. If OAM Server mode is Simple, agents can use Simple or Cert mode. If OAM Server mode is Cert, agents must use Cert mode.

See Also: Appendix C, "Securing Communication"

6.2.5 About Restarting Servers After Configuration Changes

Most Oracle Access Management functional services take up changes made through the Oracle Access Management Console without restarting OAM Server. Table 6–1 identifies conditions that do require a server restart.

Table 6–1 Conditions Requiring Server Restart

Event	Description
Session persistence change	A change from database to in-memory (or vice versa) session persistence requires an OAM Server restart.
Oracle Coherence port number	A change to the port number requires an OAM Server restart.
Load balancer server definition	A change requires an OAM Server restart.
Managed Server port number	A change requires an OAM Server restart.
New Managed Server	Adding a new managed server to the cluster requires restarting the AdminServer to policy enable uptake. OAM Servers must be restarted to reinitialize Oracle Coherence security configuration with the new server included.

6.3 Managing Individual OAM Server Registrations

This section describes how to register and manage OAM Server instances using the Oracle Access Management Console. Topics here include:

- About the OAM Server Registration Page
- Registering a Fresh OAM Server Instance
- Viewing or Editing Individual OAM Server and Proxy Settings
- Deleting an Individual Server Registration

6.3.1 About the OAM Server Registration Page

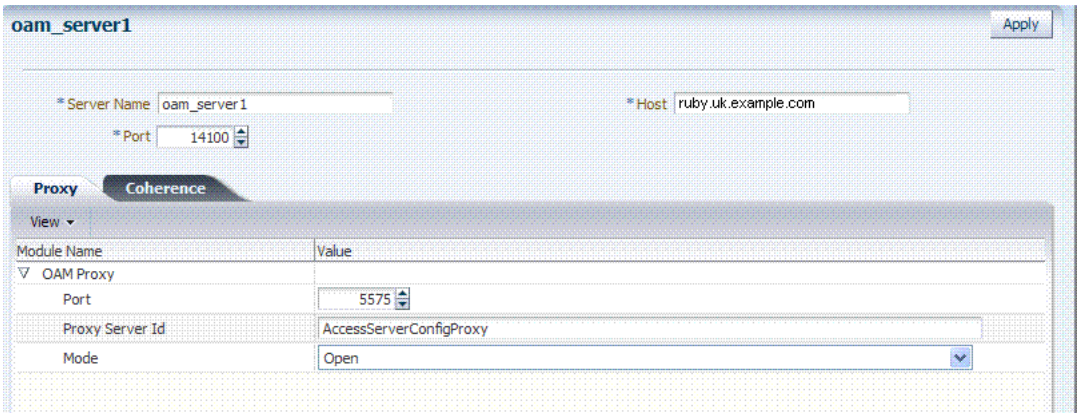
Users with valid Administrator credentials can register a freshly installed Managed Server (OAM Server instance) or modify an existing OAM Server registration using the Oracle Access Management Console.

Alternatively: You can use custom WLST commands to register and manage OAM Server instances. Changes are reflected in the Oracle Access Management Console and are automatically propagated to every OAM Server in the cluster.

> **See Also:** Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

Figure 6–1 illustrates a typical OAM Server registration page when viewed within the Oracle Access Management Console.

Figure 6–1 OAM Server Registration Page with Proxy Tab Displayed



This screen illustrates the Server Registration page. The Proxy and Coherence tabs provide additional elements to help configure your environment.

****

Individual server registration settings are described in Table 6–2.

Table 6–2 OAM Server Instance Settings

Element	Definition
Server name	The identifying name for this server instance, which was defined during initial deployment in the WebLogic Server domain.
Host	The full DNS name (or IP address) of the computer hosting the server instance. For example: *host2.domain.com*.

Table 6–2 (Cont.) OAM Server Instance Settings

Element	Definition
Port	The port on which this server communicates (listens and responds). Default: 5575 Note: If both the SSL and Open ports of the Managed Server are enabled, then the Managed Server is set to the SSL port by default. If you must use the non-SSL port, the credential collector URL of the authentication scheme must be set to the absolute URL which points to `http` as the protocol and non-SSL port. See Also: Appendix C, "Securing Communication"
Proxy	See "OAM Proxy Page" on page 6-6
Coherence	See "Coherence Page for Individual Servers" on page 6-7

See Also: "Managing Individual OAM Server Registrations" on page 6-5

6.3.1.1 OAM Proxy Page

An integrated proxy server (OAM Proxy) is installed with each Managed Server for OAM Server. The OAM Proxy is used as a legacy Access Server to provide backward compatibility for 10g Agents that are registered with Access Manager 11g. The Agent can be freshly installed or currently operating within an Oracle Access Manager 10g SSO deployment.

Each OAM Proxy instance requires a different port. The proxy starts listening when the application starts. Registered access clients can immediately communicate with the proxy.

The OAM Proxy handles both configuration and run-time events. Each OAM Proxy can accept requests from multiple access clients concurrently. Each OAM Proxy enables access clients to interact with Access Manager 11g. This includes:

- 10*g* (10.1.4.3) Webgates
- 10*g* (10.1.4.2.0) Webgates
- 10*g* (10.1.4.0.1) Webgates
- 11g Webgates (needs no proxy)

Note: For Access Clients, Access Manager 11g provides authentication and authorization functionality only. Policy modification through Access Clients is not supported.

OAM Proxy settings consist of the details in Table 6–3.

Table 6–3 OAM Proxy Settings for an Individual OAM Server

OAM Proxy Setting	Type	Value
Port	int (integer)	The unique port on which this OAM Proxy instance is listening.
Proxy Server ID		The identifier of the computer on which the OAM Proxy (and this OAM Server instance) resides. DNS hostname is preferred; however, you can use any valid and relevant string.

Table 6–3 (Cont.) OAM Proxy Settings for an Individual OAM Server

OAM Proxy Setting	Type	Value
Mode		OAM channel transport security for the OAM Proxy can be one of the following (the agent mode must match during registration and can be higher after registration): ■ Open: No encryption. ■ Simple: The data passed between the OAM Agent and OAM Server is encrypted using OAM self-signed certificates. Before specifying Simple mode, you must specify the global passphrase. ■ Cert: The data between the OAM Agent and OAM Server is encrypted using Certificate Authority (CA) signed X.509 certificates. **Note**: Before specifying Cert mode, you must acquire signed certificates from a trusted third party Certificate Authority. **Note**: Simple and Cert transport security modes are governed by information defined on the OAM Server Common Properties OAM Proxy tab, as described in "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security" on page 14-6. **See Also**: Appendix C if you are configuring Simple or Cert transport security modes.

OAM Proxy Logging: Oracle Access Management services use the same logging infrastructure as any other Oracle Fusion Middleware 11g component, as described in Chapter 9. However, OAM Proxy uses Apache log4j for logging.

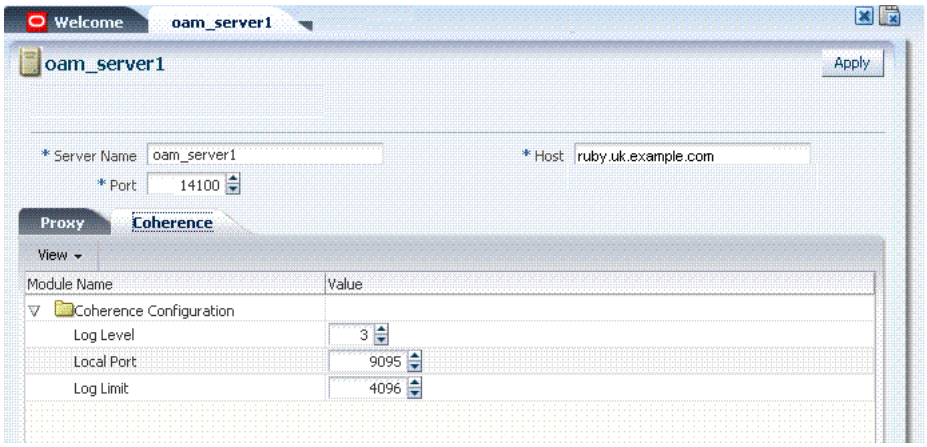
6.3.1.2 Coherence Page for Individual Servers

Coherence provides replicated and distributed (partitioned) data management and caching services on top of a reliable, highly scalable peer-to-peer clustering protocol. Coherence has no single points of failure; it automatically and transparently fails over and redistributes its clustered data management services when a server becomes inoperative or is disconnected from the network.

When a new server is added, or when a failed server is restarted, it automatically joins the cluster and Coherence fails back services to it, transparently redistributing the cluster load. Coherence includes network-level fault tolerance features and transparent soft re-start capability to enable servers to self-heal.

Coherence modules consist of the values, and types for the individual server instance, as shown in Figure 6–3.

Figure 6–2 Coherence Page and Values for an Individual OAM Server



WARNING: Oracle recommends that you do not modify Oracle Coherence settings for an individual server unless you are requested to do so by an Oracle Support Representative.

Table 6–4 Default Coherence Settings for Individual OAM Servers

Coherence Module	Type of Entry	Description and Default Values
LogLevel	String	The Coherence log level (from 0 to 9) for OAM Server events.
LogPort	int (integer)	The listening port for Coherence logging on the WebLogic Server.
LogLimit	String	The Coherence log limit

Coherence Logging: Appears only in the WebLogic Server log. There is no bridge from Oracle Coherence logging to Oracle Access Management logging. For Oracle Fusion Middleware 11g logging infrastructure details, see Chapter 8.

6.3.2 Registering a Fresh OAM Server Instance

Users with valid Administrator credentials can perform the following task to register a new Managed Server (OAM Server) instance using the Oracle Access Management Console.

Note: Each OAM Server must be registered to communicate with agents.

Prerequisites

The new Managed Server instance must be configured in the Oracle WebLogic Server domain, but not yet started.

See Also:

- Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management
- "About the OAM Server Registration Page" on page 6-5

To register an OAM Server instance

1. Install the new Managed Server instance and configure it in the Oracle WebLogic Server domain, but do not start this instance.
2. Log in to the Oracle Access Management Console.
3. Click Server Instances and then Create to open a fresh page.
4. On the Create: OAM Server page, enter details for your instance, as described in Table 6–2:
   - Server name
   - Host
   - Port
5. Proxy: Enter or select details for this OAM Proxy instance, as described in Table 6–3:
   - Port
   - Proxy Server ID
   - Mode (Open, Simple, or Cert)

   See Also: Appendix C if you are using Simple or Cert mode
6. Coherence: Oracle recommends that you do not modify Oracle Coherence settings for an individual server instance unless you are requested to do so by an Oracle Support Representative.

   See Also: "Using Coherence" on page E-28
7. Click Apply to submit the configuration, which should appear in the navigation tree (or close the page without applying changes).
8. Start the newly registered server.

6.3.3 Viewing or Editing Individual OAM Server and Proxy Settings

Users with valid Administrator credentials can perform the following task to view or modify settings for an individual server instance using the Oracle Access Management Console. For instance, you might need to change the listening port or the Proxy communication transport security mode.

Changes are immediately visible in the Oracle Access Management Console and propagated to all OAM Servers in the cluster.

See Also:

- "About the OAM Server Registration Page" on page 6-5
- Oracle Fusion Middleware WebLogic Scripting Tool Command Reference
- Moving Identity Management to a New Production Environment in the Oracle Fusion Middleware Administrator's Guide

To view or modify a server instance registration

1. From the Oracle Access Management Console, click Server Instances.

2. Double-click the desired instance name to display its configuration, and then proceed as follows:
   - View Only: Close the page when you finish viewing details.
   - Modify: Perform remaining steps to edit the configuration.
3. On the OAM Server page, change details for your instance, as described in Table 6–2.
4. **Proxy**: Change details for this OAM Proxy instance, as described in Table 6–3.

   See Also: Appendix C if you are using Simple or Cert mode

5. **Coherence**: Oracle recommends that you do not modify Oracle Coherence settings for an individual server instance unless you are requested to do so by an Oracle Support Representative.

   See Also: "Using Coherence" on page E-28

6. Click Apply to submit the changes (or close the page without applying change).

6.3.4 Deleting an Individual Server Registration

Users with valid Administrator credentials can perform the following task to delete a server registration, which disables the OAM Server.

Prerequisites

Registering a Fresh OAM Server Instance

To delete a server registration

1. From the System Configuration tab, Common Configuration section, click to expand the Server Instances node.
2. Double-click the desired instance name to confirm details, then close the page.
3. Click the desired instance name, click the Delete button in the tool bar, and confirm removal in the Confirmation window.
4. Confirm that the instance is removed from the navigation tree.
5. Finalize server instance removal by removing the instance from the WebLogic Server Administration Console.

   The Node Manager on Managed Server host handles the rest automatically.

7

Using Multi-Data Centers

Oracle Access Management Access Manager allows for distribution of directory service data by providing identical copies of said data across more than one data center. Multiple data centers provide a scalable deployment model to support access management requirements for millions of users. The Multi-Data Center topology scales horizontally - within a single data center by clustering multiple nodes or across multiple data centers. This model provides load balancing as well as failover capabilities in the case that one of the data centers goes down.

This chapter contains the following sections.

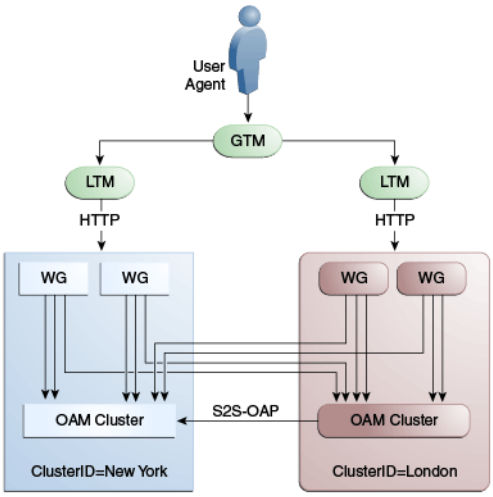
7.1 Introducing Multi-Data Center

Large organizations using Access Manager 11g typically deploy their applications in multi-data centers to distribute load as well as address data recovery. Deploying multi-data centers configures single sign-on (SSO) between them and allows for the transfer of user session details transparently. The scope of a data center comprises protected applications, WebGate agents, Access Manager servers and other infrastructure entities including identity stores and databases. (Access Manager 11g supports scenarios where applications are distributed across two or more data centers.)

The Multi-Data Center approach supported by Access Manager is a Master-Clone deployment in which the first data center is specified as the Master and clone data centers mirror it. A Master Data Center is cloned using Test-to-Production (T2P) tools to create one or more child Data Centers. See *Oracle Fusion Middleware Administrator's Guide* for information on T2P. (The T2P utility is also used to replicate Access Manager

domains used by data centers.) Figure 7–1 illustrates the Multi-Data Center system architecture.

Figure 7–1 Multi-Data Center System Architecture



A data center may include applications, data stores, load balancers and the like. Each data center includes a full Access Manager installation. The WebLogic Server domain will not span data centers. Global load balancers are configured to route HTTP traffic to the geographically closest data center. (No load balancers are used to manage Oracle Access Protocol traffic.) Additionally, they maintain user to data center affinity although session adoption allows for the creation of a user session based on the submission of a valid authentication cookie (OAM_ID) indicating that a session for the user already exists in another data center. (Session adoption may or may not involve re-authentication of the user.)

All applications are protected by WebGate agents configured against Access Manager clusters in the respective data centers. Every WebGate has a primary server and one or more secondary servers; WebGate agents in each data center have Access Manager server nodes from the same data center in the primary list and nodes from other data centers in the secondary list. It is still possible for a user request to be routed to a different data center when:

- The data center goes down.
- There is a load spike causing redistribution of traffic.
- Certain applications are deployed in only one data center.
- WebGates are configured to load balance within one data center but failover across data centers.

The following sections contain more information on how Multi-Data Center works and the topologies it supports.

- Providing a Multi-Data Center Solution
- Supported Multi-Data Center Topologies
- Understanding Access Manager Security Modes for Multi-Data Center

7.1.1 Providing a Multi-Data Center Solution

The following sections contain information on how the Multi-Data Center solution is implemented.

- Enhancing Cookies for Multi-Data Center
- Session Adoption During Authorization
- Session Indexing

7.1.1.1 Enhancing Cookies for Multi-Data Center

The following sections contain information on the SSO cookies enhanced and used by the Multi-Data Center.

- OAM_ID Cookie
- OAMAuthn / ObSSO WebGate Cookies
- OAM_GITO (Global Inactivity Time Out) Cookie

7.1.1.1.1 OAM_ID Cookie The OAM_ID cookie is the SSO cookie for Access Manager and holds the attributes required to enable the MDC behavior across all Data Centers. If a subsequent request from a user in the same SSO session is routed to a different Data Center in the Multi-Data Center topology, session adoption is triggered per the configured session adoption policies. *Session adoption* refers to the action of a Data Center creating a local user session based on the submission of a valid authentication cookie (OAM_ID) that indicates a session for the user exists in another other Data Center in the topology. (It may or may not involve re-authentication of the user.) When a user session is created in a Data Center, the OAM_ID cookie will be augmented/updated with the `clusterid` of the Data Center, a `sessionid` and the `latest_visited_clusterid`.

In Multi-Data Center deployments, OAM_ID is a host-scoped cookie. Its domain parameter is set to `login.oracle.com`, a virtual host name which is a singleton across data centers and is mapped by the global load balancer to the Access Manager servers in the Access Manager data center based on the load balancer level user traffic routing rules (for example, based on geographical affinity). The OAM_ID cookie is not accessible to applications other than the Access Manager servers.

7.1.1.1.2 OAMAuthn / ObSSO WebGate Cookies OAMAuthn is the WebGate cookie for 11g and ObSSO is the WebGate cookie for 10g. On successful authentication and authorization, a user will be granted access to a protected resource. At that point, the browser will have a valid WebGate cookie with the `clusterid:sessionid` of the servicing Data Center. If authentication followed by authorization spans across multiple Data Centers, the Data Center authorizing the user request will trigger session adoption by retrieving the session's originating `clusterid` from the WebGate cookie. After adopting the session, a new session will be created in the current Data Center with the synced session details.

Note: The WebGate cookie cannot be updated during authorization hence the newly created `sessionid` cannot be persisted for future authorization references. In this case, the remote sessionid and the local sessionids are linked through `session indexing`. During a subsequent authorization call to a Data Center, a new session will be created when:

- MDC is enabled.
- A session matching the sessionid in the WebGate cookie is not present in the local Data Center.
- There is no session with a Session Index that matches the sessionid in the WebGate cookie.
- A valid session exists in the remote Data Center (based on the MDC SessionSync Policy).

In these instances, a new session is created in the local Data Center with a Session Index that refers to the sessionid in the WebGate cookie.

7.1.1.1.3 OAM_GITO (Global Inactivity Time Out) Cookie OAM_GITO is a domain cookie set as an authorization response. The session details of the authentication process will be recorded in the OAM_ID cookie. If the authorization hops to a different Data Center, session adoption will occur by creating a new session in the Data Center servicing the authorization request and sets the session index of the new session as the incoming `sessionid`. Since subsequent authentication requests will only be aware of the clusterid:sessionid mapping available in the OAM_ID cookie, a session hop to a different Data Center for authorization will go unnoticed during the authentication request. To address this gap, an OAM_GITO cookie (which also facilitates timeout tracking across WebGate agents) is introduced.

During authorization, the OAM_GITO cookie is set as a domain cookie. For subsequent authentication requests, the contents of the OAM_GITO cookie will be read to determine the latest session information and the inactivity/idle time out values. The OAM_GITO cookie contains the following data.

- Data Center Identifier
- Session Identifier
- User Identifier
- Last Access Time
- Token Creation Time

Note: For the OAM_GITO cookie, all WebGates and Access Manager servers should share a common domain hierarchy. For example, if the server domain is `.us.example.com` then all WebGates must have (at least) `.example.com` as a common domain hierarchy; this enables the OAM_GITO cookie to be set with the `.example.com` domain.

7.1.1.2 Session Adoption During Authorization

Multi-Data Center session adoption is supported during the authorization flow. After successful authentication, the OAMAuthn cookie will be augmented with the cluster ID details of the Data Center where the authentication has taken place. During

authorization, if the request is routed to a different Data Center, the runtime does adequate checks to determine whether it is a Multi-Data Center scenario and looks for a valid remote session. If one is located, the Multi-Data Center session adoption process is triggered per the session adoption policies; a new session will be created in the Data Center servicing the authorization request.

> **Note:** Since OAMAuthn cookie updates are not supported during authorization, the newly created session's session index will be set to that of the incoming session ID.

7.1.1.3 Session Indexing

During an authorization call to a Data Center, a new session will be created in the local Data Center with a Session Index that refers to the session identifier in the OAMAuth/ObSSO cookie. This will occur under the following conditions:

- Session matching Session ID in the OAMAuth/ObSSO cookie is not present in the local Data Center.
- MDC is enabled.
- No session with Session Index matching Session ID in the OAMAuth/ObSSO cookie.
- Valid Session exists in the remote Data Center based on the MDC SessionSync Policy.

7.1.2 Supported Multi-Data Center Topologies

Access Manager supports the following Multi-Data Center topologies.

- An Active-Active topology is when Master and Clone data centers are exact replicas and active at the same time. They cater to different sets of users based on defined criteria; geography, for example. A load balancer routes traffic to the appropriate Data Center. See Section 7.1.2.1, "Active-Active Mode."

> **Note:** An Active-Active topology with agent failover is when an agent has Access Manager servers in one Data Center configured as primary and Access Manager servers in the other Data Centers configured as secondary to aid failover scenarios.

- An Active Standby-Passive topology is when the primary Data Center is operable and the clone Data Center is not but can be brought up within a reasonable time in cases when the primary data center fails. See Section 7.1.2.2, "Active Standby-Passive Mode."
- Active–Hot Standby is when one of the Data Centers is in *hot standby* mode. In this case, the Data Center will not actively be used until the other Data Center goes down. See Section 7.1.2.3, "Active-Hot Standby."

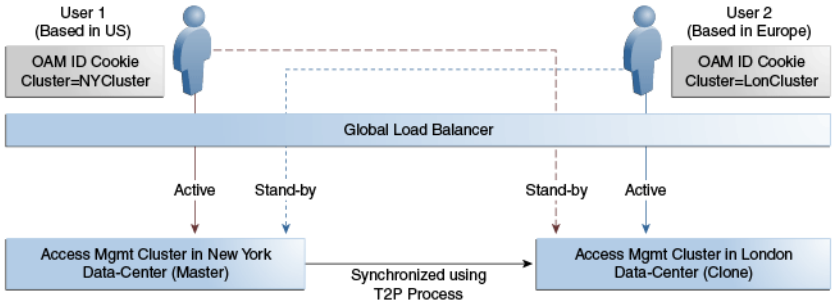
7.1.2.1 Active-Active Mode

Figure 7–2 illustrates a Multi-Data Center set up in Active-Active mode during normal operations. The New York Data Center is designated as the Master and all policy and configuration changes are restricted to it. The London Data Center is designated as a Clone and uses T2P tooling and utilities to periodically synchronize data with the New York Data Center. The global load balancer is configured to route users in different

geographical locations (US and Europe) to the appropriate data centers (New York or Europe) based on proximity to the data center (as opposed to proximity of the application being accessed). For example, all requests from US-based User 1 will be routed to the New York Data Center (NYDC) and all requests from Europe-based User 2 will be routed to the London Data Center (LDC).

> **Note:** The Access Manager clusters in this figure are independent and not part of the same Oracle WebLogic domain. WebLogic domains are not recommended to span across data centers.

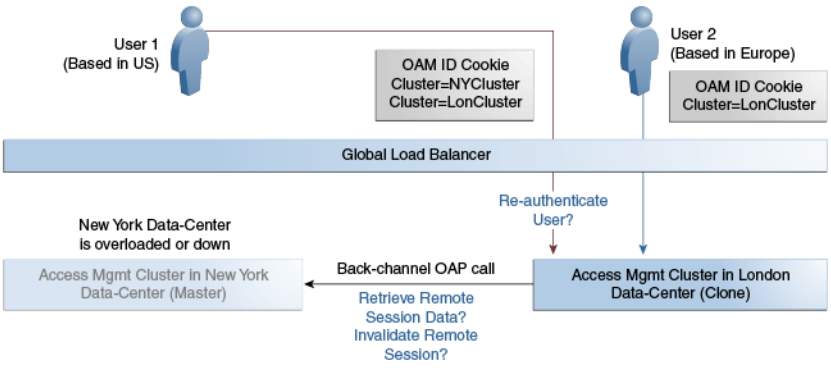
Figure 7–2 Active-Active Deployment Mode



In this example, if NYDC was overloaded with requests, the global load balancer would start routing User 1 requests to the clone Access Manager cluster in LDC. The clone Access Manager cluster can tell (from the user's OAM ID cookie) that there is a valid session in the master cluster and would therefore create a new session without prompting for authentication or re-authentication. Further, the session adoption policy can be configured such that the clone Access Manager cluster would make a back-end request for session details from the master Access Manager cluster using the Oracle Access Protocol (OAP). The session adoption policy can also be configured to invalidate the remote session (the session in NYDC) so the user has a session only in one data center at a given time.

Figure 7–3 illustrates how a user might be rerouted if the Master cluster is overloaded or down. If the Master Access Manager cluster were to go completely down, the clone Access Manager cluster would try to obtain the session details of User 1 but since the latter would be completely inaccessible, User 1 would be forced to re-authenticate and establish a new session in the clone Access Manager cluster. In this case, any information stored in the previous session is lost.

Figure 7–3 Active-Active Mode Failover



7.1.2.2 Active Standby-Passive Mode

Active-Passive Mode is when one of the data centers is passive and can be brought up within a reasonable time in case the primary data center fails.

7.1.2.3 Active-Hot Standby

Active-Hot Standby Mode is when one of the data centers is in a hot standby mode. It will not actively cater to users until the other data center goes down.

7.1.3 Understanding Access Manager Security Modes for Multi-Data Center

The MDC relies on the Oracle Access Protocol (OAP) channel for the inter data center session management operations and back channel communication. The security mode of the MDC partner profile should match the security mode defined for the Access Manager server: OPEN, SIMPLE or CERT.

> **Note:** An MDC partner profile is exposed by each data center and used by other data centers to communicate with it. Registering an MDC partner is a two step process. Consider an MDC with three data centers. In DC1, expose an MDC partner profile by creating a 10g or 11g WebGate (DC1_MDC_Partner). Then, register DC1_MDC_Partner in DC2 and DC3 using addPartnerForMultiDataCentre. See Section 7.9.3, "addPartnerForMultiDataCentre" for details.

7.1.3.1 OPEN Security Mode

This is the default mode of the Access Manager deployment. No configuration is needed. The following is a sample input properties file for use with the addPartnerForMultiDataCentre WLST command.

```
remoteDataCentreClusterId=
 <CLUSTER ID OF REMOTE DC FOR WHICH THE AGENT IS BEING ADDED>
oamMdcAgentId=
 <AGENT ID OF THE REGISTERED PARTNER IN datacenter ABOVE>
PrimaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:PrimaryHostPort=adc.example.com:5575
SecondaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:SecondaryHostPort=adc.example.com:5577
AccessClientPasswd=<ACCESS CLIENT PASSWORD OF oamMdcAgentId IN datacenter>
oamMdcSecurityMode=OPEN
agentVersion=<WEBGATE AGENT VERSION 10g or 11g>
```

```
#NA ----> Not Applicable
trustStorePath=NA
keyStorePath=NA
globalPassPhrase=NA
keystorePassword=NA
```

7.1.3.2 SIMPLE Security Mode

Follow the instructions in Appendix C.5, "Configuring Simple Mode Communication with Access Manager" to set up the Access Manager servers in SIMPLE mode. In short, create an MDC partner profile in each of the member data centers in SIMPLE mode, and add it to each of the other data centers. The following is a sample input properties file for use with the addPartnerForMultiDataCentre WLST command.

```
remoteDataCentreClusterId=
 <CLUSTER ID OF REMOTE DC FOR WHICH THE AGENT IS BEING ADDED>
oamMdcAgentId=<AGENT ID OF THE REGISTERED PARTNER IN datacenter ABOVE>
PrimaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:PrimaryHostPort=adc.example.com:5575
SecondaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:SecondaryHostPort=adc.example.com:5577
AccessClientPasswd=<ACCESS CLIENT PASSWORD OF oamMdcAgentId IN datacenter>
oamMdcSecurityMode=SIMPLE
agentVersion=<WEBGATE AGENT VERSION 10g or 11g>

#Copy the oamclient-truststore.jks & oamclient-keystore.jks from
#<DOMAIN_HOME>/output/webgate-ssl/ from 'datacenter with cluster ID
#remoteDataCentreClusterId' above into the local DC say /scratch/MDCArtifacts/ and
#refer them in the below parameters

trustStorePath=</scratch/MDCArtifacts/oamclient-truststore.jks>
keyStorePath=</scratch/MDCArtifacts/oamclient-keystore.jks>

#Use the online WLST command displaySimpleModeGlobalPassphrase() to list
#the global passphrase in SIMPLE mode. Admins can also update this in the UI
#@ System Configuration-->Access Manager-->Access Manager Settings-->
#Access Protocol-->Simple Mode Configuration-->Global Passphrase.
#globalPassPhrase & keystorePassword are the same for SIMPLE mode

globalPassPhrase=<passphrase resulted in using the above steps>
keystorePassword=<same as globalPassPhrase>
```

7.1.3.3 CERT Security Mode

Follow the instructions in Appendix C.4, "Configuring Cert Mode Communication for Access Manager" to set up the Access Manager servers in CERT mode. In short, create an MDC partner in each of the member data centers in CERT mode, and generate the 'clientTrustStore.jks' and 'clientKeyStore.jks' keystores to be used by the MDC partner using the following procedure.

1. Run the following openssl command from a Linux command prompt to generate aaa_key.pem & aaa_req.pem.

   ```
   openssl req -new -keyout aaa_key.pem -out aaa_req.pem -utf8
   ```

   Use the certreq command to generate the certificate and chain.

2. Create aaa_cert.pem using the following procedure.

   a. Open aaa_req.pem in a text editor and copy the contents.

Exclude the trailing spaces from your selection.

b. Paste the copied text into Signcsr.

Include [-----BEGIN CERTIFICATE REQUEST----- and -----END CERTIFICATE REQUEST-----].

c. Copy the output into a text editor and save it as aaa_cert.pem.

3. Create aaa_chain using the following procedure.

a. Open certreq.

b. Click on chain.pem and copy/paste the contents into a text editor and save it as aaa_chain.pem.

Excluding traiing and leading spaces from your selection.

4. Encrypt the private key (aaa_key.pem) using the following command.

```
openssl rsa -in aaa_key.pem -passin pass: -out aaa_key.pem -passout
pass:Welcome1 -des
```

The password used in this command must be defined as the access client password or agent key password while registering the MDC partner.

5. Copy aaa_key.pem, aaa_cert.pem and aaa_chain.pem to a temporary location.

For example, /tmp/clientCertArtifacts/

6. Convert aaa_cert.pem and aaa_key.pem into DER format using one of the following commands.

```
-openssl x509 -in /tmp/clientCertArtifatcs/aaa_cert.pem -inform PEM -out
 /tmp/clientCertArtifatcs/aaa_cert.der -outform DER;

-openssl pkcs8 -topk8 -nocrypt -in /tmp/clientCertArtifatcs/aaa_key.pem
 -inform PEM -out /tmp/clientCertArtifatcs/aaa_key.der -outform DER;
```

7. Import the aaa_key.der and aaa_cert.der into clientKeyStore.jks; and the aaa_chain.pem into clientTrustStore.jks with the below steps

```
-cd $IDM_HOME/oam/server/tools/importcert/;

-unzip importcert.zip;

-java -cp importcert.jar
 oracle.security.am.common.tools.importcerts.CertificateImport -keystore
 /tmp/clientCertArtifatcs/clientKeyStore.jks -privatekeyfile
 /tmp/clientCertArtifatcs/aaa_key.der -signedcertfile
 /tmp/clientCertArtifatcs/aaa_cert.der -storetype jks -genkeystore yes

-keytool -importcert -file /tmp/clientCertArtifatcs/aaa_chain.pem -trustcacerts
 -keystore /tmp/clientCertArtifatcs/clientTrustStore.jks -storetype JKS
```

Enter the keystore passwords when prompted. The password needs to be defined in the input properties file for the addPartnerForMultiDataCentre WLST command as well.

8. If not done when creating the certificates for the WebGate, import the aaa_key.der and aaa_cert.der formatted certificates into the .oamkeystore using the same Oracle provided importcert.jar used inthe previous step.

```
-java -cp importcert.jar
 oracle.security.am.common.tools.importcerts.CertificateImport
```

```
-keystore /scratch/Oracle/Middleware/domains/
base_domain/config/fmwconfig/.oamkeystore -privatekeyfile
/tmp/clientCertArtifacts/aaa_key.der -signedcertfile
/tmp/clientCertArtifacts/aaa_cert.der -alias mycertmode1 -storetype JCEKS
```

alias is the alias name defined when setting CERT mode in Access Manager.

The following is a sample input properties file for use with the addPartnerForMultiDataCentre WLST command.

```
remoteDataCentreClusterId=
 <CLUSTER ID OF REMOTE DC FOR WHICH THE AGENT IS BEING ADDED>
oamMdcAgentId=<AGENT ID OF THE REGISTERED PARTNER IN datacenter ABOVE>
PrimaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:PrimaryHostPort=adc.example.com:5575
SecondaryHostPort=<fully-qualified-host-name:OAM-port>
 for example:SecondaryHostPort=adc.example.com:5577
AccessClientPasswd=<ACCESS CLIENT PASSWORD OF oamMdcAgentId IN datacenter>
oamMdcSecurityMode=CERT
agentVersion=<WEBGATE AGENT VERSION 10g or 11g>

trustStorePath=</tmp/clientCertArtifatcs/clientTrustStore.jks >
keyStorePath=</tmp/clientCertArtifatcs/clientKeyStore.jks >

globalPassPhrase=NA

#use keystore password used for generating keystore in the previous step
keystorePassword=<keystore password given while generating keystore>
```

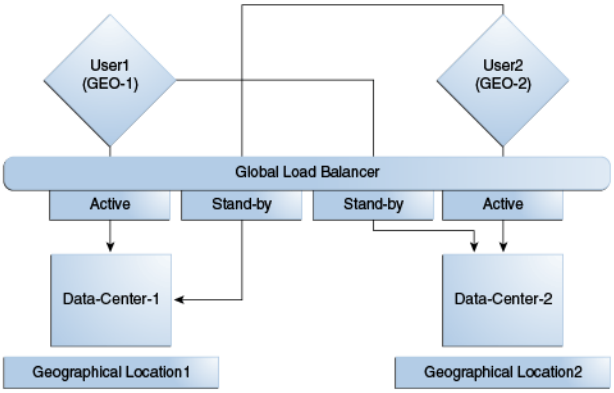
7.2 Understanding Multi-Data Center Deployments

In a Multi-Data Center deployment, each data center will include a full Access Manager installation and WebLogic Server domains will not span the Data Centers. Global load balancers will maintain user to Data Center affinity although a user request may be routed to a different Data Center:

- When the data center goes down.
- When a load spike causes redistribution of traffic.
- When each Data Center is not a mirror of the other. For example, certain applications may only be deployed in a single Data Center.
- WebGates are configured to load balance within the Data Center and failover across Data Centers.

Figure 7–4 illustrates a basic Multi-Data Center deployment.

Figure 7–4 Multi-Data Center Deployment



The following sections describe several deployment scenarios.

- Session Adoption Without Re-authentication, Session Invalidation or Session Data Retrieval
- Session Adoption Without Re-authentication But With Session Invalidation & Session Data Retrieval
- Session Adoption Without Re-authentication & Session Invalidation But With On-demand Session Data Retrieval
- Authentication & Authorization Requests Served By Different Data Centers
- Logout and Session Invalidation

Note: The OAP connection used for backchannel communication does not support load balancing or failover so a load balancer needs to be used.

7.2.1 Session Adoption Without Re-authentication, Session Invalidation or Session Data Retrieval

The following scenario illustrates the flow when the Session Adoption Policy is configured without reauthentication, remote session invalidation and remote session data retrieval. It is assumed the user has affinity with DC1.

1. User is authenticated by DC1.

   On successful authentication, the OAM_ID cookie is augmented with a unique data center identifier referencing DC1 and the user can access applications protected by Access Manager in DC1.

2. Upon accessing an application deployed in DC2, the user is routed to DC2 by a global load balancer.

3. Access Manager in DC2 is presented with the augmented OAM_ID cookie issued by DC1.

   On successful validation, Access Manager in DC2 knows that this user has been routed from the remote DC1.

4. Access Manager in DC2 looks up the Session Adoption Policy.

The Session Adoption Policy is configured without reauthentication, remote session invalidation or remote session data retrieval.

5. Access Manager in DC2 creates a local user session using the information present in the DC1 OAM_ID cookie (lifetime, user) and re-initializes the static session information ($user responses).
6. Access Manager in DC2 updates the OAM_ID cookie with its data center identifier.

   Data center chaining is also recorded in the OAM_ID cookie.
7. User then accesses an application protected by Access Manager in DC1 and is routed back to DC1 by the global load balancer.
8. Access Manager in DC1 is presented with the OAM_ID cookie issued by itself and updated by DC2.

   On successful validation, Access Manager in DC1 knows that this user has sessions in both DC1 and DC2.
9. Access Manager in DC1 attempts to locate the session referenced in the OAM_ID cookie.
   - If found, the session in DC1 is updated.
   - If not found, Access Manager in DC1 looks up the Session Adoption Policy (also) configured without reauthentication, remote session invalidation and remote session data retrieval.
10. Access Manager in DC1 updates the OAM_ID cookie with its data center identifier and records data center chaining as previously in DC2.

7.2.2 Session Adoption Without Re-authentication But With Session Invalidation & Session Data Retrieval

The following scenario illustrates the flow when the Session Adoption Policy is configured without reauthentication but with remote session invalidation and remote session data retrieval. It is assumed the user has affinity with DC1.

1. User is authenticated by DC1.

   On successful authentication, the OAM_ID cookie is augmented with a unique data center identifier referencing DC1.
2. Upon accessing an application deployed in DC2, the user is routed to DC2 by a global load balancer.
3. Access Manager in DC2 is presented with the augmented OAM_ID cookie issued by DC1.

   On successful validation, Access Manager in DC2 knows that this user has been routed from the remote DC1.
4. Access Manager in DC2 looks up the Session Adoption Policy.

   The Session Adoption Policy is configured without reauthentication but with remote session invalidation and remote session data retrieval.
5. Access Manager in DC2 makes a back-channel (OAP) call (containing the session identifier) to Access Manager in DC1 to retrieve session data.

   The session on DC1 is terminated following data retrieval. If this step fails due to a bad session reference, a local session is created as documented in Section 7.2.1,

"Session Adoption Without Re-authentication, Session Invalidation or Session Data Retrieval."

6. Access Manager in DC2 creates a local user session using the information present in the OAM_ID cookie (lifetime, user) and re-initializes the static session information ($user responses).
7. Access Manager in DC2 rewrites the OAM_ID cookie with its own data center identifier.
8. The user then accesses an application protected by Access Manager in DC1 and is routed to DC1 by the global load balancer.
9. Access Manager in DC1 is presented with the OAM_ID cookie issued by DC2.

   On successful validation, Access Manager in DC1 knows that this user has sessions in DC2.
10. Access Manager in DC1 makes a back-channel (OAP) call (containing the session identifier) to Access Manager in DC2 to retrieve session data.

    If the session is found, a session is created using the retrieved data. If it is not found, the OAM Server in DC1 creates a new session. The session on DC2 is terminated following data retrieval.

7.2.3 Session Adoption Without Re-authentication & Session Invalidation But With On-demand Session Data Retrieval

Multi-Data Center supports session adoption without re-authentication except that the no-local session are not terminated and the local session is created using session data retrieved from the remote DC. Note that the OAM_ID cookie is updated to include an attribute that indicates which data center is currently being accessed.

7.2.4 Authentication & Authorization Requests Served By Different Data Centers

Consider a scenario where an authentication request is served by the New York Data Center (NYDC) but the authorization request is presented to the London Data Center (LDC) because of user affinity. If Remote Session Termination is enabled, the scenario requires a combination of the OAM_ID cookie, the OamAuthn/ObSSO authorization cookie and the GITO cookie to perform the seamless Multi-Data Center operations. This flow (and Figure 7–5 following it) illustrates this. It is assumed that the user has affinity with NYDC.

1. Upon accessing APP1, a user is authenticated by NYDC.

   On successful authentication, the OAM_ID cookie is augmented with a unique data center identifier referencing NYDC. The subsequent authorization call will be served by the primary server for the accessed resource, NYDC. Authorization generates the authorization cookie with the NYDC identifier (cluster-id) in it and the user is granted access to the APP1.
2. User attempts to access APP2 in LDC.
3. The Webgate for APP2 finds no valid session in LDC and initiates authentication.

   Due to user affinity, the authentication request is routed to NYDC where seamless authentication occurs. The OamAuthn cookie contents are generated and shared with the APP2 Webgate.
4. The APP2 Webgate forwards the subsequent authorization request to APP2's primary server, LDC with the authorization cookie previously generated.

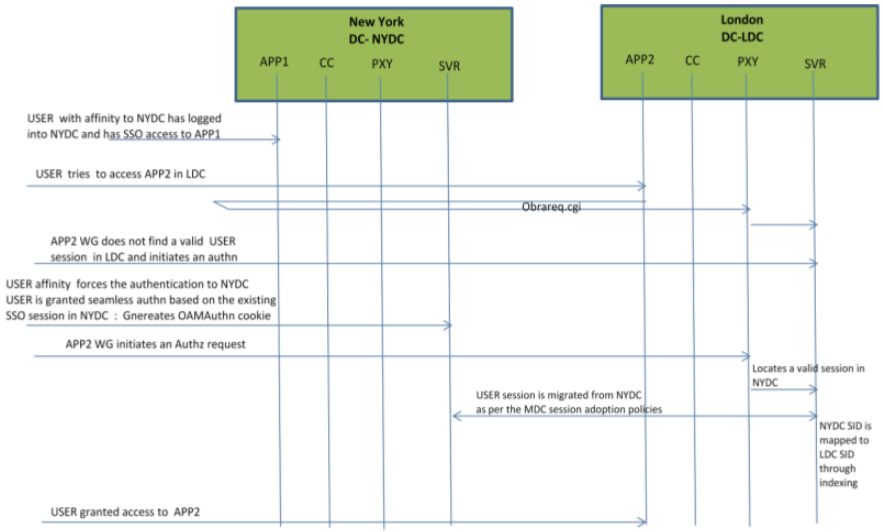
During authorization, LDC will determine that this is a Multi-Data Center scenario and a valid session is present in NYDC. In this case, authorization is accomplished by syncing the remote session as per the configured session adoption policies.

5. A new session is created in LDC during authorization and the incoming session id is set as the new session's index.

   Subsequent authorization calls are honored as long as the session search by index returns a valid session in LDC. Each authorization will update the GITO cookie with the cluster-id, session-id and access time. The GITO cookie will be re-written as an authorization response each time.

   lf a subsequent authentication request from the same user hits NYDC, it will use the information in the OAM_ID and GITO cookies to determine which Data Center has the most current session for the user. The Multi-Data Center flows are triggered seamlessly based on the configured Session Adoption policies.

Figure 7–5 Requests Served By Different Data Centers



7.2.5 Logout and Session Invalidation

In Multi-Data Center scenarios, logout ensures that all server side sessions across Data Centers and all authentication cookies are cleared out. For session invalidation, termination of a session artifact over the back-channel will not remove the session cookie and state information maintained in the Webgates. However, the lack of a server session will result in an Authorization failure which will result in re-authentication. In the case of no session invalidation, the logout clears all server side sessions that are part of the current SSO session across Data Centers. This flow (and Figure 7–6 following it) illustrates logout. It is assumed that the user has affinity with NYDC.

1. User with affinity to NYDC gets access to APP1 after successful authentication with NYDC.
2. User attempts to access APP2.

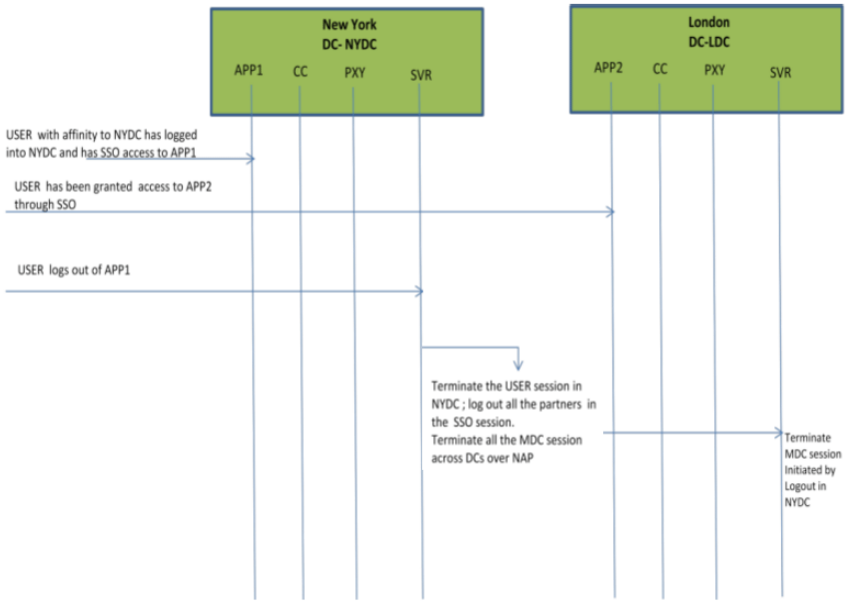
   At this point there is a user session in NYDC as well as LDC (refer to section 2.4.5) as part of SSO.
3. User logs out from APP1.

Due to affinity, the logout request will reach NYDC.

4. The NYDC server terminates the user's SSO session and logs out from all the SSO partners.
5. The NYDC server sends an OAP terminate session request to all relevant Data Centers associated with the SSO session - including LDC.

   This results in clearing all user sessions associated with the SSO across Data Centers.

Figure 7–6 Logout and Session Invalidation



7.3 Before Deploying Multi-Data Centers

The following pre-requisites must be satisfied before deploying Multi-Data Centers.

- All Data Center clusters must be front ended by a single Load Balancer. The load balancer should send all requests in a user session consistently to the same backend server (persistence, stickiness) and it should be route traffic geographically (geo-affinity).
- Clocks on the machines in which Access Manager and agents are deployed must be in sync. Non-MDC Access Manager clusters require the clocks of WebGate agents be in sync with Access Manager servers. This requirement applies to the MDC as well. If the clocks are out of sync, token validations will not be consistent resulting in deviations from the expected behaviors regarding the token expiry interval, validity interval, timeouts and the like.
- The identity stores in a Multi-Data Center topology must have the same Name.
- The first Data Center is designated as Master and will be cloned (using T2P tools) for additional Data Centers.
- All configuration and policy changes are propagated from the Master to the Clone using the WLST commands provided as part of the T2P Tooling.

- Each Data Center is a separate WebLogic Domain and the install topology is the same.
- Any firewall between these Data Centers must allow communication over the OAP channel between the data centers.
- Partners (WebGates or agents) are anchored to a single Data Center. Partner registration is done at the individual Data Centers.

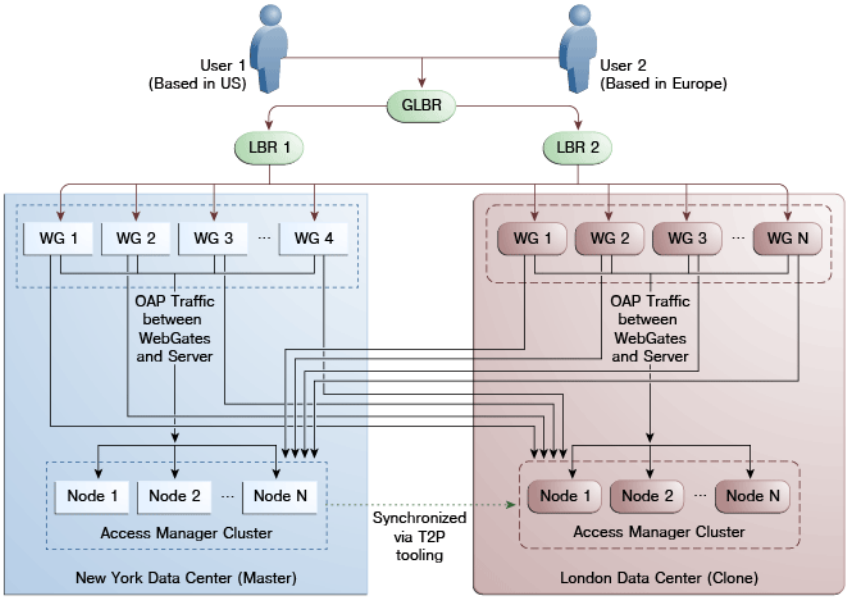
7.4 Deploying Multi-Data Centers

An Active-Active topology is when Master and Clone Data Centers are exact replicas of each other (including applications, data stores and the like). They are active at the same time and cater to different sets of users based on defined criteria - geography, for example. A load balancer routes traffic to the appropriate Data Center. Identical Access Manager clusters are deployed in both locales with New York designated as the Master and London as the Clone.

Note: An Active-Active topology with agent failover is when an agent has Access Manager servers in one Data Center configured as primary and Access Manager servers in the other Data Centers configured as secondary to aid failover scenarios.

Figure 7–7 illustrates the topology for a Multi-Data Center deployment in Active-Active mode. The New York Data Center is designated as the Master and all policy and configuration changes are restricted to it. The London Data Center is designated as a Clone and uses T2P tooling and utilities to periodically synchronize data with the New York Data Center. The global load balancer is configured to route users in different geographical locations (US and Europe) to the appropriate data centers (New York or Europe) based on proximity to the data center (as opposed to proximity of the application being accessed). For example, all requests from US-based User 1 will be routed to the New York Data Center (NYDC) and all requests from Europe-based User 2 will be routed to the London Data Center (LDC).

Figure 7–7 Active-Active Topology



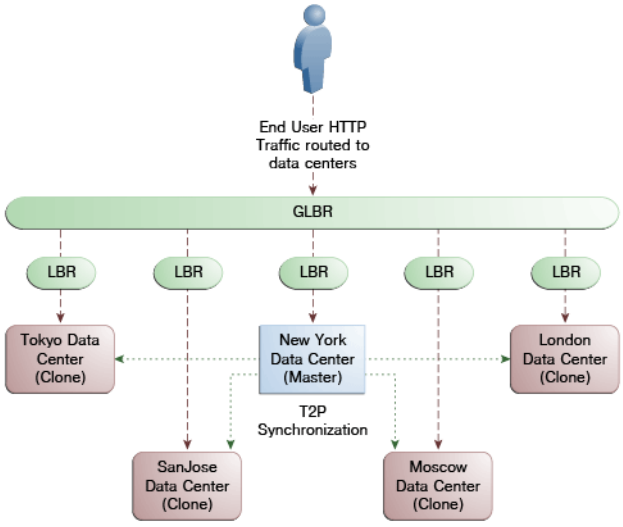
The Global Load Balancer is configured for session stickiness so once a user has been assigned to a particular data center, all subsequent requests from that user would be routed to the same data center. In this example, User 1 will always be routed to the New York Data Center and User 2 to the London Data Center.

User requests in the respective data centers are intercepted by different WebGates depending on the application being accessed. Each WebGate has the various nodes of the Access Manager cluster within the same data center configured as its primary servers. In this case, the WebGates load balance and failover the local data center.

Note: Administrators have the flexibility to configure the primary servers for every WebGate in different orders based on load characteristics. Running monitoring scripts in each data center will detect if any of the Access Manager components – the WebGates or the servers – are unresponsive so administrators can reconfigure the load balancers to direct user traffic to a different data center.

Any number of Clone data centers can be configured to distribute the load across the globe. The only condition is that all Clone data centers are synchronized from a single Master using T2P. Figure 7–8 below depicts an Active-Active Multi-Data Center deployment across five data centers.

Figure 7–8 Active-Active Topology Across Multiple Data Centers



7.5 Load Balancing Between Access Management Components

The topology described earlier shows global and local load balancers for routing the end user HTTP traffic to various data centers. Additionally, customers can choose to deploy load balancers between the access manager components to simplify the configuration of the access manager components by using virtual host names. For example, instead of configuring the primary servers in each WebGate in the NYDC as ssonode1.ny.acme.com, ssonode2.ny.acme.com and so on, they can all point to a single virtual hostname like sso.ny.acme.com and the load balancer will resolve the DNS to direct them to various nodes of the cluster. However, while introducing a load balancer between Access Manager components, there are a few constraining requirements to keep in mind.

- OAP connections are persistent and need to be kept open for a configurable duration even while idle.
- The WebGates need to be configured to recycle their connections proactively prior to the Load Balancer terminating the connections, unless the Load Balancer is capable of sending TCP resets to both the Webgate and the server ensuring clean connection cleanup.
- The Load Balancer should distribute the OAP connection uniformly across the active Access Manager Servers for each WebGate (distributing the OAP connections according the source IP), otherwise a load imbalance may occur.

Figure 7–9 illustrates a variation of the deployment topology with local load balancers (LBR 3 and LBR 4) front ending the clusters in each data center. These local load balancers can be Oracle HTTP Servers (OHS). The OAP traffic still flows between the WebGates and the Access Manager clusters within the data center but the load balancers perform the DNS routing to facilitate the use of virtual host names.

Figure 7–9 Load Balancing Access Manager Components

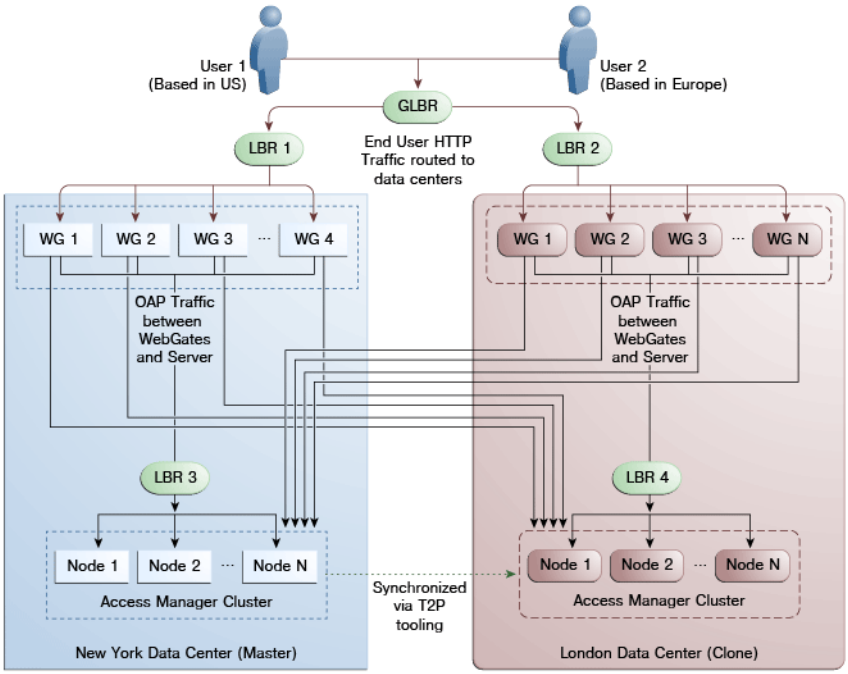
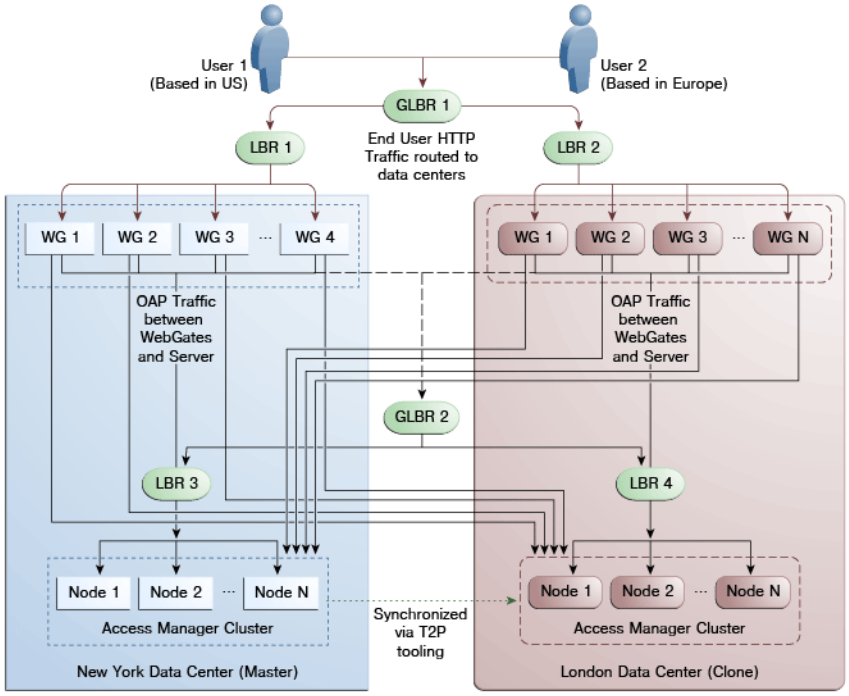


Figure 7–10 illustrates a second variation of the deployment topology with the introduction of a global load balancer (GLBR2) to front end local load balancers (LBR3 and LBR4). In this case, the hostnames can be virtualized not just within the data center but across the data centers. The WebGates in each data center would be configured to load balance locally but fail over remotely. One key benefit of this topology is that it guarantees high availability at all layers of the stack. Even if the entire Access Manager cluster in a data center were to go down, the WebGates in that data center would fail over to the Access Manager cluster in the other data center.

Figure 7–10 Global Load Balancer Front Ends Local Load Balancer



For information on monitoring Access Manager server health with a load balancer in use, see Section 12.7, "Monitoring the Health of an Access Manager Server."

7.6 Setting Up A Multi-Data Center

The MDC feature is disabled by default. To deploy an Access Manager MDC, start with an Access Manager cluster, set all MDC global configurations and designate the cluster as the Master Data Center. This procedure includes running the commands documented in Section 7.9, "WLST Commands for Multi-Data Centers."

> **Note:** See *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for information on the WebLogic Scripting Tool.

From the Master, clone the required number of Data Centers using the T2P process explained in the following documents.

- See *Oracle Fusion Middleware Administrator's Guide* for information on T2P when using WebLogic Server.
- See *Oracle Fusion Middleware Third-Party Application Server Guide for Oracle Identity and Access Management* for information on T2P when using Websphere Server.

The following procedure contains more details.

1. Set up the primary Access Manager Data Center and designate it as the Master.

   This Multi-Data Center can be an existing Access Manager cluster or a vanilla installation. The Access Manager bootstrap assigns a unique `clusterId` to the Access Manager cluster. To set a custom clusterId, use the `setMultiDataCentreClusterName` WLST command documented in Section 7.9.7, "setMultiDataCentreClusterName."

a. Perform the basic configurations.

This includes setting up the LDAP store, and configuring the security mode [SIMPLE/CERT].

b. Enable MDC by running the `enableMultiDataCentreMode` WLST command.

This applies the global configurations.

c. Configure the global load balancer.

d. Validate the MDC configuration by running the `validateMDCConfig()` WLST command.

e. Restart the Admin server.

f. Designate this Access Manager cluster as the Master Data Center.

enableMultiDataCentreMode sets an Access Manager cluster as Master, by default. To explicitly set the DC type, use the `setMultiDataCenterType` WLST command.

g. Deploy any applications and WebGates to the Data Center.

2. Clone the required number of clusters from the Master Data Center using the T2P process.

Note: This step contains the cloning procedure for R2PS1. If using R2PS2, do the following:

- Run the rcu to create the schema required for Access Manager on the target data center database.
- Skip step a.
- Export the Access Manager and OPSS data by running the copyConfig command (as designated below) with the additional `-opssDataExport true` argument.

```
./copyConfig.sh -javaHome $JAVA_HOME -archiveLoc
 $T2P_HOME/oamt2pConfig.jar
 -sourceDomainLoc $WL_DOMAIN_HOME -sourceMWHomeLoc
 $MW_HOME -domainHostName name.example.com
 -domainPortNum 7001
 -domainAdminUserName weblogic
 -domainAdminPassword $T2P_HOME/t2p_domain_pass.txt
 -silent true -ldl $T2P_HOME/oam_cln_log_config
 -opssDataExport true -debug true;
```

---

a. **R2PS1 Step Only**: Before you begin cloning an Access Manager R2PS1 data center, move the OPSS data from the source database to the target. Instructions for performing this procedure can be found in the *Oracle Fusion Middleware Administrator's Guide*.

b. After moving the OPSS data, copy the Access Manager from the source test machine to the target production server using the following three sets of commands.

On the Source Test machine, run:

```
export JAVA_HOME=/scratch/11gR2_Refresh/jRockit;
export MW_HOME=/scratch/R2PS2RC4Refresh/Middleware;
export T2P_HOME=/scratch/R2PS2RC4Refresh/T2P;
```

```
export WL_DOMAIN_HOME=$MW_HOME/user_projects/domains/base2_domain;

cd $MW_HOME/oracle_common/bin/;

  Note : For the copyBinary command the Admin and
  managed servers can be running or stopped

./copyBinary.sh -javaHome $JAVA_HOME -archiveLoc $T2P_HOME/oamt2pbin.jar
 -sourceMWHomeLoc $MW_HOME -idw true
 -ipl $MW_HOME/oracle_common/oraInst.loc
 -silent true -ldl $T2P_HOME/oam_cln_log;

  Note : For the copyConfig command the Admin and managed servers
  should be up and running; see note above when running R2PS2

./copyConfig.sh -javaHome $JAVA_HOME -archiveLoc $T2P_HOME/oamt2pConfig.jar
 -sourceDomainLoc $WL_DOMAIN_HOME -sourceMWHomeLoc
 $MW_HOME -domainHostName name.example.com -domainPortNum 7001
 -domainAdminUserName weblogic
 -domainAdminPassword $T2P_HOME/t2p_domain_pass.txt
 -silent true -ldl $T2P_HOME/oam_cln_log_config -debug true;

cp $MW_HOME/oracle_common/bin/pasteBinary.sh $T2P_HOME;
cp $MW_HOME/oracle_common/jlib/cloningclient.jar $T2P_HOME;
cp $MW_HOME/oracle_common/oraInst.loc $T2P_HOME;
```

On the target production server, run:

```
export JAVA_HOME=/scratch/PSFE_T2P_FINAL/jRockit/jRockit;
export MW_HOME=/scratch/PSFE_T2P_FINAL/Middleware;
export T2P_HOME=/scratch/PSFE_T2P_FINAL/T2P/T2P;
export WL_DOMAIN_HOME=
 /scratch/PSFE_T2P_FINAL/Middleware/user_projects/domains/base15_domain;
```

Make a directory and copy the contents of $T2P_HOME on the source machine to this directory. Use the appropriate copy command for the target environment.

```
mkdir -p $T2P_HOME
cp -r /net/slc02ozn/$T2P_HOME/* $T2P_HOME
cd $T2P_HOME

./pasteBinary.sh -javaHome $JAVA_HOME -al /scratch/T2P_FIX/oamt2pbin.jar
 -tmw $MW_HOME -silent true -idw true -esp false
 -ipl /scratch/T2P_FIX/oraInst.loc -ldl /scratch/T2P_FIX/oam_cln_log_p
 -silent true

cd $MW_HOME/oracle_common/bin

./extractMovePlan.sh -javaHome $JAVA_HOME -al $T2P_HOME/oamt2pConfig.jar
 -planDirLoc $T2P_HOME/moveplan/

cp $T2P_HOME/moveplan/moveplan.xml $T2P_HOME/moveplan/moveplan.org
```

Also on the target production server, before running this pasteConfig command, the moveplan.xml just extracted must be updated with the host and port details of the Target Machine as well as the DATA SOURCE details. Be sure that the moveplan modifications are reviewed carefully and

the Target machine details are verified before running the following pasteConfig command.

```
./pasteConfig.sh -javaHome $JAVA_HOME
 -archiveLoc $T2P_HOME/oamt2pConfig.jar -targetMWHomeLoc $MW_HOME
 -targetDomainLoc $WL_DOMAIN_HOME
 -movePlanLoc $T2P_HOME/moveplan/moveplan.xml
 -domainAdminPassword $T2P_HOME/t2p_domain_pass.txt
 -ldl $T2P_HOME/oam_cln_log_paste_p -silent true
```

After these steps, the Access Manager Clone Cluster is set up and the Admin Server started and running. The managed servers can be started as needed.

3. Perform the following configurations for the clones created in the previous step.

   a. Set a unique `clusterId` for all Clone Data Centers using the `setMultiDataCentreClusterName` WLST command.

   ```
   setMultiDataCentreClusterName(clusterName="LonCluster")
   ```

   The T2P process copies the Master `clusterId` to all clones.

   b. Use the `addPartnerForMultiDataCentre` WLST command to configure and register the MDC partners in all of the member Data Centers (Master and Clones).

   Note: An MDC partner profile is exposed by each data center and used by other data centers to communicate with it. Registering an MDC partner is a two step process. Consider an MDC with three data centers. In DC1, expose an MDC partner profile by creating a 10g or 11g WebGate (DC1_MDC_Partner). Then, register DC1_MDC_Partner in DC2 and DC3 using addPartnerForMultiDataCentre. See Section 7.9.3, "addPartnerForMultiDataCentre" for details.

   c. Open the necessary firewall ports in the Clone Data Centers to allow back channel communication (required for onDemand session data retrieval).

   d. Deploy any applications and WebGates to the Clone Data Centers.

   Note: In cases of load balancing based on the user's affinity, the load balancer decides the target Data Center against which the authentication will occur so an authentication request initiated by a given WebGate can reach any of the member Data Centers. Thus, the WebGate profiles need to be uniformly present across the member Data Centers even though the applications are deployed selectively across Data Centers. To sync this WebGate specific data following T2P, use the exportPartners/importPartners and exportPolicy/importPolicy WLST commands.

4. Distribute the changes to all the member Data Centers using T2P commands.

5. Mark the member Data Centers as write protected by designating them as Clone and read-only using the `setMultiDataCenterType` and `setMultiDataCenterWrite` WLST commands.

7.7 Syncing Multi-Data Centers

The Multi-Data Center infrastructure can be configured to keep Access Manager data synchronized across multiple data centers. Previously, replication was addressed using T2P tooling to setup the Master and Clones and any further changes are applied using the WLST commands. In this 11gR2 release introduces Automated Policy Synchromization (APS), an automated replication mechanism that removes administrator and manual intervention from the data synchronization process. (The T2P tooling and WLST command procedure used previous to this release is still available.

Note: Policy, system configuration and partner metadata will to be synchronized

When syncing data centers using APS, the following may occur:

- Establishment of a replication agreement with the registration of one data center as a replication clone and another in a separate geographical location as its master; the changes are pulled and applied to the clone.
- Definition of data center specific configurations which may not be replicated across data centers.
- Tracking of Access Manager configuration changes in each data center and querying the current replication state in any of the data centers.
- Generation of a changelog which can be applied in the context of a similar setup running in another data center.
- Trigger of a pull from a master data center if there is a need; for example, if automated replication fails.
- Replication of Access Manager configuration artifacts in Master-Clone model.

The following sections contain additional details.

- How Automated Policy Synchronizaton Works
- Understanding the Replication Agreement
- Enabling the Replication Service

7.7.1 How Automated Policy Synchronizaton Works

Automated Policy Synchronization works in a master-clone topology. In this topology, multiple clones pull changes from a single master. One Data Center is defined by the administrator as the master and one or more other Data Centers work as clones. The administrator makes changes to the master and the clones replicate them. Only master to clone replication is supported; changes to clones will not be replicated back to the master.

Note: Multi-master replication is not supported.

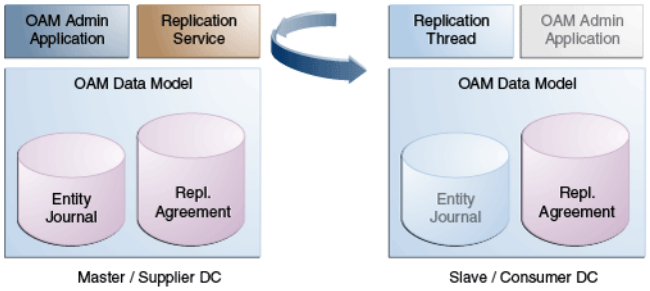
To partake in APS, the supplier data center (initiater of the replication) and the clone data center (receiver of the changes) must have a Replication Agreement stored in the Access Manager data store. (APS is optional; administrator initiated import and export based replication is still available.) Table 7–1 documents the states in which APS can be deployed.

Table 7–1 Automated Policy Synchronization - States of Replica

State	Definition
Active	An Access Manager domain (inlcuding Admin and managed servers) is setup to serve access requests. In an active state, the Access Manager server provides the web access management functionalities without additional MDC features.
Bootstrapping	This state is optional for some Data Centers; for example, the first one in an MDC topology. A Data Center goes through this intermediate state when added to an existing MDC topology. The new DC contacts the master and bootstraps itself to the same state. The bootstrap includes synchronizing the server keys, policy artifacts, partners, and system configuration. After completion of bootstrapping, the DC will be Replication Ready.
Replication Ready	In this state, MDC is enabled, the DC is made part of the topology, and the replication service is enabled. Once enabled, a clone can be registered with the master via a Replication Agreement. Once established, clone DCs can query and start pulling changelogs from the master.

Figure 7–11 illustrates the flow of Automated Policy Synchronization.

Figure 7–11 Automated Policy Synchronization Flow



7.7.2 Understanding the Replication Agreement

APS replicates configuration changes (defined as *journals*) from a Master node to Clone nodes. On receiving the journals, each node updates it's configuration to match the journal and remains in the synchronized state. The nodes, though, need to enter a replication agreement to receive change journals.

When a new data center is added to an existing MDC topology, it has to bootstrap itself to be in sync with the existing data centers. This bootstrap operation will get the current Access Manager policies, system configuration, partner metadata and server keys for the existing MDC topology. After the bootstrap operation, the new data center captures the last change sequence number from the topology's master so that during replication it can be used to determine the current state.

Note: Automated bootstrap is the ideal scenaro but (in R2PS2) you can execute T2P tooling first to ensure the Master configuration and Clones are in the same state. Following this, APS can be enabled and setup for sync. See Enabling the Replication Service for details.

To establish replication, the clone data center must know the supplier's change log sequence number. If the data center is added to the topology on 'day 0' and the replication agreement was created on 'day N', there is a need to bootstrap again. To avoid this and to keep the flow simple, creating a replication agreement should take care of the bootstrap and actual replication agreement creation. See Enabling the Replication Service for details.

7.7.3 Enabling the Replication Service

The Replication Service is a set of REST API. The binaries are installed as part of the Access Manager application and deployed in AdminServer. It is disabled by default but can be enabled by setting the `oracle.oam.EnableMDCReplication` property to true. After enabling the service, create a pull model Replication Agreement between the clone data center and the master. The clone polls for changes from the master as long as the replication agreement is valid for it. The master will respond to the clone's request as long as it finds a valid replication agreement. The clone pulls changes from the master and applies them locally.

Note: To verify that the replication REST services are available, access the following hello REST end point.

```
curl -u <user>
'https://oam1.example.com:7002/oam/services/rest/_
 replication/hello'
```

The following sections contain details on how to use the REST API provided by Access Manager. They need to be executed at the master data center's end point.

- Setting Up Replication Using REST
- Querying for Replication Agreement Details
- Modifying an Existing Replication Agreement
- Deleting a Replication Agreement

7.7.3.1 Setting Up Replication Using REST

The example in this section assumes that DC1 is the master located at oam1.oracle.com. DC2 is cloned from DC1 using the T2P process and is located at oam2.oracle.com.

Note: For replication, the partnerInfo.properties file used for WLST input should have an additional `RESTEndpoint` property (sample below). Its value is the HTTP endpoint for invoking replication related REST services. See addPartnerForMultiDataCentre.

```
remoteDataCentreClusterId=DC1
oamMdcAgentId=DC1Partner
PrimaryHostPort=dc1.oracle.com:5575
SecondaryHostPort=dc1.oracle.com:5576
AccessClientPasswd=secret
oamMdcSecurityMode=OPEN
trustStorePath=NA
keyStorePath=NA
globalPassPhrase=NA
keystorePassword=NA
agentVersion=11g
RESTEndpoint=https://oam1.oracle.com:443
```

This following REST request will:

- Insert an entry in the Master's replication agreement store that contains details regarding the clone that wants to pull changes.
- Insert an entry in the Clone's replication agreement store that contains details regarding the master and values like the poll interval.

```
POST http://oam1.oracle.com/oam/services/rest/_replication/setup HTTP/1.1
Content-Type: application/json
{"name":"DC12DC2", "source":"DC1","target":"DC2","documentType":"ENTITY"}
```

Note: The REST end point can be an HTTP or HTTPS URL. HTTPS is preferred.

In response to this REST request, the Master provides its starting sequence number for the changelog repository. The starting sequence number is used to update the Clone's replication agreement to the sequence number from which the replication will occur. The identifier returned is used for replication related queries.

```
{"enabled":"true","identifier":"201312040602298762","ok":"true","pollInterval":"60
","startingSequenceNumber":"10","state":"READY"}
```

In the previous example, all records before the value of the startingSequenceNumber (10) are not available. It is implicit that the bootstrap happened before creating the replication agreement and the Clone can start pulling changes from sequence number 10. The Clone also has an entry created in its local replication table which keeps track of the last sequence number

Note: The Weblogic user and password will be used for authentication when replication polling happens from the Clone to the Master. To call a different user for replication, a valid basic authorization header can be provided for the Clone. In the following example, 'replicationuser' and 'secret' are user and password (respectively) and "BASIC cmVwbGljYXRpb251c2VyOnNlY3JldA==" is the basic header (base64 encrypted with user and password) to be used for REST calls. User details will be seeded to both the Master and Clone.

```
curl -u weblogic:welcome1 -H 'Content-Type: application/json'
 -X POST 'http://adc1140321.example.com:7001/oam/services/rest
 /_replication/setup' -d
 '{"source":"DC1","target":"DC2","documentType":"ENTITY",
 "config":{"entry":{"key":"authorization",
 "value":"BASIC cmVwbGljYXRpb251c2VyOnNlY3JldA==}}}'
```

The replication agreement needs to be done for each Master-Clone pair. Once finished, Clones may periodically start pulling changes from their Master. See Understanding the Replication Agreement. After replication is enabled, in both Master and Clone data centers, execute the addPartnerForMultiDataCentre WLST command for each of master and clone node to register all as MDC partners.

7.7.3.2 Querying for Replication Agreement Details

A REST request can be executed at the Master data center's endpoint to query the details of the replication agreement between a Master and a Clone. To query details of a Master, use the following:

```
GET http://oam1.oracle.com/oam/services/rest/_replication/201312040602298762
HTTP/1.1
Content-Type: application/json
```

To query details of a clone, use the following:

```
GET http://oam1.oracle.com/oam/services/rest/_
replication/201312040602298762?type=clone HTTP/1.1 HTTP/1.1
Content-Type: application/json
```

7.7.3.3 Modifying an Existing Replication Agreement

Replication Agreement properties (enabled status, poll interval and the like) can be updated by executing the following REST API at the Master data center's endpoint. Either the master or clone replication agreement will be updated as specified by the value of the replicaType parameter. The default value for the pollInterval parameter for a clone is 900 seconds. The clone will poll for changes, apply them and wait the specified duration.

```
PUT http://oam1.oracle.com/oam/services/rest/_replication/201312040602298762
HTTP/1.1
Content-Type: application/json
{"enabled":"false","pollInterval":"60","replicaType":"clone"}
```

This example will disable the clone replication agreement and change the poll interval to '60' seconds. If a value for replicaType is not defined (or it is mentioned as SUPPLIER) the master's replication agreement will be updated.

7.7.3.4 Deleting a Replication Agreement

A replication agreement can be deleted by executing the following REST API at the master DC's endpoint. Replication Agreements that are currently active and in use cannot be deleted until the master and clone have been disabled.

```
DELETE http://oam1.oracle.com/oam/services/rest/_replication/
 201312040602298762 HTTP/1.1
```

7.8 Understanding Time Outs and Session Syncs

The following sections contain information on how the Multi-Data Center deals with session time outs and syncs.

- Ensuring Maximum Session Constraints
- Configuring Policies for Idle Timeout
- Expiring Multi-Data Center Sessions
- Synchronizing Sessions and Multi-Data Center Fail Over

7.8.1 Ensuring Maximum Session Constraints

Credential Collector user affinity ensures that maximum session constraints per user are honored. There is no Multi-Data Center session store to validate allowed maximum sessions per user.

7.8.2 Configuring Policies for Idle Timeout

The OAM_ID and OAM_GITO cookies are used to calculate and enforce idle (inactivity) timeouts. The OAM_GITO cookie, though, can be set only if there is a common sub-domain across WebGates. Thus, Multi-Data Center policies should be configured based on whether or not the OAM_GITO cookie is set. Table 7–2 documents the policy configurations.

Table 7–2 Multi-Data Center Policy Configurations for Idle Timeout

OAM_GITO Set	Multi-Data Center Policies
Yes	SessionMustBeAnchoredToDataCenterServicingUser=<true/false>
Idle timeout will be calculated from the latest OAM_GITO cookie	SessionDataRetrievalOnDemand=true
	Reauthenticate=false
	SessionDataRetrievalOnDemandMax_retry_attempts=<number>
	SessionDataRetrievalOnDemandMax_conn_wait_time=<milliseconds>
	SessionContinuationOnSyncFailure=<true/false>
	MDCGitoCookieDomain=<sub domain>

Table 7–2 (Cont.) Multi-Data Center Policy Configurations for Idle Timeout

OAM_GITO Set	Multi-Data Center Policies
No	SessionMustBeAnchoredToDataCenterServicingUser=false
Idle time out will be calculated from the OAM_ID cookie because OAM_GITO is not available	SessionDataRetrievalOnDemand=true
	Reauthenticate=false
	SessionDataRetrievalOnDemandMax_retry_attempts=<number>
	SessionDataRetrievalOnDemandMax_conn_wait_time=<milliseconds>
	SessionContinuationOnSyncFailure=<true/false>
	#MDCGitoCookieDomain= This setting should be commented or removed

7.8.3 Expiring Multi-Data Center Sessions

Session expiration will be managed by the Data Center with which the user has affinity. Users have affinity to a particular Data Center based on the global trffic manager/load balancer.

7.8.4 Synchronizing Sessions and Multi-Data Center Fail Over

Access Manager server side sessions are created and maintained based on single sign-on (SSO) credentials. The attributes stored in the session include (but are not limited to) the user identifier, an identity store reference, subject, custom attributes, partner data, client IP address and authentication level. SSO will be granted if the server can locate a valid session corresponding to the user's request.

In a Multi-Data Center scenario, when a user request hops across Data Centers, the Data Center servicing the request should validate for a legitimate session locally and across Data Centers. If a valid session for a given request exists in a remote Data Center, the remote session needs to be migrated to the current Data Center based on the MDC session synchronization policies. (See Section 7.2, "Understanding Multi-Data Center Deployments" for details.) During this session synchronization, all session attributes from the remote session are synced to the newly created session in the Data Center servicing the current request.

The Multi-Data Center also supports Webgate failover across Data Centers. When a Webgate fails over from one Data Center to a second, the session data can not be synchronized because the first Data Center servers are down. Thus, the second Data Center will decide whether or not to proceed with the session adoption based on the setting configured for `SessionContinuationOnSyncFailure`. When true, even if the OAP communication to the remote Data Center fails, the Data Center servicing the current request can proceed to create a new session locally based on the mandatory attributes available in the cookie. This provides seamless access to the requested resource despite the synchronization failure. Table 7–3 summarizes prominent session synchronization and failover scenarios.

Table 7–3 Session Synchronization and Failover Scenarios

MDC Deployment	MDC Policy	Validate Remote Session	Session Synchronized in DC Servicing User From Remote DC	Terminate Remote Session	User Challenged
Active-Active	SessionMustBeAnchoredToDataCenterServicingUser=true SessionDataRetrievalOnDemand=true Reauthenticate=false SessionDataRetrievalOnDemandMax_retry_attempts=<number> SessionDataRetrievalOnDemandMax_conn_wait_time=<milliseconds> SessionContinuationOnSyncFailure = false MDCGitoCookieDomain=<sub domain>	Yes	Yes	Yes	When a valid session could not be located in a remote DC

Table 7–3 (Cont.) Session Synchronization and Failover Scenarios

MDC Deployment	MDC Policy	Validate Remote Session	Session Synchronized in DC Servicing User From Remote DC	Terminate Remote Session	User Challenged
Active-Active	SessionMustBeAnchoredToDataCenterServicingUser=false SessionDataRetrievalOnDemand=true Reauthenticate=false SessionDataRetrievalOnDemandMax_retry_attempts=<number> SessionDataRetrievalOnDemandMax_conn_wait_time=<millisecon ds> SessionContinuationOnSyncFailure = false MDCGitoCookieDomain=<sub domain>	Yes	Yes	No	When a valid session could not be located in a remote DC
Active-Standby	SessionMustBeAnchoredToDataCenterServicingUser=true SessionDataRetrievalOnDemand=true Reauthenticate=false SessionDataRetrievalOnDemandMax_retry_attempts=<number> SessionDataRetrievalOnDemandMax_conn_wait_time=<millisecon ds> SessionContinuationOnSyncFailure = false MDCGitoCookieDomain=<sub domain>	Could not validate as the remote DC is down	No, since the remote DC is down	Could not terminate as the remote DC is down	Yes
Active-Standby	SessionMustBeAnchoredToDataCenterServicingUser=true SessionDataRetrievalOnDemand=true Reauthenticate=false SessionDataRetrievalOnDemandMax_retry_attempts=<number> SessionDataRetrievalOnDemandMax_conn_wait_time=<milliseconds> SessionContinuationOnSyncFailure = true MDCGitoCookieDomain=<sub domain>	Could not validate as the remote DC is down	No, since the remote DC is down	Could not terminate as the remote DC is down	No Provides seamless access by creating a local session from the details available in the valid cookie

7.9 WLST Commands for Multi-Data Centers

The following WebLogic Scripting Tool (WLST) commands are specific to Multi-Data Center deployment. More information is in the following sections.

- enableMultiDataCentreMode
- disableMultiDataCentreMode
- addPartnerForMultiDataCentre
- removePartnerForMultiDataCentre
- setMultiDataCenterType
- setMultiDataCenterWrite
- setMultiDataCentreClusterName
- validateMDCConfig

7.9.1 enableMultiDataCentreMode

Online command used to enable Multi-Data Center mode.

7.9.1.1 Description

This command enables Multi-Data Center mode. It takes a value equal to the full path to, and name of, the MDC.properties file.

> **Note:** Setting the SSO Token version to 5 is not supported from the administration console. To do this, modify the Access Manager Settings page and run the `enableMultiDataCentreMode` WLST command to set.

7.9.1.2 Syntax

```
enableMultiDataCentreMode(propfile="../MDC_properties/oamMDCProperty.properties")
```

Argument	Definition
propfile	Mandatory. Takes a value equal to the full path to, and name of, the `oamMDCProperty.properties` file. Table 7–4 documents the properties that comprise `the file`. Example 7–1 (following the table) is a sample oamMDCProperty.properties file.

Table 7–4 oamMDC.properties Properties

Property	Definition
SessionMustBeAnchoredToDataCenterServicing User	Takes a value of True (Invalidate) or False (No Invalidation).
SessionDataRetrievalOnDemand	Takes a value of True (Cross DC retrieval) or False (No). Data retrieval can be turned off without disabling MDC. If False, session data is not transferred but SSO is still performed as the user moves across DCs.
Reauthenticate	Takes a value of True (force reauthentication) or False (No forced reauthentication).

Table 7–4 (Cont.) oamMDC.properties Properties

Property	Definition
SessionDataRetrievalOnDemandMax_retry_attempts	Takes a value equal to a binary that represents the number of times to retry data retrieval when it fails. Default is 2.
SessionDataRetrievalOnDemandMax_conn_wait_time	Takes a value equal to a binary that represents the total amount of time in seconds to wait for a connection. Default is 1000.
SessionContinuationOnSyncFailure	Takes a value of True (Invalidation/Retrieval must succeed) or False (ignore Failure).
MDCGitoCookieDomain	Specifies the domain with which the OAM_GITO cookie should be set. In MDC deployments where a common cookie domain hierarchy cannot be derived, this setting should be commented or removed as described in Inactivity time outs scenario.

Example 7–1 Sample oamMDCProperty.properties File

```
SessionMustBeAnchoredToDataCenterServicingUser=true
SessionDataRetrievalOnDemand=true
Reauthenticate=true
SessionDataRetrievalOnDemandMax_retry_attempts=3
SessionDataRetrievalOnDemandMax_conn_wait_time=80
SessionContinuationOnSyncFailure=true

#MDCGitoCookieDomain=.oracle.com <This setting should be provided only if there is
a common cookie subdomain across the WGs and DCs>
```

7.9.1.3 Example

The following command enables this data center.

```
enableMultiDataCentreMode(propfile="../MDC_properties/oamMDCProperty.properties")
```

7.9.2 disableMultiDataCentreMode

Online command used to disable Multi-Data Center mode.

7.9.2.1 Description

This command disables Multi-Data Center mode.

7.9.2.2 Syntax

```
disableMultiDataCentreMode()
```

There are no arguments for this command.

7.9.2.3 Example

The following command disables Multi-Data Center mode.

```
disableMultiDataCentreMode()
```

7.9.3 addPartnerForMultiDataCentre

In an MDC deployment with *n* number of Data Centers, each Data Center has a registered partner to communicate with each of the other (n-1) Data Centers. This makes the total number of partner registrations (n) x (n-1). This online command is used to add a partner for inter Data Center OAP communication.

> **Note:** An MDC partner profile is exposed by each data center and used by other data centers to communicate with it. Registering an MDC partner is a two step process. Consider an MDC with three data centers. In DC1, expose an MDC partner profile by creating a 10g or 11g WebGate (DC1_MDC_Partner). Then, register DC1_MDC_Partner in DC2 and DC3 using addPartnerForMultiDataCentre. See Section 7.9.3, "addPartnerForMultiDataCentre" for details.

7.9.3.1 Description

This command adds a partner to the Data Center. It takes a value equal to the full path to, and name of, the `partnerInfo.properties` file.

7.9.3.2 Syntax

```
addPartnerForMultiDataCentre(propfile="../MDC_properties/partnerInfo.properties")
```

Argument	Definition
propfile	Mandatory. Takes a value equal to the path to, and name of, the partnerInfo.properties file.
RESTEndpoint	Optional. Takes as a value the HTTP/HTTPS URL from which the Access Manager REST services can be accessed.

Table 7–5 documents the properties that comprise `partnerInfo.properties`. See Section 7.1.3, "Understanding Access Manager Security Modes for Multi-Data Center" for properties file samples.

Table 7–5 partnerInfo.properties Properties

Property	Definition
remoteDataCentreClusterId	Cluster id of the remote Data Center with which the OAP communication needs to be established.
oamMdcAgentId	Partner ID of the registered partner profile in the remote Data Center. The "allow management operations" flag for this partner should be set in the remote Data Center.
PrimaryHostPort	Takes a *fully-qualified-host-name*:*OAM-port* for the primary Access Manager server corresponding to the remote DC identified by remoteDataCentreClusterId; for example: PrimaryHostPort=abc.example.com:5575

Table 7–5 (Cont.) partnerInfo.properties Properties

Property	Definition
SecondaryHostPort	Takes a *fully-qualified-host-name*:*OAM-port* for the secondary Access Manager server corresponding to the remote DC identified by remoteDataCentreClusterId; for example: SecondaryHostPort=abc.example.com:5577 Consider an OAM MDC member Data Center with two managed servers at abc.example.com with ports as follows: oam_server1 (5575) and oam_server2 (5577). High availability/failover of the OAP SDK partner can be achieved by setting the PrimaryHostPort and SecondaryHostPort as below. PrimaryHostPort=abc.example.com:5575 SecondaryHostPort=abc.example.com:5577
AccessClientPasswd	The access client password of the MDC partner registered in the remote Data Center.
oamMdcSecurityMode	Defines the MDC security mode. Takes a value of OPEN/SIMPLE/CERT. (CERT Mode is preferred, SIMPLE is fine but OPEN is discouraged.) For SIMPLE and CERT modes, the following values should be supplied appropriately. For OPEN mode, these values are not applicable.
agentVersion	Valid agent version 11g/10g.
trustStorePath	Absolute path to the truststore file [SIMPE/CERT].
keyStorePath	Absolute path to the keyStore file [SIMPLE/CERT].
globalPassPhrase	Global passphrase set during the partner registration [SIMPLE/CERT].
keystorePassword	Key store password set during partner configuration [SIMPLE/CERT].

7.9.3.3 Example

The following command defines this data center as a Master.

```
addPartnerForMultiDataCentre(propfile="../MDC_properties/partnerInfo.properties")
```

7.9.4 removePartnerForMultiDataCentre

Online command used to remove a registered remote partner from the Data Center configuration.

7.9.4.1 Description

This command removes a registered remote partner from a configured Data Center. It takes a value equal to a valid remoteDataCentreClusterId.

7.9.4.2 Syntax

```
removePartnerForMultiDataCentre=("<cluster_ID>")
```

Argument	Definition
cluster_ID	Mandatory. Takes a string value equal to the cluster ID.

7.9.4.3 Example

The following command defines the partner to be removed.

```
removePartnerForMultiDataCentre("99bf9-adc2120609")
```

7.9.5 setMultiDataCenterType

Online command used to set the type of data center - either Master or Clone.

7.9.5.1 Description

In an MDC deployment one Data Center is designated as the Master and the others as a Clone. Essentially all MDC wide global configurations and policy updates should be applied to the Master and propagated to the Clones using the supported T2P commands. This command sets the type of the data center. Values are Master or Clone.

7.9.5.2 Syntax

```
setMultiDataCenterType(DataCenterType="<Master|Clone>")
```

Argument	Definition
DataCenterType	Mandatory. Takes a string value of Master or Clone.

7.9.5.3 Example

The following command defines this data center as a Master.

```
setMultiDataCenterType(DataCenterType="Master")
```

7.9.6 setMultiDataCenterWrite

Online command used to set controls for modifications to system and policy configurations.

7.9.6.1 Description

Clone Data Centers can be write protected so no updates can be made to the system or policy configurations. Values are true or false.

7.9.6.2 Syntax

```
setMultiDataCenterWrite(WriteEnabledFlag="<true|false>")
```

Argument	Definition
WriteEnabledFlag	Mandatory. Takes a string value of true or false.

7.9.6.3 Example

The following command enables modifications to the system and policy configurations.

```
setMultiDataCenterWrite(WriteEnabledFlag = "true")
```

7.9.7 setMultiDataCentreClusterName

Online command to set the cluster name of the Data Center to the supplied string.

7.9.7.1 Description

This command sets the Multi-Data Center cluster name. Value is a string.

7.9.7.2 Syntax

```
setMultiDataCentreClusterName(clusterName="<string_value>")
```

Argument	Definition
clusterName	Mandatory. Takes a string equal to the cluster name.

7.9.7.3 Example

The following command enables this data center.

```
setMultiDataCentreClusterName(clusterName="MyCluster")
```

7.9.8 validateMDCConfig

Online command used to insure the Multi-Data Center configuration is correct.

7.9.8.1 Description

This command validates that the required entries in the Multi-Data Center configuration are present in `oam-config.xml`. For the MDC solution, a new Access Manager event named `mdc_session_update` is required to create or update MDC sessions during authorization. The Access Manager event model requires a set of configurations to be present in the `oam-config.xml` configuration file. The required configurations cannot be added statically so `validateMDCConfig` validates the required entries for `mdc_session_update` and seeds any configurations not already present.

7.9.8.2 Syntax

```
validateMDCConfig()
```

There are no arguments for this command.

7.9.8.3 Example

The following command validates the MDC configuration.

```
validateMDCConfig()
```

7.10 Replicating Domains with Multi-Data Centers and Identity Manager

If you have a deployment where Access Manager 11.1.2.1.0 and Oracle Identity Manager (11.1.2.1.0) are integrated in the same domain, Test-to-Production (T2P) cannot be used for domain replication because Identity Manager does not support T2P. In this case, Access Manager and Identity Manager should be installed in different domains using the following procedure.

1. Install Access Manager.
2. Run `configureSecurityStore (-create)`.

3. Start Access Manager.

   Remember to enable TRACE logging with instrumented EAR.

4. Install Identity Manager.

5. Run `configureSecurityStore (-join)`.

6. Update the default passwords for the Access Manager and Identity Manager domains in *`$DOMAIN_HOME`*`/config/fmwconfig/default-keystore.jks` password using the `keytool` command.

7. Set the same password values in the CSF using the EM console.

   a. Navigate to the *domain_name* of the appropriate Weblogic domain.

   b. Right click the *domain_name* and navigate to Security --> Credentials.

   c. Expand the `oracle.wsm.security` Credential map and edit the value of `keystore-csf-key`.

   d. Update password and confirm password fields with the password.

      This password should be same as the new password for `default-keystore.jks` in both Access Manager and Identity Manager domains

8. Map oracle.wsm.security with the Key keystore-csf-key.

9. Start Identity Manager.

10. Restart Access Manager and Identity Manager.

7.11 Multi-Data Center Recommendations

This section contains recommendations regarding the Multi-Data Center functionality.

- Using a Common Domain
- Using an External Load Balancer
- Honoring Maximum Sessions

7.11.1 Using a Common Domain

It is recommended that WebGates be domain-scoped in a manner that a common domain can be inferred across all WebGates and the OAM Server Credential Collectors. This allows for WebGates to set an encrypted GITO cookie to be shared with the OAM Server. For example, if WebGates are configured on applications.abc.com and the OAM Server Credential Collectors on server.abc.com, abc.com is the common domain used to set the GITO cookie. In scenarios where a common domain cannot be inferred, setting the GITO cookie is not practical as a given Data Center may not be aware of the latest user sessions in another Data Center. This would result in the Data Center computing session idle-timeout based on old session data and could result in re-authenticating the user even though a more active session lives elsewhere.

Note: A similar issue occurs during server fail-over when the SessionContinuationOnSyncFailure property is set. The expectation is to retrieve the session from contents of the OAM_ID cookie. Since it's not possible to retrieve the actual inactivity time out value from the GITO cookie, a re-authentication could result.

When there is no common cookie domain across WebGates and OAM servers, make the following configuration changes to address idle time out issues.

- Run the `enableMultiDataCentreMode` WLST command after removing the MDCGitoCookieDomain property from the input properties file.
- Set the value of the WebGate cookie validity lower than the value of the session idle time out proeprty. Consider a session idle time out value of 30 minutes and a WebGate cookie validity value of 15 minutes; in this case, every 15 minutes the session will be refreshed in the authenticating Data Center.

7.11.2 Using an External Load Balancer

This patch uses the 11g SDK API to retrieve session data but this API does not support SDK based load-balancing across the configured set of primary servers. Use an external TCP based load balancer to front-end the NAP endpoints of the Data Center nodes where high performance is expected.

Note: Failover between primary and secondary OAM servers are supported in the current release of 11g SDK APIs.

7.11.3 Honoring Maximum Sessions

A typical Multi-Data Center scenario authenticates users against the Data Center with which the user geography has an affinity. In the rare scenarios where user authentication and session creation for a given user spans across member Data Centers (bypassing geographic affinity and load spike), the maximum sessions the user has in the whole Multi-Data Center topology would not be honored.

7.12 Cloning with T2P

This document contains steps and prerequisites to cloning an Access Manager R2PS1 data center. There are two procedures involved.

1. Move the OPSS data to the target database.
2. Copy the OAM from source to Target.

7.12.1 Move OPSS Data

Moving the OPSS data tier is not applicable Moving the data tier if applicable [Not applicable if the T2P is done for OAM alone.]

The procedure to move the OPSS data tier can be found in the Refer to the steps in http://docs.oracle.com/cd/E27559_01/core.1112/e28516/testprod.htm#autoId5 for this

Scenario:

The following steps can be used to clone a freshly installed OAM or an existing OAM set up.

Moving OPSS data to the Clone: (http://docs.oracle.com/cd/E27559_01/core.1112/e28516/testprod.htm#CHDHAFCE)

Part III

Logging, Auditing, Reporting and Monitoring Performance

Part III provides information to help you perform logging, auditing, and performance monitoring for Oracle Access Management services.

Part III contains the following chapters:

8

Logging Component Event Messages

Logging is the mechanism by which components and services write messages to a log file to capture critical component events, process, and state information.

Administrators can configure logging to provide information at various levels of granularity using the same logging infrastructure and guidelines as any other component in Oracle Fusion Middleware 11g: `java.util.logging` (standard and available in all Java environments). The logging system writes output to flat files only. Logging to an Oracle Database instance is not supported.

Configuring logging and locating log files are the focus of this chapter. Diagnosing problems using the information in log files is outside the scope of this manual.

> **Note:** Unless explicitly stated, information in this chapter is the same whether you are using Access Manager, Identity Federation, or Security Token Service. You can also use a custom Oracle WebLogic Scripting Tool (WLST) command to change logging levels.

This chapter includes the following topics:

8.1 Prerequisites

Before you can perform tasks in this chapter ensure that the Oracle Access Management Console and a managed OAM Server are running.

Oracle recommends that you review Chapter 6, "Managing Server Registration".

8.2 Introduction to Logging Component Event Messages

The logging infrastructure records messages that can be used for problem diagnosis. Security Token Service is a J2EE Web application, part of the Access Manager J2EE Application. Both use OJDL for logging purposes. Security Token Service captures the interactions between itself and Partners with timestamps.

The Administrator controls the amount of information that is logged in a message by specifying log levels for each component for which a logger is defined.

> **Note:** Generally, you enable logging to produce files that you send to Oracle Technical Support for problem diagnosis. Documentation for log messages is not available. In some cases, you might be able to diagnose problems on your own by reading log files.

Oracle Access Management makes use of the files in Table 8–1.

Table 8–1 Logging Files

File Type	Description
Logging Configuration File	Provides logging level and other configuration information for logging. This file is stored in the following path: *$DOMAIN_HOME*/config/fmwconfig/servers/*SERVER-NAME*/logging.xml **Note**: By default, Security Token Service and Identity Federation messages are logged in the OAM Server's log file. However, for convenience, you can edit logging.xml to direct Security Token Service or Identity Federation information to a separate log file, as described in "Configuring Logging for Security Token Service and Identity Federation" on page 8-8.
Log File	Logged information is stored in the following location: *$DOMAIN_HOME*/servers/*SERVER-NAME*/logs/*SERVER-NAME*-diagnostics.log

Oracle Access Management uses the WebLogic container's logging defaults in Table 8–2.

Table 8–2 Logging Defaults

	Description
Events	The following events are logged automatically: ■ OAM Server events (managed run-time servers) ■ Administrative events (generated for configuration changes made using the console)
Levels	By default, the log level for all Oracle Access Management components is the Notification level. Logging at the Error level produces a small amount of output while other log levels can result in voluminous logging output, which can impact performance. In production environments, logging is usually either disabled or the log level is set to a level that results in a small volume of logging output (the error level, for example).

For more information, see:

- About Component Loggers
- Sample Logger and Log Handler Definition
- About Logging Levels

See Also:

- Chapter 13 for details about how you can configure and view logs using Fusion Middleware Control
- Logging information in the Oracle Fusion Middleware Application Security Guide

8.2.1 About Component Loggers

This section introduces component loggers for Security Token Service and Access Manager. There are differences.

Security Token Service has only a single logger: oracle.security.fed. For more information, see "Configuring Logging for Security Token Service and Identity Federation" on page 8-8.

Each Access Manager component is associated with its own logger name, as listed in the following tables:

- Table 8–3, " Oracle Access Management Server-Side Component Loggers"
- Table 8–4, " Oracle Access Management Shared-Service Engine Component Loggers"
- Table 8–5, " Oracle Access Management Foundation API Component Loggers"

Table 8–3 Oracle Access Management Server-Side Component Loggers

Component Name	OAM Logger Name	Description
Protocol Binding	oracle.oam.binding	Responsible for marshalling/unmarshalling wire protocol request and response to a Java Object representation.
SSO Controller	oracle.oam.controller.sso	Responsible for managing the user session lifecycle and orchestrating the SSO and logout flows.
OAM Proxy	oracle.oam.proxy.oam	Responsible for interacting with OAM Webgates by marshalling/unmarshalling OAP protocol requests and responses and performing the data/message transformation necessary to help the OAM Server process OAP requests/responses.
OSSO Proxy	oracle.oam.proxy.osso	Responsible for interacting with OSSO Agents by marshalling/unmarshalling requests and responses and doing the data/message transformation necessary to help the OAM Server process mod_osso requests/responses.
OpenSSO Proxy	oracle.oam.proxy.opensso	Responsible for interacting with OpenSSO Web and Java Agents by marshalling/unmarshalling requests and responses and performing the data/message transformation necessary to help the OAM Server process OpenSSO agent requests/responses.
Credential Collector	oracle.oam.credcollector	Responsible for interacting with the user to acquire the necessary information required by the Authentication Scheme.
Remote Registration of Partners	oracle.oam.engine.remotereg	Responsible for registering partners with the OAM Server and managing associated protected policies.
Oracle Access Management Console	oracle.oam.admin.console	Console that supports administration and monitoring of the Access Management deployment.
Admin-Service Config	oracle.oam.admin.service.config	Module used by the UI Console to manage the configuration.
Diagnostics and Monitoring	oracle.oam.diag	Provides instrumentation used by the OAM Server components to enable Diagnostic and Monitoring.

Table 8–4 Oracle Access Management Shared-Service Engine Component Loggers

Component Name	OAM Logger Name	Description
Authentication Engine	oracle.oam.engine.authn	Supports establishing the identity of the user by validating the credentials and other data as required by the specified Authentication scheme.
Policy Service Engine	oracle.oam.engine.policy	Supports management of Authentication, Authorization and Token Issuance Policies. In addition, it also provide a policy decision service to support runtime processing.
Session Management Engine	oracle.oam.engine.session	Supports managing user session and token context information with support for user/administrator-initiated and time-out based events.
Token Engine	oracle.oam.engine.token	Supports managing the entire token life cycle from generation to cancellation.
SSO Engine	oracle.oam.engine.sso	Supports the single sign-on experience by managing the lifecycle of the user login session(s).
PartnerTrustMetadata Engine	oracle.oam.engine.ptmetadata	Supports management of partner metadata and trust information.
Authorization Engine	oracle.oam.engine.authz	Wrapper that provides methods that map directly to OAP runtime request operations.

Table 8–5 Oracle Access Management Foundation API Component Loggers

Component Name	OAM Logger Name	Description
Session Access	oracle.oam.session.access	** Not useful unless your are decompiling code.
Session Access Implementation	oracle.oam.session.accessimpl	** Not useful unless your are decompiling code.
Policy Access	oracle.oam.policy.access	** Not useful unless your are decompiling code.

8.2.2 Sample Logger and Log Handler Definition

This topic provides a sample for Access Manager only.

> **Note:** Security Token Service has only one logger and log handler, as described in "Configuring Logging for Security Token Service and Identity Federation" on page 8-8.

Example 8–1 illustrates the configuration of an Access Manager logger and a log handler in the file `logging.xml`.

Example 8–1 Configuring Access Manager Loggers and Log Handlers

```
<logging_configuration>

  <log_handlers>
    <log_handler name='oam-handler' class='oracle.core.ojdl.logging.
    ODLHandlerFactory'>
      <property name='path' value='oam/diagnostic'/>
      <property name='maxFileSize' value='10485760'/>
      <property name='maxLogSize' value='104857600'/>
    </log_handler>
  </log_handlers>

  <loggers>
    <logger name='oracle.security.am' level='NOTIFICATION:1'>
```

```
      <handler name='oam-handler'/>
      ...
    </logger>
  </loggers>

</logging_configuration>
```

See Also: For more information about Java EE application logging, see Appendix I, section I.1.1, in Oracle Fusion Middleware Application Security Guide.

8.2.3 About Logging Levels

This topic applies to Oracle Access Management.

The amount of data output by a logger is controlled by its level; the higher the level, the more information is logged. The level of a logger is specified with the element <logger> in the file logging.xml with the following format:

```
<logger name="loggerName" level="notifLevel"/>
```

where *loggerName* is a logger name (see "About Component Loggers"), and *notifLevel* is either an ODL message level or a Java message level.

Table 8–6 shows the correspondence between ODL message levels and Java message levels, in increasing order:

Table 8–6 Mapping of ODL to Java Levels

ODL Message Level	Java Message Level
INCIDENT_ERROR:1	SEVERE.intValue()+100
ERROR:1	SEVERE (logs exceptions)
WARNING:1	WARNING (logs exceptions)
NOTIFICATION:1	INFO (default)
NOTIFICATION:16	CONFIG
NOTIFICATION:32	INFO and CONFIG
TRACE:1	FINE (occasionally recommended in production environments)
TRACE:16	FINER (not recommended in production environments)
TRACE:32	FINEST (not recommended in production environments)

Any other Java level value not listed above (that is, one outside the interval [SEVERE.intValue()+100 - FINEST] is mapped to the ODL level UNKNOWN.

Note: If you define a filter to log messages at the finest level for the oracle.security.fed package and sub-package (classes for Security Token Service), after restarting the server you would see logs for the OAM Server. For more information, see "Configuring Logging for Security Token Service and Identity Federation" on page 8-8.

8.3 Configuring Logging for Access Manager

This section describes tasks for only Access Manager.

See Also: "Configuring Logging for Security Token Service and Identity Federation"

There is no graphical user interface available to change logger levels; only WLST commands can be used. This section provides the following topics:

- Modifying the Logger Level for Access Manager
- Adding an Access Manager-Specific Logger and Log Handler

8.3.1 Modifying the Logger Level for Access Manager

Administrators can use custom WLST commands for Access Manager to change logger settings as described in the following procedure. Your deployment and choices will be different.

Note: Use the WLST command `help("fmw diagnostics")`.

See Also: Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

To modify the OAM logger level

1. Confirm that the OAM Server is running.
2. Acquire the custom WLST script for Access Manager. For example:

   ```
   $ORACLE_HOME/common/bin/wlst.sh
   ```

3. Connect to the WebLogic Server and log in as the WebLogic Administrator. For example:

   ```
   connect([username, password])
   ```

4. List available loggers for the OAM Server. For example:

   ```
   wls:/base_domain/serverConfig> listLoggers(pattern="oracle.oam.*",target="oam_server1")
   ```

   Here pattern= represents the oam.controller component and target= represents the desired OAM Server as it was specified during registration.

5. View the list of Access Manager loggers associated with this OAM Server. For example:

   ```
   Logger                                          | Level
   ------------------------------------------------+-----------------
   oracle.oam                                      | <Inherited>
   oracle.oam.admin.foundation.configuration       | <Inherited>
   oracle.oam.agent-default                        | <Inherited>
   oracle.oam.audit                                | <Inherited>
   oracle.oam.binding                              | <Inherited>
   oracle.oam.commonutil                           | <Inherited>
   oracle.oam.config                               | <Inherited>
   oracle.oam.controller                           | <Inherited>
   oracle.oam.default                              | <Inherited>
   oracle.oam.diagnostic                           | <Inherited>
   oracle.oam.engine.authn                         | <Inherited>
   oracle.oam.engine.authz                         | <Inherited>
   ```

```
oracle.oam.engine.policy                    | <Inherited>
oracle.oam.foundation.access                | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.user.identity.provider           | <Inherited>
```

6. Modify the log level based on your requirements. For example, this sequence changes the log level of the oam.controller to TRACE:32 with no persistence:

```
wls:/base_domain/serverConfig> domainRuntime()
wls:/base_domain/domainRuntime> setLogLevel(logger="oracle.oam.controller",
level="TRACE:32", persist="0", target="oam_server1")
```

7. Repeat step 4 to list the loggers again and verify the log level change. For example:

```
wls:/base_domain/serverConfig> listLoggers(pattern="oracle.oam.*",target="oam_
server1")

Logger                                      | Level
--------------------------------------------+-----------------
oracle.oam                                  | <Inherited>
oracle.oam.admin.foundation.configuration   | <Inherited>
oracle.oam.agent-default                    | <Inherited>
oracle.oam.audit                            | <Inherited>
oracle.oam.binding                          | <Inherited>
oracle.oam.commonutil                       | <Inherited>
oracle.oam.config                           | <Inherited>
oracle.oam.controller                       | TRACE:32
oracle.oam.default                          | <Inherited>
oracle.oam.diagnostic                       | <Inherited>
oracle.oam.engine.authn                     | <Inherited>
oracle.oam.engine.authz                     | <Inherited>
oracle.oam.engine.policy                    | <Inherited>
oracle.oam.foundation.access                | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.idm                              | <Inherited>
oracle.oam.user.identity.provider           | <Inherited>
```

8. Verify the generated log file to confirm the controller is logged at the TRACE:32 level:

```
$DOMAIN_HOME/server/SERVER_INSTNCE_NAME/logs/
```

9. Proceed to "Validating Run-time Event Logging Configuration" on page 8-11.

8.3.2 Adding an Access Manager-Specific Logger and Log Handler

Administrators can use the following procedure to specify a log file path and necessary attributes.

In the following procedure, you will identify the target OAM Server, rotation and retention periods, a path to the log file, the handler, and logger. Your deployment and choices will be different.

Note: Use the WLST command `help("fmw diagnostics")` to get more information.

Skip steps 1 through 3 if the following items are true:

- The OAM Server is running
- You have the WLST script
- You have connected to the server and logged in

> **See Also:** Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

To specify the OAM logger, level, and log handler

1. Confirm that the OAM Server is running.
2. Acquire the WLST script. For example:

   ```
   $ORACLE_HOME/common/bin/wlst.sh
   ```

3. Connect to the WebLogic Server and log in as the WebLogic Administrator. For example:

   ```
   sh wlst.sh wls:/offline> connect
   ```

4. Add an Access Manager logger and level for the OAM Server. For example:

   ```
   wls:/base_domain/serverConfig> domainRuntime()
   wls:/base_domain/domainRuntime> setLogLevel(logger="oracle.oam",
   level="WARNING", persist="0", target="oam_server1")
   ```

5. Add a custom log handler and associate it with the Access Manager logger. For example:

   ```
   wls:/base_domain/domainRuntime> configureLogHandler(name="oam-log-handler",
   target="oam_server1", rotationFrequency="daily", retentionPeriod="week",
   path="${domain.home}/oamlogs" , maxFileSize ="10485760", maxLogSize =
   "104857600", addHandler="true", handlerType="oracle.core.ojdl.logging
   .ODLHandlerFactory", addToLogger="oracle.oam")

   wls:/base_domain/domainRuntime>configureLogHandler(name="oam-log-handler",
   addProperty="true", propertyName="supplementalAttributes", propertyValue=
   "OAM.USER, OAM.COMPONENT", target="oam_server1")
   ```

6. Verify all the logs in the $*DOMAIN_HOME*/oamlogs directory:

   ```
   $DOMAIN_HOME/oamlogs/
   ```

8.4 Configuring Logging for Security Token Service and Identity Federation

By default Security Token Service and Identity Federation messages are logged into the OAM Server's log files. You can view and configure logs in Fusion Middleware Control. However, you can also edit logging.xml and direct Security Token Service and Identity Federation information to a separate log file, as described here.

The files that are involved include:

- **Logging Configuration File**: Provides logger names and other configuration information for logging. This file is stored in: *$DOMAIN_HOME*/config/fmwconfig/servers/*SERVER-NAME*/logging.xml.

- **Log File**: *$DOMAIN_HOME*/ostslogs/*SERVER-NAME*-diagnostics.log, for example.

Security Token Service and Identity Federation do not categorize log handlers as Access Manager does. Instead, there is only one logger that affects the log levels for Security Token Service and Identity Federation. Table 8–7 provides details for this logger, which are required in the WLST command.

Table 8–7 Oracle Security Token Service and Identity Federation Loggers

Component Name	Logger Name	Log Handler Name	Log Class
Security Token Service or Identity Federation	oracle.security.fed	stsfed-handler	class=oracle.core.ojdl.logging.ODLHandlerFactory

For details, see:

- Configuring Logging for Security Token Service or Identity Federation
- Defining Log Level and Log Details for Security Token Service or Identity Federation

See Also:

- Chapter 13 for details about how you can configure and view logs using Fusion Middleware Control
- Logging information in the Oracle Fusion Middleware Application Security Guide

8.4.1 Configuring Logging for Security Token Service or Identity Federation

Administrators can use the following procedure to separate Security Token Service or Identity Federation log messages from OAM Server message logs.

To configure logging for Security Token Service or Identity Federation

1. Locate and open logging.xml: $*DOMAIN_HOME*/config/fmwconfig/servers/*SERVER-NAME*/logging.xml.
2. Add the following to create the independent message log for Security Token Service:

```
<log_handler name='stsfed-handler' class='oracle.core.ojdl.logging.ODLHand
lerFactory'>
      <property name='path' value='sts/log'/>
      <property name='maxFileSize' value='10485760'/>
      <property name='maxLogSize' value='104857600'/>
    </log_handler>

<logger name='oracle.security.fed' level='TRACE:32'>
      <handler name='stsfed-handler'/>
    </logger>
```

3. Save the file.
4. Proceed with "Defining Log Level and Log Details for Security Token Service or Identity Federation".

8.4.2 Defining Log Level and Log Details for Security Token Service or Identity Federation

Administrators can use custom WLST commands for Oracle Access Management to change logger settings for Security Token Service as described here. This specifies an independent output file for only Security Token Service log messages.

This sample procedure for Security Token Service logging is very similar to the one for Access Manager. However, there are a few differences. Your deployment choices will be different.

Note: Use the WLST command `help("fmw diagnostics")`.

Skip steps 1 through 3 if the following items are true:

- The OAM Server is running
- You have the WLST script
- You have connected to the server and logged in

See Also: Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

To modify the logger level and log file for Security Token Service

1. Confirm that the OAM Server is running.
2. Acquire the custom WLST script for Oracle Access Management:

   $ORACLE_HOME/common/bin/wlst.sh

3. Connect to the WebLogic Server and log in as the WebLogic Administrator. For example:

   ```
   sh wlst.sh wls:/offline> connect adminID password
   ```

4. Modify the log level of `oracle.security.fed` based on your requirements. For example, this sequence changes the log level to WARNING with no persistence:

   ```
   wls:/base_domain/serverConfig> domainRuntime()
   wls:/base_domain/domainRuntime> setLogLevel(logger="oracle.security.fed",
   level="WARNING", persist="0", target="oam_server1")
   ```

5. Specify the target OAM Server, as well as rotation and retention periods, path to the log file, the handler, and logger. For example:

   ```
    wls:/base_domain/domainRuntime> configureLogHandler(name="osts-log-handler",
   target="oam_server1", rotationFrequency="daily", retentionPeriod="week",
   path="${domain.home}/ostslogs", maxFileSize ="10485760", maxLogSize
   ="104857600", addHandler="true",handlerType="oracle.core.ojdl.logging.ODL
   HandlerFactory", addToLogger="oracle.security.fed")
   ```

6. Verify the generated log file to confirm the controller is logged at the WARNING level:

   $*DOMAIN_HOME*/ostslogs/*SERVER-NAME*-diagnostics.log
   $*DOMAIN_HOME*/oiflogs/*SERVER-NAME*-diagnostics.log

7. Proceed to "Validating Run-time Event Logging Configuration" on page 8-11.

8.5 Validating Run-time Event Logging Configuration

You can use the following procedure to test your run-time event logging configuration.

Prerequisites

- Configure logging using WLST commands as described in this chapter.
- Ensure the Agents and Servers are running.
- Configure an Application Domain to protect the resource as described in Chapter 20, "Managing Policies to Protect Resources and Enable SSO".

To validate run-time event logging

1. In a browser, enter the URL to a protected resource and sign in using an invalid credential.
2. Sign in again using the proper credential.
3. On the physical server, verify all the logs appear in:

   ```
   $DOMAIN_HOME/oamlogs/
   $DOMAIN_HOME/ostslogs/SERVER-NAME-diagnostics.log
   $DOMAIN_HOME/oiflogs/SERVER-NAME-diagnostics.log
   ```

4. Open the log file and look for the last entries to confirm authentication failure and success, respectively.

9

Auditing Administrative and Run-time Events

In Oracle Fusion Middleware, auditing refers to the process of collecting for review specific information related to administrative, authentication, and run-time events. Auditing can help you evaluate adherence to polices, user access controls, and risk management procedures. Auditing provides a measure of accountability and answers to the "who has done what and when" types of questions. Audit data can be used to create dashboards, compile historical data, and assess risks. Analyzing recorded audit data allows compliance officers to perform periodic reviews of compliance policies. (Analyzing and using audit data is outside the scope of this chapter.)

This chapter describes the administrative and run-time events that can be audited for Oracle Access Management services (Access Manager, Security Token Service, Identity Federation, and Mobile and Social) as well as information on configuring common auditing settings and validating your auditing configuration. It includes the following topics:

> **Note:** There is nothing specific or separate related to auditing OpenSSO Agents or Identity Context. Unless explicitly stated, information in this chapter is the same for all Oracle Access Management services.

9.1 Understanding Oracle Fusion Middleware Auditing

Review the following sections in the *Oracle Fusion Middleware Application Security Guide* to gain an understanding of auditing and the Audit Framework in Oracle Fusion Middleware.

- Introduction to Oracle Fusion Middleware Audit Framework
- Setting up Oracle Business Intelligence Publisher
- Customizing Audit Reports

- "Auditing the Security Token Service" on page 36-21
- Oracle Fusion Middleware Audit Framework Reference for details about how the Audit database is laid out

9.2 Introduction to Oracle Access Management Auditing

Many businesses must now be able to audit identity information and user access on applications and devices. Compliance audits help an enterprise conform with regulatory requirements—Sarbanes-Oxley or the Health Insurance Portability and Accountability Act (HIPAA) are two examples.

Oracle Access Management uses the Oracle Fusion Middleware Common Audit Framework to support auditing for a large number of user authentication and authorization run-time events, and administrative events (changes to the system). The Oracle Fusion Middleware Common Audit Framework provides uniform logging and exception handling and diagnostics for all audit events.

Auditing is based on configuration parameters set using the Oracle Access Management Console which enables data capture for a user or set of users. While auditing can be enabled or disabled, it is normally enabled in production environments. Audit data can be written to either a single, centralized Oracle Database instance or to flat files known as bus-stop files.

Note: The Oracle Fusion Middleware Common Audit Framework database audit store does not include Access Manager policy or session-data and is not configured through the Oracle Access Management Console.

Auditing has minimal performance impact, and the information captured by auditing can be useful (even mission-critical). The audit log file helps the audit Administrator track errors and diagnose problems if the audit framework is not working properly.

This section contains the following topics.

- About Oracle Access Management Auditing Configuration
- About Audit Record Storage
- About Audit Reports and Oracle Business Intelligence Publisher
- About the Audit Log and Data

9.2.1 About Oracle Access Management Auditing Configuration

An Administrator controls certain auditing parameters using the Oracle Access Management Console. This auditing configuration is recorded in the `oam-config.xml` file. Additional auditing configuration is required through the Common Audit Framework.

Note: Oracle recommends that you use only the Oracle Access Management Console or WebLogic Scripting Tool (WLST) commands for changes; do not edit the `oam-config.xml` file directly.

Event configuration (mapping events to levels) occurs in the `component_events.xml` file. An audit record contains a sequence of items that can be configured to meet particular requirements.

Within the Oracle Access Management Console, you can set the maximum log file and log directory size. Audit policies (known as Filter Presets declare the types of events to be captured by the audit framework for particular components.

Audit policies cannot be configured using Fusion Middleware Control, therefore audit filter settings in the EM Console will not be applied to the audit function within Oracle Access Management. Oracle Access Management does not use JPS infrastructure to configure the audit configuration. There are no WebLogic Scripting Tool (WLST) commands for auditing.

See Also:

- "Access Manager Events You Can Audit" on page 9-6
- "Security Token Service Events You Can Audit" on page 9-16

9.2.2 About Audit Record Storage

Audit data can be written to either a single, centralized Oracle Database instance or to flat files known as *bus-stop* files. By default, audit data is recorded to the file but administrators can change the configuration to log audit data to a database. Although the formats differ, audit data content is identical in both the flat file and the database.

- **Audit Bus-stop**: Local files containing audit data records before they are pushed to the audit data store. In the event that no audit data store is configured, audit data remains in these bus-stop files. The bus-stop files are simple text files that can be queried easily to look up specific audit events. When an audit data store is in place, the bus-stop acts as an intermediary between the component and the audit data store. The local files are periodically uploaded to the audit data store based on a configurable time interval.

  Bus-stop files for Java components are located in:

  `$DOMAIN_HOME/servers/$SERVER_NAME/logs/auditlogs/OAM/audit.log`

  Bus-stop files for system components are located in:

  `$ORACLE_INSTANCE/auditlogs/OAM/oam_server1/audit.log`

- **Database Logging**: Implements the Common Auditing Framework across a range of Oracle Fusion Middleware products. The benefit is audit-function commonality at the platform level.
- **Database Audit Store**: In production environments, Oracle recommends using a database audit store to provide scalability and high-availability for the Common Audit Framework. A key advantage of the audit data store is that audit data from multiple components can be correlated and combined in reports; for example, authentication failures in all Middleware components and instances. Audit data is cumulative and grows over time so ideally this is a stand-alone RDBMS database for audit data only and not used by other applications.

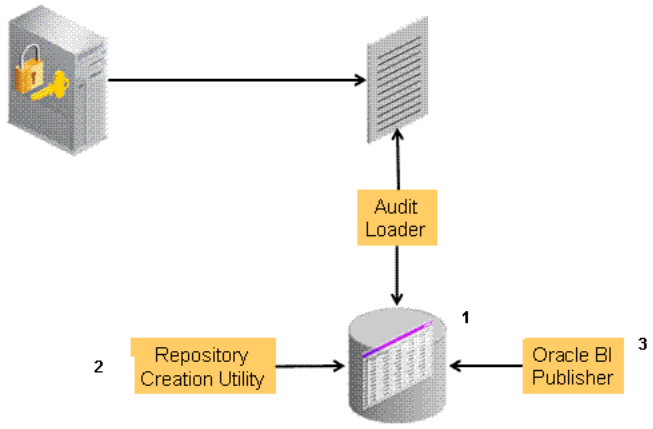
Note: The preferred mode in production environments is writing audit records to a stand-alone RDBMS database for audit data only.

To switch to a database as the permanent store for your audit records, you must first use the Repository Creation Utility (RCU) to create a database schema for audit data. The RCU seeds that database store with the schema required to store audit records in a database. After the schema is created, configuring a database audit store involves:

- Creating a data source that points to the audit schema you created
- Configuring the audit store to point to the data source

Figure 9–1 provides a simplified view of the audit architecture with a supported database. As previously documented, the Oracle Fusion Middleware Audit Framework schema is provided by the RCU.

Figure 9–1 Audit to Database Architecture



See Also:

- "Configuring and Managing Auditing" in the Oracle Fusion Middleware Application Security Guide
- "Setting Up the Audit Database Store" on page 9-21

An independent audit loader process reads the flat log file and inserts records in the log table of the Oracle database. The audit store allows Administrators to expose audit data with Oracle Business Intelligence Publisher using a variety of out-of-the-box reports.

9.2.3 About Audit Reports and Oracle Business Intelligence Publisher

Oracle Access Management integrates with Oracle Business Intelligence Publisher, which provides a pre-defined set of compliance reports through which the data in the database audit store is exposed. These reports allow you to drill down the audit data based on various criteria, such as user name, time range, application type, and execution context identifier (ECID). Out-of-the-box, there are several sample audit reports available with Oracle Access Management and accessible with Oracle Business Intelligence Publisher. You can also use Oracle Business Intelligence Publisher to create your own custom audit reports.

Oracle BI Enterprise Edition (Oracle BI EE) is a comprehensive set of enterprise business intelligence tools and infrastructure, including a scalable and efficient query and analysis server, an ad-hoc query and analysis tool, interactive dashboards, proactive intelligence and alerts, real-time predictive intelligence, and an enterprise reporting engine. The components of Oracle BI EE share a common service-oriented architecture, data access services, analytic and calculation infrastructure, metadata management services, semantic business model, security model and user preferences, and administration tools. Oracle BI EE provides scalability and performance with data-source specific optimized analysis generation, optimized data access, advanced calculation, intelligent caching services, and clustering.

> **See Also:** Using Audit Analysis and Reporting in the Oracle Fusion Middleware Security Guide

For an overview of how to prepare Oracle BI EE for use with auditing reports for Oracle Access Management, see "Preparing Oracle Business Intelligence Publisher EE" on page 9-21.

Oracle BI EE reports contain enumerated fields, the data fields and labels of which are self-explanatory. Content of reports is described in Table 9–1 (taken from Knowledge Base Doc ID 1495333.1 on My Oracle Support.

Table 9–1 Oracle Business Intelligence Enterprise Edition Reports for OAM

Report Type	Description
Account Management	User ID | Timestamp | Component/ Application Name | Event Details
Authentication_Statistics	Authentication_statistics Failure | Userid | Number of Events AuthenticationFromIPByUser IP Address | Distinct User Count | Total Attempts | Users AuthenticationPerIP IP Address | Distinct Users | Total Number of Attempts AuthenticationStatisticsPerServer Server Instance Name | Success Count | Failure Count
Errors_and_Exceptions	All_Errors_and_Exceptions User ID | Timestamp | Component/Application Name | Client IP Address | Message Event | Event Details Authentication_Failures User ID | Timestamp | Component/ Application Name | Client IP Address | Authentication Method | Message Event Details | Authorization_Failures Users_Activities Authentication_History User ID | Timestamp | Component/ Application Name | Client IP Address | Authentication Method | Message Event Details | Authorization_Failures Multiple_Logins_From_Same_IP IP Address | Usernames Used

For more information, see the following topics:

- Access Manager Events You Can Audit
- Identity Federation Events You Can Audit
- Security Token Service Events You Can Audit

9.2.4 About the Audit Log and Data

An audit log file helps the audit administrator track errors and diagnose problems when the audit framework is not working properly. An audit log file records several fields including (but not limited to) Date, Time, Initiator, EventType, EventStatus, MessageText, ECID, RID ContextFields, SessionId, TargetComponentType, ApplicationName, and EventCategory.

> **See Also:** The topic on audit logs in the chapter on configuring and managing auditing in the Oracle Fusion Middleware Security Guide

9.3 Access Manager Events You Can Audit

This section provides the following topics:

- Access Manager Administrative Events You Can Audit
- Access Manager Run-time Events You Can Audit
- Auditing Authentication Events

> **See Also:**
>
> - Identity Federation Events You Can Audit on page 9-14
> - Security Token Service Events You Can Audit on page 9-16

9.3.1 Access Manager Administrative Events You Can Audit

Administrative events are those generated when the Oracle Access Management Console is used. The Access Manager-specific administrative events that can be audited and the details captured for them are listed in Table 9–2. These event definitions and configurations are implemented as part of the audit service in Oracle Platform Security Services.

> **Note:** The amount and type of information that is logged is controlled by choosing a filter preset from the Audit Configuration section. Auditable events for each filter preset are fixed in the read-only `component_events.xml` file. Editing or customizing this file is not supported.

Table 9–2 Access Manager Administrative Audit Events

Administrative Event	Event Data Include
Oracle Access Management Console Login success/failure	▪ User name ▪ Remote IP ▪ Roles
Authentication Policy Creation	▪ Policy name ▪ Authentication scheme details ▪ Resource details ▪ Policy type (authentication or authorization)

Table 9–2 (Cont.) Access Manager Administrative Audit Events

Administrative Event	Event Data Include
Authentication Policy Modification	■ Policy name ■ Authentication scheme details ■ Resource details ■ Policy type (authentication or authorization ■ Old Policy name ■ Old Authentication scheme details ■ Old Resource details
Authentication Policy Removal	■ Policy name ■ Authentication scheme details ■ Resource details ■ Policy type (authentication or authorization
Resource Creation	■ Resource name ■ URI ■ Operation ■ Resource type
Resource Modification	■ Resource name ■ URI ■ Operation ■ Resource type ■ Old Resource name ■ Old URI ■ Old Operation
Resource Removal	■ Resource name ■ URI ■ Operation ■ Resource type
Authentication Scheme Creation	■ Scheme name ■ Authentication modules ■ Level
Authentication Scheme Modification	■ Scheme name ■ Authentication modules ■ Level ■ Old Scheme name ■ Old Authentication modules ■ Old Level
Authentication Scheme Removal (Delete)	■ Scheme name ■ Authentication modules ■ Level
Response Creation	■ Response name ■ Response key ■ Data source ■ Response Type

Table 9–2 (Cont.) Access Manager Administrative Audit Events

Administrative Event	Event Data Include
Response Modification	■ Response name ■ Response key ■ Data source ■ Response Type ■ Old Response name ■ Old Response key ■ Old Data source
Response Removal (Delete)	■ Response name ■ Response key ■ Data source ■ Response Type
Partner Addition	■ Partner name ■ Partner ID ■ Partner URL ■ Logout URL
Partner Modification	■ Partner name ■ Partner ID ■ Partner URL ■ Logout URL ■ Old Partner name ■ Old Partner URL ■ Old Logout URL
Partner Removal	■ Partner name ■ Partner ID ■ Partner URL ■ Logout URL
Conditions creation	■ Condition Name ■ Condition type ■ Condition data
Conditions Modification	■ Condition Name ■ Condition type ■ Condition data ■ Old Condition name ■ Old Condition type ■ Old Condition data
Conditions Removal	■ Condition Name ■ Condition type ■ Condition data
Server Domain creation	■ Domain Name
Server Domain Modification	■ Domain Name ■ Old Domain Name
Server Domain Removal	■ Domain Name

Table 9–2 (Cont.) Access Manager Administrative Audit Events

Administrative Event	Event Data Include
Server configuration change	▪ New details ▪ Old details ▪ Instance Name ▪ Application Name ▪ User Name ▪ Remote ID ▪ Roles ▪ Date and time

9.3.2 Access Manager Run-time Events You Can Audit

Run-time events are those generated by some of the events the Access Manager component engines issue when interacting with one another. The run-time events that can be audited, when they are issued, and the details captured for them are listed in Table 9–3. These event definitions and configurations are implemented as part of the audit service in Oracle Platform Security Services.

Note: The amount and type of information that is logged is controlled by choosing a filter preset in the Audit Configuration. Auditable events for each filter preset are fixed in the read-only `component_events.xml` file. Editing or customizing this file is not supported.

Table 9–3 Access Manager Run-time Audit Events

Run-time Event	Issued When	Event Details Include
Authentication Attempt	A user attempts to access a protected resource and the request arrives at the SSO server; this event might be followed by the events credential submit and authentication success or failure.	▪ Remote IP ▪ Resource ID ▪ Partner ID ▪ Resource ID ▪ Authentication scheme ID ▪ Authentication Policy ID
Authentication Success	A client submits credentials and credential validation is successful.	▪ Remote IP ▪ User Name ▪ User DN ▪ Resource ID ▪ Authentication scheme ID ▪ Authentication Policy ID ▪ Partner ID
Authentication Failure	A client submits credentials and credential validation fails.	▪ Remote IP ▪ User Name ▪ User DN ▪ Resource ID ▪ Authentication Scheme ID ▪ Failure Error Code ▪ Retry count ▪ Authentication Policy ID ▪ Partner ID

Table 9–3 (Cont.) Access Manager Run-time Audit Events

Run-time Event	Issued When	Event Details Include
Session Creation	Authentication succeeds.	■ SSO Session ID ■ User Name ■ User DN ■ Remote IP ■ Resource ID ■ Authentication scheme ID ■ Authentication Policy ID
Session Destroy	Authentication succeeds.	■ SSO Session ID ■ User Name ■ User DN ■ Partner ID
Login success	A client finishes the login procedure and it is forwarded to the agent.	■ Remote IP ■ User Name ■ User DN ■ Authentication level ■ Resource ID ■ Authentication scheme ID ■ Authentication Policy ID ■ Partner ID
Login failure	A client fails to login; this event is issued only when all the retry authentication attempts allowed have failed or when the account is locked.	■ Remote IP ■ User Name ■ Authentication level ■ Resource ID ■ Authentication scheme ID ■ Authentication Policy ID ■ Partner ID
Logout success	A client finishes the logout procedure and is forwarded to the agent.	■ Remote IP ■ User DN ■ Authentication level ■ SSO Session ID ■ Partner ID
Logout failure	A client fails to logout.	■ Remote IP ■ User DN ■ SSO Session ID ■ Failure details ■ Partner ID
Credential Collection	A client is redirected to the credential collection page.	■ Remote IP ■ Resource Name ■ Resource ID ■ Authentication scheme ID ■ Authentication Policy ID
Credential Submit	A client submits credentials.	■ Remote IP ■ User Name ■ Resource ID ■ Authentication scheme ID ■ Authentication Policy ID

Table 9–3 (Cont.) Access Manager Run-time Audit Events

Run-time Event	Issued When	Event Details Include
Authorization Success	A client has been authorized to access a resource.	■ Remote IP ■ User DN ■ Resource ID ■ Authorization Policy ID
Authorization Failure	A client has not been authorized to access a resource.	■ Remote IP ■ User DN ■ Resource ID ■ Authorization Policy ID
Server Start Up	The server starts up.	■ Date and time ■ Instance Name ■ Application Name ■ User Name
Server Shut Down	The server shuts down.	■ Date and time ■ Instance Name ■ Application Name ■ User Name

9.3.3 Auditing Authentication Events

Auditing events during authentication can help Administrators scrutinize security weaknesses in their systems. The events that an Administrator can configure for auditing during authentication are:

- Authentication success
- Authentication failure
- Create, modify, delete, or view Authentication Policy data

Information related to the user being authenticated may include the following:

- IP address
- Browser type
- User Login ID
- Time of Access

> **Note:** Oracle recommends that you avoid auditing, logging, or tracing sensitive user attributes, such as user passwords.

Information about users requesting authentication or brute force attacks can be stored in the file system or in a back-end database.

9.4 Mobile and Social Events You Can Audit

This section provides the following topics:

- REST Run-Time Audit Events
- Mobile and Social Audit Events

9.4.1 REST Run-Time Audit Events

You can audit the run-time events in the following table.

Table 9–4 REST Run-Time Audit Events

Run-time Event	Issued When	Event Details Include
Partner Security Validation Event	Partner credentials are validated using the appropriate security mechanism. The event is logged for both success and failure scenarios.	▪ Partner ID (or any unique partner var) ▪ Remote IP ▪ Security Mechanism ▪ Service Instance (Endpoint or name) ▪ Event Status (success/fail)
Create Token	A token is created.	▪ Event Status ▪ Caller Attribute ▪ Subject Attribute ▪ Filter Subject Attribute ▪ Token Attribute ▪ Opcode Attribute ▪ Message Text
Terminate Token	A token is terminated.	▪ Event Status ▪ Caller Attribute ▪ Subject Attribute ▪ Filter Subject Attribute ▪ Token Attribute ▪ Opcode Attribute ▪ Message Text
Get Token	A token is obtained/read.	▪ Event Status ▪ Caller Attribute ▪ Subject Attribute ▪ Filter Subject Attribute ▪ Token Attribute ▪ Opcode Attribute ▪ Message Text

9.4.2 Mobile and Social Audit Events

You can audit the runtime events in the following table.

Table 9–5 Mobile and Social Run-Time Audit Events

Run-Time Event	Issued When	Event Details Include
IDP Login	A user attempts to log in using an identity provider	▪ Event status ▪ Application ID ▪ Identity provider name ▪ Event message

Table 9–5 (Cont.) Mobile and Social Run-Time Audit Events

Run-Time Event	Issued When	Event Details Include
IDP Rest Access	The REST service for identity providers is accessed	■ Event status ■ Application ID ■ Protocol ■ Event message
IDP User Profile	The user profile related to a user authenticated by an identity provider is obtained	■ Event status ■ Application ID ■ User attributes ■ Identity provider name ■ Event message (optional attributes)
Local Registration	A user registers locally by providing registration info	■ Event status ■ User ID ■ First name ■ Last name ■ E-mail ■ Location ■ Time zone ■ Event message
Security Validation	The security mechanism on the Identity Provider REST Services for Relying Party (RP) is validated	■ Security mechanism ■ Client principal ■ Remote IP address ■ Event message
OpenID Authentication Request	An OpenID authentication request is initiated	■ Event status ■ Request ID ■ IDP login URL ■ Request attributes ■ Message text
OAuth Authentication Request	An OAuth authentication request is initiated	■ Event status ■ Request ID ■ Return URL ■ IDP attributes ■ Message text
OAuth Access Token Request	An OAuth access token request is initiated	■ Event status ■ Request ID ■ Token ■ Message text
Local Login	User logs in locally	■ Event status ■ Application ID ■ User ID ■ Token ■ Message text

9.5 Identity Federation Events You Can Audit

The Identity Federation service also uses the Fusion Middleware Audit Framework for auditing. The following data is part of each audit record, regardless of the event or event type that is audited:

- timestamp - Date and time the audit event occurred
- initiator - the initiator of the audit event (for some events this attribute may be empty)
- ECID - the execution context ID

The Fusion Middleware Audit Framework supports the following audit levels:

- None
- Low
- Medium
- Custom

Events can be audited in different categories and audit levels. Table 9–6 lists the event categories and where they are described in this chapter.

Table 9–6 Categories of Audit Events for Identity Federation

Category	Described in ...
Session Management	Session Management Events for Identity Federation
Protocol Flow	Protocol Flow Events for Identity Federation
Server Configuration	Server Configuration Events for Identity Federation
Security	Security Events for Identity Federation

> **See Also:** Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation chapter on "Diagnostics and Auditing" for greater detail

The following section contain more information.

- Session Management Events for Identity Federation
- Protocol Flow Events for Identity Federation
- Server Configuration Events for Identity Federation
- Security Events for Identity Federation

9.5.1 Session Management Events for Identity Federation

Session Management events for this Identity Federation release, include a subset of auditable events for the previous release. For attributes of each event, see "Session Management Events" in Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation.

Table 9–7 Identity Federation Session Management Events

Auditable Events	Auditing Not Supported in This Release for ...
CreateUserSession – Creation of a session after a successful login	CreateUserFederation – Creation of a user federation between two remote servers

Table 9–7 (Cont.) Identity Federation Session Management Events

Auditable Events	Auditing Not Supported in This Release for ...
DeleteUserSession – Deletion of a session after logout	UpdateUserFederation - Updating the user federation between two remote servers
CreateActiveUserFederation – Creation of an active federation after successful login	DeleteUserFederation – Deletion of a user federation between two remote servers
CreateActiveUserFederation – Creation of an active federation after successful login	
DeleteActiveUserFederation - Deletion of an active federation after logout	
LocalAuthentication – Authentication of a user at OIF	
LocalLogout - Logout of a user at Identity Federation	

9.5.2 Protocol Flow Events for Identity Federation

Protocol flow events for this Identity Federation release, include a subset of auditable events for the previous Identity Federation release. For attributes of each event, see "Protocol Flow Events" in Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation.

Table 9–8 Protocol Flow Events for Identity Federation

Auditable Events	Auditing Not Supported in This Release for ...
IncomingMessage Message being received by Identity Federation	AssertionCreation Creation of an assertion by Identity Federation (Success only
OutgoingMessage Message being sent by Identity Federation (Success only)	
AssertionConsumption Consumption of an assertion by Identity Federation (Success only)	

9.5.3 Server Configuration Events for Identity Federation

Auditable Server configuration events for this Identity Federation release, include a subset of auditable events for the previous Identity Federation release. For attributes of each event, see "Server Configuration Events" in Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation.

Table 9–9 Server Configuration Identity Federation

Auditable Events	Auditing Not Supported in This Release for ...
CreateConfigProperty Adding a new configuration property (Success only)	SetDataStoreType Changing the type of a data store (Success only)
ChangeConfigProperty Changing the value of an existing configuration property (Success only)	ChangeDataStore Setting of the federation data store (Success only)
DeleteConfigProperty Deleting a configuration property (Success only)	

Table 9–9 (Cont.) Server Configuration Identity Federation

Auditable Events	Auditing Not Supported in This Release for ...
CreatePeerProvider Adding a new provider to the list of trusted providers (Success only)	
UpdatePeerProvider Updating the information on an existing provider in the list of trusted providers (Success only) PeerProviderID	
DeletePeerProvider Deleting a provider from the list of trusted providers (Success only)	
LoadMetadata Loading of metadata (Success only)	
ChangeFederation Changing of the trusted providers (Success only)	
ChangeServerProperty Changing of a server configuration property (Success only)	

9.5.4 Security Events for Identity Federation

Auditable security events for this Identity Federation release, include all auditable events for the previous Identity Federation release. For attributes of each event, see "Security Events" in Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation.

Table 9–10 Security Events for Identity Federation

Auditable Events	Auditing Not Supported in This Release for ...
CreateSignature Creation of a digital signature by Identity Federation	n/a
VerifySignature Verification of a digital signature by Identity Federation	
EncryptData Encryption of data by Identity Federation	
DecryptData Decryption of data by Identity Federation	

9.6 Security Token Service Events You Can Audit

Security Token Service provides an independent audit configuration file, named `component_events.xml`, that defines specific event types and events to audit. The following sections provide more details.

- About Audit Record Content Common to All Events
- Security Token Service Administrative Events You Can Audit
- Security Token Service Run-time Events You Can Audit

9.6.1 About Audit Record Content Common to All Events

The following data is part of each audit record, regardless of the event or event type that is audited:

- Date and time of event
- IP address of the client initiating event
- Client identity
- Processing time for the event

9.6.2 Security Token Service Administrative Events You Can Audit

Security Token Service administrative events fall into several configuration management operations defined in `component_events.xml`. See details in Table 9–11.

See Also: "Setting Up Auditing for Oracle Access Management" on page 9-20

Table 9–11 Security Token Service Configuration Management Operations

Security Token Service Configuration Operations	Description
Common Attributes	▪ OldSettings: The string representing the previous settings before the change was applied. ▪ NewSettings: The string representing the new settings. ▪ TemplateID: The ID of the Validation or Issuance Template being created or updated or deleted. ▪ ProfileID: The ID of the Partner Profile being created or updated or deleted. ▪ PartnerID: The ID of the Partner being created or updated or deleted. ▪ SettingsID: The ID of the generic settings being created or updated or deleted.
Create Validation Template	Audit event recorded for the creation of a Validation Template referenced by CreateValidationTemplate. Attributes: ▪ TemplateID ▪ NewSettings
Update Validation Template	Audit event recorded for the update of a Validation Template referenced by UpdateValidationTemplate. Attributes: ▪ TemplateID ▪ OldSettings ▪ NewSettings
Delete Validation Template	Audit event recorded for the delete event of a Validation Template referenced by DeleteValidationTemplate. Attributes: ▪ TemplateID ▪ OldSettings
Create Issuance Template	Audit event recorded for the creation of an Issuance Template referenced by CreateIssuanceTemplate. Attributes: ▪ TemplateID ▪ NewSettings

Table 9–11 (Cont.) Security Token Service Configuration Management Operations

Security Token Service Configuration Operations	Description
Update Issuance Template	Audit event recorded for the update of an Issuance Template referenced by UpdateIssuanceTemplate. Attributes: ■ TemplateID ■ OldSettings ■ NewSettings
Delete Issuance Template	Audit event recorded for the delete event of an Issuance Template referenced by DeleteIssuanceTemplate. Attributes: ■ TemplateID ■ OldSettings
Create Partner Profile	Audit event recorded for the creation of Partner Profile referenced by CreatePartnerProfile. Attributes: ■ ProfileID ■ NewSettings
Update Partner Profile	Audit event recorded for the update of a Partner Profile referenced by UpdatePartnerProfile. Attributes: ■ ProfileID ■ OldSettings ■ NewSettings
Delete Partner Profile	Audit event recorded for the delete event of Partner Profile referenced by DeletePartnerProfile. Attributes: ■ ProfileID ■ OldSettings
Create Partner	Audit event recorded for the creation of Partner Profile referenced by CreatePartner. Attributes: ■ PartnerID ■ NewSettings
Update Partner	Audit event recorded for the update of a Partner Profile referenced by UpdatePartner. Attributes: ■ PartnerID ■ OldSettings ■ NewSettings
Delete Partner	Audit event recorded for the delete event of Partner Profile referenced by DeletePartner. Attributes: ■ PartnerID ■ OldSettings
Generic Admin Creation	Audit event recorded for the generic create administrative operation referenced by GenericAdminCreation. Attributes: ■ SettingsID ■ NewSettings

Table 9–11 (Cont.) Security Token Service Configuration Management Operations

Security Token Service Configuration Operations	Description
Generic Admin Update	Audit event recorded for the update of a generic update administrative operation referenced by GenericAdminUpdate. Attributes: ■ SettingsID ■ OldSettings ■ NewSettings
Generic Admin Removal	Audit event recorded for generic delete administrative operation referenced by GenericAdminDeletion. Attributes: ■ SettingsID ■ OldSettings

9.6.3 Security Token Service Run-time Events You Can Audit

Security Token Service-specific run-time events for token operations are defined in `component_events.xml`. See details in Table 9–12.

Table 9–12 Security Token Service-specific Run-time Events

Token Operations	Description
Common Attributes	■ Requester: Who made the request by sending the RST ■ RelyingParty: The one for whom the token is created ■ UserID: End user identity ■ TokenType: Either SAML11, SAML20, Username, X.509, Kerberos, OAM or Custom ■ Token: The XML value of the token ■ TokenContext: The Context data passed for token operations ■ Message: The XML representation of the incoming or outgoing message
Incoming Message	Incoming RSTR message received by Security Token Service referenced by OutgoingMessage. Attributes populated for this event, if available: ■ Requester ■ RelyingParty ■ Message
Outgoing Message	Outgoing RSTR message received by Security Token Service referenced by IncomingMessage. Attributes populated for this event, if available: ■ Requester ■ RelyingParty ■ Message

Table 9–12 (Cont.) Security Token Service-specific Run-time Events

Token Operations	Description
Token Validation	Audit event for token validation in Security Token Service referenced by TokenValidation. The status attribute indicates whether or not the validation operation was successful. Attributes populated for this event, if available: ▪ Requester ▪ RelyingParty ▪ Token ▪ TokenType ▪ TokenContext ▪ Status
Token Generation	Audit event for token generation in Security Token Service referenced by TokenGeneration. Attributes populated for this event, if available: ▪ Requester ▪ RelyingParty ▪ Token ▪ TokenType ▪ TokenContext ▪ UserID
LDAP User Authentication	Audit event for local user authentication with the LDAP Directory referenced by LDAPUserAuthentication. Attributes populated for this event, if available: ▪ UserID ▪ Status
Generic Runtime Operation	Audit event for a generic operation performed by Security Token Service referenced by GenericRuntimeOperation Attributes populated for this event, if available: ▪ OperationType: type of operation ▪ OperationData: string representing context of the operation

9.7 Setting Up Auditing for Oracle Access Management

The following overview provides a list of the tasks that must be performed before you can perform auditing for Oracle Access Management.

Task overview: Configuring auditing

1. Set up the audit data store, as described in "Setting Up the Audit Database Store" on page 9-21.
2. Set up publishing for audit reports, as described in "Preparing Oracle Business Intelligence Publisher EE" on page 9-21.
3. Edit the Audit Configuration in the Oracle Access Management Console, as described in:
   - Using the Oracle Access Management Console for Audit Configuration
   - Adding, Viewing, or Editing Audit Settings

See Section 9.8, "Validating Auditing and Reports" for details testing and validating the audit configuration.

9.7.1 Setting Up the Audit Database Store

This topic provides an overview of the tasks required to create the audit database and extend the schema using the Repository Creation Utility (RCU). This task is required before you can audit events for Oracle Access Management if you choose a database store for audit data.

See Also:

- *Oracle Fusion Middleware Application Security Guide* for details on managing the audit store
- Oracle Fusion Middleware Repository Creation Utility User's Guide

Task overview: Creating the database audit store

1. Create an audit database, version 11.1.0.7 or later, as described in the *Oracle Fusion Middleware Application Security Guide*.
2. Run the RCU against the database, as described in "Create the Audit Schema using RCU" in the Oracle Fusion Middleware Repository Creation Utility User's Guide.
3. Set up audit data sources for the audit loader and configure it for the OAM Server as described in "Set Up Audit Data Sources" in the *Oracle Fusion Middleware Application Security Guide*:
   - Use the Java EE audit loader configuration for WebLogic Server.
   - Use the JNDI name of the data source jdbc/AuditDB that points to the database that was set up in step 2 above.
4. In the service instance specified in the domain file (`$DOMAIN_HOME/config/fmwconfig/jps-config.xml`), enable database auditing by changing the value of the property `audit.loader.repositoryType` to `DB`. For example:

```
<serviceInstance name="audit.db" provider="audit.provider">
   <property name="audit.loader.repositoryType" value="DB"/>
   <property name="auditstore.type" value="db"/>
   <property name="audit.loader.jndi" value="jdbc/AuditDB"/>
   <property name="audit.maxDirSize" value="0"/>
   <property name="audit.filterPreset" value="None"/>
   <property name="audit.maxFileSize" value="104857600"/>
   <property name="audit.loader.interval" value="15"/>
   <propertySetRef ref="props.db.1"/>
</serviceInstance>
```

5. Restart the WebLogic Server.
6. Ensure that the audit loader is configured for the OAM Server and that it points to the proper database, as described in "Configure a Database Audit Store for Java Components" in the *Oracle Fusion Middleware Application Security Guide*.
7. Maintain the bus-stop files, as described in "Tuning the Bus-stop Files" in the *Oracle Fusion Middleware Application Security Guide*.

9.7.2 Preparing Oracle Business Intelligence Publisher EE

You must prepare Oracle Business Intelligence Publisher Enterprise Edition (EE) for use with Oracle Access Management audit reports as outlined in the following procedure.

See Also:

- *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*
- *Oracle Fusion Middleware Developer's Guide for Oracle Business Intelligence Enterprise Edition*
- *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Enterprise Edition*

Task overview: Prepare Oracle BI Publisher

1. Install Oracle BI Publisher, as described in the *Oracle Business Intelligence Enterprise Edition Installation and Upgrade Guide*.
2. Perform tasks as described in "Set Up Oracle Reports in Oracle Business Intelligence Publisher" in the Oracle Fusion Middleware Application Security Guide:
   - Unzip the `oam_audit_reports_11_1_2_0_0.zip` into your Reports folder.

     This zip file is located in the $ORACLE_HOME/oam/server/reports/ directory.
   - Set up the JNDI connection for the audit data source or the JDBC connection the audit database.

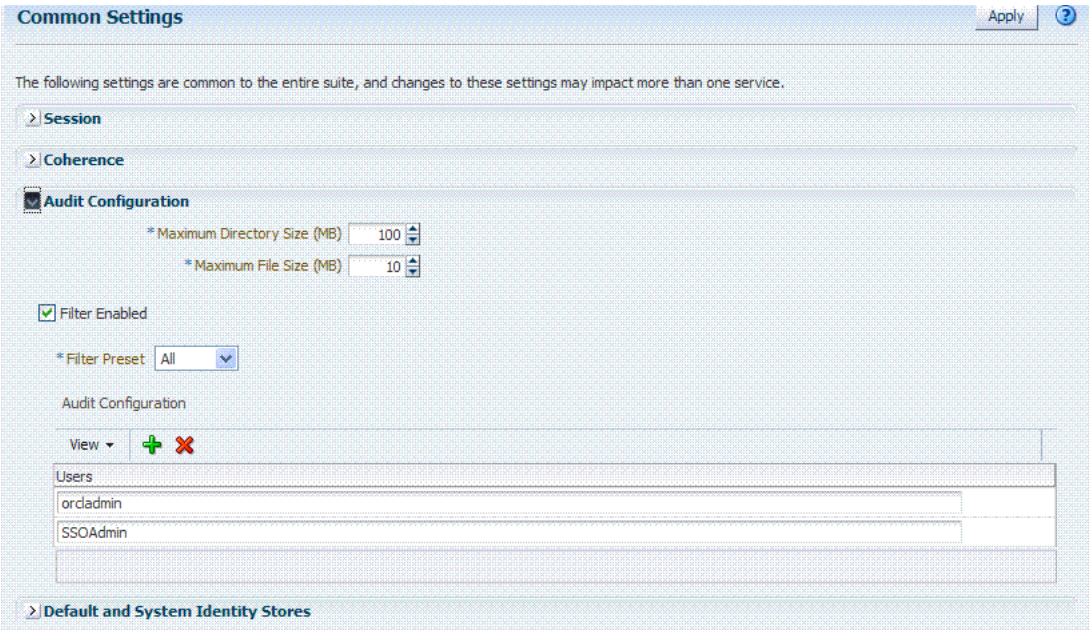
     The datasource name must be "Audit".
3. Set up audit report templates, as described in the section "Set Up Audit Report Templates" of the *Oracle Fusion Middleware Application Security Guide*.
4. Set up audit report filters, as described in the section "Set Up Audit Report Filters" of the *Oracle Fusion Middleware Application Security Guide*.
5. View reports from the following path: Reports/Oracle_Fusion_Middleware_Audit reports.

See Also: "Validating Auditing and Reports" on page 9-25

9.7.3 Using the Oracle Access Management Console for Audit Configuration

Within Oracle Access Management, certain Audit Configuration settings are accessible as Common Settings under the System Configuration. These settings are not required when you audit to a database. Figure 9–2 shows the Audit Configuration section of the Common Settings page.

Figure 9–2 Common Settings: Auditing Configuration



The Auditing section provides settings for the Log Directory, Filter Settings, and Audit Configuration Users.

> **Note:** The actual log directory cannot be configured using the Oracle Access Management Console. It is the default directory for the Common Audit Framework audit loader. Changing the directory impacts the audit loader and is not supported.

Table 9–13 describes the elements in the Audit Configuration page.

Table 9–13 Audit Configuration Elements

Elements	Description
Maximum Directory Size	The maximum size, in MBs, of the directory that contains audit output files. For example, assuming that the maximum file size is 10, a value of 100 for this parameter implies that the directory allows a maximum of 10 files. Once the maximum directory size is reached, the audit logging stops. For example, a value of 100 specifies a maximum of 10 files if the file size is 10 MB. If the size exceeds this, the creation of audit logs stops. This is configured using the `max.DirSize` property described in the configuration file`jps-config.xml`. This property controls the maximum size of a bus-stop directory for Java components as described in the *Oracle Fusion Middleware Application Security Guide*.
Maximum File Size	The maximum size, in MBs, of an audit log file. Once the size of a file reaches the maxi mum size, a new log file is created. For example, specifying 10 directs file rotation when the file size reaches 10 MB. This is configured using the `max.fileSize` property described in the configuration file`jps-config.xml`. This property controls the maximum size of a bus-stop file for Java components as described in the *Oracle Fusion Middleware Application Security Guide*.
Filter Enabled	Check this box to enable event filtering.

Table 9–13 (Cont.) Audit Configuration Elements

Elements	Description
Filter Preset	Defines the amount and type of information that is logged when the filter is enabled. The default value is Low. ■ All: captures and records all auditable OAM events ■ Low: captures and records a specific set of auditable OAM events ■ Medium: captures and records events covered by the Low setting plus a number of other auditable OAM events ■ None: no OAM events are captured and recorded Events for each filter preset are fixed in the read-only component_events.xml file. Editing or customizing this file is not supported for Oracle Access Management. Only items that are configured for auditing at the specified filter preset can be audited.
Users	Specifies the list of users whose actions are included only when the filter is enabled. All actions of the special users are audited regardless of the filter preset. Administrators can add, remove or edit special users from this table.

9.7.4 Adding, Viewing, or Editing Audit Settings

The Administrator controls the amount and type of information that is logged by choosing a filter preset from the Audit Configuration tab on the OAM Server Common Properties page.

> **Note:** Auditable events for each filter preset are fixed in the read-only `component_events.xml` file. Editing or customizing this file is not supported.

The following procedure describes how to add, view, or edit OAM Server Common Audit Configuration settings. Individual audit policies cannot be configured using Fusion Middleware Control. Oracle Access Management does not use JPS infrastructure to configure the audit configuration. There are no WebLogic Scripting Tool (WLST) commands for auditing.

To view or edit auditing configuration in the Oracle Access Management Console

1. From the Oracle Access Management Console, click Common Settings.
2. In the Audit Configuration section, enter appropriate details for your environment (Table 9–13):
   - Maximum Log directory size
   - Maximum Log file size
   - Filter Enabled
   - Filter Preset (to define verbosity of audit data)
   - Users to include specific users from the audit by clicking the Add (+) button above the Users table and entering a value in the field.
3. Click Apply to submit the Audit Configuration (or close the page without applying changes).
4. Restart AdminServer and OAM Servers after changes are applied.

9.8 Validating Auditing and Reports

Use the following procedure to test your run-time event auditing configuration.

Prerequisites

- Configure auditing parameters as described in "Setting Up Auditing for Oracle Access Management" on page 9-20.
- Ensure the Agents and Servers are running.
- Prepare BI EE Publisher as described in "Preparing Oracle Business Intelligence Publisher EE" on page 9-21.

To validate your auditing configuration

1. **Authentication Event**: Audit Console login success/failure as described here or any administrative event described in Table 9–2, " Access Manager Administrative Audit Events".
   a. Sign out of Oracle Access Management Console.
   b. Sign in to Oracle Access Management Console with invalid user (not Administrator) credentials.
   c. Sign in to Oracle Access Management Console using the proper Administrator credentials.
   d. **Review Log File**: Open the audit.log file and search for the last Administrative event entries:

      `$DOMAIN_HOME/servers/$ADMINSERVER_NAME/logs/auditlogs/OAM/audit.log`

   e. **Review Database Log**:
      a. Perform tasks in "Setting Up the Audit Database Store" on page 9-21.
      b. Generate an Authentication event as described in Step 1.
      c. Connect to the database and connecting to the database and reviews audit events under IAU_BASE table.
2. **Runtime Event**: Audit Authorization success/failure as described here or any runtime event described in Table 9–3, " Access Manager Run-time Audit Events".
   a. In a browser window, enter the URL of a protected resource for which you are not authorized.
   b. **Review Log File**: Open the audit.log file and search for the last Administrative event entries:

      `$DOMAIN_HOME/servers/$ADMINSERVER_NAME/logs/auditlogs/OAM/audit.log`

   c. **Review Database Log**:
      a. Perform tasks in "Setting Up the Audit Database Store" on page 9-21.
      b. Generate and Authentication event as described in Step 1.
      c. Connect to the database and connecting to the database and reviews audit events under IAU_BASE table.
3. **Audit Configuration Changes**: See Also "Adding, Viewing, or Editing Audit Settings" on page 9-24.

a. From the Oracle Access Management Console, System Configuration tab, Common Configuration, modify Maximum Directory Size (MB) and Maximum File Size (MB) parameters.

b. Repeat Steps here to confirm auditing is working.

4. **View Reports**:

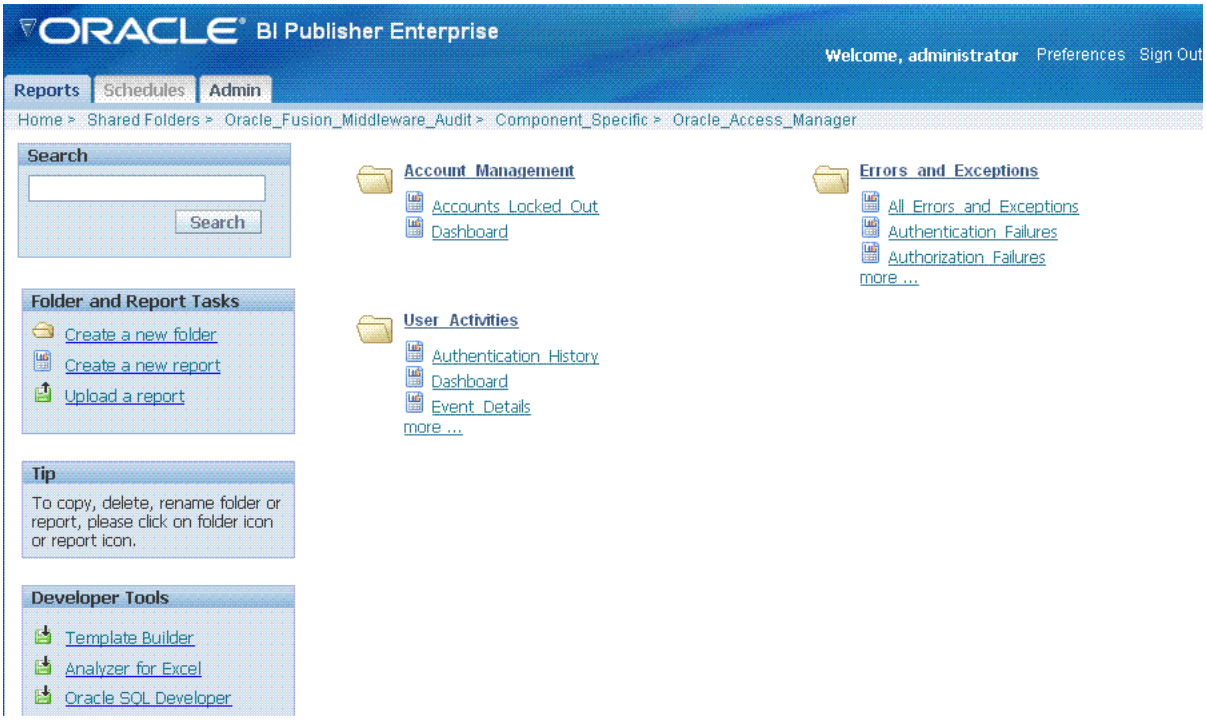
a. Sign in to Oracle BI EE. For example:

http://*host:port*/xmlpserver

Here, *host* is the computer hosting Oracle BI Publisher; *port* is the listening port for BI Publisher; xmlpserver is the login page for BI Publisher.

b. In Oracle BI Publisher Enterprise, locate the desired reports. For example:

Click Shared Folders, the component that contains the report you would like to view and then select the desired report.



c. Perform any analysis as desired, or edit your auditing configuration as needed.

`$MW_HOME/user_projects/domains/base_domain/servers/oam_server1/logs/auditlogs/OAM/`

5. Archive and manage audit logs according to your company policies.

10

Logging WebGate Event Messages

Each WebGate instance (both 10g and 11g WebGates) can write information about its processes and states to a log file. The logs can be configured to provide information at various levels of granularity. For example, you can record errors, errors plus state information, or errors, states, and other information to the level of a debug trace. You can also eliminate sensitive information from the logs.

> **Note:** Unless explicitly stated, all information in this section applies equally to 10g and 11g Webgates. For instance, the location of the log configuration, oblog_config_wg.xml, has changed for 11g while the content of the file and most other specifics have not.

This chapter provides the following sections:

10.1 About Logging, Log Levels, and Log Output

The logging feature enables you to analyze system performance and to troubleshoot issues. You can configure logging for individual WebGate instances of the following components:

- 10g WebGates
- 11g WebGates
- Custom Access Clients (Access Manager SDK)

You can configure different logging levels for different functional areas of a component instance. For example, you can capture debug data for LDAP activity while recording only error-level data for all other component activity. You can also record the time taken for each request that a component processes, and you can send different levels of

log data to different destinations. For example, you can send error information to a file and all other log data to the system log.

Securing Sensitive Information: Access Manager handles sensitive information about users. On some sites, this includes user password, date of birth, a social security number, security questions and answers for lost password requests. Sensitive data on your site might include a security number or other information you want to secure. At certain logging levels, sensitive information might be captured. Today, you can filter sensitive information out of log files, as described in "Filtering Sensitive Attributes" on page 10-26.

Configuring Logging: You configure logging by editing a configuration file that is stored with the Webgate. See "About Log Configuration File Paths and Contents" on page 10-4.

Logging Levels: You can request logging at various levels. The highest level is Fatal and the lowest level is Trace. See "About Log Levels" on page 10-2 for details.

Logging Destinations: In the log configuration file, a parameter known as a log writer determines the destination for log output. See "About Directing Log Output to a File or the System File" on page 10-9 for details. You create a complete definition for your log output by identifying a log writer and a log level. This complete definition is known as a log-handler. See "The Second Compound List and Log Handlers" on page 10-13 for details.

The rest of this section discusses the following topics:

- About Log Levels
- About Log Output

10.1.1 About Log Levels

A logging level determines the amount of data that is written to the log data file. Each logging level is cumulative, that is, each level contains all the data generated by the higher levels. For example, Error logs contain all the data generated by the Fatal logs, plus the events that are specific to the Error category.

Table 10–5 describes the levels. The default log level is Warning: LOGLEVEL_ WARNING.

Table 10–1 Logging Levels

Level	Number of Events Reported	Description
LOGLEVEL_ FATAL	> 60	Records critical errors. Generally, these events can cause the component to exit. In the event of a system failure, Fatal-level messages are always flushed to the log file.
LOGLEVEL_ ERROR	> 960	Records events that may require corrective action, for example, a component is unavailable. Error logs can also be generated for transient or self-correcting problems, for example, failure to connect to another component.
LOGLEVEL_ WARNING	> 1200	Records issues that may lead to an error or require corrective action in the future.
LOGLEVEL_ INFO	> 400	Records completed actions or the current state of a component, for example, the component is initializing.

Table 10–1 (Cont.) Logging Levels

Level	Number of Events Reported	Description
LOGLEVEL_ DEBUG1	> 400	Records debugging information. Typically, the information at this level is only meaningful to a developer.
LOGLEVEL_ DEBUG2	> 100	Records advanced debugging information. This level augments the Debug1 log level. Typically, the information at this level is only meaningful to a developer.
LOGLEVEL_ DEBUG3	> 900	Records a large amount of debugging information or data pertaining to an expensive section of the code. This level is useful for debugging a tight loop or a performance-sensitive function. Typically, the information at this log level is only meaningful to a developer. These logs can contain sensitive information.
LOGLEVEL_ TRACE	> 900 Access Manager API > 150 third-party API	This log level is used to trace code path execution or to capture performance metrics. This information is captured at the entry and exit points for each component function. Typically, the information at this log level is only meaningful to a developer. These logs can contain sensitive information.
LOGLEVEL_ ALL	> 5000	This level includes all the events and states from all other levels.

Compound Lists: You can collect log data from non-adjacent levels and send different levels of log data to different destinations. For example, you can send the Fatal logs to the system log, and write Error logs to a file. See "The Second Compound List and Log Handlers" on page 10-13 for details.

Threshold: You configure a global cutoff, or threshold, for logging on the LOG_ THRESHOLD_LEVEL parameter in the log configuration file. By default, if a configured level for a log-handler exceeds the cutoff, the log data is not collected. Note that logs can fail to be written despite the configured level because the LOG_THRESHOLD_LEVEL parameter takes precedence over the level configured in the log-handler. Only the MODULE_CONFIG section of the log configuration file overrides the global threshold. See "The Simple List and Logging Threshold" on page 10-11 for details.

Overrides: You specify function- or module-specific overrides for the global logging threshold on the MODULE_CONFIG parameter. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.

Note: The Trace and Debug3 level logs can contain sensitive information. For more information about sensitive information, see "Filtering Sensitive Attributes" on page 10-26.

10.1.2 About Log Output

Each line of the log output file follows a particular structure. A line starts with a date and time stamp, followed by the thread that is processing the request, the name of the function or module being logged, and the log level.

The following is a snapshot of the left-most columns of the log output file:

```
2007/06/01@00:50:56.859000    5932  2672  DB_RUNTIME     DEBUG3
2007/06/01@00:50:56.859000    5932  2672  DB_RUNTIME     TRACE
2007/06/01@00:50:56.859000    5932  2672  LDAP           DEBUG1
2007/06/01@00:50:56.859000    5932  2672  LDAP           TRACE
2007/06/01@00:50:56.859000    5932  2672  LDAP           TRACE
```

The two columns to the right of the log level are internal code references, and can be ignored. The following is an example of these columns:

```
0x00000205   ldap_connection_mngr.cpp:212
```

To the right of the internal code reference columns, you see the log message that is associated with this log level, for example, "`Function called`" or "`Function returned`," followed by the name of the function, as illustrated in the following example:

```
"Function called"   _CallName^ldap_init
```

The log message and function name can be followed by additional information, for example, the duration of the process, the address space where the function is running, or state information, as illustrated in the following examples:

```
"Connection health check result"  Server^dlsun4072  Port^389  Server Priority^1
Connection available^true

"Function entered"    _TraceName^ConnectionWatcherThread::CheckPrimaries

"Function exited"     _TraceName^ConnectionWatcherThread::CheckPrimaries
TraceDuration^0.000028

"Connection Pool Status in ValidateConnections()    "NumLivePrimaryConnections^1
Maximum Connections^1     UpConnections^1     Failover Threshold^1     Max Session
Time^0    SleepFor^60
```

To secure sensitive information and ensure that it is not included in the output of the logging operation, see "Filtering Sensitive Attributes" on page 10-26.

See Also: "Log Configuration File Contents" on page 10-5

10.2 About Log Configuration File Paths and Contents

The log configuration file, oblog_config_wg.xml, is used to specify configuration details for Webgate logging (oblogs).

You configure parameters that control Webgate log output in XML-based log files that you edit with a plain text editor. Changes that you make to these files are effective immediately.

The rest of this section discusses the following topics:

- Log Configuration File Paths and Names
- Log Configuration File Contents

10.2.1 Log Configuration File Paths and Names

By default, Webgate logging is enabled and oblogs are generated in the Oracle HTTP Server (OHS) instance diagnostics directory: instance1/diagnostics/logs/OHS/ohs1/.

Each Webgate instance includes a log configuration file (oblog_config_wg.xml) where you can define what type of data is recorded in the log output. A log configuration file

is distinct from the log output file. For details on log output files, see "About Log Output" on page 10-3.

The oblog_config_wg.xml file is updated when you edit to configure Webgate logging. For example, by setting a new log threshold level, changing a log file name, or filtering logs related to some modules and so on.

Log configuration, oblog_config_wg.xml, files reside in the following locations depending upon your Webgate version:

10g Webgates: *Webgate_install_dir*\oblix\config

11g Webgates: $*WEBGATE_HOME* or *$ORACLE_HOME*/webgate/ohs/config. The same oblog_config_wg.xml file is copied to the Webgate instance directory ($*INSTANCE_HOME*/webgate/config) when the Webgate instance is created The later is to be used when configuring logging.

> **Note:** Do not change the path to this file. If you install more than one instance, a log configuration file is installed for each instance. When configuring logging, oblog_config_wg.xml under *$INSTANCE_HOME* should be updated.

After installation, oblog_config_wg.xml and oblog_config_wg_original.xml both contain comments to help guide your editing.

Table 10–2 lists the names of the log configuration files. Do not change the names.

Table 10–2 Log Configuration File Names for Components

Component	Log Configuration FIle Name
Webgate	oblog_config_wg.xml
Access Manager SDK (custom Access Client)	oblog_config.xml

> **Important:** Do not change the default path or name for any logging configuration file.

The oblog_config_wg.xml file can be edited using any text editor as long as you ensure that after the update the file is still valid XML. After updates to the file, changes will take affect in about 60 seconds.

10.2.2 Log Configuration File Contents

The log configuration file controls items such as the following:

- What is logged for that component
- Where the data is sent
- In certain cases, the size of the write buffer used for the log
- Log file rotation intervals

The configuration file contains XML statements that you can edit in a text editor.

10.2.2.1 When Changes to the File Take Effect

A watcher thread picks up changes to the log configuration file every 60 seconds and ensures that changes take effect. It is unnecessary to restart the server

10.2.2.2 About Comments in the Log File

Each default log configuration file contains comments that are intended to assist with editing the file.

See Also: The log configuration file on your system.

The commented default configuration file is shown here:

Comments can span one or multiple lines. Comments look similar to the following:

```
<!--NetPoint Logging Configuration File                          -->
<!--                                                             -->
<!--Changes to this file will be automatically taken into  effect  -->
<!--in one minute. This does not require any server restart.      -->
```

Example 10–1 shows a typical log configuration file with comments. Example 10–8 shows an example of a log file without comments.

Example 10–1 The Default Log Configuration File with Comments

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<!--============================================================   -->
<!--============================================================   -->
<!--NetPoint Logging Configuration File                           -->
<!--                                                             -->
<!--Changes to this file will be automatically taken into  effect  -->
<!--in one minute. This does not require any server restart.      -->
<!--                                                             -->
<!--============================================================   -->
<!--============================================================   -->
<!--Set the Log Threshold                                         -->
<!---->
<!--The log Threshold determines the amount of information to log. -->
<!--Selecting a lower level of logging includes the information    -->
<!--logged at the higher levels. For example, LOGLEVEL_ERROR      -->
<!--includes the information collected at LOGLEVEL_FATAL.         -->
<!---->
<!--Choices are:                                                  -->
<!--LOGLEVEL_FATAL - serious error, possibly a program halt.      -->
<!--LOGLEVEL_ERROR - a transient or self-correcting problem.      -->
<!--LOGLEVEL_WARNING - a problem that does not cause an error.    -->
<!--LOGLEVEL_INFO - reports the current state of the component.   -->
<!--LOGLEVEL_DEBUG1 - basic debugging information.                -->
<!--LOGLEVEL_DEBUG2 - advanced debugging information.             -->
<!--LOGLEVEL_DEBUG3 - logs performance-sensitive code.            -->
<!--LOGLEVEL_TRACE - used when you need to trace the code path    -->
<!--execution or capture metrics. Includes all previous levels.  -->
<!--                                                             -->
<!--If you do not specify a threshold, the default is WARNING.    -->
<!--                                                             -->
<!--In addition to specifying a threshold, you need to specify    -->
<!--if changes that you make to the logging configuration in      -->
<!--the NetPoint GUI overwrite the settings in this file. The     -->
<!--AutoSync parameter accomplishes this. This parameter takes a  -->
<!--value of True or False. If set to True, changes made in the   -->
```

```
<!--GUI overwrite changes in this config file. If False, changes   -->
<!--made in the GUI are only in effect until the server is         -->
<!--stopped or restarted, after which the settings in this file    -->
<!--overwrite the GUI settings. The default is True.               -->
<!--                                                               -->
<!--                                                               -->
<CompoundList xmlns="http://www.oblix.com" ListName="logframework.xml.staging">
  <SimpleList>
   <NameValPair ParamName="LOG_THRESHOLD_LEVEL" Value="LOGLEVEL_WARNING" />
   <NameValPair ParamName="AUTOSYNC" Value="True" />
   <!-- SECURE_LOGGING flag can be used to turn on/off Secure Logging -->
   <!-- feature. By defalut this feature is tunred on.               -->
   <NameValPair ParamName="SECURE_LOGGING" Value="On" />
   <!-- In addition to specifying a log threshold, you need to       -->
   <!-- configure log level for which Secure Logging should be       -->
   <!-- applicable.Choices for this can be used same as that of      -->
   <!-- LOG_THRESHOLD_LEVEL. Secure log threshold can be set using   -->
   <!-- LOG_SECURITY_THRESHOLD_LEVEL flag. Default value for Secure  -->
   <!-- log threshold is TRACE.                                      -->
   <NameValPair ParamName="LOG_SECURITY_THRESHOLD_LEVEL"
    Value="LOGLEVEL_TRACE" />
   <!-- LOG_SECURITY_ESCAPE_CHARS is used to configure escape sequence -->
   <!-- characters. This can be used to avoid additional information   -->
   <!-- getting overwritten due to Secure Logging mechanism. Currently -->
   <!-- following characters have been identified as escape sequence.  -->
   <!-- Configuring inappropriate characters may lead to sensitive     -->
   <!-- information being unmasked.                                    -->
   <NameValPair ParamName="LOG_SECURITY_ESCAPE_CHARS" Value="),]" />
   <!-- LOG_SECURITY_MASK_LENGTH is used to specify default masking    -->
   <!-- length if none is specified in FILTER_LIST.                    -->
   <!-- Default value for LOG_SECURITY_MASK_LENGTH is 300.             -->
   <NameValPair ParamName="LOG_SECURITY_MASK_LENGTH" Value="300" /   >
  </SimpleList>
<!--                                                               -->
<!--                                                               -->
<!--===============================================================   -->
<!--===============================================================   -->
<!--Configure the Log Level                                        -->
<!--                                                               -->
<!--                                                               -->
<!--To configure a log level, you specify a name for the           -->
<!--configuration (for instance, MyErrorLog1) and                   -->
<!--the log level that you are configuring. You can create         -->
<!--more than one configuration per log level if you want          -->
<!--to output to more than one destination. You can output to      -->
<!--the system log or to a file, as specified on                   -->
<!--the LOG_WRITER parameter. The value for the LOG_WRITER         -->
<!--parameter may only be SysLogWriter, FileLogWriter or           -->
<!--MPFileLogWriter. The MPFileLogWriter is a multi-process safe   -->
<!--FileLogWriter. It should be used to log in webcomponents i.e   -->
<!--Webgate loaded on multiprocess     -->
<!--webservers like Apache and IPlanet(UNIX)                       -->
<!--                                                               -->
<!--If you do not specify an output destination, the default is    -->
<!--SysLogWriter.                                                  -->
<!--                                                               -->
<!--If outputting to a file, you also specify a file name and      -->
<!--other parameters. Default parameter values are:                -->
<!--FILE_NAME: <installdir>/oblix/log/oblog.log                    -->
<!--BUFFER_SIZE: 32767 (number of bytes)                           -->
```

```
<!--MAX_ROTATION_SIZE: 5242880 (bytes, equivalent to 5MB)          -->
<!--MAX_ROTATION_TIME: 86400 (seconds, equivalent to one day)      -->
<!--                                                              -->
<!--Configuring the log level does not ensure that the data is     -->
<!--actually collected. Data collection for a log is               -->
<!--determined by the LOG_THRESHOLD_LEVEL parameter, above,        -->
<!--and the LOG_STATUS parameter in the log configuration.         -->
<!--                                                              -->
<!--If you do not provide a LOG_STATUS, the default for            -->
<!--LOGLEVEL_FATAL, LOGLEVEL_ERROR, and LOGLEVEL_WARNING,          -->
<!--is On.                                                        -->
<!---->
<!--This file contains several sample configurations that are      -->
<!--enclosed in comments. To use them, remove the comments.        -->
<!--                                                              -->
   <CompoundList xmlns="http://www.oblix.com" ListName="LOG_CONFIG">
    <!--Write all FATAL logs to the system logger. -->
    <ValNameList xmlns="http://www.oblix.com" ListName="LogFatal2Sys">
      <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_FATAL" />
      <NameValPair ParamName="LOG_WRITER" Value="SysLogWriter" />
      <NameValPair ParamName="LOG_STATUS" Value="On" />
    </ValNameList>
    <!--Write all logs to the Oracle log file.                    -->
    <ValNameList xmlns="http://www.oblix.com" ListName="LogAll2File">
      <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_ALL" />
      <NameValPair ParamName="LOG_WRITER" Value="FileLogWriter" />
      <NameValPair ParamName="FILE_NAME" Value="oblog.log" />
      <!-- Buffer up to 64 KB (expressed in bytes) of log entries before
       flushing to the file.     -->
      <NameValPair ParamName="BUFFER_SIZE" Value="65535" />
      <!--Rotate the log file once it exceeds 50 MB (expressed in bytes). -->
      <NameValPair ParamName="MAX_ROTATION_SIZE" Value="52428800" />
      <!--Rotate the log file after 24 hours (expressed in seconds). -->
      <NameValPair ParamName="MAX_ROTATION_TIME" Value="86400" />
      <NameValPair ParamName="LOG_STATUS" Value="On" />
    </ValNameList>
  </CompoundList>
<!--  List of values that can be specified in the module config     -->
<!--                                                               -->
<!--  On - Uses loglevel set in the loglevel threshold             -->
<!--  Off - No information is logged                               -->
<!--  LOGLEVEL_FATAL - serious error, possibly a program halt.     -->
<!--  LOGLEVEL_ERROR - a transient or self-correcting problem.     -->
<!--  LOGLEVEL_WARNING - a problem that does not cause an error.   -->
<!--  LOGLEVEL_INFO - reports the current state of the component.  -->
<!--  LOGLEVEL_DEBUG1 - basic debugging information.               -->
<!--  LOGLEVEL_DEBUG2 - advanced debugging information.            -->
<!--  LOGLEVEL_DEBUG3 - logs performance-sensitive code.           -->
<!--  LOGLEVEL_TRACE - used when you need to trace the code path   -->
<!--  execution or capture metrics. Includes all previous levels.  -->
<!--                                                               -->
<!--  List of modules that can be specified in the module config   -->
<!--                                                               -->
<!--  ALL_MODULES - Applies to all log modules                     -->
<!--  Specific module name - Applies to specific module            -->
<!--                                                               -->
<!--                                                               -->
<!--    <ValNameList                                               -->
<!--        xmlns="http://www.oblix.com"                           -->
<!--        ListName="MODULE_CONFIG">                              -->
```

```
<!--        <NameValPair                                          -->
<!--            ParamName="CONNECTIVITY"                          -->
<!--            Value="LOGLEVEL_TRACE"></NameValPair>             -->
<!--    </ValNameList>                                            --><!--
<!--FILTER_LIST is used to maintain list of attributes which need        -->
<!-- to be treated as sensitive and hence will be filtered out from   -->
<!-- from logs. FILTER_LIST consist of all attribute names along      -->
<!-- with corresponding masking lengths.There should be separate      -->
<!-- entry in the list for the display name of the attribute          -->
<!-- identified as sensitive. All attributes configured are case      -->
<!-- sensitive i.e. if we configured sensitive attribute homePhone    -->
<!-- as HomePhone then it will not get filtered out from logs.        -->
<!-- By default four attributes (password, Password, response and     -->
<!-- Response) are configured as sensitive                            -->
<!-- A sample configuration is shown below                            -->

<!-- <ValNameList                                                  -->
<!--    xmlns="http://www.oblix.com"                              -->
<!--    ListName="FILTER_LIST">                                   -->
<!--    <NameValPair                                              -->
<!--      ParamName="password"                                    -->
<!--      Value="40"></NameValPair>                               -->
<!--    <NameValPair                                              -->
<!--      ParamName="Password"                                    -->
<!--      Value="40"></NameValPair>                               -->
<!--    <NameValPair                                              -->
<!--      ParamName="response"                                    -->
<!--      Value="40"></NameValPair>                               -->
<!--     <NameValPair                                             -->
<!--      ParamName="Response"                                    -->
<!--      Value="40"></NameValPair>                               -->
<!--    <NameValPair                                              -->
<!--      ParamName="homePhone"                                   -->
<!--      Value="40"></NameValPair>                               -->
<!--  </ValNameList>                                              -->
  <ValNameList xmlns="http://www.oblix.com" ListName="FILTER_LIST">
    <NameValPair ParamName="password" Value="40" />
    <NameValPair ParamName="Password" Value="40" />
    <NameValPair ParamName="passwd" Value="40" />
    <NameValPair ParamName="Passwd" Value="40" />
    <NameValPair ParamName="response" Value="40" />
    <NameValPair ParamName="Response" Value="40" />
  </ValNameList>
</CompoundList>
```

10.3 About Directing Log Output to a File or the System File

To send log output to a destination, you configure a log writer. A log writer can send log output to one, none, or both of the following:

- A log file.

  This file resides under the root installation directory of the component.

- The system file of the host for the component.

  If more than one component resides on the same host, all components send data to the system log file on that host.

You can send logs of a particular level, or logs of different levels, to more than one type of log writer. For instance, you can send Fatal data to the system log, and send Trace data to a file. Or, you can send Fatal data to both the system log and a file.

You define log writers in the log configuration file using the `LOG_WRITER` parameter in a log-handler definition. See "The Second Compound List and Log Handlers" on page 10-13 for details.

The log writers are described in Table 10–3.

Table 10–3 Log Writers

Writer	Description
`SysLogWriter`	Sends data to the system log file for the computer that hosts the component being logged. Typically, the system log file contains event information from multiple applications and the host operating system. For Windows, this is the application log file located at My Computer, Manage, Event Viewer, Application. For UNIX platforms, the name and location of the system log file can vary according to the computer and the preferences of the system Administrator. Consult the Administrator of the computer for the file location. The default log configuration file sends Fatal, Error, and Warning messages to the system log file.
`FileLogWriter`	This writer is recommended when you want to save log data for an OAM Server or other single-process application on a disk file. The FileLogWriter opens the log file and holds it open for disk writes until the approximate file size limit or file rotation interval has been reached. Oracle does not recommend this log writer for situations where more than one process needs to write to the same log file. For these situations, use the MPFileLogWriter.
`MPFileLogWriter`	This writer resembles the FileLogWriter, except that it opens and closes the log file each time it writes data to the file. This enables multiple processes to write to the file in turn. However, this practice can slow performance substantially. Oracle recommends using MPFileLogWriter only when FileLogWriter fails to record logging data from some of the processes associated with a multi-process application, for example, an Access Client installed on a multi-process Web server (such as Apache) or the Solaris version of the iPlanet Web server.

10.4 Structure and Parameters of the Log Configuration File

The log configuration file conforms to a standard format. You can edit parameters and add or subtract sections known as log-handler definitions, but do not change the underlying format of the log configuration file.

See Example 10–1 or Example 10–8 for a listing of the default log configuration file.

The rest of this section discusses the following topics:

- The Log Configuration File Header
- The Initial Compound List
- The Simple List and Logging Threshold
- The Second Compound List and Log Handlers
- The List for Per-Module Logging

- The Filter List
- About XML Element Order

10.4.1 The Log Configuration File Header

At the beginning of the log configuration file there is an XML file header:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
```

The header serves the following purposes:

- The header declares the relevant XML version, which is always 1.0.
- It also declares the encoding format, which is always ISO-8559-1.

10.4.2 The Initial Compound List

The header is followed by an initial compound list that is delimited as follows:

```
<CompoundList xmlns="http://www.oblix.com" ListName="logframework.xml.staging">
. . .
</CompoundList>
```

The first compound list is structured as follows:

- The compound list start-tag shows the relevant XML name space for the log configuration file in the `xmlns` parameter.
- The compound list start-tag also provides a name for the compound list in the `ListName` parameter.
- The compound list end-tag occurs near the end of the file.

  This compound list delimits all log configuration information.

10.4.3 The Simple List and Logging Threshold

After the start-tag for the first compound list, a simple list sets the global defaults for logging, as follows:

```
<SimpleList>
. . .
</SimpleList>
```

Between the start and end tags of the simple list, you configure the following:

Table 10–4 Global Parameters in the First Compound List

Parameter	Description
`LOG_LEVEL_THRESHOLD`	Sets the default logging threshold. Default value: `LOGLEVEL_WARNING` Possible Values: Refer to log levels in "About Log Levels" on page 10-2 The global threshold allows logs of a particular level and more general levels to be collected, and prevents lower-level logs from being collected. This threshold can be overridden by a per-module threshold. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.

Table 10–4 (Cont.) Global Parameters in the First Compound List

Parameter	Description
SECURE_LOGGING	Dynamically enables or disables the secure logging mechanism. This does not require a server or component restart. Default value: On Possible Values: On or Off
LOG_SECURITY_THRESHOLD_LEVEL	Indicates the log threshold for which secure logging is effective. Default value: LOGLEVEL_TRACE Possible Values: Refer to log levels in "About Log Levels" on page 10-2 **Note**: Ensure that LOG_THRESHOLD_LEVEL and LOG_SECURITY_THRESHOLD_LEVEL are the same or are consistent with one another. For example, if LOG_THRESHOLD_LEVEL is set to LOGLEVEL_TRACE while LOG_SECURITY_THRESHOLD_LEVEL is set at LOGLEVEL_WARNING, then secure logging applies to LOGLEVEL_WARNING and above but does not apply to LOGLEVEL_TRACE.
LOG_SECURITY_ESCAPE_CHARS	Configure escape sequence characters used to avoid additional information being overwritten due to the secure logging mechanism. Use a comma separated list as shown here. Default value:),] Possible Values: Characters only **Note**: Default values are recommended. Configuring inappropriate characters may lead to sensitive information being unmasked.
LOG_SECURITY_MASK_LENGTH	Specifies the default masking length if none is specified in FILTER_LIST. Default value: 300 Possible Values: Positive integer **Note**: FILTER_LIST appears after the second compound list (log handlers). For more information, see "Filtering Sensitive Attributes" on page 10-26.

Example 10–2 shows the simple lists containing global settings, which appear in the first compound list in the oblog_config_wg.xml file.

Example 10–2 Simple Lists with Global Settings (First Compound List in oblog_config_wg.xml)

```
<SimpleList>
   <NameValPair
      ParamName="LOG_THRESHOLD_LEVEL"
      Value="LOGLEVEL_WARNING">
   </NameValPair>
   <NameValPair
      ParamName="AUTOSYNC"
      Value="True">
</NameValPair>
   <NameValPair
      ParamName="SECURE_LOGGING"
      Value="On">
</NameValPair>
   <NameValPair
      ParamName="LOG_SECURITY_THRESHOLD_LEVEL"
      Value="LOGLEVEL_TRACE">
```

```
</NameValPair>
   <NameValPair
      ParamName="LOG_SECURITY_ESCAPE_CHARS"
      Value="),]">
</NameValPair>
   <NameValPair
      ParamName="LOG_SECURITY_MASK_LENGTH"
      Value="300">
</NameValPair>
</SimpleList>
```

10.4.4 The Second Compound List and Log Handlers

After the simple list containing global settings, and within the start and end tags for the initial compound list, you specify an additional compound list. This compound list contains log-handler definitions. The start and end tags for this list are as follows:

```
<CompoundList xmlns="http://www.oblix.com" ListName="LOG_CONFIG">
. . .
</CompoundList>
```

This compound list tag is configured as follows:

- In the start tag for the compound list, the `xmlns` parameter indicates the relevant XML name space.
- Also in the start tag, you specify the name of the list on the `ListName` parameter.

  Typically, the name of this list is `LOG_CONFIG`.

Between the start and end tags for the compound list for the log-handler, you specify one or more `ValNameList` elements. Each `ValNameList` element contains the definition for a log-handler. Each instance of this element begins and ends as follows:

```
<ValNameList xmlns="http://www.oblix.com" ListName="Unique_Name">
. . .
</ValNameList>
```

The `ValNameList` elements are configured as follows:

- The opening tag sets the relevant XML name space on the `xmlns` parameter.
- The opening tag also sets a name for the log-handler on the `ListName` parameter.

Within the opening and closing `ValNameList` tags, you configure the log-handler. A log-handler definition contains three mandatory `NameValPair` elements:

- The first mandatory `NameValPair` element defines the logging level for the log-handler.

  This element contains the statement `ParamName="LOG_LEVEL"`, whose value is a reserved name in Table 10–1, as follows:

  ```
  <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_FATAL" />
  ```

- The second mandatory `NameValPair` element defines the destination for log output.

  This element contains a statement `ParamName="LOG_WRITER"`, whose value is a reserved name in Table 10–3, as follows:

  ```
  <NameValPair ParamName="LOG_WRITER" Value="SysLogWriter" />
  ```

- The third mandatory `NameValPair` element toggles this log-handler on and off.

This element contains a statement `ParamName="LOG_STATUS"`, with a value of `On` or `Off`, as follows:

```
<NameValPair ParamName="LOG_STATUS" Value="On" />
```

Finally, within the opening and closing `ValNameList` tags, if you specify `FileLogWriter` or `MPFileLogWriter` as the log writer, you can add none, some, or all of the following. See Table 10–7 for details:

- A destination file name, as follows:

  ```
  <NameValPair ParamName="FILE_NAME" Value="oblog.log" />
  ```

- A buffer size, as follows:

  ```
  <NameValPair ParamName="BUFFER_SIZE" Value="65535" />
  ```

- A a file size that determines when a new log file is generated, as follows:

  ```
  <NameValPair ParamName="MAX_ROTATION_SIZE" Value="52428800" />
  ```

- A time in minutes that determines the interval at which a new log file is generated, as follows:

  ```
  <NameValPair ParamName="MAX_ROTATION_TIME" Value="86400" />
  ```

10.4.5 The List for Per-Module Logging

After the end tag for the compound list that delimits the log-handlers, and before the end tag for the initial compound list, you can add per-module logging parameters.

See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.

10.4.6 The Filter List

After the per-module logging parameters a filter list identifies sensitive information that you might want to filter out of the log file. For example, passwords and responses for lost password management are sensitive information that you might want to filter out of the log file.

Each name value pair associated with the FILTER_LIST parameter provides the name of a word or phrase to be checked before the log is written and the corresponding masking length for that word or phrase. During logging, the value of the word or phrase is masked and omitted from the log file.

Simply put, during logging Access Manager does not recognize whether a value to be masked is an attribute or its display name or something different (plain text). Secure Logging works by searching for words or phrases added in the FILTER_LIST and then masking out any data that is followed by the occurrence of those words or phrases. For example, in the following statement:

```
\csabuild\coreid1014\np_common\db\ldap\util\ldap_util3.cpp:3107 "ldap_parse_result
of Simple Bind"           ld handle^0x0779FA00       result^0x09FB0088
bind^cn=orcladmin        LDAP bind operation status code^0          Additional
error message^ freeit^0 parse_rc^0
```

After turning Secure Logging ON and adding "`bind`" in the FILTER_LIST (which is neither an attribute nor a display name), whatever follows the word in the FILTER_ LIST (in this case, "`bind`") is masked. In this case, you would see the following in logs:

```
\csabuild\coreid1014\np_common\db\ldap\util\ldap_util3.cpp:3107 "ldap_parse_result
of Simple Bind"           ld handle^0x0779FA00       result^0x09FB0088
bind^cn=orcladmin        LDAP bind**********  status code^0          Additional
error message^ freeit^0 parse_rc^0
```

All attributes are case sensitive. For example, if you enter "password" instead of "Password" as a display name for an attribute, then "Password" is not filtered. By default, four attributes are always configured in the filter list: password, Password, response, and Response.

The default masking length, 40, is specified for each of the four default attributes. The default mask length can be altered for the default attributes if needed. If you add other attributes to the filter list, you might need a larger mask length (300, for example).

The default filter list is shown in Example 10–3.

Example 10–3 FILTER_LIST Masks Sensitive Attributes in Log Files

```
<ValNameList>
   xmlns="http://www.oblix.com"
   ListName="FILTER_LIST">
   <NameValPair
      ParamName="password"
      Value="40"></NameValPair>
   <NameValPair
      ParamName="Password"
      Value="40"></NameValPair>
   <NameValPair
      ParamName="passwd"
      Value="40"></NameValPair>
   <NameValPair
      ParamName="Passwd"
      Value="40"></NameValPair>
   <NameValPair
      ParamName="response"
      Value="40"></NameValPair>
   <NameValPair
      ParamName="Response"
      Value="40"></NameValPair>
</SimpleList>
```

When you add another attribute to the filter list, you must include the display name as well as the attribute name in the directory server.

10.4.7 About XML Element Order

When using XML, you can specify parallel elements in a list in any order as long as the elements remain intact and within the tags that originally bracketed them. For example, the lists in Example 10–4 and Example 10–5 are equivalent:

Example 10–4 Valid Name/Value List

```
<ValNameList xmlns="http://www.example.com" ListName="LogError2Sys">
   <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_ERROR" />
   <NameValPair ParamName="LOG_WRITER" Value="SysLogWriter" />
   <NameValPair ParamName="LOG_STATUS" Value="On" />
</ValNameList>
```

Example 10–5 Another Valid Name/Value List

```
<ValNameList xmlns="http://www.example.com" ListName="LogError2Sys">
   <NameValPair ParamName="LOG_WRITER" Value="SysLogWriter" />
   <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_ERROR" />
   <NameValPair ParamName="LOG_STATUS" Value="On" />
</ValNameList>
```

Similarly, within a given tag, the attributes (except for the tag name, which must always be the first element within the tag brackets) can be reordered, as long as they remain intact and within the tag elements that originally bracketed them. The opening tags for a name-value list in Example 10–6 and Example 10–7 are equivalent:

Example 10–6 Opening tag for a Name/Value List

```
<ValNameList xmlns="http://www.example.com" ListName="LogError2Sys">
```

Example 10–7 Opening tag for a Name/Value List

```
<ValNameList ListName="LogError2Sys" xmlns="http://www.example.com">
```

10.5 About Activating and Suppressing Logging Levels

Several factors determine if logging is active for a particular log-handler. Table 10–5 lists these factors.

Table 10–5 Factors that Determine Whether Logging Is Active

Factor	Importance	Description
LOG_ THRESHOLD_ LEVEL	Primary	This parameter sets a cutoff for logging. Any log level that is more detailed than the threshold is suppressed. See Table 10–1 for valid log levels. You override this parameter for a subset of items that can be logged using the MODULE_CONFIG parameter. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.
MODULE_CONFIG	Primary	This sets a per-module override for the global logging threshold. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.
LOG_STATUS	Secondary	This parameter toggles logging on or off, as long as it is not overridden by the logging threshold or a module-specific override.
The physical position of a log handler	Secondary	See "About Log Handler Precedence" on page 10-16.

10.5.1 About Log Handler Precedence

You can configure up to three log-handler definitions for a single log level in a log configuration file. Three different log handlers are required to send output for a particular log level to each of the three log writers described in Table 10–3.

If you specify different LOG_STATUS settings in these log handlers, the setting in the log-handler definition closest to the physical end of the log configuration file sets the status for the other log-handler definitions of the same log level. For example, you can set LOG_STATUS to Off for the first two log handlers for the Error log level, but if LOG_

STATUS is On for the third and final log handler in the configuration file, logging still occurs for all three handlers.

The LOG_STATUS settings are moot if that level is more fine-grained than the current LOG_THRESHOLD_LEVEL. In this case, logging cannot be activated at this level unless the threshold is overridden by a module-specific threshold. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.

10.6 Mandatory Log-Handler Configuration Parameters

At minimum, each log-handler definition contains five parameters listed in Table 10–6.

Table 10–6 Mandatory Log Configuration File Parameters

Parameter	Comment
xmlns	This parameter is specified in the opening ValNameList tag. It specifies the relevant XML namespace for the current list and is identical for all log-handler definitions in a given logging configuration file. Example: http://www.example.com
ListName	This parameter is specified in the opening ValNameList tag. Where possible, use the default names. When creating a new log-handler definition, select a memorable name that you cannot confuse with other log handlers. Examples: WarningsAndAboveToSyslog sends Fatal, Error, and Warning messages to the system log file. WarningsOnlyToFileLog128KBuffer sends messages from just the Warning level to a 128KB buffer, and hence to a disk file. TraceOnlyToMPRotateDaily sends messages from just the Trace level to the multi-process file writer, which opens and closes the file each time it writes to disk. This file is replaced with a fresh (empty) file every day, regardless of the size of the file at the time of replacement.
LOG_LEVEL	This specifies a log level. See Table 10–1 for details. The default logging configuration file activates logging for three levels: Fatal, Error, and Warning.
LOG_WRITER	This specifies the destination for log output for this log-handler. See Table 10–3 for details. The default log configuration file sends output to both the system log and the log data file for the component doing the logging.
LOG_STATUS	This parameter turns the log handler on or off.

If you specify FileLogWriter or MPFileLogWriter as the value for the LOG_WRITER parameter, the four parameters in Table 10–7 are relevant.

Table 10–7 Log Data File Configuration Parameters

Parameter	Description	Default
FILE_ NAME	Mandatory. Used only for the FileLogWriter or MPFileLogWriter. It is the name and location of the file where log data is written. You can prepend an absolute path to the file name to store it somewhere other than the default location, which is: *component_install_dir*\oblix\logs Where *component_install_dir* is the root installation directory for the component whose system events you are logging. When you create more than one log-handler definition that sends output to FileLogWriter or MPFileLogWriter, provide unique file names so that multiple handlers do not write to the same file. This caution does not apply to log handlers accessing the SysLogWriter.	oblog.log
BUFFER_SIZE	Optional. This is the size of the buffer, in bytes, for logged data as it is being written to the log file. If you set the buffer value to 0 or a negative number, the default value is used. To write to the log file immediately, without buffering, set the value to a small number, for example, 5. Oracle recommends that you set a small buffer size in situations where there are system failures.	65535 (64KB)
MAX_ ROTATION_ SIZE	Optional. When the log file reaches this size (in bytes), a time stamp is appended to the file name, for example `oblog.log` becomes `oblog.log1081303126`. New data is written to the file with the original name.	52428800 (512KB)
MAX_ ROTATION_ TIME	Optional. A time interval, in seconds, when the log file is renamed, whether or not it has reached the maximum rotation size. If the rotation time determines when the file is rotated, the numbers appended to the log files differ by the number of seconds in the rotation interval. For example, `oblog.log.1081389526` and `oblog.log.1081303126` differ by 84,600, which is the number of seconds in 24 hours. This is the rotation interval set in the log configuration file.	86400 (1 day, in seconds)

10.6.1 Settings in the Default Log Configuration File

As installed with each component, the log configuration file activates only the highest three levels (Fatal, Error, and Warning) and directs all log output to the system log.

On Windows, you can view the system log for the computer that hosts the component you are logging by navigating to My Computer, Manage, Event Viewer, Application. System event entries for the components being logged are interspersed among the system events for the operating system and applications other than Access Manager.

For Solaris and Linux environments, the location of the system log is recorded in a system configuration file whose particulars can vary from computer to computer. For the name and location of this system file or the system log, consult the owner of the computer that hosts the component whose system log you want to examine.

Example 10–8 shows the default log configuration file with comments removed to expose the file structure.

Example 10–8 A Default Log Configuration File Without Embedded Comments

```
<?xml version="1.0" encoding="utf-8"?>
<CompoundList
   xmlns="http://www.oblix.com
   ListName="oblog_config_wg.xml.staging">
   <SimpleList>
      <NameValPair
         ParamName="LOG_THRESHOLD_LEVEL"
         Value="LOGLEVEL_WARNING"></NameValPair>
   </SimpleList>
   <SimpleList>
      <NameValPair
         ParamName="AUTOSYNC"
         Value="True"></NameValPair>
   </SimpleList>
   <SimpleList>
      <NameValPair
          ParamName="SECURE_LOGGING"
          Value="On"></NameValPair>
   </SimpleList>
   <SimpleList>
      <NameValPair
         ParamName="LOG_SECURITY_THRESHOLD_LEVEL"
         Value="LOGLEVEL_TRACE"></NameValPair>
   </SimpleList>
   <SimpleList>
      <NameValPair
         ParamName="LOG_SECURITY_ESCAPE_CHARS"
         Value="),]"></NameValPair>
   </SimpleList>
   <SimpleList>
      <NameValPair
        ParamName="LOG_SECURITY_MASK_LENGTH"
        Value="300"></NameValPair>
   </SimpleList>
   <CompoundList
      xmlns="http://www.oblix.com"
      ListName="LOG_CONFIG">
      <ValNameList
         xmlns="http://www.oblix.com"
         ListName="LogFatal2Sys">
         <NameValPair
            ParamName="LOG_LEVEL"
            Value="LOGLEVEL_FATAL"></NameValPair>
         <NameValPair
            ParamName="LOG_WRITER"
            Value="SysLogWriter"></NameValPair>
         <NameValPair
            ParamName="LOG_STATUS"
            Value="On"></NameValPair>
      </ValNameList>
      <ValNameList
         xmlns="http://www.oblix.com"
         ListName="LogAll2File">
         <NameValPair
            ParamName="LOG_LEVEL"
```

```
            Value="LOGLEVEL_ALL"></NameValPair>
         <NameValPair
            ParamName="LOG_WRITER"
            Value="FileLogWriter"></NameValPair>
         <NameValPair
            ParamName="FILE_NAME"
            Value="oblog.log"></NameValPair>
         <NameValPair
            ParamName="BUFFER_SIZE"
            Value="65535"></NameValPair>
         <NameValPair
            ParamName="MAX_ROTATION_SIZE"
            Value="52428800"></NameValPair>
         <NameValPair
            ParamName="MAX_ROTATION_TIME"
            Value="86400"></NameValPair>
         <NameValPair
            ParamName="LOG_STATUS"
            Value="On"></NameValPair>
      </ValNameList>
   </CompoundList>
   <ValNameList
      xmlns="http://www.oblix.com"
      ListName="FILTER_LIST">
      <NameValPair
         ParamName="password"
         Value="40"></NameValPair>
      <NameValPair
         ParamName="Password"
         Value="40"></NameValPair>
      <NameValPair
         ParamName="passwd"
         Value="40"></NameValPair>
      <NameValPair
         ParamName="Passwd"
         Value="40"></NameValPair>
      <NameValPair
         ParamName="response"
         Value="40"></NameValPair>
      <NameValPair
         ParamName="Response"
         Value="40"></NameValPair>
   </ValNameList>
</CompoundList>
```

10.6.1.1 Description of the Settings in the Default Log Configuration File

The default configuration file sends Fatal, Error, and Warning messages to both the system log and to a log data file named oblog.log.

The simple list near the top of the file sets the following parameters:

- It sets the `LOG_THRESHOLD_LEVEL` to `Warning`.

  The threshold suppresses logging for levels that are more fine-grained than Warning. You can override this threshold. See "Configuring Different Threshold Levels for Different Types of Data" on page 10-21 for details.

The nested compound list contains four log-handler definitions:

- The first, named `LogFatal2Sys`, sets the logging level to `Fatal` and sets `LOG_STATUS` to On.

The threshold level is Warning, which is more fine-grained than Fatal, so this definition is in effect. The log output is written to the system log, as specified by the `LOG_WRITER` parameter.

- The `LogError2Sys` log-handler definition sends Error level messages to the system log.

  Error is located before the current threshold level (Warning), so this definition is in effect.

- The `LogWarning2Sys` definition sends Warning level output to the system log.

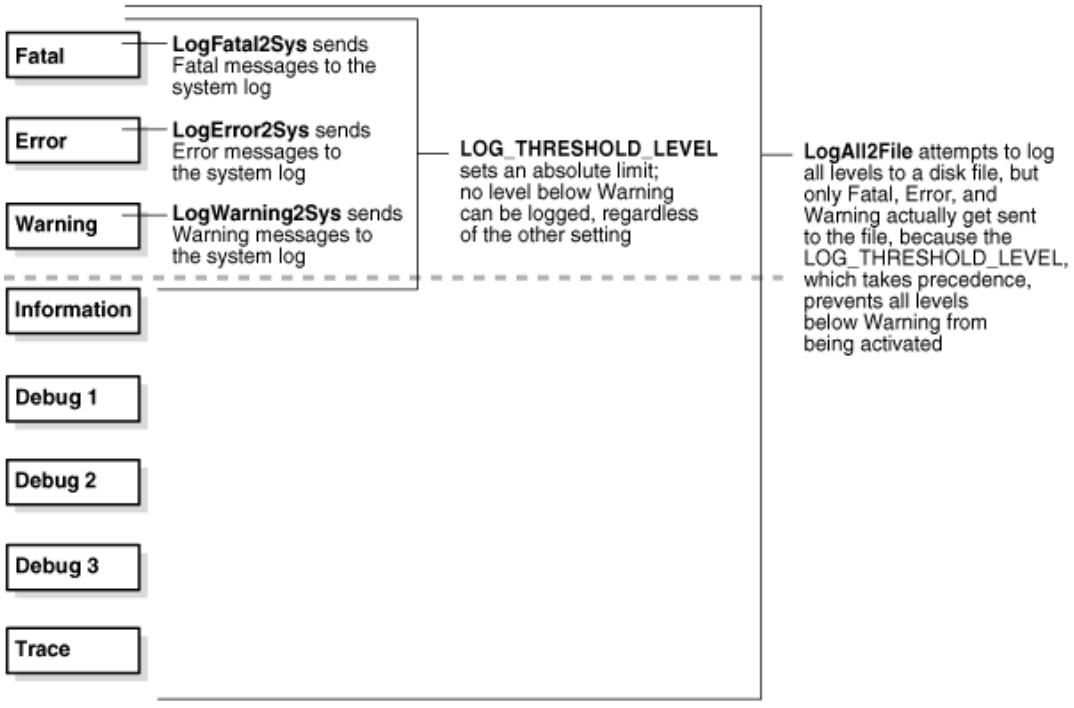
  Like the two previous log-handler definitions, it is not overridden by the current `LOG_THRESHOLD_LEVEL` parameter.

- `LogAll2File`, the final log-handler definition, appears to send output from all log levels to a disk file named oblog.log.

  The `LOG_THRESHOLD_LEVEL` parameter is set to Warning, so only the output from the Fatal, Error, and Warning levels are recorded in this log data file. Since output from `LogAll2File` goes to the `FileLogWriter`, the parameters governing file name, buffer size, rotation size, and rotation interval all take effect.

Figure 10–1 illustrates log-level activation in the default log confirmation file.

Figure 10–1 Log-Level Activation in the Default Log Configuration File



10.7 Configuring Different Threshold Levels for Different Types of Data

When diagnosing a problem, you may not want detailed logs for every operation that a component performs. For example, to diagnose slow response times for requests that an Identity Server submits to its directory, you would want detailed information on LDAP operations and fewer details about other types of operations.

As of release 10.1.4.2, you can configure per-module or per-function threshold levels in the log configuration file, so that Access Manager generates detailed logs for some components while generating concise logs, or no logs, for others.

You configure per-module logging thresholds in a MODULE_CONFIG section in the oblog_config_wg.xml file. The MODULE_CONFIG section overrides the global default that you specify on the LOG_THRESHOLD_LEVEL in the simple list section of this file.

The rest of this section discusses the following topics:

- About the MODULE_CONFIG Section
- Configuring a Log Level Threshold for a Function or Module

10.7.1 About the MODULE_CONFIG Section

As described in "Structure and Parameters of the Log Configuration File" on page 10-10, in the log configuration file you configure a global logging threshold. The following is an example of the global LOG_THRESHOLD_LEVEL setting:

```
<SimpleList>
   <NameValPair ParamName="LOG_THRESHOLD_LEVEL" Value="LOGLEVEL_WARNING" />
   . . .
</SimpleList>
```

In addition to the global threshold, the configuration file can contain a ValNameList that defines function- or module-specific log thresholds. The name of this list is always MODULE_CONFIG. Only one instance of this list is permitted in the log configuration file, and the information in the list applies to all log writers defined in the file. As of release 10.1.4.2, the default log configuration file contains a commented sample of the MODULE_CONFIG list.

Each item in the MODULE_CONFIG list sets a logging level for a module, as shown in the following example:

```
<ValNameList xmlns="http://www.oblix.com" ListName="MODULE_CONFIG">
    <NameValPair ParamName="LDAP" Value="LOGLEVEL_TRACE"></NameValPair>
    <NameValPair ParamName="DB_RUNTIME" Value="LOGLEVEL_TRACE"></NameValPair>
</ValNameList>
```

The elements in this section are as follows:

- The ValNameList tag delimits the list of per-module logging thresholds.
- One NameValPair tag delimits each specific per-module logging threshold.
- The ParamName parameter sets the name of a module or function.

  See Table 10–8 for a list of valid values.
- The Value parameter sets the logging threshold for the module that you specify as a value for the ParamName parameter.

  Table 10–1 lists the permissible values for the Value parameter. In addition to these values, you can specify the value ON to enable logging for the module and a value of OFF to disable logging for the specific module.

10.7.1.1 Location of the Per-Module Logging Section in the Log Configuration File

You add the per-module logging threshold section near the end of the log configuration file, after the closing tag for the compound list for the log-handlers and before the closing tag for the first compound list in the file.

This section contains an example of the per-module logging section. See "To configure a module-specific log threshold" on page 10-24 for details.

10.7.1.2 List of Modules That Can Be Logged

Table 10–8 describes the a partial list of the values that you can specify for the `ParamName` parameter in the `MODULE_CONFIG` list.

Table 10–8 ParamName Values You Can Configure for Per-Module Logging Threshold

ParamName Value	Logging Threshold That This Parameter Sets

`AAA_ACTIONS`	Sets a logging threshold for triggered actions that are configured as part of a policy in the OAM Server.
	`<ValNameList xmlns="http://www.oblix.com"`
	`ListName="MODULE_CONFIG">`
	`<NameValPair Paramname="AAA_ACTIONS" Value="OFF">`
	`</NameValPair>`

`AAA_AMENGINE`	Sets a logging threshold for activity performed by the Access Manager engine.
`AAA_ISRESRCOPPROT`	Sets a logging threshold for all OAM Server activities related to determining if a resource operation is protected.
`ACCESS_CLIENT`	Sets a logging threshold for operations performed by an access client, that is, an Access Client or Webgate.
`ACCESS_GATE`	Sets a logging threshold for operations performed by an Access Client.
`ACCESS_SDK`	Sets a logging threshold for operations performed by the Access Manager SDK interface. See the Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details.
`ACCESS_SERVER`	Sets a logging threshold for operations performed in the OAM Server.
`AM_SDK`	Sets a logging threshold for the Access Manager SDK. See the Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details.
`AUDIT`	Sets a logging threshold for auditing. See Chapter 9 for details.
`AUTHENTICATION`	Sets a logging threshold for user authentication operations.
`AUTHN_MGMT`	Sets a logging threshold for authentication scheme management.
`AUTHN_PLUGIN`	Sets a logging threshold for operations performed by an authentication plug-in.
`AUTHORIZATION`	Sets a logging threshold for user authorization operations.
`AUTHZ_MGMT`	Sets a logging threshold for authorization scheme management.
`AUTHZ_PLUGIN`	Sets a logging threshold for authorization plug-in operations.
`CACHE`	Sets a logging threshold for cache management and operations on the caches.
`CONN_MGMT`	Sets a logging threshold for connection management.
`CONN_RUNTIME`	Sets a logging threshold for connection run time.
`CONNECTIVITY`	Sets a logging threshold for client-sever connectivity and messaging.

Table 10–8 (Cont.) ParamName Values You Can Configure for Per-Module Logging

ParamName Value	Logging Threshold That This Parameter Sets
DB_CONFIGURATION	Sets a logging threshold for the data store interface layer configuration.
DB_RUNTIME	Sets a logging threshold for the data store interface layer run time.
DIAGNOSTIC_FRAMEWORK	Sets a logging threshold for the diagnostic framework.
GROUPDB	Sets the threshold for logging accesses of Group Manager data in the directory.
GROUP_MGR	Sets the threshold for logging Group Manager operations.
HTTP_REQ	Sets the threshold for logging HTTP request processing.
IDXML	Sets the threshold for logging IDXML operations. See the Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details.

LDAP	Sets a logging threshold for LDAP SDK, for example:
	`<ValNameList xmlns="http://www.oblix.com" ListName="MODULE_CONFIG">`
	`<NameValPair Paramname="LDAP" Value="LOGLEVEL_TRACE">`
	`</NameValPair>`

NET	Sets a logging threshold for network APIs.
OBMYGROUPS	Sets a logging threshold for `ObMyGroups` processing. This refers to searches of groups where the person who initiated the search is a member.
OIS_CLIENT	Sets a logging threshold for the Identity client.
POLICY_MGMT	Sets a logging threshold for policy and policy domain management.
PPP	Sets a logging threshold for Identity Event Plug-in API operations. See the Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details.
QUERY_BUILDER	Sets a logging threshold for Query Builder operations.
SECURITY	Sets a logging threshold for the security and encryption library.
SELECTOR	Sets a logging threshold for Selector operations.
SERVER	Sets a logging threshold for server infrastructure.
SSOTOKEN	Single sign-on token management.
UTILS	Sets a logging threshold for utility classes.
WEB	Sets a logging threshold for the Web server plug-in interface.
XML	Sets a logging threshold for the XML Infrastructure.

10.7.2 Configuring a Log Level Threshold for a Function or Module

The following procedure describes how to configure a function- or module-specific log level threshold.

To configure a module-specific log threshold

1. Open the log configuration file in the following location:

   Webgate_install_dir\identity|access\oblix\config

2. If a `ValNameList` section with a `ListName` of `MODULE_CONFIG` does not already exist in this file, create one that is similar to the following:

```
<ValNameList xmlns="http://www.oblix.com" ListName="MODULE_CONFIG">
</ValNameList>
```

Place this list after the end tag for the compound list that contains the log handler definitions. If there are comments immediately after this end tag, place the list after the comments.

3. Between the opening and closing tags of the new `ValNameList` element, configure one or more `NameValPair` elements.

This element contains a `ParamName` parameter and a `Value` parameter. See Table 10–8 for the modules that you can supply on the `ParamName` parameter. See Table 10–1 for values, or you can specify a value of `On` or `Off`. The following is an example:

```
<NameValPair ParamName="LDAP" Value="LOGLEVEL_TRACE"></NameValPair>
```

You can specify multiple `ValNamePair` elements within the `ValNameList`.

A complete per-module logging threshold section is illustrated in **bold** in the following example:

```
<!--  ============================================================   -->
<!--  Configure the Log Level                                        -->
. . .
<CompoundList xmlns="http://www.oblix.com" ListName="LOG_CONFIG">

<!-- Write all FATAL logs to the system logger. -->
<ValNameList xmlns="http://www.oblix.com" ListName="LogFatal2Sys">
     <NameValPair ParamName="LOG_LEVEL" Value="LOGLEVEL_FATAL">
     </NameValPair>
     <NameValPair ParamName="LOG_WRITER" Value="SysLogWriter">
     </NameValPair>
     <NameValPair ParamName="LOG_STATUS" Value="On">
     </NameValPair>
</ValNameList>
. . .
</CompoundList>
<!--  List of values that can be specified in the module config      -->
<!--                                                                 -->
<!--  On - Uses loglevel set in the loglevel threshold               -->
<!--  Off - No information is logged                                 -->
<!--  LOGLEVEL_FATAL - serious error, possibly a program halt.       -->
<!--  LOGLEVEL_ERROR - a transient or self-correcting problem.       -->
<!--  LOGLEVEL_WARNING - a problem that does not cause an error.     -->
<!--  LOGLEVEL_INFO - reports the current state of the component.    -->
<!--  LOGLEVEL_DEBUG1 - basic debugging information.                 -->
<!--  LOGLEVEL_DEBUG2 - advanced debugging information.              -->
<!--  LOGLEVEL_DEBUG3 - logs performance-sensitive code.             -->
<!--  LOGLEVEL_TRACE - used when you need to trace the code path     -->
<!--  execution or capture metrics. Includes all previous levels.    -->
<!--                                                                 -->
<!--  List of modules that can be specified in the module config     -->
<!--                                                                 -->
<!--  ALL_MODULES - Applies to all log modules                       -->
<!--  Specific module name - Applies to specific module              -->
<!--                                                                 -->
<!--                                                                 -->
<!--    <ValNameList                                                 -->
```

```
<!--        xmlns="http://www.oblix.com"                                -->
<!--        ListName="MODULE_CONFIG">                                   -->
<!--        <NameValPair                                                -->
<!--            ParamName="CONNECTIVITY"                                -->
<!--            Value="LOGLEVEL_TRACE"></NameValPair>                   -->
<!--    </ValNameList>                                                  -->

    <ValNameList xmlns="http://www.oblix.com" ListName="MODULE_CONFIG">
        <NameValPair ParamName="LDAP" Value="LOGLEVEL_TRACE"></NameValPair>
        <NameValPair ParamName="DB_RUNTIME" Value="LOGLEVEL_TRACE">
        </NameValPair>
    </ValNameList>

</CompoundList>
```

10.8 Filtering Sensitive Attributes

As described earlier, you can activate secure logging and expand the default filter list to mask sensitive information from the log file.

When you add another attribute to the filter list, you must include the display name as well as the attribute name in the directory server. The following procedure describes how to perform this task. In this example, you are instructed to filter the user's home phone number: display name Home Phone; attribute name `homePhone`. However, you can filter the attribute of your choice.

Note: Each value added to FILTER_LIST increases the runtime cost of using Secure Logging.

Oracle recommends that you optimize the use of FILTER_LIST to reduce the runtime cost. For example, rather than adding two ParamName variations (`User Password` and `userPassword`), you could use only one. Using `Password` as the ParamName masks values for `User Password`, `userPassword`, and other words that end with `Password`. Also, instead of including both `Home Phone` and `homePhone` in FILTER_LIST, you could simply use `Phone`.

See Also:

- "About Logging, Log Levels, and Log Output" on page 10-1
- "The Simple List and Logging Threshold" on page 10-11
- "The Filter List" on page 10-14
- "Settings in the Default Log Configuration File" on page 10-18

To add sensitive attributes to the filter list

1. Open the log configuration file in a text editor:

   Webgate_install_dir\identity|access\oblix\config\oblog_config_wg.xml

2. In oblog_config_wg.xml:

   a. Confirm that secure logging is active. For example:

```
<SimpleList>
   <NameValPair
      ParamName="SECURE_LOGGING"
      Value="On"></NameValPair>
</SimpleList>
```

b. Locate the FILTER_LIST parameter at the end of the file. For example:

```
<ValNameList xmlns="http://www.oblix.com" ListName="FILTER_LIST">
   <NameValPair ParamName="password" Value="40" />
   <NameValPair ParamName="Password" Value="40" />
   <NameValPair ParamName="response" Value="40" />
   <NameValPair ParamName="Response" Value="40" />
</ValNameList>
```

c. Add the display name to mask and the value for the mask length, then add the attribute and the value for the mask length. For example:

```
   <NameValPair ParamName="Home Phone" Value="300" />
   <NameValPair ParamName="homePhone" Value="300" />
```

Note: For testing, set the LOG_THRESHOLD_LEVEL and LOG_SECURITY_THRESHOLD_LEVEL to TRACE. See Step 6a.

d. Confirm that LOG_THRESHOLD_LEVEL and LOG_SECURITY_THRESHOLD_LEVEL are at the same level or are consistent with each other, as described in Table 10–4 on page 10-11. For example:

```
<SimpleList>
  <NameValPair ParamName="LOG_THRESHOLD_LEVEL" Value="LOGLEVEL_WARNING" />
</SimpleList>
...
<SimpleList>
   <NameValPair ParamName="LOG_SECURITY_THRESHOLD_LEVEL" Value="LOGLEVEL_
   WARNING" />
</SimpleList>
```

e. Save the oblog_config_wg.xml file.

3. **Filtering User Password**: Perform the following steps and see "The Filter List" on page 10-14:

In the filter list in oblog_config_wg.xml, add the User Password display name and the corresponding attribute, and set the mask length for each. For example:

```
<ValNameList xmlns="http://www.oblix.com" ListName="FILTER_LIST">
  ...
   <NameValPair ParamName="User Password" Value="40" />
   <NameValPair ParamName="userPassword" Value="40" />
</ValNameList>
```

4. Test secure logging and filtering of sensitive information as follows:

a. In the oblog_config_wg.xml file, set the LOG_THRESHOLD_LEVEL and LOG_SECURITY_THRESHOLD_LEVEL to TRACE:

```
   <NameValPair ParamName="LOG_THRESHOLD_LEVEL" Value="LOGLEVEL_TRACE" />
...
   <NameValPair ParamName="LOG_SECURITY_THRESHOLD_LEVEL" Value="LOGLEVEL_
   TRACE" />
```

b. Perform a task that involves the component for which you have configured secure logging. For example:

Access a resource

View or modify the value of the attribute in the user's profile: `Home Phone` (if the filtered attribute is `homePhone`).

c. Check the oblog and confirm that the filtered attribute value is masked by a string like **********.

Webgate_install_dir/access/oblix/log/oblog.log

d. In the oblog_config_wg.xml file, reset the `LOG_THRESHOLD_LEVEL` and `LOG_SECURITY_THRESHOLD_LEVEL` to the desired level for your enterprise.

e. Adjust the mask length of filtered attributes if needed in the oblog_config_wg.xml file. For example:

```
<NameValPair ParamName="Home Phone" Value="340" />
<NameValPair ParamName="homePhone" Value="340"/>
```

5. Repeat Steps 1 through 6 for each component in your deployment with one or more masked attributes.

11 Reporting

Oracle Access Manager enables you to use Oracle BI Publisher as the reporting solution for Oracle Access Management services. Access Manager provides a restricted-use license for Oracle BI Publisher and easy-to-use reporting packages.

This chapter contains the following sections.

> **Note:** For large-scale deployments, it is recommended that you deploy a dedicated enterprise-class reporting solution. A solution based on tools such as Oracle Business Intelligence Enterprise Edition can provide the flexibility, automation, and performance required for a large-scale organizations.

11.1 Using the Reports

Oracle Access Management integrates with Oracle Business Intelligence Publisher, which provides a pre-defined set of compliance reports. The data in the database audit store is exposed through pre-defined reports in Oracle Business Intelligence Publisher. These reports allow you to drill down the audit data based on various criteria, such as user name, time range, application type, and execution context identifier (ECID).

Out-of-the-box, there are several sample audit reports available with Oracle Access Management and accessible with Oracle Business Intelligence Publisher. You can also use Oracle Business Intelligence Publisher to create your own custom reports.

Oracle BI Enterprise Edition (Oracle BI EE) is a comprehensive set of enterprise business intelligence tools and infrastructure, including a scalable and efficient query and analysis server, an ad-hoc query and analysis tool, interactive dashboards, proactive intelligence and alerts, real-time predictive intelligence, and an enterprise reporting engine. Oracle BI EE is designed to bring greater business visibility and insight to a wide variety of users.

The components of Oracle Business Intelligence Enterprise Edition share a common service-oriented architecture, data access services, analytic and calculation infrastructure, metadata management services, semantic business model, security model and user preferences, and administration tools. Oracle Business Intelligence

Enterprise Edition provides scalability and performance with data-source specific optimized analysis generation, optimized data access, advanced calculation, intelligent caching services, and clustering. The following are Oracle Access Management reporting features:

- Select and view reports from a predefined list in the BI Publisher.
- Filter report information.
- View reports on-screen in the desired format.
- Provide interactive reports.

11.2 Accessing Oracle Access Management Reports

To access Access Manager Reports, you must start BI Publisher and run them. BI Publisher cannot be accessed through the Access Manager Console. You must open BI publisher explicitly to access Access Manager reports.

To start BI Publisher

1. Navigate to **Start, Oracle BI Publisher Desktop, Oracle - BIPHome10134** and click **Start BI Publisher**.

   The Oracle BI Publisher Home page appears.
2. Enter the user name and password.
3. Click Sign In.

To run a report

1. Start Access Manager Reports.

   See "Accessing Oracle Access Management Reports" on page 11-2 for more information.
2. Click the more... link under Shared Folders.
3. Click Access Manager Reports to access the reports.

   Alternately, click the more... link under Access Manager Reports. The resulting page displays the Access Manager Reports classified according to functional area.
4. Select the report to view by clicking its name.
5. Click View.

   The Report Input Parameters page displays the input parameters that must be provided to run a report. The parameters act as filter criteria. In some cases, at least one or more fields are mandatory while some reports do not require any input parameters. If you leave the input parameter field blank and click View, all the information associated with the report is displayed.
6. Enter the required parameters, if any.
7. Click View to run the report.

   The report is displayed.

11.3 Supported Output Formats

All BI Publisher reports are generated in a native XML format. This XML can be transformed into other output formats. The following formats are supported:

- HTML
- PDF
- RTF
- MHTML

11.4 Reports for Access Manager

Access Manager Reports are classified based on functional area. For example, Access Policy Reports, Attestation, Request and Approval Reports and Password Policy Reports are available. (It is no longer named Operational and Historical.) Oracle Access Manager Reports are classified into the following categories based on their functional areas:

- Account Management Reports
- Authentication Reports
- Errors and Exceptions

11.4.1 Account Management Reports

The Accounts_Locked_Out Report is the account management report that allows administrators to view details about accounts that have been locked out.

Table 11–1 Accounts_Locked_Out Report Fields

Field	Description
User ID	Identifier of the locked out user
Timestamp	Time stamp of the lockout
Component/Application Name	Component from which the user has been locked out
Event Details	Additional information

11.4.2 Authentication Reports

Authentication reports allow administrators to view details regarding user authentications. They include:

- Authentication Statistics Report
- AuthenticationFromIPByUser
- AuthenticationPerIP
- AuthenticationStatisticsPerServer Report

11.4.2.1 Authentication Statistics Report

This report contains details regarding failed and successful authentications.

Table 11–2 Authentication_statistics Report Fields

Field	Description
Failure	Failed (yes) or successful (no) authentication
Userid	Identifier of the user
Number of Events	Number of authentication events

11.4.2.2 AuthenticationFromIPByUser

This report contains details regarding failed and successful authentications from a particular IP address.

Table 11–3 AuthenticationFromIPByUser Report Fields

Field	Description
IP Address	IP address of the client
Distinct User Count	Number of distinct users
Total Attempts	Number of authentication attempts from this IP address
Users	List of users attempting authentication from this IP address

11.4.2.3 AuthenticationPerIP

This report contains details regarding failed and successful authentications from this IP address.

Table 11–4 AuthenticationPerIP Report Fields

Field	Description
IP Address	IP address of the server
Distinct Users	Number of users authenticated
Total Number of Attempts	Number of authentication attempts (successful and failed)

11.4.2.4 AuthenticationStatisticsPerServer Report

This report contains details regarding failed and successful authentications from a particular server instance.

Table 11–5 AuthenticationStatisticsPerServer Report Fields

Field	Description
Server Instance Name	Identifier of the server instance
Success Count	Number of successful authentications
Failure Count	Number of failed authentications

11.4.3 Errors and Exceptions

Error and exception reports allow administrators to view errors and exceptions logged during the authentication process. They include:

- All Errors and Exceptions
- Authentication Failures
- User Activities
- Authentication History
- Authorization History
- Multiple Logins From Same IP

11.4.3.1 All Errors and Exceptions

This report contains details regarding errors and exceptions encountered during runtime.

Table 11–6 All Errors and Exceptions Report Fields

Field	Description
User ID	Identifier of the locked out user
Timestamp	Time stamp of the lockout
Component/Application Name	Component from which the user has been locked out
Client IP Address	IP address of the client
Message Event	The error or exception
Event Details	Information regarding the error or exception

11.4.3.2 Authentication Failures

This report contains details regarding failed and successful authentications.

Table 11–7 Authentication Failures Report Fields

Field	Description
User ID	Identifier of the locked out user
Timestamp	Time stamp of the lockout
Component/Application Name	Component from which the user has been locked out
Client IP Address	IP address of the client
Authentication Method	Authentication method
Message Event Details	Message regarding the failed authentication
Authorization_Failures	Authorization failure

11.4.3.3 User Activities

There are no fields to define in this report.

11.4.3.4 Authentication History

This report contains details regarding failed and successful authentications.

Table 11–8 Authentication History Report Fields

Field	Description
User ID	Identifier of the locked out user
Timestamp	Time stamp of the lockout
Component/Application Name	Component from which the user has been locked out
Client IP Address	IP address of the client
Authentication Method	Authentication method
Message Event Details	Message regarding the failed authentication
Authorization_Failures	Authorization failure

11.4.3.5 Authorization History

This report contains details regarding failed and successful authorizations.

Table 11–9 Authorization History Report Fields

Field	Description
User ID	Identifier of the locked out user
Timestamp	Time stamp of the lockout
Component/Application Name	Component from which the user has been locked out
Client IP Address	IP address of the client
Authentication Method	Authentication method
Message Event Details	Message regarding the failed authentication
Authorization_Failures	Authorization failure

11.4.3.6 Multiple Logins From Same IP

This report contains details regarding multiple logins from the same IP address.

Table 11–10 Multiple Logins From Same IP Report Fields

Field	Description
IP Address	IP address
Usernames Used	Identifiers of users

11.5 Creating Reports Using Third-Party Software

Access Manager supports the creation of reports by using third-party tools such as Crystal Reports. To learn how to create reports by using third-party software, see the third-party software documentation. Additional information on the audit schema and creating custom reports can be found in the *Oracle Fusion Middleware Application Security Guide*.

12

Monitoring Performance and Health

Monitoring performance refers to observing (viewing) performance metrics to make yourself aware of the state specific components. Monitoring health allows perimeter devices to check the health of an Access Manager server instance by hitting the heartbeat URL of the Managed Server. This chapter provides information on monitoring Oracle Access Management performance and Access Manager health. It contains the following sections.

See Also:

- Chapter 13 if you are using Oracle Enterprise Manager Fusion Middleware Control

12.1 Introduction to Performance Monitoring

Component performance metrics can be collected in memory during the completion of particular events. These metrics are kept only in memory so there are several mechanisms to extract and display them: EM, dmsSpy, and dmsDump, for example.

Note: dmsSpy is a WebLogic Application Server (WAS) tool that displays raw DMS data specific to the WAS instance. Information is categorized by Noun Types (OAMS.OAM_ prefix for Oracle Access Management) and includes metrics pertaining to all DMS instrumented applications running in the WAS instance. To see the metrics on a WebLogic instance, go to http://*hostname:port*/dms/. For example:

`http://samplehost:7001/dms/`

Oracle Fusion Middleware Performance and Tuning Guide for details about instrumenting applications with Oracle Dynamic Monitoring Systems (DMS).

The metrics can be used to monitor the time spent in a particular area or track particular occurrences or state changes. Oracle Access Management uses the Oracle Dynamic Monitoring Systems (DMS) to measure application-specific performance information for OAM Servers and registered Agents. Administrators can monitor performance for Access Manager using the Monitoring command on the Actions menu under the System Configuration tab.

12.2 Reviewing DMS Metric Tables

Use this procedure to access the DMS console.

To access DMS console

1. In a browser window, go to the DMS Console using the following URL:

   `http:// <example_AdminServer:Port/dms/`

2. Log in with your Oracle Access Management Administrator credentials.
3. In the DMS Metric Tables, click the desired metric from those listed to view the results on the right-side of the console.

12.3 Monitoring Server Metrics

This section provides the following topics:

- Monitoring Server Instance Performance
- Reviewing Server Metrics Using Oracle Access Management Console

12.3.1 Monitoring Server Instance Performance

Users with valid Oracle Access Management Administrator credentials can use the following procedure to display various performance metrics using the Oracle Access Management Console.

Prerequisites

The OAM Server must be running.

To monitor performance using Oracle Access Management Console

1. From the Oracle Access Management Console, click Server Instances and the desired server instance.
2. **Server Instance**:
   a. From the **Actions** menu in the navigation tree, click **Monitor Menu**.
   b. On the Monitor page, click the desired subtab to view results for the server instance:

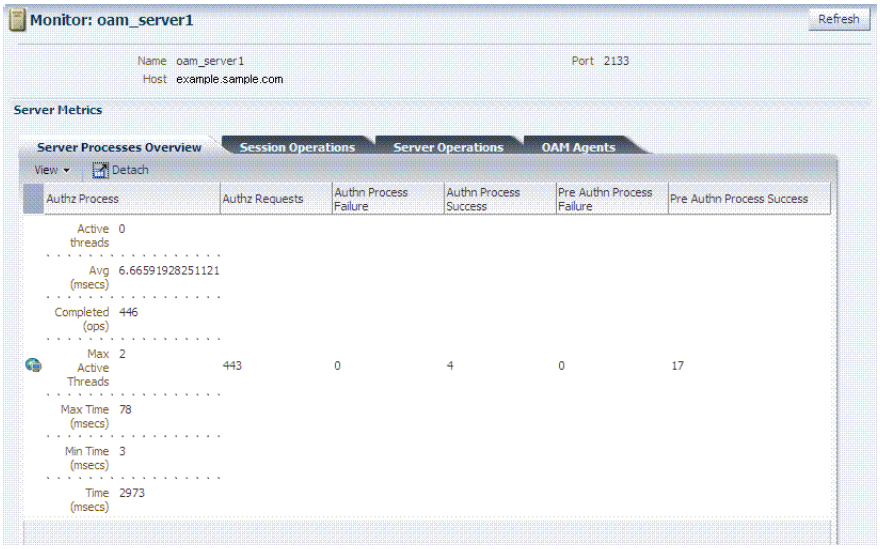
      Server Processes Overview
      Session Operations
      Server Operations
      OAM Agents

   c. Proceed to "Reviewing Server Metrics Using Oracle Access Management Console".
3. See also, "Introduction to OAM Proxy Metrics and Tuning" on page 12-9.

12.3.2 Reviewing Server Metrics Using Oracle Access Management Console

This topic provides a look at the Server metrics available when you have a server instance selected in the navigation tree and you choose the Monitoring Menu command on the Actions menu under the System Configuration tab. Figure 12–1 shows the Server Processes page.

Figure 12–1 Server Processes Overview Page



Server Processes Overview provides the following OAM Server events, organized in individual columns on the tab.

Table 12–1 OAM Server Metrics: Server Processes Overview Tab

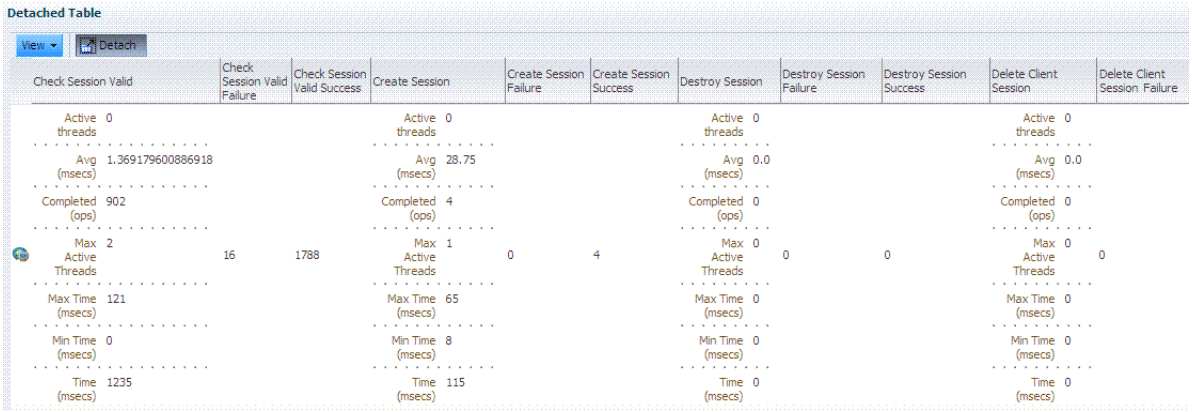
Server Metric Columns
Authorization Process
Authorization Requests
Authentication Process Failure

Table 12–1 (Cont.) OAM Server Metrics: Server Processes Overview Tab

Server Metric Columns
Authentication Process Success
Pre Authentication Process Failure
Pre Authentication Process Success

Figure 12–2 shows the Session Operations Monitoring tab after detaching the table to display all event metrics in individual columns.

Figure 12–2 OAM Server Metrics: Session Operations Monitoring Page



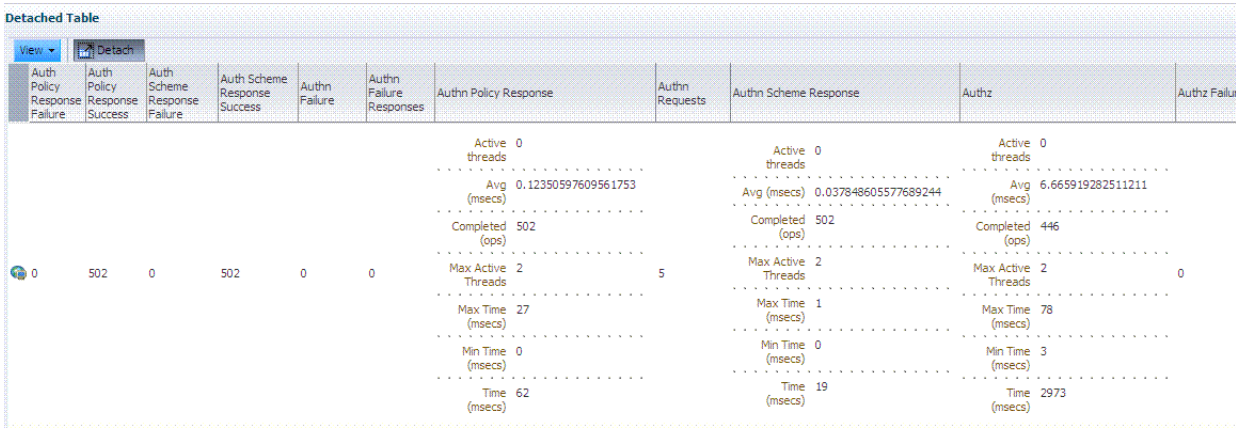
OAM Server Session Operations metrics include:

Table 12–2 OAM Server Metrics: Session Operations

Session Operations
Check Session Valid
Check Session Valid Failure
Check Session Valid Success
Create Session
Create Session Failure
Create Session Success
Destroy Session
Destroy Session Failure
Destroy Session Success
Delete Client Session
Delete Client Session Failure

Figure 12–3 shows the detached OAM Server Operations Monitoring page.

Figure 12–3 OAM Server Metrics: Server Operations Tab



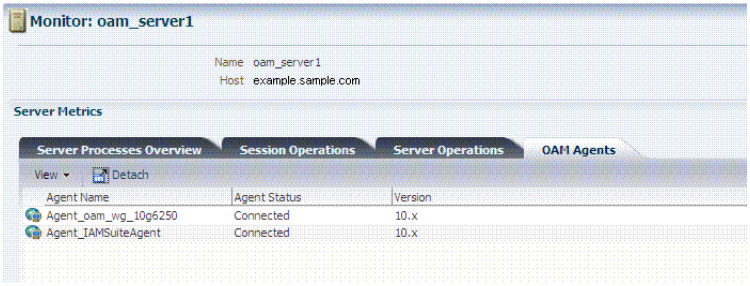
OAM Server Operations metrics include those in Table 12–3.

Table 12–3 OAM Server Metrics: Server Operations Tab

OAM Server: Operations Metrics
Authentication Policy Response Failure
Authentication Policy Response Success
Authentication Scheme Response Failure
Authentication Scheme Response Success
Authentication Failure
Authentication Failure Responses
Authentication Policy Response
Authentication Requests
Authentication Scheme Response
Autorization Failure
Autorization Failure
Autorization Process Failure
Autorization Process Success

Figure 12–4 shows the OAM Server Metrics: OAM Agents tab with all available metrics showing.

Figure 12–4 OAM Server Metrics: OAM Agents Tab



OAM Agent performance metrics include:

- Agent Name
- Agent Status
- Version

12.4 Monitoring SSO Agent Metrics

This section describes how to review metrics for various components and how to determine whether tuning is needed. The following topics are included:

- Monitoring Agent Metrics Using Oracle Access Management Console
- Reviewing OAM Agent Metrics
- Reviewing OSSO Agent Metrics

12.4.1 Monitoring Agent Metrics Using Oracle Access Management Console

Users with valid Oracle Access Management Administrator credentials can use the following procedure to display various SSO Agent performance metrics using the Oracle Access Management Console.

Prerequisites

The server and agent must be running.

To monitor SSO Agent performance using Oracle Access Management Console

1. From the Oracle Access Management Console, click SSO Agents.
2. Open the desired agent type node:
   - OAM Agents
   - OSSO Agents
   - OpenSSO Agents: There is no way to monitor this Agent other than OpenSSO Proxy behavior with respect to Agent Requests. See "Reviewing OpenSSO Metrics Using the DMS Console" on page 12-12.
3. Search for the desired agent to monitor, as usual.
4. In the Search Results table, highlight the desired agent SerialNumber and from the **Actions** menu select **Monitor**.
5. Proceed as needed.
   - Reviewing OAM Agent Metrics
   - Reviewing OSSO Agent Metrics

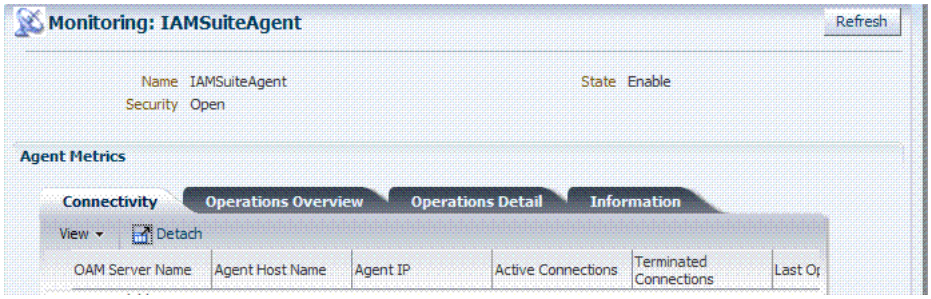
12.4.2 Reviewing OAM Agent Metrics

OAM Agent metrics are organized across the following tabs, as shown in Table 12–5:

- Connectivity
- Operations Overview
- Operations Detail
- Information

See Also: Oracle Fusion Middleware Performance and Tuning Guide

Figure 12–5 OAM Agent Metrics: Monitoring Characteristics



Following figures illustrate detached tables for one OAM Agent with all possible metrics displayed for each:

- Figure 12–6, "OAM Agent Metrics: Detached Connectivity Table"
- Figure 12–7, "OAM Agent Metrics: Detached Operations Overview Table"
- Figure 12–8, "OAM Agent Metrics: Detached Operations Detail Table"
- Figure 12–9, "OAM Agent Metrics: Detached Information Table"

Figure 12–6 OAM Agent Metrics: Detached Connectivity Table

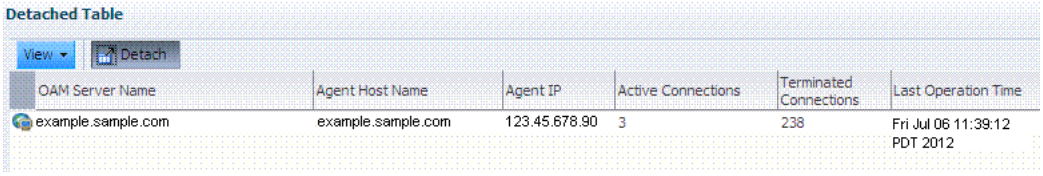


Figure 12–7 OAM Agent Metrics: Detached Operations Overview Table

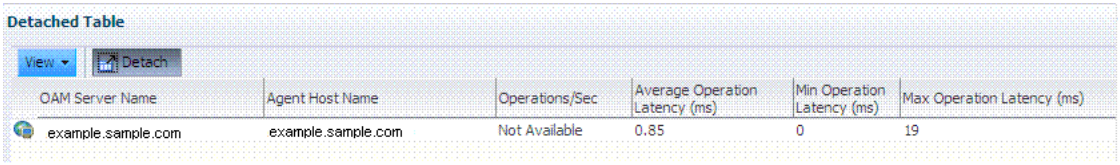


Figure 12–8 OAM Agent Metrics: Detached Operations Detail Table

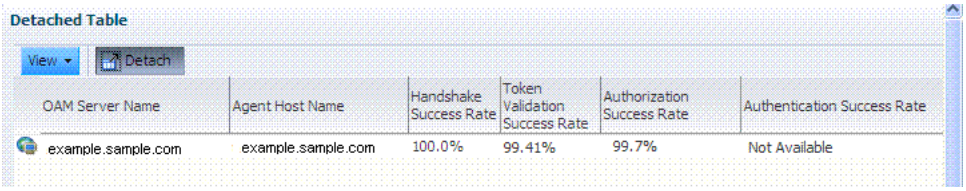
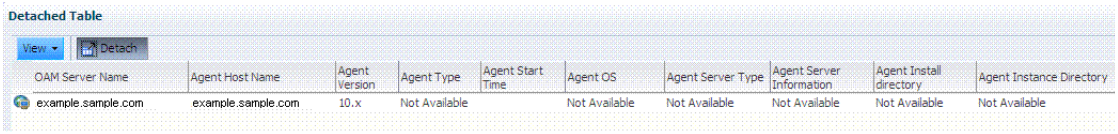


Figure 12–9 OAM Agent Metrics: Detached Information Table



12.4.3 Reviewing OSSO Agent Metrics

When you have an OSSO Agent selected OSSO Agents Search Results table and choose Monitor from the table's Actions menu, the following metrics pages are available:

- Figure 12–10, "OSSO Agent Monitoring Page with Operation Details"
- Figure 12–11, "OSSO Agent Monitoring Process Overview Table"
- Figure 12–12, "OSSO Agent Information Table"

Figure 12–10 OSSO Agent Monitoring Page with Operation Details

Figure 12–11 illustrates the detached OSSO 10g Agent Monitoring Process Overview table.

Figure 12–11 OSSO Agent Monitoring Process Overview Table

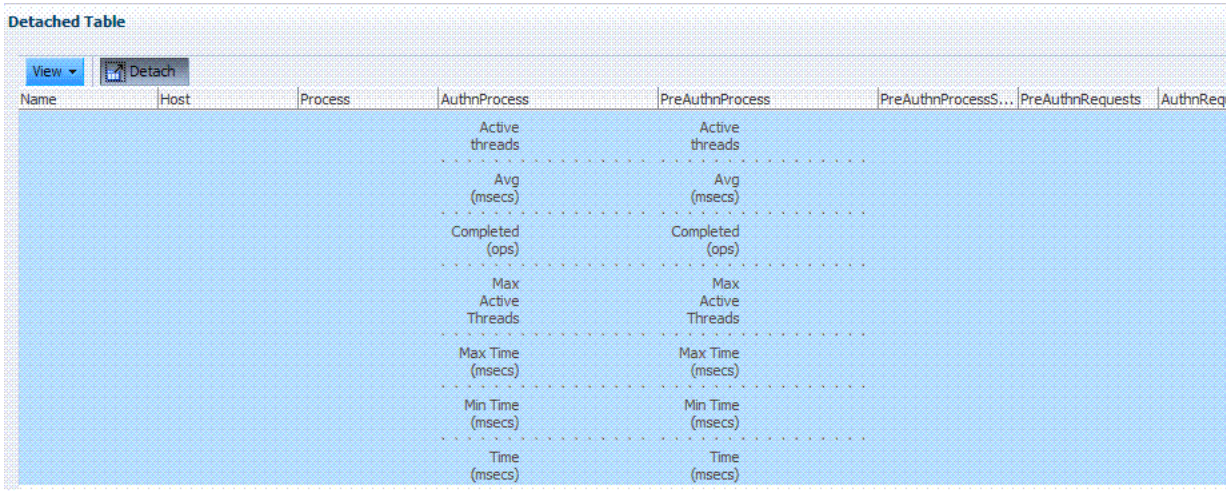
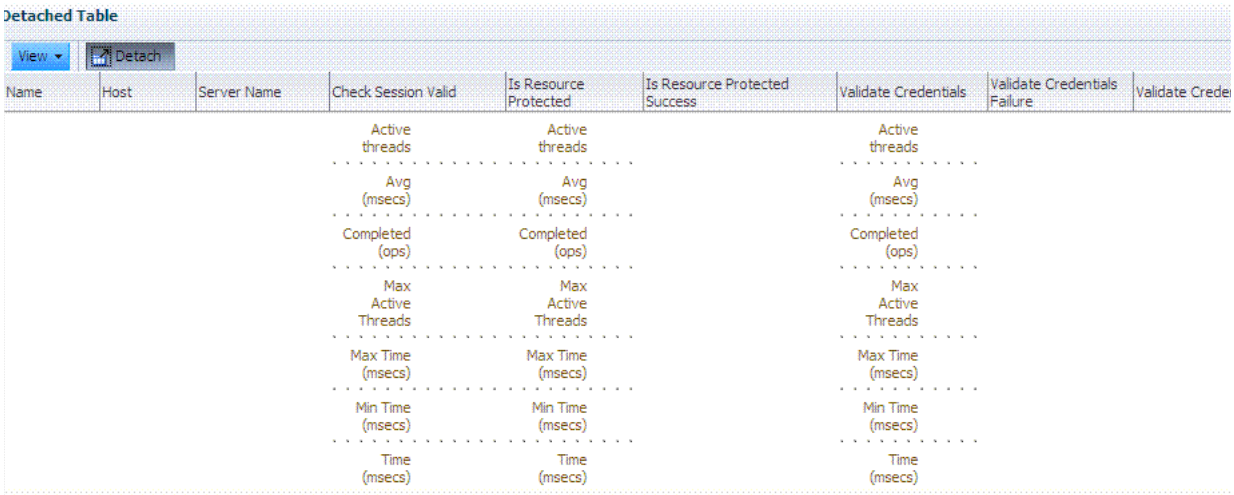


Figure 12–12 illustrates the detached OSSO Agent Information table.

Figure 12–12 OSSO Agent Information Table



12.5 Introduction to OAM Proxy Metrics and Tuning

This section provides the following topics:

- About OAM Proxy Metrics
- OAM Proxy Server Tuning Parameters

See Also:

- "OpenSSO Proxy Events and Metrics: Server" on page 12-11
- Oracle Fusion Middleware Performance and Tuning Guide

12.5.1 About OAM Proxy Metrics

Throughput refers to the number of requests processed per second. Latency refers to the time required to process a particular request. There is less than a 20% latency increase with the introduction of a proxy between Webgate and OAM Server.

Table 12–4 lists the various OAM Proxy metrics available.

Table 12–4 OAM Proxy Metrics

Metric	Description
handshakes.active	Number of active threads doing handshake
handshakes.avg	Average time spent performing initial handshake
handshakes.completed	Number of times an initial handshake has been executed
handshakes.maxTime	Maximum time spent performing initial handshake
handshakes.minTime	Minimum time spent performing initial handshake
handshakes.time	Total time spent performing initial handshake
failedHandshakes.count	Count of failed handshakes
peerCompatibilityFailures.count	Count of how many Peer Compatibility Check Failures have happened
openSecurityMode.count	Count of how many Open Security Mode handshakes have happened
simpleSecurityMode.count	Count of how many Simple Security mode handshakes have happened
SSLSecurityMode.count	Count of how many SSL Security Mode handshakes have happened
negotiateSecurityMode.active	Number of active threads doing security mode negotiation

12.5.2 OAM Proxy Server Tuning Parameters

Performance of the OAM Proxy can be tuned by changing its configuration through the Java EE container Administration Console.

> **Note:** Both the Java EE container Administrator and the Oracle Access Management Administrator can tune performance using the Java EE container Administration Console, which is outside the scope of this book.

Table 12–5 provides the tuning parameters for the OAM Proxy.

Table 12–5 OAM Proxy Tuning Parameters

Purpose	Parameter	Type	Value	Description
Denial of Service Attacks	ConnectionValidationInterval	Integer	120	The time interval in seconds for validating the connections periodically for denial of service attacks
	BacklogQueue	Integer	50	Maximum length of backlog queue

Table 12–5 (Cont.) OAM Proxy Tuning Parameters

Purpose	Parameter	Type	Value	Description
	MaxNAPHandShakeTime	Integer	100	The maximum time in milliseconds within which the client should complete the NAP handshake with client. If NAP handshake over a connection is not completed within this time, the connection will be marked as malicious

12.6 Reviewing OpenSSO Metrics in the DMS Console

This section provides the following topics:

- OpenSSO Proxy Events and Metrics: Server
- OpenSSO Proxy Metrics: Agent
- Reviewing OpenSSO Metrics Using the DMS Console

12.6.1 OpenSSO Proxy Events and Metrics: Server

Throughput refers to the number of requests processed per second. Latency refers to the time required to process a particular request. The Events that can be monitored are described in Table 12–6.

Table 12–6 OpenSSO Proxy Server Events

Event	Description
Naming Service Request	This request is for naming lookups. One can monitor response time taken by the OpenSSO Proxy in servicing this request
Agent Authentication Process	Agent Authentication has been captured in two phases: ▪ AgentAuthentication_Login and AgentAuthentication_SubmitRequirements phase. The second phase refers to the phase after the credentials are submitted by the OpenSSO Agent for authentication ▪ The second phase refers to the phase after the credentials are submitted by the OpenSSO Agent for authentication.
Agent Session Validation	Agent Session Validation
User Authentication	This event is captured for Client SDK's only. One can monitor response time taken to authenticate client SDK's through this diagnostic event
User Session Validation	Time taken to validate User Session
User Authorization	Time taken for authorization as per the configured policy for the given resource

Table 12–7 lists the various OpenSSO Proxy metrics available for the named server.

Table 12–7 OpenSSO Proxy Metrics: Server

Metric	Description
AgentAuthentication_Login	Response time details for Authentication requests during login phase sent by the Agent to authenticate
AgentAuthentication_LoginFailures	Count of how many Agent Authentication requests during login phase have failed.
AgentAuthentication_SubmitRequirements	Response time details for Authentication requests during Submit Requirements phase send by the Agent to authenticate
AgentAuthentication_ SubmitRequirementsFailures	Count of how many Agent Authentication requests during Submit Requirements phase have failed
NamingServiceRequest	Response time details for Naming Service Request operations

Table 12–7 (Cont.) OpenSSO Proxy Metrics: Server

Metric	Description
NamingServiceRequestFailures	Count of how many Naming Service Request operations have failed
UserAuthentication_SDK	Response time details for User Authentication requests
UserAuthentication_SDKFailures	Count of how many User authentication Requests have failed
UserAuthorization	Response time details for User Authorization operations
UserAuthorizationFailures	Count of how many user authorization operations have failed
ValidateAgentSession	Response time details for Agent Session Validation operation
ValidateAgentSessionFailures	Count of how many agent session validation operations have failed
ValidateUserSession	Response time details for User Session Validation operation
ValidateUserSessionFailures	Count of how many User session validation operations have failed.

12.6.2 OpenSSO Proxy Metrics: Agent

Table 2 lists the various OpenSSO Proxy metrics available for each OpenSSO Agent.

Table 12–8 OpenSSO Proxy Metrics: Agent

Metric	Description
AgentAuthentication_ SubmitRequirements	Response time details for Authentication requests during Submit Requirements phase collected per Agent
AgentCacheMode	Specifies the cache mode for the client policy evaluator. Values can be: subtree or self
AgentFilterMode	Specifies how the agent filters requests to protected web applications. The global value functions as a default, and applies for protected applications that do not have their own filter settings
AgentHostName	The host name of OpenSSO Agent
AgentIPAddress	The IP Address of OpenSSO Agent
AgentMappingMode	Specifies the mechanism used to determine the user ID
AgentState	The state of OpenSSO Agent: enabled or disabled.
UserAttributeName	Specifies the data store attribute that contains the user ID
UserAuthorization	Response time details for User Authorization operations collected per Agent
UserIdentity	Specifies the session property name for the authenticated user's ID. Default is 'UserToken'
ValidateAgentSession	Response time details for Agent Session Validation operation collected per Agent
agentType	The type of OpenSSO agent: J2EE or Web Agent

12.6.3 Reviewing OpenSSO Metrics Using the DMS Console

User with valid Oracle Access Management Administrator credentials can use the procedure here to view OpenSSO Proxy metrics in the DMS console.

Prerequisites

The OAM Server must be running.

To access DMS console

1. In a brower window, go to the DMS Console using the following URL:

   `http:// <example_AdminServer:Port/dms/Spy`

2. Log in with your Oracle Access Management Administrator credentials.
3. OpenSSO Agent Metrics: In the DMS Metric Tables, click OAMS.OAM_Server.OPENSSO_Agents.
4. OpenSSO Proxy Metrics: In the DMS Metric Tables, click OAMS.OAM_OpenSSOProxy and view the results on the right side of the console.

12.7 Monitoring the Health of an Access Manager Server

Access Manager Services are business critical and must always be available to control user access to an organization's protected web services and applications. Because hardware, network connectivity issues and other failures can happen, HeartBeat monitoring can be leveraged by Load Balancers to ensure user traffic is routed to healthy OAM Servers. For example, when there is a firewall installed between a User Agent or WebGate (10 or 11g) and the 10g or 11g Access Manager server, perimeter devices can check availability of the Access Manager server (its *health*) by hitting its HeartBeat URL. The following sections contain details.

- Understanding WebGate and Access Manager Communications
- Monitoring Access Manager Server Health

12.7.1 Understanding WebGate and Access Manager Communications

When deploying a network firewall between a WebGate and Access Manager server, the WebGate communicates using the OAP protocol by creating a TCP socket connection with Access Manager to establish a message channel. The WebGate uses the message channel to send different OAP messages necessary to serve the resource requests (isprotected, isauthorized, and the like). Now, consider a situation in which the WebGate/Oracle HTTP Server is idle. In this case, the WebGate has received no resource request and will not send any messages to Access Manager for authentication or authorization; there will also not be any read/write activity on the socket connection.

The firewall determines this connection is *idle* after 30-40 minutes of inactivity (depending on its configuration) and terminates the socket connection but does not inform/notify the WebGate or Access Manager server. In this case, when a request for a resource arrives at the WebGate and it sends a OAP message to the Access Manager server, it uses the existing connection and waits for a reply. Because the connection was dropped by the firewall, the WebGate does not receive any reply; so it waits for the TCP timeout. Following the TCP timeout, WebGate understands the message channel is of no use and starts the process to get a new message channel. TCP timeout is OS specific and may vary from several minutes to hours which makes the WebGate unable to process user requests.

Note: The `setKeepAlive` WebGate parameter ensures that load balancers do not drop the OAP connection. See User-Defined WebGate Parameters for details.

12.7.2 Monitoring Access Manager Server Health

The OAM monitoring model allows Web Tier components (load balancers) to ping an OAM Managed Server's HeartBeat endpoint at a scheduled interval over HTTP(S). This allows Web Tier components to route incoming HTTP traffic away from unhealthy OAM Managed Server(s). Every OAM Managed Server exposes this HeartBeat URL:

```
Scheme://ManagedServerHost:ManagedServerPort/oam/server/HeartBeat
```

In this URL, the following is true:

- scheme = https | http
- ManagedServerHost = Host name of the Access Manager WLS Managed Server
- ManagedServerPort = Port used by the Access Manager WLS Managed Server

The HeartBeat URL works as follows:

1. The Web Tier components will send an HTTP request to the HeartBeat endpoint of the Access Manager Managed Server.
2. The Access Manager Managed Server will then do the following:
   - Verify Id Store Connectivity
   - Verify Policy Store Connectivity
   - Verify the Credential Collector URLs are reachable
   - Sanity check the working of the Coherence Layer
   - Check for NAP connectivity

   If the above tests succeed, the Access Manager server is considered to be healthy and a HTTP 200 response is sent to the Load Balancer. Any other HTTP Status Code value signifies that the Access Manager Managed Server is not healthy.
3. When multiple Access Manager Managed Servers are present in the deployment, the Web Tier component will repeat this for each OAM Managed Server.

Note: Neither the health status test results or check results can be communicated in the body of the HTTP Response.

13

Monitoring Performance and Logs with Fusion Middleware Control

Live, dynamic performance metrics can be viewed in Fusion Middleware Control. This chapter describes how to monitor performance and log messages for Access Manager and Security Token Service using Oracle Fusion Middleware Control. This chapter focuses on general tasks that Administrators can perform from Fusion Middleware Control, which does not replace details in the Oracle Fusion Middleware Administrator's Guide.

> **Note:** Unless explicitly stated, information in this chapter is the same for both services. There are no metrics in Oracle Fusion Middleware Control for Identity Federation or Mobile and Social.

This chapter includes the following topics:

13.1 Prerequisites

Oracle Fusion Middleware Control must be deployed with Oracle Access Management on the WebLogic Administration Server, as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.

13.2 Introduction to Fusion Middleware Control

Within Fusion Middleware Control, information is updated dynamically during live sessions of Access Manager, Security Token Service, and other products.

Fusion Middleware Control organizes a wide variety of performance data and administrative functions into distinct Web-based pages. This helps Administrators

easily locate the most important monitoring data and the most commonly used administrative functions from a Web browser.

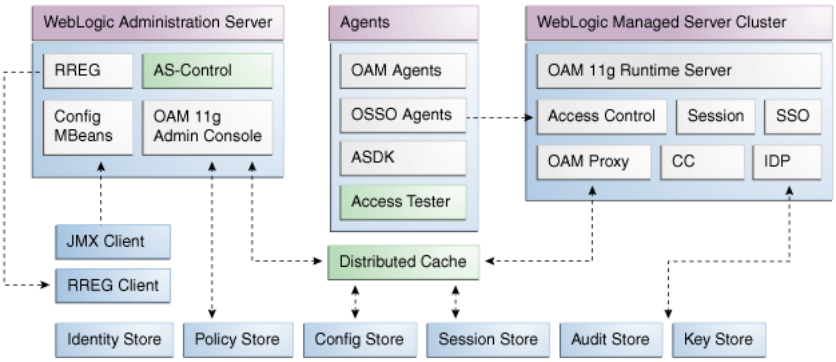
> **Note:** Enterprise Manager Grid Control is an independently licensed product that provides additional capabilities not found in Fusion Middleware Control (primarily, the ability to collect and maintain data for historical purposes and trending).

Oracle Access Management 11g is deployed as a Java EE application in a WebLogic container. For high availability and failover, Oracle Access Management is typically deployed in a WebLogic cluster environment.

A WebLogic Server domain can have multiple clusters. To provide monitoring and performance statistics for all clustered components requires a composite target. This target provides status and rolled-up load and response performance metrics for member instances. In addition to the metrics exposed for Access Manager and Security Token Service, generic performance metrics are also available for Java EE application and composite Java EE applications.

Fusion Middleware Control must be deployed with Oracle Access Management on the WebLogic Administration Server, as shown in Figure 13–1.

Figure 13–1 Fusion Middleware Control (AS-Control) Deployment Architecture



Using Fusion Middleware Control for targets is supported through the Oracle Dynamic Monitoring Systems instrumentation within Oracle Access Management. This instrumentation is used to provide:

- Performance overview and drill down
- Log message searches and dynamic log level changes
- Routing topology overview
- Mbean browser
- Component- and cluster-level metrics for Access Manager with Security Token Service

13.3 Logging In to and Out of Fusion Middleware Control

This section provides the following topics:

- About the Farm Page in Fusion Middleware Control

- Logging In To Fusion Middleware Control
- Logging Out of Fusion Middleware Control

13.3.1 About the Login Page for Fusion Middleware Control

The Fusion Middleware Control Login page provides the usual fields for the User Name and Password. The bottom of the Fusion Middleware Control Login page provides topics that you can click for additional information.

13.3.2 Logging In To Fusion Middleware Control

Only Fusion Middleware Control Administrators can perform this task.

> **See Also:** *Oracle Fusion Middleware Administrator's Guide* for details about getting started using Fusion Middleware Control

To log in to Fusion Middleware Control

1. In a browser window, enter the URL to Fusion Middleware Control. For example:

   `http://host.example.com:8888/em/`

2. Expand a topic at the bottom of the Login page to learn about the enhanced user experience or new features.
3. Log in as a Fusion Middleware Control Administrator.
4. Choose the farm containing Oracle Access Management, if needed.
5. Help: From the Farm Resource Center on the OAM Farm page, choose topics of interest (or click Help in the upper-right corner of the page) to get more information.
6. Proceed to any topic in this chapter for viewing and configuration details.

13.3.3 Logging Out of Fusion Middleware Control

You can use the following procedure to sign out of Fusion Middleware Control.

To log out of Fusion Middleware Control

1. Click the Log Out link in the upper-right corner of Fusion Middleware Control.
2. Close the browser window.

13.4 Displaying Menus and Pages in Fusion Middleware Control

This section provides the following topics for Access Manager and Security Token Service:

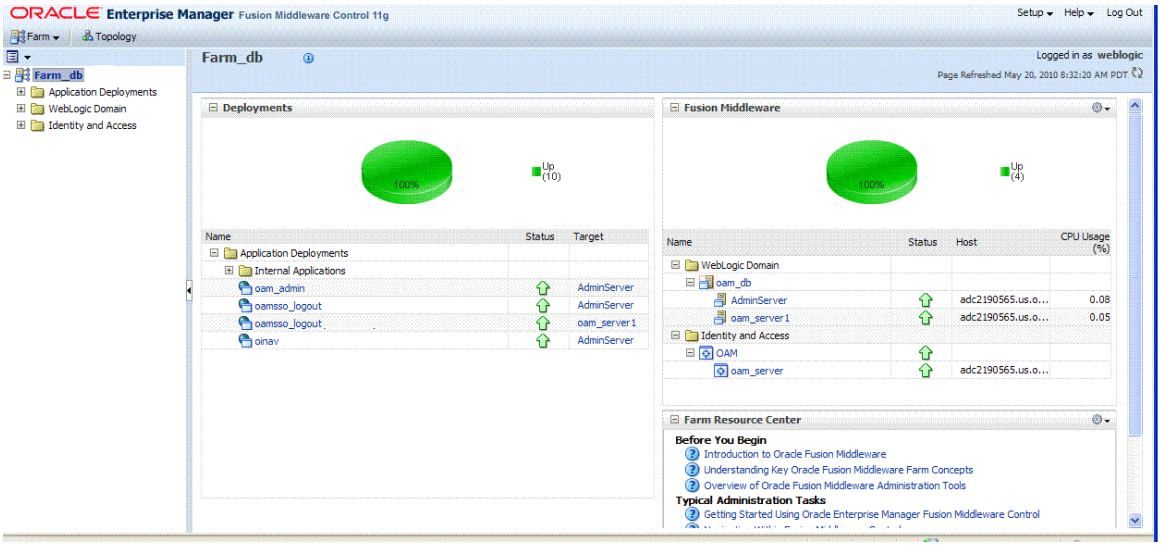
- About the Farm Page in Fusion Middleware Control
- About Context Menus and Pages in Fusion Middleware Control
- Displaying Context Menus and Target Details in Fusion Middleware Control

> **See Also:** *Oracle Fusion Middleware Administrator's Guide* for details about getting started using Fusion Middleware Control

13.4.1 About the Farm Page in Fusion Middleware Control

Figure 13–2 illustrates the OAM Farm page in Fusion Middleware Control. Each Farm page includes similar information. The Farm Resource Center provides immediate access to online information.

Figure 13–2 OAM Farm Page in Fusion Middleware Control



Sections on the Farm page are described in Table 13–1.

Table 13–1 Farm Page Sections

Farm Page Sections	Description
Deployments	Within the farm, this section displays the Status and Target of each Internal Application within the Application Deployment. Clicking any link in the Deployments section (or in the navigation tree) displays a page containing more information.
Fusion Middleware	Within the farm, this section displays the status, host, and CPU usage for server instances in the: ▪ WebLogic Server domain ▪ Identity and Access Clicking any link on the page (or in the navigation tree) displays a page containing a more detailed summary.
Farm Resource Center	Provides a wealth of online information in the following categories: ▪ Information that is useful before you begin using Fusion Middleware Control ▪ Administrator tasks using Fusion Middleware Control ▪ Other resources Clicking any link in the resource center displays information on the chosen subject. With a wealth of information online, these details are not repeated in this book.

The navigation tree on the left side of the page, like the one in Figure 13–3, enables you to choose a specific instance (target) on which to operate regardless of the page you are currently viewing. Target names in your environment will be different.

Figure 13–3 Farm Navigation Tree in Fusion Middleware Control

For more information, see "Logging In To Fusion Middleware Control".

See Also: "Displaying Menus and Pages in Fusion Middleware Control" on page 13-3

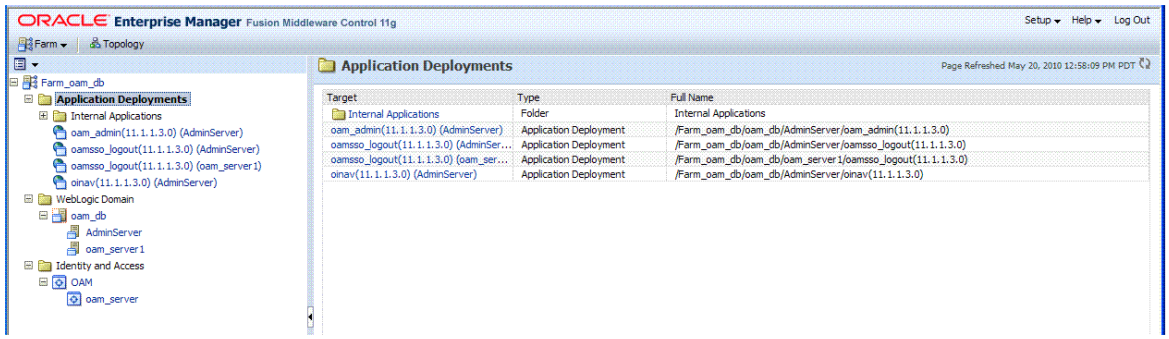
13.4.2 About Context Menus and Pages in Fusion Middleware Control

For Oracle Access Management, Farm details in Fusion Middleware Control are divided into the following nodes within the navigation tree:

- Application Deployments
- Internal Applications (includes logout page and other details for the OAM AdminServer and OAM Server instances)
- WebLogic Server domains (WebLogic Server details, including the OAM Farm)
- Identity and Access (includes OAN Cluster or individual OAM Server instances)

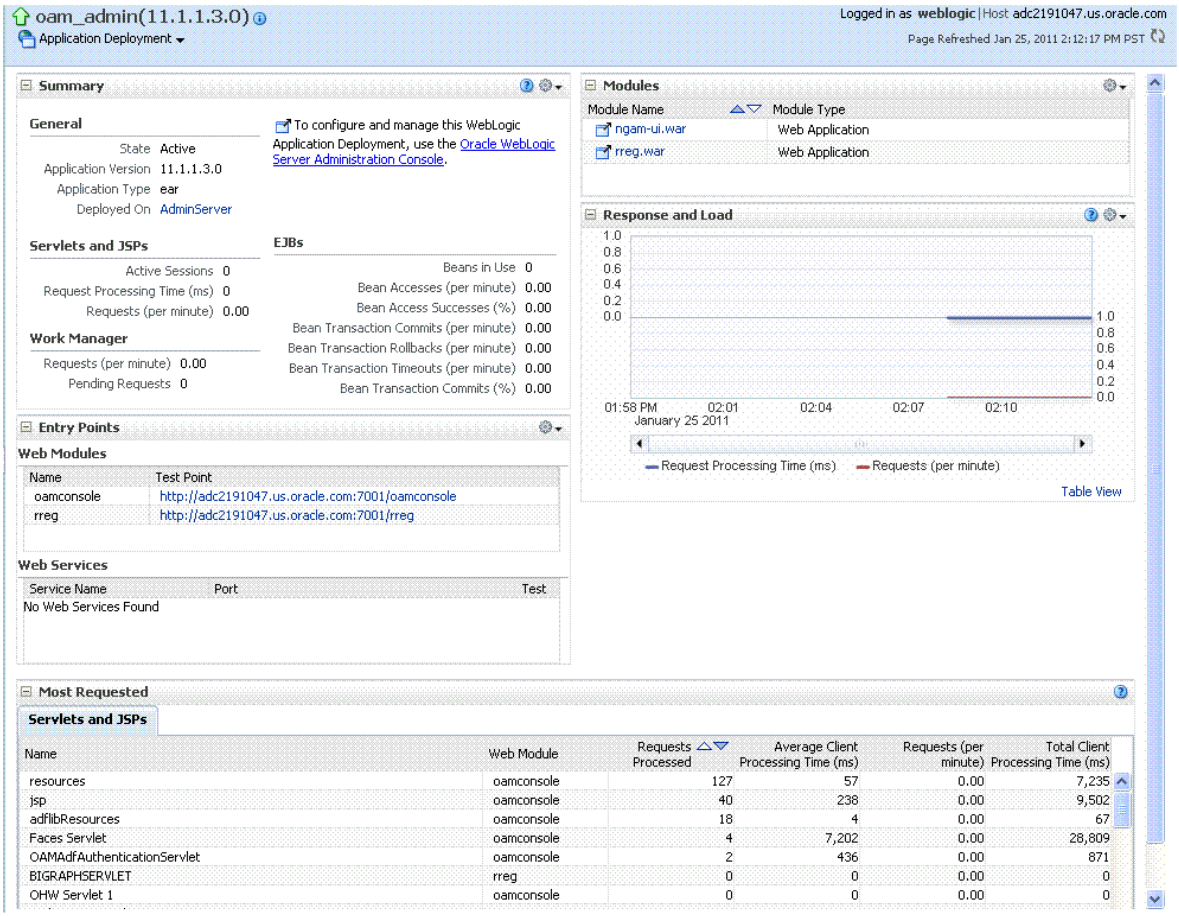
Clicking a node in the navigation tree displays an information page with individual links and a description of the Target, Type, and Full Name, as shown in Figure 13–4 for Application Deployments.

Figure 13–4 Node Information Page in Fusion Middleware Control



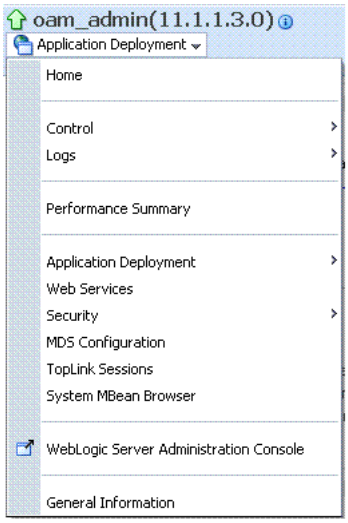
Clicking an instance (target) name (from either the navigation tree or a page), displays a context menu and a more detailed summary page. The Internal Application target is highlighted in the navigation tree and a page of the same name is displayed on the right. The context menu is available beneath the target name at the top of the page, as shown in Figure 13–5.

Figure 13–5 Application Deployment Summary for the Selected Internal Application



The Application Deployment menu is shown in Figure 13–6.

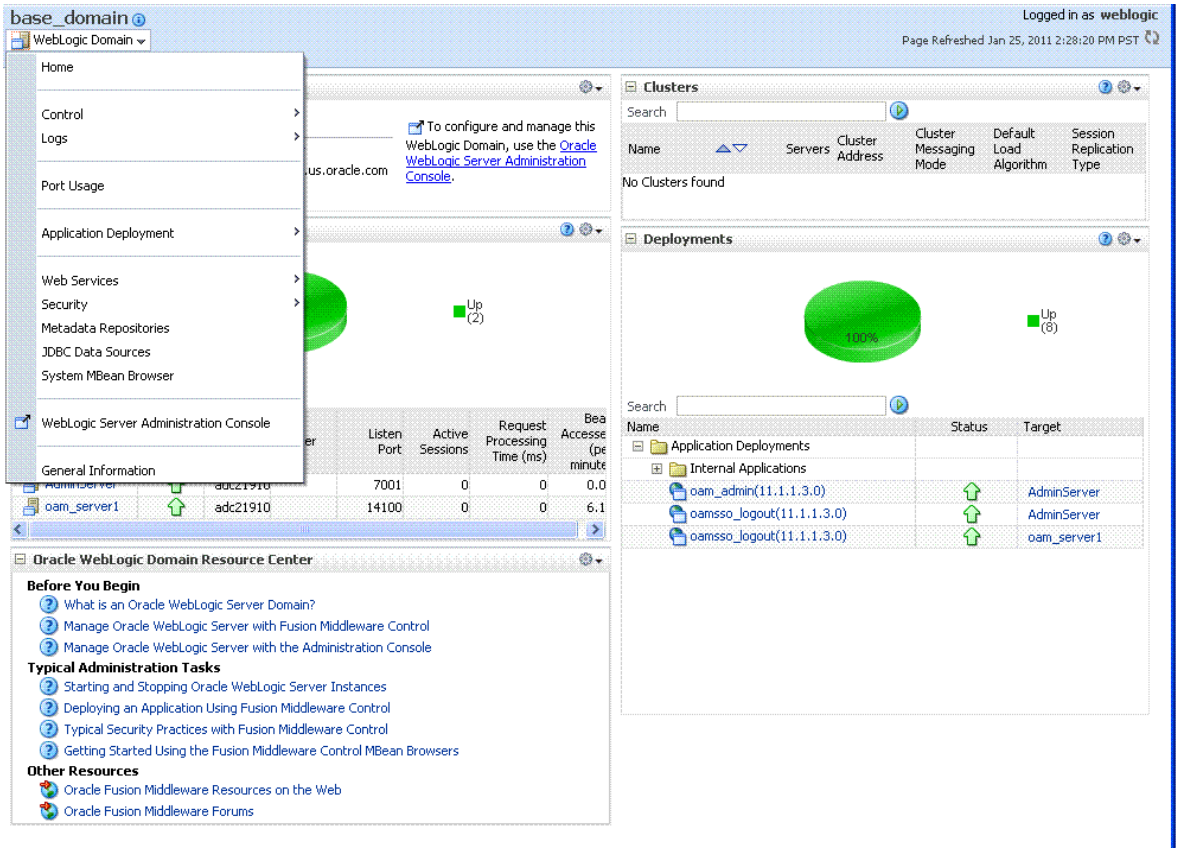
Figure 13–6 Application Deployment Menu



WebLogic Server domain: The WebLogic Server domain page is shown in Figure 13–7 with the corresponding menu displayed. The Oracle WebLogic Server domain

Resource Center, with links to online documentation, is visible in the bottom-left corner. This page more closely resembles the Farm landing page.

Figure 13–7 WebLogic Server Domain Summary with Context Menu Exposed



Selecting a target name within the WebLogic Server domain node displays a target summary page that more closely resembles the Application Deployment page in Figure 13–5.

For more information, see "Displaying Context Menus and Target Details in Fusion Middleware Control".

> **See Also:** "Viewing Performance in Fusion Middleware Control" on page 13-8 for information about the Identity and Access node and related pages.

13.4.3 Displaying Context Menus and Target Details in Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to view context menus and target pages.

> **Note:** From the Farm Resource Center on the OAM Farm page, choose topics of interest (or click Help in the upper-right corner of the page) to get more information.

> **See Also:** "About Context Menus and Pages in Fusion Middleware Control" on page 13-5

To display context menus and target information

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the Farm containing Oracle Access Management, if needed.
3. **Information Pages**: From the navigation tree, click one of the following to display the related information page:
   - Application Deployments
   - WebLogic Server domain
   - Identity and Access
4. **Menus and Summary Pages**: Click an instance name (in either the navigation tree or the related page) to display a summary page and menu (Figure 13–5 and Figure 13–6).
5. **Cluster or Server Pages**: See "Viewing Performance in Fusion Middleware Control".

13.5 Viewing Performance in Fusion Middleware Control

Fusion Middleware Control provides Administrators with:

- A cluster-wide view of performance for Access Manager with Security Token Service
- A per-server drill-down of key performance metrics
- The ability to quickly add or remove performance metrics

Using Fusion Middleware Control, you can view performance metrics for live sessions in a variety of formats. Table 13–2 summarizes the pages for selected nodes and target instances.

Table 13–2 Resulting Pages for Selected Nodes and Targets

Node	Target	Information Summary Page	Performance Overview	Performance Summary w/Metrics
Application Deployment				
Internal Applications	...AdminServer	Yes	No	Yes
	oamsso_logout(11.1.1.3.0) AdminServer	Yes	No	Yes
	oamsso_logout(11.1.1.3.0) oam_server	Yes	No	Yes
WebLogic Server domain				
	oam_bd (Cluster name)	Yes	No	No
	AdminServer	Yes	No	Yes
	oam_server	Yes	No	Yes
Identity and Access				
	OAM (Cluster)	No	Yes	Yes
	oam_server (Server)	No	Yes	Yes

Note: Security Token Service performance is included with relevant OAM Cluster and Server pages.

This section provides the following topics:

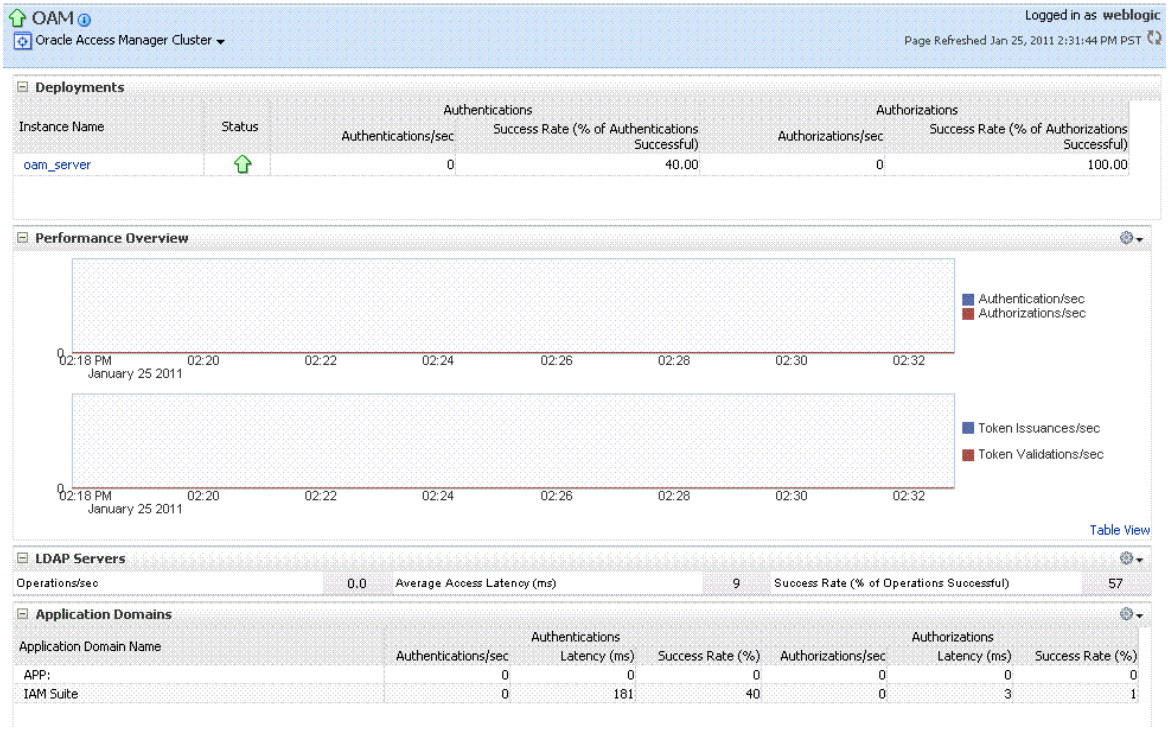
- About Performance Overview Pages in Fusion Middleware Control
- About the Metrics Palette and the Performance Summary Page
- Displaying Performance Metrics in Fusion Middleware Control
- Displaying Component-Specific Performance Details

13.5.1 About Performance Overview Pages in Fusion Middleware Control

The Fusion Middleware Control Performance Overview can be used to reflect WebLogic cluster information down to specific performance metrics for individual Cluster and Server targets.

Cluster Page: The top node within Identity and Access leads to a page for the OAM Cluster Deployment, which includes a Performance Overview. For Figure 13–8, the Cluster is selected in the navigation tree, beneath the Identity and Access node. Figure 13–8 illustrates the Cluster Deployments and Performance Overview sections. This page includes a table for Token Issuance and Token Validations.

Figure 13–8 Cluster Page



OAM Server Pages: Selecting an OAM Server target name from the navigation tree (or the open page), displays a Performance Overview for the target. At the top of the OAM Server page, a summary of Key Metrics for the server instances appears instead of the Cluster Deployment section. Figure 13–9 illustrates the OAM Server instance Key Metrics, which include Token Issuance and Token Validations per second. The Token Validation success rate is included.

Figure 13–9 Key Metrics for Server Pages

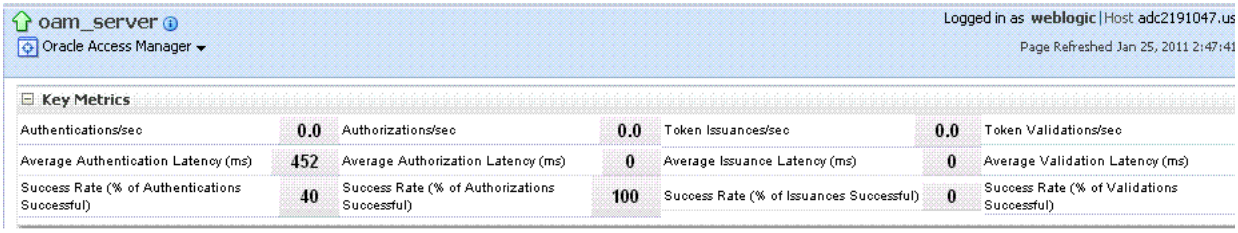


Table 13–3 describes the elements of the Performance Overview for Clusters and OAM Server instances in Fusion Middleware Control. There are only a few differences.

Table 13–3 Summary of Performance Overviews in Fusion Middleware Control

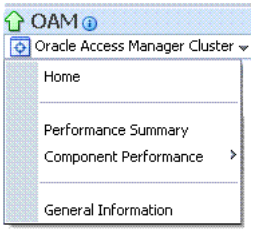
Section or Column Name	Description
Cluster Menu	Dynamic context menus provide functions related to the selected target (also available when you right-click a target in the navigation tree). This menu is available for the selected Cluster.  The Component Performance command enables you to choose between displaying Access Manager or Security Token Service metrics. See Also: "Access Manager Component Pages" and "Security Token Service Component Pages".
Deployments, OAM Cluster pages	This section appears only on OAM Cluster pages. It describes the status of each instance in the cluster. The following information is included: ▪ Instance Name ▪ Status ▪ Authentications ▪ Authorizations
Instance Name	This column includes the name of each OAM Server instance in the cluster. For example: *OAM_server_name*
Status	This column identifies the status of each OAM Server instance in the cluster with either a: ▪ Green Up Arrow (running) ▪ Red Down Arrow (not running)
Authentications	Authentications columns identify: ▪ Authentications/sec: The number of authentications per second for each OAM Server instance in the cluster ▪ Success Rate (% of Authentications Successful): A numeric value representing the percentage of successful authentications for each OAM Server instance in the cluster

Table 13–3 (Cont.) Summary of Performance Overviews in Fusion Middleware Control

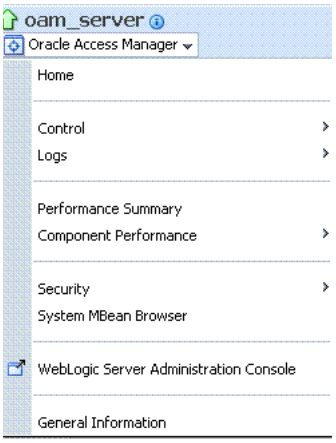
Section or Column Name	Description
Authorizations	This column identifies the number of authorizations per second for each OAM Server instance in the cluster. Authorizations columns identify: ▪ Authorizations/sec: The number of authorizations per second for each OAM Server instance in the cluster ▪ Success Rate (% of Authorizations Successful): A numeric value representing the percentage of successful authorizations for each OAM Server instance in the cluster
Server Instance Menu	Dynamic context menus provide functions related to the selected target (also available when you right-click a target in the navigation tree). This menu is available for the selected server instance.  The Component Performance command enables you to choose between displaying specific Access Manager or Security Token Service metrics. See Also: "Access Manager Component Pages" and "Security Token Service Component Pages".
Key Metrics, OAM Server Page	This table provides a summary of statistics for only the selected OAM Server instance. Key metrics include details for both Access Manager and Security Token Service: ▪ Authentications/sec, Average Authentication Latency (ms), and Success ratio ▪ Authorizations/sec, Average Authorization Latency (ms), and Success ratio ▪ Token Issuances/sec, Average Issuance Latency (ms), and Success ratio ▪ Token Validations/sec, Average Validation Latency (ms), and Success ratio
Performance Overview, OAM Cluster and OAM Server Pages	This section provides a graphic representations of Access Manager authentication and authorization operations and Security Token Service Token Issuance and Token Validation operations. Metrics in the Performance Overview are not configurable. The Metrics Palette is available for only the Performance Summary. Whether you have an OAM Cluster or OAM Server instance selected, the Performance Overview includes: ▪ Authentications/sec and Authorizations/sec ▪ Token Issuances/sec and Token Validations/sec Within each table: ▪ Coordinates along the horizontal axis (the x axis) identify the time period. ▪ Coordinates along the vertical axis (the y axis) identify the number of named transactions that occured during the time period.

Table 13–3 (Cont.) Summary of Performance Overviews in Fusion Middleware Control

Section or Column Name	Description
Table View	Click the Table View link on the bottom-right side of the Performance Overview to display performance information in columns within a pop up window.
LDAP Servers, OAM Cluster and OAM Server Pages	This section is available when either an OAM Cluster or a single OAM Server instance is selected. It provides information for the default LDAP user identity store: ▪ LDAP operations/sec ▪ LDAP Latency (milliseconds) ▪ LDAP Success Rate
Application Domains, OAM Cluster and OAM Server Pages	This section of the OAM Cluster and OAM Server pages provides information for all Application Domains that were used during authentication and authorization processing. Columns in this section provide the: ▪ Application Domain Name: Each Application Domain that contains the authentication and authorization policies used for a request. ▪ Authentications/sec, Authentications Latency (ms), Success Ratio (%) for each Application Domain ▪ Authorizations/sec, Authorization Latency (ms), Success Ratio (%) for each Application Domain

13.5.1.1 Access Manager Component Pages

The Component Performance command on both the Cluster and Server instance menus enables you to display Access Manager-specific metrics.

Cluster component-specific metrics are aggregated across the cluster, illustrated in Figure 13–10. Details follow in Table 13–4.

Figure 13–10 Aggregated Access Manager Component Metrics for the Cluster

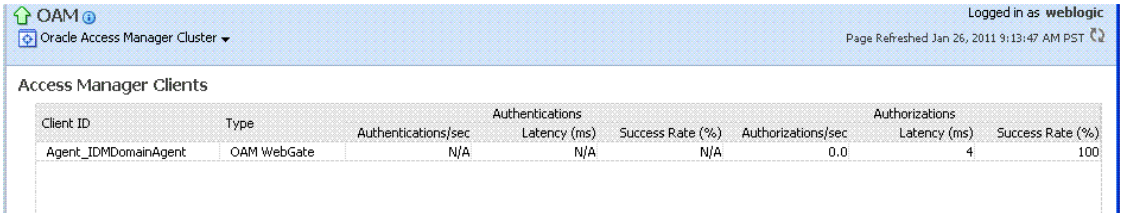


Figure 13–11 illustrates the Access Manager component metrics for a single OAM Server instance.

Figure 13–11 Access Manager Component Metrics for a Single OAM Server Instance

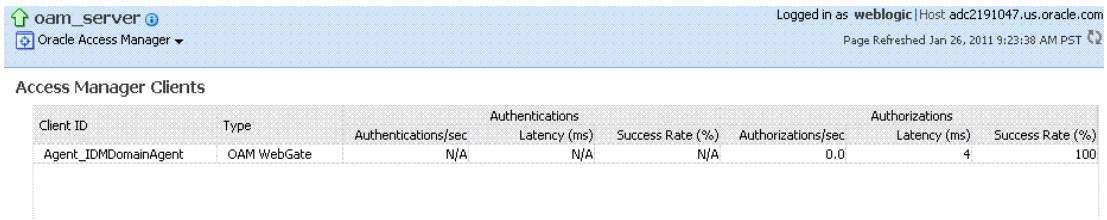


Table 13–4 describes the component-specific metrics for Access Manager.

Table 13–4 Access Manager Component Metrics

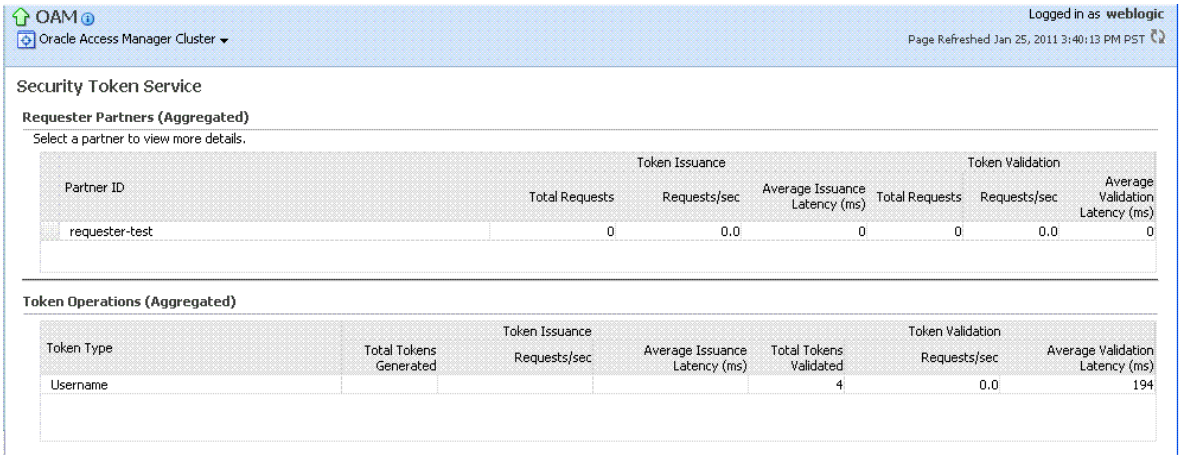
Access Manager Metrics	Description
Access Manager Clients	Based on your selection (Cluster or Server instance), this page provides information for all active Access Clients in a cluster (or for the active Access Clients of an individual OAM Server). Details include: ▪ Client ID ▪ Type ▪ Authentications ▪ Authorizations
Client ID	Displays the name of the Agent, as defined in the Agent registration in the Oracle Access Management Console. For example: IAMSuiteAgent
Type	Displays the Agent. type For example: OAM Webgate
Authentications	Authentications columns identify: ▪ Authentications/sec: The number of authentications per second for each OAM Server instance in the cluster ▪ Latency (ms): The number of milliseconds the authentication was delayed ▪ Success Rate (%): A numeric value representing the percentage of successful authentications for each OAM Server instance in the cluster
Authorizations	Authorizations columns identify: ▪ Authorizations/sec: The number of authorizations per second for each OAM Server instance in the cluster ▪ Latency (ms): The number of milliseconds the authorization was delayed ▪ Success Rate (%): A numeric value representing the percentage of successful authorizations for each OAM Server instance in the cluster

13.5.1.2 Security Token Service Component Pages

The Component Performance command on both the Cluster and Server instance menus enables you to display Security Token Service component-specific metrics.

Component-specific metrics are aggregated for the Cluster, as illustrated in Figure 13–10.

Figure 13–12 Aggregated STS Component Metrics for the Cluster



For each individual server instance, STS component-specific metrics are also available, as illustrated in Figure 13–10.

Figure 13–13 STS Component Metrics for an Individual OAM Server Instance

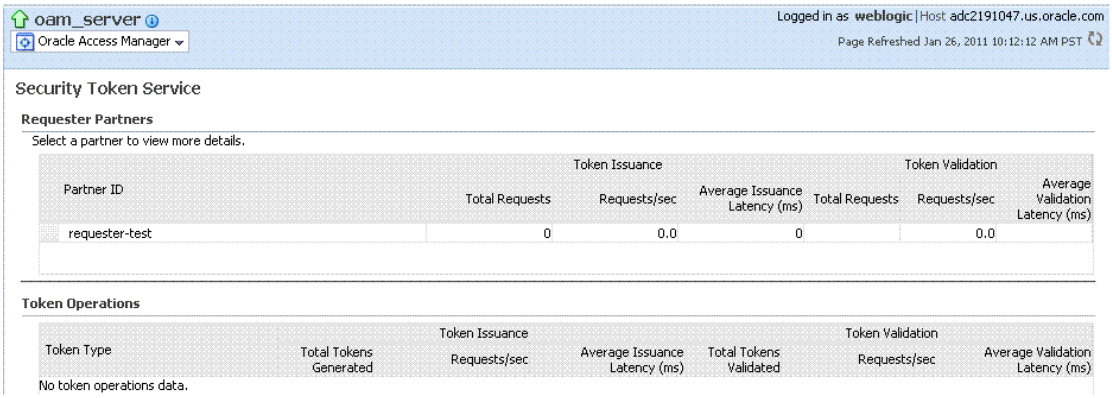


Table 13–5 introduces the STS component specific metrics.

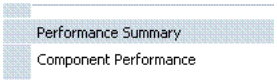
Table 13–5 STS Component-Specific Metrics

Security Token Service Metrics	Description
Requestor Partners	Statistics summary for either the selected OAM Server instance (or an aggregated summary for the Cluster): ▪ Partner ID ▪ Token Issuances ▪ Token Validations Selecting a Requestor Partner ID reveals Relying Party Details with specific information for only the named partner.
Token Operations	Metrics for STS Token Operations include: ▪ Token Type ▪ Token Issuances: Total Requests, Requests per second, Average Issuance Latency (ms) ▪ Token Validations: Total Requests, Requests per second, Average Issuance Latency (ms)

13.5.2 About the Metrics Palette and the Performance Summary Page

The Performance Summary command on the Cluster or Server menu displays metrics charts for the selected target.

Figure 13–14 Performance Summary Command



On the Performance Summary page, a chart is displayed for each selected metric. An OAM Server Performance Summary page. Figure 13–15 shows the Performance Summary page with an open Metric Palette from which you can choose metrics to chart. Stacked charts allow you to easily compare multiple metrics for the same time frame, change the time frame to go back in time, or zoom in or out.

Figure 13–15 Performance Summary Page with Metric Palette

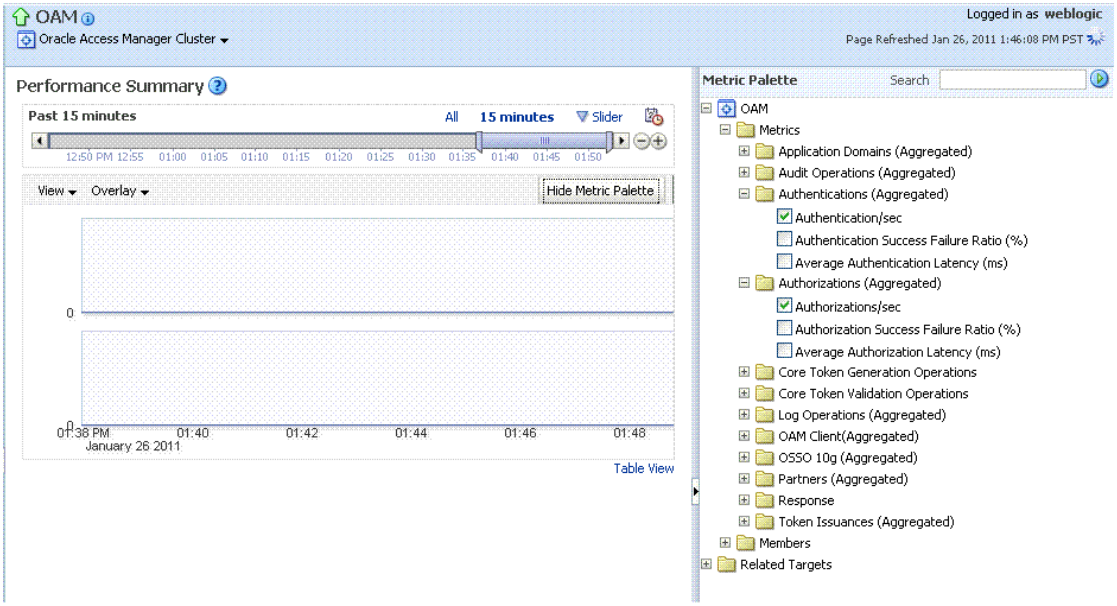


Table 13–6 describes the status and controls available on the Performance Summary page.

Table 13–6 Status and Controls on Performance Summary Pages

Status or Control	Description
Past *n* minutes	Status is based on the specified time period, which can be adjusted using the slider.
All	
n Minutes	The specified time period, which can be adjusted using the slider.

Table 13–6 (Cont.) Status and Controls on Performance Summary Pages

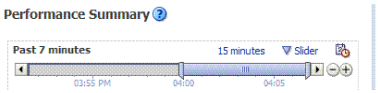
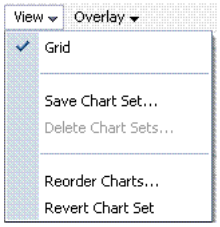
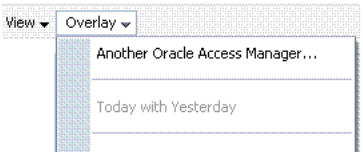
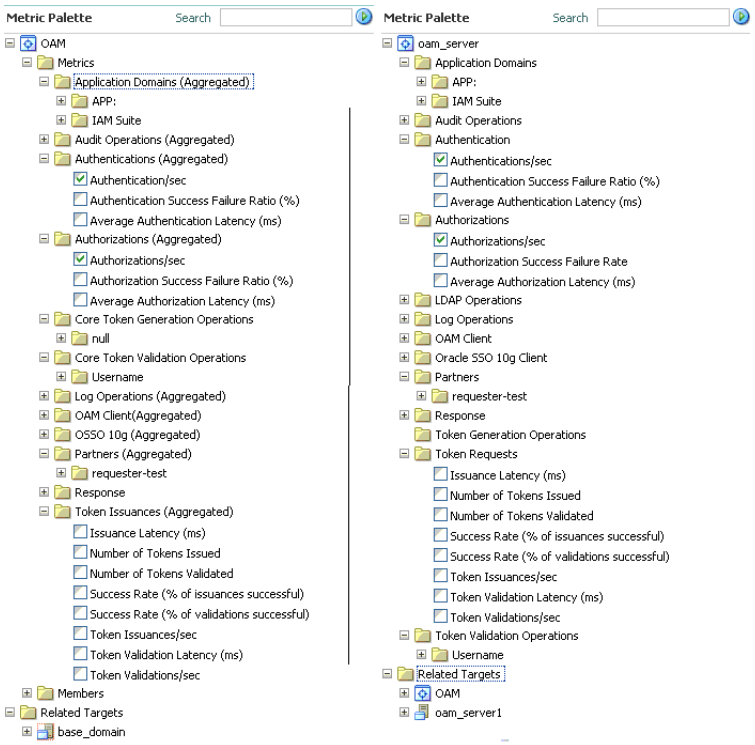
Status or Control	Description
Slider	The tool you use to adjust the time period. 
Chart Set	A list from which you can choose the set of saved charts to view.

Table 13–6 (Cont.) Status and Controls on Performance Summary Pages

Status or Control	Description
View	A menu that enables you to add a grid, save a chart, and order information on the page. 
Overlay	A menu that enables you to search for and view another instance of the same type and compare this against the instance in the summary. 
Metric Palette	A listing from which you can select performance metrics to chart. Items unique to Access Manager and Security Token Service are shown here. Left: Metric Palette for the Cluster Right: Metric Palette for a Single OAM Server 

13.5.3 Displaying Performance Metrics in Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to add or change the metrics that are displayed in the Performance Summary.

See Also:

- "About Performance Overview Pages in Fusion Middleware Control"
- "About the Metrics Palette and the Performance Summary Page"

To add or change metrics displayed in the Performance Summary

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. **Performance Overview**:
   a. Expand the desired node and select a target. For example: Identity and Access.

      Identity and Access
        oam_server

   b. Review the Performance Overview.
3. **Performance Summary**:
   a. Select a target (Step 1).
   b. From the context menu, select Performance Summary.
   c. Review the Summary Page.
4. **Changing Metrics**:
   a. From the Performance Summary page (Step 2), click the **Show Metrics Palette** button.
   b. From the Metrics Palette, expand nodes and check (or clear) boxes to add (or remove) metrics from the summary.
   c. Review the updated the Summary page.
   d. Click **Hide Metrics Palette** when you finish.
5. **Saving a Chart Set**:
   a. From the View menu on the Performance Summary page, click **Save Chart Set**.
   b. In the dialog box that appears, enter a unique name for this chart set and click **OK** when the operation is confirmed.
   c. Click **Hide Metrics Palette** when you finish.
   d. Review the updated information on the Summary Page.
6. **Adding an Overlay, Access Manager**:
   a. From the Overlay menu on the Performance Summary page, click **Another Oracle Access Manager**.
   b. In the Search and Select Targets dialog, enter the target name and host name, then click **Go**.
   c. In the target results table, click the name of the desired target and then click **Select**.
   d. When finished viewing the overlay, click **Remove Overlay** from the Overlay menu.
7. **Adding an Overlay, Today with Yesterday**:

a. From the Overlay menu on the Performance Summary page, click **Today with Yesterday**.

b. When finished viewing the overlay, click **Remove Overlay** from the Overlay menu.

8. **Testing**:

a. Using the Access Tester, perform several authentication and authorization tests (see Chapter 21).

b. In Fusion Middleware Control, check performance metrics.

13.5.4 Displaying Component-Specific Performance Details

Fusion Middleware Control Administrators can use the following procedure to view and compare component-specific performance data.

See Also:

- "Access Manager Component Pages"
- "Security Token Service Component Pages"

To display component-specific performance details

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the desired node and select a target. For example:

   Identity and Access
   oam_server

3. From the context menu, select **Component Performance**.
4. Choose **Access Manager** (or **Security Token Service**).
5. **STS Partner ID**: Choose a Partner ID in the **Security Token Service** results table for more details, if needed.
6. **Component Performance**:

a. From the context menu, select Component Performance.

b. Choose either **Access Manager** (or **Security Token Service**).

c. Choose an item in the results table to get more details, if available.

7. **Testing**:

a. Using the Access Tester, perform several authentication and authorization tests (see Chapter 21).

b. In Fusion Middleware Control, check performance metrics.

13.6 Managing Log Level Changes in Fusion Middleware Control

Oracle Fusion Middleware components generate log files containing messages that record all types of events. Administrators can set log levels using Fusion Middleware Control, as described in this chapter.

Note: Alternatively, Administrators can set OAM logger levels using custom WebLogic Scripting Tool (WLST) commands, as described in Chapter 8.

Topics in this section include:

- About Dynamic Log Level Changes
- Setting Log Levels Dynamically Using Fusion Middleware Control

13.6.1 About Dynamic Log Level Changes

Using Fusion Middleware Control, Administrators can change log levels dynamically for **Access Manager** (or **Security Token Service**).

Table 13–7 outlines log availability and functions in Fusion Middleware Control.

Table 13–7 OAM Log Availability and Functions in Fusion Middleware Control

Node	Target	View Log Messages	Log Configuration
Application Deployment			
Internal Applications	...AdminServer	Yes	Yes
	oamsso_logout(11.1.1.3.0) AdminServer	Yes	Yes
	oamsso_logout(11.1.1.3.0) oam_server	Yes	Yes
WebLogic Server domain			
	oam_bd (Cluster name)	Yes	No
	AdminServer	Yes	Yes
	oam_server	Yes	Yes
Identity and Access			
	OAM (Cluster)	No	No
	oam_server (Server)	Yes	Yes

Figure 13–16 shows the Log Levels configuration page in Fusion Middleware Control. Notice that Runtime Loggers is the selected View and oracle.oam logger names are currently displayed. With Security Token Service there is only one logger that affects the log levels for Security Token Service: `oracle.security.fed`.

Figure 13–16 Access Manager Log Levels on the Log Configuration Tab

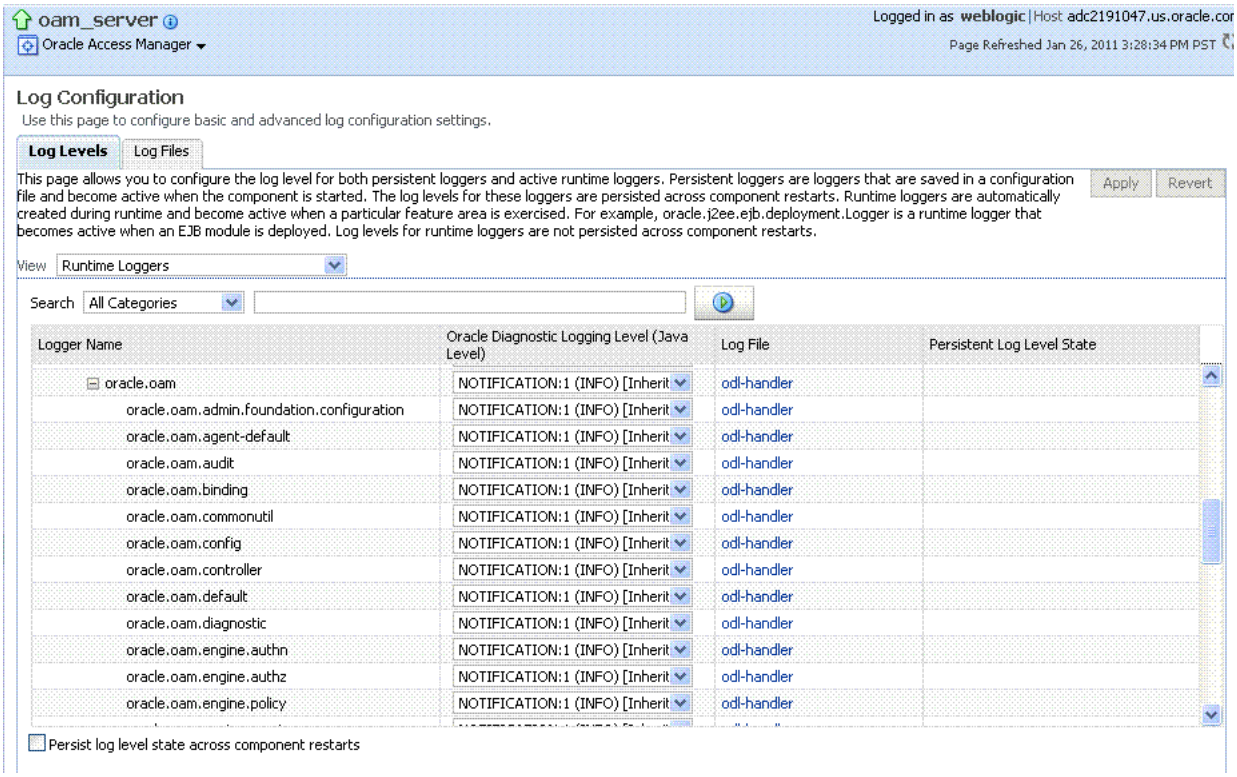
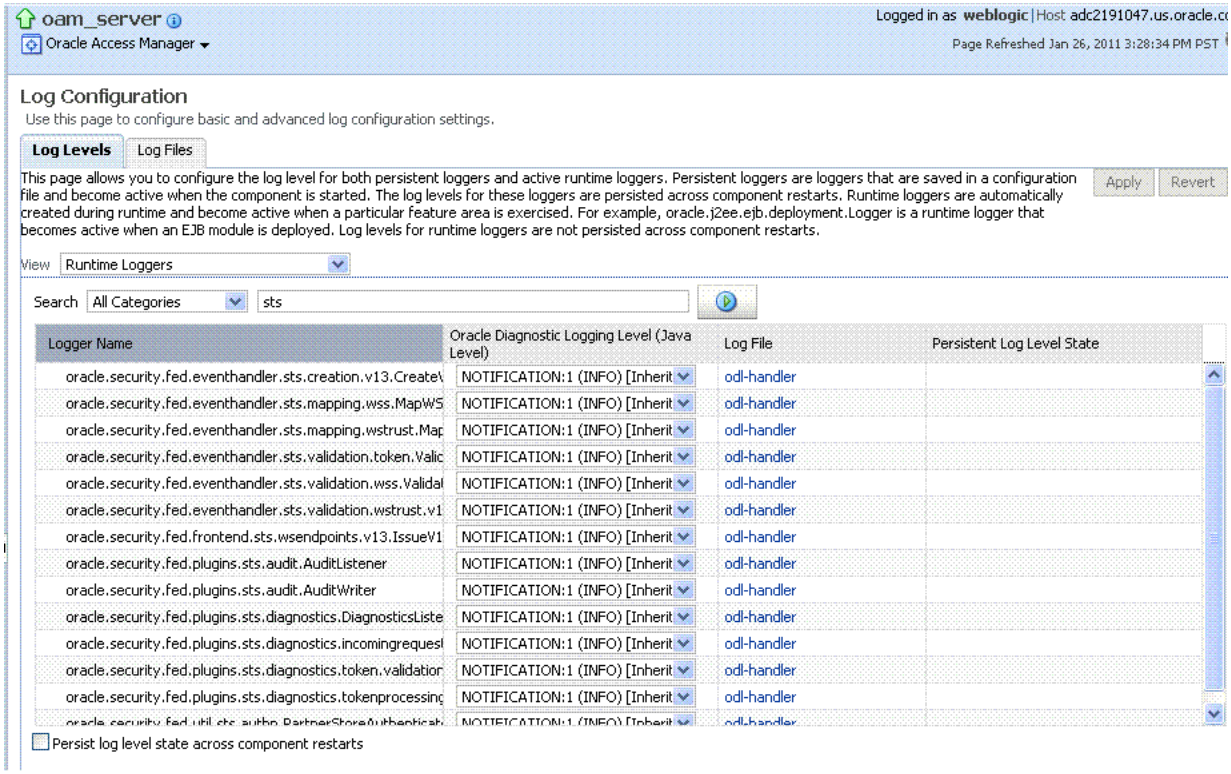


Figure 13–17 Log Levels for Security Token Service



The Log Levels tab on the Log Configuration page allows you to configure the log level for both persistent loggers and active runtime loggers:

- Persistent loggers are saved in a configuration file and become active when the component is started.

  The log levels for these loggers are persisted across component restarts.

- Runtime loggers are automatically created during runtime and become active when a particular feature area is exercised.

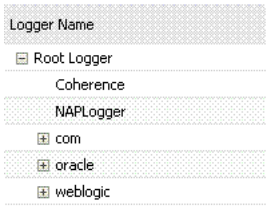
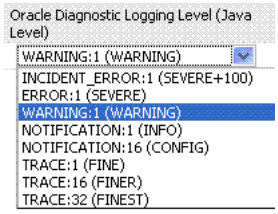
  For example, oracle.j2ee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime loggers are not persisted across component restarts.

Table 13–8 explains the configuration status and options for log levels.

Table 13–8 Log Levels Tab on Log Configuration Page

Element	Description
Apply	Submits and applies log level configuration changes, which take affect immediately.
Revert	Restores the target's previous log level configuration, which take affect immediately.
View	Use this list to view runtime loggers or loggers with a persistent log level state. ▪ Runtime Loggers ▪ Loggers with Persistent Log Level State

Table 13–8 (Cont.) Log Levels Tab on Log Configuration Page

Element	Description
Search	Use this list to specify the categories you would like to search. 
Table	
Logger Name	The name of the loggers found during the search. You can expand names in the list to see any loggers beneath the top node. 
Oracle Diagnostic Logging Level (Java Level)	Choose the logging level for the corresponding logger; c.  Click Apply and review confirmation messages displayed in a pop-up window: Updating log levels Updating the log levels of runtime loggers The log levels of runtime loggers have been updated successfully The log levels have been updated successfully
Log File	Clicking a name in the Log File column displays the Log Files page, which you can use to create and edit the file where log messages are logged, the format of the log messages, rotation policies, and other logging parameters. See Also: "Managing Log File Configuration from Fusion Middleware Control" on page 13-24.
Persistent Log Level State	Identifies the persistent state for this specific logger, which is set when you create or edit the value using the Log Files tab.

13.6.2 Setting Log Levels Dynamically Using Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to set the log level dynamically.

See Also: "About Dynamic Log Level Changes" on page 13-20

Note: Alternatively, Administrators can set logger levels using custom WebLogic Scripting Tool (WLST) commands, as described in Chapter 8.

To configure logging levels dynamically in Fusion Middleware Control

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the desired node, and select a target. For example:

   Identity and Access
   oam_server

3. From the Access Manager context menu, select Logs and then choose Log Configuration.
4. From the Log Levels tab, View list, choose the loggers to display. For example: **Runtime Loggers**.
5. From the Search list, choose a category, enter your search criteria, and click the search button. For example: **All Categories sts**.
6. In the results table, expand nodes to reveal information as needed.
7. In the results table, choose log levels for your environment, then click Apply (or Revert).
8. Proceed to "Managing Log File Configuration from Fusion Middleware Control"

13.7 Managing Log File Configuration from Fusion Middleware Control

This section provides the following information:

- About Log File Configuration
- Managing Log File Configuration by Using Fusion Middleware Control

13.7.1 About Log File Configuration

Figure 13–8 shows the Log Files Configuration. Use this page to create and edit where the log messages will be logged to, the format of the log messages, the rotation policies used, as well as other parameters depending on the log file configuration class.

Figure 13–18 Log Files Configuration Page

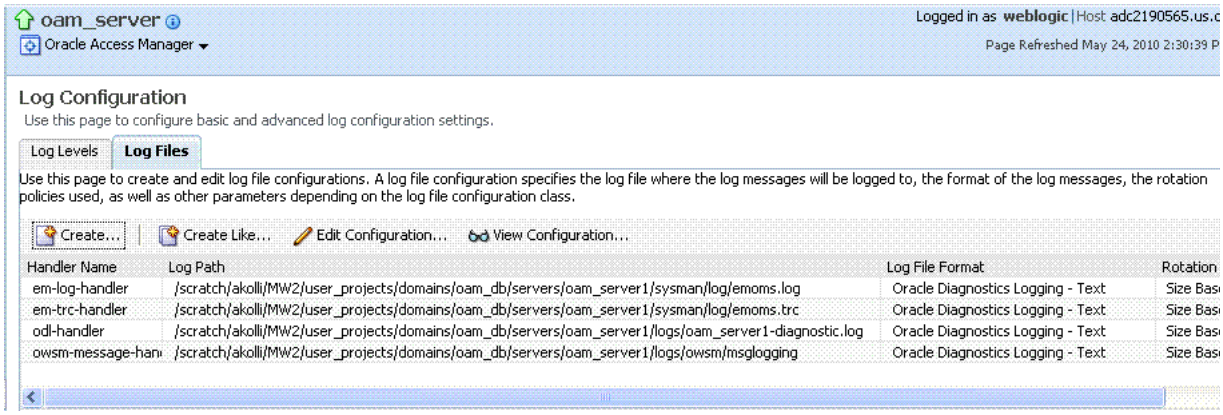


Table 13–9 describes the log files configuration parameters for **Access Manager** (or **Security Token Service**).

Table 13–9 Log Files Elements

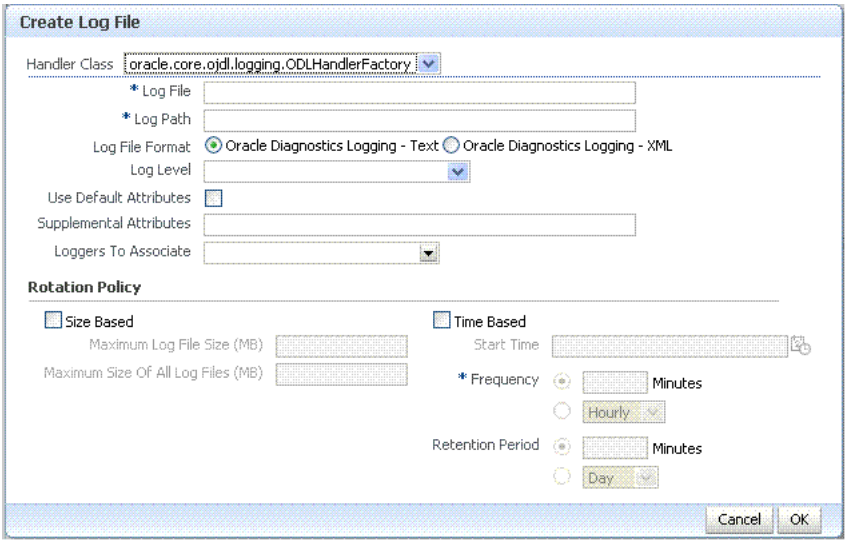
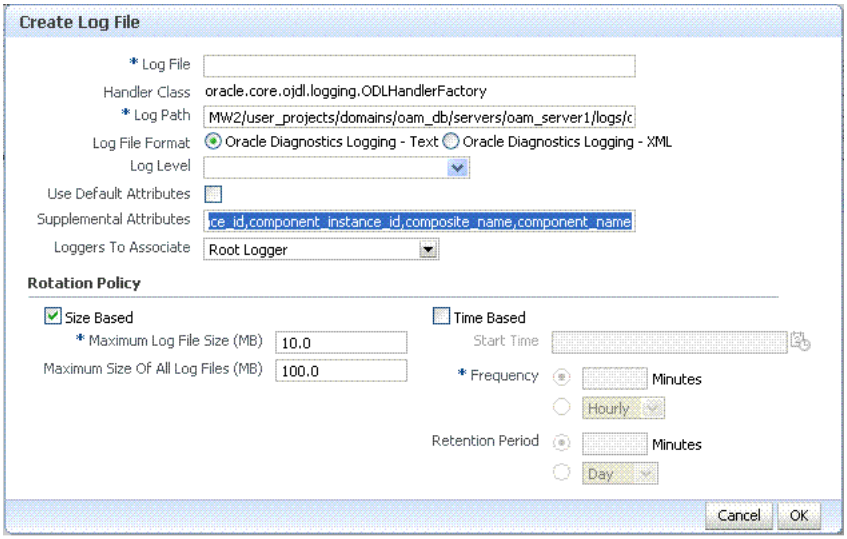
Element	Description
Create	Click this button to display the fresh form to create a new file for logged messages. Notes: ▪ Log File is the name of the log handler (odl-handler for OAM) ▪ Log Path points to the logging output file in your environment, which you can change. ▪ The output logging file in your environment can have a unique file name. 
Create Like	Click this button to display a partially filled-in form to create a new file for logged messages. 
Edit Configuration	Click this button to display and edit the selected log file configuration.
View Configuration	Click this button to view a read-only description of the selected log file configuration.
Table	The information in this table is based on log file configuration parameters in this table.
Handler Name	The Log File name assigned during log file creation.

Table 13–9 (Cont.) Log Files Elements

Element	Description
Log Path	The file system directory path assigned during log file creation.
Log File Format	The Log File format assigned during log file creation.
Rotation Policy	The rotation policy selected during log file creation.

13.7.2 Managing Log File Configuration by Using Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to create a log file, edit the configuration, or view a read-only version of the log file configuration.

See Also: "About Log File Configuration" on page 13-24

To manage log files in Fusion Middleware Control

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the desired node, and select a target. For example:

   Identity and Access
   oam_server

3. From the Access Manager menu, select Logs and then Log Configuration.
4. **Create a Log File**: From the Log Files tab (Table 13–9):
   a. Click the **Create** button to display a fresh Create Log File form.
   b. Enter a name and file system path for this log file. For example:

      Log File ***oam-odl-handler***

      Log Path domains***/oam_db/servers/oam-server1/log/oam.log***

   c. Click the desired Log File Format. For example: **... Text**
   d. Set the logging attributes. For example:

      Use Default Attributes ***x***

      Supplemental Attributes

   e. Associate a Logger. For example: **Root Logger**
   f. Specify the Rotation Policy. For example: **Size Based**

      Maximum Log File Size (MB) ***10.0***

      Maximum Size of All Log File Size (MB) ***1000.0***

   g. Click OK to submit the configuration.
5. **Create Like**:
   a. From the Log Files tab, click the name of an existing log file.
   b. Click the **Create Like** button.
   c. On the Create Log File form, enter your own information:

      Log File name

      Log Level

      Attributes

d. Edit any other details as needed, then click **OK** to submit the configuration.

6. **Edit Configuration**:
   a. From the Log Files tab, click the name of an existing log file.
   b. Click the **Edit Configuration** button.
   c. Change configuration details as needed.
   d. Click **OK** to submit the changes.
7. **View Configuration**:
   a. From the Log Files tab, click the name of an existing log file.
   b. Click the **View Configuration** button.
   c. Review the information, then click **OK** to dismiss the configuration page.
8. Proceed to "Viewing Log Messages in Fusion Middleware Control".

13.8 Viewing Log Messages in Fusion Middleware Control

This section includes the following topics:

- About Finding, Viewing, and Exporting Log Messages
- Viewing Logged Messages With Fusion Middleware Control

13.8.1 About Finding, Viewing, and Exporting Log Messages

By using the context menu for an OAM Server instance in Fusion Middleware Control, Administrators can locate, view, and export key log information for:

- Application Deployment targets, including the WebLogic (and OAM) AdminServer and the OAM SSO logout pages on both AdminServer and OAM Servers
- WebLogic Server domain targets, including the OAM Farm, AdminServer, and OAM Servers
- Identity and Access targets, including the OAM Farm, Clusters, and individual OAM Servers

Using log files to troubleshoot common problems requires that you:

- Get familiar with the Oracle Diagnostic Logging (ODL) format used by Oracle Fusion Middleware components, as described in the Oracle Fusion Middleware Application Security Guide
- Configure log files to collect the appropriate level of information
- Search, view and export key log information in the farm
- Correlate messages in log files across components

Figure 13–19 shows the Log Messages page for **Access Manager** and **Security Token Service** in Fusion Middleware Control.

Figure 13–19 Typical Log Messages Page in Fusion Middleware Control

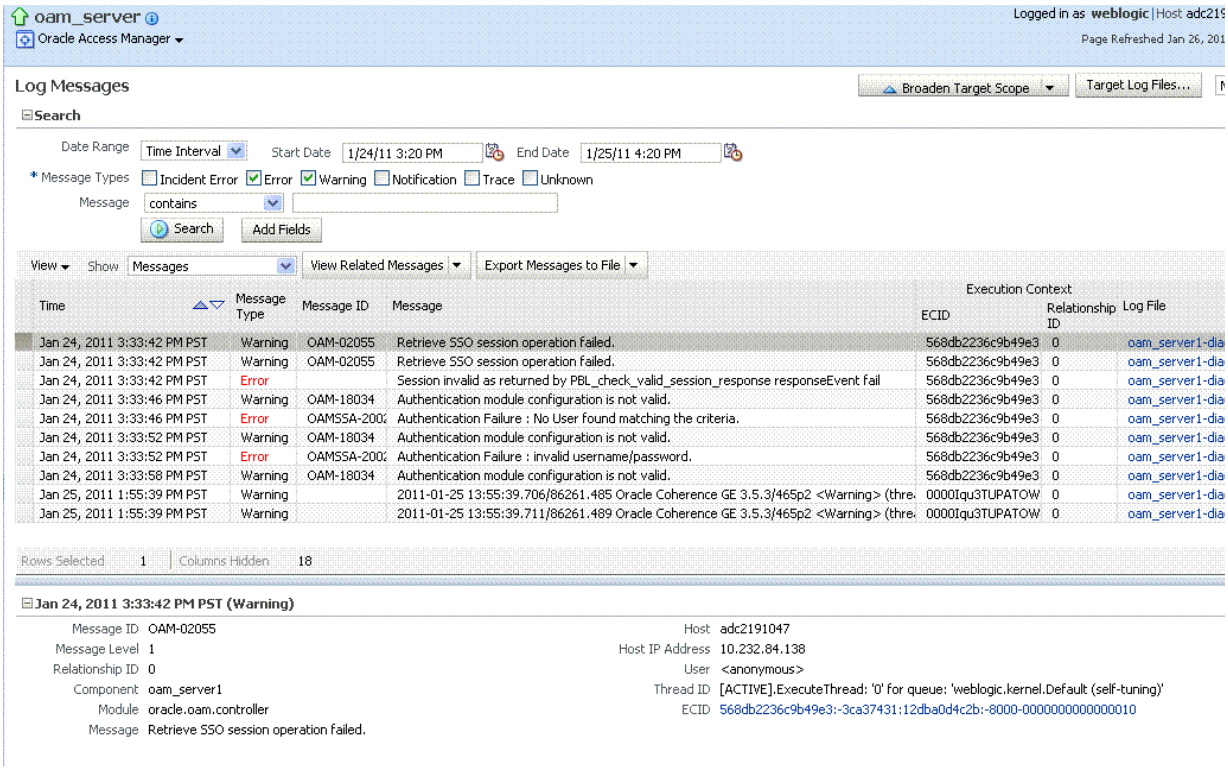


Table 13–10 describes elements on the Log Messages page in Fusion Middleware Control, which you can use to locate and view messages.

Table 13–10 OAM Log Message Search Controls in Fusion Middleware Control

Element	Description
Broaden Target Scope	Select items on this list to expand (or narrow) the targets that are used in this search: ▪ Oracle WebLogic Server domain ▪ OAM Cluster ▪ Oracle WebLogic Server ▪ Oracle Fusion Middleware Farm
Target Log Files...	Displays a list of all log files for the target scope from which you can select a specific log file to view or download.
Refresh Options	Select an item from this list to specify the refresh method: ▪ Manual Refresh ▪ 30 Second Refresh ▪ 1 Minute Refresh
Search Options	

Table 13–10 (Cont.) OAM Log Message Search Controls in Fusion Middleware Control

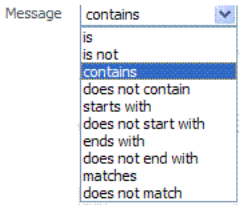
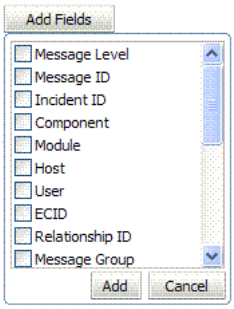
Element	Description
Date Range	The period during which the desired set of messages was logged: ▪ Most Recent Minutes Hours Days ▪ Time interval Date Range Start Date End Date
Message Types	Check all message types that apply for this search: ▪ Incident Error ▪ Error ▪ Warning ▪ Notification ▪ Trace ▪ Unknown
Message	Choose an identifier from this list and add a value in the blank field beside it to refine your search criteria: 
Add Fields	Click this button to display a list of additional search criteria you can include. 
Search	Click this button to initiate a search using the specified criteria.
Viewing Options	

Table 13–10 (Cont.) OAM Log Message Search Controls in Fusion Middleware Control

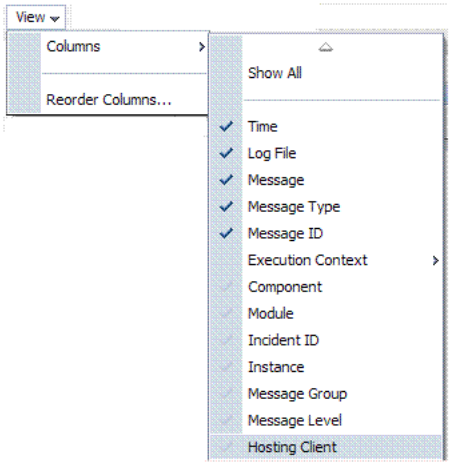
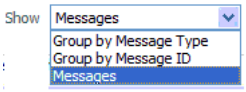
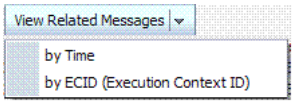
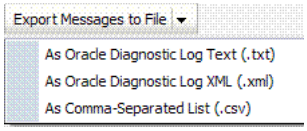
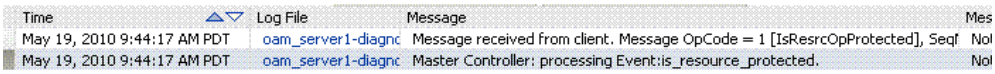
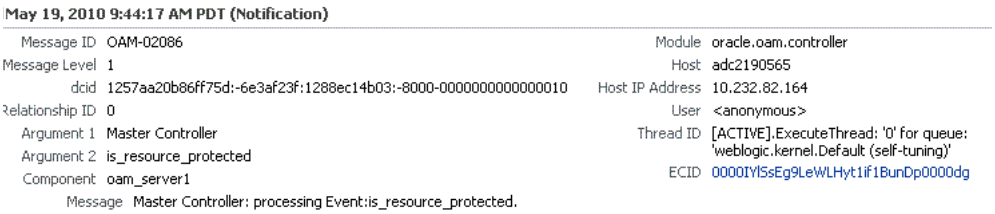
Element	Description
View	Choose items from this menu to view or reorder columns in the search results table: 
Show	Select the entity to view: 
View Related Messages	This menu is available when at least one message is listed in the search results. 

Table 13–10 (Cont.) OAM Log Message Search Controls in Fusion Middleware Control

Element	Description
Export Messages to a File	A menu of viewing commands that are available when at least one message is listed in the search results. You can choose from the following commands: 
Results Table Columns	These are based on selections in the View menu on the Log Messages page. 
Message Area	Displays details for the selected message in the search results table. 

13.8.2 Viewing Logged Messages With Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to view and download log messages for the target. This procedure explains how to search for messages, view messages (or view related messages), view all messages in a single log file, and export or download messages.

> **See Also:** "About Finding, Viewing, and Exporting Log Messages" on page 13-28

To view OAM Server log messages within Fusion Middleware Control

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the desired node and select a target. For example:

   Identity and Access
   oam_server

3. From the OAM context menu, select Logs and then choose View Log Messages.
4. **Search** (Table 13–10):
   a. Specify a Date Range.
   b. Check all Message Types to be included in your search.
   c. Define Message content options.
   d. Add Fields: Enter details to further refine message content.
   e. Click Search to display a list of messages that fit your search criteria.

5. **View Messages:** From the table of search results, click one or more messages to view on the lower half of the page.
6. **View Related**: Use one of the following methods to organize the table of search results.
   a. By **Time**: From the View Related menu, select **by Time**.
   b. By **ECID**: Click ECID in the message on the screen (or, from the View Related menu, select **by ECID Execution Context ID**).
   c. From the Scope menu, select a time period.
7. **Log File**: From the table of search results, click a name in the Log File column to view all messages in the file.
8. **Export Messages**
   a. Select one or more messages in the search results table.
   b. From the **Export Messages** menu, choose the desired export format. For example: **As Oracle Diagnostic Log (.txt)**.
   c. In the dialog box, click **Open with** and then choose the desired program.
   d. From the open program, save the file to a new path.
9. **Download**
   a. Select one or more messages in the search results table.
   b. Click the Download button.
   c. In the dialog box, click **Open with** and then choose the desired program.
   d. From the open program, save the file to a new path.
10. **Testing**:
    a. Using the Access Tester, enter an invalid user name and try to authenticate (see Chapter 21).
    b. In Fusion Middleware Control, go to the log viewer and review the error.
    c. Using the Access Tester, enter an invalid password and try to authenticate.
    d. In the Fusion Middleware Control log viewer, check the error and then view all related log messages.
    e. Repeat this test using different log levels, as described in "Managing Log Level Changes in Fusion Middleware Control" on page 13-19.

13.9 Displaying MBeans in Fusion Middleware Control

A Java object is a unit of code that runs the computer. Each object is an instance of a particular class or subclass that relies on the class's methods or procedures or data variables. Within the Java programming language, a Java object that represents a manageable resource (application, service, component, or device) is known as an MBean (managed bean).

Fusion Middleware Control enables you to:

- View information on key MBean Attributes and Operations
- Invoke methods

This section provides the following topics:

- About the System MBean Browser
- Managing Mbeans

13.9.1 About the System MBean Browser

The Fusion Middleware Control System Mbean Browser can be used to view the items outlined in Table 13–11.

Table 13–11 System MBean Browser

Node	Target	System Mbean Browser
Application Deployment		
Internal Applications	...AdminServer	Yes
	oamsso_logout(11.1.1.3.0) AdminServer	Yes
	oamsso_logout(11.1.1.3.0) oam_server	Yes
WebLogic Server domain		
	oam_bd (Cluster name)	Yes
	AdminServer	Yes
	oam_server	Yes
Identity and Access		
	OAM (Cluster)	No
	oam_server (Server)	Yes

Note: Security Token Service MBeans are also available as described here.

Table 13–12 describes the MBeans that **Access Manager** and **Security Token Service** deploy on the AdminServer on the domain runtime server (OAM Server).

Table 13–12 MBeans that Access Manager and Security Token Service Deploy

MBeans For	Description
Configuration Service	oracle.oam:type=Config
Partner and Trust Service	oracle.oam:type=PATConfig
STS MBeans	oracle.sts:type=Config
Certificate Validation Module	These are used for CRL management.
	oracle.sts:type=CertRevocationListConfig

Figure 13–20 Shows the System MBean Browser and the related Attributes tab displaying information for the Security Token Service CertRevocationListConfig: `oracle.sts:Location=oam_server1,type=CertRevocationListConfig`.

Figure 13–20 System MBean Browser and Attributes Tab

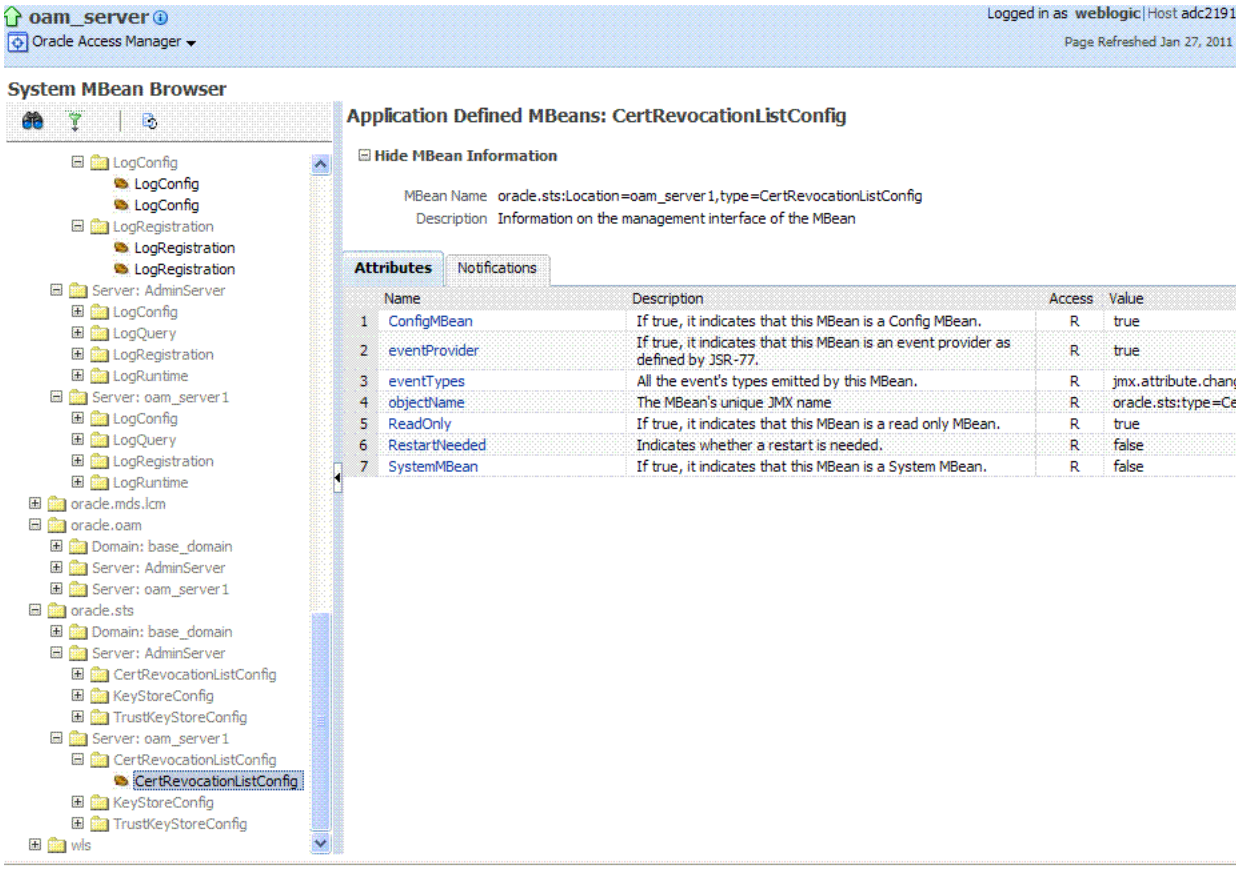
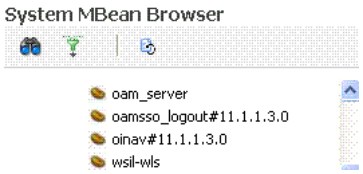
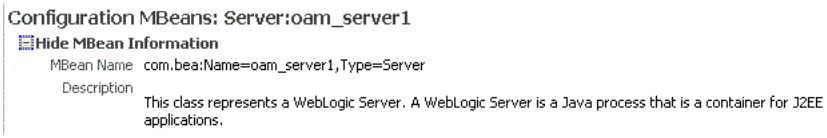
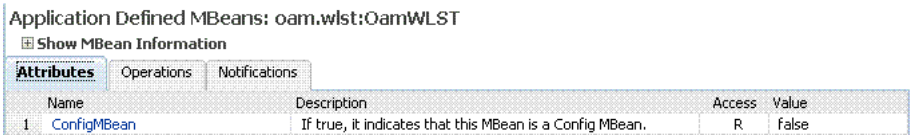
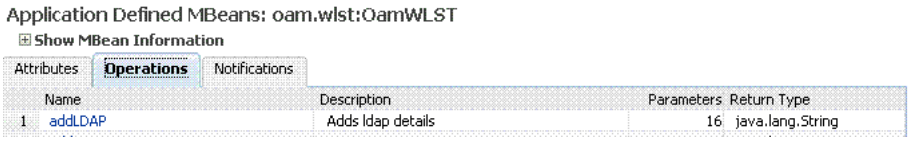


Table 13–13 describes the System MBean Browser and associated tab in greater details.

Table 13–13 System MBean Browser

System MBean Browser	
System MBean Browser	Expand items in this section to display Mbeans for the selected target. Under Application Defined Beans, find `oracle.oam` and `oracle.sts`. 
MBean Information	Details for Attributes and Operations related to the MBean for the selected target are displayed on the right. 
Attributes	This tab describes MBean attributes for the selected target. 
Operations	This tab describes MBean operations for the selected target. 
Notifications	This tab lists any notifications resulting from the invocation of an MBean.
Controls	The following controls are available from these pages: ■ Name Link: Clicking a name on either tab displays a full description of related MBeans. ■ Apply Button: Submits and applies the selected MBean attribute value. ■ Revert Button: Restores previous MBean attribute values following a change (and before clicking Apply. ■ Return Button: Returns you to the MBean Information page. ■ Invoke Button: Invokes the selected MBean and value

13.9.2 Managing Mbeans

Fusion Middleware Control Administrators can use the following procedure to view MBeans for **Access Manager** and **Security Token Service**. Additionally, you can apply values (or revert the change) and invoke MBeans.

To view, edit, or invoke MBeans for Access Manager and Security Token Service

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Expand the desired node and select a target. For example:

Identity and Access
oam_server

3. From the Access Manager context menu, select **System MBean Browser**.
4. **System MBean Browser**: Expand classes and select an MBean target to display related attributes and operations. For example: **oracle.sts** or **oracle.oam**.
5. **Manage MBean Attributes**:
   a. Click the Attributes tab.
   b. Review the name and description of MBean attributes for the selected target.
   c. Edit values for one or more attributes and click Apply to submit changes (or click Revert to cancel changes).

      Alternatively: Click a Name in the Attributes table to display a full description and the value; change the value and click Apply (or click Revert to cancel the change).
6. **Manage MBean Operations**:
   a. Click the **Operations** tab.
   b. Review the name, description, number of parameters, and return type for each MBean operation for the selected target.
   c. Click a name in the Operations table to display the parameters and related name, description, type, and value.
   d. Edit values for the operation and click Apply to submit changes (or click Revert to cancel changes).
   e. Click Invoke to invoke the MBean and review the message that appears.

13.10 Displaying Farm Routing Topology in Fusion Middleware Control

Fusion Middleware Control enables you to view a graphical representation of the Access Manager routing topology.

This section provides the following topics:

- About the Routing Topology
- Viewing the Routing Topology using Fusion Middleware Control

13.10.1 About the Routing Topology

Figure 13–21 shows the Farm routing topology page in Fusion Middleware Control.

Figure 13–21 Routing Topology with Context Menu

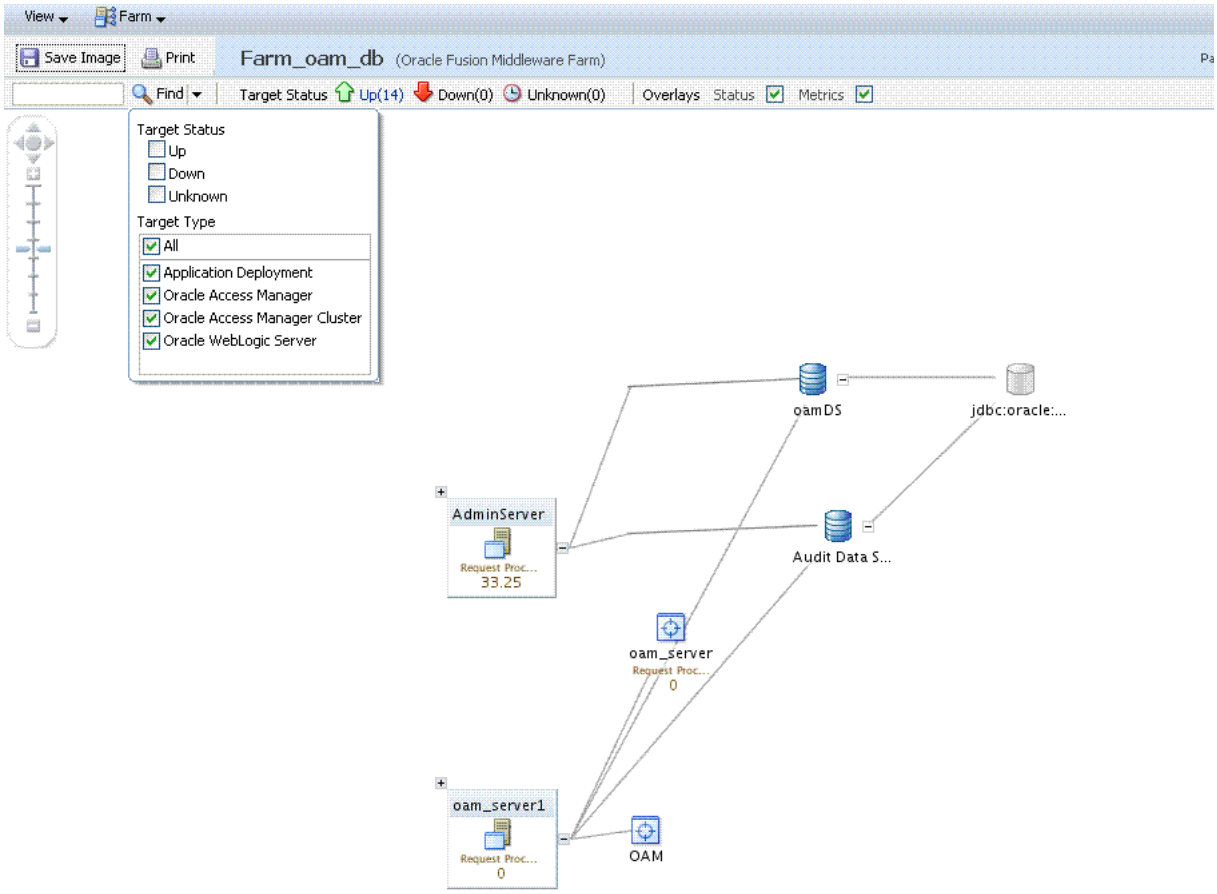


Table 13–14 describes the status and controls on the Farm topology page.

Table 13–14 Farm Topology

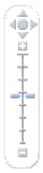
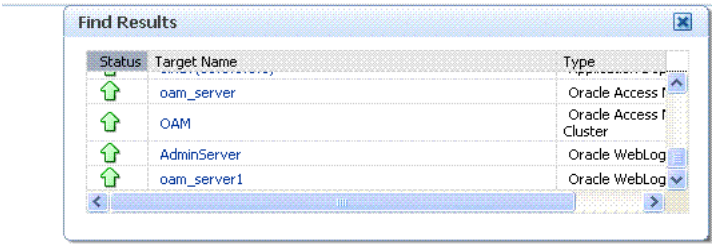
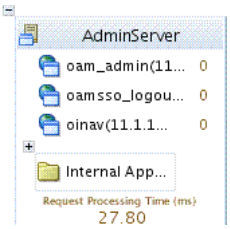
Element	Description
Save Image	Saves the image.
Print	Prints the image.
	Scales the image.

Table 13–14 (Cont.) Farm Topology

Element	Description
Find	Enter a value or simply click Find to display results. 
+	Expands the instance on the topographical view to provide more information. 
Status Bar	Displays the full farm name and targets within the farm., as well as the up and down status. You can choose to overlay the status and metrics on individual instances in the topology view. 

13.10.2 Viewing the Routing Topology using Fusion Middleware Control

Fusion Middleware Control Administrators can use the following procedure to view the routing topology of the farm that includes Access Manager 11g.

See Also: "About the Routing Topology"

To view Farm routing topology

1. Log in as described in "Logging In To Fusion Middleware Control" on page 13-3.
2. Select the Farm in the navigation tree.
3. Click Topology above the navigation tree.
4. In the Topology Browser window, click the name of the farm and click OK.
5. Use the scaling tool to shrink or grow the image.
6. Expand instances in the topology to display details about each one.
7. Use the Overlay options to add status and metrics information to the instances.
8. Use the Find option to locate specific information (Table 13–14).
9. Click Print or Save, as needed.

Part IV

Managing Access Manager Settings and Agents

Part IV provides information about managing low-level Access Manager configuration.

Part IV contains the following chapters:

14

Configuring Access Manager Settings

The Access Manager Settings provide configuration options for a number of specific Access Manager service operations.

This chapter describes these Access Manager-specific settings.

- Prerequisites
- Managing Load Balancing
- Managing Secure Error Modes
- Managing SSO Tokens and IP Validation
- Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security
- Managing Run Time Policy Evaluation Caches

14.1 Prerequisites

Before you begin these tasks, be sure to review the following topics:

- Chapter 2, "Getting Started with Oracle Access Management"
- Chapter 6, "Managing Server Registration"

14.2 Managing Load Balancing

This section provides the following topics:

- About Common Load Balancing Settings
- Managing OAM Server Load Balancing

14.2.1 About Common Load Balancing Settings

For production environments that require increased application performance, throughput, or high availability, you can configure two or more Managed Servers to operate as a cluster. A cluster is a collection of multiple WebLogic Server server instances running simultaneously and working together to provide increased scalability and reliability. In a cluster, most resources and services are deployed identically to each Managed Server (as opposed to a single Managed Server), enabling failover and load balancing. A single domain can contain multiple WebLogic Server clusters and multiple Managed Servers that are not configured as clusters. The key difference between clustered and non-clustered Managed Servers is support for failover and load balancing. These features are available only in a cluster of Managed Servers.

By default, Access Manager has a single OAM Server to which all login and logout requests are sent. In a high-availability deployment, you must change this setup so that login and logout requests are first sent to the load balancer.

> **See Also:** Oracle Fusion Middleware High Availability Guide, "Access Manager High Availability Configuration Steps" for high-level instructions for setting up a high availability deployment for Access Manager.

Figure 14–1 shows the Load Balancing Settings section of the Access Manager Settings page. In earlier releases this was part of the SSO Engine settings; the SSO Engine being the controller for sessions.

Figure 14–1 Access Manager Settings: Load Balancer

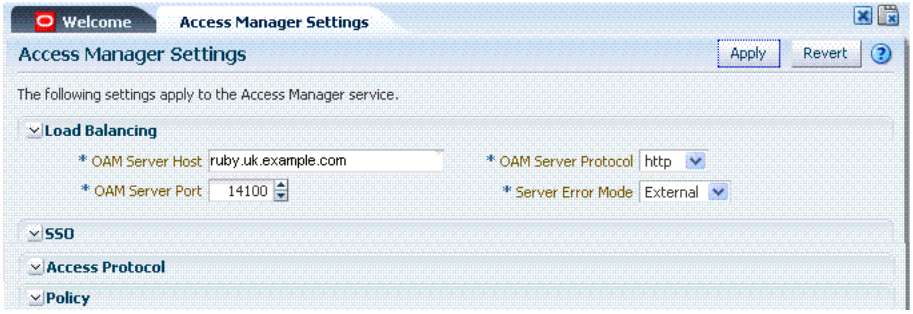


Table 14–1 describes each element and how it is used. Settings are global and common to all OAM Servers in the WebLogic administration domain.

Table 14–1 Access Manager Settings: Load Balancer

Element	Description
OAM Server Host	The virtual host name that represents the OAM Server Cluster, which might be exposed by a load balancer in front of an OAM Server Cluster.
OAM Server Port	The virtual host port associated with the OAM Server Cluster. Values between 1 and 65535 are supported.
OAM Server Protocol	The protocol, either HTTP or HTTPS, that is used to access the virtual host that represents the OAM Server Cluster. See Also: "About Security Modes and X509Scheme Authentication" on page C-4

14.2.2 Managing OAM Server Load Balancing

Users with valid Administrator credentials can perform the following task to modify Access Manager load balancing settings using the Oracle Access Management Console.

> **See Also:** "About Common Load Balancing Settings" on page 14-1

To view or edit common load balancing specifications

1. From the Access Manager Settings, open Load Balancing:
2. Expand the Load Balancing area:
   - View Only: Close the page when you finish.

- Modify: Edit Load Balancing settings for your deployment (Table 14–1).

3. Click Apply to submit the changes (or close the page without applying changes).
4. Dismiss the Confirmation window.

14.3 Managing Secure Error Modes

A custom error page is packaged as part of the custom login application. An out-of-the-box custom Web application archive file is provided that you can use as a starting point to develop customized login and password pages.

Server Error Mode settings are global and common to all OAM Servers in the WebLogic administration domain. This section provides the following topics:

- About OAM Server Error Modes
- Managing OAM Server Secure Error Modes

14.3.1 About OAM Server Error Modes

Figure 14–1 shows the Server Error Mode function, which appears on the Load Balancing Settings area of the Access Manager Settings page.

Figure 14–2 Access Manager Settings: Server Error Mode

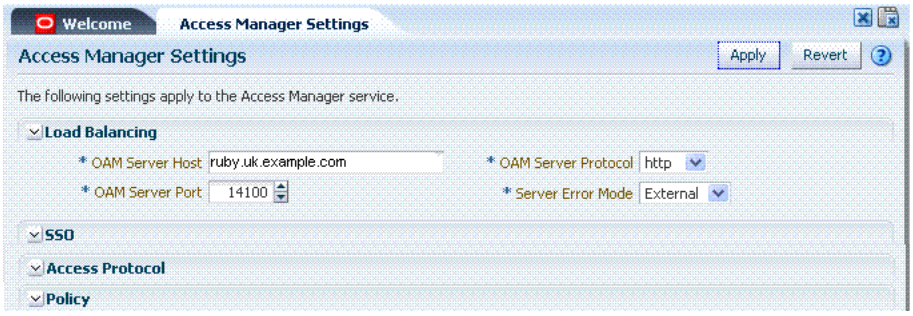


Table 14–2 describes the options you can choose to configure Server Error Mode for your deployment.

Table 14–2 Server Error Mode

Element	Description
Server Error Mode	The setting you choose determines the nature of error messages and error codes returned by the OAM Server when an operation fails (because of an invalid username or password, for example, or a server error (connection to the LDAP Server is down)). Choose one of the following settings to configure error messages with varying degrees of security for your custom login pages: ■ SECURE: Most secure. Provides generic error messages that barely give any hint of the internal reason for the error. ■ EXTERNAL: Recommended level. ■ INTERNAL: Least secure level. Recommended for Password Policy validation, as described in "Managing Global Password Policy" on page 19-97. ■ OSSO10g: Compatible with OSSO 10g. Might be required in upgraded environments for consistency. **See Also**: "Managing OAM Server Secure Error Modes" on page 14-5.

Table 14–3 shows the error triggering condition and message codes for each of the three modes.

Table 14–3 Error Trigger Condition, Modes, and Message Codes

Error Triggering Condition	Internal Mode	External Mode	Secure Mode
Invalid login attempt	OAM-1	OAM-2	OAM-8
Processing submitted credentials fails. For example: In WNA mode, the SPNEGO token is not received.	OAM-3	OAM-3	OAM-8
An authentication exception is raised.	OAM-4	OAM-4	OAM-9
User account gets locked based on certain conditions (exceeded invalid attempts, for instance).	OAM-5	OAM-5	OAM-8 OAM-9 with OIM integration
User account disabled.	OAM-5	OAM-5	OAM-9
User has exceeded the maximum number of allowed sessions (a configurable attribute).	OAM-6	OAM-6	OAM-9
Default error message, which is displayed when no other specific messages propagate up. This is not propagated to the user level. Cause could be multiple conditions.	OAM-7	OAM-7	OAM-9
Password expired.	OAM-10	OAM-10	OAM-9

Table 14–4 identifies the error codes, trigger conditions, and recommended messages.

See Also: Developing Custom Error Pages in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management

Table 14–4 External Error Codes, Trigger Conditions, and Recommended Messages

External Error Code	Trigger Condition	Recommended Display Message
OAM-1	Invalid login attempts less than the allowed count.	An incorrect Username or Password was specified
OAM-2	Invalid login attempts less than the allowed count.	An incorrect Username or Password was specified
OAM-3	Processing submitted credentials fails for some reason. For example: in WNA mode, the SPENGO token is not received.	Internal Error.
OAM-4	An authentication exception is raised for some reason.	System error. Please contact the System Administrator.
OAM-5	The user account gets locked because of certain conditions (exceeded invalid attempts, for instance). OIM Integration. The Error page appears with contact details after the password is validated.	The user account is locked or disabled. Please contact the System Administrator.
OAM-5	The user account gets locked because of certain conditions (exceeded invalid attempts, for instance). OID Without OIM Integration: The Error page appears with contact details after the password is validated.	The user account is locked or disabled. Please contact the System Administrator.
OAM-5	The user account is disabled.	The user account is locked or disabled. Please contact the System Administrator.
OAM-6	The user has exceeded the maximum number of allowed sessions, which is a configurable attribute.	The user has already reached the maximum allowed number of sessions. Please close one of the existing sessions before trying to login again.

Table 14–4 (Cont.) External Error Codes, Trigger Conditions, and Recommended Messages

External Error Code	Trigger Condition	Recommended Display Message
OAM-7	Failure could be due to multiple reasons; the exact reason is not propagated to the user level for security reasons. For instance: ▪ The request ID could have been lost ▪ The certificate is not retrieved correctly The default error message is displayed when no other specific messages are propagated up.	System error. Please re-try your action. If you continue to get this error, please contact the Administrator.
OAM-8	See Table 14–3	Authentication failed.
OAM-9	System error. Please re-try your action. If you continue to get this error, please contact the Administrator.	System error. Please re-try your action. If you continue to get this error, please contact the Administrator.
OAM-10	Password expired.	The password has expired.

14.3.2 Managing OAM Server Secure Error Modes

Users with valid Administrator credentials can perform the following task to modify Access Manager secure error modes for OAM Servers using the Oracle Access Management Console.

See Also: "About Common Load Balancing Settings" on page 14-1

To view or edit secure error modes for OAM Servers

1. From the Access Manager Settings, click Load Balancing.
2. Server Error Mode:
   - Modify: Choose the desired Server Error Mode for your deployment (Table 14–2 and Table 14–4).
   - View Only: Close the page when you finish.
3. Click Apply to submit the changes (or close the page without applying changes).
4. Dismiss the Confirmation window.
5. Proceed to "Managing SSO Tokens and IP Validation".

14.4 Managing SSO Tokens and IP Validation

This section provides the following topics:

- About Access Manager SSO Tokens and IP Validation Settings
- Managing SSO Tokens and IP Validation

14.4.1 About Access Manager SSO Tokens and IP Validation Settings

Figure 14–3 shows the SSO portion of the Access Manager Settings page. Table 14–5 describes each element and how it is used.

Figure 14–3 Access Manager Settings: SSO

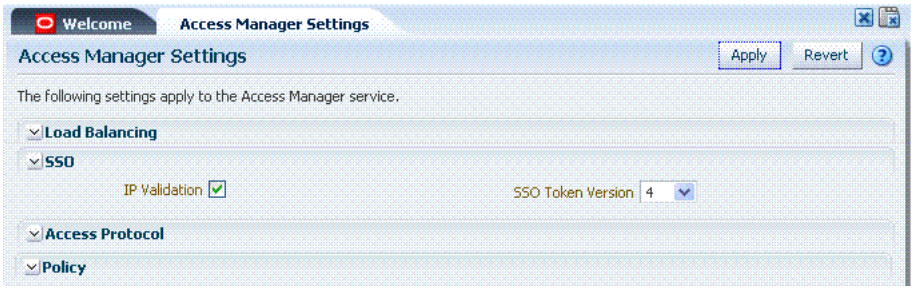


Table 14–5 Access Manager Settings: SSO

Element	Description
IP Validation	Specific to Webgates and is used to determine whether a client's IP address is the same as the IP address stored in the ObSSOCookie generated for single sign-on. Check the box to enable IP Validation. Clear the box to disable IP Validation if and only if IP Validation is disabled on all the configured WebGates. See Section 16.2.3, "About IP Address Validation for WebGates."
SSO Token Version	Select your SSO token version from the list.

14.4.2 Managing SSO Tokens and IP Validation

Users with valid Administrator credentials can perform the following task to modify Access Manager load balancing settings using the Oracle Access Management Console.

See Also: "About Common Load Balancing Settings" on page 14-1

To view or edit Access Manager SSO specifications

1. From the Oracle Access Management Console, click Access Manager Settings.
2. On the Access Manager Settings page, expand the SSO section:
   - View Only: Close the page when you finish.
   - Modify: Perform remaining steps to edit the configuration.
3. Edit settings as needed for your deployment, based on details in Table 14–5.
4. Click Apply to submit the changes (or close the page without applying changes).
5. Dismiss the Confirmation window.
6. Proceed to "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security".

14.5 Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security

This section provides the following details:

- About Simple and Cert Mode Transport Security
- About the Common OAM Proxy Page for Secure Server Communications
- Viewing or Editing Simple or Cert Settings for OAM Proxy

- Configuring 64-bit WebGate in Cert Mode
- Tuning the Simple Mode WebGate

14.5.1 About Simple and Cert Mode Transport Security

Table 14–6 outlines the similarities between Simple and Cert modes.

See Also: Appendix C, "Securing Communication"

Table 14–6 Summary: Simple and Cert Mode

Artifact or Process	Simple Mode	Cert Mode	Open Mode
X.509 digital certificates only.	X	X	N/A
Communication between OAM Agents and OAM Servers is encrypted using Transport Layer Security, RFC 2246 (TLS v1).	X	X	N/A
For each public key there is a corresponding private key that Access Manager stores in a file:	aaa_key.pem generated by openSSL	aaa_key.pem generated by your CA	N/A
Signed certificates in Privacy Enhanced Mail (PEM) format	aaa_cert.pem generated by openSSL	aaa_cert.pem generated by your CA	N/A
During OAM Server configuration, secure the private key with a Global passphrase or PEM format details, depending on which mode you are using. Before an OAM Server or Webgate can use a private key, it must have the correct passphrase.	Global passphrase stored in a nominally encrypted file: ▪ password.xml	PEM format: ▪ Keystore Alias ▪ Key KEYSTOREStore Alias Password	N/A
During OAM Agent or OAM Server registration, the communication mode is propagated to the Oracle Access Management Console.	Same passphrase for each Webgate and OAM Server instance.	Different passphrase for each Webgate and OAM Server instance.	N/A
The certificate request for the Webgate generates the certificate request file, which you must send to a root CA that is trusted by the OAM Sever. The root CA returns the Webgate certificates, which can then be installed either during or after Webgate installation.	cacert.pem The certificate request, signed by the Oracle-provided openSSL Certificate Authority	aaa_req.pem The certificate request, signed by the your Certificate Authority	N/A
Encrypt the private key using the DES Algorithm. For example: `openssl rsa -in aaa_key.pem -passin pass: -out aaa_key.pem -passout pass:` *`passphrase`* `-des`	N/A	X	N/A
Agent Key Password	N/A	Enter a password during agent registration in Cert Security mode (see Table 16–1, " Elements on Create Pages for 11g and 10g OAM Agents").	N/A

Table 14–6 (Cont.) Summary: Simple and Cert Mode

Artifact or Process	Simple Mode	Cert Mode	Open Mode
During Agent registration, ObAccessClient.xml is generated in: $DOMAIN_HOME/output/$*Agent_Name*/	ObAccessClient.xml **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*/config/OHS/ohs1/webgate/config **If**: $11gWebgate_instance_dir=$ORACLE_HOME/instance/instance1 **10g Webgate**: $*Webgate_install_dir*/oblix/lib	ObAccessClient.xml **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*/... **10g Webgate**: $*Webgate_install_dir*/...	ObAccessClient.xml **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*/... **10g Webgate**: $*Webgate_install_dir*/...
During Agent registration, password.xml is generated in: $DOMAIN_HOME/output/$*Agent_Name*/ **See Also**: Appendix C	password.xml **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*/... **10g Webgate**: $*Webgate_install_dir*/...	password.xml **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*/... **10g Webgate**: $*Webgate_install_dir*/...	N/A
During Agent registration, aaa_key.pem is generated in: $DOMAIN_HOME/output/$*Agent_Name*/ **See Also**: Appendix C	aaa_key.pem **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*... **10g Webgate**: $*Webgate_install_dir*...	aaa_key.pem **Copy to**: **11g Webgate**: $*11gWebgate_instance_dir*... **10g Webgate**: $*Webgate_install_dir*...	N/A

14.5.2 About the Common OAM Proxy Page for Secure Server Communications

Table 14–7 describes the settings required for Simple or Cert mode configurations.

Table 14–7 Server Common OAM Proxy Secure Communication Settings

Mode	Description
Simple Mode Configuration	The global passphrase for communication using OAM-signed X.509 certificates. This is set during initial OAM Server installation. Administrators can edit this passphrase and then reconfigure all existing OAM Agents to use it, as described in"Viewing or Editing Simple or Cert Settings for OAM Proxy".
Cert Mode Configuration	Details required for the Key KEYSTOREStore where the Cert mode X.509 certificates signed by an outside Certificate Authority reside: ▪ PEM Keystore Alias ▪ PEM Keystore Alias Password **Note**: These are set during initial OAM Server installation. The certificates can be imported using the import certificate utility or the keytool shipped with JDK. Administrators can edit the alias and password and then reconfigure all existing OAM Agents to use them, as described in"Viewing or Editing Simple or Cert Settings for OAM Proxy".

14.5.3 Viewing or Editing Simple or Cert Settings for OAM Proxy

Administrators can use this procedure to confirm or alter settings for the common OAM Proxy.

See Also:

- "Registering an OAM Agent Using the Console" on page 16-12
- Appendix C, "Securing Communication"

To view or edit Simple or Cert mode settings for the OAM Proxy

1. From the Oracle Access Management Console, click Access Manager Settings.
2. Expand the Access Protocol section of the page, if needed.
3. Simple Mode: Add or alter a Global Passphrase if you are using OAM-signed X.509 certificates.
4. **Cert Mode Configuration**: Specify the following details.
   - PEM Keystore Alias
   - PEM Keystore Alias Password
5. Click Apply to submit the changes and dismiss the Confirmation window (or close the page without applying changes).
6. Update Agent registration pages as needed to regenerate artifacts, and then replace the earlier artifacts as described in Chapter 15 or Chapter 16.

14.5.4 Configuring 64-bit WebGate in Cert Mode

64-bit WebGates now support SHA2 (256,384 & 512 bit) certificates. Run the following command to configure a 64-bit WebGate in cert mode.

```
<Oracle Middleware Home>/oracle_common/bin/orapki wallet add
 -wallet $DOMAIN_HOME/output/$Agent_Name/cwallet.sso -trusted_cert
 -cert <Root CA path .i.e. aaa_chain.pem> -auto_login_only
```

14.5.5 Tuning the Simple Mode WebGate

If using a simple mode WebGate, you can improve the response time of the OAM login page by changing the `aaaTimeoutThreshold` time parameter in the WebGate profile from -1 to 10. For detailed information about the AAA Timeout Threshold configuration element, see Table 16–3, " Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages" in the "Registering and Managing OAM 11g Agents" chapter.

14.6 Managing Run Time Policy Evaluation Caches

This section explains:

- About Run Time Policy Evaluation Caches
- Managing Run Time Policy Evaluation Caches

See Also: "About Run Time Resource Evaluation" on page 20-27

14.6.1 About Run Time Policy Evaluation Caches

Figure 14–4 illustrates the Policy section of the Access Manager Settings page. This section provides settings for the Resource Matching Cache and the Authorization Result Cache, which come into play during policy evaluation at run time.

Figure 14–4 Common Policy Evaluation Caches

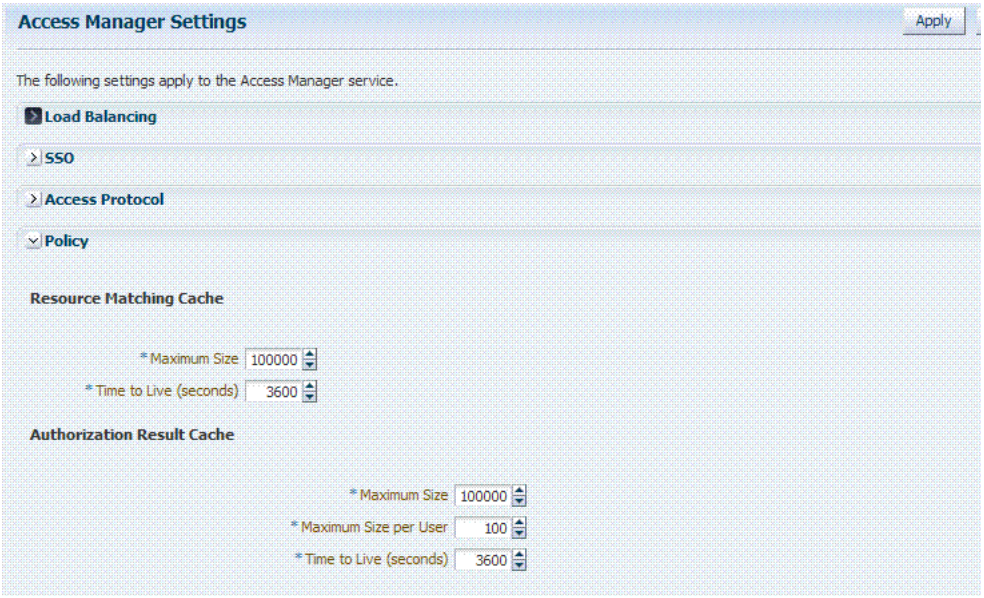


Table 14–8 outlines these global settings that apply to all servers and requests.

Table 14–8 Policy Evaluation Caches

Element	Description
Resource Matching Cache	Caches mappings between the requested URL and the policy holding the resource pattern that applies to the URL. Default Values: ▪ Maximum Size 100000 Zero disables the cache ▪ Time to Live (seconds) 3600 Zero disables Time to Live
Authorization Result Cache	Caches policy decisions for the requested URL and user. Default Values: ▪ Maximum Size 100000 Zero disables the cache ▪ Maximum Size per User 100 Zero disables the cache ▪ Time to Live (seconds) 3600 Zero disables Time to Live See Also: Oracle Fusion Middleware Performance and Tuning Guide

14.6.2 Managing Run Time Policy Evaluation Caches

Administrators can use this procedure to manage the Access Manager policy evaluation caches.

See Also: Guide

- Oracle Fusion Middleware High Availability Guide
- Oracle Fusion Middleware Performance and Tuning Guide

To manage common run time policy evaluation cache settings

1. From the Oracle Access Management Console, click Access Manager Settings.
2. On the Access Manager Settings page, expand the Policy section.
3. **Resource Matching Cache**: Specify details and click apply (Table 14–8).
4. **Authorization Result Cache**: Specify details and click apply (Table 14–8).

5. Click Apply to submit the changes and dismiss the Confirmation window (or close the page without applying changes).

15

Introduction to Agents and Registration

An agent (also known as a single sign-on agent or policy-enforcement agent) is any front-ending entity that acts as an access client to enable single sign-on across enterprise applications. Individual agents must be registered with Access Manager 11g to set up the required trust mechanism between the agent and OAM Server. Registered agents delegate authentication tasks to the OAM Server.

This chapter includes the following topics to give you an overview of agents, their registration and management, processing, and tools. It includes the following topics:

- Introduction to Policy Enforcement Agents
- Introduction to Agent Registration
- Introduction to Remote Registration

15.1 Introduction to Policy Enforcement Agents

An agent is a software plug-in that can be installed on a Web server (such as Oracle HTTP Server) where the application resides. To secure access to protected resources, a Web server, Application Server, or third-party application must be associated with an agent that is registered with Access Manager. To spare users from re-authenticating when accessing multiple resources, an application must delegate the authentication function to the single sign-on (SSO) provider: Access Manager.

During agent registration, the application can be automatically registered and basic policies generated automatically. Alternatively, you can turn off automatic policy generation during Agent registration and manually create policies.

After registration, the Agent collaborates communication between the OAM Server and its services and acts as a filter for HTTP/HTTPS requests. The Agent intercepts requests for resources protected by Access Manager and works with Access Manager to fulfill access requirements.

This section introduces the types of agents for Access Manager:

- About Agent Types and Runtime Processing
- About 11g Webgate Configured as a Detached Credential Collector
- About 11g Webgate Functionality for Mobile and Social
- About the Pre-Registered 10g Webgate IAMSuiteAgent

15.1.1 About Agent Types and Runtime Processing

With Access Manager 11.1.2, each Agent acts as a filter for requests. Your deployment can include the agent types described in Table 15–1, in any combination.

Table 15–1 Agent Types

Agent Type	Description
OAM Agents **Note**: Unless explicitly stated, the terms Webgate and Access Client are used interchangeably.	OAM Agents must be installed independently, following Oracle Access Management installation. After registering the agent with Access Manager, the agent communicates directly with registered OAM Servers and Access Manager services. OAM Agents communicate with Access Manager using the OAM Proxy to "sanitize" the request and respond identically for all agents. The following OAM Agents types are available: ■ **Webgate**: An out of an box Web server access client that intercepts HTTP requests for Web resources and forwards these to the OAM Server. Webgates for various Web servers are shipped with Access Manager. **11g Webgates (Chapter 25) provide**: Oracle Universal Installer for platform Host-based cookie Individual Webgate OAMAuthnCookie_<host:port> Resource to Authorization Policy Authorization Result Webgate Authorization Caching Diagnostic page to tune parameters Capability to act as a detached credential collector **See Also**: "About 11g Webgate Functionality for Mobile and Social" "About 11g Webgate Configured as a Detached Credential Collector" Oracle Fusion Middleware Performance and Tuning Guide **10g Webgates provide** InstallShield and One installer per platform Domain-based cookie ObSSOCookie (one for all 10g Webgates) Web server configuration **See Also**: 10g Pre-registered IAMSuiteAgent in this table and Chapter 25 ■ **Custom, Programmatic Access Clients**: Access Manager provides a pure Java software developer kit (SDK). Use this SDK to create custom Access Clients and extensions for Access Manager authentication and authorization functionality (and custom tokens). An Access Client processes requests for Web and non-Web resources (non-HTTP) from users or applications. See details in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.
IAMSuiteAgent a Pre-registered OAM 10g Agent	This pre-registered 10g agent provides single sign-on functionality for the IAM suite of consoles. The IAM Suite Agent includes a companion Application Domain (IAMSuite) and basic policies that should not be modified. **See Also**: About the Pre-Registered 10g Webgate IAMSuiteAgent on page 15-5
Legacy OSSO Agents	mod_osso is part of the OracleAS 10g single sign-on (OSSO) solution that authenticates users at a central OSSO Server. The mod_osso module is an Oracle HTTP Server module that provides authentication to OracleAS applications. After registration with Access Manager, OSSO 10g Agents communicate directly with Access Manager 11g services through an OSSO proxy. The OSSO proxy supports existing OSSO agents when upgrading to Access Manager. The OSSO proxy handles requests from OSSO Agents and translates the OSSO protocol into a protocol for Access Manager 11g authentication services. Access Manager gives mod_osso the redirect URL for the user based on the authentication scheme associated with the OAM policy defined for the resource **See Also**: Chapter 24, "Registering and Managing Legacy OSSO Agents" as well as the following topics:

Table 15–1 (Cont.) Agent Types

Agent Type	Description
Legacy OpenSSO Agents	Java Agents are deployed J2EE containers to work with the OpenSSO server. Web Agents can be deployed on any Web or Servlet container. Each OpenSSO Agent is a filter that is plugged into the container (Oracle WebLogic Server, JBoss, Apache, and so on) that hosts applications. Access Manager provides an OpenSSO Proxy to handle requests for resources protected by OpenSSO Agents: Scope can be Host- or Domain-based OpenSSO Agent key stored locally (Agent bootstrap file, Agent host) **See Also**: Chapter 23, "Registering and Managing Legacy OpenSSO Agents".

Table 15–2 introduces Access Manager features that support agent registration, configuration, management, and single-sign on. Links to topics providing more information are included.

Table 15–2 Agent Registration and SSO Support

Oracle Provides	Description
Oracle Access Management Console	Agent Registration, Configuration, Management. **See Also**: "Registering an OAM Agent Using the Console" on page 16-12
oamreg tool	Remote Agent Registration and Management **See Also**: "Acquiring and Setting Up the Remote Registration Tool". on page 16-32
SSO Implementations	Access Manager supports numerous SSO scenarios. **See Also**: "Introducing Access Manager Single Sign-On" on page 18-1
Protocols that secure information exchange on the Internet	This depends on the credential collector you choose. **See Also**: Table 19–5, " Comparing the DCC and ECC"
Login and Logout Forms	The location of the login and logout forms depends on the credential collector. **See Also**: Table 19–5, " Comparing the DCC and ECC" and Chapter 22
Cryptographic keys	One key is generated and used per registered mod_osso or 11g Webgate. However, one single key is generated for all 10g Webgates. **See Also**: Table 1–2, " Features in Access Manager 11.1.2"
Keys storage	▪ **Agent side**: A per agent key is stored locally in the Oracle Secret Store in a wallet file. ▪ **OAM Server side:** A per agent key, and server key, are stored in the credential store on the server side.

OAM Agent Run Time Processing

Table 15–3 provides run time processing information for OAM Agents.

See Also: "Introducing Access Manager Credential Collection and Login" on page 18-14

Table 15–3 Run Time Processing Overview for Access Manager

Agent Type	Description
11g Webgates 11g Access Clients	After installation and registration, 11g Webgates communicate with Access Manager using the OAM Proxy to "sanitize" the request and respond identically for all agents. **Process overview, Authentication Request without OAMAuthnCookie:** When a request for a resource protected by Basic authentication scheme comes without an authorization header (credentials) 1. Webgate redirects through the front channel to either Embedded or Detached Credential Collector (depending on scheme configuration) to collect credentials. 2. Credential Collector collects user credentials based on the challenge method defined for the authentication scheme. 3. User is authenticated; OAM Proxy (Embedded Collector) or Detached Collector itself (DCC) communicates with the OAM Server through the back channel protocol for the token and returns a response through the front channel with a token issued by the OAM Server. 4. Webgate validates the response, extracts the authentication token issued by the OAM Server, and sets a token in OAMAuthnCookie. 5. Webgate is redirected to the requested resource, with the newly set OAMAuthnCookie attached. 6. Webgate validates the OAMAuthnCookie, performs authorization through the back channel, and serves the page when authorization is successful. **Process overview, Basic Authentication:** When a request for a resource protected by Basic authentication scheme comes without an authorization header (credentials) 1. Webgate responds with `WWW-Authenticate` header containing the realm mentioned in the authentication scheme with status code `401(authorization required)`. 2. Browser client interprets the `WWW-Authenticate` header and collects credentials from user. 3. Browser client performs request again with authorization header containing credentials. **See Also**: "About 11g Webgate Configured as a Detached Credential Collector" on page 15-4 "About 11g Webgate Functionality for Mobile and Social" on page 15-5
10g Webgates 10g Access Clients	After installation and registration, 10g Webgates communicate directly with Access Manager using the OAM proxy, which acts as a bridge. **See Also**: ■ IAMSuiteAgent for details about this agent and Application Domain. ■ Chapter 25 for details about registering legacy 10g Webgates with Access Manager. ■ Appendix A for details about legacy 10g Webgates currently operating with Web Applications coded for Oracle ADF Security and the OPSS SSO Framework. ■ *Oracle Fusion Middleware Application Security Guide* for details about legacy 10g Webgates configured as the Identity Assertion Provider (IAP) for SSO (for applications using WebLogic container-based security with Access Manager 11g (or Oracle Access Manager 10g).
OpenSSO Agents	See Also: "Runtime Processing Between OpenSSO Agents and Access Manager" on page 23-6.
OSSO Agent (mod_osso 10g)	See: "Understanding OSSO Agents with Access Manager" on page 24-1.

15.1.2 About 11g Webgate Configured as a Detached Credential Collector

With Oracle Access Manager 11.1.1, the Embedded Credential Collector (IECC) is the default. The ECC was and is integrated with the OAM Server.

Access Manager 11.1.2 also supports the ECC by default. However, Access Manager 11.1.2 also enables you to configure an 11g Webgate to use as a detached credential collector (DCC).

An 11g Webgate configured to act as a detached credential collector (DCC) is known as anAuthenticating Webgate. Webgates that protect resources are known as Resource Webgates.

The DCC is considered more secure compared to the default embedded credential collector (ECC).

See Also: "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109

15.1.3 About 11g Webgate Functionality for Mobile and Social

Webgate interacts with the client to perform authentication and authorization, which involves redirection to collect credentials, set the cookie to hold the session, error reporting, and so on. Webgate works with browser clients, which usually have all the support required for this interaction end to end. However, there are cases where a non-browser/REST client needs to access resources and perform authentication and authorization.

Mobile and Social support is enabled using two user-defined parameters within the Webgate agent registration page. Mobile and Social services use a programmatic non-browser client with Access Manager.

See Also:

- Part IX, "Managing Oracle Access Management Mobile and Social"
- Oracle Fusion Middleware Developer's Guide for Oracle Access Management

15.1.4 About the Pre-Registered 10g Webgate IAMSuiteAgent

This 10g Webgate and the companion Application Domain provides single sign-on functionality for the IDM Administration Console. IAMSuiteAgent is installed and pre-configured as part of the OAM Server installation and configuration.

Oracle strongly recommends that you do not alter IAMSuiteAgent and the companion Application Domain. However, you can replace the IAMSuiteAgent with a fresh 10g Webgate.

See Also:

- "Replacing the IAMSuiteAgent with an 11g WebGate" on page 16-41
- "Configuring Centralized Logout for IAMSuiteAgent" on page 25-10
- "Bundled 10g IAMSuiteAgent Artifacts" on page D-1

15.2 Introduction to Agent Registration

You can use either the Oracle Access Management Console or the remote registration tool for Agent registration and updates. Unless explicitly stated, information in this section applies to agent registration using either the Oracle Access Management Console or the remote registration tool.

This section provides the following information:

- About Agent Registration, Keys, and Policies

- About File System Changes and Artifacts for Registered Agents

15.2.1 About Agent Registration, Keys, and Policies

Only registered agents can communicate with an OAM Server, and process information when a user attempts to access a protected resource. During agent registration, you can create policies to protect the application during agent registration.

Administrators must register each Agent to operate with Access Manager. The agent is presumed to reside on the computer hosting the application to be protected. However, the Agent can reside on a proxy Web server and the application on a different host.

An agent key and partner key are created during registration. If you choose to automatically create policies during agent registration, a host identifier and Application Domain are created with basic policies and resource definitions. Later on, you can view and manage the Application Domain and policies.

Note: You can register multiple Webgates or Access Clients under a single host identifier, with the same Application Domain and policies, as follows:

1. When you register a Webgate, allow the process to create a host identifier (a name of your choice), and enable "Auto Create Policies".
2. Register a second Webgate with the same host identifier as Step 1, and clear the "Auto Create Policies" box to eliminate policy creation.

Following a successful registration, whether using the console or using remote registration, the full agent registration appears in the Oracle Access Management Console and is propagated to all Managed Servers in the cluster. Table 15–4 identifies the keys and policies generated during agent registration.

Table 15–4 Keys and Policies Generated During Agent Registration

Keys and Policies	Accessible to	Accessible through
One key per 11g Webgate Agent One key for all 10g Agents One key per OpenSSO Agent stored in local Agent bootstrap file One key per OSSO Agent **See Also**: "About Key Use, Generation, Provisioning, and Storage" on page 16-26	▪ OAM Server	▪ Client-side: Secure local storage on the client host (a local wallet file) ▪ Server side: The Java Keystore
Partner key for the application (None for OpenSSO Agents)	▪ 11g Webgate	Client-side
Application Domain and default Policies are generated during Agent registration on demand: ▪ Named for the Agent ▪ Populated with default authentication and authorization policies (but not Token Issuance Policies) ▪ Identified by the same host identifier that was specified for the Agent during registration	▪ Administrators can view, modify, or remove a registered agent using either the Oracle Access Management Console or custom WLST commands for Access Manager ▪ All agent types at run time monitor attempts to access a Web site and use OAM Servers to provide authentication and authorization services before completing the request	Oracle Access Management Console Policy Configuration Application Domains *DomainName*

15.2.2 About File System Changes and Artifacts for Registered Agents

When you register an agent using the Oracle Access Management Console, a new file system directory is created for the Agent on the Oracle Access Management Console host (AdminServer).

This new directory includes generated files for the registered agent, as described in Table 15–5.

Table 15–5 Artifacts Associated with Agent Registration

Registration Artifact	Generated for ...
All Webgates or Access Client	All Webgates/Access Clients on the console host (AdminServer).
ObAccessClient.xml	During run time, periodic update checks are made. ObAccessClient is updated automatically when a change is discovered. Note: The pre-registered 10g IAMSuiteAgent does not use ObAccessClient.xml for bootstrap or configuration. **See Also**: Properties files generated on the client in this table.
cwallet.sso ***11g Webgate only***	11g Webgates, regardless of the transport security mode.
Certificate and password files for secure communication	All Webgates/Access Clients. For example: ▪ password.xml (nominally encrypted file for Simple Mode Global passphrase) ▪ aaa_cert.pem (reserved name for Webgate certificate file, which cannot be changed) ▪ aaa_key.pem (reserved name for Webgate key file, which cannot be changed) Cert Mode: ▪ PEM keystore Alias ▪ PEM keystore Alias Password **Note**: When editing an 11g Webgate registration, password.xml is updated only when the mode is changed from Open to Cert or Simple to Cert. In Cert mode, once generated, password.xml cannot be updated. Editing the agent Key Password does not result in creation of a new password.xml. **See**: Chapter 14 for details about Simple and Cert mode transport security)
OpenSSO Properties files	**See**: Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
osso.conf file	**See**: Chapter 24, "Registering and Managing Legacy OSSO Agents"

Generated or updated artifacts must be copied from the console host (AdminServer) into the agent's installation directory, as shown in Table 15–6.

Table 15–6 Copying Generated Artifacts

Agent Type & Artifacts	Copy Generated Artifacts to Agent Installation Directory ...
ObAccessClient.xml (and 11g Webgate cwallet.sso) 11g Webgate or Access Client	Before agent startup, copy the ObAccessClient file (and cwallet.sso) from the generated location (AdminServer (Console) host) to the agent installation directory. **See**: Chapter 16, "Registering and Managing OAM 11g Agents"
ObAccessClient.xml 10g Webgate or Access Client	Before agent startup, copy ObAccessClient.xml from the generated location to the agent installation directory. For example, from the AdminServer (Console) host: **Note**: The pre-registered IAMSuiteAgent does not use ObAccessClient.xml and should not be modified. **See**: Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g"
OpenSSO Agent Properties Files	**See**: Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
10g OSSO Agent osso.conf	**See**: Chapter 24, "Registering and Managing Legacy OSSO Agents"

15.3 Introduction to Remote Registration

As an alternative to using the console for agent registration, you can use the remote registration utility, oamreg, with Oracle-provided templates. The user of the remote registration script can be a part of any group that is mapped against the Administrator's Role in the primary user-identity store for Access Manager (Chapter 5).

Secure registration and creation of an Application Domain (as well as Symmetric key generation) is supported using either remote registration mode described in Table 15–7.

Table 15–7 Remote Registration Methods

Method	Description
In-band mode	For Administrators within the network who manage the Web server that hosts the agent can use this mode or the Oracle Access Management Console.
Out-of-band mode	Administrators outside the network must submit registration requests to an Administrator within the network. After processing the request, the in-band Administrator returns the files required by the out-of-band Administrator who uses the files to configure his environment.

Symmetric key generation per Application: One key is generated and used per registered mod_osso or 11g Webgate. However, one single key only is generated for all 10g Webgates.

Note: Registration of legacy Agents (10g Webgate, OpenSSO, and OSSO 10g), is also supported.

Table 15–8 describes functionality that is not supported:

Table 15–8 Remote Registration Does Not Support

Not Supported with Remote Registration
Persistence of the Key and Agent Information
Generation of Keys used by internal components
API support for reading Agent information

For more information, see the following topics in Chapter 16:

- About Performing In-Band Remote Registration
- About Performing Out-of-Band Remote Registration
- About Updated Agent Configuration Files

15.3.1 About Performing In-Band Remote Registration

Following is a brief overview of in-band Web server Administrator tasks for provisioning an application using the remote registration tool. Unless explicitly stated, tasks are the same regardless of the type of agent you have protecting resources.

In this overview, the term "Administrator" refers to any user within the network who is part of the LDAP group that is designated for Administrators in the Default System User Identity Store registered with Oracle Access Management.

Task overview: In-band Administrators performing remote registration

1. Acquire the registration tool as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. Update the input file with unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.
3. Run the registration tool to configure the Agent and create a default Application Domain for the resources, as described in "Performing In-Band Remote Registration" on page 16-33.
4. Validate the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.
5. Perform access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

15.3.2 About Performing Out-of-Band Remote Registration

The term *out-of-band registration* refers to manual registration that involves coordination and actions by both the in-band Administrator and the out-of-band Administrator.

Task overview: Out-of-band remote registration (Agent outside the network)

1. **Out-of-band Administrator**: Creates a starting request input file containing specific application and agent details and submits it to the in-band Administrator.
   - Acquire the registration tool as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
   - Copy and edit a template to input unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.
   - Submit the starting request input file to the in-band Administrator using a method you choose (email or file transfer).
2. **In-band Administrator**:
   - Acquire the registration tool as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
   - Use the out-of-band starting request with the registration tool to provision the agent and create the following files to return to the out-of-band Administrator. See "Performing Out-of-Band Remote Registration" on page 16-34 for details:
     - *agentName*_Response.xml is generated for the out of band Administrator to use in Step 3.
     - OAM Agents: A modified ObAccessClient.xml file is created (and the 11g Webgate cwallet.sso file), which the out-of-band Administrator can use to bootstrap the Webgate.

       11g Webgates: SSO wallet creation.
     - OSSO Agents: A modified osso.conf file is created for the out-of-band Administrator to bootstrap the OSSO module.
     - OpenSSO Agents: A modified version of the OpenSSO properties files are generated.

3. **Out-of-band Administrator**: Uses the registration tool with the *agentName*_Response.xml file and copies the Agent configuration and any other generated artifacts to the appropriate file system directory.

> **Note:** In `outofband` mode, the in-band Administrator uses the starting request file submitted by the out-of-band Administrator, and returns a generated *agentName*_Response.xml file to the out-of-band Administrator for additional processing. The out-of-band Administrator runs the remote registration tool with *agentName*_Response.xml as input to generate agent configuration files.

4. **In-band Administrator**: Validates the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.
5. **Out-of-band Administrator**: Performs several access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

See Also:

- "About Updated Agent Configuration Files" on page 15-10
- "Understanding the Remote Registration Tool, Modes, and Process" on page 16-24

15.3.3 About Updated Agent Configuration Files

After a successful registration (or update), you must locate the Agent configuration files on the AdminServer (console) host and copy these to the Agent host, as described in Table 15–9.

Table 15–9 Agent Registration and Configuration Update Artifacts

Artifacts For ...	Description
Simple or Cert mode	If Simple or Cert mode is used, certificate artifacts must also be copied to the Agent host following registration. See Also: Appendix C, "Securing Communication"
11g OAM Agents (Webgate/Access Client)	**See Also**: Chapter 16, "Registering and Managing OAM 11g Agents"
10g OAM Agents (Webgate/Access Client)	**See Also**: Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g"
OSSO Agent	**See Also**: Chapter 24, "Registering and Managing Legacy OSSO Agents"
OpenSSO Agent	**See Also**: Chapter 23, "Registering and Managing Legacy OpenSSO Agents"

16

Registering and Managing OAM 11g Agents

This chapter provides information on registration and management of 11g WebGates (and the programmatic equivalent, Access Clients) using either the console or the remote registration command-line utility. During registration, you can identify specific applications to be protected by Access Manager policies.

This chapter includes the following topics:

16.1 Prerequisites

Before you can perform tasks in this chapter, ensure that the Oracle Access Management Console host (AdminServer) and a managed OAM Server are running.

See Also: The following, as needed for your environment.

- Chapter 15, "Introduction to Agents and Registration"
- "Managing Policies and Application Domains Remotely" on page 20-81
- Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
- Chapter 24, "Registering and Managing Legacy OSSO Agents"
- Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g"

16.2 Understanding OAM Agent Registration Parameters in the Console

This section describes OAM Agent registration parameters. Unless explicitly stated, the information here applies equally to both 11g and 10g WebGates, including programmatic Access Clients. Topics include:

- About Create OAM WebGate Page and Parameters
- About User-Defined WebGate Parameters
- About IP Address Validation for WebGates

16.2.1 About Create OAM WebGate Page and Parameters

The `Create OAM ... WebGate` page requests minimal information to streamline registration. Required details are identified by the asterisk (*). Whether you register an 11g WebGate or 10g WebGate, the initial information requested is the same.

Figure 16–1 Create OAM 11g WebGate Page

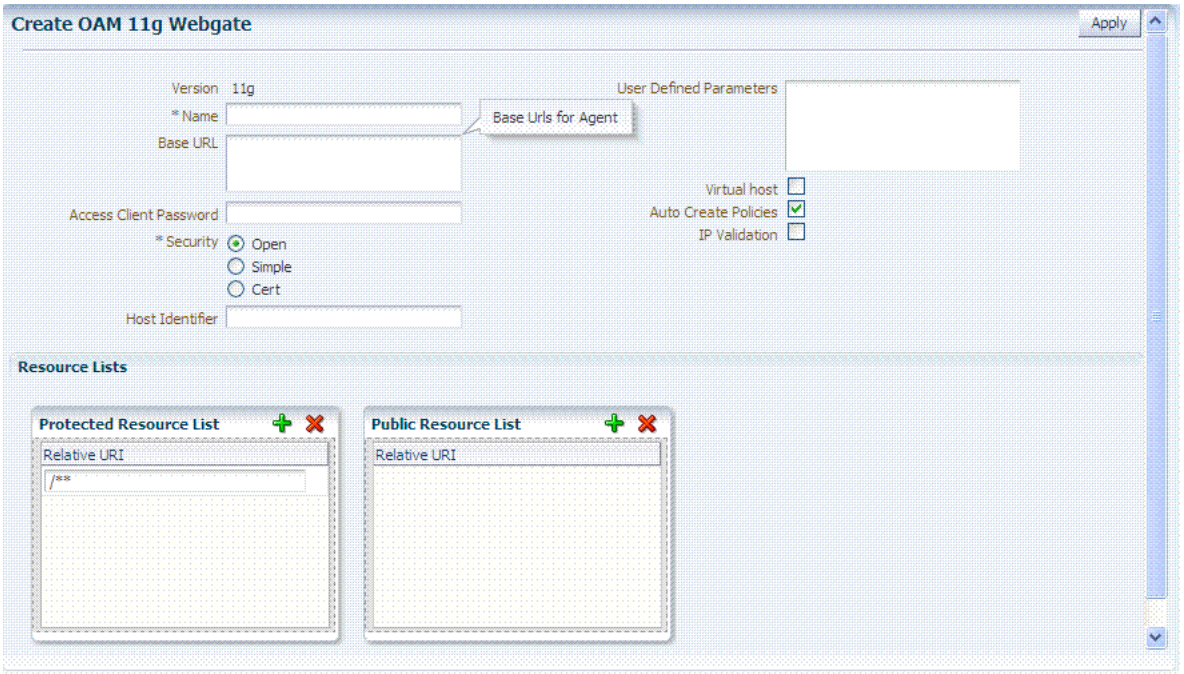


Table 16–1 describes the Create page for 11g WebGates (or Access Clients). Unless explicitly noted, all elements apply to both 11g and 10g Agents.

Table 16–1 Elements on Create Pages for 11g and 10g OAM Agents

OAM WebGate Element	Description
Name	The unique identifying name for this Agent registration. This is often the name of the computer that is hosting the Web server used by WebGate. A unique identifying name for each Agent registration is preferred. However: ■ If the Agent Name exists, no error occurs and the registration does not fail. Instead, Access Manager creates the policies if they are not already in place. ■ If the host identifier exists, the unique Agent Base URL is added to the existing host identifier and registration proceeds.
Base URL Optional	The host and port of the computer on which the Web server for the WebGate is installed. For example, http://*example_host:port* or https://*example_host:port*. The port number is optional. **Note**: A particular Base URL can be registered once only. There is a one-to-one mapping from this Base URL to the Web server domain on which the WebGate is installed (as specified with the Host Identifier element). However, one domain can have multiple Base URLs.
Access Client Password Optional	An optional, unique password for this WebGate, which can be assigned during this registration process. When a registered WebGate connects to an OAM Server, the password is used for authentication to prevent unauthorized WebGates from connecting to OAM Servers and obtaining policy information.
Security	Level of communication transport security between the Agent and the OAM Server (this must match the level specified for the OAM Server): ■ Open--No transport security ■ Simple--SSL v3/TLS v1.0 secure transport using dynamically generated session keys ■ Cert--SSL v3/TLS v1.0 secure transport using server side x.509 certificates. Choosing this option displays a field where you can enter the Agent Key Password. Agent Key Password: The private key file (aaa_key.pem) is encrypted using DES algorithm. The Agent Key Password is saved in obfuscated format in password.xml and is required by the server to generate password.xml. However, this password is not retained by the server. When editing an 11g WebGate registration, password.xml is updated only when the mode is changed from Open to Cert or Simple to Cert. In Cert mode, once generated, password.xml cannot be updated. Editing the Agent Key Password does not result in creation of a new password.xml. **Note**: For more information on Simple and Cert modes, and private key encryption, see Appendix C.
Host Identifier	This identifier represents the Web server host. This is automatically seeded with the value in the agent Name field. **Note**: You can register multiple OAM WebGates (or Access Clients) under a single host identifier with the same Application Domain and policies, as follows: 1. When you register a WebGate, allow the process to create a host identifier (a name of your choice), and enable "Auto Create Policies". 2. Register a second WebGate with the same host identifier as Step 1, and clear the "Auto Create Policies" box to eliminate policy creation. See Also: "About Virtual Web Hosting" on page 19-10.
User-defined Parameters	Parameters you can enter to enable specific WebGate behaviors: See Also: "About User-Defined WebGate Parameters" on page 16-5.
Virtual Host	Check the box beside Virtual Host if you installed a WebGate on a Web server that contains multiple Web site and domain names. The WebGate must reside in a location that enables it to protect all of the Web sites on that server. See Also: "About Virtual Web Hosting" on page 19-10.

Table 16–1 (Cont.) Elements on Create Pages for 11g and 10g OAM Agents

OAM WebGate Element	Description
Auto Create Policies	During agent registration, you can have authentication and authorization policies created automatically. This option is checked (enabled) by default. Default: Enabled **Shared Registration and Policies**: Multiple WebGates (or Access Clients) installed on different Web servers can share a single registration and policies to protect the same resources. This is useful in a high-availability failover environment. To do this: 1. WebGate1: Register the first WebGate and enable Auto Create Policies to generate a host identifier (named as you like) and policies. 2. WebGate2: Register the second WebGate, specify the same host identifier as the first WebGate, and disable Auto Create Policies. After registering the second agent, both WebGates use the same host identifier and policies.
IP Validation	Check the box beside IP Validation to ensure a client's IP address is the same as the IP address stored in the OAM session. When enabled, the IP address stored in the OAM session must match the client's IP address. Otherwise, the request is rejected and the user must re-authenticate. In the IP Validation Exceptions box, enter any IP addresses to exclude from validation using standard notation for the addresses: for example, 10.20.30.123. Default: Disabled See Also: "About IP Address Validation for WebGates" on page 16-10.
Agent Key Password	Requested for only Cert mode communication, this passphrase is used to encrypt the private key used for SSL communication between WebGate and the OAM Server in Simple and Cert modes. **Note**: The Agent Key Password has no relationship to the Access Client Password described earlier within this table. **Simple Mode**: In this mode, the agent key password is a global passphrase that must be the same on both the client and server. Once the OAM Server has this configured, the password can be retrieved during agent registration. However, the Administrator must copy to the client side, the password.xml file generated during agent registration. **Cert Mode**: In this mode, the agent key can be different on the client and server; it is no longer global. Administrators must enter the Agent Key Password to enable generation of a password.xml file during agent registration, which must be copied to the agent side. For certificate generation, you must encrypt the private key (used for SSL) using this password through `openssl` or other third-party tools to be placed inside aaa_key.pem. At runtime, WebGate retrieves the key from password.xml, and uses it to decrypt the key in aaa_key.pem. ■ If the key is encrypted, WebGate internally invokes the call back function to obtain the password. ■ If the key is encrypted and password.xml does not exist, WebGate cannot establish connections with the OAM Server. ■ If the key is not encrypted, there is no attempt to read password.xml. For more information, see Appendix C.
Resource Lists	

Table 16–1 (Cont.) Elements on Create Pages for 11g and 10g OAM Agents

OAM WebGate Element	Description
Protected Resource (URI) List	URIs for the protected application: `/myapp/login`, for example. Each URI for the protected application should be specified in a new row of the table for the Protected Resource List. Default: /** The default matches any sequence of characters within zero or more intermediate levels spanning multiple directories. **Add Resources**: Each URI should be specified in a new row of the table for the Protected Resource List. Click the + button to add a resource to the Protected Resource List. For instance, if you add `/financial` (and repeat to add `/myfinancial`) the following URLS are seeded into the designated policies of the Application Domain when **Auto Create Policies** is selected): /financial yields Resource URL /financial/** /myfinancial yields Resource URL /myfinancial/** /** **See Also**: "About the Resource URL, Prefixes, and Patterns" on page 20-19.
Public Resource (URI) List	Each public application should be specified in a new row of the table for the Public Resource List. **Add Resources**: Each URI should be specified in a new row of the table for the Public Resource List. Click the + button to add a resource to the Public Resource List. For instance, if you add `/people` the following URLS are included here and in the Application Domain (when Auto Create Policies is selected): /people **See Also**: "About the Resource URL, Prefixes, and Patterns" on page 20-19.
See Also:	Table 16–3, " Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages"

To help streamline WebGate registration, some elements are concealed during the create operation and default values are applied.

> **Note:** All changes made using the Oracle Access Management Console are taken up without restarting the application server. Changes are reflected automatically after the reconfiguration timeout period.

16.2.2 About User-Defined WebGate Parameters

Certain supported parameters can be defined by Administrators entering values directly on the WebGate registration page or within the OAM Agent remote registration request template. Table 16–2 describes supported user-defined parameters. Each parameter can have only one value.

Table 16–2 User-Defined WebGate Parameters

User-Defined WebGate Parameter	Description
ChallengeRedirectMethod	Configure this user-defined authentication POST data preservation parameter for both the embedded credential collector (ECC) and the detached credential collector (DCC). Value: GET | POST | DYNAMIC **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the WebGate providing this user defined parameter. Otherwise, default behavior is Dynamic. **See Also**: Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes"
ChallengeRedirectMaxMessageBytes	Configure this user-defined WebGate parameter to limit the size of the message data received as obrareq.cgi and obrar.cgi. Message data is comprised of query string length, if present (or POST data length, if POST data is present). If message size exceeds this limit, the message is not processed and the existing message is shown in the browser. The event is logged as usual. Default: 8192 bytes **Notes**: obrareq.cgi is the authentication request in the form of a query string redirected from WebGate to OAM Server. obrar.cgi is the authentication response string redirected from the OAM Server to WebGate. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"
MaxPostDataBytes	Authentication post-data preservation parameter for both the embedded credential collector (ECC) and the detached credential collector (DCC). This parameter requires a positive integer value that restricts the maximum number of bytes of POST data that is submitted as user credentials and sent to the OAM Server. Default: 8192 bytes Assigning MaxPostDataBytes to a Resource WebGate gives preference to restricting the size of the post data received from the application before forwarding the post data to be preserved. **See Also**: "Configuring the PasswordPolicyValidationScheme" "Configuring Authentication POST Data Handling" on page 19-116 Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes"
MaxPreservedPostDataBytes	Configure this user-defined WebGate parameter (or user-defined Authentication Scheme challenge parameter) for authentication POST-data preservation. Default: 8192 bytes **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the WebGate providing this user-defined parameter. Otherwise, default behavior is 8192 bytes. This parameter defines the maximum length of POST data that WebGate can preserve. If the size of inbound raw user POST data (or encrypted post data after processing), crosses this limit, POST data is dropped and the existing authentication flow continues. The event is logged as usual. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes"
PostDataRestoration	Authentication post-data preservation parameter for both the embedded credential collector (ECC) and the detached credential collector (DCC). This parameter requires a value of `true` or `false`. Default: `false` When set to `true`, WebGate initiates POST data preservation. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116

Table 16–2 (Cont.) User-Defined WebGate Parameters

User-Defined WebGate Parameter	Description
serverRequestCacheType ECC Only	Authentication post-data preservation parameter by the embedded credential collector (ECC). This OAM Server parameter in oam-config.xml indicates mechanism to be used to remember the request context. Possible values are FORM, COOKIE, or CACHE. Default: COOKIE FORM is the required value for POST data preservation. **See Also**: `TempStateMode` in Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes". "Configuring Authentication POST Data Handling" on page 19-116
UrlInUTF8Format=true	In an environment that uses Oracle HTTP Server 2, this parameter must be set to true to display latin-1 and other character sets.
ProxySSLHeaderVar=IS_SSL	Uses when the WebGate is located behind a reverse proxy, SSL is configured between the client and the reverse proxy, and non-SSL is configured between the reverse proxy and the Web server. It ensures that URLs are stored as HTTPS rather than HTTP. The proxy ensures that URLs are stored in HTTPS format by setting a custom header variable indicating whether it is servicing an SSL or non-SSL client connection. The value of the ProxySSLHeaderVar parameter defines the name of the header variable the proxy must set. The value of the header variable must be "ssl" or "nonssl". If the header variable is not set, the SSL state is decided by the SSL state of the current Web server. Default: **IS_SSL**
client_request_retry_attempts=1	WebGate-to-OAM Server timeout threshold specifies how long (in seconds) the WebGate waits for the OAM Server before it considers it unreachable and attempts the request on a new connection. If the OAM Server takes longer to service a request than the value of the timeout threshold, the WebGate abandons the request and retries the request on a new connection. Default: 1 **Note**: The new connection that is returned from the connection pool can be to the same OAM Server, depending on your connection pool settings. Also, other OAM Servers may also require more time to process the request than the time specified on the timeout threshold. In some cases, the WebGate can retry the request until the OAM Servers are shut down. You can configure a limit on the number of retries that the WebGate performs for a non-responsive server using the client_request_retry_attempts parameter.
InactiveReconfigPeriod=10	The WebGate update thread reads the shared secret from the OAM Server every 1 minute when WebGate is active. The OAM Server server returns the shared secret in its own cache (the OAM Server cache). Default: 10 (minutes) See Also: Oracle Fusion Middleware Performance and Tuning Guide
fallbackToContainerPolicy=true	Used for the IAMSuiteAgent. When set to `false`, user access to the resource is denied and an HTTP response code, 403 is returned. When set to 'true' the request goes through to the container and uses whatever policy (related to J2EE authentication/authorization) is configured on the container to grant or deny the user access. Default: `true`
logoutRedirectUrl=	Default = http://*OAMServer_host*:14200/oam/server/logout
protectWebXmlSecuredPagesOnly=true	Used for the IAMSuiteAgent. After the user is authenticated, this parameter is used for all subsequent requests to determine if the Agent should validate the incoming request. When set to: `false`: The Agent always validates the incoming request `true`: The default. The Agent determines whether to validate the incoming request based on the following: ▪ If the application specifies 'CLIENT-CERT' as part of the construct: "<auth-method>" in its web.xml, the Agent validates the incoming request. ▪ If the application does not specify 'CLIENT-CERT' as part of the construct: "<auth-method>" in its web.xml, the Agent does not validate the incoming request. Instead, the Agent lets the request go through to the application.

Table 16–2 (Cont.) User-Defined WebGate Parameters

User-Defined WebGate Parameter	Description
maxAuthorizationResultCacheElems	Max Authorization Results Cache Elements—Number of elements maintained in the Authorization Result Cache. This cache maintains information about authorization results for associated sessions. For example: `maxAuthorizationResultCacheElems=10000` Default = 100000 See Also: Oracle Fusion Middleware Performance and Tuning Guide
authorizationResultCacheTimeout	Authorization Results Cache Timeout—Number of elements maintained in the Authorization Result Cache. This cache maintains information about authorization results for associated sessions. For example: `authorizationResultCacheTimeout=60` Default, if no time is specified = 15 (seconds) Note: Authorization Results Cache Timeout is not set by default. With the cache enabled, the first request result persists for the cache duration. This magnifies the effect causing a brief time delay. For example suppose you set an authentication policy Response and set a custom session attribute *exmpl:sample*. The corresponding authorization policy Response returns this as HEADER SESSION_ATTR_EXMPL=*sample*. When a user access the URL protected by these policies, the header comes after a few refreshes. Initially, however, the value might not be found. A value of 0 disables the cache. With no cache, it takes two requests for the header response to be filled. The first sets the session variable used, the second uses the session variable. Oracle recommends that you do not set a Response value in the same authorization request that triggers it. See Also: Oracle Fusion Middleware Performance and Tuning Guide.
UniqueCookieNames	Controls WebGate cookie name format: ■ Legacy format (still the default and backward compatible): <prefix>_<host>:<port>_<suffix> ■ Enabled UniqueCookieNames format (rfc2109-compliant cookie name restriction): <prefix>_<host>:<port>_<suffix> ■ Disabled: Cookie name format is <prefix>_<suffix>. No <host>:<port> and No <host>_<port> is added to the cookie name. ■ Any other value is treated as the default legacy format: <prefix>_<host>:<port>_<suffix>
11g WebGate only	
SetKeepAlive	By default, SetKeepAlive is ON. In this case, a first keep-alive message will be sent after the default idle time of 2 minutes. To change this behavior, set a new value for the parameter. If SetKeepAlive=Off, the feature is disabled and no keep-alive messages will be sent. If SetKeepAlive=x (where x is some positive integer value), the keep-alive message will be sent after the channel is idle for x minutes. Any firewall or load balancer should be configured to forward the TCP/IP keep-alive messages to the actual end parties (front-ending Access Manager server). A programmatic way to change the idle time is implemented for Linux64, Linux32, and Windows32 WebGates. This is not possible on SPARC Solaris platforms; in that case, SetKeepAlive is enabled and the idle time out for Keep alive must be set manually by the system administrator.
filterOAMAuthnCookie	For 11g WebGate, a user-defined parameter (`filterOAMAuthnCookie` (default `true`)) can be used to prevent the OAMAuthnCookie from being passed to downstream applications for security consideration. If you do want to pass the cookie on, then set the `filterOAMAuthnCookie` parameter to `false`.

Table 16–2 (Cont.) User-Defined WebGate Parameters

User-Defined WebGate Parameter	Description
ssoCookie	Controls the OAMAuthnCookie cookie. **Default**: ssoCookie=httponly ssoCookie=Secure **Disable either setting**: ssoCookie=disablehttponly ssoCookie=disableSecure **Note**: These parameters are configured differently depending on your credential collector configuration. ▪ For detached credential collector-enabled 11g WebGates, set these parameters directly in the agent registration page. ▪ For non-DCC agents (Resource WebGates), these parameters are configured through user-defined challenge parameters in authentication schemes. **See Also**: Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes" "Configuring Challenge Parameters for Encrypted Cookies" on page 19-87 "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109
miscCookies	Controls other miscellaneous Access Manager internal cookies. By default, httponly is enabled for all other (miscellaneous) cookies. **Default**: miscCookies=httponly miscCookies=Secure **Disable either setting**: miscCookies=disablehttponly miscCookies=disableSecure **Note**: These parameters are configured differently depending on your credential collector configuration. ▪ For detached credential collector-enabled WebGates, set these parameters directly in the agent registration page. ▪ For non-DCC agents (Resource WebGates), these parameters are configured through challenge parameters of the same name. **See Also**: Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes" "Configuring Challenge Parameters for Encrypted Cookies" on page 19-87 "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109
OAMAuthAuthenticationServiceLocation ***11g WebGate non-browser client functionality***	Activates non-browser client functionality and defines the location of the authentication service. `OAMAuthUserAgentPrefix=`*prefix string that acts as the prefix for the "user-agent" HTTP header value*. For example, to activate this functionality for Identity Connect: `OAMAuthAuthenticationServiceLocation=https://login.example.com/nbc` Non-browser client functionality is deactivated if the parameter is omitted (or is provided with no value). See Also: Section IX, "Managing Oracle Access Management Mobile and Social."

Table 16–2 (Cont.) User-Defined WebGate Parameters

User-Defined WebGate Parameter	Description
OAMAuthUserAgentPrefix ***11g WebGate non-browser client functionality***	Activates non-browser client functionality and defines the string that acts as a prefix for the "user-agent" http header value. `OAMAuthAuthenticationServiceLocation=`*full URL location of the NBC authentication service*. For example, to activate this functionality for Identity Connect: `OAMAuthUserAgentPrefix=NBC` Non-browser client functionality is deactivated if this parameter is omitted (or is provided with no value). See Also: Section IX, "Managing Oracle Access Management Mobile and Social."
RequestContextCookieExpTime	Controls the time (in seconds) to expire OAMRequestContext cookie. Configuring the cookie lifetime is an optional control for deployments with a critical need to handle situations where the cookies could proliferate. Default: not set In the Resource WebGate registration, add this parameter to expire the OAMRequestContext cookie in the configured number of seconds using the "Max-Age" directive on all but IE browsers (default 5 minutes). **Note**: For Internet Explorer only, this parameter requires a time sync between the browser and Web server hosts because IE uses the "Expires" directive to expire the cookie with an absolute time. However, on IE browsers, when this parameter is not set, OAMRequestContext cookie is a transient session cookie. On other (non-IE) browsers, the cookie is persistent and expires based on the time set using the "Max-Age" directive. **See Also**: OAMRequestContext in Table 18–8, " SSO Cookies"
ProxyTrustedIPList	Multi-valued parameter that holds the list of IP addresses of the trusted proxies or load balancers. See Section 16.2.3.2.1, "Using ProxyTrustedIPList."
ProxyRemoteIPHeaderVar	Specifies the name of the HTTP header that contains the list of IP addresses. See Section 16.2.3.2.2, "Defining ProxyRemoteIPHeaderVar."

16.2.3 About IP Address Validation for WebGates

IP address validation is a function that determines if a client's IP address is the same as the IP address stored in the OAM session. The `IPValidation` parameter turns IP address validation on and off; it is a WebGate specific parameter found in the WebGate profile. If `IPValidation` is `true`, the IP address stored in the session must match the client's IP address, otherwise, the request (Table 1–2) is rejected and the user must reauthenticate. By default, `IPValidation` is `false`.

> **Note:** Access Manager now supports Internet Protocol version 6 (IPv6) as well as IPv4.

To configure single sign-on between WebGate and an Access Client that does not have the client IP address at authentication, the IP validation option can be explicitly turned off (set IP Validation to false). When the IP Validation parameter is set to false, the browser or client IP address is not used. However, Oracle recommends that you keep IP validation on whenever possible. Additionally:

- Enabling IP Validation on the WebGate side automatically enables it on the OAM server side. This can be verified in the Access Manager settings.
- Disabling IP Validation on the WebGate side will not disable it on the OAM server side.

side.

- IP Validation on the OAM server side should be disabled manually, if and only if it is disabled on all the WebGates as well.
- When IP Validation is enabled on the WebGate side, IP Validation on the OAM server side should never be turned off.

More details are in the following sections.

- For WebGate profile configuration information, see "Viewing or Editing an OAM Agent Registration Page in the Console."
- Defining The IP Validation Exceptions List
- Enabling IP Validation in Load Balanced Environments

16.2.3.1 Defining The IP Validation Exceptions List

The IP Validation parameter can cause problems with certain Web application deployments. For example, Web applications managed by a proxy server typically change the user's IP address, substituting the IP address of the proxy. This prevents single sign-on from using the cookie. The IP Validation Exceptions parameter lists IP addresses that are exceptions to this process. When `IPValidation` is `true`, the IP address is compared to the IP Validation Exceptions List. If the address is found on the list, it does not need to match the IP address stored in the cookie.

You can add as many IP addresses as needed to the Exceptions list - the actual IP addresses of the client and not the IP addresses stored in the ObSSOCookie SSO cookie. If an SSO cookie is from one of the exception IP addresses, the Access System ignores the address stored in the SSO cookie for validation. (The IP addresses in the IP Validation Exceptions List can be used when the IP address in the cookie is for a reverse proxy.)

16.2.3.2 Enabling IP Validation in Load Balanced Environments

In the case of (proxy servers or) a load balancer, Oracle Access Manager can not enforce true IP validation because an attacker can use the IP address defined in the exception list. Web applications managed thusly typically change the user's IP address (substituting the IP address of the proxy or load balancer). This can prevent single sign-on using the SSO cookie.

A load balancer adds an "X-forwarded-for" header variable to incoming HTTP requests, containing a comma-space-separated list of the original IP number of the requester. Consider the following example in which the request passed proxy1, proxy2 and proxy3 (proxy3 appears as the remote address of the request). The last IP address is always the IP address that connects to the last proxy.

```
X-Forwarded-For: client1, proxy1, proxy2
```

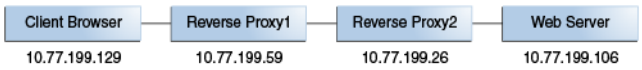
The trust list will be referenced to look up each IP address from the header, starting with the right-most value. The left-most IP address being the farthest downstream client and each successive proxy that passed the request (adding the IP address from which it received the request).

Within the specified order, the first IP address that does not match any of those in the trusted list is treated as an apparent client IP (defined as the IP address of the initiator of the connection to the furthest node along the communication path that can be trusted). Additionally:

- When all IP addresses from the header (starting from the right side) match with entries in the trusted list, WebGate chooses the end client IP (the left most IP address in the header).
- When the IP address is determined, WebGate obtains a session token that contains the apparent client IP address and IP validation is evaluated by comparing the IP address against the address in the session token.
- When the IP validation feature is enabled within a load balanced deployment, authentication (session creation) and authorization is done by the WebGate with this feature; otherwise the authenticated user must re-authenticate. When WebGate searches for the particular HTTP header, the search is case-insensitive. For example, "X-Forwarded-For" and "X-FORWARDED-FOR" are treated the same.

16.2.3.2.1 Using ProxyTrustedIPList `ProxyTrustedIPList` is a user defined, multi-valued WebGate parameter that holds the list of IP addresses for the trusted proxies or load balancers. The values are space separated. The IP addresses in the IP Validation Exceptions List can be used when the IP address in the cookie is for a reverse proxy.

Figure 16–2 Load Balanced Deployment



In Figure 16–2, the end user's HTTP request passes through REVERSEPROXY1 and REVERSEPROXY2 to reach the actual Web server. In this case, the IP addresses of REVERSEPROXY1 and REVERSEPROXY2 should be added in the ProxyTrustedIPList list as follows:

```
ProxyTrustedIPList=10.77.199.59 10.77.199.26
```

> **Note:** In a centralized authentication deployment, if any Resource WebGate (RWG) or Authentication WebGate (AWG) is behind a proxy, the IP addresses of all intermediaries must be configured (in the `ProxyTrustedIPList` parameter) in the profile of the WebGate behind the proxy. Otherwise, IP validation failures can occur.

16.2.3.2.2 Defining ProxyRemoteIPHeaderVar The ProxyRemoteIPHeaderVar parameter specifies the name of the HTTP header that contains the list of IP addresses. If this parameter is not provided, the default header X-Forwarded-For is used. This parameter can be configured like any other user-defined parameter in a WebGate profile. For example, in the deployment described in Using ProxyTrustedIPList, "X-FORWARDED-FOR" and other headers that come to the Web server take the following form.

```
HTTP_X_FORWARDED_FOR="10.77.199.129, 10.77.199.59"
REMOTE_ADDR="10.77.199.26"
```

16.3 Registering an OAM Agent Using the Console

This procedure is for both a WebGate or programmatic Access Client. Registration steps are the same. You can register an OAM-type agent before you deploy it. Users with valid Administrator credentials can perform the following task to register a WebGate using the Oracle Access Management Console.

See Also:

- Understanding OAM Agent Registration Parameters in the Console
- Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management chapter "Installing and Configuring Oracle HTTP Server 11g WebGate for OAM"

After agent registration, you can change the communication mode of the OAM Server if needed. Communication between the agent and server continues to work as long as the WebGate mode is at least at the same level as the OAM Server mode or higher. See Appendix C.

Prerequisites

Confirm that at least one OAM Server is running in the same mode as the agent to be registered.

To register an OAM Agent

1. From the Oracle Access Management Console Launch Pad, click SSO Agent and one of the following to open a fresh page:
   - New OAM 11g Agent
   - New OAM 10g Agent (see also Chapter 25)
2. On the **Create OAM ... WebGate** page, enter required details (those with an *) to register this Agent ().
3. **Protected Resource List**: In this table, enter individual resource URLs to be protected by this Agent, as shown in Table 16–1.
4. **Public Resource List**: In this table, enter individual resource URLs to be public (not protected), as shown in Table 16–1.
5. **Auto Create Policies**: Check to create a fresh Application Domain and policies (or clear and use the same host identifier as another WebGate and share policies (Table 16–1)).
6. Click **Apply** to submit the registration (or close the page without applying changes).
7. **10g WebGate**: See Chapter 25 and:
   a. Proceed as needed for your environment (Chapter 25):

      Existing WebGate: Perform Step 8, then go to Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates".

      New WebGate: Go to "Locating and Installing the Latest 10g WebGate for Access Manager 11g" on page 25-14.
8. Copy the artifacts as follows (or install WebGate with the same specifications, then copy artifacts), including any Simple or Cert mode files. For example, Open mode files include:

Agent & Artifacts	Artifacts
11g WebGate/Access Client	From the AdminServer (Console) host:
ObAccessClient.xml and cwallet.sso	$*DOMAIN_HOME*/output/$*Agent_Name*/
	To the Agent host: $*11gWG_install_dir*/WebGate/config

Agent & Artifacts	Artifacts
10g WebGate/Access Client ObAccessClient.xml **Note**: Go to Chapter 25 before completing this task.	From the AdminServer (Console) host: $*DOMAIN_HOME*/output/$*Agent_Name*/ To the Agent host: $10g*WG_install_dir*/oblix/lib/

9. **Verify Registration**: These are similar to steps in "Validating Agent Registration using the Oracle Access Management Console".
   a. In the navigation tree, confirm the Agent name is listed; click the Reset button in the navigation tree toolbar if needed.
   b. Confirm the registration page contains the appropriate information.
   c. **Auto Create Policies**: Confirm the Application Domain was generated, the host identifier was created for the application, and that resources were created in the Application Domain and associated with the host identifier.
   d. Perform further tests, as described in "Validating Authentication and Access After Remote Registration".
10. Proceed as needed for your deployment:
    - "Configuring and Managing Registered OAM Agents Using the Console"
    - Part V, "Managing Access Manager SSO, Policies, and Testing"

16.4 Configuring and Managing Registered OAM Agents Using the Console

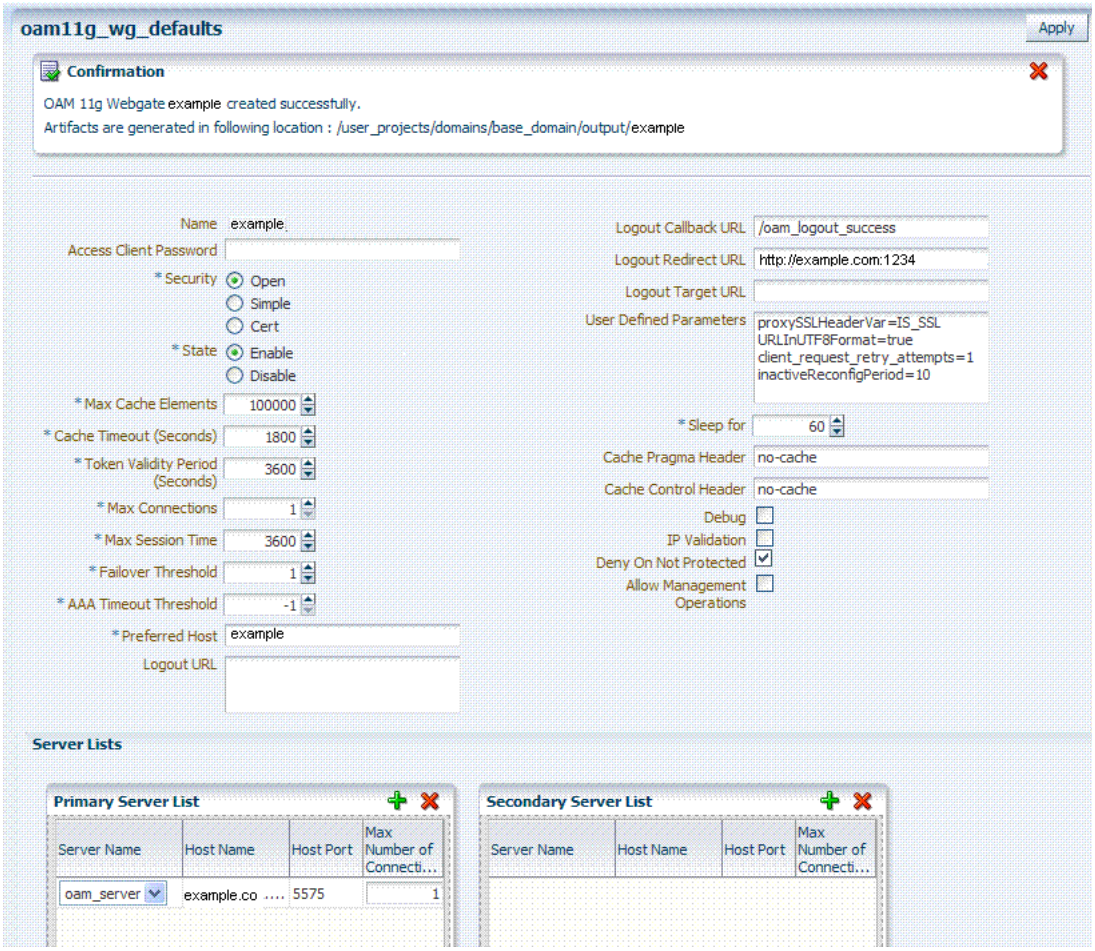
This section provides the following topics to help you manage registered WebGates:

- Understanding Registered OAM Agent Configuration Parameters in the Console
- Searching for an OAM Agent Registration
- Viewing or Editing an OAM Agent Registration Page in the Console
- Deleting OAM Agent Registration Using the Console

16.4.1 Understanding Registered OAM Agent Configuration Parameters in the Console

Whether you registered the agent using the Oracle Access Management Console or the remote registration utility, you can view the full agent configuration page in the console, as shown in Figure 16–3.

Figure 16–3 Confirmation Window and Expanded 11g WebGate Page with Defaults



There are only a few differences between 11g and 10g WebGate registration pages.

Note: Most elements on the agent's page are the same as those you define when using the remote registration tool with the expanded OAM template. `ObAccessClient.xml` is populated with values after agent registration or modification, regardless of the method you use.

Table 16–3 describes elements on an expanded registration. Additional settings revealed here are used by the OAM Proxy.

Table 16–3 Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages

Element	Description
Name	See: Table 16–1, " Elements on Create Pages for 11g and 10g OAM Agents".
Access Client Password	
Security	
User-defined Parameters	See Also: "About User-Defined WebGate Parameters" on page 16-5
IP Validation	See Also: "About IP Address Validation for WebGates" on page 16-10.
Primary Cookie Domain ***10g WebGate only***, Chapter 25	This parameter describes the Web server domain on which the Agent is deployed, for instance,*.example.com*. You must configure the cookie domain to enable single sign-on among Web servers. Specifically, the Web servers for which you configure single sign-on must have the same Primary Cookie Domain value. WebGate uses this parameter to create the ObSSOCookie authentication cookie. This parameter defines which Web servers participate within the cookie domain and have the ability to receive and update the ObSSOCookie. This cookie domain is not used to populate the ObSSOCookie; rather it defines which domain the ObSSOCookie is valid for, and which Web servers have the ability to accept and change the ObSSOCookie contents. Default: If the client side domain can be determined during registration, the Primary Cookie Domain is populated with that value. However, if no domain is found, there is no value and WebGate uses the host-based cookie. **Note**: The more general the domain name, the more inclusive your single sign-on implementation will be. For example, if you specify b.com as your primary cookie domain, users will be able to perform single sign-on for resources on b.com and on a.b.com. However, if you specify a.b.com as your primary cookie domain, users will have to re-authenticate when they request resources on b.com.
State ***Only in the console***.	Specifies whether this registration is enabled or disabled. Default = Enabled
Max Cache Elements	Number of elements maintained in the cache. Caches are the following: ▪ Resource to Authentication Scheme—This cache maintains information about Resources (URLs), including whether it is protected and, if so, the authentication scheme used for protection. ▪ (11g WebGate only) Resource to Authorization Policy—This cache maintains information about Resources and associated authorization policy—This cache stores authentication scheme information for a specific authentication scheme ID. The value of this setting refers to the maximum consolidated count for elements in these caches. Default = 100000
Cache Timeout (seconds)	Amount of time cached information remains in the WebGate caches (Resource to Authentication Scheme, Authentication Schemes, and 11g WebGate only Resource to Authorization Policy) when the information is neither used nor referenced. Default = 1800 (seconds)
Token Validity Period (seconds) ***11g WebGate only***	Maximum valid time period for an agent token (the content of OAMAuthnCookie for 11g WebGate). Default = 3600 (seconds) **Note**: For 10g WebGates, use Cookie Session Time to set the Token Validity Period.
Max Connections	The maximum number of connections that this WebGate can establish with the OAM Server. This number must be the same as (or greater than) the number of connections that are actually associated with this agent. Default = 1
Max Session Time	Maximum time to keep network connections from this WebGate to the OAM Server alive. After elapsed time, all the WebGate to OAM Server network connections will be shutdown and replaced with new ones. The unit in which to define this value is based on the maxSessionTimeUnits user-defined parameter which can be minutes or hours. When maxSessionTimeUnits is not defined, the unit is defaulted to hours.

Table 16–3 (Cont.) Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages

Element	Description
Failover Threshold	Number representing the point when this WebGate opens connections to a Secondary OAM Server. Default = 1 For example, if you type 30 in this field and the number of connections to primary OAM Server falls to 29, this Agent opens connections to secondary OAM Server.
AAA Timeout Threshold	Number (in seconds) to wait for a response from the OAM Server. If this parameter is set, it is used as an application TCP/IP timeout instead of the default TCP/IP timeout. Default = -1 (default network TCP/IP timeout is used) If using a simple mode WebGate, you can improve the response time of the OAM login page by changing the `aaaTimeoutThreshold` time parameter in the WebGate profile from -1 to 10. A typical value for this parameter is between 30 and 60 seconds. If set to a very low value, the socket connection can be closed before a reply from OAM Server is received, resulting in an error. For example, suppose a WebGate is configured to talk to one primary OAM Server and one secondary OAM Server. If the network wire is pulled from the primary OAM Server, the WebGate waits for the TCP/IP timeout to learn that there is no connection to the primary OAM Server. The WebGate tries to reestablish the connections to available servers starting with the primary OAM Server. Again, the Agent waits for the TCP/IP timeout to determine if a connection can be established. If it cannot, the next server in the list is tried. If a connection can be established to another OAM Server (either a primary or secondary), the requests are re-routed. However this can take longer than desired. When finding new connections, WebGate checks the list of available servers in the order specified in its configuration. If there is only one primary OAM Server and one secondary OAM Server specified, and the connection to the primary OAM Server times out, the Agent still tries the primary OAM Server first. As a result, the Agent cannot send requests to an OAM Server for a period greater than twice the setting in the OAM Server Timeout Threshold. If the OAM Server takes longer to service a request than the value of the timeout threshold, the Agent abandons the request and retries the request on a new connection. Note that the new connection that is returned from the connection pool can be to the same OAM Server, depending on your connection pool settings. Also, other OAM Server may also take longer to process the request than the time specified on the threshold. In these cases, the Agent can continue to retry the request until the OAM Server is shut down.
ServerConnectionReadTimeout	This parameter can be configured in the ASDK Agent User Defined Parameters section, for further timeout fine-tuning. This setting can be configured for TCP read timeout if required. The read timeout is the timeout on waiting to read data. Specifically, if the server fails to send a byte n seconds after the last byte, a read timeout error will be raised.
poolTimeOut	This parameter can be configured in the ASDK Agent User Defined Parameters section. poolTimeout is the maximum time a request thread will wait to get a connection from the connection pool, before throwing an exception. The default is 30 seconds.
Idle Session Timeout ***10g WebGate only***, Chapter 25	Default: 3600 Release 7.0.4 WebGates enforced their own idle session timeout only. 10.1.4.0.1 WebGates enforced the most restrictive timeout value among all WebGates the token had visited. With 10*g* (10.1.4.3), the 7.0.4 behavior was reinstated as the default with this element. To set Idle Session Timeout logic: ▪ The default value of `leastComponentIdleTimeout` instructs the WebGate to use the most restrictive timeout value for idle session timeout enforcement. ▪ A value of `currentComponentIdleTimeout` instructs the WebGates to use the current WebGate timeout value for idle session timeout enforcement.

Table 16–3 (Cont.) Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages

Element	Description
Preferred Host	Specifies how the hostname appears in all HTTP requests as users attempt to access the protected Web server. The hostname within the HTTP request is translated into the value entered into this field regardless of the way it was defined in a user's HTTP request. The Preferred Host function prevents security holes that can be inadvertently created if a host's identifier is not included in the Host Identifiers list. However, it cannot be used with virtual Web hosting. For virtual hosting, you must use the Host Identifiers feature. Defaults to Name (of WebGate registration)
User Defined Parameters	See Also: "About User-Defined WebGate Parameters" on page 16-5 and Oracle Fusion Middleware Performance and Tuning Guide
Logout URL ***10g and 11g WebGates***	The Logout URL triggers the logout handler, which removes the cookie (ObSSOCookie for 10g WebGates; OAMAuthnCookie for 11g WebGates) and requires the user to re-authenticate the next time he accesses a resource protected by Access Manager. Default = [] (not set) **Note**: This is the standard 10g WebGate configuration parameter used to trigger initial logout through a customized local logout page as described in "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers" on page 25-22.
Additional Logout for 11g WebGate Only	For 11g WebGate single sign-off behavior, specific logout elements and values automate the redirect to a central Logout URL, callback URL, and end_URL. **See Also**: Table 22–2, " Logout Details After Registration (ObAccessClient.xml)"
Logout Callback URL ***11g WebGate only***	The URL to `oam_logout_success`, which clears cookies during the call back. This can be a URI format without *host:port* (recommended), where the OAM Server calls back on the *host:port* of the original resource request. For example: Default = /oam_logout_success This can also be a full URL format with a *host:port*, where OAM Server calls back directly without reconstructing callback URL. **Note**: In the remote registration template this parameter is named logoutCallbackUrl (Table 16–10). **See Also**: Table 22–2, " Logout Details After Registration (ObAccessClient.xml)"
Logout Redirect URL ***11g WebGate only***	This parameter is automatically populated after agent registration completes.By default, this is based on the OAM Server host name with a default port of 14200. For example: Default = http://*OAMServer_host*:14200/oam/server/logout **See Also**: Table 22–2, " Logout Details After Registration (ObAccessClient.xml)"
Logout Target URL ***11g WebGate only***	The value is the name for the query parameter that the OPSS applications passes to WebGate during logout; the query parameter specifies the target URL of the landing page after logout completes. Default: end_url **Note**: The end_url value is configured using param.logout.targeturl in jps-config.xml. **See Also**: Table 22–2, " Logout Details After Registration (ObAccessClient.xml)"
Sleep for (seconds)	The frequency (in seconds) with which the OAM Server checks its connections to the directory server. For example, if you set a value of 60 seconds, the OAM Server checks its connections every 60 seconds from the time it comes up. Default: 60 (seconds)

Table 16–3 (Cont.) Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages

Element	Description
Cache Pragma Header Cache Control Header ***WebGate only (not Access Clients)***	These settings apply only to WebGates and control the browser's cache. By default, both parameters are set to no-cache. This prevents WebGate from caching data at the Web server application and the user's browser. However, this may prevent certain operations such as downloading PDF files or saving report files when the site is protected by a WebGate. You can set the Access Manager SDK caches that the WebGate uses to different levels. See http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html section 14.9 for details. All of the cache-response-directives are allowed. For example, you may need to set both cache values to public to allow PDF files to be downloaded. Defaults: no-cache See Also: Oracle Fusion Middleware Performance and Tuning Guide
Debug	Debugging can be enabled or not.
Deny on Not Protected ***WebGates only (not Access Clients)***	Oracle recommends enabling Deny On Not Protected. When enabled, this element denies access to all resources to which access is not explicitly allowed by a rule or policy. Enabling this can limit the number of times the WebGate queries the OAM Server, and can improve performance for large or busy Application Domains. ▪ 11g WebGate: Always enabled, and cannot be changed ▪ 10g WebGate: Can be disabled. **Important**: Deny on Not Protected overrides Host Identifiers and Preferred Host. Oracle recommends enabling Deny on Not Protected. Otherwise security holes can occur in large installations with multiple Host Identifiers, virtual hosts, and other complex configurations.
Allow Management Operations	This Agent Privilege function enables the provisioning of session operations per agent, as follows: ▪ Terminate session ▪ Enumerate sessions ▪ Add or Update attributes for an existing session ▪ List all attributes for a given session ID or read session Default: Disabled **Note**: Only privileged agents can invoke session management operations. When this parameter is enabled, session management requests (listed above) are processed by the OAM Server. If disabled, such requests are rejected for the agent.
11g WebGate only	
Allow Credential Collector Operations ***11.1.2 and later WebGate only***	Activates WebGate detached credential collector functionality for simple-form or dynamic multi-factor authentication. Default: Disabled See Also: "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109.
Sharepoint Impersonation User ***10g WebGate only***, Chapter 25	The trusted user for impersonation, in Active Directory. This user should not be used for anything other than impersonation. The constraints are the same as any other user in Active Directory. Note: SharePoint impersonation is separate and distinct from the Access Manager user impersonation feature described in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.

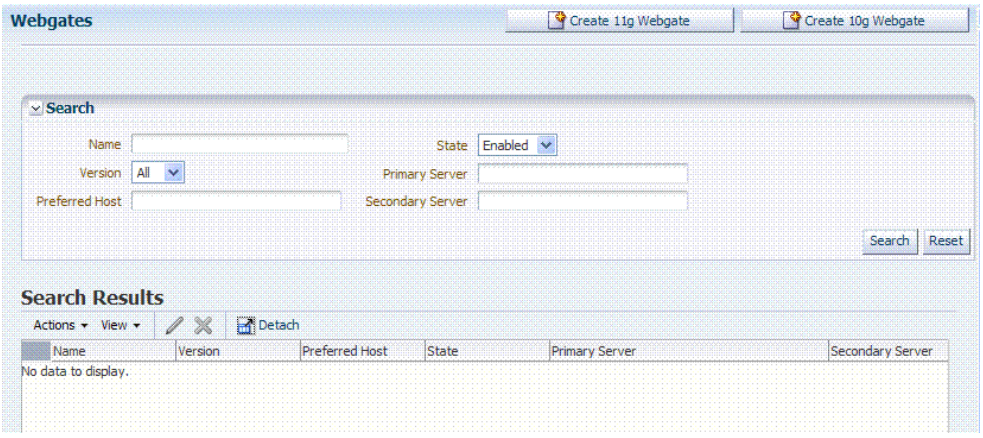
Table 16–3 (Cont.) Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages

Element	Description
Sharepoint Impersonation Password *10g WebGate only*, Chapter 25	This is the trusted user password for impersonation. The constraints are the same as any other user password in Active Directory. Oracle recommends that the user choose a very complex password, because the trusted user is granted powerful permissions. Also, check the box `Password Never Expires`. The impersonation module should be the only entity that ever sees the trusted user account. It is extremely difficult for an outside agency to discover that the password has expired.
Primary Server List	Identifies Primary Server details for this Agent. The default is based on the OAM Server: ▪ Server Name ▪ Host Name ▪ Host Port ▪ Max Number (maximum connections this WebGate will establish with the OAM Server (not the maximum total connections the WebGate can establish with all OAM Servers).)
Secondary Server List	Identifies Secondary OAM Server details for this agent, which must be specified manually: ▪ Server Name ▪ Host Name ▪ Host Port ▪ Max Number (maximum connections this WebGate will establish with the OAM Server (not the maximum total connections the WebGate can establish with all OAM Servers).)

16.4.2 Searching for an OAM Agent Registration

Figure 16–4 shows the WebGates Search controls, defaults, and the empty Search Results table. From this page you can create a new 11g WebGate or 10g WebGate registration, or search for a specific WebGate or group of WebGates (all 11g WebGates, for instance).

Figure 16–4 WebGate Search Controls and Create ... Buttons



If you do not know the exact name, you can use a wild card (*) in the search string. From the search results table, you can choose an name to open and view or edit the registration page.

The controls available on this page are described in Table 16–4.

Table 16–4 OAM Agent Search Controls

Control	Description
Create 11g WebGate	Click to open a fresh 11g WebGate registration page.
Create 10g WebGate	Click to open a fresh 10g WebGate registration page and see Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g".
Name	Enter the name (or partial name and wild card (*)) as defined on the registration page. For example: entering a* could return *Agent_WebGate_AccessDebugNew* in the result table.
Version	Choose a WebGate version to narrow the search and results: ■ 11g ■ 10g
Preferred Host	Enter all (or part of with a wild card (*)) hostname as it appears in HTTP requests. For example: iam* could return IAMSuiteAgent in the result stable.
State	Choose a WebGate state to narrow the search and results: ■ Enabled ■ Disabled
Primary Server	Enter the entire (or partial with a wild card (*)) Primary Server name.
Secondary Server	Enter the entire (or partial with a wild card (*)) Secondary Server name.

Prerequisites

The OAM Agent must be a registered agent of Access Manager.

To search for a OAM Agent registration

1. From the Oracle Access Management Console, click SSO Agents.
2. Double-click the OAM Agents node.
3. **Find**:
   - **All Enabled**: Select Version All, State All, and click the Search button.
   - **An Agent Version**: From the Agent version list, choose 10g or 11g and click the Search button.
   - **An Agent Name**: In the text field, enter the exact name of the instance you want to find and click the Search button. For example:

     ```
     my_OAM_Agent
     ```

4. Click the Search Results tab to display the results table, then:
   - **Edit or View:** Click the Edit command button in the tool bar to see the configuration page.
   - **Delete:** Proceed to "Deleting OAM Agent Registration Using the Console" on page 16-23.
   - **Detach**: Click Detach in the tool bar to expand the table to a full page.
   - **Reconfigure Table**: Select a View menu item to alter the appearance of the results table.
5. Apply any changes (or dismiss the page) when you finish.

16.4.3 Viewing or Editing an OAM Agent Registration Page in the Console

This procedure is the same whether you are editing a WebGate or Access Client registration. Users with valid Administrator credentials can change any setting for registered WebGates and programmatic Access Clients using the Oracle Access Management Console, as described in the following procedure. For example, you might want to revise the time-out threshold or other settings used by the OAM Proxy.

After changes, updated details are propagated through a runtime configuration update process. There is usually no need to copy the artifacts over to the WebGate configuration area. (Artifacts need only be copied to the WebGate directory path if the agent name, access client password, or security mode is changed.)

> **Note:** All changes made using the Oracle Access Management Console are taken up without restarting the application server, and are reflected automatically after the reconfiguration time-out period.

Prerequisites

The agent must be registered and available in the Oracle Access Management Console.

See Also:

- About Create OAM WebGate Page and Parameters

To view or modify details for a registered OAM Agent

1. From the Oracle Access Management Console, click SSO Agents.
   a. Double-click OAM Agents node to display the Search page.
   b. **Find the Registration**: See "Searching for an OAM Agent Registration".
   c. Click the Agent name in the results table to open the page.
2. Modify Agent details, and Primary or Secondary Server details, as needed (Table 16–1, Table 16–3).
3. **User-Defined Parameters**: Add or modify these as desired (Table 16–2).
4. Click Apply to submit changes and dismiss the Confirmation window (or close the page without applying changes).
5. Copy the artifacts as follows (or install WebGate with the same specifications, then copy artifacts), including any Simple or Cert mode files. For example, Open mode files include:

Agent & Artifacts	Artifacts
11g WebGate/Access Client ObAccessClient.xml and cwallet.sso	From the AdminServer (Console) host: $*DOMAIN_HOME*/output/$*Agent_Name*/ To the Agent host: $*11gWG_install_dir*/WebGate/config.
10g WebGate/Access Client ObAccessClient.xml **Note**: Go to Chapter 25 before completing this task.	From the AdminServer (Console) host: $*DOMAIN_HOME*/output/$*Agent_Name*/ To the Agent host $10g*WG_install_dir*/oblix/lib/ObAccessClient.xml

6. Proceed as needed for your deployment:

Part V, "Managing Access Manager SSO, Policies, and Testing".

16.4.4 Deleting OAM Agent Registration Using the Console

Users with valid Administrator credentials can perform the following procedure to delete a registered WebGate or Access Client from the Oracle Access Management Console.

Note: Deleting an agent registration removes only the registration (not the associated host identifier, Application Domain, resources, or the agent itself).

See Also:

- Understanding OAM Agent Registration Parameters in the Console

Prerequisites

Evaluate the Application Domain, resources, and policies associated with this agent and ensure that these are configured to use another agent (or be removed).

To delete a WebGate or Access Client registration

1. From the Oracle Access Management Console, click SSO Agents.
   a. Open the OAM Agents node to display the Search page.
   b. **Find the Registration**: See "Searching for an OAM Agent Registration".
   c. Select the desired registration from the results table, and open it to confirm it is the right agent to remove, close the page.
   d. Select the name in the results table, click the Delete (X) button, check the Confirmation dialog and then close the page.
   e. Confirm the Agent name is no longer listed in the navigation tree.
2. **Remove the 10g Agent Instance**: Perform the following steps (see "Removing a 10g WebGate from the Access Manager 11g Deployment" on page 25-27, if needed).
   a. Shut down the Web server.
   b. Remove WebGate software using the utility provided in the following directory path:

      $*WebGate_install_dir*/oui/bin

      ```
      Windows: setup.exe -d
      Unix: runInstaller -d
      ```

   c. Revert to the httpd.conf version before updates for WebGate. For example:

      Copy: httpd.conf.ORIG

      To: httpd.conf
   d. Restart the Web server.
   e. On the agent host, manually remove the WebGate instance directory:

      11g WebGate/Access Client: *$11gWebGate_instance_dir*/WebGate/config.

10g WebGate/Access Client: $*WebGate_install_dir*/oblix/lib/

16.5 Understanding the Remote Registration Tool, Modes, and Process

As an alternative to using the console for agent registration, you can use the remote registration utility, oamreg, with Oracle-provided templates. Administrators using the Oracle Access Management Console or remote registration utility must have credentials stored in the System Store (Chapter 5).

This section provides details about remote registration in the following topics:

- About Remote Registration Command Arguments and Modes
- Common Elements within Remote Registration Request Templates
- About Key Use, Generation, Provisioning, and Storage

See Also: "Introduction to Remote Registration" on page 15-8

16.5.1 About Remote Registration Command Arguments and Modes

Before using the remote registration tool, two environment variables within the script must be set as shown in the samples in Table 16–5, which presume the location of the tool to be $*OAM_REG_HOME* on a Linux system. Your environment might be different.

Table 16–5 Environment Variables to Set within oamreg

Environment Variable	Description
OAM_REG_HOME	The directory under which RREG.tar was exploded, followed by /rreg: $*OAM_HOME*/oam/server/rreg/client/rreg
JAVA_HOME	The location where Java is located on the client computer. For example: $*WLS_HOME*/Middleware/jdk160_11. Note: $JAVA_HOME should point to JDK 1.6.

Additionally, before using the remote registration tool, you must modify several tags in the request file, as described later (Table 16–9).

Remote Registration Command Arguments

The arguments required to run the remote registration script are listed in Table 16–6.

Table 16–6 Remote Registration Command Arguments: mode

Arguments	Description
mode	Either: ▪ `inband` ▪ `outofband`
input/`filename.xml`	Either the absolute path to the input file (*request.xml or an *agentName*_Response.xml), or the path relative to the value of $OAM_REG_HOME. The preferred location is $*OAM_REG_HOME*/input

Remote Registration Sample Commands

Sample commands are shown in Table 16–7, which presume the location of the tool to be $*OAM_REG_HOME* on a Linux system.

Table 16–7 Remote Registration Command Samples

Command Type	Sample (on Linux)
In-band Administrator In-band Request	`./bin/oamreg.sh inband input/*Request.xml`
In-band Administrator Submitted Request	`./bin/oamreg.sh outofband input/starting_request.xml`
Out-of-band Administrator Returned Response	`./bin/oamreg.sh outofband input/agentName_Response.xml`

[prompt_flag] value: [-noprompt]	Optional. When -noprompt is used, oamreg does not wait for prompts (password, and so on). Instead these values can be piped in, either from an input file or from the command line itself using an echo command.
	Examples from $OAM_REG_HOME location:
	`(echo username; echo password; echo WebGate_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt config.file`
	`(echo username; echo password; echo WebGate_password; echo httpscert_trust_prompt;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`
	`(echo username; echo password; echo WebGate_password; echo cert_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`
	`(echo username; echo password; echo WebGate_password; echo httpscert_trust_prompt; echo cert_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`
	See Also: "Updating Agents Remotely" on page 16-37

Note: After launching the script, Administrators are prompted for a username and password (unless -noprompt is used as shown in Table 16–7.)

After running the script, messages inform you of success or failure. Following a successful registration or update, you must copy the artifacts to the Agent host, as outlined in "About Updated Agent Configuration Files" on page 15-10.

16.5.2 Common Elements within Remote Registration Request Templates

Table 16–8, shows the global elements that are common within all remote registration request files, regardless of agent type.

Note: In Table 16–8, descriptions of each element are omitted; see Table 16–1.

Table 16–8 Common Elements in Remote Registration Requests

Element	Example
<serverAddress>	`<serverAddress>http://{oam_admin_server_host}:{oam_admin_server_port}</serverAddress>`
<agentName>	`<agentName>RREG_OAM</agentName>`
<hostIdentifier>	`<hostIdentifier>RREG_HostId11G</hostIdentifier>`

Table 16–8 (Cont.) Common Elements in Remote Registration Requests

Element	Example
Extended Templates Only	
<agentBaseUrl>	<agentBaseUrl>http://{*web_server_host):(web_server_port*}</agentBaseUrl>
<autoCreatePolicy>	<autoCreatePolicy>true</autoCreatePolicy>
<applicationDomain>	<applicationDomain>RREG_OAM11G</applicationDomain>
<virtualhost>	<virtualhost>false<virtualhost>

16.5.3 About Key Use, Generation, Provisioning, and Storage

Each registered agent has a symmetric key, regardless of the registration method (Oracle Access Management Console versus remote registration).

Each application will have a symmetric key whether it is protected through mod_osso, or an OAM Agent. This key is generated by the registration tool. Storage of the application mapping, key, and type of Agent persists in the system configuration for retrieval as needed.

Key Use

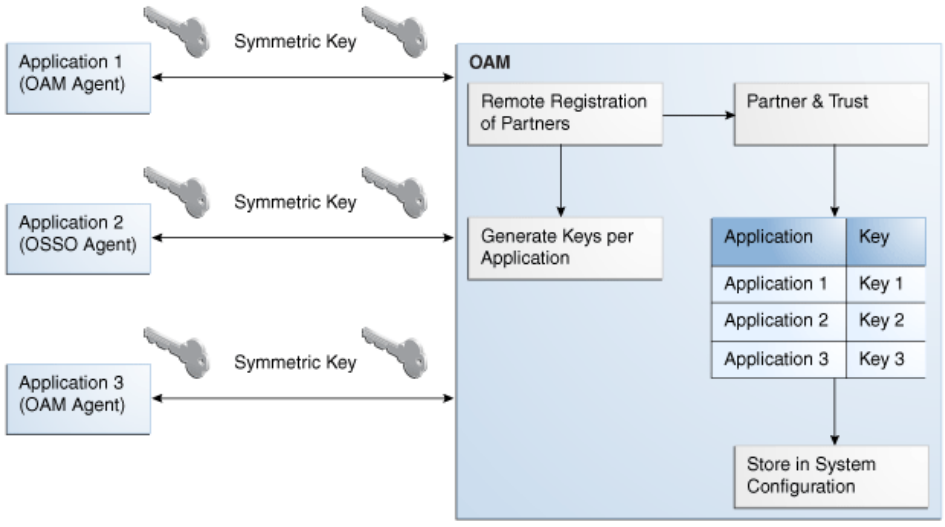
Each 11g WebGate agent has its own secret key that is shared between the agent and the OAM Server. If one 11g WebGate is compromised, other 11g WebGates are unaffected. The following presents an overview:

- Encrypt/Decrypt the host-based WebGate-specific OAMAuthnCookie_ *<host:port>_<random number>*.
- Encrypt/Decrypt the data that is redirected between WebGate and OAM Server.

Key Generation

Figure 16–5 illustrates the process of key generation, which occurs automatically when the agent is registered, regardless of the method used (Oracle Access Management Console versus remote registration). There is one symmetric key per agent.

Figure 16–5 Key Generation



Key Accessibility and Provisioning

Each Agent specific key must be accessible to the corresponding WebGate through a secure local storage on the client machine. Cryptographic keys are not stored in the data store. Instead, an alias to an entry in a Java keystore or CSF repository is stored; the Partner and Trust Management API obtain the actual key when it is requested. The agent specific secret key:

- Is provisioned during remote registration (either in-band mode or out-of-band mode)
- Is unique so that it can uniquely identify each agent.
- Is distributed securely back to the agent (either through the wire during in-band mode or through a separate secure channel during out-of-band mode).
- Is saved in the Oracle Secret Store, in the SSO wallet. SSO wallet creation applies only to 11g WebGates (not to 10g WebGates or other agent types).

> **Note:** The Oracle Secret Store is a container that consolidates the storage of secret keys and other security-related secret information inside the Oracle Wallet, not in plain-text. The SSO wallet relies on underlying file system security to protect its data. Opening this wallet does not require a password. The SSO wallet depends on the operating system and file permissions for its security.

- Is saved in the Oracle Secret Store, in an auto-login editable SSO wallet, upon completion of registration.

Key Storage

The SSO wallet containing the agent key must be located in cwallet.sso, in the directory with ObAccessClient.xml in *WebGate_instance_dir*/WebGate/config (for example, *$WebTier_MW_Home*/Oracle_WT1/instances).

The SSO wallet does not require a user password, and should be protected with the proper file permission (700) or registry on Windows.

16.6 Understanding Remote Registration Templates: OAM Agents

Oracle provides both a short and extended registration request template for use with the remote agent registration tool: oamreg.sh (Linux) or oamreg.bat (Windows). This topic focuses on OAM Agent templates (WebGates and Access Clients).

Regardless of the template you choose (short or extended), only a few differences exist between 11g and 10g OAM Agent templates, listed in Table 16–9 and stored in `$OAM_REG_HOME/input/`.

Table 16–9 Remote Registration Request Templates for OAM Agents

Template Type	Template Name in $OAM_REG_HOME/input/
Abbreviated (Short) Form	OAM11GRequest_short.xml (11g WebGates) OAMRequest_short.xml (10g WebGates)
Extended (Full) Form	OAM11gRequest.xml (11g WebGates) OAMRequest.xml (10g WebGates)
Other Templates	For a look at these specialized tasks and templates, see:
Update Agent	▪ "Updating Agents Remotely" on page 16-37
Create Policies, Update Policies	▪ "Managing Policies and Application Domains Remotely" on page 20-81
Out-of-band Response	▪ "Performing Out-of-Band Remote Registration" on page 16-34

Note: Despite being nearly identical for both 10g and 11g WebGates, be sure to copy and use the appropriate request for your release.

16.6.1 OAM Agent Parameters for Remote Registration

Table 16–10 describes elements specific to OAM Agent remote registration requests. Element names in request templates might differ slightly from counterparts in the Oracle Access Management Console. Unless explicitly stated, all information applies equally to requests for both 10g and 11g WebGates/Access Clients. Protected, public, and excluded resource lists are included in both the short and extended request templates for OAM Agents.

Note: In Table 16–10, descriptions of each element are omitted because they are shown in Table 16–3.

Table 16–10 Elements in Extended OAM Agent Remote Registration Requests

Element	Example
<serverAddress> <agentName> <hostIdentifier> <agentBaseUrl> <autoCreatePolicy> <applicationDomain> <virtualhost>	See Table 16–8, " Common Elements in Remote Registration Requests".
<hostPortVariationsList>	<hostPortVariationsList> <host>host1</host> <port>7777</port> </hostPortVariations> <host>host2</host> <port>7778</port> </hostPortVariations> </hostPortVariationsList>
<protectedResourcesList>	<protectedResourcesList> <resource>/</resource> </protectedResourcesList>
<publicResourcesList>	<publicResourcesList> <resource>/public/index.html </resource> </publicResourcesList>
<excludedresourcesList>	<excludedresourcesList> <resource>/excluded/index.html </resource> </excludedresourcesList>
<primaryCookieDomain> ***10g Request Only*** In OAMRequest.xml (10g WebGates) <hostIdentifier> is also used as preferred HTTP host	<primaryCookieDomain>{client_domain} </primaryCookieDomain>
<maxCacheElems>	<maxCacheElems>100000 </maxCacheElems>
<cacheTimeout>	<cacheTimeout>1800</cacheTimeout>
<tokenValidityPeriod> ***11g Request Only***	<tokenValidityPeriod>3600 </tokenValidityPeriod>
<cookieSessionTime> ***10g WebGate only***, Chapter 25	<cookieSessionTime>3600 </cookieSessionTime>
<maxConnections>	<maxConnections>1</maxConnections>
<maxSessionTime>	<maxSessionTime>24</maxSessionTime>
<idleSessionTimeout> ***10g WebGate only***, Chapter 25	<idleSessionTimeout>3600> </idleSessionTimeout
<failoverThreshold>	<failoverThreshold>1 </failoverThreshold>
<aaaTimeoutThreshold>-	<aaaTimeoutThreshold>-1 </aaaTimeoutThreshold>
<sleepFor>	<sleepFor>60</sleepFor>
<debug>	<debug>false</debug>
<security>	<security>open</security

Table 16–10 (Cont.) Elements in Extended OAM Agent Remote Registration Requests

Element	Example
<denyOnNotProtected>	<denyOnNotProtected>1 </denyOnNotProtected>
<allowManagementOperations>	<allowManagementOperations>false/<allowManagementOperations>
<cachePragmaHeader>	<cachePragmaHeader>no-cache </cachePragmaHeader>
<cacheControlHeader>	<cacheControlHeader>no-cache </cacheControlHeader
<ipValidation>	<ipValidation>0</ipValidation>
<ipValidationExceptions>	<ipValidationExceptions> <ipAddress>10,11,11,11</ipAddress> <ipAddress>10,11,11,12</ipAddress> <ipAddress>10,11,11,13</ipAddress> </ipValidationExceptions>
<logOutUrls>	<logOutUrls> <url>/logout1.html</url> <url>/logout2.html</url> </logOutUrls>
<logoutCallbackUrl> ***11g Request Only***	<logoutCallbackUrl>/oam_logout_success </logoutCallbackUrl>
<logoutTargetUrlParamName> ***11g Request Only***	<logoutTargetUrlParamName>end_url </logoutTargetUrlParamName>
User-Defined Parameter Names	**Examples** <userDefinedParameters> <userDefinedParam> <name>...</name> <value>...</value> </userDefinedParam>
MaxPostDataLength	<userDefinedParameters> <userDefinedParam> <name>MaxPostDataLength</name> <value>750000</value> </userDefinedParam>
maxSessionTimeUnits	<userDefinedParameters> <name>maxSessionTimeUnits</name> <value>hours</value> </userDefinedParam>
useIISBuiltinAuthentication	<userDefinedParameters> <name>useIISBuiltinAuthentication </name> <value>false</value> </userDefinedParam>
idleSessionTimeoutLogic 10g WebGates only	<userDefinedParameters> <name>idleSessionTimeoutLogic </name> <value>leastComponentIdleTimeout </value> </userDefinedParam>
URLInUTF8Format	<userDefinedParameters> <name>URLInUTF8Format</name> <value>true</value> </userDefinedParam>

Table 16–10 (Cont.) Elements in Extended OAM Agent Remote Registration Requests

Element	Example
inactiveReconfigPeriod ***Shared secret applies to only 10g WebGate*** ***Configuration applies to only 11g WebGate.***	<userDefinedParameters> <name>inactiveReconfigPeriod</name> <value>10</value> </userDefinedParam>
WaitForFailover	<userDefinedParameters> <name>WaitForFailover</name> <value>-1</value> </userDefinedParam>
proxySSLHeaderVar	<userDefinedParameters> <name>proxySSLHeaderVar</name> <value>IS_SSL</value> </userDefinedParam>
client_request_retry_attempts	<userDefinedParameters> <name>client_request_retry_attempts </name> <value>1</value> </userDefinedParam>
ContentLengthFor401Response	<userDefinedParameters> <name>ContentLengthFor401Response </name> <value>0</value> </userDefinedParam>
SUN61HttpProtocolVersion	<userDefinedParameters> <name>SUN61HttpProtocolVersion </name> <value>1.0</value> </userDefinedParam>
impersonationCredentials	<userDefinedParameters> <name>*username*:password </name> <value>cred</value> </userDefinedParam>
UseWebGateExtForPassthrough	<userDefinedParameters> <name>UseWebGateExtForPassthrough </name> <value>false</value> </userDefinedParam>
syncOperationMode	<userDefinedParameters> <name>syncOperationMode</name> <value>false</value> </userDefinedParam>
filterOAMAuthnCookie ***11g Request only.***	<userDefinedParameters> <name>filterOAMAuthnCookie</name> <value>true</value> </userDefinedParam>

16.7 Performing Remote Registration for OAM Agents

This section includes the following topics describing how to perform remote registration, which is similar regardless of the agent type:

- Acquiring and Setting Up the Remote Registration Tool
- Creating Your Remote Registration Request
- Performing In-Band Remote Registration
- Performing Out-of-Band Remote Registration

16.7.1 Acquiring and Setting Up the Remote Registration Tool

The oamreg client tool can be used anywhere, not just on the OAM Server. If the oamreg home is already exploded, you can use the following procedure to acquire and update the oamreg script for your operating system:

Windows: oamreg.bat

Linux: oamreg.sh

> **Note:** Oracle Recommends using the latest tool and files by applying the latest bundle patch and untarring RREG.tar.gz again as described here.

For remote registration, two variables are required: JAVA_HOME and OAM_REG_HOME, as described in Table 16–11.

Table 16–11 Variables Required for Remote Registration

Location	Variable	Description
Client Side	JAVA_HOME	The JDK 1.6 location on the computer that relies on $JAVA_HOME already set in the environment.
	OAM_REG_HOME	The absolute file location for RREG HOME (directory under which RREG.tar was exploded, followed by /rreg and one directory above where the scripts reside). For example: *$OAM_HOME*/oam/server/rreg/client/rreg If $ORACLE_IDM_HOME is $*MW_HOME*/Oracle_IDM: export $OAM_REG_HOME=$*MW_HOME*/Oracle_IDM/oam/server/rreg
rreg folder location (not RREG.tar.gz location)	JAVA_HOME	Relies on $JAVA_HOME already set in the environment.
	OAM_REG_HOME	Is already set in the script during the installation.

See Also: "About Remote Registration Command Arguments and Modes" on page 16-24

To acquire the tool and update the script with your environment variables

1. Locate RREG.tar.gz file in the following path:

   ```
   $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
   ```

2. Untar RREG.tar.gz file, which creates directories beneath `/client` containing the required tool and templates.
3. In the oamreg script (.../`rreg/client/rreg/bin`) set environment variables as follows:
   a. Set JAVA_HOME to JDK 1.6 (Table 16–11).
   b. Set OAM_REG_HOME to the *exploded_dir_for_RREG*.tar/rreg based on your environment (client side or server side Table 16–11).
4. Proceed with "Creating Your Remote Registration Request".

16.7.2 Creating Your Remote Registration Request

You can use the following procedure to create an appropriate *Request*.xml file to provide input for the specific agent you want to register.

Prerequisites

Understanding Remote Registration Templates: OAM Agents

To create the registration request

1. Locate the required *Request*.xml input file for the agent you want to register:

   Regardless of the template you choose (short or extended), only a few differences exist between 11g and 10g agent templates stored in `$OAM_REG_HOME/input/`. For example:

   OAM11GRequest.xml

2. Copy the request file to a new name. For example:

   From: OAM11GRequest.xml
   To: *my11gagent_request*.xml

3. In the Request file, modify information to reflect details for your agent and the resources to protect using details in:

   - Table 16–9, " Remote Registration Request Templates for OAM Agents"
   - Table 16–10, " Elements in Extended OAM Agent Remote Registration Requests"

4. Proceed with task needed for your environment:

   - Performing In-Band Remote Registration
   - Performing Out-of-Band Remote Registration

16.7.3 Performing In-Band Remote Registration

The OAM Administrator within the network performs all tasks. This section provides the steps to perform in-band remote registration, regardless of agent type. For this example, an OAM Agent is being registered using the short request on a Linux system. Your agent type, request template, and output files will be different.

> **See Also:** Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management chapter "Installing and Configuring Oracle HTTP Server 11g WebGate for OAM"

Prerequisites

- Acquiring and Setting Up the Remote Registration Tool
- Creating Your Remote Registration Request

To perform in-band remote registration

1. On the computer hosting the Agent, run the registration command and specify your own *Request*.xml as the input file. For example:

   `./bin/oamreg.sh inband input/`*myagent_request*.xml

2. Provide the registration Administrator user name and password when asked.

3. Read the messages on-screen to confirm:

- **Success**: On-screen message confirms

  `In-band registration process completed successfully!`

  `Native Configuration File Location: "... created in output folder ..."`

  The output folder is in the same location where RREG.tar.gz was expanded: /rreg/output/*AgentName*/

4. Review the native configuration file created for the agent in the /rreg/output/*AgentName*/ folder.
5. **Finalize Registration**: Perform the following steps to replace the earlier agent configuration file if it is not already replaced:
   a. Copy artifacts in /rreg/output/*AgentName*/ to update the agent configuration. For example:

      From the AdminServer (Console) host

      `/rreg/output/`*Agent_Name*`/ObAccessClient.xml` and `cwallet.sso`

      To the Agent host: $*11gWG_install_dir*`/WebGate/config`. For example:

      $*WebTier_MW_Home*/Oracle_WT1/instances/instance1/config/OHS/ohs1/WebGate/config

   b. Restart the OAM Server hosting the agent.
6. Proceed with "Validating Remote Registration and Resource Protection".

16.7.4 Performing Out-of-Band Remote Registration

This section provides steps for Administrators outside (and inside) the network as they work together to register an agent remotely.

During out-of-band remote registration, an administrator outside the network submits a registration request to an Administrator within the network. After processing the request, the in-band Administrator returns the following files to the out-of-band Administrator to configure his environment:

Table 16–12 Files Returned by in-band Administrator to out-of-band Administrator

File	Description
*agentName*_Response.xml	Returned to, and used by, the out-of-band Administrator. Oracle recommends that you do not open or edit *agentName*_Response.xml.
Native Web server configuration files	Returned to, and used by, the out-of-band Administrator to update his Web server.
See Also	"About Updated Agent Configuration Files" on page 15-10

The steps performed by each Administrator are identified:

- **In-Band Administrator**: Identifies a task performed by the Web server Administrator within the network.
- **Out-of-Band Administrator** Identifies a task performed by the Web server Administrator outside the network

> **See Also:** Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management chapter "Installing and Configuring Oracle HTTP Server 11g WebGate for OAM"

Steps here illustrate registering an OAM Agent on a Linux system. Your templates and output files will be different.

Prerequisites

Acquiring and Setting Up the Remote Registration Tool

> **See Also:** Part VI, "Registering and Using Agents with Access Manager", if needed.

To perform out-of-band remote registration

1. **Out-of-Band Administrator**: Create and send your *starting_request*.xml file to the in-band Administrator for processing (see "Creating Your Remote Registration Request" on page 16-33):

   `$WLS_Home/Middleware/Oracle_`
   `$IDM1/oam/server/rreg/client/rreg/output/AgentName/starting_request.xml`

2. **In-Band Administrator**:

   a. Run the registration command and specify the out-of-band Administrator's *starting_request*.xml as the input file. For example:

      `./bin/oamreg.sh outofband input/starting_request.xml`

   b. Provide the Registration Administrator user name and password when asked.

   c. Read messages on-screen to confirm:

      Success: "... registration process completed successfully!

      Response.xml location: "... created in input folder ..."

      The input folder is in the same location where RREG.tar.gz was expanded: /rreg/input/*AgentName*/

   d. Return the *agentName*_Response.xml file to the out-of-band Administrator along with any other artifacts. For example:

      *agentName*_Response.xml

3. **Out-of-Band Administrator**: Updates the environment, as follows.

   a. On the computer hosting the Agent, run the remote registration command and specify the received *agentName*_Response.xml as the input file. For example:

      `./bin/oamreg.sh outofband input/agentName_Response.xml`

   b. Copy artifacts generated in /rreg/output/*AgentName*/ to update the agent configuration (), then restart the OAM Server hosting the agent. For example, ObAccessClient.xml and cwallet.sso:

      From the AdminServer (Console) host `/rreg/output/Agent_Name/ObAccessClient.xml` and `cwallet.sso`

      To the Agent host: $*11gWG_install_dir*/`WebGate/config`. For example:

      $*WebTier_MW_Home*/Oracle_WT1/instances/instance1/config/OHS/ohs1/WebGate/config

   c. Proceed with "Validating Remote Registration and Resource Protection".

16.8 Introduction to Updating Agents Remotely

Several remote management modes are provided to help Administrators quickly update, validate, or delete an existing agent registration. This section provides the following topics:

- About Remote Agent Update Modes
- About Remote 11g OAM Agent Updates Template

16.8.1 About Remote Agent Update Modes

Table 16–13 presents remote agent management modes. Command parameters include the mode, input *Request.xml file (a relative path with respect to $OAM_REG_HOME, the preferred location for the input *Request.xml files):

```
./oamreg.sh <mode> <input_file> [prompt_flag] [component.oam.config_file] <mode>
value
```

Table 16–13 Remote Agent Update Modes and Input Files

Mode and Input Files	Description and Syntax
agentUpdate mode *OAM11GUpdateAgentRequest.xml* *OAMUpdateAgentRequest.xml*	Allows Administrators to update existing agent attributes, regardless of agent type: `./bin/oamreg.sh agentUpdate input/*UpdateAgentRequest.xml` **See Also**: *OpenSSOUpdateAgentRequest*, Chapter 23 *OSSOUpdateAgentRequest*, Chapter 24
agentValidate mode *No input file needed.*	Validates whether the agent is already provisioned in Oracle Access Manager: `./bin/oamreg.sh agentValidate agentname`
agentDelete mode *No input file needed.*	Allows Administrators to delete the agent registration: `./bin/oamreg.sh agentDelete agentname`

16.8.2 About Remote 11g OAM Agent Updates Template

You use `OAM11GUpdateAgentRequest.xml` to pass specific Agent-update values to the remote registration tool, oamreg. The primary differences between the update request and the original registration request is that the update request.

Table 16–14 Delta: OAM Agent Update versus Registration Request

Delta	Element
Adds	<ipValidation>
Omits	<ipValidationExceptions>
	<hostidentifier>
	<virtualhost>
	<hostportVariations>
	<authCreatePolicy> and application domain-related elements
	<ssoServerVersion>
	<idleSessionTimeout>

See Also:

- Table 16–3, " Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages"

16.9 Updating Agents Remotely

This section provides the following topics for agents registered with Access Manager, regardless of agent type:

- Updating Agents Remotely
- Performing Remote Agent Validation
- Performing Remote Agent Removal

16.9.1 Updating Agents Remotely

This topic provides the steps to update agents registered with Access Manager, regardless of agent type.

Prerequisites

Review About Remote Agent Update Modes

See Also:

- Chapter 23, "Registering and Managing Legacy OpenSSO Agents"
- Chapter 24, "Registering and Managing Legacy OSSO Agents"
- "Managing 10g OAM Agents Remotely" on page 25-13

To remotely update an Agent registration

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. Create your update request using one of the following templates:
   - OAM11GUpdateAgentRequest.xml
   - OAMUpdateAgentRequest.xml (10g) Chapter 25
   - OSSOUpdateAgentRequest.xml Chapter 24
   - OpenSSOUpdateAgentRequest.xml Chapter 23
3. On the computer hosting the Agent, run the following command with `agentUpdate` mode specify your own *Request*.xml as the input file. For example:

   ```
   ./bin/oamreg.sh agentUpdate input/*UpdateAgentRequest.xml
   ```

4. Provide the registration Administrator user name and password when asked.
5. Read the messages on-screen to confirm:
   - Success: On-screen message confirms

     ```
     agentUpdate process completed successfully!

     Native Configuration File Location: "... created in output folder
     ..."
     ```

     The output folder is in the same location where RREG.tar.gz was expanded: /rreg/output/*AgentName*/
6. Finalize Agent Registration: Copy the updated ObAccessClient.xml and cwallet.sso.

   From the AdminServer (Console) host: /rreg/output/*Agent_Name*/

   To the Agent host: $*11gWG_install_dir*/WebGate/config. For example:

$*WebTier_MW_Home*/Oracle_WT1/instances/instance1/config/OHS/ohs1/WebGate/config

7. Restart the OAM Server that is hosting this agent and proceed to "Performing Remote Agent Validation".

16.9.2 Performing Remote Agent Validation

This topic provides the steps to validate agent registration, regardless of agent type.

Prerequisites

Review About Remote Agent Update Modes

To remotely validate an Agent registration

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. On the Agent host, run the following command in `agentValidate` mode. For example:

   ```
   ./bin/oamreg.sh agentValidate agentname
   ```

3. Provide the registration Administrator user name and password when asked.
4. Read the messages on-screen to confirm:
   - **Success**: On-screen message confirms

     ```
     AgentValidation process completed successfully!
     ```

16.9.3 Performing Remote Agent Removal

This topic provides the steps to remove a registered agent, regardless of agent type.

Prerequisites

Review About Remote Agent Update Modes

To remotely remove an Agent registration

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. On the computer hosting the Agent, run the following `agentDelete` command. For example:

   ```
   ./bin/oamreg.sh agentDelete agentname
   ```

3. Provide the registration Administrator user name and password when asked.
4. Read the messages on-screen to confirm:
   - **Success**: On-screen message confirms

     ```
     AgentDelete process completed successfully!
     ```

16.10 Validating Remote Registration and Resource Protection

You can use the following sections as a guide to validate registration of an agent regardless of the agent type. You must be an in-band Administrator to perform tasks

using the Oracle Access Management Console. Out-of-band Administrators must test authentication and access remotely.

- Validating Agent Registration using the Oracle Access Management Console
- Validating Authentication and Access After Remote Registration

16.10.1 Validating Agent Registration using the Oracle Access Management Console

Only an in-band Administrator can use the following procedure.

> **See Also:** Chapter 20, "Managing Policies to Protect Resources and Enable SSO"

To validate agent and application registration

1. **Validate Agent Registration** in the Oracle Access Management Console:
   a. Confirm Agent details under the System Configuration tab in the Oracle Access Management Console.
   b. Confirm the updated Agent configuration files are in the appropriate location, as described in "Performing Remote Registration for OAM Agents".
2. **Validate Shared Components**, Host identifier: Confirm that the host identifier is defined in the Oracle Access Management Console.
3. **Validate Application Domain**: Under the Policy Configuration tab, confirm there is a new Application Domain named after the registered agent. Resources in the Application Domain should be associated with the host identifier.
4. Proceed with "Validating Authentication and Access After Remote Registration".

16.10.2 Validating Authentication and Access After Remote Registration

After registration, protected resource should be accessible with proper authentication without restarting the AdminServer or OAM Server. Both in-band and out-of-band Administrators can use the following procedure to validate proper registration and policies.

The procedure here provides several methods for confirming that registration, authentication, and authorization are properly configured and operational. The procedures is nearly identical for all agent types.

To verify authentication and access after registration

1. Enter the URL for an application protected by the registered OAM Agent to confirm that the log in page appears (proving that the authentication redirect URL was specified appropriately). For example:

   ```
   http://exampleWebserverHost.sample.com:8100/resource1.html
   ```

2. On the Log In page, enter a valid username and password when asked, and click Login.
3. Check the OAM specific cookies are created in the browser session. For example:

   ObSSOCookie:

   ```
   Set-Cookie:
   ObSSOCookie=GGVEuvjmrMe%2FhbItbjT24CBmJo1eCIfDIwQ1atdGdnY4mt6kmdSekSFeAAFvFrZZZ
   xDfvpkfS3ZLZFbaZU2rAn0YYUM3JUWVYkYFwB%2BBK7V4x%2FeuYHj%2B8gwOyxhNYFna3iSx1MSZBE
   y51KTBfsDYOiw6R%2BCxUhOO8uZDTYHI3s0c7AQSyrEiQTuUV3nv1omaFZlk1GuZa4J7ycaGbIUyqwX
   ```

```
rM0cKuBJNd6sX1LiRj9HofYQsvUV7ToqeAOpDS7z9qs5LhqU5Vq60bBn12DTX6zNX6Lcc0L5tVwvh7%
2BnOAkz2%2BoDkLs%2BBTkeGcB3ppgC9;httponly; path=/; domain=.example.com;
```

OAM_ID Cookie:

```
Set-Cookie:
OAM_ID=v1.0~0~E1EBBC9846E09857060A68E79AEEB608~AA79FC43C695162B6CDE3738F40E94DA
6408D58B879AC3B467EBBD4800743C899843672B3511141FFABCF58B2CDCB700C83CC734A913625
7C4ABDA6913C9EF5A4E05C5D03D3514F2FECACD02F1C1B9314D76B4A68CB7A8BE42AEB09AFB98B8
EB; path=/; HttpOnly
```

4. Proceed as follows:
   - **Success**: If you authenticated successfully and were granted access to the resource; the configuration is working properly. Proceed with Steps 5 through 12 for further validations.
   - **Failure**: If you received an error during login or were denied access to the resource, check the following:
     - **Login Error**: Confirm that you provided a valid user id and password.
     - **Unavailable Resource**: Confirm that the resource is available.
     - **Wrong Redirect URL**: Verify the redirect URL in the Oracle Access Management Console.
5. **User Variations:** Perform steps 1 through 4 again with user variations to confirm appropriate behavior (either success for authorized users or failure for unauthorized users).
6. **Request Cancellation:** Perform a partial log in and click Cancel to confirm that the resource is not accessed.
7. **Modified Authentication URL:** Enter a nearly identical authentication URL as you perform Steps 1 through 5 to confirm appropriate response. For example, add a character to the URL string.
8. **Updated Resource:** Perform the following steps to ensure the resource is accessible. For example:

   Original Resource: /abc/test.html

   Updated Resource: /abc/xyz/test.html

   Without restarting the Oracle WebLogic Server:
   - Access the updated resource and confirm the user is asked to authenticate and the resource is accessible.
   - Access the original resource and confirm that the resource is accessible and the user is not asked for authentication.
9. **Various URL Patterns:** Verify authentication for various URL patterns as you perform steps 1 through 5.
10. **New Authentication Scheme:** Perform the following steps to confirm authentication operations without restarting the WebLogic Server.
    - Add a new authentication policy that uses a different Authentication Scheme.
    - Protect the resource using the new policy.
    - Without restarting the Oracle WebLogic Server, perform steps 1 through 4.

See Also: Chapter 20, "Managing Policies to Protect Resources and Enable SSO"

11. **CGI Resource Header Variable and Cookies:** Perform the following steps to confirm authentication operations without having to restart the WebLogic Server.
    - Add a new authentication policy to protect a Common Gateway Interface (CGI) resource and set the Response for "Authentication Successful".
    - Protect the resource using the new policy.
    - Access the CGI resource.
    - Check for the header values configured for the response in a CGI data dump.
12. **Agent Disabled**: Perform the following steps to validate accessibility and authentication if WebGate is disabled in ObAccessClient.xml (WebGate should pick up the enabled value from oam-config.xml).
    - Disable the Agent State.
    - Start the Web server and OAM Server.
    - Access an application protected by the Agent and confirm that you are asked to authenticate.

16.11 Replacing the IAMSuiteAgent with an 11g WebGate

You can skip this section if you are not replacing the IAMSuiteAgent with an 11g WebGate.

Access Manager and Oracle Identity Manager are among the Oracle Fusion Middleware 11g components. During initial configuration with the WebLogic Server Configuration Wizard, the IAMSuiteAgent is registered with Access Manager 11g along with the IDM domain host identifier and an Application Domain named for the agent.

Oracle Fusion Middleware uses Access Manager to protected Oracle Identity Management consoles out of the box using the IAMSuiteAgent.

To protect applications beyond containers, you can replace the IAMSuiteAgent with a 11g WebGate (to protect the same set of applications using the same Application Domain and policies as the pre-registered IAMSuiteAgent).

Task overview: Replacing the IAMSuiteAgent with an 11g WebGate

1. Registering a Replacement 11g WebGate for IAMSuiteAgent
2. Installing the Replacement 11g WebGate for IAMSuiteAgent
3. Updating the WebLogic Server Plug-in
4. Optional: Confirming the AutoLogin Host Identifier for an OAM / OIM Integration
5. Optional: Configuring OAM Security Providers for WebLogic
6. Optional: Disabling IAMSuiteAgent
7. Configuring Centralized Logout for 11g Webgates
8. Verification

16.11.1 Registering a Replacement 11g WebGate for IAMSuiteAgent

The following procedure walks through registering a replacement 11g WebGate using the remote registration tool, in-band mode.

See Also:

- Chapter 16 for more information about the remote registration tool, processing, and request files

In this example, `OAMRequest_short.xml` is used as a template to create an agent named *11g4IAM*, protecting */.../**, and declaring a public resource, `/public/index.html`. Your values will be different.

Note: To use IAM Suite policies with the replacement WebGate, ensure that the WebGate registration is configured to use the IAMSuiteAgent Host Identifier and Preferred Host.

To register an 11g WebGate to replace the IAMSuiteAgent

1. Acquire the Access Manager remote registration tool and set up the script for your environment. For example:

   a. Locate RREG.tar.gz file in the following path:

   ```
   $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
   ```

   b. Untar RREG.tar.gz file to any suitable location. For example: exploded_dir_for_RREG.tar/rreg/input/oamreg.

   c. In the oamreg script, set the following environment variables based on your situation (client side or server side) and information in Table 16–5:

   OAM_REG_HOME = *exploded_dir_for_RREG*.tar/rreg
   JAVA_HOME = *Java_location_on_the_computer*

2. Create the registration request and ensure that the `autoCreatePolicy` parameter is set to false:

   a. Locate OAMRequest_short.xml and copy it to a new file. For example:

   exploded_dir_for_RREG.tar/rreg/input/oamreg/

   Copy: OAM11gRequest_short.xml

   To: *11g4IAM*.xml

   b. Edit *11g4IAM*.xml to include details for your environment. For example, if you are changing from the IAMSuiteAgent to an 11g WebGate Agent your request might look like the following:

   ```
   <OAM11gRegRequest>
       <serverAddress>http://ruby.uk.example.com:7001</serverAddress>
       <hostIdentifier>11g4IAM</hostIdentifier>
       <agentName>11g4IAM</agentName>
       <autoCreatePolicy>false</autoCreatePolicy>
       <logOutUrls><url>/oamsso/logout.html</url></logOutUrls>
       ...retain defaults for remaining elements...
       ...
       ...
   </OAM11gRegRequest>
   ```

See Also: "Creating Your Remote Registration Request" on page 16-33

3. Register the agent. For example:

   a. Locate the remote registration script.

      Linux: rreg/bin/oamreg.sh

      Windows: rreg\bin\oamreg.bat

   b. From the directory containing the script, execute the script using inband mode. For example:

      $ ./bin/oamreg.sh inband input/*11g4IAM*.xml

      ```
      Welcome to OAM Remote Registration Tool!
      Parameters passed to the registration tool are:
      Mode: inband
      Filename: ...
      ```

   c. When prompted, enter the following information using values for your environment:

      ```
      Enter your agent username: userame
         Username:  userame
      Enter agent password: ********
      Do you want to enter a WebGate password?(y/n)
          n
      iv.Do you want to import an URIs file?(y/n)
          n
      ```

   d. Review the final message to confirm that this was a successful registration:

      ```
      Inband registration process completed successfully! Output artifacts are
      created in the output folder"
      ```

4. Log in to the Oracle Access Management Console and review your new registration:

   a. From the System Configuration tab, Access Manager section, open the OAM Agents node and locate your agent registration.

      See Also: "Searching for an OAM Agent Registration" on page 16-20

   b. Double-click the agent's name to display the registration page and review the details. For example:

      Note: If you install a fresh WebGate, enter matching details during installation.

      ---

   c. **OAM Proxy Port**—From the System Configuration tab, Common Configuration section, double-click Server Instances and locate the port on which the OAM Proxy is running.

5. Copy the artifacts as follows (or install WebGate with the same specifications, then copy artifacts), as described in "Installing the Replacement 11g WebGate for IAMSuiteAgent".

Agent & Artifacts	Artifacts
11g WebGate/Access Client ObAccessClient.xml and cwallet.sso	From the AdminServer (Console) host: $*DOMAIN_HOME*/output/$*Agent_Name*/ To the Agent host: $*11gWG_install_dir*/WebGate/config

6. Proceed to "Updating the WebLogic Server Plug-in".

16.11.2 Installing the Replacement 11g WebGate for IAMSuiteAgent

After provisioning you must install the 11g WebGate to replace the IAMSuiteAgent. During the installation, you must provide some of the same information for the WebGate as you did when provisioning it.

Prerequisites

Registering a Replacement 11g WebGate for IAMSuiteAgent

Task overview: Installing the 11g WebGate includes

1. Install the 11g WebGate as described in Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
2. Replace IAMSuiteAgent Registration as described in "Updating the WebLogic Server Plug-in".

16.11.3 Updating the WebLogic Server Plug-in

After provisioning and installing the 11g WebGate to replace the IAMSuiteAgent, the mod_wl_ohs.conf file requires specific entries to instruct the WebGate Web server to forward requests to the applications on the WebLogic Server.

> **Note:** The generic name of the WebLogic Server plug-in for Apache is mod_weblogic. For Oracle HTTP Server 11g, the name of this plug-in is mod_wl_ohs (the actual binary name is mod_wl_ohs.so). Examples show exact syntax for implementation.

Example 16–1 illustrates the areas that must be changed using sample entries. Entries for your environment will be different.

Example 16–1 Updates for the 11g WebGate in mod_wl_ohs.conf

```
<IfModule weblogic_module>
   <Location /oamconsole>
         SetHandler weblogic-handler
         WebLogicHost ruby.uk.example.com
         WebLogicPort    6162
   </Location>
   <Location apmmconsole>
         SetHandler weblogic-handler
         WebLogicHost ruby.uk.example.com
         WebLogicPort    6162
   </Location>
...

</IfModule>
```

Note: You need similar Location entries for each of the URIs for all the applications that were earlier accessed directly on the WebLogic Server.

Prerequisites

Installing the Replacement 11g WebGate for IAMSuiteAgent

To update the mod WebLogic configuration for your environment

1. Locate the mod_wl_ohs.conf file in the following path:

   $OHS-INSTANCE_HOME/config/OHS/*INSTANCE_NAME*/mod_wl_ohs.conf

2. Edit the file to include a Location element for each application URI that was previously accessed directly on the WebLogic Server (see Example 16–1).
3. Save the file.
4. Restart the Web server.
5. Proceed to the following task, as needed:
   - Confirming the AutoLogin Host Identifier for an OAM / OIM Integration
   - Configuring OAM Security Providers for WebLogic

16.11.4 Confirming the AutoLogin Host Identifier for an OAM / OIM Integration

This topic describes how to confirm (or configure) Oracle Identity Manager (OIM) automatic login functionality when you have Access Manager integrated with OIM.

Note: Skip this step if you do not have Access Manager 11g integrated with Oracle Identity Manager 11g.

The AutoLogin functionality when Oracle Identity Manager is integrated with Access Manager 11g requires the 10g WebGate Web server host name and port in the list of host identifiers for the IAMSuiteAgent.

Note: If you have a load balancer in front of the 11g WebGate Web server, you must also include the load balancer's host name and port during Step 3.

The agentBaseUrl parameter is used to update a given Host Identifier. However, if automatic policy creation is set to false, the remote registration utility does not create the Application Domain and does not honor the agentBaseUrl parameter.

The following procedure shows how to confirm (or configure) the AutoLogin host identifier for an Access Manager/Oracle Identity Manager integration. Your values will be different.

Prerequisites

Updating the WebLogic Server Plug-in

To configure the AutoLogin Host Identifier for an OAM / OIM Integration

1. From the Policy Configuration tab, Host Identifiers node, and select IAMSuiteAgent.

   See Also: "Searching for a Host Identifier Definition" on page 19-16

2. In the Operations panel, confirm that all host name and port combinations are listed for this Host Identifier.
3. Proceed to "Configuring OAM Security Providers for WebLogic".

16.11.5 Configuring OAM Security Providers for WebLogic

This section describes how to configure the WebLogic Security Providers to ensure Single Sign On using Access Manager 11g and the 10g WebGate.

Note: Skip this step if you do not have Access Manager 11g integrated with Oracle Identity Manager 11g.

Refer to following topics for more information on setting up the security providers for the 11g WebGate.

- About Security Providers
- Setting Up Security Providers for the 11g WebGate

16.11.5.1 About Security Providers

To complete the Access Manager 11g SSO configuration when a 11g WebGate is replacing the IAMSuiteAgent requires configuring the following security providers in a WebLogic Server domain:

- OAM Identity Asserter: Uses token-based authentication and asserts the OAM SSO header and token.
- OID (or OVD) Authenticator: Creates the Subject and populates it with the correct principals.

  Depending on the store where your users are located, you configure either the Oracle Internet Directory Authenticator or the Oracle Virtual Directory Authenticator as the primary credential authenticator.
- Default Authenticator: This default WebLogic Authentication provider allows you to manage users and groups in one place: the embedded WebLogic Server LDAP server. This Authenticator is used by the Oracle WebLogic Server to login administrative users:

When you configure multiple Authentication providers, you use the JAAS Control Flag for each provider to control how the Authentication providers are used in the login sequence. You can choose the following the JAAS Control Flag settings, among others:

- REQUIRED—The Authentication provider is always called, and the user must always pass its authentication test. Regardless of whether authentication succeeds or fails, authentication still continues down the list of providers. The OAM Identity Asserter is required.
- SUFFICIENT—The user is not required to pass the authentication test of the Authentication provider. If authentication succeeds, no subsequent Authentication

providers are executed. If authentication fails, authentication continues down the list of providers. Both the Oracle Internet Directory (or Oracle Virtual Directory) and the Default Authenticator are sufficient.

- OPTIONAL—When additional Authentication providers are added to an existing security realm, the Control Flag is set to OPTIONAL by default. You might need to change the setting of the Control Flag and the order of providers so that each Authentication provider works properly in the authentication sequence.

  The user is allowed to pass or fail the authentication test of this Authentication provider. However, if all Authentication providers configured in a security realm have the JAAS Control Flag set to OPTIONAL, the user must pass the authentication test of one of the configured providers.

  See Also: "Configuring Authentication Providers" in Oracle Fusion Middleware Securing Oracle WebLogic Server for a complete list of Authentication providers and details about configuring the Oracle Internet Directory provider to match the LDAP schema for user and group attributes.

Access Manager JAR are WAR files for authentication providers are available when you install an Oracle Fusion Middleware product (Oracle Identity Management, Oracle SOA Suite, or Oracle WebCenter). If you have a Fusion Middleware application, you already have the files you need.

- **oamAuthnProvider.jar**: Includes files for both the Access Manager Identity Asserter for single sign-on and the Authenticator for Oracle WebLogic Server 10.3.1+. A custom Access Manager AccessGate is also provided to process requests for Web and non-Web resources (non-HTTP) from users or applications.
- **oamauthenticationprovider.war**: Restricts the list of providers that you see in the Oracle WebLogic Server Console to only those needed for use with Access Manager.

  When you deploy the extension, the Administration Console creates an in-memory union of the files and directories in its WAR file with the files and directories in the extension WAR file. Once the extension is deployed, it is a full member of the Administration Console: it is secured by the WebLogic Server security realm, it can navigate to other sections of the Administration Console, and when the extension modifies WebLogic Server resources, it participates in the change control process For more information, see *Oracle Fusion Middleware Extending the Administration Console for Oracle WebLogic Server*.

16.11.5.2 Setting Up Security Providers for the 11g WebGate

The following procedure requires the WebLogic Server Administration Console. This example illustrates setting up the Oracle Internet Directory provider with the OAM Identity Asserter and Default Authenticator. The steps are the same for OVD, should you need this.

Note: If you have a Fusion Middleware application, you already have the files you need and you can skip Step 1 of the following procedure. With no Fusion Middleware application, however, you have a stand-alone Oracle WebLogic Server and must obtain the JAR and WAR files from Oracle Technology Network as described in Step 1.

Prerequisites

Updating the WebLogic Server Plug-in

To set up providers in a WebLogic Server domain for 11g WebGate with Access Manager 11g

1. **No Oracle Fusion Middleware Application**: Obtain the Access Manager provider:
   a. Log in to Oracle Technology Network at:

      http://www.oracle.com/technology/software/products/middleware/htdocs/111110_fmw.html

   b. Locate the oamAuthnProvider ZIP file with WebGates:

      oamAuthnProvider<*version number*>.zip

   c. Extract and copy oamAuthnProvider.jar to the following path on the computer hosting Oracle WebLogic Server:

      $BEA_HOME/wlserver_10.x/server/lib/mbeantypes/oamAuthnProvider.jar

2. **With Oracle Fusion Middleware Application Installed**:
   a. Locate oamauthenticationprovider.war in the following path:

      $ORACLE_HOME/modules/oracle.oamprovider_11.1.2/oamauthenticationprovider.war

   b. Copy oamauthenticationprovider.war to the following location:

      $BEA_HOME/wlserver_10.x/server/lib/console-ext/autodeploy/oamauthenticationprovider.war

3. Log in to the WebLogic Server Administration Console and click **Security Realms**, ***Default Realm Name***, and click **Providers**.
4. **OAM Identity Asserter**: Perform the following steps to add this provider:
   a. Click Authentication, click New, and then enter a name and select a type:

      Name: *OAM ID Asserter*

      Type: **OAMIdentityAsserter**

      OK

   b. In the Authentication Providers table, click the newly added authenticator.
   c. Click the Common tab, set the Control Flag to **REQUIRED**, and click Save
5. **OID Authenticator:** Perform the following steps to add this provider.
   a. Click **Security Realms**, ***Default Realm Name***, and click **Providers**
   b. Click New, enter a name, and select a type:

      Name: *OID Authenticator*

      Type: OracleInternetDirectoryAuthenticator

      OK

   c. In the Authentication Providers table, click the newly added authenticator.
   d. On the Settings page, click the **Common** tab, set the Control Flag to **SUFFICIENT**, and then click Save.

e. Click the **Provider Specific** tab and specify the following required settings using values for your own environment:

Host: Your LDAP host. For example: *localhost*

Port: Your LDAP host listening port. For example: *6050*

Principal: LDAP administrative user. For example: *cn=orcladmin*

Credential: LDAP administrative user password.

User Base DN: Same searchbase as in Access Manager.

All Users Filter: For example: `(&(uid=*)(objectclass=person))`

User Name Attribute: Set as the default attribute for username in the LDAP directory. For example: `uid`

Group Base DN: The group searchbase (same as User Base DN)

Do not set the All Groups filter as the default works fine as is.

Save.

6. **Default Authenticator**: Perform the following steps to set up the Default Authenticator for use with the Identity Asserter:
   a. Go to **Security Realms**, ***Default Realm Name***, and click **Providers**.
   b. Click Authentication, Click **DefaultAuthenticator** to see its configuration page.
   c. Click the Common tab and set the Control Flag to **SUFFICIENT**.
   d. Save.
7. **Reorder Providers**:
   a. Click **Security Realms**, ***Default Realm Name***, **Providers**.
   b. On the Summary page where providers are listed, click the **Reorder** button
   c. On the **Reorder Authentication Providers** page, select a provider name and use the arrows beside the list to order the providers as follows:

      OAM Identity Asserter (REQUIRED)

      OID Authenticator (SUFFICIENT)

      Default Authenticator (SUFFICIENT)

   d. Click OK to save your changes
8. **Activate** Changes: In the Change Center, click Activate Changes
9. Reboot Oracle WebLogic Server.
10. Proceed as follows:
    - **Successful**: Go to "Disabling IAMSuiteAgent".
    - **Not Successful**: Confirm that all providers have the proper specifications for your environment, are in the proper order, and that `oamAuthnProvider.jar` is in the correct location as described in "About Security Providers" on page 16-46.

16.11.6 Disabling IAMSuiteAgent

This step is optional, not required.

IAMSuiteAgent detects when the WebGate has performed the authentication and then goes silent. However, if the agent must be disabled, then either the WLSAGENT_DISABLED system property or environment variable must be set to true for each one of the servers on which the agent should be disabled. This applies to both AdminServer and OAM Servers.

You can disable the agent in one of two ways:

- Either set the WLSAGENT_DISABLED environment variable to true
- Or pass WLSAGENT_DISABLED as a System Property

Prerequisites

Configuring OAM Security Providers for WebLogic, if needed.

To disable the IAMSuiteAgent

1. On the computer hosting the IAMSuiteAgent, perform one the following tasks:
   - Either set the `WLSAGENT_DISABLED` environment variable to true:

     ```
     setenv WLSAGENT_DISABLED true
     ```

   - Or or pass `DWLSAGENT_DISABLED=true` as a System Property:

     ```
     -DWLSAGENT_DISABLED=true
     ```

2. Restart the Web server.
3. Proceed with "Configuring Centralized Logout for 11g Webgates" on page 22-4, then return to "Verification".

16.11.7 Verification

Oracle recommends testing your environment using the 11g WebGate to ensure that all applications that were previously protected by the IAMSuiteAgent are now protected after configuring the 10g WebGate.

Prerequisites

"Configuring Centralized Logout for 11g Webgates"

See Also:

- "Validating Authentication and Authorization in an Application Domain" on page 20-76
- Chapter 21, "Validating Connectivity and Policies Using the Access Tester"

16.12 Managing the Preferred Host in 10g WebGates

In previous 10g releases, the preferred host was a mandatory parameter which could be made optional through configuration. In the current implementation of Access Manager, the value of the preferred host parameter in the agent profile is a mandatory field populated when the profile is created. Thus when migrating agent profiles from Access Manager 10g, this parameter might have no value. Because of the empty preferred host value in a migrated agent profile, the Access Manager 11g console does not allow the administrator to modify the agent profile. Since the current migration process does not support migration when this parameter is empty, the following actions have been incorporated into the migration process.

- During the migration of agent profiles with no preferred host value, the host identifier defined as the value of AUTO_UPDATE_HOSTID will be set as the preferred host. This will work for 11g WebGates as well as 10g WebGates.

  Note: In the getClientConfigResponse() method, the AUTO_UPDATE_HOSTID host identifier will be replaced with an empty string so that the preferred host will not be set in ObAccessClient.xml. In these cases, the WebGate will read the host from the HTTP header. Because the user can modify the HTTP header, this vulnerability is indicated as follows.

  - The 11g Access Manager console displays the agent profile with a red mark indicating that the value of the preferred host is blank.
  - The agent's GetClientConfig() method indicates that the empty preferred host is null.

- The ALLOWBLANKPREFERREDHOST flag will be added and action taken based on its value. In cases where it is set to true, the empty string will be sent to the agent as the preferred host. In cases where it is set to false, the server will send a fatal error to the agent.

Use the setAllowEmptyHostIdentifier WLST command, described in the following section, to manage this feature.

16.12.1 setAllowEmptyHostIdentifier

Enables and disables the use of an empty preferred host parameter.

16.12.1.1 Description

Enables or disables the use of an empty preferred host parameter. The following parameters (added to the oam-config.xml file) will be set to enable or disable an empty preferred host parameter in the ObAccessClient.xml file.

```
<Setting Name="AutoUpdateHostIdentifier"
 Type="xsd:string">AUTO_UPDATE_HOSTID</Setting>
<Setting Name="AllowEmptyHostIdentifier"
 Type="xsd:boolean">true</Setting>
```

16.12.1.2 Syntax

```
setAllowEmptyHostIdentifier(enable="true/false")
```

Argument	Definition
enable	Set to true or false to allow for an empty host identifier or not.

16.12.1.3 Example

```
setAllowEmptyHostIdentifier(enable ="true")
```

17

Maintaining Access Manager Sessions

An Access Manager session is created during authentication and bound to both the user and the client with which the user has authenticated. Access Manager sessions are maintained to provide tracking and policy enforcement (performed either manually by an Administrator or using automated flows) for a given session's lifecycle. The Access Manager session lifecycle consists of state transitions for session creation, updates, idleness, and expiration.

This chapter describes concepts and procedures for Access Manager sessions.

17.1 Introducing Access Manager Session Management

With this 11gR2 PS2 release of Oracle Access Management, Access Manager sessions can be managed from either the server side or the client side.

- Server-side session management (also referred to as Coherence-based session management) is the default session management option developed for Access Manager. It allows for advanced session management across nodes via Coherence-based caching. Offering reliable performance and advanced features (including impersonation, session sniping, identity context propagation and the like), server side session management is recommended for most deployments - especially internal ones where rich session management features are desired. More details are documented in:
  - "Understanding Server-Side Session Management" on page 17-2
  - "Server-Side Session Enforcement Examples" on page 17-7
  - "Configuring the Server-Side Session Lifecycle" on page 17-9
  - "Managing Active Server-Side Sessions" on page 17-12
  - "Verifying Server-Side Session Operations" on page 17-17

- Client-side session management (also referred to as cookie-based session management) manages sessions using browser cookies; it is essentially stateless. Client side session management offers higher performance with a lightweight footprint when compared to the Coherence-based option. It stores session details in the browser cookie with no information saved on the server-side and is most appropriate for very large deployments where advanced server-side session management features are not needed. More details are documented in "Understanding Client-Side Session Management" on page 17-18.

  Note: Cookie-based sessions can be accessed only from a browser request context and not directly from the server.

See "Using WLST To Configure Session Management" on page 17-18 for instructions on how to configure the session management option.

17.2 Understanding Server-Side Session Management

This section provides the following topics:

- Securing Access Manager Sessions
- Understanding the Access Manager Session Lifecycle, States, and Enforcement
- Access Manager Sessions and the Role of Oracle Coherence

17.2.1 Securing Access Manager Sessions

Session security begins with a secure installation. For installation details see the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.

See Also: Oracle Fusion Middleware Administrator's Guide for details about configuring secure communications between Oracle Fusion Middleware components using SSL.

The HTTPS protocol, Oracle Coherence and database encryption are some of the ways in which Access Manager supports server-side session security. The following list describes how this support can work.

- HTTPS Protocol

  Access Manager helps prevent session fixation by providing IP address checks by the Proxy. To further help prevent session fixation, be sure to use the secure HTTPS protocol for communication between WebGates and OAM Servers.

- Oracle Coherence

  Data is not encrypted in-memory; however, data is protected over the wire. Oracle Coherence communicates between the different Access Manager instances on various servers, and this communication is secured in the following ways.

  – Coherence supports communication only between hosts that have been previously identified. This is done as a range of IP addresses, or by specific host names. Access Manager configuration files contain entries for each server that participates in the communication. During startup, this information is provided to Coherence ensuring that only authorized servers participate in the communication.

– Coherence uses mutually-authenticated SSL between all servers in the cluster. The jceks keystore file, which holds the applicable keys and certificates, is created during installation.

For more information, see "Access Manager Sessions and the Role of Oracle Coherence" on page 17-6 as well as the Oracle Coherence documentation.

- Database Encryption

  The Session Management Engine does not encrypt data. For security concerns, use an in-database encryption such as Oracle Advanced Security.

17.2.2 Understanding the Access Manager Session Lifecycle, States, and Enforcement

The session lifecycle refers to a set of states with defined transitions from one state to another that depend on user activity (or lack thereof), and manual (or automated) Administrator activity. Administrators can define the following global session lifecycle settings:

- Session Lifetime
- Idle Timeout
- Maximum number of Sessions
- Database Persistence of Active Sessions

> **Note:** Idle Timeout can also be implemented as application-specific settings, as described later.

Session lifecycle states include those in Table 17–1.

Table 17–1 Session Lifecycle States

State	Description
Active	Newly-created sessions are active. A session is created when the user is authenticated by Access Manager. The session remains active until Access Manager determines that the session must transition into one of the other states in this table. Note: Administrators can delete only active sessions.
Idle	An active session becomes idle when the user does not access Access Manager-protected content for the period defined by an Administrator. When an active session becomes idle, the user must re-authenticate to proceed. When re-authentication is successful, the session returns to the Active state; session attribute values are preserved through this process.
Expired	An active session expires when the duration of the session exceeds the defined lifetime. An expired session is completely inaccessible and eligible for deletion. When an active session expires, the user must re-authenticate to proceed. When re-authentication is successful, a new session is created; however, session attribute values are not preserved (as they are for Idle states).

For more information, see the following topics:

- About Global Session Enforcement Checks
- About Session Removal
- About Step-Up and Step-Down Authentication and Credentials
- About Optional Application-Specific Session Enforcement

- About Timeout with Multiple-Agent Types: OSSO and OAM Agents
- About OpenSSO Agents

17.2.2.1 About Global Session Enforcement Checks

Each Access Manager session holds the following attributes and applicable values.

- Session creation time
- Last access time

The values of these attributes are compared for session enforcement as described in Table 17–2.

Table 17–2 Session Checks for State Changes

Session Check	Description
Is the Session Idle?	Compares the last access time against the configured Idle Timeout value. Exceeding the configured period triggers a change from the Active to the Idle state.
Is the Session Expired?	Compares the session creation time against the configured Session Lifetime. Exceeding the configured period triggers a change from the Active to the Expired state.

During transitions to the Idle state, underlying session attributes are preserved because the user previously satisfied authentication criteria and the data is trusted. However, continued access to protected resources based on that session, and resulting modification of data within that session, is not allowed until the user re-authenticates, proving not to be a malicious user with access to an unlocked computer.

17.2.2.2 About Session Removal

A session can be removed by any of the actions described in Table 17–3.

Table 17–3 Session Removal

Action	Description
Expiration	Expired sessions are eligible for removal based on their creation time. Actual removal is determined by the storage mechanism. The session is removed from the distributed cache using a background task running on the server; it is removed from the database using a similar background task, an optionally-enabled job within the database itself, or both methods in combination. Once a session has been deleted from storage on all tiers (local and distributed caches, and from the database if enabled), the session is removed.
User Logout	User Logout triggers immediate removal from the distributed cache, subject to present volume of DB session writes and performance.
Termination	Termination is identical to user log out whether the session is interactively terminated through the Administration Console or in an automated way--as part of an Oracle Identity Management user lockout or de-provisioning flow.

17.2.2.3 About Step-Up and Step-Down Authentication and Credentials

On occasion, multiple forms of authentication are required and performed within a single session to complete a step-up flow. In a step-up flow, a user authenticates to access protected content and later in the same session, the user requests other, more sensitive content and is required to authenticate again to access it at a more stringent level. In a step-up flow, multiple authentications always occur in order of the increasing authentication level. Each session holds the Authentication Level attribute for step-up authentication enforcement.

A re-authentication level might be a step down from the session. If the re-Authentication Level is less than that previously contained in the session, the user has completed a step-down process. Upon successful re-authentication, the session is restored to the Active state with an Authentication Level that is equal to the lower level of the authentication scheme used. If the user later attempts to access content that is protected at a higher level, step-up authentication occurs.

17.2.2.4 About Optional Application-Specific Session Enforcement

Access Manager enforces limitations on user access to resources in a more granular way than is possible with a single set of global session timings, or single set of authentication schemes in which access depends solely on a single authentication level. Access to certain data has more stringent requirements, while access to all other data is configured globally.

Administrators can choose to override global session timeout settings on a per application basis, defined as part of Application Domain settings. Optional application-specific session configuration provides:

- The ability to declare session idle timings on a per-application basis, which is generally more stringent than the global idle timing defined within the deployment as a whole.
- The ability to require the user to re-authenticate after a per-application session inactivity timeout.

Table 17–4 describes session enforcement when you have defined Application Domain-specific overrides to global session settings.

Table 17–4 Application Domain-Specific Overrides

Override	Description
Is the Session Idle?	Compares the last access time against the configured Idle Timeout value for the defined Application Domain only. Exceeding the configured period triggers a change from the Active to the Idle state.
Is the Session Expired?	Compares the session creation time against the configured Session Lifetime. Exceeding the configured period triggers a change from the Active to the Expired state for the defined Application Domain group only.

17.2.2.5 About Timeout with Multiple-Agent Types: OSSO and OAM Agents

The idle timeout is applied appropriately even if the session is operating in a disconnected state. (A disconnected state occurs if mod_osso requests are being made but not by the WebGate. In this case, the session appears to have idled out to the server.) To enable global logout for the OSSO Agent, the Session Management Engine reconciles a period of inactivity with the OAM Agent against a period of activity with the OSSO Agent.

mod_osso agents support granular timeout only if the Global Inactivity TimeOut feature is enabled (using the `editGITOValues` WLST command). The GITO cookie is needed in special cases to support timeout with multiple types of agents (mod_osso and WebGate) working with OAM Server. If a user leaves an active session (with an OAM Agent), starts a session with an OSSO Agent, and then returns to the initial session (with the OAM Agent, now inactive), the Session Management Engine reconciles the period of inactivity with the OAM Agent against the period of activity with the OSSO Agent to enable global logout for the OSSO Agent.

17.2.2.6 About OpenSSO Agents

In the context of session management, OpenSSO agents are equivalent to WebGates. Unlike mod_osso, OpenSSO Agents do not operate in a disconnected state.

17.2.3 Access Manager Sessions and the Role of Oracle Coherence

This section describes how the embedded Oracle Coherence data management and caching service interacts with the session stores during session management. This might include the local and distributed (serialized) in-memory caches and an optional database if one is configured and enabled as the Session Management Engine session store.

Note: Generally, both the AdminServer and OAM Servers participate in the Oracle Coherence cluster. However, AdminServer does not access session data except when performing searches.

Access Manager uses Coherence to replicate session states within a distributed installation. Coherence is used to communicate state changes between the OAM Servers. Coherence relies on User Datagram Protocol (UDP) for cluster discovery and heartbeat. If a firewall exists between certain components, then the corresponding UDP ports used by Coherence must be open. Otherwise, Access Manager might not work correctly.

Note: To maintain a consistent shared session state among the OAM Servers, the Coherence infrastructure requires network connectivity between cluster members. Oracle recommends the use of redundant networking infrastructure in deployments requiring OAM session data consistency in the presence of network component failures.

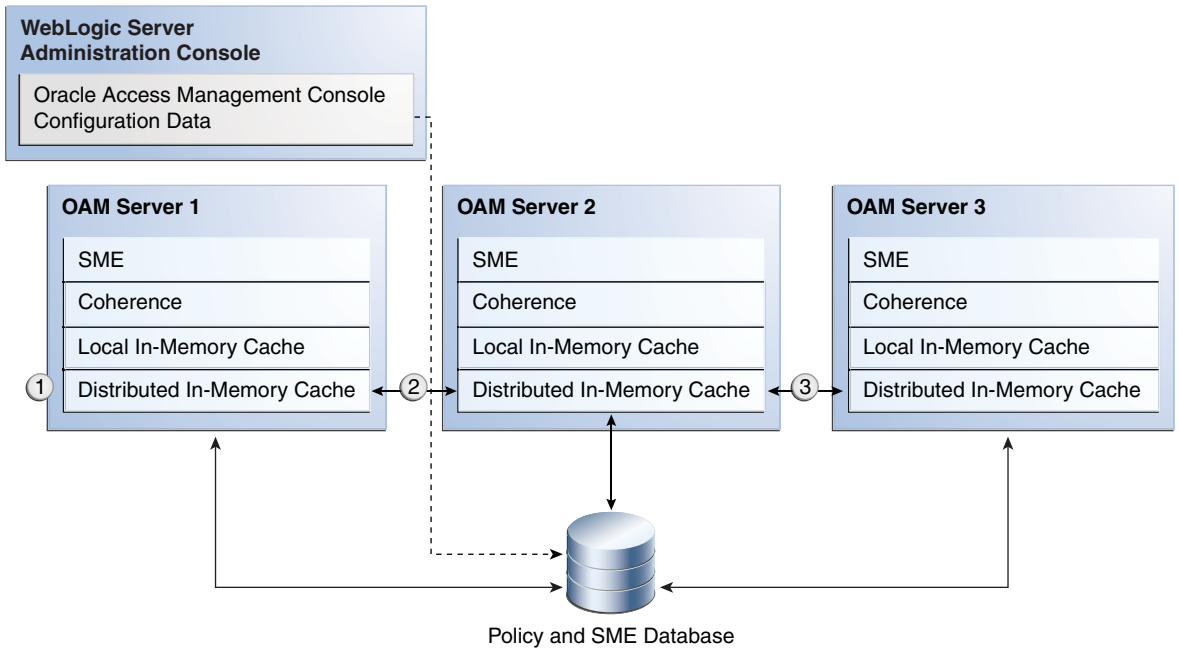
Oracle Coherence replicates and distributes session data across all Managed Servers in the cluster. The location of the session is transparent to the client. The Session Management Engine exposes session objects to other components as needed.

Note: Oracle Coherence traffic is automatically encrypted.

Oracle Coherence also performs failover and reconciliation. For example, if one Managed Server fails, Oracle Coherence automatically distributes data from the failed host to the distributed in-memory caches of other Managed Servers.

Although the Oracle Access Management Console resides on the WebLogic AdminServer, sessions are not stored there. Figure 17–1 illustrates session storage using an embedded Oracle Coherence.

Figure 17–1 Session Data and the Role of Oracle Coherence



The session is stored on two hosts. If the distributed cache runs out of allocated memory space, the oldest sessions are evicted from the cache. If the Session Management Engine is configured to use just the distributed cache, evicted sessions are recorded in a flat file to avoid loss. The following list is an overview of how session data is stored after a successful authentication.

1. The session is created in the distributed in-memory cache. A copy is available in the local in-memory cache on the computer hosting the resource (Managed Server 1 in this example). If session persistence to database is enabled, the session is also written to the database.
2. With each session change, Oracle Coherence updates, replicates, and distributes the session in the distributed cache among OAM Servers (Managed Server 2 in this example). By default, each change is also written to the database.
3. A new resource request is made and the session is read into the local in-memory cache on the server hosting the resource (Managed Server 3 in this example).

17.3 Server-Side Session Enforcement Examples

Satisfying the authentication scheme of a given level provides access to all resources protected at lower levels. Additionally, all authentication schemes of a given level are viewed as equivalent. This section provides a simple session enforcement example based on a single authentication scheme used in two application domains as well as a more complex example based on multiple authentication schemes used in two application domains.

- Example 1: Single Authentication Scheme
- Example 2: Multiple Authentication Schemes
- Access Manager Sessions and the Role of Oracle Coherence

17.3.1 Example 1: Single Authentication Scheme

Consider the following configuration:

- A single authentication scheme (S1) defined using Level 2
- Application domains D1 and D2
- All resources within each domain are protected with a single authentication policy, which uses S1, and a single authorization policy.
- Global Session Configuration:
  - Session Lifetime: 90 minutes
  - Idle Session Timeout: 0 (session never idles out)
  - Application Domain Timeout: 30 minutes

Now consider the outcomes in Table 17–5.

Table 17–5 Session Content: Single Authentication Scheme

Time (Delta)	Action	Access Allowed or Denied	Session Content
0	Access to D1	Denied due to no session	null
1	Authentication with S1 and Access to D1	Allowed because Authentication scheme is satisfied	Level 2, authentication time 1
21	Access to D2	Allowed	Level 2, authentication time 1
66	Access to D1	Denied due to Application Domain Timeout (based on the parameters configured)	Level 2, authentication time 1
67	Authentication with S1 and Access to D1 and D2	Both Allowed because the Authentication Sceme is satisfied	Level 2, authentication time 67

17.3.2 Example 2: Multiple Authentication Schemes

In previous releases of Access Manager, a session could only have its authentication level reduced in the context of an Oracle Identity Management integration self-service flow (such as forced password reset). In this release, step-down authentication occurs when a session times out as a matter of course--until the user happens to provide new credentials that satisfy a scheme of the same level as the maximum held by the session previously. Otherwise, from the authentication perspective, it is as if the session is new and further step-up is required. Consider this example with two authentication schemes (for step-up and step-down).

- Authentication schemes S1 (Level 2) and S2 (Level 3)
- Application domains D1 and D2
- All resources within each domain are protected with a single authentication policy, and a single authorization policy
- D1 uses S1; D2 uses S2
- Global Session Configuration:
  - Session Life: 240 mins
  - Idle Timeout: 30 mins
  - Appdomain 2 (D2) Timeout: 15 mins (appdomain setting)

When accessing resources from D1, timeout will occur after 30 minutes (global timeout setting); D2 timeout will happen after 15 mins since its timeout value is overridden at the global level. Table 17–6 shows the resulting outcomes.

Table 17–6 Session Outcomes: Multiple Authentication Schemes

Time (Delta)	Action	Access Allowed or Denied	Session Content
0	Access D1 resource (RD1)	Access allowed after successful login	Timeout for D1 will be set to 0+30=30 (30 is default global timeout as D1 has not overriden timeout at the Application Domain level)
1 (implies after 1 minute)	Access D2 resource (RD2)	Access allowed post credential challenge (user will be prompted for credentials since D2 is protected using a higher authentication scheme)	Timeout of D2 will be set to 1+15=16
t>16 and t<30 (say t=20)	Access RD1 and RD2	Allowed access to RD1 because timeout of D1=30. Allowed access to RD2 after providing credentials since timeout of D2=16	The new timeout of D2 is 16
40	Access RD1	Allowed: D1 resource will be allowed since timeout is 50	
55	Access RD1 and RD2	Allowed to access both resources after user is successfully challenged for credentials.	Timeout of D1 is now 85 (55+30) Timeout of D2 is now 70 (55+15)

The access order does have an impact on the outcome. For instance, the last D1 access could have been allowed if the user had chosen to first pursue access to the D2 application after credentials had expired. For example:

- Authentication S2 with Access to D2 Allowed: L3 scheme satisfied; resulting level of the now (again) active session same as before. Session Content: Level 3, authentication time 51
- Access to D1 Allowed: Level 3 credentials also sufficient for Level 2-protected access. Session Content: Level 3, authentication time 51.

17.4 Configuring the Server-Side Session Lifecycle

Session Lifecycle settings can be defined using the Oracle Access Management Console. When you define either global or application-specific session lifecycle settings, any timing interval set to 0 cancels the corresponding check. For example if idle timeout is set to 0, sessions never idle out. With a session lifetime of 0, sessions never expire. In all cases, applicable data is tracked and updated in the session, just as if it is being checked on a per-request basis.

This section provides the following topics:

- About Global Session Lifecycle Settings
- About Application-Specific Session Overrides
- Viewing or Modifying Global Session Settings
- Viewing or Modifying Optional Application-Specific Session Overrides

17.4.1 About Global Session Lifecycle Settings

Access Manager session lifecycle settings are defined as part of the Common Settings shared by all OAM Servers. Figure 17–2 shows the lifecycle attributes that you can configure on the Common Settings page.

Figure 17–2 Global Session Details: Common Settings Page

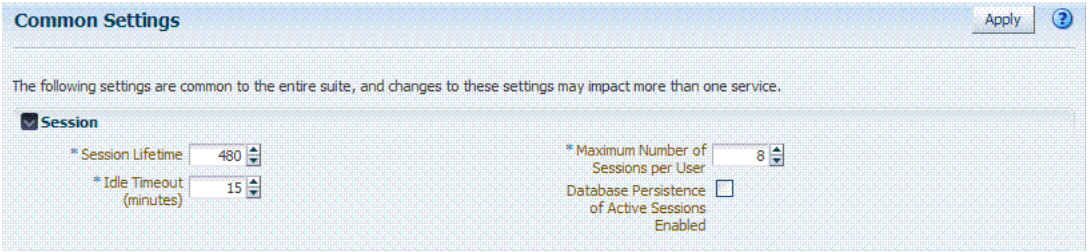


Table 17–7 describes the global session lifecycle settings and their defaults. Sessions can operate in a disconnected mode (mod_osso, for example). Therefore, changes to the configuration establishing your session rules apply only to new sessions. To apply changes immediately, Oracle recommends that you terminate existing sessions and force users to create new ones that adhere to your new rules.

> **See Also:** Oracle Fusion Middleware Performance and Tuning Guide

Table 17–7 Global Session Settings

Setting	Description
Session Lifetime (minutes)	The amount of time, in minutes, that a user's authentication session remains active. When the lifetime is reached, the session expires. Default = 1440 minutes (24 hours specified in an integer representing minutes) A value of zero (0) disables this setting. Any value between 0 (zero) and 2147483647 is allowed. Note: An expired session is automatically deleted from the in-memory caches (or database).
Idle Timeout (minutes)	The amount of time, in minutes, that a user's authentication session remains active without accessing any Access Manager protected resources. When the user is idle for a longer period, they are asked to re-authenticate. Default = 15 minutes A value of zero (0) disables this setting. Any value between 0 (zero) and 2147483647 is allowed. Note: Timed-out sessions are not deleted from the session manager. Session data could be removed from memory but will still be available in the persistant store (database). After re-authentication, the same session will be re-activated. See Also: "About Application-Specific Session Overrides"
Maximum Number of Sessions per User	The exact number of sessions each user can have at one time. Use this setting to configure multiple session restrictions for all users. Any positive integer is allowed. Specifying the count as "1", activates a special mode. If a user who already has a session authenticates using another device (thereby creating a new session), then their existing session is deleted. No error is reported and no warning is given. Note: Too high a number impacts performance and result in a security risk. Oracle recommends less than 20 as a reasonable limit per user. Otherwise there can be performance impact. For tuning information, see Oracle Fusion Middleware Performance and Tuning Guide.

Table 17–7 (Cont.) Global Session Settings

Setting	Description
Database Persistence for Active Sessions Enabled	Persists active sessions to the configured database session store, in addition to the local and distributed caches. Sessions are retained even if all managed servers die off. Default = Enabled (checked) If this is overkill for your environment, or you want to perform deployment sizing to take into account the database, you can clear the checkbox and restart all OAM Servers to disable this function.

17.4.2 About Application-Specific Session Overrides

Application-specific access is tracked from the initial application-access time and is updated only as further requests are made of that Application Domain. In other words, the user's authentication and the authentication state are under control of Access Manager and the Administrator. The current idle time for a given application is shared between Access Manager and the application. The application provisions its own run time data for the user on a per-session basis and needs to remove it as soon as possible to make room for others.

Administrators can add application-specific session overrides on the Summary tab of an Application Domain. Table 17–8 lists application-specific settings that, when specified, override global session settings.

Table 17–8 Application-Specific Session Timing Overrides

Element	Description
Idle timeout	Access Manager previously stored the last access time value within the session. To enforce maximum idle time on a per-application basis, Access Manager includes a new application-specific last access time field to hold it. This is filled with the last access time for each subset of domains visited within the course of a session, on which a per-application idle timeout override has been defined. This is not needed for domains on which an override has not been defined--no checking is done against such data. Default: undefined

For more information, see "Viewing or Modifying Optional Application-Specific Session Overrides" on page 17-12.

17.4.3 Viewing or Modifying Global Session Settings

Users with valid Administrator credentials can use the following procedure to modify common session lifecycle settings using the Oracle Access Management Console.

See Also: "About Global Session Lifecycle Settings"

To view or modify global session settings

1. From the Oracle Access Management Console, click Common Settings.
2. On the Common Settings page, expand the Session section.
3. Click the arrow keys beside each list to increase or decrease session lifecycle settings as needed (Table 17–7):
   - Session Lifetime (minutes)
   - Idle Timeout (minutes)
   - Maximum Number of Sessions per User

- (Management) Maximum Search Results - denotes the number of sessions fetched by default for a session query if the result set is large
- Database Persistence of Active Sessions Enabled

4. Check the box to enable Database Persistence for Active Sessions.
5. Click Apply to submit the changes (or close the page without applying changes).
6. Close the page when you finish.
7. Proceed to one of the following topics:
   - "Viewing or Modifying Optional Application-Specific Session Overrides"
   - "Managing Active Server-Side Sessions"

17.4.4 Viewing or Modifying Optional Application-Specific Session Overrides

Users with valid Administrator credentials can use the following procedure to modify optional session settings for one or more application domains in a named group.

> **See Also:** "About Application-Specific Session Overrides" on page 17-11

To view or modify optional application-specific session settings

1. From the Oracle Access Management Console, click Application Domains.
2. Find and open the desired domain.
3. On the Summary tab, enter the following information to create (or add) this domain to the group that uses session overrides (Table 17–8):
   - Idle Timeout
4. Click Apply to submit the changes (or close the page without applying changes).
5. Proceed to "Managing Active Server-Side Sessions".

17.5 Managing Active Server-Side Sessions

The Oracle Access Management Console Session Management page provides Search controls that enable Administrators to create a query based on filter conditions, save their Search Criteria for use later, and add fields to the query form to further refine the search.

In the database store configuration, the session might exist in the database but not in the cache. Session searches are based on the system time stamp. The database is queried for sessions updated earlier than the time stamp (minus the write delay). The cache is queried for sessions updated later than this time stamp. Resulting data found in the cache and the database is merged. If duplicate results exist, cache data prevails. Detailed performance metrics are generated for search operations.

This section describes how to locate and delete one or more sessions for a single user, or for all users. It provides the following information:

- About the Session Management Pages
- Managing Active Sessions

17.5.1 About the Session Management Pages

Figure 17–3 illustrates the Session Management page, under the System Configuration tab, Common Configuration section. Additional details follow the figure.

Figure 17–3 Common Configuration: Session Management Page

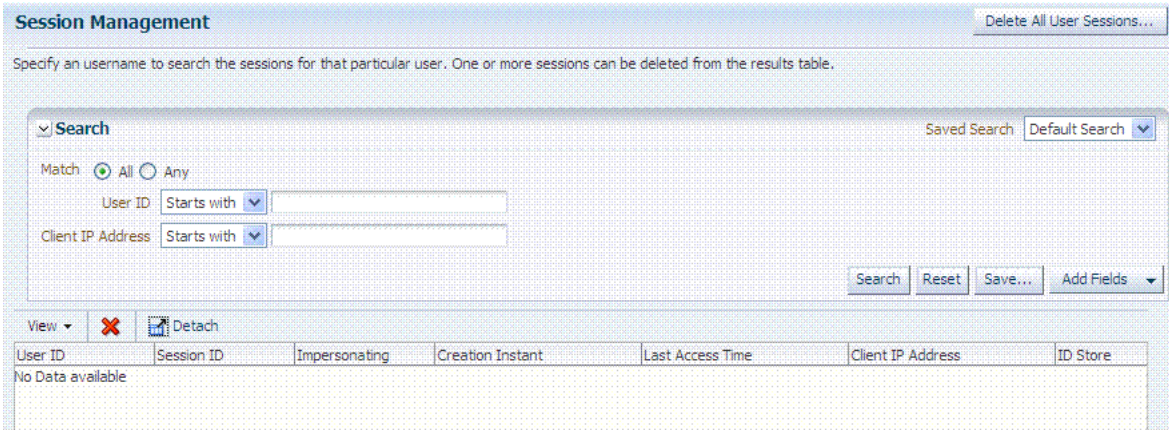


Table 17–9 describes Session Management page and Search controls that enable you to create a query that is based on filter conditions.

Table 17–9 Session Management Controls and the Results Table

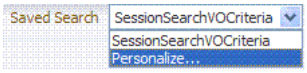
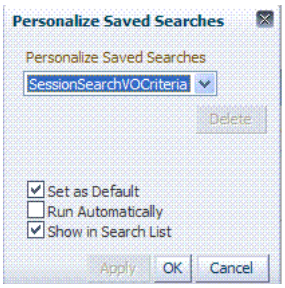
Name	Description
Delete All User Sessions ...	Choose this command button to delete the active sessions of all users. **Note**: A Confirmation window appears where you can confirm or decline the operation.
Saved Search	Lists any search criteria saved previously for reuse. A list like the following is made available whenever you save search criteria.  If you choose Personalize, you can change the behavior of the saved search criteria by making new choices in the following window. 
Match All Any	Enables you to match either any of the criteria you have specified or match all of the criteria you have specified during the search. **Note**: When a resource is protected `byAnonymousScheme`, it is not displayed in a session search.

Table 17–9 (Cont.) Session Management Controls and the Results Table

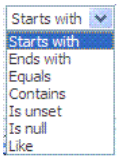
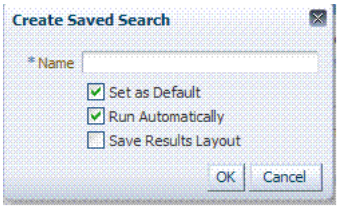
Name	Description
Userid	Enter a specific userID in the field and then click the Search button to display all active sessions for this user. Incomplete strings and wild cards are allowed. The following list is available to assist your search: 
Client IP Address	Enter a Client IP Address and then click the Search button to display all active sessions for this user. Incomplete strings and wild cards are allowed. The same list is available to assist your Userid search and your Client IP Address.
Search	Click this button to initiate a search based on criteria in the form.
Reset	Click this button to clear the form of all criteria.
Save	Click this button to initiate a save operation that enables reuse of your search criteria. The following window opens.  1. Enter a name, which will appear in the Saved Search list for later selection. 2. Set this search as the Default (or clear the check box). 3. Set this search to Run Automatically (or clear the check box). 4. Save the Results Layout (or clear the check box). 5. Click OK.

Table 17–9 (Cont.) Session Management Controls and the Results Table

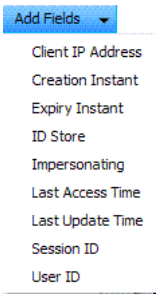
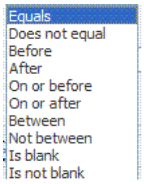
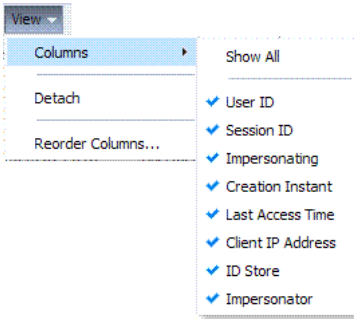
Name	Description
Add Fields	You can add different fields to your search form. The following list is available to assist.  1. Click the Add Fields button. 2. Click items in the list to add them to the form and click Save. After adding an item, notice that a list is available to assist with the search. For example: Employment and time-based selections provide the following list. 
View	Choose commands from the View menu above the results table to configure the table. Commands include: ■ Columns: Displays a menu with the following options you can use to hide or display specific details in the table:  ■ Detach: Expands the results table to a full-screen view ■ Attach: Restores the Session Management page view. ■ Reorder Columns: Specifies a new order for columns containing session data in the results table.
 Delete	Choose this command button after selecting items in the results table to delete. **Note**: When session search criteria is generic (using just a wild card (*), for example), there is a limitation on deleting a session from a large list of sessions. Oracle recommends that your session search criteria is fine-grained enough to obtain a relatively small set of results (ideally 20 or less). **Also**: A Confirmation window appears where you can confirm or decline the operation.

Table 17–9 (Cont.) Session Management Controls and the Results Table

Name	Description
 Detach	Click to expand the results table to a full-page view. Note: If the table is already a detached full-page, click Detach to restore the Session Management page.
Detach	
Results table (not named)	After searching for the active sessions of a specific user, results are displayed in the table. Details include: ■ Session ID: A unique, OAM-generated session Id. ■ User ID: ■ Impersonating: ■ Creation Time: The day and time the session was created. ■ Last Accessed: The day and time the session was last accessed ■ Client IP: The IP address of the specified user. ■ ID Store ■ Impersonator

17.5.2 Managing Active Sessions

Users with valid Administrator credentials can use information in the following procedure to configure the search results table, locate the active sessions of a specific user, delete one or more sessions for a specific user, or delete all sessions for all users.

When a resource is protected by `AnonymousScheme`, it is not displayed in a session search.

See Also: "About the Session Management Pages"

Skip any steps that do not apply to your requirements.

Prerequisites

OAM Server must be running.

To locate and manage active sessions

1. From the Oracle Access Management Console, click Session Management.

   The Session Management Search page appears with the Username field and a results table.

2. **Add Fields**: From the Add Fields list, choose the desired field name (Table 17–9).
3. **Choose Operators**: Open the list of operators for the chosen search field, and choose the desired function.
4. **Find sessions**:
   a. In the desired query field, enter your criteria (with or without a wild card (*)).
   b. Click the Search button to locate sessions that match either any or all your criteria.
   c. Review the results table.
   d. Repeat if needed to further refine your search.

5. **Configure the Results Table**: Use functions on the View menu to create the desired results table.
6. **Delete sessions**:
   a. In the results table, click one or more sessions to remove.
   b. Click the Delete (x) button to delete the selected sessions.
   c. Click Yes to confirm deleting selected sessions (or click No to cancel the delete operation).
   d. Notify the user, if needed.
7. **Delete sessions for all users**:
   a. Click the Delete All Sessions button in the upper-right corner.
   b. Click Yes when you are asked to confirm.
8. Close the Session Management page when you finish.
9. Proceed to "Verifying Server-Side Session Operations".

17.6 Verifying Server-Side Session Operations

Use the following procedure to verify your configured session lifecycle operations.

To validate session operations

1. Authenticate:
   a. Access a resource from a browser using a credential other than your Administrative credential.
   b. Verify that the session exists, as described in "Managing Active Sessions".
2. Multiple Sessions:
   a. From a second browser (with cookies removed), access the same resource.
   b. Verify that two sessions exist.
3. Delete all sessions, (Step 7 of "Managing Active Sessions") and confirm that the Active sessions are removed.
4. Re-authentication Verification:
   a. From the second browser (Step 2), access a different resource to confirm that you must re-authenticate.
   b. Enter credentials for the resource.
   c. Verify that a session was created.
5. Database Verification:
   a. Delete all sessions.
   b. Connect to the database and run the following query:

      ```
      SQL> select * from oam_session
      ```

   c. Confirm that you see the following results:

      ```
      no row selected
      ```

   d. From the second browser, access a different resource.

e. Connect to the database and run the following query

```
SQL> select * from oam_session
```

f. Confirm that you see one row of data:

```
1 rows selected
```

g. Select rows from OAM_SESSION_ATTRIBUTES and confirm that data exists for the user.

17.7 Understanding Client-Side Session Management

Client-side (or cookie-based) session management is a light weight session management solution that reduces server-side overhead and provides better scalability. It uses client-side cookies as the persistent mechanism for SSO sessions, making the server stateless. Client-Side session management supports the following features:

- Authentication
- Authorization (excluding session constrains and responses)
- OAM & OIM integration over TAP - excluding session deletion on attribute change (account lock/disable, etc.)
- Step up authentication
- Inactivity time out with single web domain

17.8 Using WLST To Configure Session Management

The following WLST commands can be used to configure for server-side (default) or client-side (cookie-based) session management.

- displaySSOSessionType
- configSSOSessionType

17.8.1 displaySSOSessionType

Online and offline command that allows you to view the session management configuration.

17.8.1.1 Description

Allows you to view the session type configuration.

17.8.1.2 Syntax

```
displaySSOSessionType(domainHome="<domainHome>")
```

Argument	Definition
domainHome	Specifies the location for the Weblogic Server OR Cell Path for WebSphere. This parameter is mandatory for WebSphere. When Offline, a value is mandatory; when online, optional.

17.8.1.3 Example

```
displaySSOSessionType(domainHome="/oracle/product/OAM/domains/oam_domain")
```

17.8.2 configSSOSessionType

Online and offline command that allows you to configure session management as COOKIE-BASED or DEFAULT.

17.8.2.1 Description

Configure session management for Access Manager.

17.8.2.2 Syntax

```
configSSOSessionType(type="<ssoSessionType>",
  cookieDomain="<cookieDomain>",domainHome="<domainHome>")
```

Argument	Definition
type	Specifies the type of session store. Accepted values are COOKIE_ BASED or DEFAULT.
cookieDomain	Specifies the value of the SSO Session Timeout cookie domain.
domainHome	Specifies the location for the Weblogic Server OR Cell Path for WebSphere. This parameter is mandatory for WebSphere. When Offline, a value is mandatory; when online, optional.

17.8.2.3 Examples

```
configSSOSessionType(type="COOKIE_BASED",cookieDomain-".example.com")

configSSOSessionType(type="COOKIE_BASED",cookieDomain-".example.com",
  domainHome="domainHome1")

configSSOSessionType(type="Default",cookieDomain=".example.com")
```

Part V

Managing Access Manager SSO, Policies, and Testing

This part, Part V, provides information to help you understand single-sign on (SSO) with Access Manager, and help you to configure Access Manager policies and logout. Testing your single sign-on connection and policies is also described.

Part V contains the following chapters:

18

Understanding Single Sign-On with Access Manager

This chapter introduces the elements that comprise Access Manager single sign-on. It provides an administrator with the foundation to begin developing policies.

This chapter includes the following topics:

- Introducing Access Manager Single Sign-On
- Understanding the Access Manager Policy Model
- Anatomy of an Application Domain and Policies
- Introduction to Policy Conditions and Rules
- Introducing Access Manager Credential Collection and Login
- Understanding SSO Cookies
- Introduction to Configuration Tasks for Single Sign-On

Note: Unless explicitly stated, information in this chapter is the same for all agent types and Access Manager credential collectors.

For details about single log-out, see Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates".

18.1 Introducing Access Manager Single Sign-On

Login is the action a user takes to authenticate and gain access to a protected application. Single sign-on (SSO) is the process that gives users the ability to access multiple protected resources (Web pages and applications) with a single authentication. SSO is enabled by Access Manager to eliminate the need for additional or different logins to access other applications at the same (or lower) authentication level during the same session.

Access Manager converges several SSO architectures (including Identity Federation for Partner Networks, and Service Oriented Architecture) and provides SSO through a common SSO Engine for consistent service across multiple protocols. The Oracle Identity Management Infrastructure stores user identities in the identity store referenced in the policy.

Note: Contextual data is the information that is presented to or collected by Access Manager at various stages of user interaction. These stages include authentication, authorization, enterprise SSO, federation, adaptive authentication, token validation, session creation, and so on. The information itself might comprise a user's device fingerprints, IP address, antivirus and firewall protection, assertion and so on. Components that play the role of contextual data providers and asserters when integrated with Access Manager include Enterprise Single Sign-on, Identity Federation, Oracle Adaptive Access Manager.

Table 18–1 summarizes the components that support or enforce Access Manager policies, and where to find more information about these, if needed.

Note: Default Access Manager behavior is to deny access when a resource is not protected by a policy that explicitly allows access. To delegate authentication tasks to Access Manager, agents must reside with the relying parties and must be registered with Access Manager. Registering an agent sets up the required trust mechanism between the agent and Access Manager SSO.

Table 18–1 Summary: SSO Components

Component	Description
Applications	Applications can delegate authentication and authorization to Access Manager and accepts headers from a registered Agent. **Note**: External applications do not delegate authentication. Instead, these display HTML login forms that ask for application user names and passwords. For example, Yahoo! Mail is an external application that uses HTML login forms.
▪ OAM Server ▪ Oracle Access Management Console (installed on WebLogic AdminServer)	Non-administrative users first gain access by entering the URL of a protected resource, which returns the SSO login page. **See Also**: "Introducing Access Manager Credential Collection and Login" on page 18-14. Administrative users access the console to author policies by typing the URL: https://*host*:*port*/oamconsole. Although, default policies can be generated automatically during Agent registration, as described in Chapter 16. **See Also**: Chapter 20, "Managing Policies to Protect Resources and Enable SSO".
Policy Enforcement Agents	▪ OAM Agents (Webgate or Access Client) ▪ Legacy OSSO Agents ▪ Legacy OpenSSO Agents **See Also**: Chapter 15, "Introduction to Agents and Registration".
Credential Collectors and Communication Channels	▪ Authentication with the default embedded credential collector (ECC) occurs across the HTTP (HTTPS) channel ▪ Authentication with the optional detached credential collector (DCC) occurs across the Oracle Access Protocol (OAP) channel ▪ Authorization occurs across the Oracle Access Protocol (OAP) channel **See Also**: Table 19–5, " Comparing the DCC and ECC"
SSO Engine	Manages the session lifecycle, facilitates global logout across all relying parties in the valid session, and provides consistent service across multiple protocols. **See Also**: Chapter 17, "Maintaining Access Manager Sessions" and Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates"

Table 18–1 (Cont.) Summary: SSO Components

Component	Description
Proxy support for legacy systems	▪ OAM Proxy supports legacy Access Manager implementations by acting as a legacy Access Server. See: "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security" "Introduction to OAM Proxy Metrics and Tuning" on page 12-9 ▪ OSSO Proxy supports OSSO Agents by acting as the legacy OSSO Server. See: Chapter 24 ▪ Oracle-provided OpenSSO Proxy handles requests for resources protected by OpenSSO Agents. See: Chapter 23 **See Also**: About the Embedded Proxy Server and Backward Compatibility
Access Policies	Registered agents rely on Access Manager authentication, authorization, and token issuance policies to determine who gets access to protected applications (defined resources). **Note**: Default Access Manager behavior is to deny access when a resource is not protected by a policy that explicitly allows access. **See Also**: Chapter 20, "Managing Policies to Protect Resources and Enable SSO"
Policy Store	Database in production environments (otherwise, oam-config.xml). **See Also**: Chapter 5
Cryptographic keys and Key Storage	One key is generated and used per registered mod_osso or 11g Webgate. However, one single key is generated for all 10g Webgates. **See Also**: Table 1–2, " Features in Access Manager 11.1.2".
Cookies	See: "Understanding SSO Cookies" on page 18-23.

Note: Single Sign-on for the Oracle Access Management Console, and other Oracle Identity Management consoles deployed in a WebLogic container, is enabled using the pre-registered IAMSuiteAgent and companion policies. No further configuration is needed to protect the consoles.

Single sign-on can be implemented as introduced in Table 18–2, which includes pointers to additional information.

Table 18–2 Introduction to SSO Implementations

SSO Type	Description
Single Network Domain SSO	You can set up Access Manager single sign-on for resources within a single network domain (*example.com*, for example). This includes protecting resources belonging to multiple WebLogic administration domains within a single network domain. Single Network Domain SSO is the subject of this book.
Multiple Network Domain SSO	Access Manager 11g supports cross-network-domain single sign-on out of the box. **See Also**:"About Multiple Network Domain SSO" on page 18-4.
Application SSO	Application single sign-on allows users who have been authenticated by Access Manager to access applications without being re-authenticated. **See Also**: "About Application SSO and Access Manager" on page 18-4

Table 18–2 (Cont.) Introduction to SSO Implementations

SSO Type	Description
Multiple WebLogic Server Domain SSO	The basic administration unit for WebLogic Server instances is known as a domain. You can define multiple WebLogic administration domains based on different system Administrators' responsibilities, application boundaries, or the geographical locations of WebLogic servers. However, all Managed Servers in a cluster must reside in the same WebLogic Server domain. **See Also**: "About Multiple WebLogic Server Domain SSO" on page 18-5
Reverse-Proxy SSO	This SSO implementation type is supported with a few configuration differences. **See Also**: "About Reverse-Proxy SSO" on page 18-5
SSO with Mixed Release Agents	Access Manager seamlessly supports registered 11g and 10g OAM gents (Webgates and programmatic access clients), as well as legacy OSSO Agents (mod_osso 10g), and legacy OpenSSO agents). These can be used in any combination.

18.1.1 About Multiple Network Domain SSO

With Access Manager, this is a standard feature. When 11g WebGates are used exclusively all cookies in the system are host-based. However, you must have control over all the domains. If some domains are controlled by external entities (not part of the Access Manager deployment), Oracle recommends that you use Identity Federation.

Access Manager supports cross-network-domain single sign-on out of the box. During single sign-off with Access Manager:

- The SSO cookie set by OAM Server is a host cookie that works across the network domains. The WebGate clears its standalone Agent cookie and then redirects to the OAM Server for session clearing.
- 10g WebGates do not have a standalone Agent cookie; logout occurs only on the server side with no redirection required.
- With 11g WebGates and OSSO agents that support a standalone agent cookie, the agent Logout Callback URL is called in parallel. The agents accessed in a session and agents from multiple domains are all called in parallel, depending on the number of concurrent connections supported in the browser.

Note: Access Manager provides a proprietary multiple network domain SSO capability that predates Identity Federation 11.1.1. If this is implemented in your Oracle Access Manager 10g deployment, you can register 10g Agents with Access Manager 11g to continue this support.

See Also:

- "Configuring Centralized Logout for 11g Webgates" on page 22-4
- *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*, 11.1.1

18.1.2 About Application SSO and Access Manager

Access Manager enables Administrators to create a web of trust in which a user's credentials are verified once and are provided to each application the user runs. Using

these credentials, the application does not need to re-authenticate the user with its own mechanism.

Application single sign-on allows users who have been authenticated by Access Manager to access applications without being re-authenticated.

There are two ways to send a user's credentials:

- **Using Cookies:** A specific value is set on the browser's cookie that the application must extract to identify a user.
- **Using Header Variables:** An HTTP header set on the request by the agent and visible to the application.

> **Note:** Both forms require Administrators to enter the appropriate responses within the policy. For more information, see "Introduction to Policy Responses for SSO" on page 20-41.

Header response values are inserted into a request by an OAM Agent, and can only be applied on Web servers that are protected by an agent. registered with Access Manager 11g If the policy includes a redirect URL that is hosted by a Web server not protected by Access Manager, header responses are not applied.

For example, when a user authenticates, she might be redirected to a portal index page:

```
http://example.com/authnsuccess.htm
```

For authentication failure, an authentication action might redirect the user to an error page or a self-registration script:

```
http://example.com/authnfail.htm
```

18.1.3 About Multiple WebLogic Server Domain SSO

Access Manager supports SSO in multiple WebLogic administration domains.

You can define multiple WebLogic administration domains based on different system Administrators' responsibilities, application boundaries, or the geographical locations of WebLogic servers. Conversely, you can use a single domain to centralize all WebLogic Server administration activities.

> **Note:** All Managed Servers in a cluster must reside in the same domain; you cannot split a cluster over multiple domains. All Managed Servers in a domain must run the same version of the Oracle WebLogic Server software. The Administration Server can run either the same version as the Managed Servers in the domain, or a later service pack.

There are two basic types of WebLogic administration domains:

- **Domain with Managed Servers**: A simple production environment can consist of a domain with several Managed Servers that host applications, and an Administration Server to perform management operations. In this configuration, applications and resources are deployed to individual Managed Servers; similarly, clients that access the application connect to an individual Managed Server.

Production environments that require increased application performance, throughput, or availability may configure two or more of Managed Servers as a cluster. Clustering allows multiple Managed Servers to operate as a single unit to host applications and resources. For more information about the difference between a standalone and clustered Managed Servers, see Managed Servers and Clustered Managed Servers.

- **Standalone WebLogic Server Domain**: For development or test environments, you may want to deploy a single application and server independently from servers in a production domain. In this case, you can deploy a simple domain consisting of a single server instance that acts as an Administration Server and also hosts the applications you are developing. The examples domain that you can install with WebLogic Server is an example of a standalone WebLogic Server domain.

All Managed Servers in a cluster must reside in the same domain; you cannot split a cluster over multiple domains. All Managed Servers in a domain must run the same version of the Oracle WebLogic Server software. The Administration Server can run either the same version as the Managed Servers in the domain, or a later service pack.

Each domain's configuration is stored in a separate configuration file (config.xml), which is stored on the Administration Server along with other files such as logs and security files. When you use the Administration Server to perform a configuration task, the changes you make apply only to the domain managed by that Administration Server. To manage another domain, use the Administration Server for that domain. For this reason, the servers instances, applications, and resources in one domain should be treated as being independent of servers, applications, and resources in a different domain.You cannot perform configuration or deployment tasks in multiple domains at the same time.

Each domain requires its own Administration Server for performing management activities. When you use the Oracle Access Management Console to perform management and monitoring tasks, you can switch back and forth between domains, but in doing so, you are connecting to different Administration Servers.

If you have created multiple domains, each domain must reference its own database schema. You cannot share a configured resource or subsystem between domains. For example, if you create a JDBC data source in one domain, you cannot use it with a Managed Server or cluster in another domain. Instead, you must create a similar data source in the second domain. Furthermore, two or more system resources cannot have the same name.

18.1.4 About Reverse-Proxy SSO

This is a supported configuration with the following caveats.

Caveats

If you are going to use a reverse proxy in a single sign-on configuration, be sure to perform one of the following tasks. Otherwise, the reverse proxy hides the client's IP address:

- Either to set the `IPvalidation` parameter to `false`
- Or add the proxy IP address to the `IPValidationExceptions` list in the Webgate registration

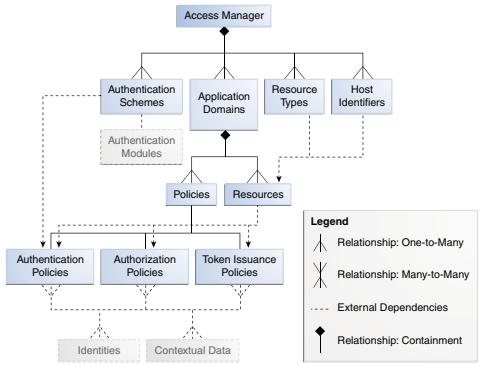
In some situations the Reverse Proxy does not pass the 10g Webgate ObSSOCookie to Oracle WebLogic after a successful authentication. To avoid this issue:

- Use Form authentication instead of Basic Over LDAP when using Reverse Proxy with Oracle WebLogic
- For 11g Webgate, a user-defined parameter (`filterOAMAuthnCookie` (default `true`)) can be used to prevent the OAMAuthnCookie from being passed to downstream applications for security consideration. If you do want to pass the cookie on, then set the `filterOAMAuthnCookie` parameter to `false`.

18.2 Understanding the Access Manager Policy Model

Access Manager distills the policy models of Oracle Access Manager and OSSO into a single Access Manager policy model. Figure 18–1 illustrates the main elements of the Access Manager 11g policy model including the shared policy components, an individual Application Domain, and external dependencies.

Figure 18–1 Access Manager 11g Policy Model



Shared Policy Components

Shared policy components are global and can be used in one or more Application Domains. Figure 18–2 illustrates the shared components for Access Manager policies.

Figure 18–2 Access Manager Shared Policy Components

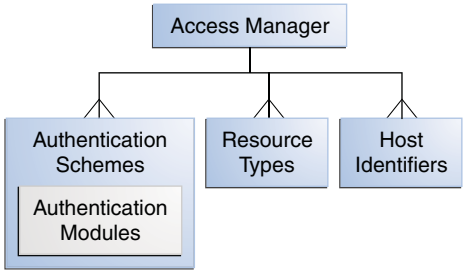


Table 18–3 describes the global, shared components in an Access Manager policy.

Table 18–3 Access Manager Global, Shared Policy Components

Component	Description
Resource Types	Defines the type of resource to be protected and the associated operations. The default resource type is HTTP. However, Administrators can define non-HTTP resource types that can be applied to specific resources in an Application Domain. Any number of resources can belong to a specific resource type. However, each resource that is added to a policy must be defined as a single type: ■ HTTP ■ wl_authen ■ TokenServiceRP See Also: ■ Chapter 19: Managing Resource Types ■ Chapter 38: Managing TokenServiceRP Type Resources
Host Identifiers	A host can be known by multiple names. To ensure that OAM recognizes the URL for a resource, OAM must know the various ways used to refer to that resource's host computer. With Access Manager, all possible host variations are stored together. Administrators enter the canonical name for the host and every other name by which the host can be addressed by users. A request sent to any address on the list is mapped to the official host name. Authentication and authorization policies in an Application Domain protect resources based on host identifiers. Host identifiers are used to identify resources or an application at run time and can be used to formulate policies for application resources at design time. Host identifiers can be generated automatically during Agent registration and are used to seed the Resource definition and default authentication and authorization policies in the new Application Domain. **Alternatively**: Administrators can create a host identifier definition for use in one or more Application Domains. Virtual Web Hosting: Enables support of multiple domain names and IP addresses that each resolve to their unique subdirectories on a single server. The same host can have multiple sites being served either based on multiple NIC cards (IP based) or multiple names (for example, abc.com and def.com) resolving to same IP. See Also: "About Host Identifiers" on page 19-8.
Authentication Scheme	A named component that defines the challenge mechanism, level of trust, and the underlying authentication module or plug-in required to authenticate a user. Several default schemes provided with Access Manager and Administrators can define their own schemes. Authenticating a user's identity with Access Manager refers to running a pre-defined set of processes to verify the digital identity of the user. One authentication scheme can be assigned to multiple authentication policies. However, each authentication policy can have only one authentication scheme assigned to it. **Note**: Authentication schemes are defined globally to ensure that a small number of Administrators define them in a consistent, secure way. **See Also**: "Managing Authentication Schemes" on page 19-64

Table 18–3 (Cont.) Access Manager Global, Shared Policy Components

Component	Description
Authentication Modules and Plug-ins	The smallest executable unit of an authentication scheme. The authentication module determines the exact procedure to be followed and the method for challenging the user for credentials. Authentication involves determining which credentials a user must supply when requesting access to a resource, gathering credentials, and returning a response that is based on the results of credential validation. All authentication processing relies on an authentication module to define the rules governing requirements and transmission of information to the backend authentication scheme. All information collected by the plug-in and saved in the context is available to the plug-in through the authentication process. Context data can also be used to set cookies or headers in the user's login page A number of plug-ins and several pre-defined modules are provided. Oracle strongly recommends using plug-ins, which you can configure and orchestrate as needed to provide multi-step authentication. **See Also**: ■ "Managing Native Authentication Modules" on page 19-23 ■ "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28

Access Manager Policy Components

Access Manager default behavior denies access when a resource is not protected by a policy that explicitly allows access. Table 18–4 describes policy components you configure to allow access and where you can find the details.

> **See Also:** "Anatomy of an Application Domain and Policies" on page 18-10

Table 18–4 Access Manager Policy Components

Component	Description
Application Domain	Each Application Domain provides a logical container for resources, and the associated policies that dictate who can access these resources. An application domain can be created automatically during Agent registration or manually using the console. **See Also**: "Anatomy of an Application Domain and Policies" on page 18-10
Resource Definitions	Based on a defined host identifier, Administrators can add specific resources to an Application Domain and apply policies to protect those resources. **See Also**: "Adding and Managing Policy Resource Definitions" on page 20-14.
Authentication Policy	Each resource defined in an Application Domain can be protected by only one authentication policy. Each authentication policy requires one authentication scheme. One authentication policy can protect many resources. However, each resource can be protected by only one authentication policy. **See Also**: "Defining Authentication Policies for Specific Resources" on page 20-32
Authorization Policies	Each resource assigned to an Application Domain can be protected by only one authorization policy. Each policy can include one or more conditions and a rule. Authorization policies can also contain success responses. One authorization policy can protect many resources. However, each resource can be protected by only one authorization policy. **See Also**: "Defining Authorization Policies for Specific Resources" on page 20-37.
Token Issuance Policy	By default, only a container for Token Issuance Policies is provided in a generated Application Domain. No Conditions or Rules are generated automatically. You must add these manually. **See Also**: "About Token Issuance Policy Pages" on page 20-10.

Table 18–4 (Cont.) Access Manager Policy Components

Component	Description
Policy Responses	Available for all policy types, Authentication and Authorization success Responses can be defined within respective policies to be applied after policy evaluation. **See Also**: "Introduction to Policy Responses for SSO" on page 20-41.
Rule	Available for only Authorization and Token Issuance Policies. Each Authorization policy includes a rule that defines whether the policy allows or denies access to resources protected by the policy. The rule references Authorization conditions, described next. **See Also**: "Introduction to Authorization Policy Rules and Conditions" on page 20-49.
Condition	Available for only Authorization and Token Issuance Policies. Each Authorization policy rule references conditions that define to whom the rule applies, if there is a time Condition, and how evaluation outcomes are to be applied. Conditions are declared outside of rules and are referenced within a rule. **See Also**: "Introduction to Authorization Policy Rules and Conditions" on page 20-49.

18.3 Anatomy of an Application Domain and Policies

Access Manager enables you to control who can access resources based on policies defined within an Application Domain. Users attempt to access a protected resource by entering a URL in a browser, by running an application, or by calling some other external business logic. When a user requests access to a protected resource, the request is evaluated according to policies that discriminate between authenticated users who are authorized and those who are not authorized for access to a particular resource.

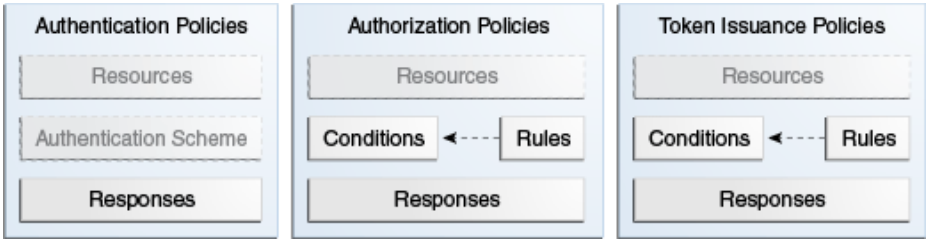
Application domains do not have any hierarchical relationship to one another. Each Application domain can be made to contain policy elements related to an entire application deployment, a particular tier of the deployment, or a single host.

Within each Application Domain, specific resources are identified for protection by specific policies that govern access. Authentication and authorization policies include Administrator-configured responses that are applied upon successful evaluation. Authorization policies include Administrator-configured conditions and rules that define how evaluation is performed, and responses to be applied upon successful evaluation.

The size and number of Application Domains is up to the Administrator. The decision can be based on individual application resources or any other logical grouping as needed. An Application Domain is automatically created during Agent registration. Also, Administrators can protect multiple Application Domains using the same agent by manually creating the Application Domain and adding the resources and policies.

Figure 18–3 shows an expanded view of policies within an Application Domain, as well as how the shared elements are used in an Application Domain.

Figure 18–3 Anatomy of Access Manager Policies



For more information, see the following topics:

- About Resource Definitions for Policies
- About Authentication Policies
- About Authorization Policies
- About Token Issuance Policies

18.3.1 About Resource Definitions for Policies

The term *resource* represents a document, or entity, or pieces of content stored on an OAM Server and available for access by a large audience.

Clients communicate with the OAM Server to request a resource using a particular protocol (HTTP or HTTPS, for example), which corresponds to an existing Resource Type. Every HTTP Resource Type must be associated with a host identifier. However, non-HTTP Resource Types are associated with a specific name (not a host identifier).

With Access Manager, each resource must be defined as within the Resources container in an Application Domain before it can be associated with a specific policy.

Note: Only resources defined in the Resources container can be associated with policies in the Application Domain.

For more information, see "Adding and Managing Policy Resource Definitions" on page 20-14.

Note: To protect pieces of content on a page, Oracle recommends using Oracle Entitlements Server.

18.3.2 About Authentication Policies

Administrators can create an authentication policy to apply to specific resources within an Application Domain. Each authentication policy:

- Identifies the specific resources covered by this policy, which must be defined on the Resources tab of this policy and in the Resources container for the Application Domain
- Specifies the authentication scheme that provides the challenge method to be used to authenticate the user
- Specifies the Success URL (and the failure URL) that redirects the user based on the results of this policy evaluation

- Defines optional Responses that identify post-authentication actions to be carried out by the Agent.

  Policy responses provide the ability to insert information into a session and pull it back out at any later point. This is more robust and flexible than Oracle Access Manager 10g, which provided data passage to (and between) applications by redirecting to URLs in a specific sequence.

  Policy responses are optional. These must be configured by an Administrator and are applied to specific resources defined within the Application Domain. For more information, see "Introduction to Policy Responses for SSO" on page 20-41.

Authentication Policy Evaluation Results

To authenticate a user, Access Manager presents the user's browser with a request for authentication credentials based on the challenge method defined by the authentication scheme for this policy.

After policy evaluation, the result is returned and the user is redirected based on that result:

- Success (allow access) redirects to the requested URL
- Failure, (deny access) redirects to a generic error page

> **Note:** Policy evaluation results can be overridden policy by policy.

See Also:

- "About Authentication Policy Pages" on page 20-7
- "Managing Run Time Policy Evaluation Caches" on page 14-9

18.3.3 About Authorization Policies

Authorization is the process of determining if a user has a right to access a requested resource. A user might want to see data or run an application program protected by a policy, for example.

Administrators can create an authorization policy to specify the conditions under which a subject or identity has access to a particular resource. The requested resource must belong to an Application Domain and must be included within a specific authorization policy.

> **Note:** OracleAS SSO 10g does not provide authorization; OSSO Agents do not use Access Manager 11g Authorization Policies.

Each authorization policy:

- Identifies the specific resources covered by this policy, which must be defined on the Resources tab of this policy and in the Resources container for the Application Domain
- Specifies the Success URL (and the failure URL) that redirects the user based on the results of this policy evaluation
- Identifies specific Allow or Deny Rules based on defined conditions for this policy and resources. See Table 18–5 for an overview of Condition types.

- Defines optional Responses that identify post-authorization actions to be carried out by the Agent, as described in "Introduction to Policy Responses for SSO" on page 20-41.

See Also: "Introduction to Policy Conditions and Rules"

18.3.4 About Token Issuance Policies

A Token Issuance Policy defines the rules under which a token can be issued for a resource (Relying Party Partner) based on the client's identity. The client can be either a Requester Partner or an end user.

Unless explicitly stated, information on Application Domains and authorization policies applies equally to Token Issuance policies.

Note: During automatic policy generation, no Token Issuance Policies are created; only the container for Token Issuance Policies is generated automatically.

For specific information about Token Issuance Policies, see:

- "Managing TokenServiceRP Type Resources" on page 38-30
- "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27

18.4 Introduction to Policy Conditions and Rules

Unless explicitly stated, information on policy Conditions and Rules applies equally to:

- Authorization policies
- Token Issuance policies

Conditions

Conditions can be specified only within Authorization and Token Issuance policies. Conditions are used in conjunction with Rules that specify Allow or Deny access, based on defined Conditions. Table 18–5 identifies available condition types.

Table 18–5 Condition Types

Type	For more information, see ...
Identity	"Introduction to Authorization Policy Rules and Conditions" on page 20-49.
IP4 Range	"Defining IP4 Range Conditions" on page 20-61.
Temporal	"Defining Temporal Conditions" on page 20-63.
Attribute	"Defining Attribute Conditions" on page 20-65.
True	Effectively "Allow All". Oracle recommends this be used as the default option in cases where you need to let in any authenticated use. In this case, you do not need any particular conditions to be satisfied at authorization time. This replaces the Use Implied Constraints flag the previous release of Access Manager, which similarly lets policy evaluation complete with an Allow result when no specifically-defined constraints were present.

Each Authorization and Token Issuance policy can contain one or more condition objects. There can be more than one instance of a type of condition in a policy (the previous policy model allowed only one instance of a class in a policy).

Conditions are similar to earlier Access Manager 11g authorization constraints. However, constraints included Allow or Deny specifications and conditions do not.

Rules

Rules are new constructs in the policy model. Each Rule defines the Allow or Deny specification that determines the overall effect of the policy. Rules also define how the outcomes of each Condition evaluation is to be combined. Conditions are referenced in rules and declared outside of rules.

Within a Rule, evaluation outcomes can be combined as follows:

- **Simple Mode**: Accepts a list of condition names that are combined based on the value of a combiner that allows either All conditions to be met or Any one condition to be met to return "true" for the evaluation. [Previously, ALL allowed constraints while ANY denied them.]
- **Expression mode**: Allows the user to specify a Boolean expression to combine conditions using condition names and special characters (comma, vertical bar, ampersand and exclamation point: , |& and !.

> **Note:** A policy in which there are one or more conditions that are not part of either an Allow or Deny Rule is treated as a valid policy.

For more information about Conditions and Rule, see Chapter 20.

18.5 Introducing Access Manager Credential Collection and Login

This section provides the following topics:

- About Access Manager Credential Collection
- About SSO Login Processing with OAM Agents and ECC
- About Login Processing with OAM Agents and DCC
- About SSO Login Processing with OSSO Agents (mod_osso) and ECC

18.5.1 About Access Manager Credential Collection

Access Manager provides two mechanisms for credential collection during authentication processing:

- The default Embedded Credential Collector (ECC) is installed with the Access Manager Server and can be used as-is with no additional installation or set up steps (except the global password policy configuration described in "Managing Global Password Policy" on page 19-97).

  The mechanism that redirects the user from the Policy Enforcement Point to the Credential Collector is a proprietary front channel protocol over HTTP. This protocol currently provides a context of the request and the authentication response on the query string.

- The 11.1.2 (or later) WebGate provides a single switch for the optional Detached Credential Collector (DCC). The DCC provides network isolation for greater security in production deployments, and is required for some forms of authentication.

Unless explicitly stated, instructions in this book presume you are using the ECC.

Single Sign On login processing determines whether the user is a valid user and whether the session state is active or inactive (either a first time user or the user session has expired). Session management support locates, persists, and cleans up the session context and user token.

Login with Self-Service Provisioning Applications

Provisioning does not create the session in Access Manager. When a new user uses a self-service provisioning application to create an account, he is prompted for his userID and password again when accessing an application.

The protected application is directed to Access Manager 11g, which requests the user's credentials. For example, if Oracle Identity Manager is protected by Access Manager, the user request is redirected to Access Manager from which a request to enter credentials is made.

Success and failure results are the same as described in "Login Processing with Access Manager-Protected Resources".

Login Processing with Access Manager-Protected Resources

The first time a user attempts to access a protected resource, she is prompted for her credentials based on the authentication scheme and authentication level for the resource. Typically a userID and password are needed.

Failure: Authentication fails if the wrong userID or password is entered. The user is not authenticated and another prompt for credentials appears.

With Oracle Access Manager 11.1.1, only the ECC in the OAM server was available. Access Manager 11.1.2 supports the ECC by default. However, Access Manager also enables you to configure an 11g WebGate to use as a detached credential collector (DCC). A DCC-enabled WebGate can be separate from (or combined with) a Resource Webgates.

Both the ECC and DCC provide an authentication flow that includes form login, error, and login retries. They provide SecurID and server affinity as well as password policy enforcement and a dynamic, multi-step, iterative, and variable (multi-step authentication) where the credentials are not supplied all at one time. A customizable authentication flow can include authentication plug-ins with contracts between the plug-in, OAM Proxy, and Credential Collector; a contract between the plug-in and login application; and between the Credential Collector and login application.

When deciding whether to use one credential collector or both, consider:

- **Co-existence**: Allowing both the ECC and DCC to co-exist enables you to use authentication schemes and policies configured for either the ECC or the DCC. This enables a fallback mechanism for resources that rely on the ECC (Oracle Access Management Console, for instance).
- **Disabling ECC**: Disabling the ECC entirely prohibits access to resources that rely on the ECC mechanism (Oracle Access Management Console, for instance).

Table 18–6 provides links to more information.

Table 18–6 Login Processing with Access Manager-Protected Resources

Login Processing Topic	See
With OAM Agents and ECC	"About SSO Login Processing with OAM Agents and ECC" on page 18-16
With OAM Agents and DCC	"About Login Processing with OAM Agents and DCC" on page 18-18

Table 18–6 (Cont.) Login Processing with Access Manager-Protected Resources

Login Processing Topic	See
With OSSO Agents and ECC	"About SSO Login Processing with OSSO Agents (mod_osso) and ECC" on page 18-21
With Other Agents or Mixed Agent Types	Mixed agent types are supported. Processing is the same for each agent type. For other agent types, see: ■ Chapter 23, "Registering and Managing Legacy OpenSSO Agents" ■ Chapter 24, "Registering and Managing Legacy OSSO Agents" ■ Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g"
Login and Auto Login for Applications Using Oracle ADF Security	Oracle Platform Security Services (OPSS) comprise Oracle WebLogic Server's internal security framework. On the Oracle WebLogic Server, you can run a Web application that uses Oracles Application Development Framework (Oracle ADF) security, integrates with Access Manager 11g SSO, and uses OPSS SSO for user authentication. For more information, see Appendix A, "Integrating Oracle ADF Applications with Access Manager SSO".

18.5.2 About SSO Login Processing with OAM Agents and ECC

This topic is based on using the default Embedded Credential Collector with OAM Agents (Resource Webgates) protecting resources).

Access Manager authenticates each user with a customer-specified authentication method to determine the identity and leverages information stored in the user identity store. Access Manager authentication supports several authentication methods and a number of authentication levels. Resources with varying degrees of sensitivity can be protected by requiring higher levels of authentication that correspond to more stringent authentication methods.

When a user tries to access a protected application, the request is received by Access Manager which checks for the existence of the SSO cookie.

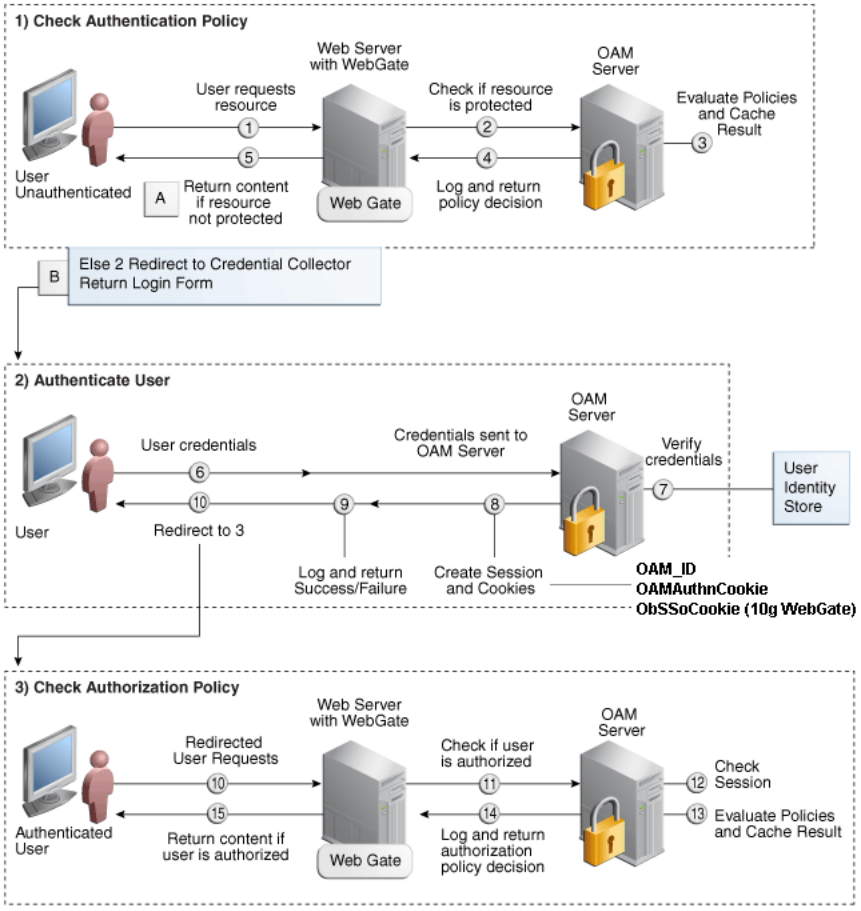
After authenticating the user and setting up the user context and token, Access Manager sets the SSO cookie and encrypts the cookie with the SSO Server key (which can be decrypted only by the SSO Engine).

Depending on the actions (responses in Access Manager 11g) specified for authentication success and authentication failure, the user may be redirected to a specific URL, or user information might be passed on to other applications through a header variable or a cookie value.

Based on the authorization policy and results of the check, the user is allowed or denied access to the requested content. If the user is denied access, she is redirected to another URL (specified by the Administrator in Webgate registration).

Figure 18–4 shows the processes involved in evaluating policies, validating a user's identity, authorizing the user for a protected resource, and serving the protected resource. This example shows the OAM Agent flow. There are slight variations with 11g Webgates/Access Clients.

Figure 18–4 SSO Log-in with Embedded Credential Collector and OAM Agents



Process overview: SSO Login Processing with Embedded Credential Collector and OAM Agents

1. The user requests a resource.
2. Webgate forwards the request to Access Manager for policy evaluation.
3. Access Manager:
   - Checks for the existence of an SSO cookie.
   - Checks policies to determine if the resource protected and if so, how?
4. Access Manager Server logs and returns decisions.
5. Webgate responds as follows:
   a. **Unprotected Resource**: Resource is served to the user.
   b. **Protected Resource**:

      Request is redirected to the credential collector.

      The login form is served based on the authentication policy.

      Authentication processing begins
6. User sends credentials.
7. Access Manager verifies credentials.

8. Access Manager starts the session and creates the following host-based cookies:
   - **One per Agent**: OAMAuthnCookie set by 11g Webgates (ObSSOCookie set by 10g Webgate) using the authentication token received from the OAM Server after successful authentication.

     Note: A valid cookie is required for a session.
   - **One for OAM Server**: OAM_ID
9. Access Manager logs Success or Failure.
10. Credential collector redirects to Webgate and authorization processing begins.
11. Webgate prompts Access Manager to look up policies, compare the user's identity, and determine the user's level of authorization.
12. Access Manager logs policy decision and checks the session cookie.
13. OAM Server evaluates authorization policies and cache the result.
14. OAM Server logs and returns decisions
15. Webgate responds as follows:
    - If the authorization policy allows access, the desired content or applications are served to the user.
    - If the authorization policy denies access, the user is redirected to another URL determined by the Administrator.

18.5.3 About Login Processing with OAM Agents and DCC

The detached credential collector is simply a WebGate configured to use the additional Credential Collection capability in your deployment. There are two deployment types depending on whether the DCC WebGate is also protecting the applications or not.

Table 18–7 identifies the DCC-supported deployments.

Table 18–7 DCC Deployment Support

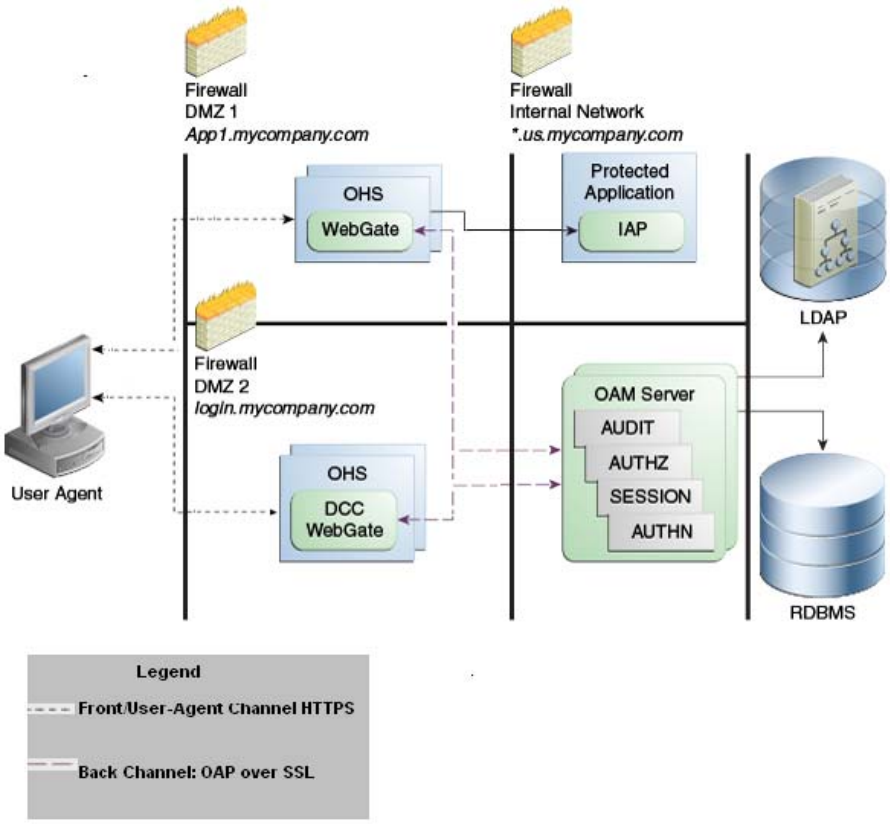
Deployment Type	Description
Separate DCC and Resource Webgate	A distributed deployment where WebGates protecting applications are managed independently from the centralized DCC. You can have: ■ Two or more 11.1.1.5 Resource Webgates that redirect to the 11.1.2 DCC-enabled Webgate for authentication ■ 10.1.4.3 Resource Webgate that redirects to the 11.1.2 DCC-enabled Webgate for authentication Enable HTTPS between the user-agent and the DCC (but not with some or all Resource WebGates). When credential collection is externalized and centralized in the DCC, the user-agent connections with other WebGates never carry user credentials, nor session tokens that could be used to obtain access to resources protected by any other WebGate. This significantly reduces exposure caused by lack of SSL on these links and may be an acceptable tradeoff in some deployments. ■ Separate OHS Instances: Install the DCC on a different OHS instance (on the same or different host) as the Resource Webgate. ■ Define the Resource Webgate Authentication Scheme Challenge Redirect URL to point to the DCC. ■ Define the Resource Webgate logoutRedirectUrl to point to the DCC logout script/page (logout callbacks to Resource Webgate is invoked during logout). See Also: Figure 18–5

Table 18–7 (Cont.) DCC Deployment Support

Deployment Type	Description
Combined DCC and Resource Webgate	A streamlined deployment minimizing configuration and processing overhead. A DCC Webgate can function as both a resource Webgate (Policy Enforcement Point) that protects application resources and a DCC. In this case, there is no front-channel redirection or processing: ▪ Install the DCC on a the same OHS instance (on the same host) as the Resource Webgate. ▪ Simplified configuration: The Challenge Redirect URL can be empty. ▪ No logoutRedirectUrl is needed, no logout callback is needed. See Also: Figure 18–6

Separate DCC and Resource Webgates: A sample deployment with segregated DCC is shown in Figure 18–5.

Figure 18–5 Example: Separate Resource Webgate and DCC Webgate Deployment



This topology (Figure 18–5) showcases choices appropriate for scenarios with maximum security sensitivity. Both centralized and externalized credential collection are used: Resource WebGates protecting applications are segregated from the DCC WebGate performing credential collection.

The user accesses the Access Manager-protected resource from the public network. A WebGate protecting the application is deployed within a DMZ. The DCC Webgate is also deployed within a DMZ. The protected application and OAM Server instances are located within the private network and not directly accessible from the public network.

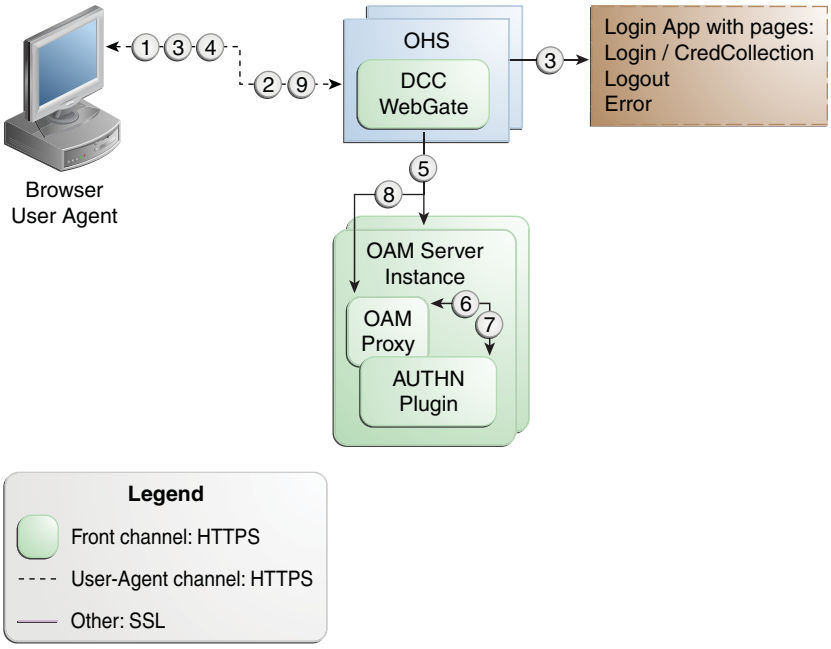
Using the DCC in the DMZ, only authenticated network connections are allowed to reach the server itself. The DCC inherits all back-channel communication characteristics available to 11g WebGates (network connection using the Oracle Access Protocol). The OAP offers:

- SSL between the client and the server, optionally using 3rd party signed certificates
- mutual authentication at the application level using client id and password
- request multiplexing and full-duplex communication at the application level
- built-in connection load balancing and failover capability

The DCC receives an authentication request from the Agent and checks for the presence of the DCC cookie. If the cookie does not exist, credential collection is initiated; checks are made, and user-supplied credentials are passed for validation.

Note: Encryption occurs only from an 11g resource Webgate to the DCC. The channel is not encrypted for communication between 10g resource Webgate and 11g DCC; this is in clear text.

Figure 18–6 Combined DCC and Webgate Configuration



Process overview: Authentication with the combined DCC and Resource Webgate

1. The user requests access to a resource which initiates the authentication process.
2. The DCC redirects through the front channel to the login page.
3. The login page is returned to the user.
4. User enters credentials, which are posted to the action URL (a user-defined parameter in an authentication scheme, Table 19–23).
5. Authentication occurs using the back channel (OAP) and OAM Proxy.

6. The Authentication Plug-in is activated.
7. The Plug-in requests redirect to a URL to collect additional credentials.
8. The Plug-in request is returned to the DCC.
9. The DCC redirects to the URL and expects specified credentials.
10. The Browser follows the redirect.
11. Credentials are posted to the Action URL.

See Also: "Configuring Logout When Using Detached Credential Collector-Enabled Webgate" on page 22-6

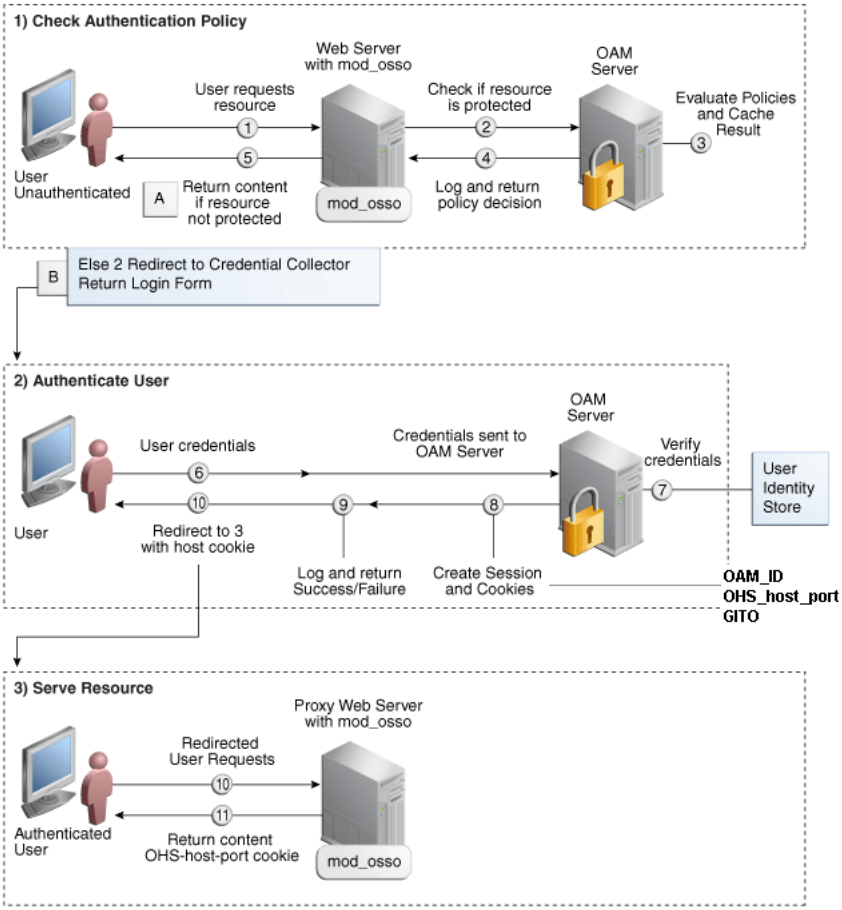
18.5.4 About SSO Login Processing with OSSO Agents (mod_osso) and ECC

SSO login processing with registered OSSSO Agents (mod_osso) is similar to login processing with Webgates. However, mod_osso provides only authentication using Access Manager 11g authentication policies.

Note: mod_osso does not support authorization either on its own or using Access Manager 11g policies.

Figure 18–7 illustrates the login processing with mod_osso and Access Manager 11g.

Figure 18–7 SSO Login Processing with OSSO Agents and ECC



Process overview: SSO Log-in Processing with OSSO Agents and ECC

1. The user requests a resource.
2. mod_osso forwards the request to Access Manager for policy evaluation.
3. Access Manager:
   - Checks for the existence of an SSO cookie.
   - Checks policies to determine if the resource protected and if so, how?
4. OAM Server logs and returns decisions.
5. mod_osso responds as follows:
   a. **Unprotected Resource**: Resource is served to the user.
   b. **Protected Resource**:

      Request is redirected to the credential collector.

      The login form is served based on the authentication policy.

      Authentication processing begins
6. User sends credentials.
7. ECC verifies credentials.

8. Access Manager starts the session, passes an authentication token to the application, and creates the following cookies:
   - **One per partner**: OHS_host_port
   - **One for the OAM Server**: OAM_ID
   - **Global Inactivity Out**: A domain-level cookie GITO, described in "mod_osso Cookies" on page 18-27
9. Access Manager logs Success or Failure.
10. Credential collector redirects to mod_osso, which transmits the simple header values that applications can use to authorize the user.
11. Resource is served upon authentication success and the OHS-*host-port* cookie is set.

18.6 Understanding SSO Cookies

This section provides a brief overview of single sign-on with Access Manager 11g. It includes the following topics:

- About Single Sign-On Cookies During User Login
- About Single Sign-On Server and Agent Cookies

18.6.1 About Single Sign-On Cookies During User Login

Table 18–8 describes the cookies that can be set or cleared during user login.

Table 18–8 SSO Cookies

SSO Cookie Set at User Login	Set By	Description
OAM_ID cookie	OAM Server Embedded Credential Collector	When a user attempts to access a protected application, the request comes to the SSO Engine and the controller checks for the existence of the cookie. See Also: "OAM_ID cookie" on page 18-24.
OAMAuthnCookie	11g Webgate	Set by each 11g Webgate that is contacted. Protected by the key known to the respective 11g Webgate and the OAM Server. A valid OAMAuthnCookie is required for a session. **Note**: If the user accesses applications protected by different 11g Webgates, you will have multiple OAMAuthnCookies. See "OAMAuthnCookie for 11g OAM Webgates" on page 18-25.
ObSSOCookie	10g Webgate	A domain-based cookie for 10g Webgates is set only when a 10g Webgate is contacted. Protected with keys known to the OAM Server only. One global shared secret key for all Webgates. **Note**: This cookie enables backward compatibility and inter-operability between Access Manager 11g and older agents. See "ObSSOCookie for 10g Webgates" on page 18-26
OAM_REQ	OAM Server Embedded Credential Collector	A transient cookie that is set or cleared by the OAM Server if the Authentication request context cookie is enabled. Protected with keys known to the OAM Server only. **Note**: This cookie is configured as a high availability option to store the state about user's original request to a protected resource while his credentials are collected and authentication performed. See "OAM_REQ Cookie" on page 18-26.

Table 18–8 (Cont.) SSO Cookies

SSO Cookie Set at User Login	Set By	Description
OAMRequestContext	11g Webgate	Set or cleared by the 11g Webgate and protected by the key known to the respective 11g Webgate and the OAM Server. With Internet Explorer browser: --When RequestContextCookieExpTime is not set, OAMRequestContext is a transient cookie. --When RequestContextCookieExpTime is set, the OAMRequestContext cookie expires by the time set using the "`Expires`" directive. This requires a time sync between the client host and Web server host. With all other (non-IE) browsers, when RequestContextCookieExpTime is not set OAMRequestContext expires in 5 minutes by default or by the time set using the "`Max-Age`" directive. See Also: "OAMRequestContext" on page 18-26 Table 16–2, " User-Defined WebGate Parameters"
DCCCtxCookie	Detached Credential Collector	For detached credential collector (DCC)--similar to OAM_REQ created by embedded credential collector (ECC). See "DCCCtxCookie" on page 18-26
OHS-*host-port*	Oracle HTTP Server	Set only when OSSO Agents (mod_osso) are contacted on Oracle HTTP Server (OHS). Protected with the key known to the respective mod_osso agent and the OAM Server. **Note**: This cookie enables backward compatibility and inter-operability between Access Manager 11g and older agents. See "mod_osso Cookies" on page 18-27.
GITO cookie	OAM Server	Provides backward compatibility and inter-operability between OSSO 10g and Access Manager 11g. The cookie is created by the OAM Server and accessed or modified by the OAM Server or mod_osso agent. See "mod_osso Cookies" on page 18-27.
OpenSSO cookie	OpenSSO Proxy	See "OpenSSO Cookie (iPlanetDirectoryPro)" on page 18-28.

For details about configuring authentication and authorization policies, see Chapter 20, "Managing Policies to Protect Resources and Enable SSO".

18.6.2 About Single Sign-On Server and Agent Cookies

- OAM_ID cookie
- OAMAuthnCookie for 11g OAM Webgates
- ObSSOCookie for 10g Webgates
- OAM_REQ Cookie
- OAMRequestContext
- DCCCtxCookie
- mod_osso Cookies
- OpenSSO Cookie (iPlanetDirectoryPro)

18.6.2.1 OAM_ID cookie

This cookie is scoped to the OAM Server. OAM_ID is generated by the OAM Server when the user is challenged for credentials, and submitted to the server on every redirect to the server.

OAM_ID is protected by keys known to the OAM Server only.

When a user attempts to access a protected application, the request comes to the SSO Engine and the controller checks for the existence of the cookie:

- If the cookie does not exist, user authentication begins. After successful authentication, the user context and token are set by the SSO Engine. The cookie is set with the global user ID (GUID), creation time, and idle timeout details. Information in the cookie is encrypted with the SSO Server key and can be decrypted only by the SSO Engine.
- If the cookie exists, then the cookie is decrypted and the sign in flow completes with the authenticated user.

18.6.2.2 OAMAuthnCookie for 11g OAM Webgates

There is one OAMAuthnCookie_<*host:port*>_<*random number*> set by each 11g Webgate using the authentication token received from the OAM Server after successful authentication. A valid OAMAuthnCookie is required for a session.

SSL Connections: Administrators can ensure the ObSSOCookie is only sent over an SSL connection and prevents the cookie from being sent back to a non-secure Web server by configuring SSL and then specifying Simple or Cert mode for Agents and Servers. For details, see "About Communication Between OAM Servers and Webgates" on page 6-4.

Cookie Expiration: For 11g Webgate and OAMAuthnCookie, expiration is controlled by the "tokenValidityPeriod" parameter, which controls the valid token (or cookie) time.

This key is known to both the 11g Webgate and SSO Engine and is used for encrypting OAMAuthnCookie. The SSO engine key (only known to the SSO Engine) is used for encrypting the OAM_ID OAM Server cookie.

Similar to ObSSOCookie for 10g Webgates.

18.6.2.3 ObSSOCookie for 10g Webgates

Access Manager 11g sets a key-based cookie *ObSSOCookie* for each user or application that accesses a resource protected by a 10g Webgate. The key is set up during agent registration and is known to both the agent and SSO Engine (shared between them). This key is different from the OAM Server (or SSO Engine) key.

Removing the ObSSOcookie causes the 10g Webgate to log the user out and requires the user to re-authenticate the next time he or she requests a resource that is protected by the Access System.

The Webgate sends the ObSSOCookie to the user's browser upon successful authentication. This cookie can then act as an authentication mechanism for other protected resources that require the same or a lower level of authentication. When the user requests access to a browser or another resource, the request flows to the OAM Server. The user is logged in, and the ObSSOCookie is set. The OAM Server generates a session token with a URL that contains the ObSSOCookie. Single sign-on works when the cookie is used for subsequent authorizations in lieu of prompting the user to supply authorization credentials.

When the cookie is generated, part of the cookie is used as an *encrypted session token*. The single sign-on cookie does not contain user credentials such as user name and password.

SSL Connections: Administrators can ensure the ObSSOCookie is only sent over an SSL connection and prevents the cookie from being sent back to a non-secure Web

server by configuring SSL and then specifying Simple or Cert mode for Agents and Servers. For details, see "About Communication Between OAM Servers and Webgates" on page 6-4.

Cookie Expiration: Administrators can specify the desired Cookie Session Time in the OAM Agent registration. For more information, see "Registering an OAM Agent Using the Console" on page 16-12.

18.6.2.4 OAM_REQ Cookie

A transient cookie that is set or cleared by the OAM Server if the Authentication request context cookie is enabled. Protected with keys known to the OAM Server only.

This cookie is configured as a high availability option to store the state about user's original request to a protected resource while his credentials are collected and authentication performed.

In high availability configurations, the Request Cache type must be changed from BASIC to COOKIE using Infrastructure Security custom WLST commands.

Note: You must invoke the WLST script from the Oracle Common home. See "Using Custom WLST Commands" in the Oracle Fusion Middleware Administrator's Guide.

See Also:

- Oracle Fusion Middleware WebLogic Scripting Tool Command Reference
- Table 18–8, " SSO Cookies"

18.6.2.5 OAMRequestContext

This cookie is set or cleared by the 11g Resource Webgate and protected by the key known to the respective 11g Webgate and the OAM Server.

This cookie is configured to store the state about the user's original request to a protected resource while his credentials are collected and authentication performed.

- With Internet Explorer browser:
  - When RequestContextCookieExpTime is not set, OAMRequestContext is a transient cookie.
  - When RequestContextCookieExpTime is set, the OAMRequestContext cookie expires by the time set using the "`Expires`" directive. This requires a time sync between the client host and Web server host.
- With all other (non-IE) browsers, when RequestContextCookieExpTime is not set OAMRequestContext expires in 5 minutes by default or by the time set using the "`Max-Age`" directive.

  See Also: RequestContextCookieExpTime in Table 16–2, " User-Defined WebGate Parameters"

18.6.2.6 DCCCtxCookie

This comes into play only with the Detached Credential Collector (DCC).

The DCCCtxCookie is used by DCC to save various context information required during authentication. It includes information necessary to reconstruct the original

request upon completion of authentication, to maintain server affinity, and to perform iterative multi-step authentication.

By default, DCCCtxCookie is set when the DCC is first redirected away to collect credentials based on the authentication scheme (when the browser is first redirected to the login form with a form-based authentication scheme).

With the DCC, once authenticated the OAM server issues a DCC master session token to the DCC in the authenticate response. DCC then sets a host- based DCC cookie using the token and:

- **If DCC cookie Presented During Authentication**: DCC decrypts the token using a DCC key, and performs partial token validation locally (integrity check, token validity period check). If it passes, DCC performs complete token validation for timeout aspects over the OAP channel against the OAM Server.
- **If no DCC Cookie**: This indicates a first time authentication which initiates credential collection, performs sanity and syntactic checks on the credential and submits to OAM Server for validation.

See Also: "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109

18.6.2.7 mod_osso Cookies

The mod_osso module is the Oracle HTTP Server module that provides authentication to OracleAS applications. This module resides on the Oracle HTTP Server that enables applications protected by OracleAS Single Sign-On to accept HTTP headers in lieu of a user name and password once the user has logged into the OracleAS Single Sign-On server. The values for these headers are stored in a mod_osso cookie.

Located on the application server, mod_osso simplifies the authentication process by serving as the sole application to the single sign-on server. In this way, mod_osso renders authentication transparent to OracleAS applications. The Administrator for these applications is spared the burden of integrating them with an SDK. After authenticating a user, mod_osso transmits the simple header values that applications may use to authorize the user.

GITO Cookie

Needed in special cases to support timeout when multiple types of agents (mod_osso and Webgate) are working with Access Manager 11g. Server side session managers can check the validity of the cookie for expiry and timeout during session validation. Global logout is required for OSSO Agents (mod_osso) to ensure that logging out of a session on any entity propagates the logout to all entities.

When a user is authenticated by OSSO 10g, the OSSO Server sets GITO cookie. Once the partner cookie (OHS cookie) is set, OHS does not route the request to the server. Instead, on every access, OHS decrypts the GITO cookie and updates the last activity timestamp. During request processing, if any partner detects that current time has surpassed GITO timeout (last activity time + GITO timeout), the request is sent to OSSO 10g in forced authentication mode. When a request reaches OSSO server in forced authentication mode, server chooses to ignore SSO_ID cookie and challenges user for credentials, considering it as a fresh request. After successful authentication, SSO_ID and GITO cookie are updated.

This is enabled (using the `editGITOValues` WLST command), as described in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference.

OssoSecureCookies Directive

Add the OssoSecureCookies directive to set the Secure flag on all cookies. This tells the browser to only transmit those cookies on connections secured by HTTPS. An example of this directive in a mod_osso configuration (mod_osso.conf), is as follows:

```
<IfModule mod_osso.c>
OssoIpCheck off
OssoIdleTimeout off
OssoSecureCookies on
OssoConfigFile osso/osso.conf
<Location /j2ee/webapp>
require valid-user
AuthType Basic
</Location>
</IfModule>
```

For more information, see *Oracle Application Server Single Sign-On Administrator's Guide*.

18.6.2.8 OpenSSO Cookie (iPlanetDirectoryPro)

The agent finds this cookie after the OpenSSO Proxy triggers session validation. The default name of the OpenSSO cookie is:

iPlanetDirectoryPro

After the OpenSSO agent is authenticated and logged in, the agent verifies whether the user has an OpenSSO cookie. If not, the user authentication request is initiated from the OpenSSO Agent. During SSO User Login and Authentication flow OpenSSO cookie is created, which contains the OpenSSO session identifier, and this cookie is set in the user's browser.

During End User Session Validation, OpenSSO agent intercepts the request to the protected application and finds an OpenSSO cookie.

During User Single Logout, the OpenSSO Proxy receives a User logout request and forwards the user to the OAM Logout URL OpenSSO Proxy decrypts the OpenSSO cookie, fetches the OpenSSO session identifier and, from that, fetches the OAM session ID. OpenSSO proxy sends the logout request to controller through the OpenSSO logout event with the OAM session ID.

- SSO User Login and Authentication flow
- End User Session Validation flow
- User Single Logout flow

18.7 Introduction to Configuration Tasks for Single Sign-On

The following overview outlines the tasks that Administrators must perform to configure single sign-on with Access Manager 11g,. For each task, a link to additional information is included.

Task overview: Configuring single sign-on

1. Review all topics in this chapter to get familiar with the Access Manager 11g SSO policy model.
2. Configure a single sign-on logout URL for each application you want to protect, using documentation for your specific application.

3. Install and register an Agent on each Web server that is hosting an application to protect using either method. See:
   - Chapter 15, "Introduction to Agents and Registration"
   - Chapter 16, "Registering and Managing OAM 11g Agents"
4. Proceed to manage resource types, host identifiers, authentication schemes, and modules:
   - Chapter 19, "Managing Authentication and Shared Policy Components"
5. Locate an existing Application Domain (or start a fresh one) and add resources and policies, as described in:
   - Chapter 20, "Managing Policies to Protect Resources and Enable SSO"

19

Managing Authentication and Shared Policy Components

This chapter describes how Administrators can manage shared policy components in the following topics:

19.1 Prerequisites

Oracle recommends that you review information in Chapter 18, "Understanding Single Sign-On with Access Manager" before performing activities in this chapter. Additionally, the Oracle Access Management Console and at least one OAM Server

must be installed and running within a WebLogic Server domain, and Access Manager must be running with at least two registered Agents.

19.2 Understanding Authentication and Shared Policy Component Tasks

This section introduces the tasks that must be performed to configure shared policy components required for use in Access Manager authentication policies that protect resources and enable single sign-on.

> **See Also:** Chapter 18, "Understanding Single Sign-On with Access Manager"

Task overview: Configuring shared policy components

1. Confirm that the desired resource type is defined, as described in this chapter:
   - Managing Resource Types
2. Confirm that a host identifier definition named for the agent was created during agent registration, (or create one yourself), as described in:
   - Managing Host Identifiers
3. Gain comprehension about credential collection with Access Manager:
   - Understanding Authentication Methods and Credential Collectors
4. Learn about and use the authentication plug-ins that enable multi-step authentication:
   - Orchestrating Multi-Step Authentication with Plug-in Based Modules
   - Deploying and Managing Individual Plug-ins for Authentication
5. Create and manage authentication schemes that you can add to authentication policies, as described in:
   - Managing Authentication Schemes
   - Configuring Challenge Parameters for Encrypted Cookies
6. Set up your own global password policy for either the default embedded or optional detached credential collector (unless specified, tasks apply to both ECC and DCC, with minor changes noted in the discussion):
   - Understanding Password Policy
   - Managing Global Password Policy
   - Configuring Password Policy Authentication
   - **DCC**: Configuring 11g WebGates and Authentication Policy for DCC
   - Completing Password Policy Configuration
7. Proceed to Chapter 20 to set up authentication policies.

19.3 Managing Resource Types

This section includes the following topics:

- About Resource Types and Their Use
- About the Resource Type Page
- Searching for a Specific Resource Type

- Creating a Custom Resource Type

19.3.1 About Resource Types and Their Use

When adding a resource to an Application Domain, Administrators must choose from a list of defined Resource Types. Oracle-provided resource types include:

- HTTP
- wl_authen
- TokenServiceRP

Administrators can configure additional resource types, and define operations on both Oracle-provided and custom resource types. A particular resource can be defined to use a subset of the declared operations, or all of them (which includes any new operators defined on the resource's type subsequently.

Administrators cannot remove custom resource types or operations for which resources have been created. Oracle-provided resource types and operations are marked as read-only within the policy store and cannot be removed.

> **Note:** Changes to the operation list of a resource type is not allowed if a resource of that type exists.

Table 19–1 compares resource types and operations.

Table 19–1 Comparison: Resource Types for Access Manager versus 10g

Access Manager 11g	Oracle Access Manager 10g
HTTP: The default resource type used with HTTP and HTTPS protocols. When adding an HTTP type resource to an Application Domain, Administrators must choose from a list of existing host identifiers and add the resource URL. This resource type is read-only. Default operations associated with the HTTP resource type need not be defined by an Administrator. Instead, policies developed and applied to the resource apply to all operations: **Operations**: Oracle-provided resource types are read-only; associated operations are pre-defined. Policies developed and applied to HTTP type resources apply to all operations. ■ Get ■ Post ■ Put ■ Head ■ Delete ■ Trace ■ Options ■ Connect ■ *Other* **See Also**: "About the Resource Type Page" on page 19-4.	**HTTP**: The HTTP resource type is read-only. **Operations**: Oracle-provided resource types are read-only; associated operations are pre-defined. Policies developed and applied to the resource apply to all operations. ■ Get ■ Post ■ Put ■ Head ■ Delete ■ Trace ■ Options ■ Connect ■ *Other*
wl_authen: Resources for representing WebLogic Authentication schemes is also read-only (default operations cannot be modified or deleted.) This non-HTTP resource type is available to use with resources deployed in a WebLogic container in a domain that does not include Access Manager. The protected resource is accessed through its URL on the Oracle WebLogic Server. Type wl_authen resources, require a custom Access Client.	N/A

Table 19–1 (Cont.) Comparison: Resource Types for Access Manager versus 10g

Access Manager 11g	Oracle Access Manager 10g
TokenServiceRP: Resources for representing Token Service Relying Party. The Operation for this resource type is Issue.	N/A
Custom Resource Types: Have no associated host identifier. A custom "*EJB*" resource type can be created on demand for use in SSO integrations.	**EJB:** A custom resource type used in SSO integrations with WebLogic and WebSphere for authenticating the user. During authentication, the user's groups were fetched and populated in the Subject Principal as roles. Subsequent authorization was executed inside the application server based on user roles. No authorization calls were made using resource operations.
Non-HTTP resource types have no associated host identifier. When adding non-HTTP resources to an Application Domain, Administrators must enter the Type name into the Resource URL field as a pointer. The name cannot match any host Identifier (and vice versa). This is not a relative HTTP URL.	

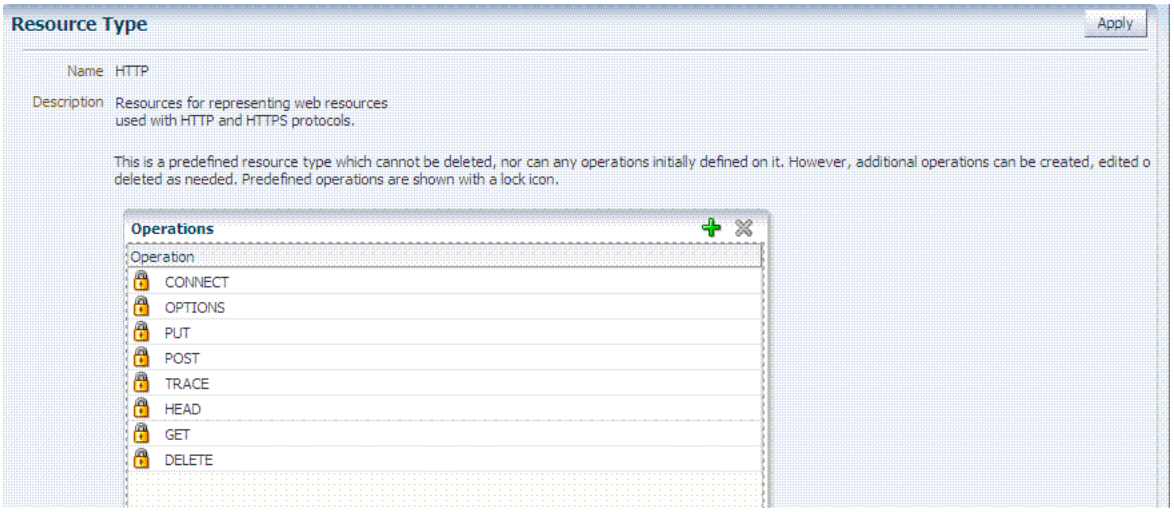
19.3.2 About the Resource Type Page

In the Oracle Access Management Console, resource types are organized with other Components under the Policy Configuration tab. The navigation tree shows Oracle-provided resource types: HTTP, wl_authen, and TokenServiceRP.

> **Note:** Pre-defined resource types cannot be deleted. Pre-defined operations are shown with a lock icon and cannot be deleted. Additional operations can be created, edited, or deleted as needed.

The `HTTP` resource type, shown in Figure 19–1, is used for Web applications protected by Access Manager and accessed using internet protocols (HTTP or HTTPS).

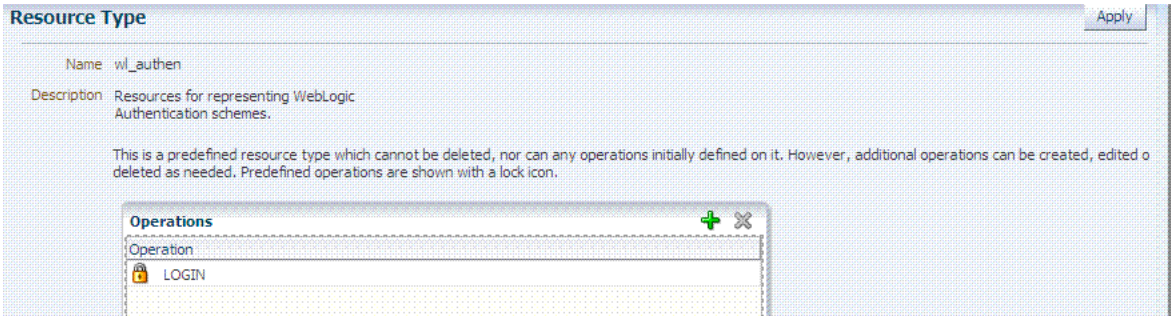
Figure 19–1 Default HTTP Resource Type Definition



The `wl_authen` resource type is shown in Figure 19–2. It is used for Fusion Middleware applications that use one of the following Access Manager Identity Assertion Provider configurations described in the Oracle Fusion Middleware Application Security Guide:

- Identity Asserter
- Identity Asserter with Oracle Web Services Manager
- Authenticator function

Figure 19–2 Default Resource Type wl_authen



The `TokenServiceRP` resource type represents the Token Service Relying Party, as shown in Figure 19–3. The operation for this resource type is Issue. For more information, see "Managing TokenServiceRP Type Resources" on page 38-30.

Figure 19–3 Default Resource Type TokenServiceRP Resource Type

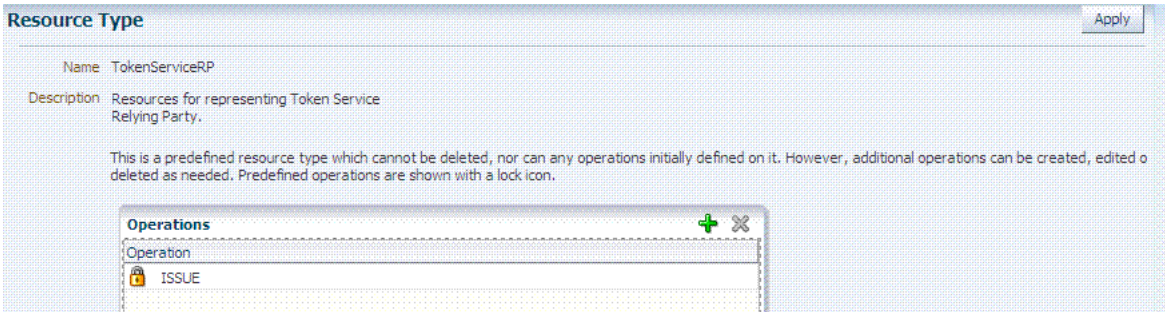


Table 19–2 describes the elements in each resource type definition.

Table 19–2 Resource Type Definition

Element	Description
Name	Required. A unique name of up to 30 alpha or numeric characters. **Note**: A non-HTTP Resource Type name cannot match a Host Identifier (and vice versa).
Description	Optional. Use this field to describe the purpose of this resource type using up to 200 alpha or numeric characters. For example: Resources representing WebLogic Authentication schemes.

Table 19–2 (Cont.) Resource Type Definition

Element	Description
Operations	Optional. Policies that govern a particular resource apply to all specified operations defined for the resource. Add (or remove) operations for this resource type as a string and the operations will be available when you define a resource of this type within an Application Domain. There is no limit to the number of operations that can be added to the resource type. ■ Get ■ Post ■ Put ■ Head ■ Issue (`TokenServiceRP`) ■ Login (`wl_authen`) ■ Delete ■ Trace ■ Options ■ Connect ■ *Other* (available with Oracle Access Manager 10 is not supported in 11g). **Remote Registration**: During automatic policy creation, specified operations are supported. During automatic policy creation with no operations specified, then All operations defined for that type are supported. **Migration**: During an upgrade to Access Manager 11.1.2 (from 10g or from 11.1.1.3 or from 11.1.1.5), resource definitions and HTTP default operations are handled automatically. However, you must create any custom resource types to replace 10g-provided EJB custom resource types which are no longer provided by Oracle. See **See Also**: "About Resource Types and Their Use" on page 19-3 and "Defining Resources in an Application Domain" on page 20-15.

Following topics describe how to create, modify, and delete a resource type.

19.3.3 Searching for a Specific Resource Type

Users with valid Administrator credentials can use the following procedure to locate a defined resource type.

> **See Also:** "Conducting A Search"

To search for a resource type

1. From the Oracle Access Management Console, click Resource Types.
2. From the search type list, choose Resource Type, enter the name of the Resource Type you want to find (with or without a wild card (*)), and click Search. For example:

   ```
   h*
   ```

   Alternatively: Go to the desired Application Domain, open the Resources node to display controls for that domain, choose a Resource Type from the list, and click Search.
3. Click the Search Results tab to display the results table, and then:
   - **Edit or View:** Click the Edit button in the tool bar to display the configuration page.
   - **Delete:** Click the Delete button in the tool bar to remove the instance; confirm removal in the Confirmation window.

- **Detach**: Click Detach in the tool bar to expand the table to a full page.
- **Reorder Columns**: Select a View menu item to alter the appearance of the results table.

4. Click the Browse tab to return to the navigation tree when you finish with the Search results.

19.3.4 Creating a Custom Resource Type

Users with valid Administrator credentials can use the following procedure to create a defined resource type. For instance, you can define a custom resource type that applies to as few as one or two (or more) operations. Any defined custom resource type is listed with default resource types when adding resources to an authentication or authorization policy.

See Also:

- "About Resource Types and Their Use" on page 19-3
- "Defining Resources in an Application Domain" on page 20-28

To create a custom resource type

1. From the Oracle Access Management Console, click Resource Types.
2. Click the Add + button.
3. Enter the following information:
   - **Name:** A unique name that identifies this resource type.
   - **Description:** Optional.
   - **Operations**: Click + in the Operations table, type the operation name into the field provided. Repeat as needed to define all operations for this resource type.
   - **Reconfigure Table**: Select a View menu item to alter the appearance of the results table.
4. Click **Apply** to submit this custom resource definition.
5. Add this resource definition to an Application Domain as described in "Adding and Managing Policy Resource Definitions" on page 20-14.

19.4 Managing Host Identifiers

This section describes host identifiers and their use as well as how to create, modify, or remove a host identifier. Topics here include:

- About Host Identifiers
- About Virtual Web Hosting
- About the Host Identifier Page
- Creating a Host Identifier
- Searching for a Host Identifier Definition
- Viewing or Editing a Host Identifier Definition
- Deleting a Host Identifier Definition

19.4.1 About Host Identifiers

Access Manager policies protect resources on computer hosts. Within Access Manager, the computer host is specified independently using a host identifier.

Table 19–3 illustrates the different host names under which a Web server might be accessible to employees. Creating a single Host Identifier using all of these names allows you to define a single set of policies to appropriately protect the application, regardless of how the user accesses it.

Table 19–3 Host Identifiers Examples

Sample Host Identifier	Description
hrportal.intranet.company.com	A friendly name employees can remember. This is a load-balanced proxy, and requests to this could actually utilize one of several servers hosting the HR application.
hr-sf-02.intranet.company.com	A single machine hosting the application, which can be accessed directly.
hrportal.company.com	The same application is also accessible externally to the corporate firewall, primarily for use by ex-employees to check benefits, 401k info, and so on. This is also a load-balanced reverse proxy.

Based on a defined host identifier, Administrators can add specific resources to an Application Domain and apply policies to protect those resources.

Registered Agents protect all requests that match the addressing methods defined for the host identifier used in a policy. A request sent to any address on the list is mapped to the official host name and Access Manager can apply the policies that protect the resource and OAM can apply the policies that protect the resource.

A host identifier is automatically created when an Agent (and application) are registered using either the Oracle Access Management Console or the remote registration tool. Administrators can manually add a host identifier if an application and resources exist on a host that does not have a mapped host identifier. Also, Oracle Access Management Administrators can modify an existing host identifier to add in the new host name variations. For instance, adding another proxy Web server with a different host name requires a new host name variation.

For more information, see:

- Host Identifier Usage
- Host Identifier Guidelines
- Host Identifier Variations

19.4.1.1 Host Identifier Usage

At design time, the host identifier can be used while defining which resources belong to a specific Application Domain. Resources are scoped using their host identifier (HTTP) or type (non-HTTP). This combination uniquely identifies them across Access Manager.

Note: Each resource should be unique across all Application Domains; each resource and host identifier combination must be unique across all Application Domains.

Runtime Usage

At run time, Web server host information in the access query from an OAM Agent is mapped to a host identifier and associated with the resource that is being accessed by a user. The OAM Agent obtains the Web server host information in one of two ways:

- If the Preferred Host parameter is configured for virtual Web hosting support (see"About Virtual Web Hosting" on page 19-10), Web server host information for the given request is obtained from the Web server.
- If the Preferred Host parameter directly specifies the Web server host information, it is always used irrespective of the Web server's own host information.

This allows for the Resources to be specified in terms of logical host names in their Host Identifiers, instead of the host names matching the present deployment of the Web server.

For instance, a user accessing `aseng-wiki`, would enter:

```
http://example-wiki.uk.example.com/wikiexample
```

Here, *wikiexample* is the resource URL and *example-wiki.uk.example.com* is the host. Matching this host and port (port is 80) provides the host identifier.

Preferred Host

Web server host information is generally acquired by setting the Preferred Host string of the OAM Agent. If the Agent is actively protecting multiple virtual hosts, this string can be set to `server_name` to ensure that the actual request hostname is correctly picked up from the Web server's request object. For more information, see "About Virtual Web Hosting" on page 19-10

Authenticating Hosts and Challenge Redirect in Authentication Schemes

When a user attempts to access a protected resource URL, she is redirected to the server specified in the Challenge Redirect field of the authentication scheme. If the authentication challenge is to be processed by another host, the name of that host must be defined to be available in the Host Identifiers list. For example, if a user is redirected to an SSL-enabled server for authentication, that server must be defined as a host identifier.

Note: If you enter a host name in the Challenge Redirect field of an authentication scheme, it must be defined as a Host Identifier.

19.4.1.2 Host Identifier Guidelines

Each host identifier can be defined to represent one or more Web server hosts. Following are several important guidelines for host identifiers:

- Each host name must be unique.
- Each *host name*:*port* pair must be unique.
- Each *host name*:*port* pair must belong to only one host identifier.
- Each *host name*:*port* pair must match the end user's entry exactly.
- A Host Identifier name cannot match a non-HTTP Resource Type name (and vice versa).
- Each resource and host identifier combination must be unique across all Application Domains.

For more information, see "Host Identifier Variations".

19.4.1.3 Host Identifier Variations

Host identifiers are used to simplify the identification of a Web server host by defining all possible hostname variations. Host identifiers consist of a list of all URL addressing methods. A host identifier must be configured for each Web site or virtual Web site that you want to protect with Access Manager.

You can identify Web server hosts to Access Manager in various ways, for example, by providing a computer name or an IP address. The following are examples of how the same host can be addressed:

- example.com
- example.com:80
- www.example.com
- www.example.com:80
- 216.200.159.58
- 216.200.159.58:80

19.4.2 About Virtual Web Hosting

You can install a Webgate on a Web server that contains multiple Web site and domain names. The Webgate must reside in a location that enables it to protect all of the Web sites on that server.

Note: The information here is the same for both 11g and 10g Webgates.

The virtual Web hosting feature of many Web servers enables you to support multiple domain names and IP addresses that each resolve to their unique subdirectories on a single virtual server. For example, you can host abc.com and def.com on the same virtual server, each with its own domain name and unique site content. You can have name-based or IP-based virtual hosting.

A virtual host referees the situation where the same host has multiple sites being served either based on multiple NIC cards (IP based) or multiple names (for example, abc.com and def.com resolving to same IP).

Consider a case where you have two virtual hosts configured on an OHS Server acting as reverse proxy to OAM Server, as follows:

- One virtual host is configured in two-way SSL mode
- One virtual host configured in non-SSL mode

Suppose there are two resources protected with different authentication schemes and Application Domains:

- */resource1* is protected by a X509Scheme with a Challenge URL (to define the credential collection URL) of https://*sslvhost:port*/

  When the user accesses */resource1* he is redirected to the OHS Server on the SSL port for authentication and is asked for the X.509 Certificate.

- */resource2* is protected by a LDAPScheme on the second virtual host with a Challenge Redirect of http://*host:port*/

When user accesses */resource2* he is redirected to second virtual host which is in non-SSL mode (or in one way SSL mode if required). The Login form for LDAP authentication is displayed.

Note: Your deployment can support X.509 and Form authentication with 10g mod_osso. However, mod_osso can be configured for only one SSO Server. In this case, the Agent redirects to Access Manager on the non-SSL virtual host. The credential collector checks the Authentication Scheme's Challenge URL parameter for the resource and redirects back to the HTTPS virtual host for X509 authentication.

19.4.2.1 Placing a Webgate Behind a Reverse Proxy

You can use 10g Webgates with reverse proxies for Access Manager. This topic discusses benefits and pitfalls of this strategy.

Benefits:

- All Web content can be protected from a single logical component as long as all requests go through the proxy.

  This is true even for platforms that are not supported by Access Manager. If you have different types of Web servers (for example, iPlanet, Apache, and so on) on different platforms (for example, Windows XP, Linux, and so on), all content on these servers can be protected. A reverse proxy can be a workaround for unsupported Web servers, eliminating the need to write custom Access Clients for unsupported Web servers and on platforms that do not have Webgate support, for example, MacOS.

- A reverse proxy offers architecture flexibility.

  Reverse proxies can allow deployments to expose an application that is available on the intranet to the extranet. Or applications that are available on the extranet can be exposed to the intranet. This can be done without any changes to the application that is already deployed.

- You only need to install a separate Webgate on the reverse proxy, rather than on every Web server.

  This allows for a single management point and can help with manageability of the system. You can manage the security of all of the Web servers through the reverse proxy without establishing a footprint on the other Web Servers.

Pitfalls: The main pitfall of using a proxy is the extra work involved in setup. If you deploy the Webgate on a Web server that is behind a reverse proxy, the following are configuration requirements:

- Ensure that any Web server that uses the reverse proxy for authentication only accepts requests from the reverse proxies.

  This will also require that Webgates deployed on this Web server be configured to not enforce IP validation for requests from the reverse proxy server that front-ends the Webgate. This is done by configuring the known IP addresses of the reverse proxy server or servers in the IP Validation list. Note that while you can achieve the same effect by turning IP validation off for the Webgate, this is not a recommended approach due to security risks.

  Ensuring that the Web server only accepts requests from reverse proxies is typically done by adding an ACL statement in the server. This prevents users from bypassing the reverse proxy and directly accessing restricted content.

- Update the virtual hosts that are configured in the Policy Manager so that the Access System intercepts requests that are sent to the reverse proxy.
- Prevent people from circumventing the proxy by entering URLs that point directly to the back-end system.

  You can prevent this problem through the use of Web Server Access Control Lists or firewall filters.
- Since all user requests are processed by the proxy, you must deploy enough proxy servers to enable the system to handle the load.
- Redirect all existing URLs to the host name and port number of the reverse proxy server.

  This often requires configuring the reverse proxy to perform content inspection and rewriting to prevent any absolute HTML links, for instance, to prevent broken link. This is achievable with most reverse proxies, and this is something you can configure independently of the Access System,.
- It is a best practice that URL links exposed to the front-ended applications rely on only relative URLs (../../*sub-path*/*resource*) rather than absolute URLs (http://example.com:[*port*]/*path*/*resource*).

  Absolute URLs can break links on the end user's browser when deployed behind a reverse proxy.

19.4.2.2 Configuring Virtual Hosting for Non-Apache Web Servers

Ensure that the Virtual Host box is checked on the 10g Webgate registration page.

On most Web servers, other than Apache-based servers, you must set the Preferred Host value to HOST_HTTP_HEADER. This ensures that, when user's browser sends a request, the Webgate sets the value of the Preferred Host to the host value in the request. For example, suppose a user enters the string example2 in a URL:

```
http://example2
```

On the Web server, if one of the Web sites has a host named `example2`, the request is served by the matching virtual site.

In the Preferred Host field of the expanded 10g Webgate registration page, enter the following:

HOST_HTTP_HEADER.

IIS Virtual Hosting: From the IIS console, you must configure each virtual Web site to contain the following fields:

- Host Header Name
- IP address
- Port

See Also:

- http://www.simpledns.com/kb.aspx?kbid=1149
- http://support.microsoft.com/kb/q190008/

19.4.2.3 Associating a Webgate for Apache with Virtual Hosts, Directories, or Files

Ensure that the Virtual Host box is checked on the 10g Webgate registration page.

On Apache-based Web servers (Apache, Apache 2, IBM HTTP Server, Oracle HTTP Server, and so on), the Preferred Host value must be set to SERVER_NAME.

> **Note:** The SERVER_NAME value is not supported for any host other than an Apache-based server. If you set this value for a non-Apache-based server, users will be unable to access any resources that are protected by Webgate on that Web server. Users will, instead, receive an error that the Webgate configuration is incorrect.
>
> The `ServerName` directive must be explicitly set with 7777 along with the hostName. This is irrespective of the `Listen` directive is set correctly. The Server sometimes requires this value explicitly to identify itself, most often it can identify itself automatically.

When using an Apache-based reverse proxy for single sign-on, in the Web server configuration file (httpd.config, for example) file you specify the Web sites to run on the Apache server. The settings can be global across all Web sites or local to a Web site. You can restrict the Access Manager loading references in the httpd.config file to be associated with a specified site, with virtual hosts, specific directories or even files.

To associate the Webgate with specific targets, you move the following directives the the http.conf file:

```
AuthType Oblix
require valid-user
```

You can put these directives in a block that tells Apache to use Webgate for every request. You can also move the directives to a block that limits when the Webgate is called. The following is an example of putting the `LocationMatch` directive after a `VirtualHost` directive:

```
  DocumentRoot /usr/local/apache/htdocs/myserver
  ServerName myserver.example.net
  AuthType Oblix
  require valid-user
```

After you move the `LocationMatch` block to the `VirtualHost` directive, the Webgate will only work for that virtual host. You can add the `LocationMatch` block to as many virtual hosts as you want. The following examples shows how you could protect one virtual server:

```
ServerAdmin webmaster@example.net
DocumentRoot "Z:/Apps/Apache/htdocs/MYsrv"
ServerName apps.example.com
    ProxyRequests On
    SSLEngine on
    SSLCACertificateFile Z:/Apps/sslcert_exampleapps_ptcweb32/intermediateca.cer
    SSLCertificateFile Z:/Apps/sslcert_exampleapps_ptcweb32/sslcert_myapps_
ptcweb32.cer
    SSLCertificateKeyFile Z:/Apps/sslcert_exampleapps_ptcweb32/sslcert_myapps_
ptcweb32.key
    ErrorLog logs/proxysite1_log
    CustomLog logs/proxysite1_log common
    ProxyPass /https://apps.example.com/
    ProxyPassReverse /https://apps.example.com/
    ProxyPass /bkcentral https://apps.example.com/bkcentral
    ProxyPassReverse /bkcentral https://apps.example.com/bkcentral
    ProxyPass /NR https://apps.example.com/NR
    ProxyPassReverse /NR https://apps.example.com/NR
```

```
      AuthType Oblix
      require valid-user

#*** BEGIN Oracle Access Manager Webgate Specific ****

LoadModule obWebgateModule
Z:/apps/Oracle/WebComponent/access/oblix/apps/webgate/bin/webgate.dll
WebgateInstalldir Z:/apps/Oracle/WebComponent/access
WebgateMode PEER

 SetHandler obwebgateerr

SSLMutex sem
SSLRandomSeed startup builtin
SSLSessionCache none

SSLLog logs/SSL.log
SSLLogLevel info
# You can later change "info" to "warn" if everything is OK
```

19.4.3 About the Host Identifier Page

A host identifier is automatically created when an Agent (and application) are registered using either the Oracle Access Management Console or the remote registration tool. In the Application Domain that is registered with the Agent, the host identifier is used automatically.

Administrators can use the console to create and manage host identifiers. Within the Oracle Access Management Console, host identifiers are organized under Shared Components, on the Policy Configuration tab navigation tree. Administrators can manually create a new host identifier definition, modify a definition, delete a definition, or copy an existing definition to use as a template. The name of the copy is based on the original definition name. For example, if you copy a definition named *host3*, the copy is named *copy of host3*.

Figure 19–4 illustrates a typical Host Identifier configuration page in the console, where you enter the canonical name for the host, and every other name by which the same host can be addressed by users.

> **Note:** Each host identifier must be unique. You cannot use the same host name and port in any other host identifier definition.

Figure 19–4 Host Identifier Page

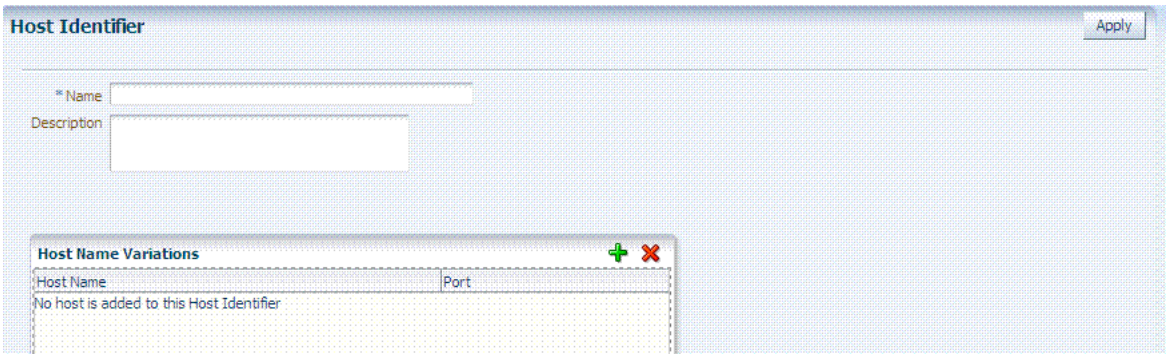


Table 19–4 describes the host identifier definition.

Table 19–4 Host Identifier Definition

Property	Description
Name	A unique name for this definition. Use only upper- and lower-case alpha characters. No punctuation or special characters are allowed.
Description	The optional description, up to 200 characters, that explains the use of this configuration.
Host Name Variations	▪ Host Name: A list of the various host names or permutations that users might use when accessing the application. See also: "Host Identifier Variations" on page 19-10 and "Host Identifier Guidelines" on page 19-9. ▪ Port: The Web server port used by each host or permutation

19.4.4 Creating a Host Identifier

Users with valid Administrator credentials can use the following procedure to create a host identifier definition manually. This is needed if an application and resources were manually added to a host that has no mapped host identifier. When you choose Auto Create Policies when registering an Agent, this is done automatically.

Note: If you copy an existing definition to use as a template, you must modify all unique identifiers in the copy.

See Also:

- "About Host Identifiers" on page 19-8
- "About Virtual Web Hosting" on page 19-10

To manually create a Host Identifier

1. From the Oracle Access Management Console, click Host Identifiers.
2. Click the Create Host Identifier button in the upper-right corner of the Search Host Identifiers page.

   Alternatively: Open the Host Identifiers node, click the Create (+) button above the Search Results table.
3. On the fresh Host Identifier page, fill in the:
   a. Name
   b. Description
   c. **Host Name Variations**: Add (or remove) host name and port variations in the Operations list.

      Add: Click the Create (+) button, then enter a new host name and port combination to identify variables that map to the Host Identifier Name.

      Remove: Click a host name, then click the Delete button to remove it.
4. Repeat step 3c as needed to identify all variations of this host that users can access.
5. Click **Apply** to submit the new definition (or close the page without applying changes).

6. Close the Confirmation window, and confirm the new definition is listed in the navigation tree.

19.4.5 Searching for a Host Identifier Definition

Users with valid Administrator credentials can perform the following task to search for a specific host identifier.

Note: During Delete, if the Host Identifier is associated with a resource, you are prompted with an alert. Without any association, the Host Identifier is deleted successfully.

See Also: "Conducting A Search"

To find for a host identifier

1. From the Oracle Access Management Console, click Host Identifiers.
2. In the Search Host Identifiers page Name field, enter a name (or a partial name with wild card (*)), or leave the Name field blank to show all Host Identifiers. For example:

   *my_h**

3. Click the Search button to initiate the search and display results in a table, then:
   - **View or Edit:** Double-click the name in the Search Results table to display the configuration page, then add or edit as usual.
   - **Delete:** Click the Delete button in the tool bar to remove the selected item in the results table; confirm removal in the Confirmation window.
   - **Detach**: Click Detach in the tool bar to expand the Search Results table to a full page (or from the View menu, click Detach).
   - **Reorder Columns**: From the View menu, select reorder Columns and use the arrows provided to reorder the columns.

19.4.6 Viewing or Editing a Host Identifier Definition

Users with valid Administrator credentials can use the following procedure to modify a host identifier definition. This can include adding, changing, or removing individual host identifiers from the definition. For instance, when adding another proxy Web server with a different host name, you might need to modify an existing host identifier definition to add the new host name variation.

Prerequisite: Inventory Application Domains that refer to the host identifier and

---

Note: After viewing settings, you can either close the page or modify settings as needed.

See Also: "About the Host Identifier Page" on page 19-14

To view or modify a Host Identifier

1. Locate the desired host identifier and view it as described in "Searching for a Host Identifier Definition" on page 19-16.

2. On the Host Identifier page, modify information as needed (Table 19–4):
   a. Name
   b. Description
   c. **Host Name Variations**: In the table provided:

      Add (+) Host Name Variations: Click the Add (+) button, then enter a new host name and port combination to identify variables that map to the Host Identifier Name.

      Delete (X) Host Name Variations: Click a host name, then click the Delete button to remove it.
3. Repeat step 3c as needed to add or remove variations.
4. Click Apply to submit the changes (or close the page without applying changes).
5. Dismiss the Confirmation window, and close the page when you finish.

19.4.7 Deleting a Host Identifier Definition

Users with valid Administrator credentials can use the following procedure to delete an entire host identifier definition. A validation error occurs if you attempt to delete the host identifier that is being used in a resource.

> **Note:** If the Host Identifier is associated with a resource, you are alerted. Without any association, the Host Identifier is deleted.

Prerequisites

Each resource in an Application Domain is associated with a specific host identifier. If you intend to delete a host identifier you must first modify any resource definitions in an Application Domain that uses this host identifier.

> **See Also:** "Viewing or Editing a Host Identifier Definition" on page 19-16 if you want to remove a single host identifier from an existing definition.

To delete a Host Identifier

1. Locate and modify related resource definitions in any application domains that uses this host identifier. See "Searching for a Resource Definition" on page 20-29.
2. Locate the desired host identifier as described in "Searching for a Host Identifier Definition" on page 19-16.
3. **View:** Double-click the name in the results table to display the configuration page, and confirm this can be removed.
4. **Delete:** Click the Delete button in the tool bar to remove the selected item in the results table; confirm removal in the Confirmation window.

19.5 Understanding Authentication Methods and Credential Collectors

With Access Manager, authentication involves redirecting the requester (user) to a centralized component that performs authentication (known as the Credential Collector).

This section provides the following topics:

- About Different Authentication Methods
- Comparing Embedded Credential Collector with Detached Credential Collector
- Authentication Event Logging and Auditing

19.5.1 About Different Authentication Methods

Authentication is the process of proving that a user is who he or she claims to be. Authenticating a user's identity with Access Manager refers to running a pre-defined set of processes to verify the digital identity of the user.

Using Access Manager, a resource or group of resources can be protected by a single authentication process known as an authentication scheme. Authentication schemes rely on pre-defined authentication modules or plug-ins.

This section describes multi-level authentication and other authentication methods supported by Access Manager.

Multi-level Authentication

Access Manager enables Administrators to assign different authentication levels to different authentication schemes, and then choose which scheme protects which application. Every authentication scheme requires a strength level. The lower this number, the less stringent the scheme. A higher level number indicates a more secure authentication mechanism.

SSO capability enables users to access more than one protected resource or application with a single sign in. A user who is authenticated to access resources at level 2, is eligible to access resources protected at levels less than or equal to 2. However, if the user is authenticated to access resources at level 2 and then attempts to access resources protected by level 3, the user is asked to re-authenticate (this is known as step-up authentication).

For more information, see "About Multi-Level and Step-Up Authentication" on page 19-79.

See Also: "Multi-Step Authentication"

Multi-Step Authentication

Multi-step authentication requires a custom authentication module composed of two or more authentication plug-ins that transmit information to the backend authentication scheme several times during the login process. All information collected by the plug-in and saved in the context will be available to the plug-in through the authentication process. Context data can also be used to set cookies or headers in the user's login page.

See "Comparing Simple Form and Multi-Factor (Multi-Step) Authentication" on page 19-29.

Windows Native Authentication

Integrated Windows Native Authentication is supported for both OSSO and Webgate protected applications. This form of authentication relies on the Kerberos authentication module. For more information, see Chapter 50, "Configuring Access Manager for Windows Native Authentication".

Other Authentication Types

Authentication features required by Oracle Fusion Middleware applications are supported, including:

- Weak authentication, typically a user name and password, no certificates
- Auto-login with third-party self-service user provisioning
- HTTP header support for user context information. For instance, host identifiers are used to create a host context for the resource. This is useful when adding resources that have the same URL paths on different computers.

If you use different authentication schemes for two WebGates, users can go from a higher authentication scheme to a lower one without re-authentication, but not from a lower level to a higher level.

Note: During single sign-on, users might pass the authentication tests but might fail authorization tests when attempting to access a second or third resource. Each resource in the domain might have a unique authorization policy.

For details about configuring and using authentication schemes with Access Manager, see "Managing Authentication Schemes" on page 19-64.

19.5.2 Comparing Embedded Credential Collector with Detached Credential Collector

Access Manager 11.1.2 supports the embedded credential collector (ECC) by default and also enables you to configure the latest Webgate to use as a detached credential collector (DCC, also known as an Authenticating Webgate).

The DCC is considered more secure than the default embedded credential collector (ECC). The centralized DCC presents the login page, collects user credentials (userID and password, for example), and sends these to the OAM Server using the back channel Oracle Access Protocol (OAP). Additional credentials can be requested using the DCC.

When OAM Server is configured to use the DCC, the ECC and its HTTP endpoints are disabled. The only HTTP communication is to the Oracle Access Management Console hosted by the WebLogic AdminServer in the domain where the OAM Server is deployed. Connectivity to the AdminServer can be controlled at the network level, for example, to disallow administration requests from outside the internal network.

- Allowing both the ECC and DCC to co-exist enables you to use authentication schemes and policies configured for use with either the ECC or the DCC. This enables a fallback mechanism for resources that rely on the ECC, which includes the Oracle Access Management Console.
- Disabling (turning off) the ECC entirely prohibits access to resources that rely on the ECC mechanism, including the Oracle Access Management Console.

While the embedded and detached credential collectors (ECC and DCC, respectively) are essentially the same, compare the two in Table 19–5.

See Also: "Introducing Access Manager Credential Collection and Login" on page 18-14

Table 19–5 Comparing the DCC and ECC

	DCC	ECC
Deployment	The Detached Credential Collector remains a logical part of the server and acts as a front channel communication endpoint of the OAM Server. However, the DCC also: ■ Stands alone (detached from the OAM Server and does not require an application server). ■ Supports RSA SecurID passcode verification, get next token, create new pin workflows. ■ Is similar to the earlier 10g Authenticating Webgate with greater flexibility for server scale-out and attack resilience as well as credential collection UI construction, flow, and lifecycle management.	The Embedded Credential Collector is deployed with, and integral to, the OAM Server and part of the protocol binding layer. The ECC supports RSA SecurID passcode verification, get next token, create new pin workflows.
DMZ Deployment	Yes. The main benefit of a deployment using DCC in the DMZ is the termination of the end-user network connections within the public network, and the use of Oracle Access Protocol (Oracle's proprietary application network protocol) over mutually authenticated connections reaching the OAM Server. This offers a complete isolation of the OAM Server from the establishment of any unauthenticated network connection. Unauthenticated users cannot send malformed requests to the OAM Server.	No.
Communication channel	DCC consumes HTTP/HTTPS requests from the user, then communicates with the OAM Server across the Oracle Access Protocol (back channel), which can be SSL-enabled.	ECC communicates with both the user and the OAM Server across HTTP/HTTPS.
DCC login, error, and password pages	Dynamic pages general login/logout and password policy with the DCC are excluded automatically through the OHS httpd.conf/webgate.conf file--you do not need to configure a policy to exclude these. See the Webgate host in `$WEBGATE_HOME/webgate/ohs/oamsso/*`, `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl`, and *`$WEBGATE_HOME/webgate/ohs`*`/oamsso-bin/templates/*` directory: ■ Login page: `/oamsso-bin/login.pl` ■ Logout: `/oamsso-bin/logout.pl` ■ RSA SecurID login pages: /oamsso-bin/`securid.pl` **Note**: Update the Perl location in the first line of the login, logout, and securid scripts in `/oamsso-bin`. **See Also**: Table 19–31, " Credential Collector Password Pages". Chapter 49, "Integrating RSA SecurID Authentication with Access Manager" for details about login pages for this implementation. For details about customizing pages and messages, see the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.	Pages where the user enters her credentials arrive out of the box on the OAM Server and require no additional settings or changes. ■ Login page: /pages/login.jsp ■ Logout page: /pages/logout.jsp ■ Error page: /pages/servererror.jsp ■ Multi-step: /pages/mfa_login.jsp

Table 19–5 (Cont.) Comparing the DCC and ECC

	DCC	ECC

Perl Scripts for DCC-based Login and Logout	Perl Scripts for DCC-based Login and Logout
	The path name of the Perl executable must be updated in Oracle-provided Perl scripts on the Webgate host `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl` to be consistent with the actual location.
	Unix: The `which` command finds Perl on the OAM Server. For example:
	`which perl`
	`/usr/bin/perl`
	However, Perl scripts themselves point to:
	`/usr/local/bin/perl`
	Windows: The default Perl Interpreter specified in Oracle-provided Perl scripts will not be available. You must update the Perl Interpreter path in these scripts to actual path to Perl on your system.
		N/A

Password policy enforcement	Yes. See "Locating and Updating DCC Forms for Password Policy" on page 19-110	Yes See: "Managing Global Password Policy" on page 19-97
Authentication scheme collection methods	DCC supports only Form Based Authentication.	ECC supports all challenge methods. The ECC collects user credentials based on the challenge method of the Authentication Scheme and sends it back to OAM Server for validation.
Custom Authentication Plug-ins and Challenge Methods	Yes; same as ECC.	All challenge methods and multi-step authentication (Password Policy and other custom authentication plugins) are supported.
Single Step (Simple Form) Authentication	Yes; same as ECC.	Yes. Both the DCC and ECC handle this, where: ▪ All credentials are supplied in one simple form ▪ Upon credential validation and authentication, either success or failure status is returned ▪ This can be retried upon failure
Multi-Step Authentication	Yes. Both the DCC and ECC handle complex multi-factor (multi-step, iterative, and variable) Authentication processing. In this case: ▪ Not all required credentials are supplied at once ▪ Depending on the authentication status, PENDING state, expected credentials and context data are returned, expecting those credentials to be supplied in the next round ▪ Each intermediate step, submit required credentials and context data to feed authentication engine, until a success or failure status returned ▪ The Authentication plug-in can have multiple steps configured See "Understanding Multi-Level and Step-Up Authentication" on page 19-79	Yes. Both the DCC and ECC handle complex multi-factor (multi-step, iterative, and variable) Authentication processing.

Table 19–5 (Cont.) Comparing the DCC and ECC

	DCC	ECC
Authentication Processing	The DCC does not restrict authentication functionality of the OAM Server in any way as compared to the ECC. The DCC: 1. Handles authentication redirects from both 10g and 11g Webgates. 2. Handles Form-based authentication, which consists of a challenge to the user for their credentials (simple form or multi-factor). 3. Decrypts the authentication request message from the agent using the agent key; performs basic integrity checks; validates request time; and extracts all parameters from the request including request context. 4. Constructs the authentication response message, including request context originally retrieved, encrypts obrar using the agent key. 5. Decrypts the logout redirect request using the agent key to trigger logout processing.	During authentication: 1. The ECC handles the request coming to the protocol binding layer (PBL), which converts it and sends it to the SSO Engine. 2. The SSO Engine checks for a valid session and, if none, transfers control to the Authentication Engine. 3. The Authentication Engine checks for resource protection and fetches the authentication scheme associated with the resource. 4. The ECC interacts with the client, accepts the data, and submits this to the PBL.
Overriding the ECC	To deploy the DCC and override the ECC, an Administrator must perform the following tasks to specify the relevant DCC URLs and forms. ■ OAM Agent registration: Allow Credential Collector Operations (enable for DCC) ■ Authentication Module, Step Orchestration: Error (if Failure) ■ Authentication Scheme: Challenge Redirect URL (DCC host and port) ■ Authentication Scheme: Challenge URL `/oamsso-bin/login.pl` (DCC login pages) ■ Authentication Scheme: Challenge Method ■ Password Policy: Password Service URL for DCC (Default: `/oamsso-bin/login.pl`) See "Enabling DCC Credential Operations" on page 19-109	N/A
Logout Configuration	See "Configuring Logout When Using Detached Credential Collector-Enabled Webgate" on page 22-6	See "Configuring Centralized Logout for 11g Webgates" on page 22-4
Cookie/Token	■ DCCCtxCookie ■ 11g Webgate: OAMAuthnCookie ■ 11g Webgate: OAMRequestContext ■ 10g Resource Webgate: ObSSOCookie See: "About Single Sign-On Cookies During User Login" on page 18-23	■ 11g Webgate: OAMAuthnCookie ■ 11g Webgate: OAM_REQ ■ 11g Webgate: OAM_ID ■ 11g Webgate: OAMRequestContext ■ 10g Webgate: ObSSOCookie See: "About Single Sign-On Cookies During User Login" on page 18-23

19.5.3 Authentication Event Logging and Auditing

Authentication Success and Failure events are audited, in addition to administration events. Auditing covers creating, modifying, viewing, and deleting authentication schemes, modules, and policies. Information that is collected about the user who is authenticating includes:

- IP address
- User Login ID

- Time of Access

During logging (or auditing), user information, user sensitive attributes are not recorded. Secure data (user passwords, for example) are removed to avoid misuse.

See Also:

- Chapter 8, "Logging Component Event Messages"
- Chapter 9, "Auditing Administrative and Run-time Events."
- Chapter 12, "Monitoring Performance and Health"

19.6 Managing Native Authentication Modules

In Access Manager, each authentication scheme requires an authentication module.

Note: Native authentication modules lack the flexibility to orchestrate two or more plug-ins to meet specialized authentication needs. Therefore, native authentication modules are targeted for deprecation in future releases. Oracle strongly recommends using plug-in based authentication modules as described "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28.

This section provides the following information:

- About Native Access Manager Authentication Modules
- Viewing or Editing Native Authentication Modules
- Deleting a Native Authentication Module

19.6.1 About Native Access Manager Authentication Modules

Table 19–6 lists the Native Access Manager Authentication Modules.

Table 19–6 Native Authentication Modules

Module Name	Description
LDAP	Matches the credentials (username and password) of the user who requests a resource to a user definition stored in an LDAP directory server. An LDAP module is required for Basic and Form challenge methods. See Also: "Native LDAP Authentication Modules" on page 19-25.
LDAPNoPasswordAuthModule	Matches the credentials (username and password) of the user who requests a resource to a user definition stored in an LDAP directory server. An LDAP module is required for Basic and Form challenge methods. See Also: "Native LDAP Authentication Modules" on page 19-25.
Kerberos	Identifies the key tab file and krb5.configuration file names and Principal. Use this plug-in when configuring Access Manager for Windows Native Authentication, as described in Chapter 50. See Also: "Native Kerberos Authentication Module" on page 19-24.
X509	Similar to the LDAPPlugin with additional properties that indicate which attribute of the client's X.509 certificate should be validated against the user attribute in LDAP. See Also: "Native X509 Authentication Module" on page 19-25.

Table 19–6 (Cont.) Native Authentication Modules

Module Name	Description
Custom Authentication Modules	This type of module relies on bundled plug-ins (or those that are developed using the Access Manager Authentication Extensibility Java API). This type of module generally uses more than one plug-in that you can orchestrate to ensure that each one performs a specific authentication function. Depending on the success or failure action defined for each plug-in, another authentication plug-in is called. See Also: "About Plug-in Based Modules for Multi-Step Authentication" on page 19-38, and Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about developing and deploying plug-ins, custom authentication modules, and schemes that use custom modules.

See Also:

- "About Challenge Methods" on page 19-71
- Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about creating custom authentication plug-ins

19.6.1.1 Native Kerberos Authentication Module

The pre-configured Kerberos authentication module is illustrated in Figure 19–5. Additional details follow the figure.

Figure 19–5 Native Kerberos Authentication Module

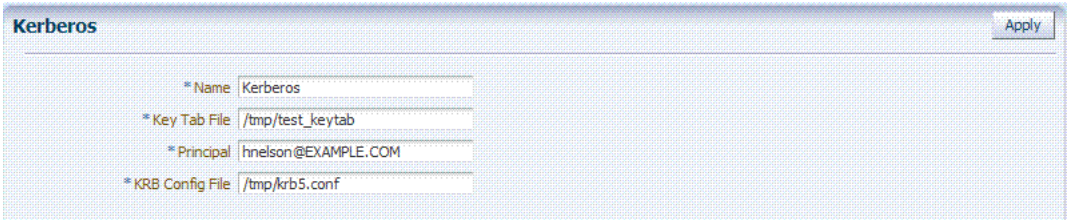


Table 19–7 describes the definition of the native Kerberos authentication module. You can use the existing, pre-configured Kerberos authentication module or create one of your own.

Table 19–7 Native Kerberos Authentication Module Definition

Element	Description
Name	The unique ID of this module, which can include upper and lower case alpha characters as well as numbers and spaces.
Key Tab File	The path to the encrypted, local, on-disk copy of the host's key, required to authenticate to the key distribution center (KDC). For example: /etc/krb5.keytab. The KDC authenticates the requesting user and confirms that the user is authorized for access to the requested service. If the authenticated user meets all prescribed conditions, the KDC issues a ticket permitting access based on a server key. The client receives the ticket and submits it to the appropriate server. The server can verify the submitted ticket and grant access to the user submitting it. The key tab file should be readable only by root, and should exist only on the machine's local disk. It should not be part of any backup, unless access to the backup data is secured as tightly as access to the machine's root password itself.
Principal	Identifies the HTTP host for the principal in the Kerberos database, which enables generation of a keytab for a host.

Table 19–7 (Cont.) Native Kerberos Authentication Module Definition

Element	Description
Krb Config File	Identifies the path to the configuration file that controls certain aspects of the Kerberos installation. A krb5.conf file must exist in the /etc directory on each UNIX node that is running Kerberos. krb5.conf contains configuration information required by the Kerberos V5 library (the default Kerberos realm and the location of the Kerberos key distribution centers for known realms).

19.6.1.2 Native LDAP Authentication Modules

Oracle provides two LDAP authentication modules:

- LDAP
- LDAPNoPasswordAuthModule

Both modules have the same requirements (Name and User Identity Store), as illustrated in Figure 19–6. Additional details follow the figure.

Figure 19–6 Native LDAP Authentication Module

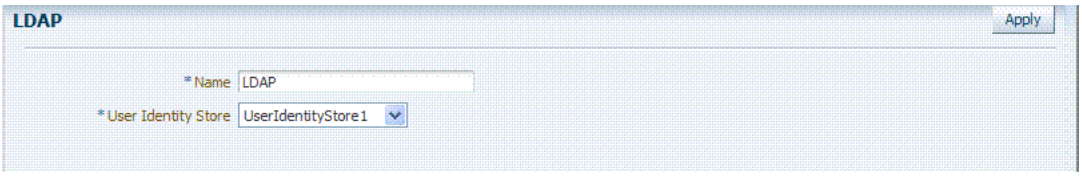


Table 19–8 describes the elements in an LDAP authentication module. The same elements and values are also used in LDAPNoPasswordAuthnModule.

> **Note:** These standard LDAP Authentication Modules are targeted for deprecation. Future enhancements will not be available in standard modules. Oracle strongly recommends using plug-in based modules.

Table 19–8 Native LDAP Authentication Modules Definition

Element	Description
Name	A unique name for this module.
User Identity Store	The designated LDAP user identity store must contain any user credentials required for authentication by this module. The LDAP store must be registered with Access Manager. See Also: "Managing OAM Identity Stores" on page 5-4. Multiple identity store vendors are supported. Upon installation, there is only one User Identity Store, which is also the designated System Store. If you add more identity stores and designate a different store as the System Store, be sure to change the LDAP module to point to the System Store. The authentication scheme `OAMAdminConsoleScheme` relies on the LDAP module for Administrator Roles and credentials. See Also: "Setting the Default Store and System Store" on page 5-21 and "Administrator Lockout" on page E-6.

19.6.1.3 Native X509 Authentication Module

Access Manager provides a pre-configured X509 authentication module as a default. Administrators can also create new X509 authentication modules. In cryptographic

terms, X.509 is a standard for digital public key certificates used for single sign-on (SSO). X.509 specifies standard formats for public key certificates, certificate revocation lists, and attribute certificates among other things.

With X.509 digital certificates you can assume a strict hierarchical system of certificate authorities (CAs) issuing the certificates. In the X.509 system, a CA issues a certificate that binds a public key to a particular Distinguished Name, or to an Alternative Name such as an e-mail address or a DNS-entry.

The trusted root certificates of an enterprise can be distributed to all employees so that they can use the company PKI system. Certain Web browsers provide pre-installed root certificates to ensure that SSL certificates work immediately.

Access Manager uses the Online Certificate Status Protocol (OCSP) Internet protocol to maintain the security of a server and other network resources. OCSP is used for obtaining the revocation status of an X.509 digital certificate. OCSP specifies the communication syntax used between the server containing the certificate status and the client application that is informed of that status.

When a user attempts to access a server, OCSP sends a request for certificate status information. OCSP discloses to the requester that a particular network host used a particular certificate at a particular time. The server returns a response of "`current`", "`expired`," or "`unknown`." OCSP allows users with expired certificates a configurable grace period, during which they can access servers for the specified period before renewing.

OCSP messages are encoded in ASN.1 and are usually transmitted over HTTP. The request and response characteristic of OCSP has led to the term "OCSP responders" when referring to OCSP servers. With Access Manager, the computer hosting the Oracle Access Management Console is the OCSP responder.

An OCSP responder can return a signed response signifying that the certificate specified in the request is 'good', 'revoked' or 'unknown'. If OCSP cannot process the request, it can return an error code.

Figure 19–7 Native X509 Authentication Module

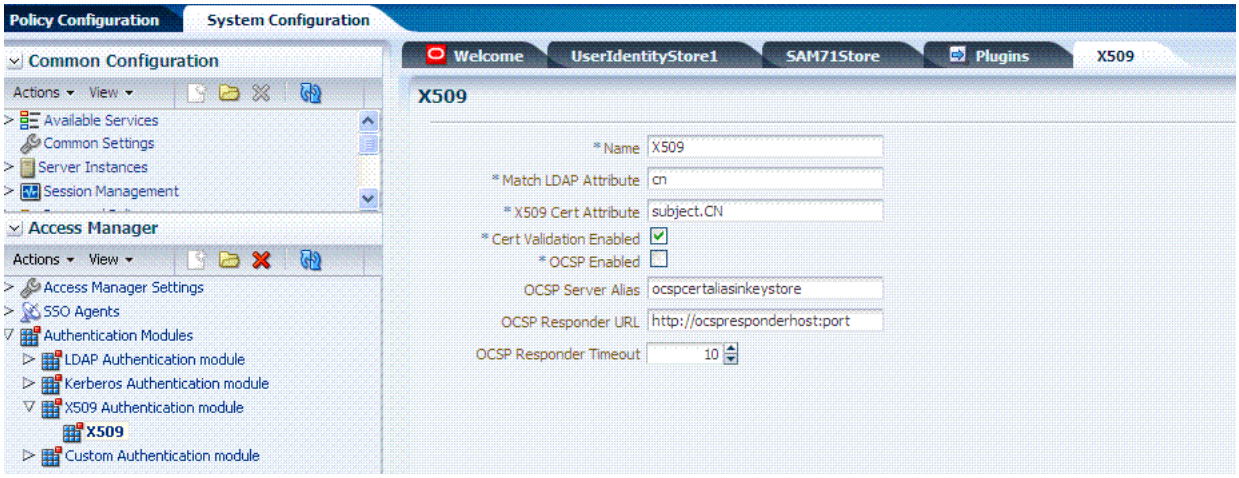


Table 19–9 describes the requirements of the native X509 authentication module.

Note: This standard Authentication Module is targeted for deprecation. Future enhancements will not be available in standard modules. Oracle strongly recommends using plug-in based modules.

Table 19–9 X509 Authentication Module Definition

Element	Description
Name	Identifies this module definition with a unique name.
Match LDAP Attribute	Defines the LDAP distinguished name attribute to be searched against given the X509 Cert Attribute value. For example, if the certificate subject EMAIL is me@example.com and it must be matched against the "mail" LDAP Attribute, an LDAP query must search LDAP against the "mail" attribute with a value "me@example.com (cn). Default: cn
X509 Cert Attribute	Defines the certificate attribute to be used to bind the public key (attributes within subject, issuer scope to be extracted from the certificate: subject.DN, issuer.DN, subject.EMAIL, for example). See Also. Match LDAP Attribute earlier in this table.
Cert Validation Enabled	Enables (or disables if not checked) X.509 Certificate validation. When enabled, the OAM Server performs the certificate validation (rather than having the WebLogic server intercept and validate the certificate before passing it to the OAM Server). Access Manager performs the entire certificate path validation.
OCSP Enabled	Enables (or disables when not checked) the Online Certificate Status Protocol. Values are either `true` or `false`. For example: OCSP Enabled: true Note: OCSP Server Alias, OCSP Responder URL and OCSP Responder Timeout are required only when OCSP Enabled is selected.
OCSP Server Alias	An aliased name for the OSCSP Responder pointing to CA certificates in .oamkeystore file--a mapping between the aliased name and the actual instance name or the IP address of the OSCSP Responder instance.
OCSP Responder URL	Provides the URL of the Online Certificate Status Protocol responder. For example, OpenSSL Responder URL: http://*localhost:6060*
OCSP Responder Timeout	Specifies the grace period for users with expired certificates, which enables them to access OAM Servers for a limited time before renewing the certificate.

19.6.2 Viewing or Editing Native Authentication Modules

Users with valid Administrator credentials can use the following procedure to modify an existing authentication module. This includes changing the name of an existing module as well as changing other attributes.

Prerequisites

Modify each authentication scheme that references the module you will change, to use another authentication module if needed.

Note: By default, the LDAP module is used in the authentication scheme that protects the Oracle Access Management Console. To ensure Administrator access, the LDAP module must point to the User Identity Store that is designated as the System Store. If you change the designated System Store, be sure to change the LDAP Module to reference the newly designated System Store.

To find, view, or edit an authentication module

1. From the Oracle Access Management Console, click Authentication Modules.
2. Open the desired Authentication Modules page.
3. On the Authentication Modules page, modify information as needed:
   - Kerberos Module: See Table 19–7
   - LDAP Module: See Table 19–8
   - X509 Module: See Table 19–9 and Table 19–15
4. Click Apply to submit the changes and close the Confirmation window (or close the page without applying changes).
5. Add the updated authentication module to authentication schemes (or change to another authentication module in each authentication scheme that references this module), as described in "Managing Authentication Schemes" on page 19-64.

19.6.3 Deleting a Native Authentication Module

Users with valid Administrator credentials can use the following procedure to delete an authentication module.

The following procedure is the same whether you are deleting a custom authentication module or a native module.

Prerequisites

In each authentication scheme that references the module to be deleted, specify another authentication module.

To delete an authentication module

1. From the Oracle Access Management Console, click Authentication Modules.
2. Optional: Open the module to verify this is the module to remove, then close the page.
3. Click the desired module name, then click the Delete button.
4. Confirm removal (or dismiss the confirmation window to retain the module).

19.7 Orchestrating Multi-Step Authentication with Plug-in Based Modules

Authentication involves determining which credentials a user must supply when requesting access to a resource, gathering credentials, and returning a response that is based on the results of credential validation. All authentication processing relies on an authentication module to define the rules governing requirements and transmission of information to the backend authentication scheme. All information collected by the plug-in and saved in the context is available to the plug-in through the authentication

process. Context data can also be used to set cookies or headers in the user's login page.

Note: Oracle strongly recommends using authentication plug-ins to create custom authentication modules.

This section provides the following topics:

- Comparing Simple Form and Multi-Factor (Multi-Step) Authentication
- About Plug-ins for Multi-Step Authentication Modules
- About Plug-in Based Modules for Multi-Step Authentication
- Example: Leveraging SubjectAltName Extension Data and Integrating with Multiple OCSP Endpoints
- Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules
- Creating and Managing Step-Up Authentication
- Configuring an HTTPToken Extractor Plug-in
- Configuring a JSON Web Token Plug-in

See Also: Oracle Fusion Middleware Developer's Guide for Oracle Access Management if you want to create custom authentication plug-ins.

19.7.1 Comparing Simple Form and Multi-Factor (Multi-Step) Authentication

Simple form-based authentication relies on the default embedded or optional detached credential collector and Web forms that process user logins with Access Manager authentication mechanisms. Simple form-based authentication is the default and does not require additional configuration unless you want to customize forms. With simple form-based authentication:

- All credentials are supplied in one simple form.
- Upon credential validation and authentication, either success or failure status is returned.
- Authentication can be retried upon failure.

See Also: *Oracle Fusion Middleware Developer's Guide for Oracle Access Management* for details about customizing login pages and forms

For dynamic, multi-step authentication, Access Manager provides a number of plug-ins with which you can design and orchestrate your own customized authentication modules. Authentication plug-ins provide processing that meets your specific needs.

Also, Administrators can install multiple user identity stores for Access Manager. Each identity store can rely on a different LDAP provider. Each authentication plug-in can be configured to use a different user identity store.

Both the ECC and DCC handle complex multi-factor (multi-step, iterative, and variable) Authentication processing, where:

- Not all required credentials are supplied at once.

- Depending on the authentication status, PENDING state, expected credentials and context data are returned, expecting those credentials to be supplied in the next round.
- Each intermediate step, submit required credentials and context data for the authentication engine, until a success or failure status returned.
- The Authentication plug-in can have multiple steps configured.

> **Note:** If using multi-factor authentication, the UserIdentificationPlugin should be invoked in the last pass during the authentication process.

Table 19–10 provides more information about these two forms of authentication.

Table 19–10 Simple Form versus Multi-Step Authentication

Authentication Method	Description
Simple form-based authentication	Simple form-based authentication relies on Credential Collectors (both ECC and DCC) and Web forms that process user logins using Access Manager authentication mechanisms. This is the default and does not require additional configuration unless you want to customize forms. **See Also**: Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about customizing login pages and forms
Multi-Step Authentication	Multi-step authentication requires a custom authentication module composed of two or more authentication plug-ins that transmit information to the backend authentication scheme several times during the login process. All information collected by the plug-in and saved in the context will be available to the plug-in through the authentication process. Context data can also be used to set cookies or headers in the user's login page. Multi-Step authentication relies on: ■ Authentication Chaining: You can chain multiple authentication plug-ins in a new authentication module, and add the module to an authentication scheme. ■ Challenge Mechanism: Controls the way in which the required credentials are collected. Currently, this is tied to the authentication scheme. Both the ECC and DCC use the same challenge mechanisms. ■ Credential Collection: Either the ECC or DCC can be used for multi-step authentication. (DCC provides greater flexibility for interactions with users or programmatic entities when collecting authentication-related information that involves several methods to establish the user's identity). **See Also**: "Adding PasswordPolicyValidationScheme to Authentication Policy for DCC" on page 19-111 "Creating and Managing Step-Up Authentication" on page 19-48 Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about custom authentication plug-ins

19.7.2 About Plug-ins for Multi-Step Authentication Modules

You can create custom plug-in based authentication modules using existing Access Manager as described in this chapter. You can also create your own plug-ins, as described in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.

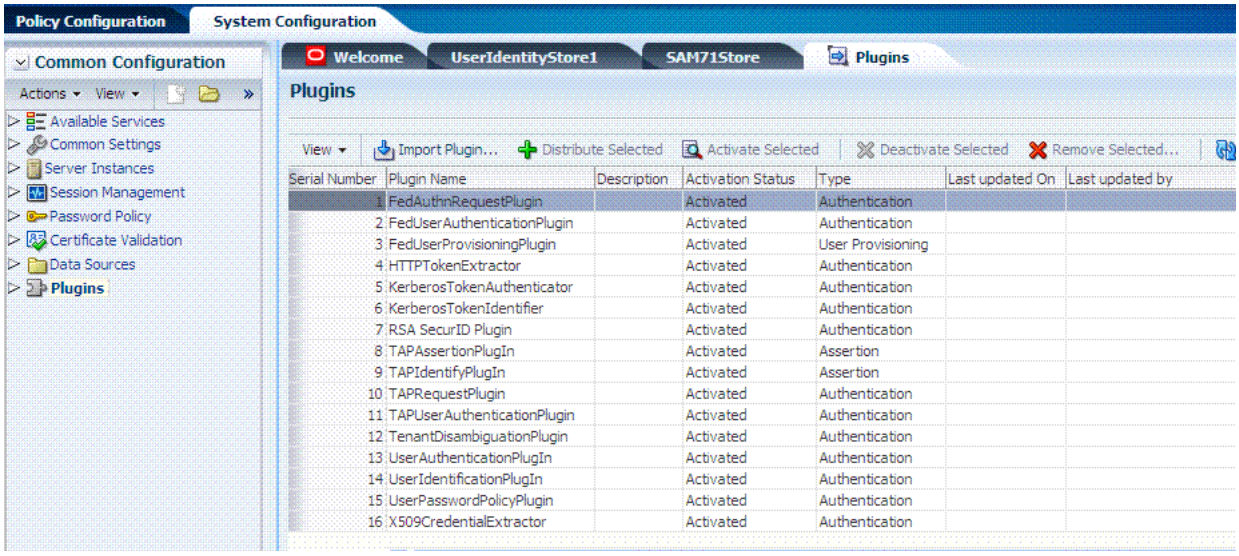
Plug-ins operate with either the default embedded credential collector (ECC) or the optional detached credential collector (DCC-enabled Webgate). Each authentication plug-in provides an individual piece of functionality that you can use alone or string

together into a series of steps. The lifecycle of a plug-in centers around the ability to add and use the plug-ins to build features and work flows that act as extensions to the OAM Server. Each plug-in is deployed as a JAR file and each plug-in's configuration requirements must be given in XML format.

> **Note:** Standard (native) Authentication Modules are targeted for deprecation; future enhancements will not be available in the standard modules. Oracle strongly recommends using plug-in based modules as described in "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28.

Figure 19–8 shows out of the box plug-ins available from the Common Configuration section of the System Configuration tab on the Oracle Access Management Console. These plug-ins, and any that you create using the SDK and import, appear in a list when you add steps to build a custom authentication module.

Figure 19–8 Access Manager Plug-ins for Customized Authentication Modules



The Name generally defines the component that relies on the plug-in. The Description is optional. The Type column indicates the purpose of the plug-in. Activation Status lets you know if this is active and ready to use.

> **See Also:** *Oracle Fusion Middleware Developer's Guide for Oracle Access Management* for details about building your own custom plug-ins. You can import new plug-ins, distribute, activate, deactivate, and remove custom plug-ins.

Whether you use an Oracle-provided plug-in or create one of your own, adding a plug-in when you create a custom authentication module is the same.

Each custom module requires the following types of information:

- **General** identifies the unique name and optional description for the individual plug-in.
- **Steps** identify the specific plug-ins to use, and their execution order, based on the configuration details of each plug-in (including the user identity store to use).

- **Step Orchestration** specifies the action to be taken on success or on failure or on error.

Additionally, when multi-factor authentication is used, the UserIdentificationPlugin should be invoked in the last pass during the authentication process.

Figure 19–9 shows a Custom Authentication Module within the Access Manager section of the System Configuration tree. Each module provides three subtabs where you enter information for the module.

Figure 19–9 Creating Custom Authentication Modules: General

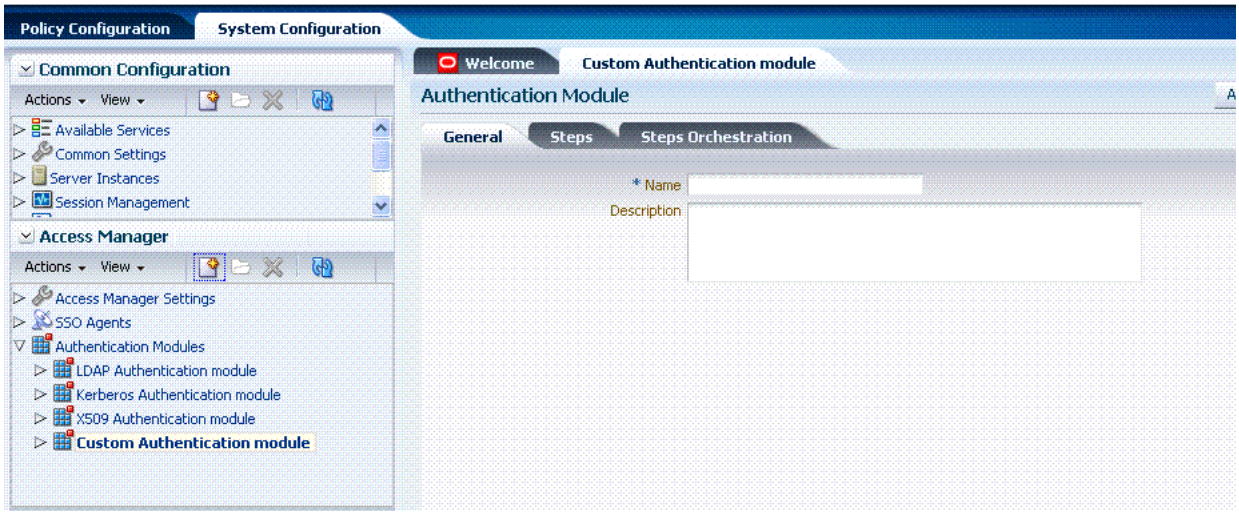


Table 19–11 describes the content of the General tab.

Table 19–11 General tab

Element	Description
Name	A unique name up to 60 characters.
Description	Optional; up to 250 characters.

Clicking the Steps tab opens a fresh page where you can add a new step. When you add a new Step, the following dialog box appears. Information that you enter is used to populate the table and Details sections of the page.

Figure 19–10 Adding a Step and Associating a Plug-in

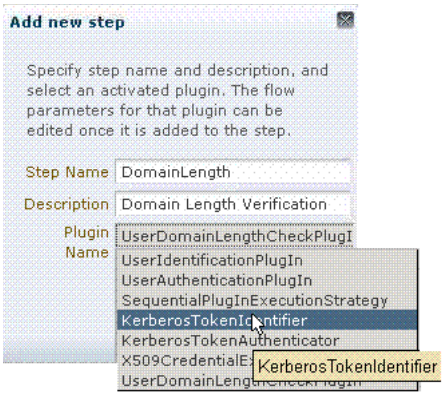


Table 19–12 describes the information required when adding a new step. Each step requires a plug-in and each plug-in requires specific details for proper operation.

Table 19–12 Add New Step Entries, Steps Results Table, and Details Section

Element	Description
Step Name	The unique name you enter to identify this step, up to 60 characters.
Description	The optional description for this step, as entered when adding the step (up to 250 characters).
Plugin Name	The plug-in that you select for a particular step from the list of imported and activated plug-ins. **See Also**: Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about creating custom plug-ins.
Step Details	Plug-in configuration details must be specified to ensure proper operation. Details might differ depending the chosen plug-in and its requirements. **See Also**: Table 19–13.

Table 19–13 describes the Plug-in Parameter Details required by Oracle-provided plug-ins. Absent from this table are the plug-in exceptions (those plug-ins with no initial parameters): `KerberosTokenIdentifier`, `FedAuthnRequestPlugin`, and `FedUserAuthenticationPlugin`.

Table 19–13 Parameter Details for Various Plug-ins

Plug-in Parameter	Display Name	Description
KEY_IDENTITY_STORE_REF	Identity Store Name	Most plug-ins require this attribute to ensure that the appropriate user identity store is called during authentication. The following plug-in uses only this property: ■ TAPAssertionPlugIn For additional Details required by plug-ins that employ this property, see: ■ UserIdentificationPlugIn ■ UserAuthenticationPlugIn ■ UserPasswordPolicyPlugin ■ TAPUserAuthenticationPlugin ■ TenantDisambiguationPlugin
CredentialCollectorPlugIn	**CredentialCollectorPlugIn**	This plugin allows the administrator to configure which credentials will be collected for authentication. Credentials to be collected are configured as step parameters. The plugin validates these parameters and renders the UI to collect the credentials. After user input, the plugin parses the credential parameters and builds the user context with credential objects. NOTE: Plugin error responses are set to the context if the credentials are invalid and the plugin returns failure. The plugin supports the collection of 4 credentials as step level parameters. 1. CRED_PARAM_1 2. CRED_PARAM_2 3. CRED_PARAM_3 4. CRED_PARAM_4 The following example illustrates how to collect a username and password. `CRED_PARAM_1= {ID=KEY_USERNAME},{DISPLAY_NAME=KEY_ USERNAME},{TYPE=text} {ID=KEY_PASSWORD},{DISPLAY_NAME=KEY_ PASSWORD},{TYPE=password}` Where ID, DISPLAY_NAME and TYPE are constants.
Actiontype	Action Type	Indicates if the plugin wants to REDIRECT or FORWARD to the login page to collect credentials.
loginPageURL	Login Page URL	The URL to which the user will be forwarded or redirected for credential collection.
NO_OF_CREDENTIALS		The number of credentials provided for the plugin instance. If the number of instances is more than 4, the user must update the oam-config file to add additional CRED_PARAMS as plugin parameters.
UserIdentificationPlugIn	**UserIdentificationPlugIn**	This native plug-in maps the user to a specific LDAP user record.
KEY_LDAP_FILTER	LDAP Filter	The search filter required to identify the user. Only standard LDAP attributes can be used when defining an LDAP search filter.
KEY_SEARCHBASE_URL	LDAP Searchbase	The search base required for the query. The node in the directory information tree (DIT)) under which user data is stored; the highest possible base for all user data searches.
UserAuthenticationPlugIn	**UserAuthenticationPlugIn**	This native plug-in authenticates the supplied username/password credentials against an LDAP directory.

Table 19–13 (Cont.) Parameter Details for Various Plug-ins

Plug-in Parameter	Display Name	Description
KEY_PROP_AUTHN_ EXCEPTION	Propagate LDAP errors	Enables (or disables) propagation of LDAP errors. UserAuthenticationPlugIn employs this attribute.
UserAuthnLevelCheckPlugin	UserAuthnLevelCheckPlugin	This native plugin shall determine if the user has been authenticated to the authentication level X - where the value of X is provided by the plugin parameter AUTHN_LEVEL_FOR_PLUGIN. For example, it checks the current Authentication Level of the user with the value specified. In addition, the plug-in specifies a list of parameters to collect depending on whether the Authentication Level check succeeded or failed.
AUTHN_LEVEL_FOR_PLUGIN	AUTHN_LEVEL_FOR_PLUGIN	Specify the authentication level as an integer. Multiple steps can use UserAuthnLevelCheckPlugin. However, each Step must have a unique name and AUTHN_LEVEL_FOR_PLUGIN. **See Also**: "Creating and Managing Step-Up Authentication" on page 19-48
UserPasswordPolicyPlugin	**UserPasswordPolicyPlugin**	
PLUGIN_EXECUTION_MODE	Mode of Operation	The execution mode of plug-in (UserPasswordPolicyPlugin). Depending upon the configuration, this plug-in can operate either alone or with other default plug-ins. Values are one of the following: ■ PSWDONLY: Default. The most preferred configuration where only the password status is determined. The ID and authentication must be performed using the UserIdentification and UserAuthentication Plugins. ■ AUTHWITHPSWD: Both authentication and password are performed using this plug-in. ■ AUTHONLY: Only the user identification and authentication is performed using this plug-in
POLICY_SCHEMA	Policy Schema To Use	Specifies the schema for the password service (used with UserPasswordPolicyPlugin). Only OAM10G is supported. Default: OAM10G
NEW_USERPSWD_BEHAVIOR	Force Password Change on First Login	Configures retroactive behavior of the new-user password-policy. Used with UserPasswordPolicyPlugin.Values are either: ■ FORCECHANGEPASSWORD: Forces a password change. ■ NOFORCEPASSWORDCHANGE: The password policy change does not affect user passwords that are already set. Default: FORCECHANGEPASSWORD
DISABLED_STATUS_SUPPORT	Disabled Account Status Support	Specifies whether the disabled status is to be supported and acted upon in this password service. Valid values are either True or False. Default: TRUE
URL_ACTION	Password Management Action URL	Specifies the URL to which the user is sent for password management. The type of servlet action needed for redirecting the user to the specific password page for expiry and warning pages. Values can be either: ■ REDIRECT_POST ■ REDIRECT_GET ■ FORWARD Default: REDIRECT_POST
FedUserProvisioningPlugin		

Table 19–13 (Cont.) Parameter Details for Various Plug-ins

Plug-in Parameter	Display Name	Description
KEY_USER_RECORD_ ATTRIBUTE_LIST	List of User Attributes	For Federation. Comma-separated list of assertion attributes required to create the user record.
KEY_PROVIDERID_ATTRIBUTE_ NAME	Partner Attribute Name	For Federation. The attribute name of the LDAP user record whose value will be set to the Partner's Identity Provider ID when provisioning the user. This field is optional and if empty, the Partner's Identity Provider ID will not be set in the LDAP user record.
KEY_USERID_ATTRIBUTE_ NAME	User UserID Attribute	For Federation. Name of the attribute in the assertion attributes that is used as the LDAP UserID.
TAPIdentifyPlugIn		
KEY_TAP_RETURN_ATTRIBUTE	Username Mapping Attribute	Name of the attribute used for account linking by TAPIdentifyPlugIn.
SequentialPlugInExecutionStrategy		
StrategyName	Orchestration Strategy	Name of the plugin orchestration strategy required by SequentialPlugInExecutionStrategy.
KerberosTokenAuthenticator		
KEY_KEYTAB_FILE	Location of Keytab file	Name of the file containing Kerberos principals and encrypted keys required by KerberosTokenAuthenticator
KEY_PRINCIPAL	OAM Service Principal	Your OAM Account SPN, required by KerberosTokenAuthenticator.
KEY_KRB_CONFIG_FILE	Location of Kerberos Configuration file	Location of the Kerberos configuration properties file, required by KerberosTokenAuthenticator.
KEY_DOMAIN_DNS2DN_MAP	AD Domain DNS Names to DN Mapping	Comma-separated list of Active Directory DNS Domains to DN mappings required by KerberosTokenAuthenticator.
X509CredentialExtractor		
KEY_CERTIFICATE_ATTRIBUTE_ TO_EXTRACT	User Mapping Attribute	X509 certificate Attribute to be used for user mapping required by X509CredentialExtractor.
KEY_IS_CERT_VALIDATION_ ENABLED	Certificate Validation	Enable or disable X.509 certificate validation, required by X509CredentialExtractor.
TAPRequestPlugin		
TAPS2PVersion	Integration Protocol Version	Token version for Integration.
TAPPartnerId	Integration PartnerId	Integration Partner Identifier.
TAPChallengeURL	Partner Integration Endpoint URL	Remote Partner End Point URL.
TAPUserAuthenticationPlugin		
KEY_USERNAME_ATTRIBUTE	Username Mapping Attribute	Name of the attribute used for account linking required by TAPUserAuthenticationPlugin
KEY_CHECK_TOKEN_EXPIRY	Enable Token Expiration Checking	Enable or disable Integration token expiration.
TenantDisambiguationPlugin		
KEY_FEDERATED_TENANTS	FederatedTenantNames	Optional names of tenants (comma separated) for whom federated authentication is enabled. Plugin will check with Federation engine if tenant names are not mentioned.
RSA SecurID Plugin		
username	Username Parameter	Name of the username plugin parameter required by RSA SecurID Plugin.
passcode	Passcode Parameter	Name of the passcode plugin parameter required by RSA SecurID Plugin.

Table 19–13 (Cont.) Parameter Details for Various Plug-ins

Plug-in Parameter	Display Name	Description
nexttoken	Next Token Parameter	Name of the next token plugin parameter required by RSA SecurID Plugin.
newpin	New PIN Parameter	Name of the new pin plugin parameter required by RSA SecurID Plugin.
confirmnewpin	Confirm New PIN Parameter	Name of the confirm new pin plugin parameter required by RSA SecurID Plugin.
HTTPTokenExtractor		
KEY_HEADER_PROPERTY	HTTP Header Names	Comma separated list of HTTP Headers. See Section 19.7.7, "Configuring an HTTPToken Extractor Plug-in."
KEY_COOKIE_PROPERTY	HTTP Cookie Names	Comma separated list of Cookies. See Section 19.7.7, "Configuring an HTTPToken Extractor Plug-in."

Figure 19–11 illustrates the Steps subtab and Details section for a custom authentication module. When adding Steps, there is no data to display in the table. However, when you add one or more Steps the table the Details sections are populated.

Figure 19–11 Plug-in Based Authentication Module Steps and Details

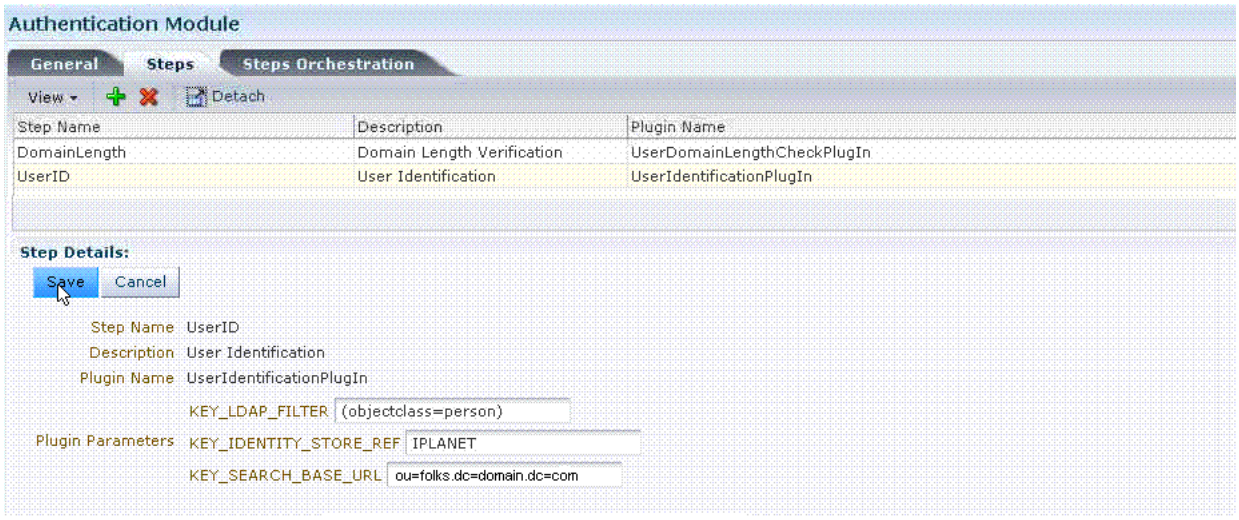


Figure 19–12 illustrates the Steps Orchestration subtab of a custom authentication module, which is populated by information for each defined step (and the action you choose for each operational condition).

Figure 19–12 Steps Orchestration for Plug-in Based Authentication Modules

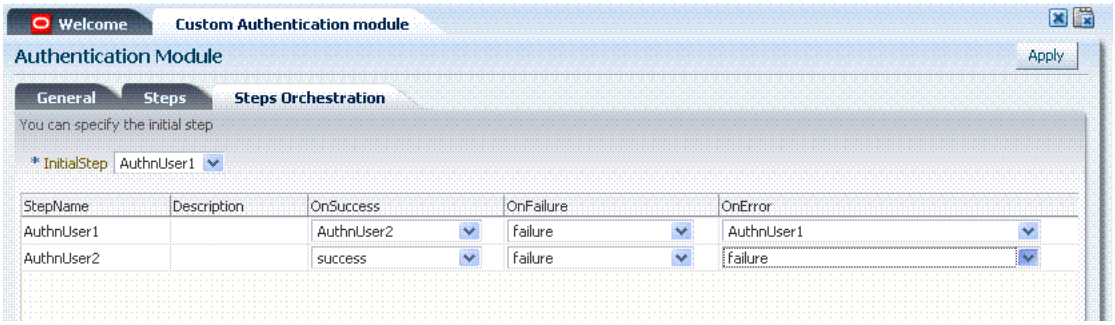


Table 19–14 describes the elements on the Steps Orchestration subtab. The lists available for `OnSuccess`, `OnFailure`, and `OnError` include the following choices:

- success
- failure
- *StepName* (any step in the module can be selected as the action for an operational condition)

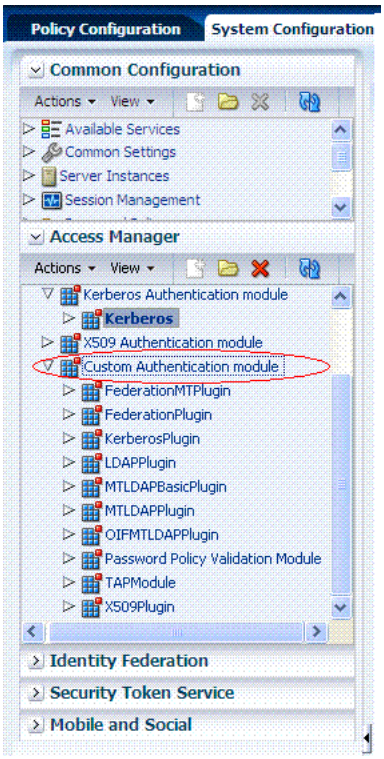
Table 19–14 Steps Orchestration Subtab

Element	Description
Initial Step	Choose the starting step from those listed. The list includes only those steps defined for this module.
Name	Each step added to this module is listed by the name that was entered when the step was added.
Description	The optional description for this step, entered when this step was added.
OnSuccess	The action selected for successful operation. A list provides actions you can choose: ■ Success ■ Failure ■ *StepName* (activates the next step)
OnFailure	The action selected for failure of this step. A list provides actions you can choose: ■ Success ■ Failure ■ *StepName* (activates the next step)
OnError	The action selected for an error when executing this step. A list provides actions you can choose: ■ Success ■ Failure ■ *StepName* (activates the next step)

19.7.3 About Plug-in Based Modules for Multi-Step Authentication

Figure 19–13 lists the currently available native plug-in based Authentication modules.

Figure 19–13 Oracle-provided Plug-in Based Authentication Modules



Following topics describe several of the native Custom modules provided with pre-populated plug-ins. You can use these to orchestrate your own custom authentication modules:

- KerberosPlugin
- LDAPPlugin
- X509Plugin
- Password Policy Validation Module and Plug-ins

See Also:

- Table 19–13, " Parameter Details for Various Plug-ins"
- Example: How to leverage the SubjectAltName extension data and integrate with multiple OCSP Endpoints on page 19-45
- "Creating and Managing Step-Up Authentication" on page 19-48

KerberosPlugin

Use this plug-in when configuring Access Manager for Windows Native Authentication, as described in Chapter 50.

Figure 19–14 shows the KerberosPlugin module that is bundled with Access Manager 11g. This is a credential mapping module that matches the credentials (username and password) of the user who requests a resource to the encrypted "kerberos ticket".

Figure 19–14 KerberosPlugin

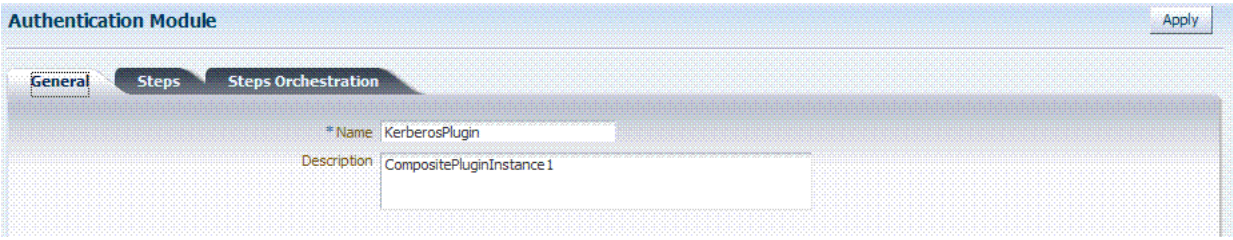


Figure 19–15 shows the default steps and details. Figure 19–16 shows the orchestration of the steps and conditions.

Figure 19–15 Default KerberosPlugin Steps and Details

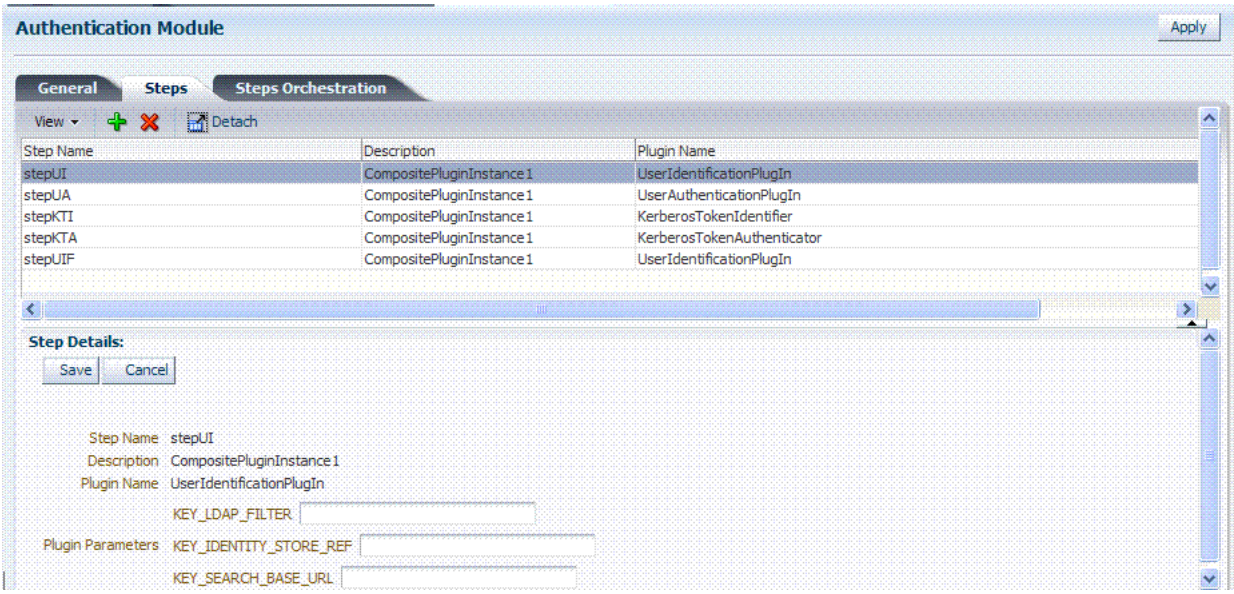
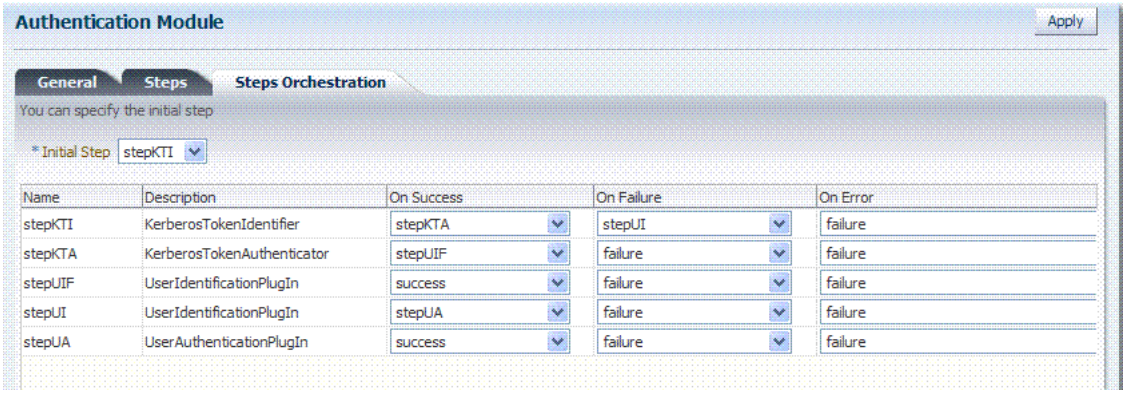


Figure 19–16 Default KerberosPlugin Steps and Orchestration



LDAPPlugin

Figure 19–17 shows the LDAPPlugin module that is bundled with Access Manager. By default, LDAPPlugin has 2 steps, shown in Figure 19–18. Figure 19–19 shows the default orchestration of steps for LDAPplugin.

Figure 19–17 LDAPPlugin

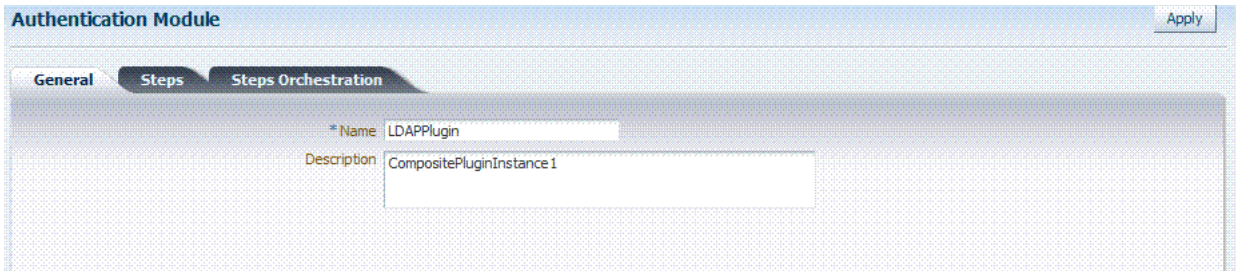


Figure 19–18 Default LDAPPlugin Steps and Details

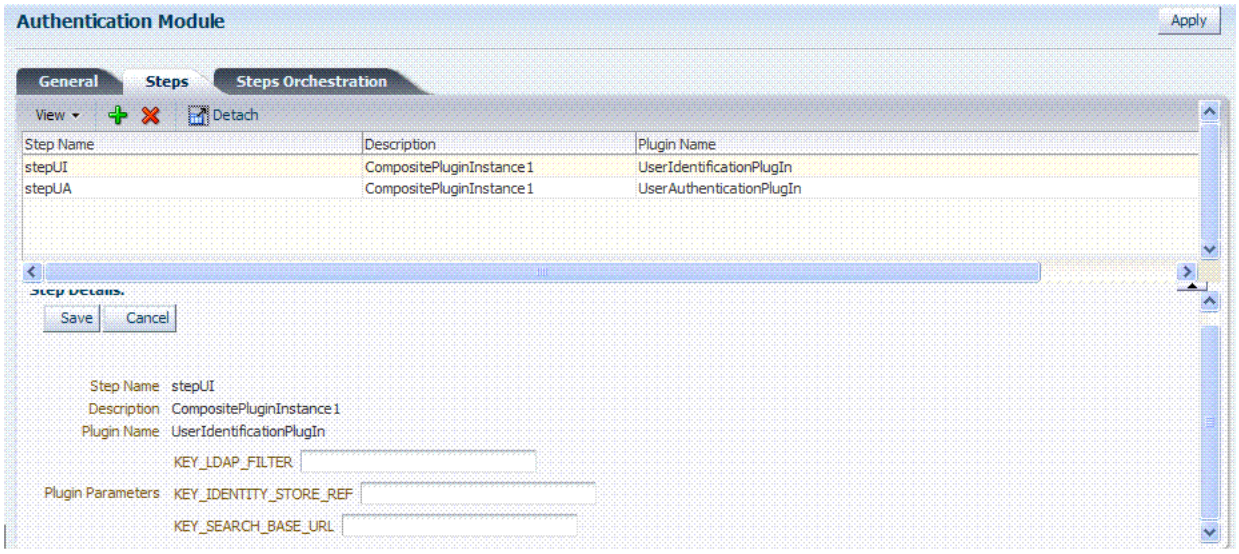
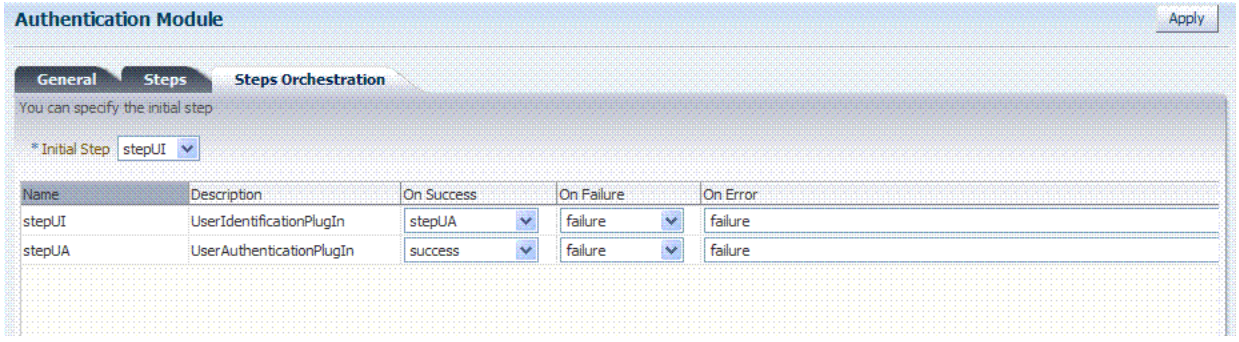


Figure 19–19 Default Orchestration of Steps for LDAPplugin



X509Plugin

Figure 19–20 shows the X509Plugin module that is bundled with Access Manager 11g. The X509Plugin is similar to the LDAPPlugin with additional properties that indicate which attribute of the client's X.509 certificate should be validated against the user attribute in LDAP. Figure 19–21 shows default steps and details for this plug-in. Figure 19–22 shows the default orchestration of steps for the X509Plugin.

Figure 19–20 X509Plugin

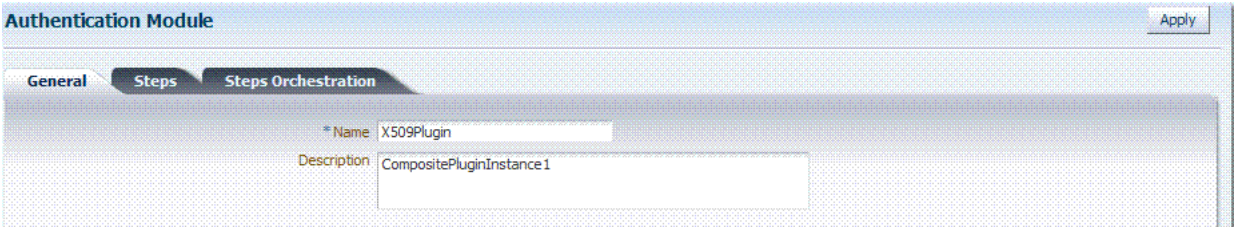
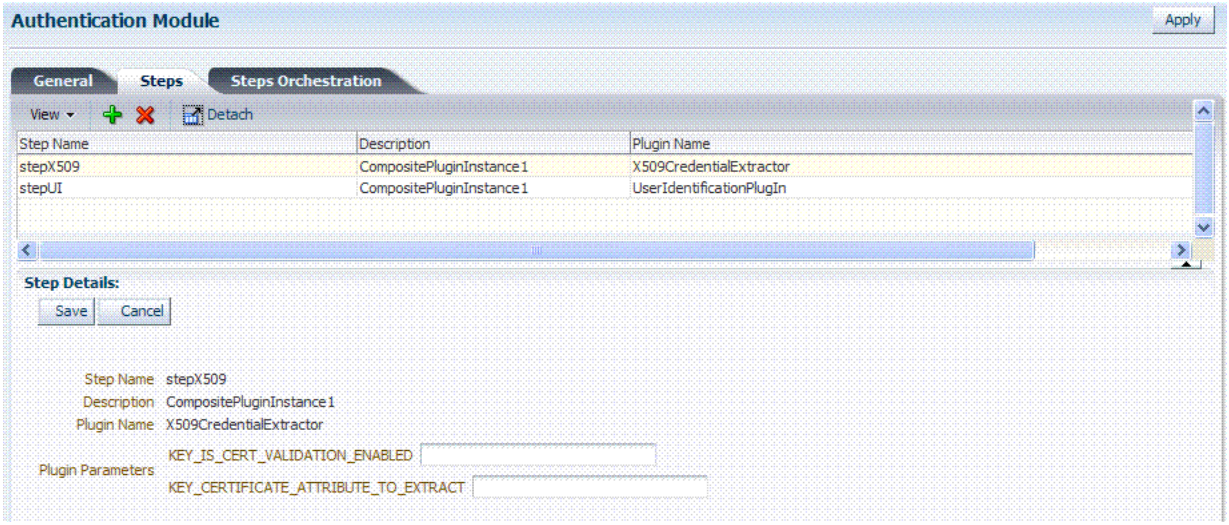


Figure 19–21 X509Plugin Default Steps and Details



With this plug-in, the root and sub CA certificates must be added to the $DOMAIN_HOME/config/fmwconfig/amtruststore because the X509CredentialExtractor plug-in loads certificates from this location.

Table 19–15 lists the stepX509 values for Subject and Subject Alternative Names. Such processing is only supported when the X509Plugin is used.

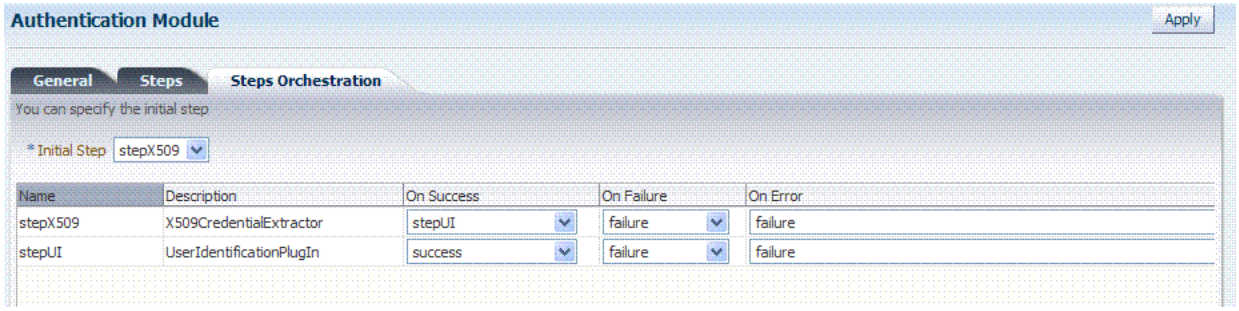
See Also:

- Table 19–13, " Parameter Details for Various Plug-ins"
- Example: How to leverage the SubjectAltName extension data and integrate with multiple OCSP Endpoints on page 19-45

Table 19–15 X509 Step Details (KEY_CERTIFICATE_ATTRIBUTE_TO_EXTRACT)

issuer.D	Subject
subject.	EDIPI **Note**: EDIPI refers to the Electronic Data Interchange Personal Identifier.
subjectAltName.	OTHER_NAME (FASC-N) **Note**: FASC-N refers to the Federal Agency Smart Credential Number.
subjectAltName.	RFC822_NAME
subjectAltName.	UNIFORM_RESOURCE_IDENTIFIER

Figure 19–22 Default Orchestration for X509Plugin Steps



See Also: "Example: Leveraging SubjectAltName Extension Data and Integrating with Multiple OCSP Endpoints"

Password Policy Validation Module and Plug-ins

Oracle provides a Password Policy Validation Module that employs the following plug-ins as individual steps in the authentication process:

- User Identification Step
- User Authentication Step
- User Password Status Step

Figure 19–23 shows the Steps tab. Additional details follow the figure.

Figure 19–23 Password Policy Validation Module Plug-ins

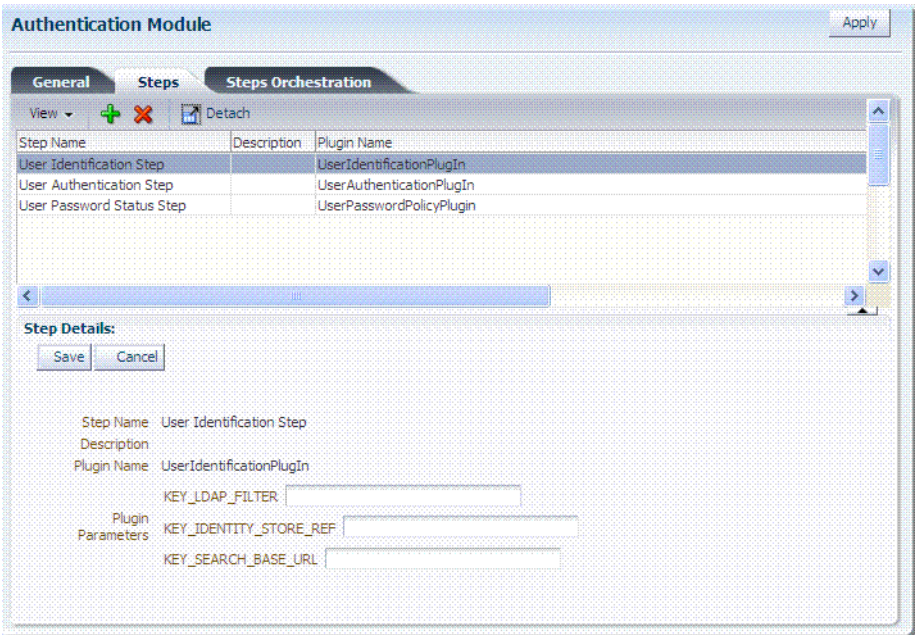
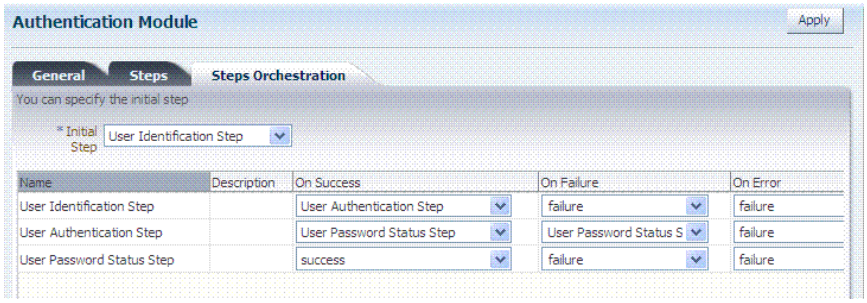


Figure 19–24 shows the Steps Orchestration page for the Password Policy Validation Module plug-ins, which is self explanatory.

See Also:

- Table 19–13, " Parameter Details for Various Plug-ins"
- "Understanding Password Policy" on page 19-89

Figure 19–24 Steps Orchestration: Password Policy Validation Plug-ins



19.7.4 Example: Leveraging SubjectAltName Extension Data and Integrating with Multiple OCSP Endpoints

Access Manager 11g support for personal identity verification (PIV) cards (a United States Federal smart card), is to use FASC-N and EDIPI attributes from the SubjectaltName extension to map the user during X.509 authentication. While multiple OCSP providers are not supported, you can use an OCSP Gateway or write a custom authentication plug-in that uses the OSDT OCSP APIs to validate against multiple OCSP providers.

The following functionality is available only with the X.509 Plug-in (not the X.509 Authentication module). The Plug-in configuration specifies the LDAP attribute to which the extracted attribute from the X.509 client certificate will be mapped.

Example: How to leverage the SubjectAltName extension data and integrate with multiple OCSP Endpoints

1. From the Oracle Access Management Console, click Authentication Modules, Custom Authentication Modules and X509plugin.

   See Also: "Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules" on page 19-46

   General Tab:

   a. Name: *CustomX509Plugin*.

   b. Description: *Custom Plug-in for X509*.

   Steps Tab:

   a. Click + to add a step to the plug-in.

   b. Enter a Name and Description, then select the *X509CredentialExtractor* plug-in.

   Step Details:

   a. KEY_IS_CERT_VALIDATION_ENABLED `true`.

   b. KEY_CERTIFICATE_ATTRIBUTE_TO_EXTRACT (Table 19–15):
   `subject.EDIPI, subjectAltName.OTHER_NAME (FASC-N), subjectAltName.RFC822_NAME, subjectAltName.UNIFORM_RESOURCE_IDENTIFIER`

   c. Click the Save button.

   Add Another Plug-in:

   a. Click + to add a different plug-in.

   b. Enter the Name, Description, and select *UserIdentificationPlugin*

   Step Details for Second Plug-in:

   a. Set KEY_IDENTITY_STORE_REF to the required identity store.

   b. Add the LDAP filter to the KEY_LDAP_FILTER attribute. For example:

   ```
   (&(uid=
   Unknown macro: {subject.CN}
   )(mail=
   Unknown macro: {subject.E}
   ))
   ```

   c. Add the user search base, if required, to the KEY_SEARCH_BASE_URL attribute.

   d. Click the Save button.

   e. Proceed to Step Orchestration tab (Step2).

2. **Orchestrate Steps**:

   a. **Initial Step**: Select the *X509CredentialPlugin* Step from the drop down.

   b. **On Success**: *X509CredentialPlugin* step, select the *UserIdentificationPlugin* Step from the drop down list.

c. **On Success**: *UserIdentificationPlugin* step, select `Success` from the drop down list.

d. **On Failure**: Select `Failure` for both *X509CredentialPlugin* and *UserIdentificationPlugin* steps.

e. **On Error**: Select `Failure` for both *X509CredentialPlugin* and *UserIdentificationPlugin* steps.

f. Click the Apply button and review the confirmation window stating that the plug-in has been created successfully.

3. Set up the Certificate Validation Module for Certificate Validation and Revocation using OCSP.

See Also: "Managing Certificate Validation and Revocation" on page 3-7

a. From the Oracle Access Management Console, click Certificate Validation.

b. In the Certificate Revocation list section, confirm that Enabled is checked, then click Save.

c. In the OCSP/CDP section, enable OCSP, enter the OCSP URL and the Subject of the OCSP Server's certificate, then click Save.

d. On the command line, use the Java keytool application to import the trusted certificates into the $*DOMAIN_HOME*/config/fmwconfig/amtruststore keystore, as trusted certificate entries.

Note: Initially the keystore is empty; its password is set the first time the Java keytool application is used.

19.7.5 Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules

Users with valid Administrator credentials can use the following procedure to create custom authentication plug-in module that uses one or more authentication plug-ins.

This procedure outlines general steps for any authentication module (with sample information to configure an authentication X509 module for use with the Online Certificate Status Protocol (OCSP) to maintain the security of a server and other network resources).

See Also:

- "Example: How to leverage the SubjectAltName extension data and integrate with multiple OCSP Endpoints" on page 19-45
- "Creating and Managing Step-Up Authentication" on page 19-48

Prerequisites

Ensure that any user identity store associated with the module is running and includes the required user population.

To create a custom authentication module using bundled plug-ins

1. From the Oracle Access Management Console, click Authentication Modules.
2. **Create New**:

a. Click the Custom Authentication Module node.

b. Click the Create (+) button.

c. Add General Information: Name and optional Description. For example: *CustomX509Plugin* and *Plugin for X509*, respectively.

Click Apply to save general information.

3. **Add Steps**:

a. Click the Steps subtab.

b. Click the Add (+) button above the Steps table.

c. In the Add New Step dialog box, enter a unique Step Name and optional Description.

d. Browse for and select the desired plug-in name (*X509CredentialExtractor*, for instance) and click OK.

e. Confirm information in the results table.

f. Repeat b through e to add other steps until you have listed all required plug-ins for your module.

4. **Define Step Details**: Use appropriate values for requested parameters (Table 19–12, Table 19–13, Table 19–17, " Managing Custom Plug-ins Actions" and "Example: How to leverage the SubjectAltName extension data and integrate with multiple OCSP Endpoints"):

a. Click a *StepName* in the table to reveal required details, enter appropriate values for the requested details.

b. **Validate User Cert using OCSP**:

Confirm that KEY_IS_CERT_VALIDATION_ENABLED is set to `true`.

Add the certificate attributes to be extracted with KEY_CERTIFICATE_ATTRIBUTE_TO_EXTRACT (Table 19–15):

```
subject.EDIPI
subjectAltName.OTHER_NAME (FASC-N)
subjectAltName.RFC822_NAME
subjectAltName.UNIFORM_RESOURCE_IDENTIFIER
```

c. Click the Save button.

d. Repeat to configure each step appropriately.

e. Ensure that users are provisioned in any user identity stores assigned in the steps.

5. **Orchestrate Steps**: See Table 19–14 as you perform following steps.

a. Click the Steps Orchestration subtab.

b. From the InitialStep list, choose the name of the first step to be used.

c. Select a *StepName* in the table.

d. From the OnSuccess List, choose a condition (success or failure) or a step name.

e. From the OnFailure List, choose the desired condition or a *StepName*.

f. From the OnError List, choose the desired condition or a *StepName*.

g. Repeat Steps c through f to orchestrate operations for each plug-in this module.

h. Review your orchestration.

6. **Initiate Strategy Validation**: Click Apply to initiate validation of your orchestration strategy:
   - **Successful Strategy**: The orchestration strategy is applied and the module is ready to include in an authentication scheme. Continue with Steps 9 and 10.
   - **Invalid Strategy**: Click OK in the Error box, then edit your OnSuccess, OnFailure, OnError strategies (or add or remove plug-ins) to correct the problem. Repeat this step until your strategy is successful.
7. In the navigation tree, confirm the new Custom Authentication Module is listed, and then close the page when you finish.
8. Use your custom module in an authentication scheme, as described in "Managing Authentication Schemes" on page 19-64.

19.7.6 Creating and Managing Step-Up Authentication

This section describes how to define step-up authentication using plug-ins within a customized module. In this example, there are users who need standard level access to pages on the corporate portal and those who need access to sensitive information. For standard applications, authentication credentials include username and password. For sensitive applications, credentials include username, password, and a security code (the later obtained with a custom plugin that validates the code).

Figure 19–25 shows the steps within Step-up-Authn_Module. The processing that occurs with this customized step-up authentication module is driven by the steps and plug-ins described in Table 19–16. For more information, see Table 19–13.

Figure 19–25 StandardLevelCheck-2 and SensitiveLevelCheck-6 Modules

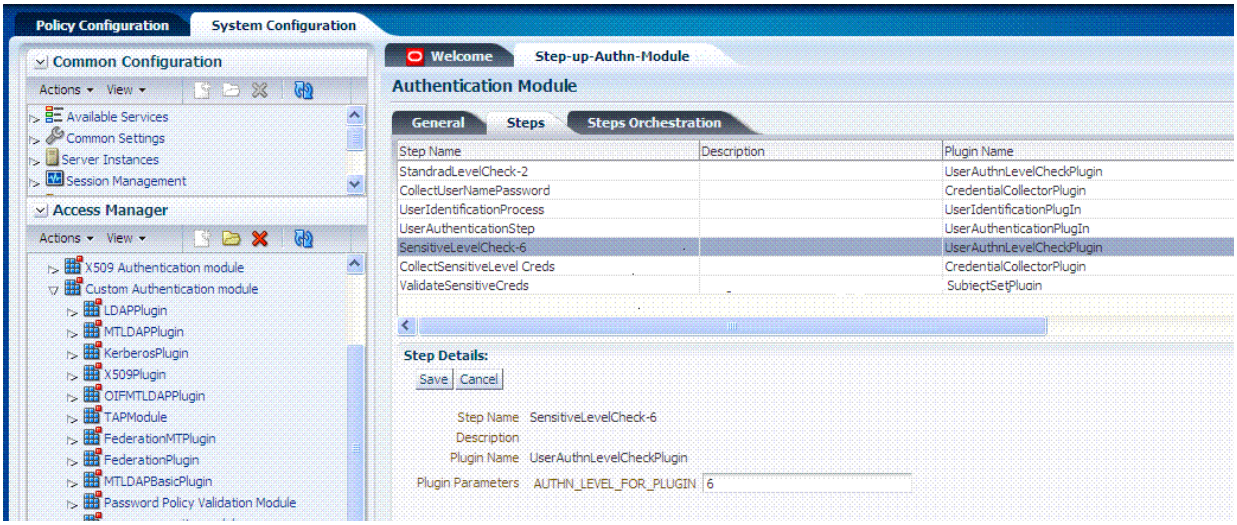


Table 19–16 Steps and Plug-ins in a Customized Step-up Authentication Module

Step #	Step Name	Plug-in Name	Description
1	StandardLevelCheck-2	UserAuthnLevelCheckPlugin	Configurable with the LevelCheck Rule and credentials parameters associated with the SUCCESS or FAILURE outcome resulting from the check. This plugin communicates with the authentication engine to determine the current authentication level of the user and compares it with the plugin level parameter AUTHN_LEVEL_FOR_PLUGIN. It interacts with a custom credential collector and checks the current Authentication Level of the user against the value specified. For example, if 2 is specified for X: ■ Authentication Level >= X returns ExecutionStatus.SUCCESS and proceeds to the next step; for example it will check for higer level authentication. ■ Authentication Level < X returns ExecutionStatus.FAILURE and proceeds to the next step in the plugin; for example it will collect the standard credentials for level 2 (username and password). Specifies parameters to collect depending on whether the Authentication Level check succeeded or failed: ■ ON SUCCESS, go to SensitiveLevelCheck-6 ■ ON FAILURE, go to CollectUserNamePassword ■ ON ERROR, Failure
2	CollectUserNamePassword	CredentialCollectorPlugin Flow must start with the Plug-in communicating the credential parameters to collect. The Action must support allowing the Server to mark parameters as immutable.	This plugin interacts with the credential collector (CustomReadServlet) to allow the administrator to configure the credentials collected for authentication. Credentials to be collected are configured as step parameters. The plugin validates these parameters and renders the UI to collect them. The user provides the credentials that need to be collected in the step parameter. In this example, since in previous step user was not authenticated to level 2, he will be prompted to enter a user name and password. ■ loginPageURL: /CustomRead/Servlet (generic credential collector for UserAuthnLevelCheckPlugin to render the interface to acquire plug-in specified credentials. ■ No_OF_CREDENTIALS: 4 ■ CRED_PARAM_4 ■ CRED_PARAM_3 ■ CRED_PARAM_2: {ID=KEY_PASSWORD},{DISPLAY_NAME=KEY_PASSWORD},{TYPE=password} ■ CRED_PARAM_1: {ID=KEY_USERNAME},{DISPLAY_NAME=KEY_USERNAME },{TYPE=text} ■ actiontype: FORWARD Credentials to be collected should be specified in this format only for the credential collector to render the UI interface. Also specifies action on: ■ ON SUCCESS, go to UserIdentificationProcess ■ ON FAILURE, Failure ■ ON ERROR, Failure
3	UserIdentificationProcess	UserIdentificationPlugIn	Out of the box plug-in that maps the user to a specific LDAP user record: ■ ON SUCCESS, go to UserAuthenticationStep ■ ON FAILURE, Failure ■ ON ERROR, Failure

Table 19–16 (Cont.) Steps and Plug-ins in a Customized Step-up Authentication Module

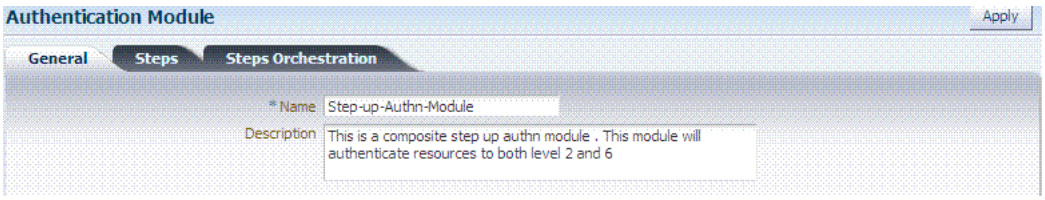
Step #	Step Name	Plug-in Name	Description
4	UserAuthenticationStep	UserAuthenticationPlugin	Out of the box plug-in that authenticates the supplied username and password credentials against an LDAP directory. ■ ON SUCCESS, go to SensitiveLevelCheck-6 ■ ON FAILURE go to CollectSensitiveLevelCreds ■ ON ERROR, Failure
5	SensitiveLevelCheck-6	UserAuthnLevelCheckPlugin	This plugin communicates with the authentication engine to determine the current authentication level of the user and compares it with the plugin level parameter AUTHN_LEVEL_FOR_PLUGIN. It interacts with a custom credential collector and checks the current Authentication Level of the user against the value specified. Specifies parameters to collect depending on whether the check succeeded or failed: ■ ON SUCCESS, Success ■ ON FAILURE, go to CollectSensitiveLevelCreds ■ ON ERROR, Failure
6	CollectSensitiveLevelCreds	CredentialCollectorPlugin	This plugin renders the UI for collecting credentials for level 6 authentication. This is similar to CollectUserNamePwd. ■ ON SUCCESS, go to ValidateSensitiveLevelCreds ■ ON FAILURE, Failure ■ ON ERROR, Failure ■ CRED_PARAM_1: {ID=securitycode},{DISPLAY_NAME=form_securecode},{TYPE=text}
7	ValidateSensitiveLevelCreds	SubjectSetPlugin	This custom developed plug-in validates the security code against the server. ■ ON SUCCESS, Success ■ ON FAILURE, Failure ■ ON ERROR, Failure

After defining and orchestrating plug-ins in an authentication module, you can use the module in an authentication scheme and use the scheme in a policy.

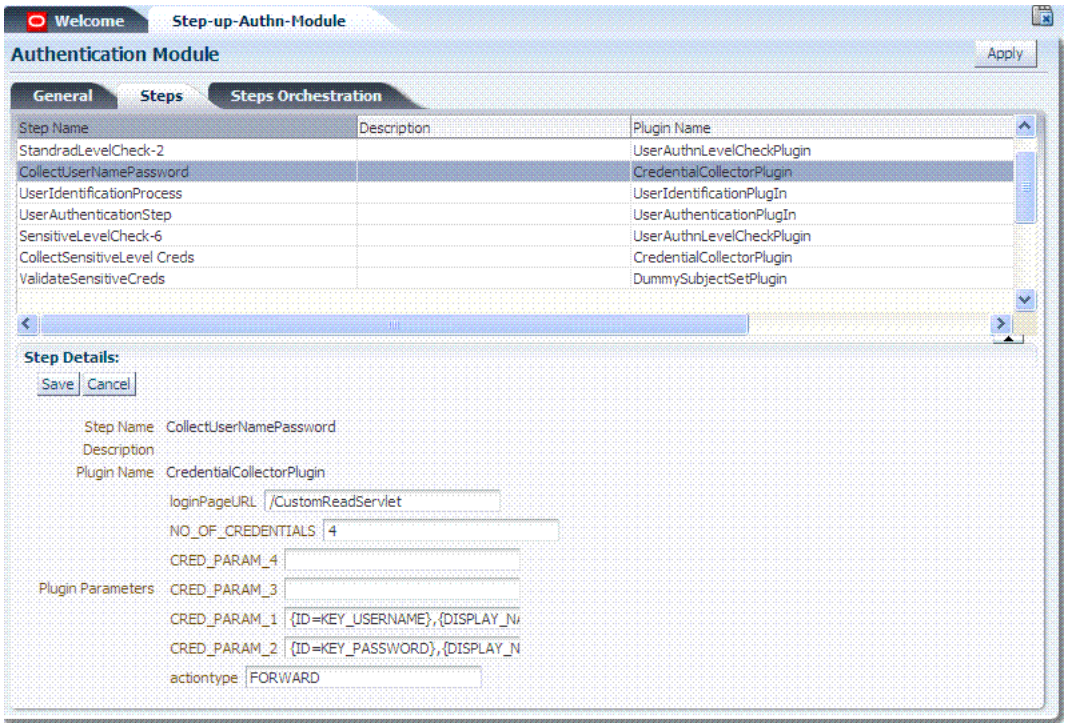
> **See Also:** "Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules"

Task overview: Configuring Step-up Authentication

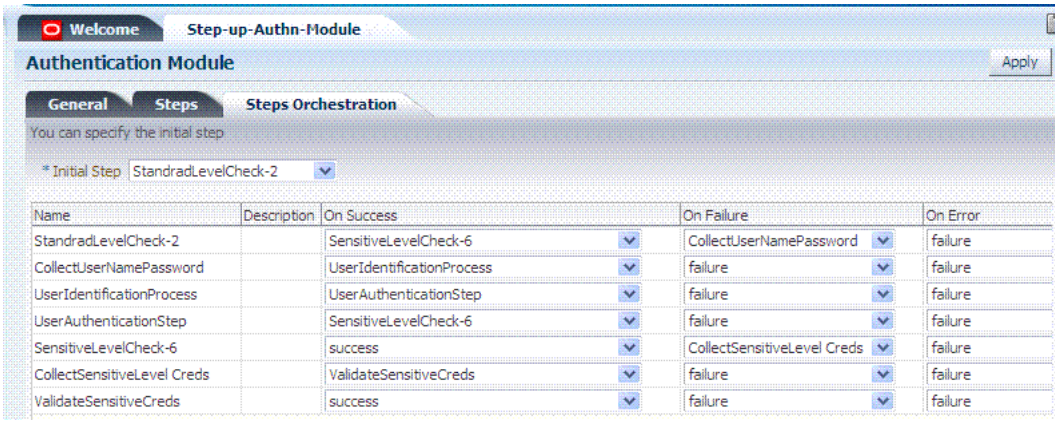
1. Create or edit a custom authentication module for step up authentication:



2. Define your custom authentication module based on the Steps shown here.

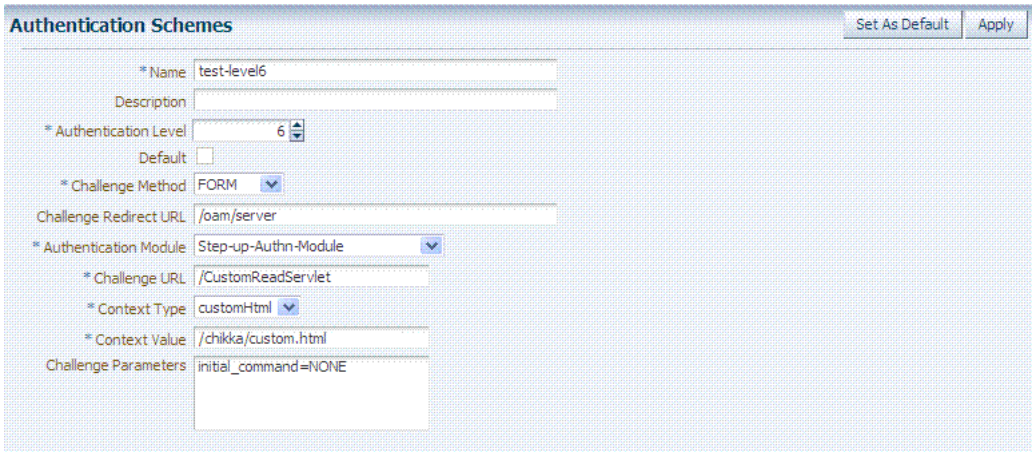


3. Orchestrate your Steps and Plug-ins as shown here and described in Table 19–16.

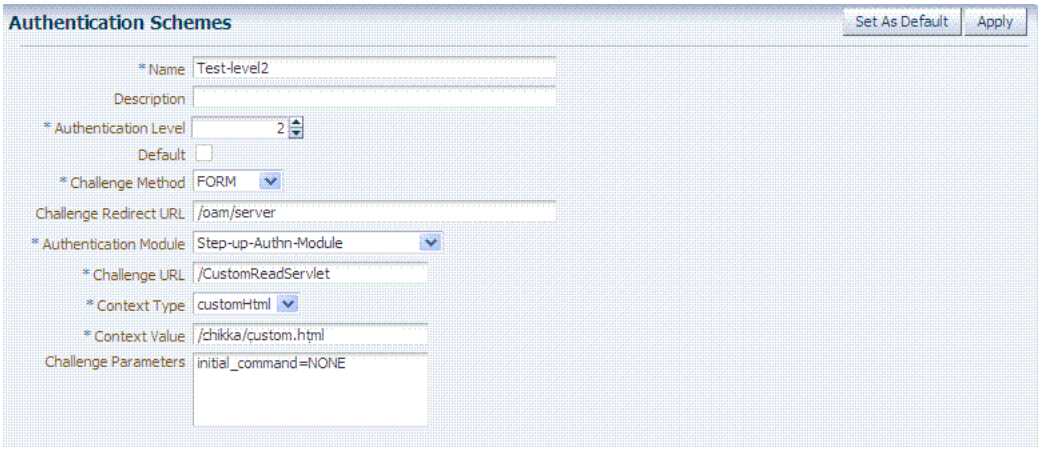


4. **Sensitive Scheme**: Create or edit an Authentication Scheme for sensitive applications that uses your customized step-up authentication module . For example:

See Also: "Managing Authentication Schemes" on page 19-64

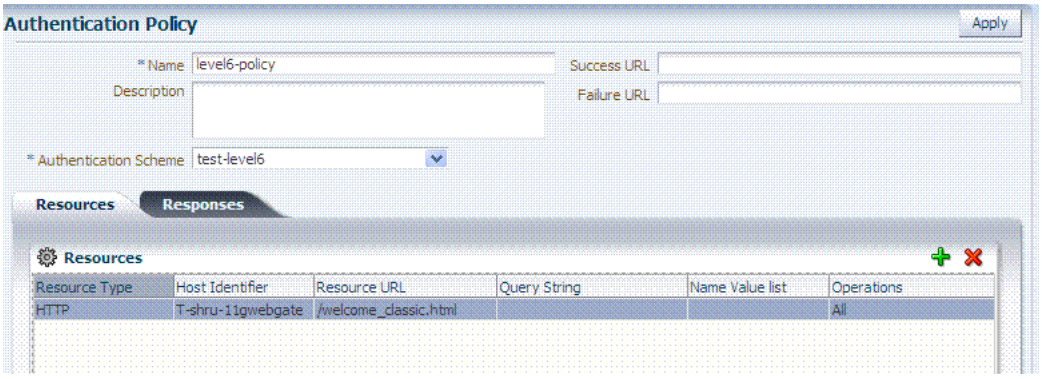


5. **Lower-Level Scheme**: Create or edit an Authentication Scheme for the lowest level applications using your customized step-up authentication module F.or example:

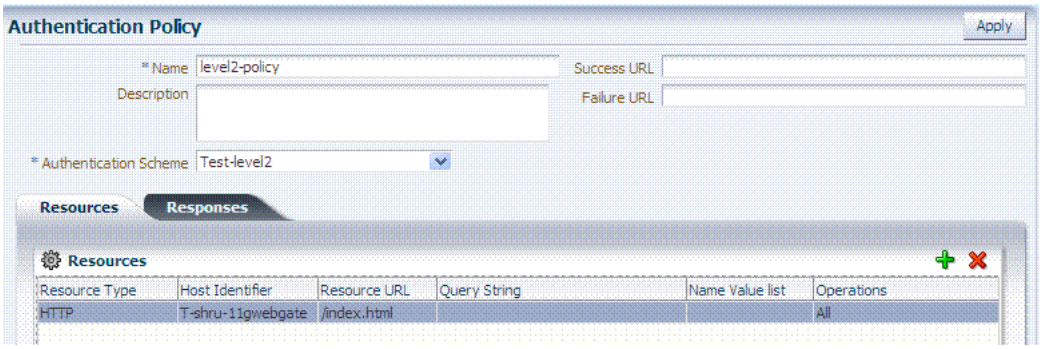


6. **Sensitive Policy**: Create or edit an Authentication Policy for sensitive-level resources using your customized step-up Authentication Scheme. For example:

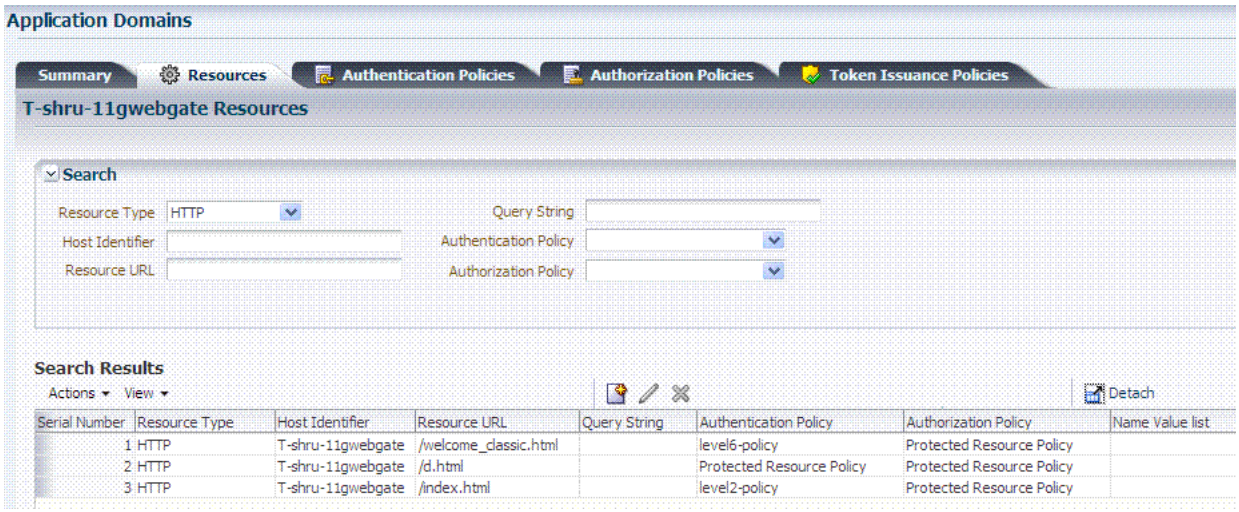
See Also: Chapter 20, "Managing Policies to Protect Resources and Enable SSO"



7. **Lower-Level Policy**: Create or edit an Authentication Policy for the lowest level resources using your customized step-up Authentication Scheme. For example:



8. **Verify**: Verify your resources and the policies that protect them. For example:



19.7.7 Configuring an HTTPToken Extractor Plug-in

The following process should be followed to configure an HTTPToken Extractor plug-in.

1. Create a sample plug-in that will re-direct the user to the authenticating application.

   The authenticating application will authenticate the user and set the user name in the HTTP header or cookie.

2. Create a custom authentication module that will access any applicable plug-ins.

   For example, if you add the plug-in created in the previous step and the HTTPToken Extractor and User identification plug-ins, successful authentication occurs when the process for all three plug-ins has been successfully completed.

3. Add values for the header name and the user search filter properties.

   The KEY_HEADER_PROPERTY is set in the HTTPToken Extractor plug-in while KEY_LDAP_FILTER is set in the UI plug-in. For example:

   - KEY_HEADER_PROPERTY = *cookieorheadername*
   - KEY_LDAP_FILTER = (uid={*cookieorheadername*})

Note: The user should be present in the data store which is being used.

19.7.8 Configuring a JSON Web Token Plug-in

Use this plug-in when you need to protect REST or Web services using standard tokens. The JSON Web Token Plug-in issues both an OAM token and a Mobile and Social JWT token that can be used for Web services access. Oracle API Gateway and Oracle Web Services Manager can use this JWT token for Web services protection.

19.7.8.1 Understanding the JSON Web Token Plug-in

The following flow describes how this authentication plug-in can be used in deployments:

- Configure the Oracle Access Management WebGate to use both OAM authentication and the JSON Web Token Plug-in.
- When a user accesses a resource protected by the WebGate, the WebGate redirects the user to authenticate with Access Manager.
- Upon authentication, the plug-in identifies which OAuth service end point should generate the JWT token. (OAuth service end points are unique and can be configured to point to a specific OAuth service profile within a specific Identity Domain.) Oracle Access Manager Mobile and Social creates the JWT token and the plug-in returns it as a cookie. (The cookie name can be configured in the plug-in configuration.)
- The Web application intercepts the response and accesses the cookie so that it can be used later for Web service access. Depending on how the web application is deployed, there may be other options to retrieve the JWT token. The user can now access the Web resource.
- When the Web resource needs to access a Web service, it extracts the OAM Mobile and Social JWT token and sends it to the Oracle API Gateway.
- The Oracle API Gateway uses the Oracle OAuth Service REST API to validate the token. It then grants access to the Web service. The Oracle API Gateway can also validate the JWT token locally without making a remote call to the OAuth service.

Notes: Currently there is not a mechanism to pass scope to the OAuth service while issuing a JWT token with OAM authentication. Consequently, the token should be considered to have global scope.

Both the OAM token timeout and the JWT token timeout can be set to the same value to have the same validity. The OAM tokens and JWT token are not linked, so they cannot be terminated using single logout.

19.7.8.2 Configure the JSON Web Token Plug-In

Use these steps to configure the JSON Web Token (JWT) plug-in. You will be creating a custom authentication module.

1. Click **Authentication Modules** from the Launch Pad.

   The Search Authentication Modules screen is displayed.

2. Click **Create Authentication Module** and from the drop down select **Create Custom Authentication Module**.

The General tab is displayed.

3. Enter a name (and optional description) for the custom authentication module.

   For this example, we name the module JWTToken AuthnModule.

4. Click the **Steps** tab and the **+** (plus sign) to add a new step.

   The Add New Step dialog is displayed. Three new steps will be added.

5. Specify a step name (and optional description), select an activated plug-in from the Plug-in name drop down list and click OK.

   For this example, the values are StepUI and UserIdentificationPlugin. The flow parameters for that plug-in can be edited after it is added to the step

6. Enter values for the UserIdentificationPlugin parameters and click Save.

7. Click the **+** (plus sign) to add a second step, enter the name StepUA, select **UserAuthenticationPlugin** from the drop down list and click OK.

8. Enter values for the UserAuthenticationPlugin parameters and click Save.

9. Click the **+** (plus sign) to add a third step, enter the name StepOAuth, select **OAuthTokenResponsePlugin** from the drop down list and click OK.

10. Enter values for the OAuthTokenResponsePlugin parameters and click Save.

11. Click the **Steps Orchestration** tab to configure the orchestration of the steps in the following order.

    a. StepUI

    b. StepUA

    c. StepOAuth

12. Click **Apply** and close the Custom Authentication Module tab.

13. Click **Authentication Schemes** from the Launch Pad.

14. Select **LDAPScheme** and click **Duplicate**.

    A Copy of LDAPScheme screen displays.

15. Change the value of Name to JWTToken AuthnScheme and the value of Authentication Module to JWTToken AuthnModule.

16. Click Save.

17. Configure an Authentication policy with the newly defined JWTToken AuthnScheme Authentication Scheme.

19.8 Deploying and Managing Individual Plug-ins for Authentication

This section provides the following topics:

19.8.1 About Managing Your Own Authentication Plug-ins

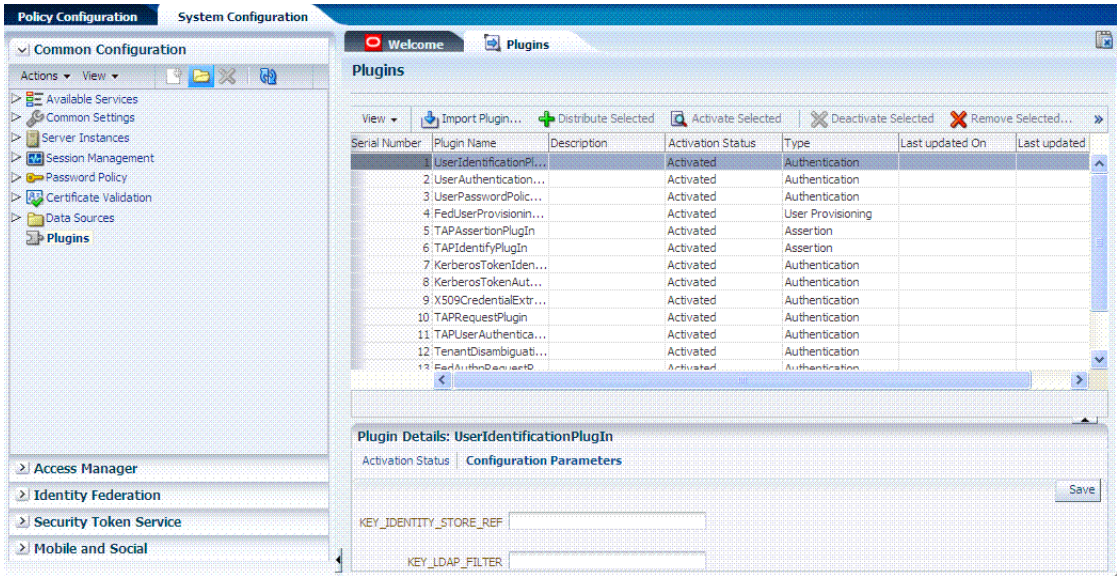
Using information in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management, custom authentication plug-ins can be created and used to define customized multi-step authentication modules.

After development, the plug-in must be deployed on the AdminServer, as a JAR file, which is validated automatically. After validation, an Administrator can configure and distribute the plug-in using the Oracle Access Management Console.

The server processes the XML configuration file within the plug-in JAR file to extract data about the plug-in. After the plug-in is imported, an Administrator can see and modify the various plug-in states based on information available from the AdminServer.

Figure 19–26 illustrates the Plug-ins Node under the Common Configuration section of the System Configuration tab, and the Plugins page. This Plugins page includes a tool bar with command buttons, most of which operate on the plug-in that is selected in the table. The table provides information about the existing custom plug-ins and their state. The Plugin Details section at the bottom of the page reflects configuration details for the selected plug-in the table.

Figure 19–26 Plug-ins Page



Administrators control plug-in states using the command buttons across the table at the top of the Plugins page, as described in Table 19–17.

Table 19–17 Managing Custom Plug-ins Actions

Action Button	Description
Import Plugin...	Adds the plug-in JAR file to the AdminServer *$DOMAIN_HOME*/oam/plugins and begins plug-in validation. ■ **Same JAR Name**: If the new plug-in JAR name (in *$DOMAIN_HOME*/oam/plugins) matches an existing plug-in JAR name (in $*DOMAIN_HOME*/config/fmwconfig/oam/plugins), Oracle Access Manager extracts new configuration metadata from the XML file in the JAR (in *$DOMAIN_HOME*/oam/plugins) and checks the version of the new plug-in. ■ **XML Version**: If the new plug-in XML version (in *$DOMAIN_HOME*/oam/plugins) is greater than the existing XML version (in *$DOMAIN_HOME*/config/fmwconfig/oam/plugins), validation is successful. Otherwise, "invalid plugin name with invalid version" is returned and the new plug-in JAR is removed (from *$DOMAIN_HOME*/oam/plugins). ■ **Different JAR Name**: If the new plug-in JAR name (in $*DOMAIN_HOME*/oam/plugins) is different then existing plug-in JAR names (in *$DOMAIN_HOME*/config/fmwconfig/oam/plugins), the new plug-in JAR is uploaded and validation is successful. **On Success**: Status is reported as "Uploaded" (even if an OAM Server is down). If all registered OAM Servers report "Uploaded", then the status on AdminServer is also "Uploaded". **On Failure**: Status is reported as "Upload Failed" **See Also**: "About the Custom Plug-in Life Cycle" in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management
Distribute Selected ...	■ Propagates the plug-in to all registered OAM Servers. ■ Sets the plug-in flag in oam-config.xml to "Distribute=true". ■ Starts the distribution listener and notification mechanism between AdminServer and OAM Servers ■ Distributes the plug-in JAR from AdminServer node to each OAM Server node under $*DOMAIN_HOME*/config/fmwconfig/oam/plugins **On Success**: Status is reported as "Distributed" (even if an OAM Server is down). If all registered OAM Servers report "Distributed", then the status on AdminServer is also "Distributed". **On Failure**: Status is reported as "Distribution Failed"

Table 19–17 (Cont.) Managing Custom Plug-ins Actions

Action Button	Description
Activate Selected ...	After successful distribution the plug-in can be activated on all registered OAM Servers. Activation: ■ Updates the plug-in flag in oam-config.xml to "Activate=true" ■ Starts the Message listener and notification mechanism between AdminServer and OAM Servers ■ AdminServer sends message "Activate" to all registered OAM Servers **On Success**: Status is reported as "Activated" (even if an OAM Server is down). If all registered OAM Servers report "Activated", then the status on AdminServer is also "Activated". **On Failure**: Status is reported as "Activation Failed" Following activation on all OAM Servers, the plug-in can be used and executed in any authentication module construction or orchestration.
Deactivate Selected ...	Following plug-in activation, an Administrator can choose to deactivate the plug-in: if the plug-in is not used in any authentication module or scheme, for example. The selected plug-in from all registered OAM Servers. Deactivate: ■ Updates the plug-in flag in oam-config.xml to "De-activate=true" ■ Starts the Distribution listener and notification mechanism between AdminServer and OAM Servers ■ Removes the plug-in JAR from AdminServer and each registered OAM Server (*$DOMAIN_HOME*/config/fmwconfig/oam/plugins) ■ AdminServer sends message "De-activation" to all registered OAM Servers ■ OAM Servers send status message to AdminServer using the "Message" listeners on both AdminServer and OAM Server **On Success**: Status is reported as "De-activation" (even if an OAM Server is down). If all registered OAM Servers report "De-activation", then the status on AdminServer is also "De-activation". Plug-in configuration is removed from oam-config.xml. **Note**: After deactivation, the plug-in cannot be used or executed in any authentication module or orchestration. **On Failure**: Status is reported as "De-activation Failed"
Remove Selected ...	Following plug-in deactivation, an Administrator can delete the selected plug-in. During this process, Access Manager: Delete: ■ Updates the plug-in flag in oam-config.xml to "Remove=true" ■ Starts the Distribution listener and notification mechanism between AdminServer and OAM Servers ■ Removes the plug-in JAR from AdminServer and each registered OAM Server (*$DOMAIN_HOME*/config/fmwconfig/oam/plugins) ■ AdminServer sends message "Activate" to all registered OAM Servers On Success: Status is reported as "Removed" (even if an OAM Server is down). If all registered OAM Servers report "Removed", then the status on AdminServer is also "Removed". Plug-in configuration is removed from oam-config.xml. **On Failure**: Status is reported as "Removal Failed"

Table 19–18 describes elements in the Plugins status table.

Table 19–18 Plugins Status Table

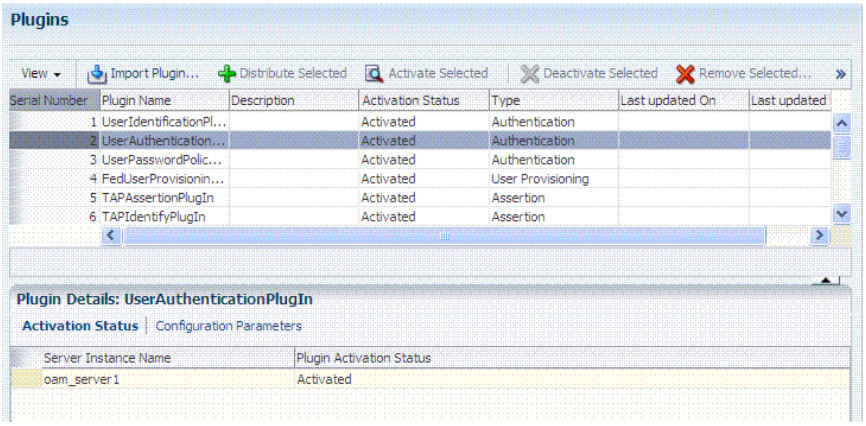
Element	Description
Plugin Name	Extracted from the Plugin name element of the XML metadata file.
Description	Extracted from the description element of the XML metadata file.
Activation Status	Reported activation status based on information from AdminServer.

Table 19–18 (Cont.) Plugins Status Table

Element	Description
Type	Extracted from the type element of the XML metadata file.
Last Updated on	Extracted from the creation date element of the XML metadata file.
Last Updated by	Extracted from the author element of the XML metadata file.

In the Plugin Details section of the page, the Activation Status is maintained by the AdminServer, as shown in Table 19–18.

Figure 19–27 Plugin Details: Activation Status of Selected Plug-in



Depending on your plug-in, various configuration details are extracted from the configuration element of the XML metadata file to populate Configuration Parameters in the Plugin Details section. Examples are shown in Table 19–19; see also, Table 19–13 on page 19-34.

Table 19–19 Example of Plugin Details Extracted from XML Metadata File

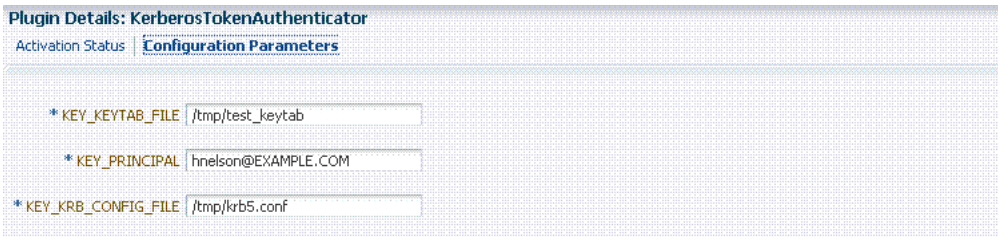
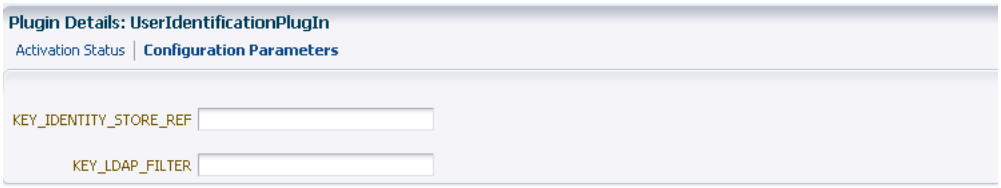
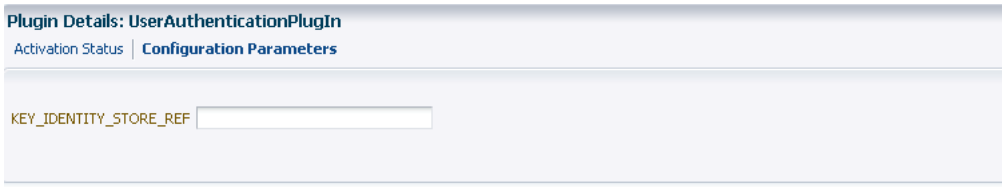
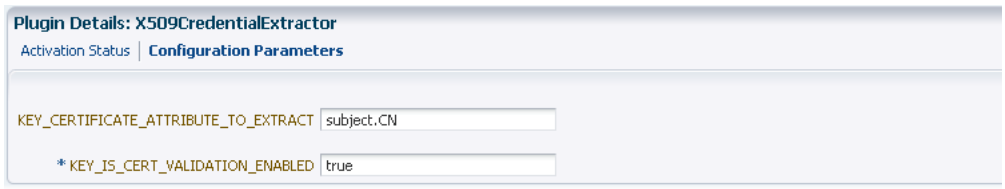
Configuration Element	Description
DataSource	- <configuration> - <AttributeValuePair> <Attribute type="string" length="20">DataSource</Attribute> <mandatory>true</mandatory> <instanceOverride>false</instanceOverride> <globalUIOverride>true</globalUIOverride> <value>jdbc/CISCO</value> <AttributeValuePair> <configuration> 
Kerberos Details	Defines Kerberos details for this plug-in to use. 

Table 19–19 (Cont.) Example of Plugin Details Extracted from XML Metadata File

Configuration Element	Description
User Identification Details	Defines the User Identity Store and filter details for this plug-in to use. 
User Authentication Details	Defines the User Identity Store for this plug-in to use. 
X.509 Details	Defines the certificate details for this plug-in to use. 

19.8.2 Making Custom Authentication Plug-ins Available for Use

Users with valid Administrator credentials can perform the following task to add, validate, distribute, and activate a custom plug-in.

Prerequisites

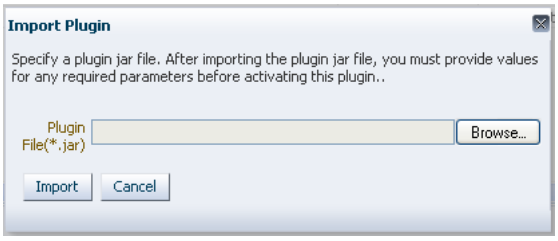
Developing a custom plug-in as described in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management

To make available for use a custom authentication plug-in

1. **Import the Plug-in**:
   a. Log in to the Oracle Access Management Console.

      `https://hostname:port/oamconsole/`

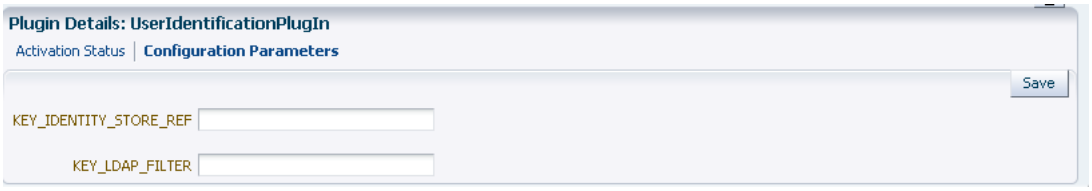
   b. From the Oracle Access Management Console, click Plug-ins and then click Open from the Actions menu.
   c. Click the Import Plugin button.
   d. In the Import Plugin dialog box, click Browse and select the name of your plug-in JAR file.



e. Review the message in the dialog box, then click Import.

The JAR file is validated as described in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

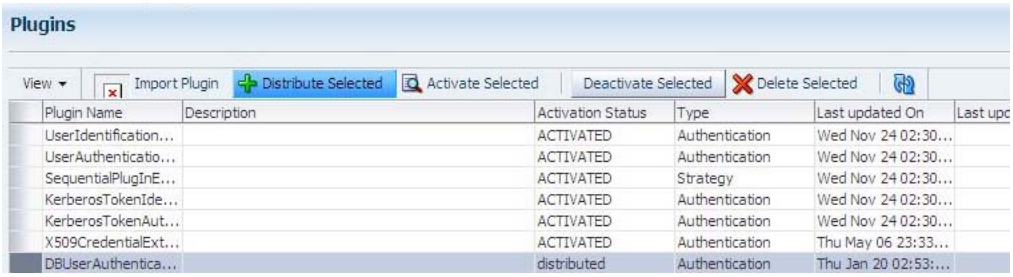
2. **Configure Parameters**: Expand the Plugin Details section, click Configuration Parameters, and enter appropriate information as needed. For example:



3. **Distribute the Plug-in to OAM Servers**:

a. In the Plugins table, click your plug-in name to select it.

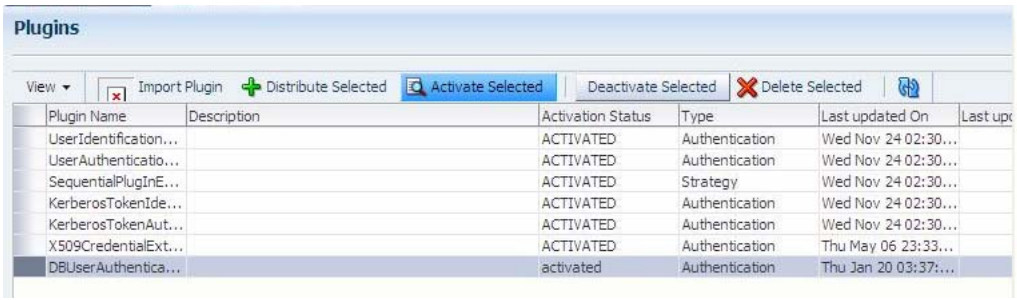
b. Click the Distribute Selected button, then check its Activation Status.



4. **Activate the Plug-in** (and the custom plugin implementation class) so it is ready to be used by OAM Server:

a. In the Plugins table, click your plug-in name to select it.

b. Click the Activate Selected button, then check its Activation Status.



5. Perform the following tasks as needed:

- Checking an Authentication Plug-in's Activation Status
- Deleting Your Custom Authentication Plug-ins
- Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules

19.8.3 Checking an Authentication Plug-in's Activation Status

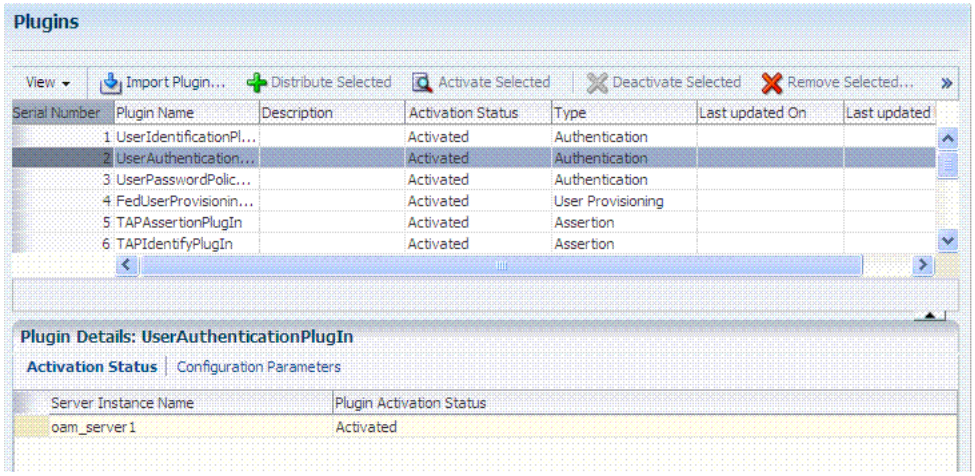
Users with valid Administrator credentials can perform the following task to add, validate, distribute, and activate a custom plug-in.

Prerequisites

Making Custom Authentication Plug-ins Available for Use

To check the activation status of a custom authentication plug-i

1. From the Oracle Access Management Console, click Plug-ins and then click Open from the Actions menu.
2. In the Plugins table, click the desired plug-in name to select it.
3. **Server Instance Name**: Expand the Plugin Details section and click Activation Status to display the location and status of the plug-in. For example:



4. Perform the following tasks as needed:
   - Deleting Your Custom Authentication Plug-ins
   - Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules

19.8.4 Deleting Your Custom Authentication Plug-ins

Users with valid Administrator credentials can use the following procedure to deactivate and then delete a custom plug-in.

When an Administrator deletes a custom authentication plug-in, its name is not removed from the list of plug-ins. To delete the plug-in (for the purpose of re-importing the same plug-in later), the Administration must stop the WebLogic Server and edit the oam-config.xml manually.

Prerequisites

The plug-in must have been added and available in the console

To delete a custom authentication plug-in

1. Log in to the Oracle Access Management Console. For example:

   `https://hostname:port/oamconsole/`

2. From the Oracle Access Management Console, click Plug-ins.
3. **Deactivate the Plug-in**: You must perform this before removing a plug-in.
   a. In the Plugins table, click your plug-in name to select it.
   b. Click the Deactivate Selected button, then check the plug-ins Activation Status.
4. **Delete a Deactivated Plug-in**:
   a. In the Plugins table, click your plug-in name to select it.
   b. Click the Delete Selected button.
   c. Stop the WebLogic Administration Server, locate and edit oam-config.xml manually to remove the deactivated plug-in, and then restart the WebLogic Administration Server.
5. Perform the following tasks as needed:
   - Making Custom Authentication Plug-ins Available for Use
   - Creating and Orchestrating Plug-in Based Multi-Step Authentication Modules

19.9 Managing Authentication Schemes

Access to a resource or group of resources can be governed by a single authentication process known as an authentication scheme. An authentication scheme is a named component that defines the challenge mechanism required to authenticate a user. Each authentication scheme must also include a defined authentication module (standard or custom, as described in "Deploying and Managing Individual Plug-ins for Authentication" on page 19-55).

When you register a partner (either using the Administration Console or the remote registration tool), the Application Domain that is created is seeded with a policy that uses the authentication scheme that is set as the default scheme. You can choose any of the existing authentication schemes as the default for use during policy creation.

You can also create a new authentication scheme, copy an existing definition to use as a template, modify a definition, or delete the definition. The copy uses a default name that is based on the original. For example, if you copy the scheme named *KerberosScheme*, the copy is named *Copy of KerberosScheme*.

This section is divided into the following topics:

- About Authentication Schemes and Pages
- Understanding Multi-Level and Step-Up Authentication
- Creating an Authentication Scheme
- Viewing, Editing, or Deleting an Authentication Scheme
- Searching for an Authentication Scheme

19.9.1 About Authentication Schemes and Pages

All authentication schemes include the same elements with differing values. Figure 19–28 shows the default LDAPScheme page as an example. The Authentication Schemes navigation tree lists other default schemes that are delivered.

Figure 19–28 Default LDAPScheme Page

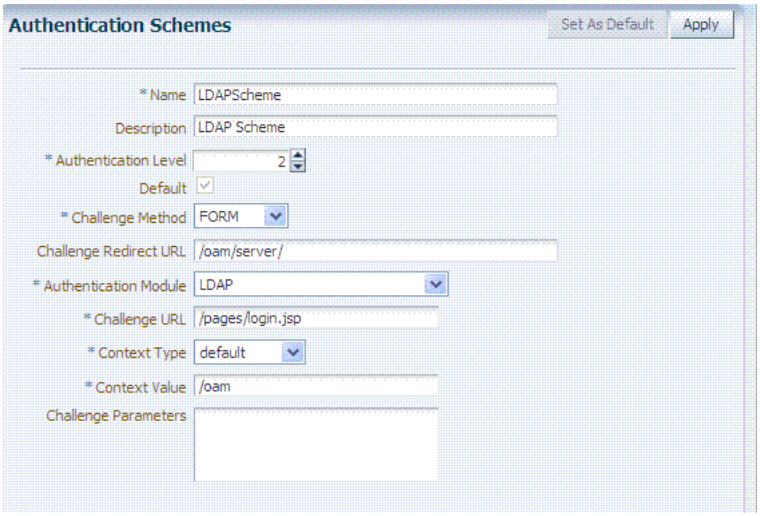


Table 19–20 provides information about each of the elements and values in any authentication scheme. Use the Set as Default button to make this the default scheme.

Table 19–20 Authentication Scheme Definition

Element	Description
Name	The unique name for this scheme, which appears in the navigation tree. See Also:"Pre-configured Authentication Schemes" on page 19-68
Description	The optional description, up to 200 characters, that explains the use of this scheme.
Authentication Level	The trust level of the authentication scheme. This reflects the challenge method and degree of trust used to protect transport of credentials from the user. The trust level is expressed as an integer value between 0 (no trust) and 99 (highest level of trust). Note: Level 0 is unprotected. Only unprotected resources can be added to an Authentication Policy that uses an authentication scheme at protection level 0. For more information, see Table 20–1, " Resource Definition Elements". **Note**: After a user is authenticated for a resource at a specified level, the user is automatically authenticated for other resources in the same Application Domain or in different Application Domains, if the resources have the same or a lower trust level as the original resource. See Also: "About Multi-Level and Step-Up Authentication" on page 19-79.
Default	A non-editable box that is checked when the Set as Default button is clicked.

Table 19–20 (Cont.) Authentication Scheme Definition

Element	Description
Challenge Method	One challenge method must be selected from those listed as available: ■ Form ■ Basic (LDAP) ■ X509 (Certificate) ■ WNA (Windows Native Authentication) ■ None ■ DAP ■ OAM10g See Also: "About Challenge Methods" on page 19-71
Challenge Redirect URL	This URL declares the end point referencing the Credential Collector (ECC or DCC). For example: ECC: `/oam/server` DCC: `http://<dcc-host:port>/` **See Also**: ■ "About Host Identifiers" on page 19-8 ■ "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109
Authentication Module	Identifies the pre-configured authentication module to be used to challenge the user for credentials. The module or plug-in specified here identifies the exact user identity store to be used. ■ FederationMTPlugin ■ FederationPlugin ■ Kerberos Plugin (Authentication Modules and Custom Authentication Module) ■ MTLDAPBasic ■ MTLDAPPlugin ■ OIFMTLDAPPlugin ■ Password Policy Validation Module ■ TAPModule ■ X509 Plugin (under the X509 Authentication Modules node) **See Also** "Managing Native Authentication Modules" on page 19-23 and "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28.
Challenge URL	This URL is associated with the designated Challenge Method (FORM, for instance). FORM-based, out of the box authentication scheme (LDAPScheme and LDAPNoPasswordValidationScheme), Challenge URL is "/pages/login.jsp". The context type and context values are used to build the final URL. X509-based Challenge URL takes the form: `https://managed_server_host:managed_server_ssl_port/oam/CredCollectServlet/X509` Note: The default Challenge URL is based on the credential collector embedded with the OAM Server (ECC). If you are using detached credential collector-enabled Webgate and related DCC pages installed with Webgate, see "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109.
Challenge Parameters	Supported challenge parameters are discussed in "About Challenge Parameters for Authentication Schemes" on page 19-74.
For schemes using Challenge Method FORM, X509, or DAP	Only Schemes with the Challenge Method of FORM, X509, or DAP include the following additional elements. Other schemes use defaults that require no change.

Table 19–20 (Cont.) Authentication Scheme Definition

Element	Description
Context Type	Used to build the final URL for the Embedded Credential Collector (ECC only, DCC does not use this) based on the following possible values: ▪ **default**: The Context Value is used to construct the final URL to forward to for credential collection. For example: with a challenge URL of "/pages/login.jsp" and a context value of /oam, the server forwards to "/oam/pages/login.jsp" for credential collection by the ECC. ▪ **customWar**: If a customized credential collector page "customlogin.jsp" is deployed in a WAR file (with context root, "custom") within the same domain, it should be used to collect credentials. Then set the following values to have server forward to the WEB application page "/custom/customlogin.jsp" to collect credentials: challenge_url = "/customlogin.jsp" contextType="customWar" contextValue="/contextroot of custom application" ▪ **customHtml**: A custom html credential collector page. This file can be placed in a location that is accessible to the application. Set the following values to have the server forward to the custom servlet provided to read the html file and render the page: challenge_url = "/CustomReadServlet" contextType="customHtml" contextValue="html file location" ▪ **external**: If the login page is external, the file can be placed in a location that is accessible to the application. Set the following values to have the server redirect to the challenge URL (the fully-qualified URL of the external credential collector page) for credential collection. The username and password are collected by the external form (HTML or jsp) and submitted to the OAM Server: challenge_url = "http://*host:port*/externallogin.jsp" contextType="external" contextValue=Not applicable **See Also**: "About Custom Login Pages" on page 19-67 and "Managing Global Password Policy" on page 19-97
Context Value	Used to build the final URL for the credential collector. The default value is /oam.

About Custom Login Pages

Only Schemes with the Challenge Method of FORM, X509, or DAP include additional elements described at the end of Table 19–20. All custom login pages must meet the following requirements:

- Custom login pages require two form fields (username and password). Access Manager supports custom forms as described in Oracle Fusion Middleware Developer's Guide for Oracle Access Management.
- CustomWar and external context types, require logic within the custom login page to perform the following two tasks:
  - Send back the request ID the page received from the Access Manager server. For example: `String reqId = request.getParameter("request_id");` `<input type="hidden" name="request_id" value="<%=reqId%>">`
  - Submit back to the OAM Server the end point, "/oam/server/auth_cred_submit". For example: `<form action="/oam/server/auth_cred_submit">` or `"http://oamserverhost:port/oam/server/auth_cred_submit"`.

For more information, see the following topics:

- Pre-configured Authentication Schemes

- About Challenge Methods
- About Challenge Parameters for Authentication Schemes

See Also: Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about customizing login pages and messages.

19.9.1.1 Pre-configured Authentication Schemes

Table 19–21 identifies the pre-configured authentication schemes available with Access Manager and some specific details of each. For more information about challenge parameters, see Table 19–21.

Table 19–21 Pre-configured Authentication Schemes

Scheme Name	Specifications	Purpose
AnonymousScheme	Authentication Level: 0 Challenge Method: None Authentication Module: AnonymousModule	Leaves unprotected specific Access Manager URLs and allows users to access such URLs without a challenge. Users are not challenged and do not need to enter their credentials. **Note**: Authentication Level 0 is for public pages. Oracle recommends that you do not use Level: 0 in a custom authentication scheme. **Also**: When a resource is protected by AnonymousScheme, it is not displayed in a session search.
BasicFAScheme Only for Oracle Fusion Applications	For Fusion Applications	For specific information about this authentication scheme, refer to the Oracle Fusion Applications Technology Library located on the Oracle Technology Network (OTN) web site: http://www.oracle.com/technetwork
BasicScheme	Authentication Level: 1 Challenge Method: Basic Authentication Module: LDAP	Protects Access Manager-related resources (URLs) for most directory types. **Note**: Authentication Level 1 is only one step higher than 0 public pages. Oracle recommends that you do not use Level: 1 in a custom authentication scheme.
BasicSessionlessScheme	Authentication Level: 1 Challenge Method: Basic Authentication Module: LDAP	Primarily used for clients that don't support URL redirect or cookies. Challenge Parameters: CookieLessMode=true **Note**: Authentication Level 1 is only one step higher than 0 public pages. Oracle recommends that you do not use Level: 1 in a custom authentication scheme.
FAAuthScheme Only for Oracle Fusion Applications	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAP Context: customWar Context Value: /fusion_apps	For specific information about this authentication scheme, refer to the Oracle Fusion Applications Technology Library located on the Oracle Technology Network (OTN) web site: http://www.oracle.com/technetwork
FederationMTScheme Only for Oracle Fusion Applications	Authentication Level: 2 Challenge Method: FORM Authentication Module: FederationMTPlugin Context Type: customWar Context Value: /fusion_apps Challenge Parameters: initial_command=NONE is_rsa=true	For specific information about this authentication scheme, refer to the Oracle Fusion Applications Technology Library located on the Oracle Technology Network (OTN) web site: http://www.oracle.com/technetwork See Also: "About Challenge Parameters for Authentication Schemes" on page 19-74.

Table 19–21 (Cont.) Pre-configured Authentication Schemes

Scheme Name	Specifications	Purpose
FederationScheme Only for Identity Federation 11.1.2.	Authentication Level: 2 Challenge Method: FORM Authentication Module: FederationPlugin Context Type: customWar Context Value: /oam Challenge Parameters: initial_command=NONE is_rsa=true	See Also: Part VII, "Managing Oracle Access Management Identity Federation". Note: With Oracle Identity Federation 11.1.1, use OIFScheme as described in the Oracle Fusion Middleware Integration Guide for Oracle Access Manager.
KerberosScheme	Authentication Level: 2 Challenge Method: WNA Authentication Module: Kerberos Context Type: customWar Context Value: /fusion_apps	Protects Access Manager-related resources (URLs) for most directory types based on a Windows Native Authentication challenge method and valid WNA credentials in Active Directory.
LDAPNoPasswordValidationScheme	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAPNoPasswordAuthModule Context Type: default Context Value: /oam **Note**: LDAPNoPasswordAuthModule is similar to the DAP (asserter) mechanism. **See Also** OAM10gScheme, later in this table.	Protects Access Manager-related resources (URLs) for most directory types based on a form challenge method. Used with the Identity Asserter for SSO when you have resources in a WebLogic Container. For details, see the Oracle Fusion Middleware Application Security Guide.
LDAPScheme	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAP Context Type: customWar Context Value: /fusion_apps	Protects Access Manager-related resources (URLs) for most directory types based on a form challenge method.
OAAMAdvanced	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAP Context Type: external	Protects OAAM-related resources with an external context type. This authentication scheme is used when complete integration with OAAM is required. A Webgate must front ending the partner.
OAAMBasic	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAP Context Type: default Context Value: /oam Challenge Parameters oaamPostAuth=true oaamPreAuth=true	Protects OAAM-related resources with a default context type. This scheme should be used when basic integration with OAAM is required. Here, advanced features like OTP are not supported. This is more of an integration when mod_osso is used as the agent.
OAM10gScheme	Authentication Level: 2 Challenge Method: OAM10G Authentication Module: LDAPNoPasswordAuthModule **See Also** LDAPNoPasswordValidationScheme, earlier in this table. enableCoexistMode and disableCoexistMode in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference.	Facilitates integration and coexistence with Oracle Access Manager 10g. In the coexistence mode, Oracle Access Manager 10g is the authenticator and Access Manager 11g is the asserter. This scheme requires challenge mechanism OAM10G, specifically for OAM10g coexistence with OSSO as described in "OAM10G" on page 19-74.
OAMAdminConsoleScheme	Authentication Level: 2 Challenge Method: FORM Authentication Module: LDAP Context Type: default Context Value: /oam	Authentication scheme for Oracle Access Management Console.

Table 19–21 (Cont.) Pre-configured Authentication Schemes

Scheme Name	Specifications	Purpose
OICScheme	Authentication Level: 2 Challenge Method: DAP Authentication Module: TAPModule Context Type: External Challenge Parameters: TAPPartnerId=RPPartner MatchLDAPAttribute=mail	Access Manager uses this scheme to delegate authentication to Mobile and Social services and redirects the user to the Mobile and Social login page for authentication. See Also: Part IX, "Managing Oracle Access Management Mobile and Social"
OIFScheme Only for Oracle Identity Federation 11.1.1. For Identity Federation 11.1.2, use FederationScheme.	Authentication Level: 2 Challenge Method: DAP Authentication Module: DAP Context Type: External	This scheme delegates authentication to OIF, after which, Oracle Identity Federation sends back a token that is asserted by the OAM Server as described in the Oracle Fusion Middleware Integration Guide for Oracle Access Manager. The Delegated Authentication Protocol (DAP) challenge method is used to delegate authentication to a third-party (OIF in this case). Challenge Parameters: TAPPartnerId=OIFDAPPartner See Also: "About Challenge Parameters for Authentication Schemes" on page 19-74.
OIMScheme	Authentication Level: 1 Challenge Method: FORM Authentication Module: LDAP Context Type: default Context Value: /oam	Protects Oracle Identity Manager-related resources with a default context type. Note: When integrating OAM and OIM, OAM downgrades the user's authentication level when any of the following is detected: password expiry forced password change challenge setup not done This enables the user to access the pages only after performing necessary operations in the identity management (OIM) page to which the user is redirected. At Level 1, only public and OIM pages for the required operations can be accessed. **Note**: Authentication Level 1 is only one step higher than 0 public pages. Oracle recommends that you do not use Level: 1 in a custom authentication scheme.
OSSOCoexistMigrateScheme		Set as the Default authentication scheme for environments that have been migrated from OSSO 10g to Access Manager 11g. See Also: Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management.
PasswordPolicyValidationScheme	Authentication Level: 2 Challenge Method: FORM Authentication Module: Password Policy Validation Module Context: External	Enables password policy evaluation.

Table 19–21 (Cont.) Pre-configured Authentication Schemes

Scheme Name	Specifications	Purpose
TAPResponseOnlyScheme	Authentication Level: 2 Challenge Method: DAP Authentication Module: DAP	
TAPScheme	Authentication Level: 2 Challenge Method: DAP Authentication Module: DAP Context Type: External	To use TAPScheme for IDM product resources in the IAM Suite Application Domain, Protected HigherLevel Policy, the following configuration must be done in addition to changing the Authentication Scheme. 1. From the IAM Suite Application Domain, Protected Higher Level Policy, remove IAMSuiteAgent:/oamTAPAuthenticate. 2. Create a new Authentication Policy in the IAM Suite Application Domain, that uses LDAPScheme. 3. Protect IAMSuiteAgent:/oamTAPAuthenticate using the newly created policy. Challenge Parameters: TAPPartnerId=TAPPartnerName
X509Scheme	Authentication Level: 5 Challenge Method: X509 Authentication Module: X509	This authentication scheme is a certificate-based user identification method. To use this method, a certificate must be installed on the user's browser and the Web server must be SSL-enabled. **Note**: This scheme relies on SSL to deliver the use's X.509 certificate to the OAM Server.

19.9.1.2 About Challenge Methods

Authentication involves determining what credentials a user must supply when requesting access to a resource, gathering credentials over HTTP, and returning an HTTP response that is based on the results of credential validation. Access Manager provides the following credential challenge methods for use in an authentication scheme:

- FORM
- BASIC
- X509
- WNA
- NONE
- DAP
- OAM10G

FORM

This authentication challenge uses an HTML form with one or more text input fields for user credentials. In a typical form-based challenge, users enter a user name and password in two text boxes on the form. The most common credential choices are user name and password; however, you can use any user attributes: for example, user name, password, and domain.

A Submit button posts the content of the form. When the user clicks the Submit button, the form data is posted to the Web server. OAM and OSSO Agents intercept and process the form data. Upon validation of the user credentials collected in the form, the user is authenticated.

Note: This challenge method relies on an LDAP Authentication Module and the user identity store associated with that module.

You might want to use form-based authentication challenge for reasons such as:

- A consistent user experience: Using form-based login and a standardized logout means that the user experience for login and logout features will be consistent across browsers.
- A Custom Form: You can apply your organization's look and feel in the authentication process.

  For example, a custom form can include a company logo and a welcome message instead of the standard user name and password window used in Basic authentication.
- Additional Information: You can gather additional information at the time of login.
- Additional Functionality: You can provide additional functionality with the login procedure, such as a link to a page for lost password management.

BASIC

This built-in Web server challenge mechanism requires a user to enter her login ID and password. The credentials supplied are compared to the user's definition in the LDAP directory server. Thus, a Basic challenge relies on the LDAP Authentication Module and user identity store associated with that module.

Note: If a URL is protected by Access Manager using Basic Authentication with OID configured as the identity store, OID defined users can not log in. To resolve this, add the following line before the closing `</security-configuration>` tag in the `config.xml` file.

```
<enforce-valid-basic-auth-credentials>false
   </enforce-valid-basic-auth-credentials>
```

X509

With the X509 certificate challenge method, a user's browser must supply an X.509 digital certificate over SSL to the OAM Server through the Agent to perform authentication.

Note: X509 is the challenge method for the X509Scheme. The user's organization can determine how to obtain a certificate.

The X.509 client certificate must be verified against the trusted CAs in the keystore used by OAM Proxy and OAM Servers to ensure the validity of X.509 Client certificate for authentication.

The following attributes of the X.509 certificate can be validated against the user identity store associated with Access Manager:

- SubjectDN
- SubjectUniqueID

- Mail
- CN

To acquire the user entry, the X509 Authentication Module takes the attribute name of the X.509 certificate to be validated and the LDAP attribute against which the search will be launched. The expected result is the single user entry matching the criteria. If the search returns no user entry, or more than one entry, authentication fails. Authentication scheme parameters are located in oam-policy.xml.

> **Note:** For X509 authentication, Administrators must configure the Oracle HTTP Server as a reverse proxy (or a server with the wl-proxy plug-in). The Oracle HTTP Server must be configured in two way SSL Mode to acquire X.509 certificate for authentication. Oracle HTTP Server can also be configured for CRL verification.

The online certificate status protocol (OCSP) capabilities are also provided. Any certificate passed for X.509 certificate-based authentication is validated using an OCSP request. Administrators can configure the system to communicate with one or more OCSP servers to retrieve the certificate status.

The X509 Authentication Module configuration for the OCSP responder URL indicates whether OCSP validation is to be done. The value, if specified, indicates the URL for validation of the X.509 client certificate using OCSP. No value indicates no OCSP validation.

WNA

Uses Windows Native Authentication with Active Directory, and the Kerberos Authentication Module.

> **Note:** The KerbScheme relies on the WNA challenge method and Kerberos Authentication Module.

> **See Also:** Chapter 50 for details about integration with Windows Native Authentication

NONE

The challenge method of None means that users are not challenged and do not need to enter their credentials. This is used in the AnonymousScheme authentication scheme, which allows users to access Access Manager-specific URLs that you do not want to protect.

DAP

The Delegated Authentication Protocol (DAP) challenge method is required for OIFScheme (Oracle Identity Federation 11.1.1 integration) with the DAP authentication module and external context type (Table 19–20). The DAP challenge mechanism indicates that Access Manager does an assertion of the token that it receives, which differs from the standard challenge "FORM" mechanism with the external option.

DAPModule is an assertion module, though it is specialized for this one application and does not appear in the list of Authentication Modules in the Oracle Access Management Console. This integration replaces OSSO 10g with Access Manager 11g, with no changes from the Identity Federation side.

The DAP challenge mechanism delegates authentication to a third party (Identity Federation in this case). The challenge_url points to the Identity Federation Server URL. When a resource is protected by this scheme, the OAM Server redirects to the Identity Federation Server URL for credential collection. OAM Server does not perform the credential collection or validation in this case. Identity Federation collects the credentials, authenticates the user against its identity store and returns an assertion token to the OAM Server consisting of the username. Access Manager receives and decrypts this token, checks whether the user is a valid user in the default identity store for Oracle Access Management. If the user is valid, Access Manager gives access to the resource.

The DAPToken is encrypted and decrypted with a key that is shared between Access Manager and Identity Federation. The DAPToken is built from the Access Manager side.

The Identity Federation Administration EM Console provides a way to generate the keystore containing the encryption keys that will be used to secure communications between the Access Manager and Identity Federation. Access Manager provides a WLST command (`registerOIFDAPPartner`), that takes the keystore location generated by the Identity Federation store and retrieves the keys and stores it on the Identity Federation side.

OAM10G

This mechanism is created for Oracle Access Manager 10g coexistence with OSSO 10g. The OAM10G method always acts as the authentication and authorization provider and is required for OAM10gScheme with the LDAPNoPasswordAuthModule to facilitate trust when you have Oracle Access Manager 10g protecting a domain that also includes an OSSO 10g integrated classic application (Portal, Disco, and so on).

OSSO10g is protected with OAM10G challenge method through Webgate; OAM10G always acts as the authentication and authorization provider.

Facilitating Integration: The OSSO 10g integrated classic applications can be upgraded to Access Manager, which then acts only as an asserter. Access Manager creates the tokens that mod_osso can consume so that access can be provided to these applications. The mod_osso applications are protected by the new "OAM10gScheme". There is a Webgate front ending the OAM Server and configured against the 10g Access Server.

Setup: When the resource is accessed, Webgate intercepts the request and sends it to the 10g Access Server for authentication. Oracle Access Manager 10g collects the credentials, validates it against its identity store, and sets the username as a header variable (OAM_REMOTE_USER). The request now goes to the OAM Server which uses the OAM10gScheme to locate the username in the header variable. Access Manager retrieves the header variable and asserts the presence of the user against the primary identity store. If present, the required cookies (OAM_ID) are generated and redirected to the resource.

See Also:

- OAM10gScheme in Table 19–21
- `enableCoexistMode` and `disableCoexistMode` in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

19.9.1.3 About Challenge Parameters for Authentication Schemes

Challenge parameters are short text strings consumed and interpreted by Webgates and Credential Collector modules to operate in the manner indicated by those values.

The syntax for specifying any challenge parameter is:

```
<parmatername>=<value>
```

This syntax is not specific to any Webgate release (10g versus 11g). Authentication schemes are independent of Webgate release.

Table 19–22 identifies the pre-configured schemes with challenge parameters.

Table 19–22 Challenge Parameters in Pre-configured Schemes

Pre-configured Schemes	Challenge Parameter
BasicSessionlessScheme	CookieLessMode=true Primarily used for clients that do not support URL redirect or cookies.
FederationMTScheme	initial_command=NONE Primarily used for Fusion Applications that support multiple factor authentication. is_rsa=true Used with RSA multi-step authentication, as described in Chapter 49, "Integrating RSA SecurID Authentication with Access Manager" and the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.
FederationScheme For Identity Federation 11.1.2.only. Use OIFScheme for Oracle Identify Federation 11.1.1.	Primarily used for clients that do not support URL redirect or cookies. Context Value: /fusion_apps Challenge Parameters: initial_command=NONE is_rsa=true Primarily used for clients that do not support URL redirect or cookies.
OAAMBasic	oaamPostAuth=true oaamPreAuth=true Protects OAAM-related resources. These parameters should be used when basic integration with OAAM is required.
OIFScheme For Oracle Identify Federation 11.1.1 only. Use FederationScheme for Identity Federation 11.1.2.	TAPPartnerId=OIFDAPPartner This scheme delegates authentication to Oracle Identity Federation 11.1.1, after which, Federation sends back a token that is asserted by the OAM Server.
TapScheme	TAPPartnerId=TAPPartnerName

An authentication scheme can collect context-specific information before submitting the request to the Access Server. Context-specific information can be in the form of an external call for information. Table 19–23 lists user-defined challenge parameters you can use in Authentication Schemes.

Table 19–23 User-Defined Challenge Parameters for Authentication Schemes

Challenge Parameter	Definition
initial_command=NONE	Required to enable the plug-in to indicate which credentials are to be collected. For example, for Form-based authentication, the framework typically expects to collect "username" and "password" (submitted from the login page). However, you might want credentials from different fields of the login page; "form_username" and "form_password" for example. Setting this challenge parameter shifts initial control from the login page to the plug-in, which decides the parameters to collect from the login page then appropriately forwards or redirects to the page. Default: blank (not set)
action=	The actions parameter identifies the URL to which the HTML form is posting when you do not want to use the hard coded ECC default `/oam/server/auth_cred_submit`. **Note**: ECC does not use the `action=` parameter. When the `action=` challenge parameter is not specified, both the DCC and ECC use the default: `/oam/server/auth_cred_submit`. **See Also**: "Configuring the PasswordPolicyValidationScheme" on page 19-106
creds= ***DCC Only***	Supported by the detached credential collector (DCC) only. In the following 11g example, username and password are the names of relevant fields in the login form: creds=username password **NOTE:** Format of this challenge parameter has changed since the 10g release. The Web server source (server parameter) takes precedence over other sources. This prevents the request data, which is under control of the user, from overriding Web server data. For example, a remote_user cookie sent from a user will not override a remote_user variable set by the Web server Generally, when the user submits a login form that is protected by an authentication scheme with a Form-based challenge method, the DCC processes the credentials that were specified with this `creds=` parameter. For forms using METHOD=POST processing, the browser sends a POST request to the Web server with the credential data from the form in the body of the request. If the form uses METHOD=GET, the browser sends a GET request with query string parameters with the same names as those specified on the creds parameter. Oracle recommends that you use POST processing, if possible. Note: You can specify the `creds` parameter with the other types of challenge methods. For a plug-in to make use of the `creds` parameter, you specify what is passed in the obMap credentials parameter of the ObUserSession object, as described in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management. **See Also**: "Configuring the PasswordPolicyValidationScheme" on page 19-106
extracreds= ***DCC Only***	Supported by the DCC only. Specifies optional parameters which, if present, are made available to the authentication plug-in for collection during each iteration of a multi-step authentication using the DCC. The `extracreds` parameter uses the same syntax as the `creds` parameter: `extracreds=` separated qualified or unqualified names [{any | cookie | header | server | query | post}:] <name>. However, the value `any` is used by `extracreds` only. For example: extracreds=[{any | cookie | header | server | query | post}:] <*name*> **See Also**: "Configuring the PasswordPolicyValidationScheme" on page 19-106
OverrideRetryLimit=0	The number of tries that can override the RetryLimit for login. The value must be a positive integer. A value of zero (0) disables this function. **See Also**: "Configuring the PasswordPolicyValidationScheme" on page 19-106
ChallengeRedirectMethod	Authentication POST data preservation parameter for both the embedded credential collector (ECC) and the detached credential collector (DCC). Value: GET | POST | DYNAMIC **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the Webgate providing this user defined parameter. Otherwise, default behavior is Dynamic. **See Also**: "Configuring Authentication POST Data Handling" Table 16–2, " User-Defined WebGate Parameters"

Table 19–23 (Cont.) User-Defined Challenge Parameters for Authentication Schemes

Challenge Parameter	Definition
MaxPreservedPostDataBytes	Configure this Authentication Scheme challenge parameter (or user-defined Webgate parameter) for authentication POST-data preservation. Default: 8192 bytes **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the Webgate providing this user-defined parameter. Otherwise, default behavior is 8192 bytes. This parameter defines the maximum length of POST data that Webgate can preserve. If the size of inbound raw user POST data (or encrypted post data after processing), crosses this limit, POST data is dropped and the existing authentication flow continues. The event is logged as usual. **See Also**: "Configuring Authentication POST Data Handling" on page 19-120 Table 16–2, " User-Defined WebGate Parameters"
MaxPostDataBytes= *DCC Only*	Configure this Authentication Scheme challenge parameter to restrict the maximum number of bytes of POST data that is submitted as user credentials and sent to the OAM Server. Configure this challenge parameter for POST-data preservation by the DCC only to limit the maximum size of the POST data that can be posted as credentials on the form and sent to the OAM Server. DCC compares the value of the content-length header with the limit set. Default: 8192 bytes This challenge parameter requires a positive integer value. **See Also**: Table 16–2, " User-Defined WebGate Parameters" "Configuring the PasswordPolicyValidationScheme" on page 19-106 "Configuring Authentication POST Data Handling" on page 19-116
ssoCookie=	Controls the OAMAuthnCookie cookie, as described in "Configuring Challenge Parameters for Encrypted Cookies" on page 19-87. **Default**: ssoCookie=httponly ssoCookie=Secure **Disable either setting**: ssoCookie=disablehttponly ssoCookie=disableSecure **Note**: These parameters are configured differently depending on your credential collector configuration. ▪ For detached credential collector-enabled 11g Webgates, set these parameters directly in the agent registration page. ▪ For non-DCC agents (Resource Webgates), these parameters are configured through user-defined challenge parameters in authentication schemes. **See Also**: Table 19–30, " Challenge Parameters for 10g/11g Encrypted Cookies"

Table 19–23 (Cont.) User-Defined Challenge Parameters for Authentication Schemes

Challenge Parameter	Definition
miscCookies=	Controls other miscellaneous Access Manager internal cookies. By default, httponly is enabled for all other (miscellaneous) cookies. **Default**: miscCookies=httponly miscCookies=Secure **Disable either setting**: miscCookies=disablehttponly miscCookies=disableSecure **Note**: These parameters are configured differently depending on your credential collector configuration. ■ For detached credential collector-enabled Webgates, set these parameters directly in the agent registration page. ■ For non-DCC agents (Resource Webgates), these parameters are configured through challenge parameters of the same name. **See Also**: Table 19–30, " Challenge Parameters for 10g/11g Encrypted Cookies" "Configuring the PasswordPolicyValidationScheme" on page 19-106
DCCCtxCookieMaxLength= ***DCC Only***	Defines the maximum length of the DCC cookie. Default: 4096 **See Also**: TempStateMode in this table for more information.

Table 19–23 (Cont.) User-Defined Challenge Parameters for Authentication Schemes

Challenge Parameter	Definition
TempStateMode=	Controls how the DCC stores the OAM Server state (cookie or form) as specified with the parameter's value: ■ **form**: This is the default, and is required for retaining authentication POST data. The OAM Server state stored and passed through the form parameter "OAM_REQ", to avoid the case when the OAM Server configuration `serverRequestCacheType=COOKIE`, bloated server state causes DCCCtxCookie to explode beyond limit resulting in incorrect behavior. The cookie cache mode can be changed to `FORM` mode from default `COOKIE` mode. `FORM` mode works with long URLs. The only difference in behavior is for programmatic authentication, which requires a proper form Submit to pass the `OAM_REQ` parameter set to the form. Custom credential collection pages need to handle the `OAM_REQ` parameter that is submitted with the form. ■ **cookie**: Adding this parameter and value stores the OAM Server state through part of the `DCCCtxCookie` (`encdata=… svrctx=…`). However, when `serverRequestCacheType=COOKIE or =FORM`, this could cause incorrect behavior if the resulting cookie length is beyond browser limit. **Note**: ■ When `serverRequestCacheType=COOKIE`, Oracle recommends TempStateMode=form. ■ When `serverRequestCacheType=BASIC`, either mode is fine. To update `serverRequestCacheType`, use the WLST command configRequestCacheType as described in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference. Editing `serverRequestCacheType` is not supported using the Oracle Access Management Console. **With ECC**: The serverRequestCacheType dictates whether OAM Server stores its state in memory(BASIC) or not (FORM or COOKIE). serverRequestCacheType = COOKIE or FORM only makes difference when ECC is used. OAM Server stores its state in a request token, which ECC keeps in a cookie or hidden form field as specified with the parameter: serverRequestCacheType=COOKIE, for example. **With DCC**: There is no difference between serverRequestCacheType=COOKIE or FORM. TempStateMode controls how the DCC stores the OAM Server state (cookie or form) as specified with the parameter's value: TempStateMode=cookie, for example. With the DCC, POST data restoration with a Form-based Authentication Scheme requires the challenge parameter **TempStateMode=form**. **See Also**: ■ "Configuring 11g WebGates and Authentication Policy for DCC" on page 19-109 ■ Table 16–2, " User-Defined WebGate Parameters" ■ " Parameters Required for Authentication POST Data Handling" ■ "Configuring the PasswordPolicyValidationScheme"

19.9.2 Understanding Multi-Level and Step-Up Authentication

This section provides the following topics:

- About Multi-Level and Step-Up Authentication
- Detection of Insufficient Authentication Level by OAM Agent
- Multi-Level Authentication Processing with 10g OSSO Agent

19.9.2.1 About Multi-Level and Step-Up Authentication

Every authentication scheme requires a strength level. The higher the number, the more more secure the authentication mechanism; the lower the number, the less stringent the scheme. For example:

- LDAPScheme authLevel=1
- KerbScheme authLevel=3

Note: Multi-level authentication does not affect, negate, or alter X.509 certificate authentication.

SSO capability enables users to access more than one protected resource or application with a single sign in. After a successful user authentication at a specific level, the user can access one or more resources protected by one or more Application Domains. However, the authentication schemes used by the Application Domains must be at the same level (or lower). When a user accesses a resource protected with an authentication level that is greater than the level of his current SSO token, he is re-authenticated. In the step-up case, the user maintains his current level of access even if failing the challenge presented for the higher level. This is "additional authentication".

Note: A user who is authenticated to access resources at level 3, is eligible to access resources protected at levels less than or equal to 3. However, if the user is authenticated to access resources at level 2 and then attempts to access resources protected by level 3, the user is asked to re-authenticate (this is known as step-up authentication).

Access Manager policies allow different resources of the same application to be protected with different authentication levels.

In such cases, the application must enforce the Level and send the Dynamic Directive to mod_osso for re-authentication. On receiving the Dynamic Directive, mod_osso will redirect to Access Manager for re-authentication at the appropriate level.

Both agent types redirect the user to the OAM Server to authenticate again. The challenge is presented according to the level of the authentication scheme configured in the policy for the resource.

Registered agents detect the authentication level as follows:

- OAM Agents receive an insufficient level error message from the OAM Server, as described in "Detection of Insufficient Authentication Level by OAM Agent" on page 19-81.
- mod_osso detects the authentication level from dynamic directives, as described in Multi-Level Authentication Processing with 10g OSSO Agent on page 19-81.

Note: mod_osso delegates authentication to Access Manager. Oracle recommends that mod_osso-protected resources be protected with Access Manager authentication levels. the mod_osso plug-in does not support two resources on the same application with a different trust level.

See Also: Oracle Fusion Middleware Integration Guide for Oracle Identity Management Suite; for example, the chapter Integrating Access Manager and Oracle Adaptive Access Manager. The user was already authenticated when he accessed another resource with a lower authentication level using Access Manager. Oracle Adaptive Access Manager does not show the user name and password pages because the user is already authenticated. However, the flows that are executed in Oracle Adaptive Access Manager depend on whether the user was already logged in to Oracle Adaptive Access Manager.

19.9.2.2 Detection of Insufficient Authentication Level by OAM Agent

When the user requests a resource that is protected with a higher level authentication scheme, the following process occurs.

See Also: "Understanding Authentication Methods and Credential Collectors" on page 19-17

Process overview: OAM Agent detects insufficient session level

No check of the authentication level is made on the server side. The following example refers to a 10g OAM Agent.

Note: 11g OAM Agents are associated with individual per-agent OAMAuthnCookies.

1. The OAM Agent sends the request to the OAM Proxy to obtain the scheme details for the protected resource.
2. The OAM Agent sends the request for session information to the OAM Proxy.
3. The OAM Proxy returns details of the ObSSOCookie, including the authenticated level of the ObSSOCookie.
4. The OAM Agent compares the level of ObSSOCookie with that of the authentication scheme.
   - If insufficient, the agent invokes the authentication process again.
   - If sufficient, the access is granted access.

19.9.2.3 Multi-Level Authentication Processing with 10g OSSO Agent

In contrast to OAM Agents, all the resources protected by mod_osso on a host (or virtual host) are protected at the same level.

With mod_osso, multi-level authentication applies when user is already authenticated using one mod_osso host (or virtual host) at Level 2 and then tries to access another mod_osso protected host (or virtual host) at level 3.

Process overview: OSSO Agent multi-level authentication flow

1. The user tries to access a resource protected by mod_osso on *host1* at level 2.
2. The OSSO Agent sends the request to the OAM Proxy to obtain the authentication scheme details for the protected resource.
3. The OAM_ID cookie for SSO Server and a host based cookie "HOST_port" for *host1* are set and contain authentication level information.

4. After authentication, the user tries to access a resource on *host2* that is protected with a higher level of authentication.
5. The user is redirected to the OAM Server for authentication because this is the first time accessing *host2*.
6. The OAM Server (OSSO Proxy) receives the OAM_ID cookie which has an insufficient level to access the resource on *host2*.
   - If the level is insufficient, the OAM Server (OSSO Proxy) triggers re-authentication.
   - If the level is sufficient, the access is granted access.

19.9.3 Creating an Authentication Scheme

Users with valid Administrator credentials can use the following procedure to add a new authentication scheme for use in an Application Domain.

Prerequisites

The authentication module must be defined and ready to use as described in "Deploying and Managing Individual Plug-ins for Authentication" on page 19-55.

See Also:

- "About Authentication Schemes and Pages" on page 19-65
- "Adding PasswordPolicyValidationScheme to Authentication Policy for DCC" on page 19-111 if needed

To create an authentication scheme

1. From the Oracle Access Management Console, click Authentication Schemes.
2. Click the Create button in the tool bar.
3. Fill in the fresh Authentication Scheme page (Table 19–20) by supplying information based on your deployment:
   a. Name: *LDAPSimpleFormScheme*
   b. Authentication Level
   c. Challenge Method: FORM
   d. Challenge Redirect URL: *http://CredentialCollectorhost:port*
   e. Authentication Module: LDAP
   f. Challenge URL: */CredentialCollector/loginform...*
   g. Challenge Parameters: Table 19–22, Table 19–23, Table 19–30
   h. Context Type
4. Click Apply to submit the new scheme (or close the page without applying changes).
5. Dismiss the Confirmation window.
6. Optional: Click the Set as Default button to automatically use this with new Application Domains, then close the Confirmation window.
7. In the navigation tree, confirm the new scheme is listed (Refresh the tree, if needed).

8. Proceed to "Defining Authentication Policies for Specific Resources" on page 20-32.

19.9.4 Searching for an Authentication Scheme

Users with valid Administrator credentials can perform the following task to search for a specific authentication scheme.

See Also: "Conducting A Search"

To search for an authentication scheme

1. From the Oracle Access Management Console, click Authentication Schemes.
2. In the text field, enter the desired scheme name (with or without wild card *). For example:

   `OA*`

3. Click the Search button to initiate the search.
4. Click the Search Results tab to display the results table, and then:
   - **Edit:** Click the Edit button in the tool bar to display the configuration page.
   - **Delete:** Click the Delete button in the tool bar to remove the instance; confirm removal in the Confirmation window.
   - **Detach**: Click Detach in the tool bar to expand the table to a full page.
   - **View**: Select a View menu item to alter the appearance of the results table.
5. Click the Browse tab to return to the navigation tree when you finish with the Search results.

19.9.5 Viewing, Editing, or Deleting an Authentication Scheme

Users with valid Administrator credentials can use the following procedure to view or modify an existing authentication scheme.

Note: During a delete operation, if the Authentication Scheme is associated with any authentication policy, she is prompted with association details. Without policy associations, the scheme is deleted.

See Also:

- "About Authentication Schemes and Pages"
- "Configuring the PasswordPolicyValidationScheme"

To view or modify an authentication scheme

1. From the Oracle Access Management Console, click Authentication Schemes and find the desired scheme.
2. **Edit**:
   a. On the Authentication Scheme page, modify values for your environment (Table 19–20).

Note: In an upgraded deployment with OSSO Agents, change the Authentication Scheme and any Protected Resource Policies to use SSOCoExistMigrateScheme.

b. Click **Apply** to submit the changes (or close the page without applying changes).

c. Dismiss the Confirmation window.

3. **Set as Default**: Click the **Set as Default** button to automatically use this scheme when creating policies in fresh Application Domains, then close the Confirmation window.

4. **Delete**:

a. Review any Application Domain using this authentication scheme and assign a different scheme.

b. Review the Authentication Scheme page to confirm this is the scheme to remove, then close the page.

c. In the navigation tree, click the name of the scheme and then click the **Delete** button in the tool bar.

d. Confirm removal (or dismiss the Confirmation window).

19.10 Extending Authentication Schemes with Advanced Rules

Advanced Rules have been added to allow for extending an existing authentication policy. Both Pre-Authentication and Post-Authentication rules can be applied.

Advanced Rules contain Boolean expressions. If there is more than one triggered Authentication Rule outcome, the lowest execution order outcome will be chosen as the final outcome. Table 19–24 documents the attributes that need be defined when creating an Advanced Rule.

Table 19–24 Advanced Rules Attributes

Name	Description
Name	AuthnRule name. Name has to be unique within the checkpoint
Description	Description of the rule
Execution Order	Order in which the outcome will be executed in cases of more than 1 outcome
Condition	Script; the user can configure condition based on the HTTP request header's availability and set the desired outcome
Outcome	ID of the Authentication Scheme to which the rule applies. Access / Deny.

Certain customers need the form-based authentication scheme to be extended to support non-browser clients. The requirement is that a form-based login page should be presented to the browser but allow a non-browser client to do a basic authentication based on credentials passed via header. See the following sections for details.

- Using Pre-Authentication Advanced Rules
- Understanding Sample Advanced Rules

19.10.1 Using Pre-Authentication Advanced Rules

For user authentication, a form-based login page is presented through the browser for the user to complete. In some cases, a non-browser client (switches, routers and the like) might need to do basic authentication based on credentials passed via the request header. (This might arise when a particular resource protected by a form-based authentication scheme can be accessed by both users with a browser as well as switches, routers and other types of non-browser clients.) Non-browser client authentication support has been added (and can be configured) as one of the pre-authentication Advanced Rules. To support non browser client authentication, a user can configure the desired condition in an Authentication Rule (based on the HTTP request header's availability) and set a desired outcome.

Before executing the Authentication Condition, the Access Manager server prepares a request context using the available Request data (to construct a Boolean expression based condition). The following tables describe the various request context data details.

- Table 19–25, " Request Context Data"
- Table 19–26, " Location Context Data"
- Table 19–27, " Session Context Data"
- Table 19–28, " User Context Data"

Table 19–25 Request Context Data

Attribute Name	Description
requestMap	Map of all the request headers, parameters and post data values. This example can get the custom-header key from request header and compare it with value 'test'. str(request.requestMap['custom-header']).lower().find('test') > 0
resourceMap	Map of matched resource details
accept	Returns 'Accept' header value
acceptCharset	Returns 'Accept-Charset' header value
acceptEncoding	Returns 'Accept-Encoding' header value
acceptLanguage	Returns 'Accept-Language' header value
authorization	Returns 'Authorization' header value
connection	Returns 'Connection' header value
contentLength	Returns 'ContentLength' header value
cookie	Returns 'Cookie' header value
host	Returns 'Host' header value
ifModifiedSince	Returns 'ifModifiedSince' header value
pragma	Returns 'Pragma' header value
referer	Returns 'Referer' header value
userAgent	Returns 'UserAgent' header value
resourceHost	Returns matched Resource's Host value
resourcePost	Returns matched Resource's Port value
resourceOperation	Returns matched Resource's Operation value
resourceQueryString	Returns matched Resource's QueryString

Table 19–25 (Cont.) Request Context Data

Attribute Name	Description
resourceName	Returns matched Resource's name
resourceType	Returns matched Resource's Type
resourceURL	Returns matched Resource's URL; for example, if 'landingPage' is in request.resourceURL, condition will evaluate to true if resourceURL has landingPage in it.

Table 19–26 Location Context Data

Attribute Name	Description
locationMap	Map of all the location data values; for example: location.locationMap['CLIENT_IP'] == '10.1.23.4'
clientIP	Returns client IP address; for example: location.clientIP.startswith('10.2')
proxyIP	Returns Proxy IP address

Table 19–27 Session Context Data

Attribute Name	Description
sessionMap	Map of all the session data values; for example: location.sessionMap['count'] > 2;
count	Returns number of sessions for the current user; for example: session.count > 2

Table 19–28 User Context Data

Attribute Name	Description
userMap	Map of all the user profile data; for example: user.userMap['email'] == 'john.joe@example.com'

19.10.2 Understanding Sample Advanced Rules

Table 19–29 contains sample Advanced Rules.

Table 19–29 Sample Advanced Rules

Sample Rule	Sample Jython Script-based Condition	Notes
Switching authentication scheme based on private or public IP rule	location.clientIP.startswith('10.') *or* location.clientIP.startswith('172.16') *or* location.clientIP.startwith('192.168')	This rule can be used in Pre and Post authentication checkpoints
Black listed IP	location.clientIP in ['130.35.50.115', '130.35.50.112', '130.35.50.113']	This rule can be used in Pre and Post authentication checkpoints
Client Browser Type	request.userAgent.lower().find('firefox') > 0	This rule can be used in Pre and Post authentication checkpoints

Table 19–29 (Cont.) Sample Advanced Rules

Sample Rule	Sample Jython Script-based Condition	Notes
Blocking access to user having user attribute 'description' equals 'test'	user.userMap['description'] == 'test'	This rule can be used only in Post authentication checkpoints
Non browser client	request.authorization.lower().startswith('basic')	This rule can be used only in Pre authentication checkpoints
Customer HTTP Header value	request.requestMap['param'] == 'test'	This rule can be used in Pre and Post authentication checkpoints

19.11 Configuring Challenge Parameters for Encrypted Cookies

This section provides the following topics:

- About Challenge Parameters for Encrypted Cookies
- Configuring Challenge Parameters for Security of Encrypted Cookies
- Setting Challenge Parameters for Persistence of Encrypted Cookies

19.11.1 About Challenge Parameters for Encrypted Cookies

In addition to the OAM Server cookie (OAM_ID), Access Manager implements single sign-on through an encrypted cookie:

- **11g Webgate, One per agent**: OAMAuthnCookie_<host:port>_<random number> set by Webgate using the authentication token received from the OAM Server after successful authentication

  Note: A valid OAMAuthnCookie is required for a session.

- **10g Webgate**, One ObSSOCookie for all 10g Webgates.

Access Manager provides the `ssoCookie` challenge parameter that you can use within any authentication scheme to control how Webgates set the flags of the encrypted cookie. For example:

- **Securing Encrypted Cookie**: Ensures that the encrypted cookie is sent only over an SSL connection and prevents the encrypted cookie from being sent back to a non-secure Web server.
- **Persisting Encrypted Cookie**: Allows the user to log in for a time period rather than a single session. Persistent cookie functionality works with Internet Explorer and Mozilla browsers.

Note: The value of the challenge parameter is note case sensitive. Syntax is the same regardless of your Webgate release. A single value is specified after the equal sign (=):

```
ssoCookie=value
```

Multiple values must be separated by a semicolon (;). For example:

```
ssoCookie=value1;value2;...
```

- For detached credential collector-enabled Webgates, set these parameters directly in the agent registration page (Table 16–2).
- For non-DCC agents (Resource Webgates), these parameters are configured through Authentication Scheme challenge parameters (Table 19–30).

Table 19–30 describes specific challenge parameters that control how Webgates set encrypted cookie flags for single sign-on.

Table 19–30 Challenge Parameters for 10g/11g Encrypted Cookies

11g /10g Webgate Challenge Parameter Syntax for Encrypted Cookies	Description
`ssoCookie=`	Parameter that controls flags for the SSO cookie OAMAuthnCookie.
`miscCookies=`	Parameter that controls flags for all other Access Manager encrypted cookies.

`Secure`	Ensures that the encrypted cookie is sent only when the resource is accessed through HTTPS. A secure cookie is required only when a browser is visiting a server using HTTPS.
	`ssoCookie=Secure`
	`miscCookies=Secure`

`disableSecure`	Explicitly disables Secure cookies.
	`ssoCookie=disableSecure`
	`miscCookies=disableSecure`

`httponly`	Enabled by default with 11g Webgate SSO OAMAuthnCookie and miscellaneous cookies.
	`ssoCookie=httponly`
	`miscCookies=httponly`

`disablehttponly`	Explicitly disables `httponly` functionality, making the encrypted cookies accessible to client-side scripts.
	`ssoCookie=disablehttponly`
	`miscCookies=disablehttponly`

`ssoCookie=max-age=`*`time-in-seconds`*	Creates a persistent cookie in browsers, rather than one that lasts for a single session, and specifies the time interval *in-seconds* when the cookie expires. For example, to set the cookie to expire in 30 days (2592000 seconds): `max-age=2592000`

19.11.2 Configuring Challenge Parameters for Security of Encrypted Cookies

The challenge parameter is not case sensitive.

See Also: "Creating an Authentication Scheme" on page 19-82

To secure the encrypted cookie

1. Create an authentication scheme.
2. In the Challenge Parameter field, enter your specification for the desired encrypted cookies (Table 19–30).
3. Confirm that the OAM Servers and clients (OAM Agents) are communicating securely across the Oracle Access Protocol channel, as described in Appendix C.

19.11.3 Setting Challenge Parameters for Persistence of Encrypted Cookies

The challenge parameter is not case sensitive.

See Also: "Creating an Authentication Scheme" on page 19-82

To define encrypted cookie persistence

1. Define an authentication scheme.
2. In the challenge parameter for this scheme, add the following (Table 19–30):

   Webgate `ssoCookie=max-age=`*time-in-seconds*

19.12 Understanding Password Policy

This section provides the following topics:

- Previewing Oracle-Provided Password Forms and Functionality
- Previewing the Password Policy Page in Oracle Access Management Console
- About Credential Collectors and Password Policy Validation

19.12.1 Previewing Oracle-Provided Password Forms and Functionality

Access Manager provides several pages for user interactions during credential collection, as described in Credential Collector Password Pages. The location can be customized, depending on the desired topology of the authentication scheme being developed.

Table 19–31 Credential Collector Password Pages

Credential Collector	Description
ECC pages	The default embedded credential collector jsp forms, by default, reside on the OAM Servers. ▪ Login page: /pages/login.jsp ▪ Logout page: /pages/logout.jsp ▪ Error page: /pages/servererror.jsp ▪ Multi-step authentication page: /pages/mfa.jsp
DCC pages	Dynamic pages general login/logout and password policy with the DCC are excluded automatically through the OHS httpd.conf/webgate.conf file--you do not need to configure a policy to exclude these. See the Webgate host: ▪ *$WEBGATE_HOME*/webgate/ohs/oamsso/* ▪ $WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl (update the Perl location in the first line of the login, logout, and securid scripts) ▪ *$WEBGATE_HOME*/webgate/ohs/oamsso-bin/templates/* See Also: For details about customizing pages and messages, see the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.

Table 19–32 shows the password forms provided.The default pages can be customized for your enterprise, or replaced entirely with custom pages. For example, you can design, implement, and deploy a custom page that displays a different version of the login form for a mobile browser than is used for a desktop browser.

Table 19–32 Password Management Forms and Functions

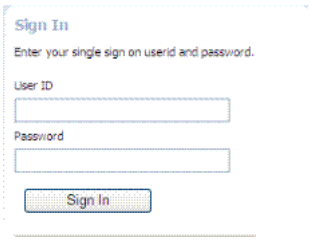
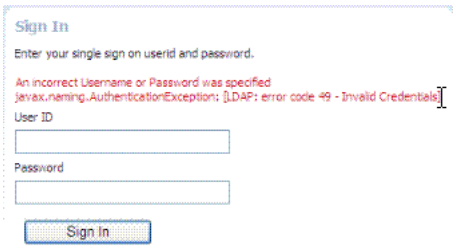
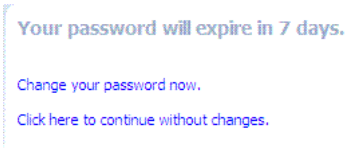
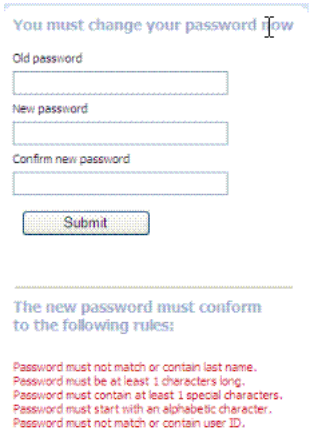
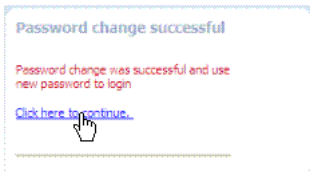
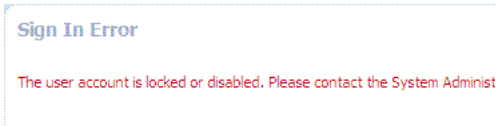
Form	Function
Sign In Form	The standard login form provides fields for userID and password. Clicking the Login button initiates authentication processing governed by the authentication module.  See: Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about customizing login forms.
Sign In Error	This standard login form appears when an error occurs. The text in red identifies the errors, which can be suppressed or displayed.  See: Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about suppressing or displaying.
Password Expiry Notification	The following message appears to inform the user that her password will expire, based on the notification policy. 

Table 19–32 (Cont.) Password Management Forms and Functions

Form	Function
Change Password Form	Based on password expiration policy configuration, the following window appears to enforce the policy and require user to change his password. 
Password Change Success	The following message appears to confirm the password change was successful. 
Locked or Disabled User Account	Based on the password policy, user account lockout occurs when supplied credentials fail during the maximum allowed login attempts. 

19.12.2 Previewing the Password Policy Page in Oracle Access Management Console

Figure 19–29 shows the Password Policy page in the Oracle Access Management Console. Administrators use this page to define policy based on enterprise requirements.

Figure 19–29 Password Policy Configuration Page

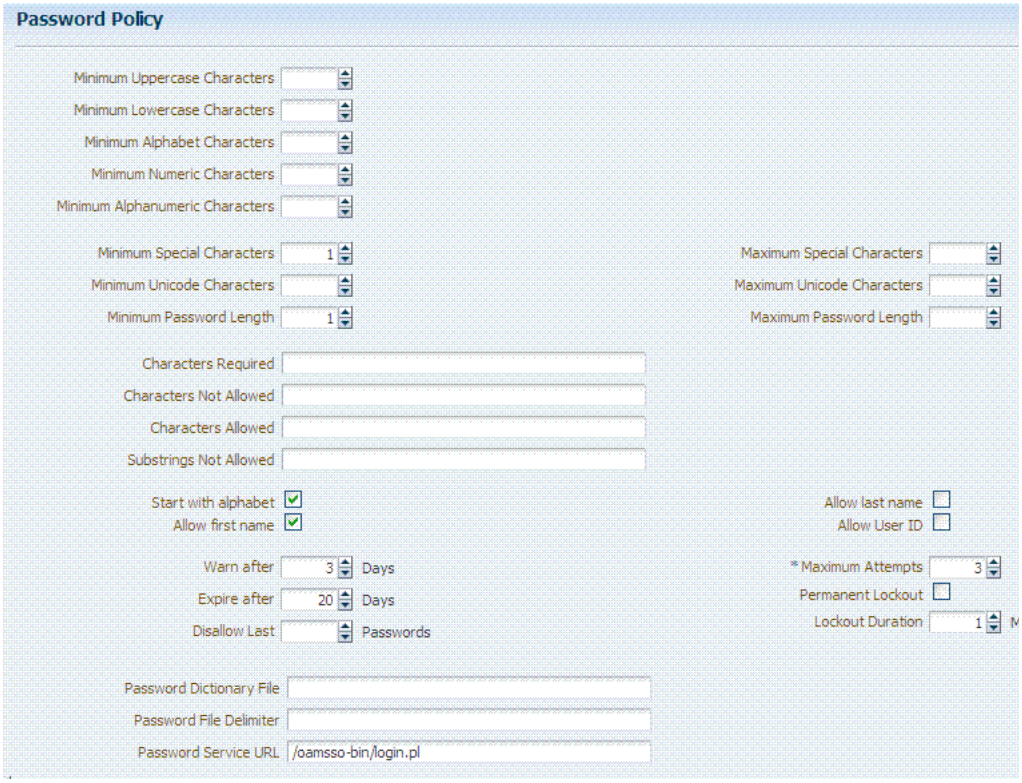


Table 19–33 describes configurable password policy elements (as read from left to right in the console).These elements are used by both the ECC and DCC.

Table 19–33 Password Policy Elements

Element	Description
Minimum Uppercase Characters	Defines the minimum number of uppercase characters required in a password.
Minimum Lowercase Characters	Sets the minimum number of lowercase characters required in a password.
Minimum Alphabetic Characters	Defines the minimum number of special characters allowed in the password.
Minimum Numeric Characters	Sets the minimum number of numeric characters required in a password.
Minimum Alphanumeric Characters	Defines the minimum number of alphanumeric characters required in a password.
Minimum Special Characters	Sets the minimum number of special characters required in a password.
Maximum Special Characters	Defines the maximum number of special characters allowed in a password.
Minimum Unicode Characters	Defines the minimum number of unicode characters required in a password.
Maximum Unicode Characters	Sets the maximum number of unicode characters allowed in a password.
Minimum Password Length	Sets the total minimum number of characters required in a password.
Maximum Password Length	Defines the total maximum number of characters allowed in a password.

Table 19–33 (Cont.) Password Policy Elements

Element	Description
Characters Required	Defines the specific characters that are required in a password. No delimiter is needed or allowed in this definition.
Characters Not Allowed	Sets the specific characters that cannot be used in a password. No delimiter is needed or allowed in this definition
Characters Allowed	Defines all allowed characters in a password. No delimiter is needed or allowed in this definition
Substrings Not Allowed	Specific character strings that are not allowed in a password. Use a comma as the delimiter in this definition.
Start with alphabet	Specifies that the first character in a password must be alphabetic, when checked.
Allow last name	Specifies that the user's last name is allowed in the password, when checked.
Allow first name	Specifies that the user's first name is allowed in the password, when checked.
Allow User ID	Specifies that the user's userID is allowed in the password, when checked.
Warn after	Defines when (in days) to warn a user before her password will expire.
Maximum Attempts	Identifies the maximum number of login attempts a user can make before a lockout.
Expire after	Defines the period of time (in days) that the password is valid.
Lockout Duration	Identifies the period of time the user is locked out (in minutes) after the designated number of failed login attempts. After this period, the user can attempt a fresh login.
Permanent Lockout	specifies permanent lockout after the designated number of failed login attempts.
Disallow Last	Defines the number of previous passwords that cannot be used when the user changes her password.
Password Dictionary File	Identifies the physical file on OAM Servers that contain the list of restricted words that can not be specified in a password.
Password File Delimiter	Defines the delimiter used in the Password Dictionary file to separate various words. For example, if the file contains `abc,def,welcome` and the dictionary delimiter is comma (,), the words that are restricted and cannot be used in a user password are `abc def` and `welcome`.
Password Service URL	The location of various password pages.

19.12.3 About Credential Collectors and Password Policy Validation

Regardless of the credential collection method you choose, you can configure one global password policy that applies to all Access Manager-protected resources (using the Password Policy Validation Module in the authentication scheme). Also, the relevant URLs for the credential collector and related forms must be specified as outlined in Table 19–34.

Table 19–34 Specifying Credential Collectors and Related Forms for Authentication

In the . . .	For the ECC . . .	For the DCC . . .
OAM Agent Registration ***DCC Only***	N/A.	Check the box beside **Allow Management Operations** in the OAM Agent registration page. **See Also**: "Enabling DCC Credential Operations" on page 19-109
login, error, and password pages	Pages where the user enters credentials arrive out of the box on the OAM Server and require no additional settings or changes. ▪ Login page: /pages/login.jsp ▪ Logout page: /pages/logout.jsp ▪ Error page: /pages/servererror.jsp ▪ Multi-step authentication: /pages/mfa_login.jsp	Dynamic pages for general login/logout and password policy with the DCC are excluded automatically through the OHS `httpd.conf/webgate.conf` file--you do not need to configure a policy to exclude these. See Webgate host directories `$WEBGATE_HOME/webgate/ohs/oamsso/*`, `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl`, and *`$WEBGATE_HOME/webgate/ohs`*`/oamsso-bin/templates/*` for: ▪ Login page: `/oamsso-bin/login.pl` ▪ Logout: `/oamsso-bin/logout.pl` ▪ RSA SecurID login pages: `/oamsso-bin/securid.pl` Perl Scripts for DCC-based Login and Logout The path name of the Perl executable must be updated in Oracle-provided Perl scripts on the Webgate host `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl` to be consistent with the actual location. **See Also**: Table 19–5, " Comparing the DCC and ECC"
Password Policy, Password Service URL	The Default/ECC password page is used automatically: Password Service URL for ECC: `/oam/pages/pswd.jsp` **See Also**: "Defining Your Global Password Policy" on page 19-98	Enter the DCC password page: Password Service URL for DCC: `/oamsso-bin/login.pl` **See Also**: "Locating and Updating DCC Forms for Password Policy" on page 19-110
User Identity Store	The user data object definition in the Access Manager schema is extended with attributes that enable password user status and password history maintenance. This definition is provided in an LDIF file, and must be added to each user identity store using the `ldapadd` tool. Oracle-provided LDIFs are identified in Table 19–35.	Same for both DCC and ECC: **See Also**: ▪ "Adding Key Password Attributes to the Default Store" on page 19-99 ▪ "Adding an Administrator to Change User Attributes After a Password Change"
Password Policy Validation Authentication Module	Enter the Default Store as the KEY_IDSTORE_REF for each of the three plug-ins / steps (with an Error redirect on Failure): **See Also**: ▪ Table 19–13, " Parameter Details for Various Plug-ins" ▪ "Configuring the Password Policy Validation Authentication Module"	Same for both DCC and ECC:
Authentication Scheme, Challenge Redirect URL	Enter the Credential Collector host: ▪ **For ECC**, relative URI format: /oam/server (server prepends the *host:port*) **See Also**: "Configuring the PasswordPolicyValidationScheme"	Enter the Credential Collector host: ▪ **For DCC**, full URL: http://*dcchost:port* ▪ **For DCC** combined with Resource Webgate: Leave empty **See Also**: "Configuring the PasswordPolicyValidationScheme"

Table 19–34 (Cont.) Specifying Credential Collectors and Related Forms for Authentication

In the . . .	For the ECC . . .	For the DCC . . .
Authentication Scheme, Challenge URL	Enter the Credential Collector login form relative URI: ▪ **For ECC**: /pages/login.jsp **See Also**: "Configuring the PasswordPolicyValidationScheme"	Enter the Credential Collector login form relative URI: ▪ **For DCC**: /oamsso-bin/login.pl **See Also**: "Configuring the PasswordPolicyValidationScheme"
Authentication Scheme, Challenge Parameters	**ECC**: User-defined Challenge Parameters: OverrideRetryLimit=0 initial_command=NONE **See Also**: ▪ Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes" ▪ "Configuring the PasswordPolicyValidationScheme"	**DCC**: User-defined Challenge Parameters: ▪ creds ▪ extracreds ▪ MaxPostDataBytes ▪ DCCCtxCookieMaxLength ▪ TempStateMode **See Also**: ▪ Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes" ▪ "Configuring the PasswordPolicyValidationScheme"

Table 19–34 (Cont.) Specifying Credential Collectors and Related Forms for Authentication

In the . . .	For the ECC . . .	For the DCC . . .
Server Error Mode	Same for both DCC and ECC. **See**: "Setting the Error Message Mode for Password Policy Messages" on page 19-113	Same for both DCC and ECC. **See**: "Setting the Error Message Mode for Password Policy Messages" on page 19-113
Authentication Policy	Credential collectors in authentication policies: ▪ **ECC**: Use any authentication scheme configured for the ECC in the application domain for the protecting Webgate (Resourcre Webgate) **See Also**: "Adding Your PasswordPolicyValidationScheme to ECC Authentication Policy"	Credential collectors in Authentication Policies: **DCC Separate from Resource Webgate**: ***Protecting (Resource) Webgate Application Domain, (Authentication Policy protecting resources), use the DCC-related Authentication Scheme. ***DCC Webgate Application Domain, Authentication Policy protecting resources, use the DCC-related Authentication Scheme. Consider: --**With No Action URL**: DCC uses the default /oam/server/auth_cred_submit, which is automatically protected with the DCC-related authentication scheme. --**With an Action URL**: Explicitly protect the specified Action URL with the DCC Scheme. **See Also**: "Adding PasswordPolicyValidationScheme to Authentication Policy for DCC"

Logout Configuration	**ECC**:
	
	In the protecting (Resource) Webgate Agent registration, configure the `Logout URL` as shown in Table 16–3, " Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages"
	
	See "Configuring Centralized Logout for 11g Webgates" on page 22-4
		DCC:
		
		▪ In the DCC Agent registration page the Logout Redirect URL is ignored.
		
		▪ In the protecting (Resource) Webgate registration, define the:
		
		`Logout Redirect URL:`
		`http//`*`dcchost:port`*`/oamsso-bin/logout.pl`
		
		Note: If the Resource Webgate's Logout Redirect URL is anything other than `logout.*`, then that URL must be defined in the `Logout URL` parameter of the DCC Webgate registration. For example:
		
		If Resource Webgate registration has:
		Logout Redirect URL
		`http//dcchost:port/someurl.html`
		
		then DCC Webgate registration must have:
		`Logout URL: someurl.html`
		
		▪ DCC: Perl path must be updated in Oracle-provided scripts.
		
		See "Configuring Logout When Using Detached Credential Collector-Enabled Webgate" on page 22-6

Caveats for Integrated Deployments

When you are using Oracle Identity Management and Oracle Access Management with Oracle Internet Directory, there are two sets of password policy definitions and enforcement.

- Password Policy Definition in both Oracle Identity Management and in Oracle Internet Directory
- Password Policy Enforcement by one of the following:

  Oracle Access Management enforces state policies (incorrect password, for example) during Web access; Oracle Internet Directory enforces its own state policies as well as LDAP operations (bind and compare, for example).

Oracle Identity Management enforces value policies (characteristics of the password) during user creation of the password update; Oracle Internet Directory enforces it's own value policies as well for policies for LDAP operations (add, modify for example).

To use just one set of policies you can either:

1. Make the Oracle Internet Directory policies weaker or the same strength as the Oracle Identity Management and Oracle Access Management policies. However, this leads to a double enforcement.
2. Disable native LDAP password policy validation, which unfortunately leaves no enforcement for direct LDAP operations.

19.13 Managing Global Password Policy

Authentication involves determining which credentials a user must supply when requesting access to a resource, gathering credentials, and returning a response that is based on the results of credential validation.

Access Manager authentication processing relies on an authentication module (or plug-in) to define the rules governing requirements and transmission of information to the back-end authentication scheme. By default, Access Manager supports using the OAM Server Embedded Credential Collector (ECC) for authentication processing. However, you can also configure an 11g Webgate to use as an detached credential collector (DCC) instead.

Both the ECC and DCC facilitate multi-step authentication flows where credentials are not provided all at once. This increases the flexibility of interaction with users or programmatic entities for the purpose of collecting authentication-related information. For more information on multi-factor authentication, see the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.

Regardless of the credential collection method you choose (default ECC or optional DCC), you can configure a global password policy as described in this section that applies to all Access Manager-protected resources.

Prerequisites

- Previewing Oracle-Provided Password Forms and Functionality
- Previewing the Password Policy Page in Oracle Access Management Console
- About Credential Collectors and Password Policy Validation

The following overview provides links to topics that describe how to configure and use the password policy. Unless explicitly stated, all tasks apply equally to the ECC and DCC. Skip any tasks that do not apply to your deployment.

Task overview: Password policy management includes

1. Defining Your Global Password Policy
2. Adding Key Password Attributes to the Default Store
3. Adding an Administrator to Change User Attributes After a Password Change
4. Configuring Password Policy Authentication
5. **DCC:** Configuring 11g WebGates and Authentication Policy for DCC
6. Completing Password Policy Configuration
7. Testing Your Multi-Step Authentication

19.13.1 Defining Your Global Password Policy

Users with Oracle Access Management Administrator credentials can use the following procedure to define a common password policy based on enterprise-defined requirements.

> **Note:** The only difference between a global password policy for the ECC versus the DCC is `Password Service URL`, which is credential collector-specific and defaults to ECC pages as shown in Step 2.

The specifications in this example are for illustration only. Your environment will be different.

To configure the password policy in Oracle Access Management

1. From the Oracle Access Management Console, click Password Policy under the Access Manager panel.
2. On the Password Policy page, enter the Password Service URL for the desired credential collector login page (ECC or DCC, Table 19–34).

ECC Password Service URL	DCC Password Service URL
`/pages/login.jsp`	`/oamsso-bin/login.pl`

3. On the Password Policy page, enter values (Table 19–33) based on requirements for your enterprise. For example:
   - Warn After 3
   - Expire After 20
   - Permanent Lockout (Disable)
   - Lockout duration 1
   - Minimum Special Characters 1
4. Click **Apply** to submit the policy.
5. Proceed as needed for your environment; skip any tasks that have been completed already:
   - Adding Key Password Attributes to the Default Store
   - Adding an Administrator to Change User Attributes After a Password Change

19.13.2 Designating the Default Store for Your Password Policy

The Password Policy operates only with the designated Default Store. Administrator roles and credentials must reside in the System Store.

> **See Also:** "Setting the Default Store and System Store"

To designate a Default Store for the global password policy

1. From the Oracle Access Management Console, click User Identity Stores.
2. **Set the System Store**: Administrator roles and credentials must reside in this store.
   a. Open the page of the store to designate as the System Store.

b. Check Set as system store (for domain wide authentication and authorization operations).

c. Click Applyn.

d. **Add Administrators**: See "Managing the Administrators Role" on page 5-22.

e. **Authentication Module**: Set the LDAP Authentication Module used by the `OAMAdminConsoleScheme` (authentication scheme) to use this System Store.

f. Configure one or more authentication plug-ins to use this store, as described in "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28.

3. **Set Default Store**: This store is required for Password Policy, Security Token Service, and migration when patching.

a. Open the page of the store to designate as the Default Store.

b. Check the box beside Set as default store.

c. **Authentication Module**: Locate `OAMAdminConsoleScheme` and confirm that the LDAP module does not refer to this store. See "Managing Native Authentication Modules" on page 19-23.

d. **Authorization Policy Conditions**: Choose the desired user identity store when setting Identity Conditions in Authorization Policies. See "Defining Authorization Policy Conditions" on page 20-52.

e. **Token Issuance Policy Conditions**: Choose the desired user identity store when setting Identity Conditions in Token Issuance Policies. See "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27.

4. Close the registration page.

19.13.3 Adding Key Password Attributes to the Default Store

The Password Policy operates only with the designated Default Store. This section provides steps for extending the default store schema for Oracle Access Management password policy operations.

- About Extending the Default Store Schema
- Extending the Default Store Schema with Password Policy Attributes

19.13.3.1 About Extending the Default Store Schema

The LDIF (Lightweight Directory Interchange Format) files distributed as part of Access Manager are meant to extend the schema with required object classes. Generally, these are applied using the idmConfigTool or Access Manager and Oracle Identity Management wiring has been performed manually.

The user data object definition in the Access Manager schema is extended with attributes that enable password user status and password history maintenance. This definition is provided in an LDIF file, and must be added to each user identity store using the `ldapadd` tool. Oracle-provided LDIFs are identified in Table 19–35.

> **Note:** OAM_HOME contains installed files necessary to host Oracle Access Management. OAM_HOME resides within the directory structure of the Middleware home ($MW_HOME).

Table 19–35 Location of Oracle-provided LDIFs for LDAP Providers

LDAP Provider	LDIF Location
OID: Oracle Internet Directory	`$OAM_HOME/oam/server/pswdservice/ldif/OID_PWDPersonSchema.ldif`
OVD: Oracle Virtual Directory	`$OAM_HOME/oam/server/pswdservice/ldif/OVD_PWDPersonSchema.ldif`
AD: Microsoft Active Directory	`$OAM_HOME/oam/server/pswdservice/ldif/AD_PWDPersonSchema.ldif`
SJS: sun Java System Directory	`$OAM_HOME/oam/server/pswdservice/ldif/IPLANET_PWDPersonSchema.ldif`
eDirectory: Novell eDirectory	`$OAM_HOME/oam/server/pswdservice/ldif/EDIR_PWDPersonSchema.ldif`
ODSEE: Oracle Directory Server Enterprise Edition	`$OAM_HOME/oam/server/pswdservice/ldif/IPLANET_PWDPersonSchema.ldif`
OUD: Oracle Unified Directory	`$OAM_HOME/oam/server/pswdservice/ldif/OUD_PWDPersonSchema.ldif`
SLAPD: OpenLDAP Directory	`$OAM_HOME/oam/server/pswdservice/ldif/OLDAP_PWDPersonSchema.ldif`
IBM: OBM Tivoli Directory	`$OAM_HOME/oam/server/pswdservice/ldif/TIVOLI_PWDPersonSchema.ldif`

The attributes that enable password user status and password history maintenance are shown in Table 19–36. The user data object of each user identity store must include the attributes shown in Table 19–36. These can be added with the `ldapadd` tool, LDIF (Lightweight Directory Interchange Format) file.

Table 19–36 Key Password Attributes in a Password Policy

Attribute	Description	Format and Values
obPasswordCreationDate	The date and time used to calculate (at the time of user login) whether the password has expired and whether a warning needs to be issued.	YYYY-MM-DDThh:mm:ssZ
obPasswordHistory	Used to track the number of last passwords used. Access Manager understands 10g oblixPersonPwdPolicy format and changes it to new format.	New format: `password1###password2###` Previous format: `passwordX = SHA256 (password+canonical userid)`
obPasswordChangeFlag	Used during forced password change for first time user login (or forced password change initiated by the Administrator.	Boolean string value. `true | false` Empty string represents `false`.
obuseraccountcontrol	Used to represent a disabled user.	Non-encrypted string value. `activated | deactivated` Empty string represents "activated".
obpasswordexpirydate	The time after which the user password is considered to be expired.	YYYY-MM-DDThh:mm:ssZ Empty value represents `not expired`.
obLockoutTime	The time up to which the user is considered to be locked out due to too many login attempts.	Epoch value (in seconds) representing time in the future. `Seconds` (since 01 January, 1970)

Table 19–36 (Cont.) Key Password Attributes in a Password Policy

Attribute	Description	Format and Values
obLoginTrvCount	The number of consecutive login failures by the user. This counter is reset on the first correct password entry.	Non-encrypted integer value. 1,2,3, and so on.
oblastsuccessfullogin	The time of the last successful login.	YYYY-MM-DDThh:mm:ssZ
oblastfailedlogin	The time of the last failed login.	YYYY-MM-DDThh:mm:ssZ

19.13.3.2 Extending the Default Store Schema with Password Policy Attributes

You can skip this task if the environment has been configured using `idmConfigTool -prepareIDStore`.

If your user identity store has not been extended with the `oblix` schema, you must update the schema to include the object classes required by the password service.

LDAP tools should be run from the `/bin` directory beneath `$OAM_HOME`. The following procedure illustrates extending the Oracle Internet Directory schema. Your environment might be different.

To extend the Default User Identity Store schema

1. Use the following command to update the Oracle Internet Directory object classes of the designated Default Store required by the password service:

   ```
   ldapadd -D "cn=orcladmin" -w <password> -h <hostname> -p 3060 -x -f $OAM_HOME/
   oam/server/pswdservice/ldif/OID_PWDPersonSchema.ldif
   ```

2. Proceed to "Adding an Administrator to Change User Attributes After a Password Change".

19.13.4 Adding an Administrator to Change User Attributes After a Password Change

In this procedure, you modify the Default Store (Oracle Internet Directory in this example) to use a different privileged account as the Bind DN. This enables sufficient privileges to change user attributes after a password change.

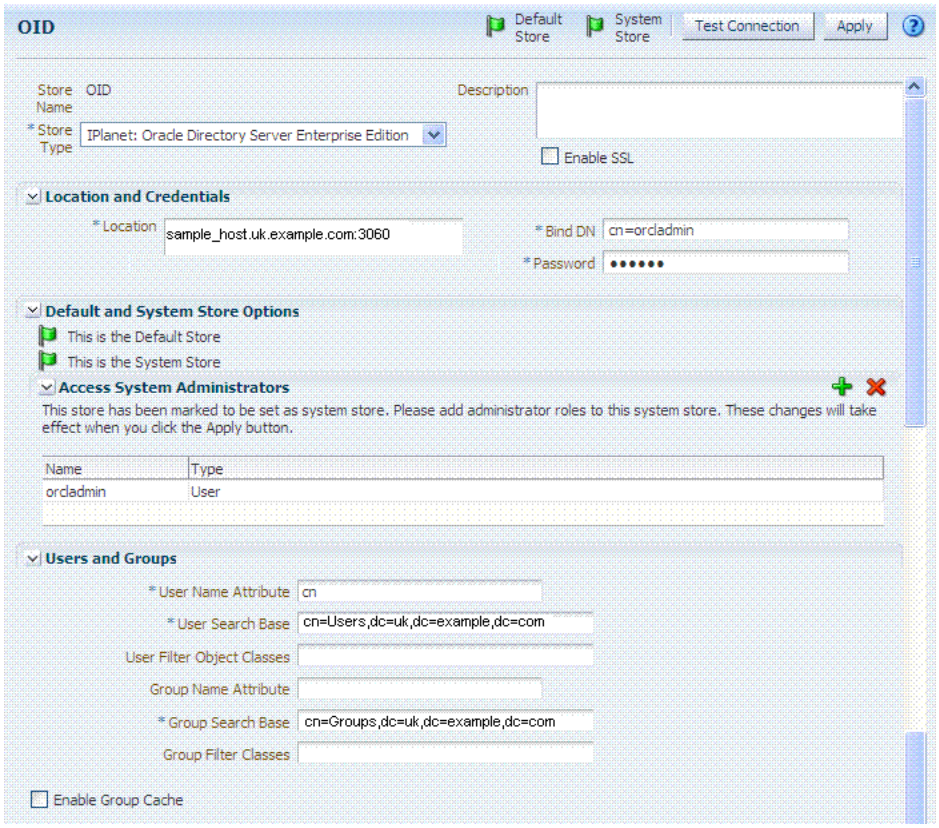
Prerequisites

Register a supported LDAP store and designate it as the Default Store. Ensure that the user you add is defined within the Default Store.

See Also: "Managing the Administrators Role" on page 5-22

Figure 19–30 shows the completed registration page for the designated Default Store. The procedure to add an Administrator follows the figure.

Figure 19–30 Default Store with New Administrator Designated



To add a new Administrator

1. Log in to the Oracle Access Management Console, as usual.

   `https://hostname:port/oamconsole/`

2. Open the desired User Identity Store registration page:

   System Configuration tab
   Common Configuration section
   Data Sources node
   User Identity Stores
   OID

3. **Add a New Administrator**:

   a. In the **Access System Administrators** section of the page, click + above the table.

   b. In the dialog box, search **All Users**, highlight *desireduser*, then click **Add Selected**.

   c. Click **Apply** to submit the changes.

4. **Default Store**: Confirm the designated Default Store (or click Default Store) then click **Apply**.

5. Proceed with "Configuring Password Policy Authentication".

19.14 Configuring Password Policy Authentication

After preparing your password policy, Default Store, and Administrator, you can develop your authentication module and scheme as described in this section.

- Configuring the Password Policy Validation Authentication Module
- Configuring the PasswordPolicyValidationScheme
- Adding Your PasswordPolicyValidationScheme to ECC Authentication Policy—If you are using the DCC, skip this topic and go to "Configuring 11g WebGates and Authentication Policy for DCC"

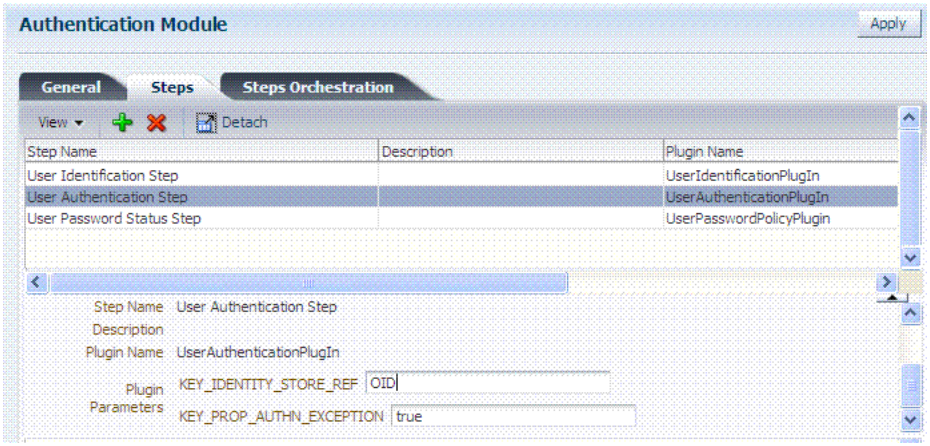
19.14.1 Configuring the Password Policy Validation Authentication Module

You must also configure the Password Policy Validation Authentication Module to use the Default Store.

> **Note:** There are no credential collector dependencies when defining the Password Policy Validation Module for authentication.

A sample module is shown in Figure 19–31. The User Password Status Step is the unique step that relies on the `UserPasswordPolicyPlugin`.

Figure 19–31 Password Policy Validation Authentication Module with Orchestrated Plug-ins



Each step identifies the action provided by a specific named plug-in.

> **See Also:** "Orchestrating Multi-Step Authentication with Plug-in Based Modules" and Table 19–19.

Figure 19–32 shows the orchestration of steps within the authentication module. For more information on modules and steps, see "About Plug-in Based Modules for Multi-Step Authentication" on page 19-38.

Figure 19–32 Step Orchestration for Password Policy Validation Module

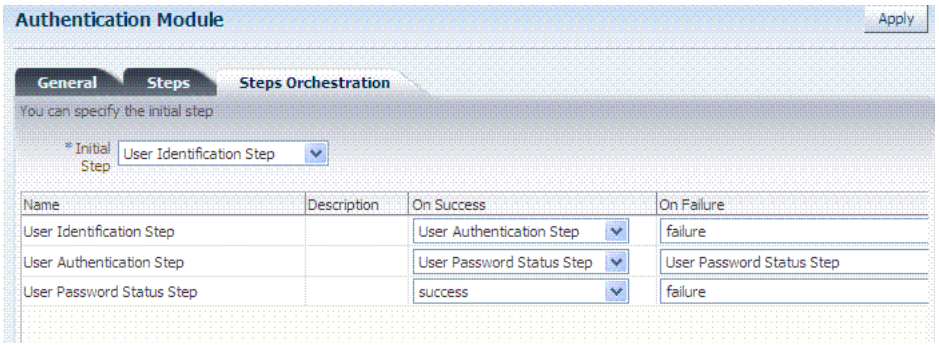


Table 19–37 describes the Password Policy Validation module step details that you specify.

Table 19–37 User Password Step Details

Step Name	Step Details	Description
User Identification Step	KEY_LDAP_FILTER	Add the LDAP filter to the KEY_LDAP_FILTER attribute. Only standard LDAP attributes can be used when defining an LDAP search filter. For example: `(uid={KEY_USERNAME})` See Also: Table 20–22, " LDAP Search Filter Examples for Access Manager" and your vendor documentation for the exact syntax for your identity store
	KEY_IDENTITY_STORE_REF	The name of the registered Identity Store containing the module users. Default: The registered Default Store.
	KEY_SEARCH_BASE_URL	Base URL for user searches. For example: `dc=us,dc=example,dc=com`
User Authentication Step	KEY_IDENTITY_STORE_REF	The name of the registered Identity Store containing the module users. Default: The registered Default Store.
	KEY_PROP_AUTHN_ EXCEPTION	Enable or disable the propagation of LDAP errors.
User Password Status Step	PLUGIN_EXECUTION_MODE	The execution mode of plug-in. Depending upon the configuration, this plug-in can operate either alone or with other default plug-ins. Values are one of the following: ■ PSWDONLY: The most preferred configuration where only the password status is determined. The ID and authentication must be performed using the UserIdentification and UserAuthentication Plugins. ■ AUTHWITHPSWD: Both authentication and password are performed using this plug-in. ■ AUTHONLY: Only the user identification and authentication is performed using this plug-in Default: PSWDONLY
	KEY_IDENTITY_STORE_REF	The name of the registered Identity Store containing the module users. Default: The registered Default Store.

Table 19–37 (Cont.) User Password Step Details

Step Name	Step Details	Description
	NEW_USERPSWD_BEHAVIOR	Configures retroactive behavior of the new-user password-policy. Values are either: ▪ FORCEPASSWORDCHANGE: Forces a password change. ▪ NOFORCEPASSWORDCHANGE: The password policy change does not affect user passwords that are already set. Default: FORCEPASSWORDCHANGE
	POLICY_SCHEMA	Policy schema for password service. Currently only OAM10G is supported. Default: OAM10G
	URL_ACTION	The type of servlet action needed for redirecting the user to the specific password page for expiry and warning pages. Values can be either: ▪ REDIRECT_POST ▪ REDIRECT_GET ▪ FORWARD Default: REDIRECT_POST
	DISABLED_STATUS_SUPPORT	Specifies whether the disabled status is to be supported and acted upon in this password service. Valid values are either True or False. Default: TRUE

Prerequisites

Defining Your Global Password Policy

Note: There are no credential collector dependencies when defining the Password Policy Validation Module. Enter the Default Store as the KEY_IDSTORE_REF for each of the three plug-ins (with an Error redirect on Failure).

To configure the Password Policy Validation Module

1. From the Oracle Access Management Console, click Authentication Modules, Custom Authentication Modules and then Password Policy Validation Module.
2. Click the **Steps** tab; for each of the three steps add the **Default Store** name in the field beside KEY_IDSTORE_REF (Save after each change). For example:
   a. **User Identification Step**

      KEY_IDSTORE_REF: *OID*

      Save.

   b. **User Authentication Step**

      KEY_IDSTORE_REF: *OID*

      Save.

   c. **User Password Status Step**

      KEY_IDSTORE_REF: *OID*

      Save.
3. Click **Apply**.

4. Proceed to "Configuring the PasswordPolicyValidationScheme".

19.14.2 Configuring the PasswordPolicyValidationScheme

You can have multiple authentication schemes for use with the global password policy. Users with Administrator credentials can follow this procedure to configure the PasswordPolicyValidationScheme.

Note: Differences between values for the ECC versus the DCC include (Table 19–34):

- Challenge Redirect URL: *Credential Collector host and port*
- Challenge URL: *Credential Collector Pages*
- Challenge Parameters: Table 19–23

The sample scheme in Figure 19–33 is configured for the ECC. The sample scheme in Figure 19–34 is configured for the ECC. Your authentication scheme will be different.

Figure 19–33 Sample ECC PasswordPolicyValidationScheme

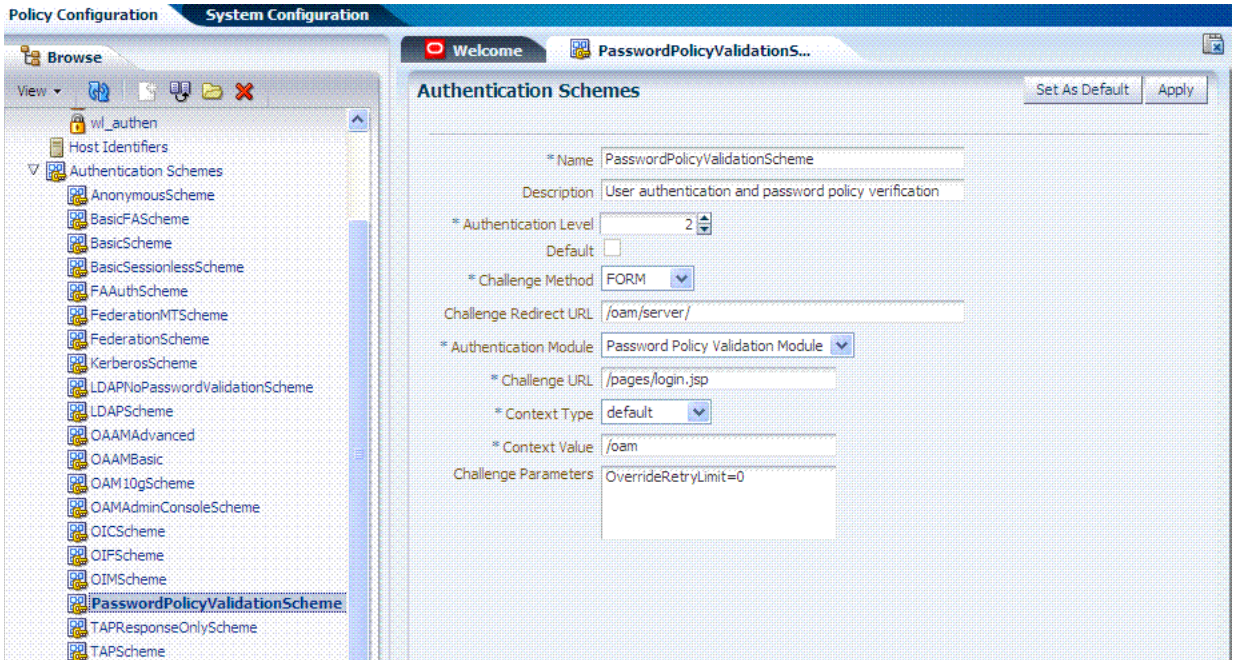
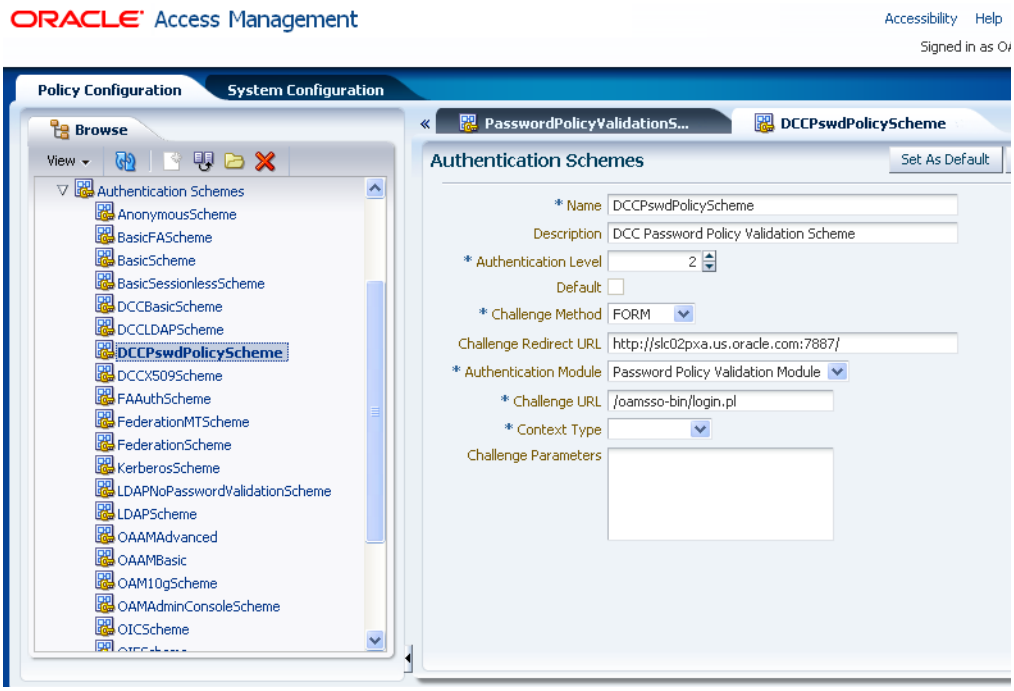


Figure 19–34 Sample DCC PasswordPolicyValidationScheme



Prerequisites

Configuring the Password Policy Validation Authentication Module

See Also: "Managing Authentication Schemes" on page 19-64

To configure the PasswordPolicyValidationScheme

1. From the Oracle Access Management Console, click Authentication Schemes and then PasswordPolicyValidationScheme.
2. Set up the scheme for your environment. For example:
   - Authentication Level **2**
   - Default (*blank*)
   - Challenge Method: **Form**
   - Challenge Redirect URL: **`http://`***CredCollector_host:port*`/`
   - Authentication Module: **Password Policy Validation Module**
   - Challenge URL: **`/CredCollector_pages/`**
   - Context Type: **External**
   - Challenge Parameters:

ECC Challenge Parameters	DCC Challenge Parameters
`OverrideRetryLimit=0` `initial_command=NONE`	`OverrideRetryLimit=0` `creds=userid password`

ECC Challenge Parameters	DCC Challenge Parameters

	See Also: Table 19–23, " User-Defined Challenge Parameters for Authentication Schemes"
	
	`action`
	If not specified, the default for both ECC and DCC is /oam/server/auth_cred_submit.
	
	`DCCCtxCookieMaxLength`
	(default is 4096)
	
	`TempStateMode`
	controls how the DCC stores the OAM Server state: cookie or form (the default) as specified with the parameter's value.
	
	`MaxPostDataBytes`
	Restricts the maximum number of bytes of POST data submitted as user credentials.
	
	`creds`
	Whatever is passed must be specified in the `obMap` credentials parameter of the `ObUserSession` object, as described in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management

3. Click **Apply**.
4. Proceed to "Adding Your PasswordPolicyValidationScheme to ECC Authentication Policy".

19.14.3 Adding Your PasswordPolicyValidationScheme to ECC Authentication Policy

A user with Administrative privileges can use the PasswordPolicyValidationScheme configured for the ECC in the application domain of the protecting Webgate (Resource Webgate).

Prerequisites

Configuring the PasswordPolicyValidationScheme

To add PasswordPolicyValidationScheme to an ECC authentication policy

1. **ECC**: In the console, search for and open the appropriate Application Domain. (See "Searching for an Existing Application Domain" on page 20-12).

   See Also: "Adding PasswordPolicyValidationScheme to Authentication Policy for DCC" on page 19-111

2. **ECC**: Protect Resources using the **PasswordPolicyValidationScheme**:
   a. Find and open your **Protected Resource Policy** on the Authentication Policies tab (see "Viewing or Editing an Authentication Policy" on page 20-36):

      Authentication Policies
        Protected Resource Policy

   b. Select **PasswordPolicyValidationScheme** for the **Protected Resource Policy** (Authentication Scheme) and click **Apply**.
   c. Finish updating your Authentication and Authorization policies, as desired (Chapter 20).

3. Proceed as needed for your environment:
   - **ECC**: Completing Password Policy Configuration
   - **DCC**: Configuring 11g WebGates and Authentication Policy for DCC

19.15 Configuring 11g WebGates and Authentication Policy for DCC

The following task overview documents how to configure an 11g WebGate and Authentication Policy for use with the DCC. The appropriate sub sections are linked within each step.

1. Enabling DCC Credential Operations provides steps for either configuration:

   DCC Combined with Resource Webgate: Enable Allow Credential Collector Operations in the DCC's OAM Agent registration page.

   Separate DCC and Resource Webgate: Enable Allow Credential Collector Operations in the DCC's OAM Agent registration page and edit the Resource Webgate registration page to set the `Logout Redirect URL` to the DCC's logout.pl.

2. Locating and Updating DCC Forms for Password Policy
3. Adding PasswordPolicyValidationScheme to Authentication Policy for DCC provides steps for either configuration:

   DCC Combined with Resource Webgate: In the combined DCC/Resource Webgate Application Domain, update the Protected Resources Authentication Policy to use your DCC Authentication Scheme.

   Separate DCC and Resource Webgate: In the separate Resource Webgate Application Domain, update the Protected Resources Authentication Policy to use your DCC Authentication Scheme.

4. Supporting Federation Flows With DCC provides steps to incorporate the DCC into Federation flows.

Note: If your environment uses the ECC, go to "Completing Password Policy Configuration".

19.15.1 Enabling DCC Credential Operations

Whether you are using a separate DCC or combined DCC and Resource WebGate, you must enable Allow Credential Collector Operations in the DCC's OAM Agent registration page.

With a separate DCC and Resource WebGate, you must also edit the Resource WebGate registration page to set the `Logout Redirect URL` to the DCC's logout.pl, as described in Step 3.

The following procedure presumes your deployment uses Open mode communication. If your deployment uses Simple or Cert mode communication, be sure to copy the appropriate artifacts when you perform Step 4.

Prerequisites

- Configuring and Managing Registered OAM Agents Using the Console
- Managing Global Password Policy
- Configuring Password Policy Authentication using DCC-specific details

To enable DCC credential operations

1. In the Access Manager section of the Oracle Access Management Console, click SSO Agents to find and open the registration page for the 11.1.2 Webgate that will function as the DCC.
2. **DCC Webgate Registration**: Check **Allow Credential Collector Operations**, click **Apply**, then perform Steps 4 and 5.

> **Note:** If the DCC is combined with a Resource WebGate, skip Step 3.

3. **Separate Resource Webgate**: Edit the Resource WebGate registration to set the `Logout Redirect URL` to the DCC's logout.pl (Table 19–34), click **Apply**, then perform Steps 4 and 5.
4. Copy Agent configuration file (including Simple or Cert mode files) from the AdminServer (Console) host to the Agent host. For example:

Agent & Artifacts	Artifacts
11g Webgate/Access Client ObAccessClient.xml and cwallet.sso	From the AdminServer (Console) host: $*DOMAIN_HOME*/output/$*Agent_Name*/ To the Agent host: $*11gWG_install_dir*/webgate/config
Simple or Cert Mode	Copy to the Agent host: $*11gWG_install_dir*/webgate/config ▪ aaa_key.pem ▪ aaa_cert.pem ▪ aaa_chain.pem ▪ password.xml See Also: Appendix C, "Securing Communication"

5. Restart the OHS Web server.
6. Proceed to "Locating and Updating DCC Forms for Password Policy".

19.15.2 Locating and Updating DCC Forms for Password Policy

Access Manager provides several dynamic pages for user interactions with the DCC.

> **See Also:** *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*

Prerequisites

Enabling DCC Credential Operations

To locate and update the DCC forms

1. Locate the DCC forms in the Webgate host (`Table 19-34`): `$WEBGATE_HOME/webgate/ohs/oamsso/*`, `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl`, and `$WEBGATE_HOME/webgate/ohs/oamsso-bin/templates/*`.
2. Customize their location, depending on the desired topology of the authentication scheme being developed.
3. **Update Perl Location**: Update the Perl location to be consistent with the actual location, in the first line of the login, logout, and securid scripts on Webgate host in `$WEBGATE_HOME/webgate/ohs/oamsso-bin/*pl` ("Perl Scripts for DCC-based

Login and Logout" in Table 19–34).

4. Customize the default pages for your enterprise, or replace them entirely with custom pages. For example, you can design, implement, and deploy a custom page that displays a different version of the login form for a mobile browser than is used for a desktop browser.
5. Proceed to "Adding PasswordPolicyValidationScheme to Authentication Policy for DCC".

19.15.3 Adding PasswordPolicyValidationScheme to Authentication Policy for DCC

The following procedure provides steps that you must perform to use your DCC Authentication Scheme in a Protected Resources Authentication Policy. The steps you perform depend on the type of deployment you have:

- **Combined DCC/Resource Webgate**: Perform Step 1 to add your DCC Authentication Scheme to the Protected Resources Authentication Policy of the combined DCC/Resource Webgate Application Domain.
- **Separate Resource Webgate**: Perform Step 3 to add your DCC Authentication Scheme to the Protected Resources Authentication Policy of the separate Resource Webgate Application Domain.

Perform Step 2 regardless of your DCC deployment type. By default, login and logout forms are excluded through OHS /httpd.conf/webgate.conf so that you do not need to exclude them through policies. However, with the Chrome browser, you must explicitly exclude the async favicon.ico request (which overrides the DCCCtxCookie).

Note: This example refers to the PasswordPolicyValidationScheme set for the DCC in Section 19.14, "Configuring Password Policy Authentication."

Prerequisites

Locating and Updating DCC Forms for Password Policy

To use the DCC Authentication Scheme in an Authentication Policy

1. **Combined DCC/Resource Webgate**: Open the DCC application domain:

   Policy Configuration
   Application Domains
   DCCDomain

   a. Locate and open the **Authentication Policy, Protected Resource Policy** (see "Searching for an Authentication Policy" on page 20-35).

   b. Add your **DCC Authentication Scheme** to this policy (see "Defining Authentication Policies for Specific Resources" on page 20-32).

      PasswordPolicyValidationScheme (DCC Authentication Scheme)

   c. Perform Step 2 if you have the Chrome Browser. Otherwise, go to Step 4.

2. **Chrome Browser**: Add and exclude resource `/favicon.ico` in the *DCCDomain*, as follows.

   a. From *DCCDomain*, click the **Resources** tab.

b. Find and open the HTTP resource `/favicon.ico` (or click the New Resource button and then add this resource).

c. Confirm or edit the Resource URL to:

```
/favicon.ico
```

d. In the **Protection** section, **Protection Level** list, select **Excluded**, then click **Apply**.

e. Proceed to Step 4.

3. **Separate Resource Webgate**: Open the Resource Webgate application domain.

Policy Configuration
Application Domains
ResourceWGDomain

a. Locate and open the **Authentication Policy, Protected Resource Policy** (see "Searching for an Authentication Policy" on page 20-35).

b. Add your **DCC Authentication Scheme** and an optional Failure URL (when not specified, Failure URL displays the default error page) to this policy (see "Defining Authentication Policies for Specific Resources" on page 20-32):

DCC Authentication Scheme
Failure URL (optional)

c. Perform Step 2 if you have the Chrome Browser. Otherwise, go to Step 4.

4. Restart your Web server and proceed to "Completing Password Policy Configuration".

See Also: "Configuring Logout When Using Detached Credential Collector-Enabled Webgate" on page 22-6

19.15.4 Supporting Federation Flows With DCC

The DCC is enhanced to work as a public end-point to the Access Manager server. HTTP requests to the DCC are tunneled via NAP to the proxy module of the Access Manager server. The JSP pages and servlets are executed in the Access Manager server and the response is tunneled back to the DCC. The end user effectively communicates only to the DCC.

Note: If a WebGate is configured as a DCC and federated flows are in use, the DCC WebGate cannot be used to protect the resource. A separate WebGate must be configured and used to protect the resource.

To use DCC for converged Federation flows, perform the following manual steps.

1. Configure the following internal resources as Public instead of Excluded.

```
/oamfed/…/*
/oam/…/*
/…/*
```

2. In the DCC WebGate, set the logout value to a valid DCC WebGate logout URL; for example, `/oamsso-bin/logout.pl`

3. Update the DCC Agent entry by adding the following entry to the User Defined Parameters list using the Access Manager Administration Console.

```
TunneledUrls=/oam,/oamfed
```

19.16 Completing Password Policy Configuration

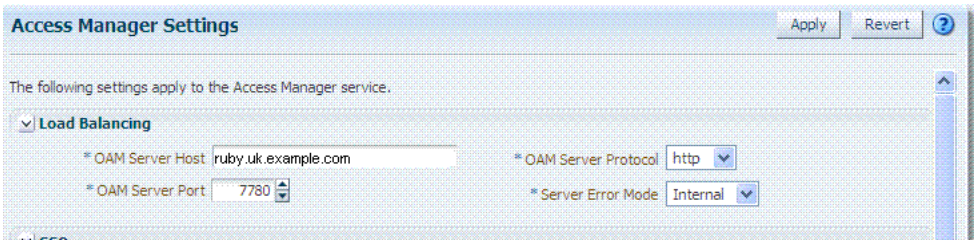
These tasks are the same regardless of the credential collector you have configured. Perform the following tasks to complete your password policy configuration:

- Setting the Error Message Mode for Password Policy Messages
- Overriding Native LDAP Password Policy Validation
- Disabling ECC Operation and Using DCC Exclusively
- Testing Your Multi-Step Authentication

19.16.1 Setting the Error Message Mode for Password Policy Messages

Users with administrative privileges can use this procedure to set the Server Error Mode for password policy messages, as shown in Figure 19–35.

Figure 19–35 Server Error Mode for Password Management



Prerequisites

- Managing Global Password Policy
- Configuring Password Policy Authentication
- Optional: Configuring 11g WebGates and Authentication Policy for DCC

To set the error message mode

1. From the Oracle Access Management Console, click Access Manager settings.
2. In the **Load Balancing** section, set the **Server Error Mode** to **Internal**.
3. Click **Apply**.
4. Proceed with "Overriding Native LDAP Password Policy Validation".

19.16.2 Overriding Native LDAP Password Policy Validation

As described earlier, you need to disable native LDAP password policy validation before the non-native password policy can be used.

For example, with Oracle Internet Directory registered for Oracle Access Management, native password policy is generally located as follows:

```
dn: cn=default,cn=pwdPolicies,cn=Common,cn=Products,cn=OracleContext,<DOMAIN_
```

CONTAINER>

Caution: Disabling the native LDAP password policy validation leaves no enforcement for direct LDAP operations. There are various password policies in Oracle Internet Directory, including one in the following:

```
dn:
cn=default,cn=pwdPolicies,cn=Common,cn=Products,cn=OracleContext
```

However, this might not apply to your domain.

You can disable the Oracle Internet Directory password policy by setting the `orclpwdpolicyenable` parameter to zero (0).

> **See Also:** The various attributes described in Oracle Fusion Middleware Administrator's Guide for Oracle Internet Directory

The following procedure is only an example. Your environment will be different.

Prerequisites

Setting the Error Message Mode for Password Policy Messages

To override native LDAP policy with Oracle Access Management password policy

1. Refer to the manual from your LDAP directory vendor.
2. **Oracle Internet Directory**: Disable native policy by setting `orclpwdpolicyenable` to zero (0).
   - Confirm the location of the password policy for your domain.
   - When you are sure you have the proper native LDAP policy, disable the policy. For example:

     ```
     orclpwdpolicyenable = 0
     ```
3. Proceed as follows, depending on your deployment:
   - "Disabling ECC Operation and Using DCC Exclusively"
   - "Testing Your Multi-Step Authentication"
   - Chapter 22: "Configuring Logout When Using Detached Credential Collector-Enabled Webgate"

19.16.3 Disabling ECC Operation and Using DCC Exclusively

You can skip this task to allow the DCC and ECC to co-exist, and maintain authentication schemes and policies for both credential collectors.

To disable ECC, you must edit the oam-config.xml file as described here. Generally, Oracle recommends not editing oam-config.xml. Changes to this file could result in lost data or overwriting of the file during data sync operations. However, there is no other way to disable the ECC completely in favor of the DCC.

Note: After disabling the ECC, access to resources protected by schemes and policies that rely on the ECC will be prohibited, including access to the Oracle Access Management Console.

Prerequisites

Configuring 11g WebGates and Authentication Policy for DCC

To disable ECC operation and use DCC exclusively

1. Make your changes on the node running the AdminServer to minimize possible conflicts that another AdminConsole user might make.
2. Back up oam-config.xml in *$DOMAIN_HOME*/config/fmwconfig/ and store the copy in a different location for use later if needed.
3. Locate the `ECCEnabled` parameter in the `OAMServicesDescriptor` section and make the changes shown here in bold:

```
<Setting Name="OAMServicesDescriptor" Type="htf:map">
  ... ...
   <Setting Name="ECCEnabled" Type="htf:map">
   <Setting Name="ServiceStatus" Type="xsd:boolean">false</Setting>
</Setting>
```

4. Increment by 1, the configuration version number at the top of the file to associate your change and enable automatic propagation and dynamic activation across all running OAM Servers (see the next to last line of this example):

```
<Setting Name="Version" Type="xsd:integer">
  <Setting xmlns="http://www.w3.org/2001/XMLSchema"
    Name="NGAMConfiguration" Type="htf:map:>
  <Setting Name="ProductRelease" Type="xsd:string">11.1.1.3</Setting>
    <Setting Name="Version" Type="xsd:integer">2</Setting>
</Setting>
```

5. Proceed to "Testing Your Multi-Step Authentication".

19.16.4 Testing Your Multi-Step Authentication

This section provides a number of evaluations you can perform to confirm that your deployment is working properly.

See Also: Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates"

To confirm your multi-step authentication

1. Confirm access after login:
   a. Open a new browser and request a resource.
   b. Log in with your user credentials.
   c. Confirm that you have access to the resource.
2. Confirm no access on incorrect login:
   a. Open a new browser and request a resource.
   b. Log in with incorrect user credentials.
   c. Confirm that you must re-authenticate.

3. Confirm lockout after exceeding maximum incorrect login attempts:
   a. Open a new browser and request a resource.
   b. Log in with incorrect user credentials repeatedly.
   c. Confirm that the user account is locked.
4. Modify and evaluate your password expiry policy:
   a. Log in to the Oracle Access Management Console.
   b. In your password policy, reset the expiry and lockout periods (Table 19–33) so that you will see warnings on your next login.
   c. Save the policy updates.
   d. Open a new browser and request a resource.
   e. Verify the warning page appears advising that the password will expire.
   f. Click the link to continue without password change.
5. Change your password:
   a. Open a new browser and request a resource.
   b. On the password expiry warning page, click the link to change your password.
   c. On the password change page, enter your correct old password.
   d. In the new password field, enter a different new password that does not follow the password policy and confirm the password validation error.
   e. Enter a new password that meets requirements and confirm success and access to the resource.

19.17 Configuring Authentication POST Data Handling

Post data preservation and restoration functions apply to both credential collectors (ECC or DCC). This section provides the following topics:

- About Authentication Post Data Preservation and Restoration
- About Configuring Authentication POST Data Handling
- Configuring Authentication POST Data Handling
- Testing POST Data Handling Configuration

19.17.1 About Authentication Post Data Preservation and Restoration

POST data preservation and restoration functions come into play when an application has a form wherein the user has entered a credential (or other data) but the session has expired, an idle session timeout has occurred, or the token validity period has ended by the time the user submits the form. If this scenario occurs, the user is presented with a fresh login form (depending on the authentication scheme) unless POST data is preserved and restored.

Administrators can configure the Resource Webgate to perform POST data preservation when the expired user and newly authenticated user are the same. Table 19–38 describes Resource Webgate support and behavior for post data.

Note: Authentication POST data preservation and restoration is not supported when Access Manager performs authentication through custom agents.

Table 19–38 Resource Webgate Support of POST Data Preservation and Restoration

Resource Webgate	Description
Supports Authentication Schemes	LDAP, Basic, Sessionless Basic, X509, WNA
Supports form encoding	with text/html, text/plain, multipart/form-data, and application/x-www-form-urlencoded type data posted by the application form.
Preserves	The encoding type of the data posted by the original application form, except the input field of file type.
Ensures	The downstream application sees the same post data that was posted by the original application form.
Constrains	The overall size of the inbound request data or the inbound front channel message. There shall be a configuration parameter to override the code default value. This shall be per application.
Maintains application data confidentiality and integrity	Neither the Resource Webgate nor credential collector will interpret, nor log, application post data. If, after expiration and during re-authentication, the user authenticates with different credentials, then the post data of the previous user is cleared by the Resource Webgate and not restored. However, Webgate will post to the downstream application URL that was posted by the original application form.
Ignores Preservation if ... Logs a Message when ... Performs Standard Authentication if ... Shows an Error when ...	Post data is larger than the configured or hard-coded limit, preservation is ignored. Post data is skipped because it is bigger than the allowed limit, a message is logged. Post data size is larger than the hard-coded limit (or the configured value), the standard authentication flow is used. Together, if both front channel message data and application post data are large an error occurs.

Table 19–39 describes credential collector feature support for POST data handling.

Table 19–39 Credential Collector Support for POST Data Handling

Credential Collector Support
ECC and DCC
Compatible with earlier 11g Webgates
Supports post data preservation for Form based authentication scheme with the default login form provided out of the box.
Preserves application post data during authentication processing by: ▪ Challenging the user ▪ Re-challenging the user if invalid credentials are provided
Does not interpret application post data.
Constrains the overall size of inbound front-channel messages using a configuration parameter to override the default value, per application.
Logs a warning when post data is skipped because it is larger than the allowed limit.

Table 19–39 (Cont.) Credential Collector Support for POST Data Handling

Credential Collector Support
Does not preserve application post data when: ▪ Authentication policy is configured with Success or Failure authentication URLs ▪ Password management (password expiration and so on) is involved ▪ Access Manager is used for performing authentication through custom agents.
ECC Only ▪ The embedded credential collector does not support POST data handling with the external login page.
DCC Only ▪ POST data is preserved through the HTTP header, and the amount of POST data that can be handled to 8192 characters. ▪ POST data restoration with a Form-based Authentication Scheme requires the challenge parameter **TempStateMode=form**. ▪ DCC does not support custom login pages. ▪ DCC does not support POST data restoration during password management operations (password expiration, for instance) when the URL_ACTION in the password policy plug-in is set to anything other than FORWARD.

19.17.2 About Configuring Authentication POST Data Handling

Table 19–40 summarizes the authentication schemes that support authentication POST data handling.

Table 19–40 Authentication Schemes Supporting POST Data Handling

Authentication Schemes
▪ FORM challenge method, supported with the out of the box login page. ▪ WNA ▪ Basic ▪ Basic+Sessionless ▪ X509 ▪ OIF, OIM, OAAM integrations using TAP

Table 19–41 summarizes complete configuration requirements for authentication POST data handling. All requirements described in Table 19–41 are supported end to end with the authentication schemes in Table 19–40.

Table 19–41 Parameters Required for Authentication POST Data Handling

Parameter	Description
MaxPostDataBytes	Configure this Authentication Scheme challenge parameter for POST-data preservation used by the DCC only to limit the maximum size of the POST data that can be posted as on the login form. DCC compares the value of the content-length header with the limit set. Default: unlimited This Authentication Scheme challenge parameter requires a positive integer value that restricts the maximum number of bytes of POST data that is submitted as user credentials and sent to the OAM Server.

Table 19–41 (Cont.) Parameters Required for Authentication POST Data Handling

Parameter	Description
MaxPreservedPostDataBytes	Configure this Authentication Scheme challenge parameter (or user-defined Webgate parameter) for authentication POST-data preservation. Default: 8192 bytes **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the Webgate providing this user-defined parameter. Otherwise, default behavior is 8192 bytes. This parameter defines the maximum length of POST data that Webgate can preserve. If the size of inbound raw user POST data (or encrypted post data after processing), crosses this limit, POST data is dropped and the existing authentication flow continues. The event is logged as usual. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"
TempStateMode=form ***DCC Only***	With the DCC, a Form-based Authentication Scheme requires the challenge parameter **TempStateMode=form** for POST data restoration For Form authentication scheme, if this parameter is not defined, the value will be "form". **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"
ChallengeRedirectMaxMessageBytes	Configure this user-defined Webgate parameter to limit the size of the message data received as obrareq.cgi and obrar.cgi. Message data is comprised of query string length (if present) or POST data length (if POST data is present). If message size exceeds this limit, the message is not processed and the existing message is shown in the browser. The event is logged as usual. Default: 8192 bytes **Notes**: obrareq.cgi is the authentication request in the form of a query string redirected from Webgate to the credential collector (OAM Server or DCC). obrar.cgi is the authentication response string redirected from the credential collector (OAM Server or DCC) to Webgate. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"
PostDataRestoration	Configure this user-defined Webgate parameter to initiate authentication POST-data preservation for the resource Webgate. This parameter requires a value of `true` or `false`. Default: `false` When set to `true`, Webgate initiates POST data preservation. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"

Table 19–41 (Cont.) Parameters Required for Authentication POST Data Handling

Parameter	Description
serverRequestCacheType ***ECC Only***	Configure this OAM parameter to define the mechanism used to remember the request context by the embedded credential collector (ECC). This OAM Server parameter in *$DOMAIN_HOME*`/config/fmwconfig/oam-config.xml` indicates mechanism to be used to remember the request context. Possible values are FORM, COOKIE, or CACHE. Default: COOKIE FORM is the required value for POST data preservation, Long URL handling and Form-based authentication schemes. **See Also**: `TempStateMode` in this table. "Configuring Authentication POST Data Handling" on page 19-116

19.17.3 About Post Data Size Limits

Assuming the usual form data entered by users is about several kilobytes, putting a limit on data comsumption from the incoming request is a general requirement. The data transferred in the front channel protocol (either request or response) must also go through the size check. Considering these situations:

- Limit the size of data passed to the OAM Server on the back channel using the maxpostdatabytes authentication challenge parameter

  In cases where the DCC is used, the maxpostdatabytes authentication challenge parameter performs this check on the overall POST data.

- Limit the size of the POST data from the end user application using MaxPreservedPostDataBytes authentication scheme challenge parameter.

  The MaxPreservedPostDataBytes authentication scheme challenge parameter handles this. Additionally, this can be set as a user-defined Webgate parameter.

- Limit size of the front channel payload on obrar.cgi or obrareq.cgi with a Webgate user-defined parameter ChallengeRedirectMaxMessageBytes.

19.17.4 Configuring Authentication POST Data Handling

Be sure to read all POST data topics in this section before attempting this procedure. There is no need to make any explicit change in your authentication scheme.

To configure authentication POST data handling

1. Configure the Authentication Scheme:

   a. From the Oracle Access Management Console, create or find the desired scheme (Table 19–40).

   b. On the Authentication Scheme page, modify values for POST data handling.

   This example uses the embedded credential collector (Table 19–20) and values for POST data handling (Table 19–23):

   Name: *DesiredScheme*
   Authentication Level **2**
   Challenge Method: **Form**
   Challenge Redirect URL: /oam/server/
   Authentication Module: **LDAP**
   Challenge URL: /pages/login.jsp
   Context Type: **External**

Challenge Parameters

Authentication Scheme Challenge Parameters for Post Data with ECC	Authentication Scheme Challenge Parameters for Post Data with DCC
`MaxPreservedPostDataBytes`=9000	`MaxPreservedPostDataBytes`=9000 TempStateMode=form

c. Click **Apply** to submit the changes.

2. ECC: Configure serverRequestCacheType, the OAM parameter in oam-config.xml, if using ECC.
   a. Stop the managed server.
   b. Stop the administration server.
   c. Open oam-config.xml and modify the value of serverRequestCacheType.
   d. Save the file.
   e. Restart the administration server.
   f. Restart the managed server.
3. Configure Webgate Parameters for POST data handling:
   a. From the System Configuration tab, Access Manager section, create or find the desired OAM Agent registration.
   b. On the agent registration page, submit values for POST data handling (Table 19–23):

      Name: *DesiredAgent*
      User-Defined Parameters

User-Defined Webgate Post Data Parameters with ECC	User-Defined Webgate Post Data Parameters with DCC
PostDataRestoration=true	PostDataRestoration=true

   c. Click **Apply** to submit the changes.

19.17.5 Testing POST Data Handling Configuration

The following actions can be performed in sequence to test your POST data handling configuration.

1. Complete all configurations as documented.
2. Develop a simple script to print the POST data and the URL protected by Webgate.
3. Use a browser to access the protected resource.
4. Provide credentials and establish SSO. Wait for the idle session timeout period.
5. With the same browser, use the form to post data to the same Webgate using the URL which can print the POST data. You will be redirected to credential collector.
6. Enter the same credentials previously used.

   From the HTTP headers you can see, after getting obrar.cgi from the credential collector, the protected resource Webgate will give a 200 response (previously it was 302) and the POST data can be printed by your script.

19.18 Long URL Handling During Authentication

Long URL handling applies to both credential collectors (ECC or DCC) and is a default operation.

19.18.1 About Long URLs and Authentication Handling

Authentication involves redirecting the user's request to a centralized component that performs authentication, known as a Credential Collector. The mechanism used to redirect user from the policy enforcement point (OAM Agent) to the Credential Collector, is a proprietary front channel protocol over HTTP. This protocol currently provides the context of the request and the authentication response on the query string. In situations where the URL of the requested page is larger, the overall context becomes larger and can go beyond the browser's permissible size. This is referred to as Long URL Handling.

By default, the Resource Webgate checks the payload size of the front channel protocol message to determine if it is larger than the coded limit. When long URL handling is explicitly enabled, the limit is ignored and has no impact.

The credential collector determines if the front channel response payload is to be sent as HTTP Post data when:

- The incoming request indicates that the agent is capable of handling HTTP POST or REDIRECT type of response
- The credential collector is configured to always send the payload as HTTP post data
- The credential collector is configured to always send the payload as a query string

If no explicit configuration is present, then if the payload size is greater than predefined limit, then it shall send payload as the HTTP post data. But if the payload size is lower than the predefined limit, then it shall send it on the query string.

Note: If application post data is also preserved there is no impact.

Table 19–42 identifies Long URL handling functionality with both the ECC and DCC.

Table 19–42 ECC and DCC: Long URL Handling

ECC Long URL Handling	DCC Long URL Handling
ECC is compatible with all 11g Webgates.	Same as ECC.
N/A	Long URL handling is limited to the maximum allowed size of the DCCContextCookie. The DCC does not perform explicit long URL handling. There is no support to preserve the front channel payload on the form.

19.18.2 About Configuring Long URL Handling

Table 19–43 summarizes the authentication schemes that support authentication Long URL handling.

Table 19–43 Authentication Schemes Supporting Long URL Handling

Authentication Schemes
▪ FORM challenge method, supported with the out of the box login page. ▪ WNA ▪ Basic ▪ Basic+Sessionless ▪ X509 ▪ OIF, OIM, OAAM integrations using TAP

Table 19–44 summarizes the parameters and complete configuration requirements for authentication Long URL handling. All requirements described in Table 19–44 are supported end to end with the authentication schemes in Table 19–43.

Table 19–44 Parameters Required for Long URL Handling

Parameter	Description
ChallengeRedirectMethod	Configure this as either as an Authentication Scheme challenge parameter (or as a user-defined Webgate parameter) for POST-data preservation for both the embedded credential collector (ECC) and the detached credential collector (DCC). **Note**: Preference is given first to the Authentication Scheme containing this parameter; second to the Webgate providing this user-defined parameter. Otherwise, default behavior is Dynamic. Value: GET | POST | DYNAMIC Behavior when value is: ▪ POST: Webgate sends encquery as POST data and credential collectors send encreply as POST data. ▪ GET: Webgate sends encquery as query string and expects encreply as query string. ▪ DYNAMIC: Default behavior, based on the length of the encquery/encreply. Webgate/credential collector sends data either as a query string or as POST data. Code default maximum length is 2000 characters. **See Also**: "Configuring Authentication POST Data Handling" Table 16–2, " User-Defined WebGate Parameters"
ChallengeRedirectMaxMessageBytes	Configure this user-defined Webgate parameter to limit the size of the message data received as obrareq.cgi and obrar.cgi. Message data is comprised of query string length (if present) or POST data length (if POST data is present). If message size exceeds this limit, the message is not processed and the existing message is shown in the browser. The event is logged as usual. Default: 8192 bytes **Notes**: obrareq.cgi is the authentication request in the form of a query string redirected from Webgate to the credential collector (OAM server or DCC). obrar.cgi is the authentication response string redirected from the credential collector (OAM server or DCC) to Webgate. **See Also**: "Configuring Authentication POST Data Handling" on page 19-116 Table 16–2, " User-Defined WebGate Parameters"

Table 19–44 (Cont.) Parameters Required for Long URL Handling

Parameter	Description
serverRequestCacheType ***ECC Only***	Configure this OAM parameter to define the mechanism used to remember the request context by the embedded credential collector (ECC). This OAM Server parameter in $*DOMAIN_HOME*`/config/fmwconfig/oam-config.xml` indicates mechanism to be used to remember the request context. Possible values are FORM, COOKIE, or CACHE. Default: COOKIE FORM is the required value for POST data preservation, Long URL handling and Form-based authentication schemes. **See Also**: `TempStateMode` in this table. "Configuring Authentication POST Data Handling" on page 19-116

Long URL handling is enabled by default. The Webgate/credential collector sends data either as a query string or a POST. The length of the querystring parameter sent with obrareq.cgi and obrar.cgi is 2000 characters maximum.

19.19 Using Application Initiated Authentication

Access Manager exposes a Reauthentication URL that applications may choose to invoke if the user is accessing a sensitive URL or operation. This re-authentication will be triggered irrespective of whether or not the user already has a valid session. An application can trigger re-authentication by invoking the `/oamreauthenticate` URL at:

```
http://<ohs_host>:<ohs_port>/oamreauthenticate
```

Access Manager will expect the /oamreauthenticate to be registered and associated with an authentication policy. Re-authentication will be performed using the scheme associated with this policy. The re-authentication URL takes the redirection URL as a query parameter. After re-authentication is complete, Access Manager redirects the user to this URL. A request to re-authenticate the user might look like the following:

```
http://<host>:<port>/oamreauthenticate?
  redirect_url=http://<host>:<port>/<redirection_resource_url>
```

If the redirection URL is not specified, a 404 error code is returned. If the incorrect credentials are specified during re-authentication, the user will remain on the login page and, after the maximum retry limit, the user will be redirected to an appropriate error page. The following process is how to configure for application initiated authentication.

1. Create an `http://<ohs_host>:<ohs_port>/oamreauthenticate` resource and assign the desired authentication scheme to it.
2. In the redirect URL, set the appropriate responses to verify that re-authentication has been successful and to communicate back to the application about the re-authentication responses.

Access Manager sets the last re-authentication time as a "OAM_LAST_REAUTHENTICATION_TIME" header and this value is updated every time the user is re-authenticated.

19.20 Using the Adaptive Authentication Service

Oftentimes, passwords alone are not enough to protect resources from hackers and cyber-criminals. The Adaptive Authentication Service is a One Time Password

Authenticator that provides *multifactor* authentication in addition to the standard user name and password type authentication. Multifactor authentication is a two-step process in which users are required to provide a user name, password and a second generated password before access to a requested service is allowed. The second password, referred to as a One Time Password (OTP), is generated using an app on a mobile device. The supported apps are Oracle Mobile Authenticator and Google Authenticator. (For this release, only iOS and Android devices are supported.)

> **Note:** Time-based One Time Password (TOTP) is a two-factor authentication scheme specified by the Internet Engineering Task Force (IETF) under RFC 6238 and used by the Adaptive Authentication Service. TOTP is an extension of the HMAC-based One Time Password algorithm and supports a time-based *moving factor* (a value that must be changed each time a new password is generated).

To use the Adaptive Authentication Service, a user downloads one of the authenticator apps to a mobile device (for example, Oracle Mobile Authenticator to an Apple iPhone) and configures it by clicking a link provided by the Access Manager administrator. Then, to obtain a secret key, the user launches the app, clicks Online Configuration, and enters his/her credentials. Following a successful authentication, the app displays a OTP with validity. The following sections have more details.

- Understanding the Adaptive Authentication Service
- Configuring Access Manager for Two-Factor Authentication
- Configuring the Oracle Mobile Authenticator App
- Configuring the Google Authenticator App

> **Note:** The Adaptive Authentication Service requires either an Oracle Adaptive Access Manager license or an Application Management Services license.

19.20.1 Understanding the Adaptive Authentication Service

The following sections contain specific details on the Adaptive Authentication Service.

- Understanding the One Time Password Flow
- Generating a Secret Key
- Understanding Adaptive Authentication Configurations

19.20.1.1 Understanding the One Time Password Flow

When using an Authenticator mobile app to generate a One Time Password (OTP), the Authenticator app is first configured with the Access Manager server details in order to obtain the secret key to generate a OTP. Following this, the user authenticates with Access Manager using the proper credentials and Access Manager returns the user's secret key. This secret key is unique to each user and known only to Access Manager and the Authenticator app. (See Generating a Secret Key for details.)

When the user accesses a protected resource, a page is displayed that requests a user name and password. If these initial credentials are authenticated successfully, a OTP page is displayed. The user enters the OTP displayed by the mobile Authenticator app in the OTP page. Once the OTP is validated by Access Manager, access is allowed.

Note: The Authenticator app refreshes the OTP every 30 seconds so the OTP entered by a user is valid only for that period of time. Access Manager also generates a OTP for the user with the same secret key and refresh period. Thus if the OTP generated by Access Manager matches the OTP entered by the user, access to the protected resource is allowed. If the OTP entries do not match, access is not allowed.

19.20.1.2 Generating a Secret Key

Businesses can generate secret keys in different ways. The means in which the secret key is generated makes no difference to Access Manager although the specific information required by Access Manager must be integrated within it. The secret key needs to be shared with Access Manager and the Authenticator app. The following list of parameters and their values must be passed to the business before they generate a shared secret key.

- Client Id - identifier for the Mobile and Social client configured in Configuring OAuth for the Google Authenticator. For example, 54321id
- Client Pass - is the Mobile and Social client password configured in Configuring OAuth for the Google Authenticator.
- OAMMS Endpoint URL - is the URL where the Mobile and Social REST services are deployed. For example, http://host.example.com:14100/ms_oauth
- Secret Key Attribute Name - is the LDAP attribute in which the shared secret key will be stored.

19.20.1.3 Understanding Adaptive Authentication Configurations

To use the Adaptive Authentication Service, you must configure Access Manager and the mobile authenticator app. For information on configuring Access Manager to use the Adaptive Authentication Service, see:

- Configuring Access Manager for Two-Factor Authentication

For information on configuring your mobile authenticator app for use with the Adaptive Authentication Service, see the applicable section:

- Configuring the Oracle Mobile Authenticator App
- Configuring the Google Authenticator App

19.20.2 Configuring Access Manager for Two-Factor Authentication

The following sections contain details on two-factor authentication configurations using the Administration Console. They assume that Access Manager 11gR2PS2, a WebGate and the Oracle HTTP Server (OHS) are installed and configured.

- Configuring OAuth for the Oracle Mobile Authenticator
- Configuring OAuth for the Google Authenticator
- Configuring Access Manager

19.20.2.1 Configuring OAuth for the Oracle Mobile Authenticator

Using the Administration Console, follow this procedure to enable the Mobile and Social Service and update the User Profile Service to protect the REST Secret Key Service using the Basic Authentication Scheme. This configuration is for use with the Oracle Mobile Authenticator.

1. From the Launch Pad, navigate to the Configuration panel and click Available Services.
2. Click Enable to enable Mobile and Social.
3. From the Launch Pad, click OAuth Service under the Mobile and Social panel.
4. Click DefaultDomain under OAuth Identity Domains.
5. From the Resource Servers tab, click UserProfile under User Profile Services.
6. Expand the Resource URIs.
7. From the `/secretkey` tab, update the value of `basicauth.allowed` to true.
8. Click Apply.

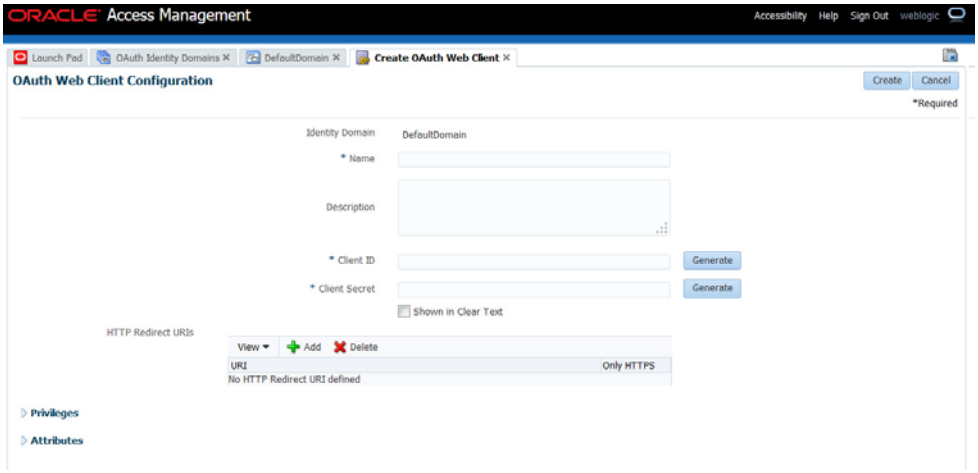
19.20.2.2 Configuring OAuth for the Google Authenticator

Using the Administration Console, follow this procedure to create an OAuth web client. This configuration is for use with the Google Authenticator.

1. From the Launch Pad, navigate to the Configuration panel and click Available Services.
2. Click Enable to enable Mobile and Social.
3. From the Launch Pad, click OAuth Service under the Mobile and Social panel.
4. From the OAuth Identity Domain tab, open the DefaultDomain identity domain.
5. From the DefaultDomain tab, click the OAuth Clients tab.
6. From the Oauth Clients tab, click Create to create a Web Client.

   This opens a new configuration tab.

Figure 19–36 Creating an OAuth Web Client



7. Enter the following details.
   - Name - a mandatory name for the Mobile and Social client.
   - Description - an optional description of the Mobile and Social client.
   - Client Id - a mandatory identifier for the Mobile and Social client. For example, 54321id
   - Client Secret - is the mandatory Mobile and Social client password.

See Generating a Secret Key for details.

8. Open the Privileges section and tick the "Allow access to all scopes" check box.

   Scopes are configured per use case.

9. Tick the All check box under Grant Types.

   Grants are configured per use case.

10. Click Create.

19.20.2.3 Configuring Access Manager

The following configurations are for Access Manager.

- Creating an Instance of TOTPModule
- Configuring the TOTP Plug-in Parameters
- Creating an OTP Authentication Scheme
- Configuring Specific Use Case Values

19.20.2.3.1 Creating an Instance of TOTPModule Access Manager provides an authentication module called TOTPModule that can be used out-of-the-box for TOTP authentication. Follow this procedure to create an instance of this module.

1. From the Launch Pad, click Authentication Modules in the Access Manager panel.
2. From the Authentication Modules tab, click Search.

   The search results are displayed.
3. Click TOTPModule to open its tab.
4. Under the TOTPModule tab, click the Steps tab.
5. Click the plus sign (+) to create a new step.

   A step instance is created by default. You can use it to configure or delete it, create a new one and configure.
6. Enter a step name (for example, OTPInstance) and select TOTP Plugin from the Plugin drop down.
7. Configure the KEY_OTP_SECRETKEY_ATTRIBUTE and KEY_IDENTITY_STORE_REF properties.

   These parameters take as values the name of the user attribute in which the secret key will be stored. Leave the other properties as default.

   Note: The value of KEY_OTP_TIME_WINDOW is the number of OTP codes generated by the mobile device that Access Manager will accept for validation. Since the mobile device generates a new OTP every 30 seconds, if the property's value is 3, Access Manager will accept the current and last three OTPs generated by the mobile device.

8. Save the changes and click Apply.

19.20.2.3.2 Configuring the TOTP Plug-in Parameters Follow this procedure to configure the parameters for the TOTP plug-in.

1. Click "Plug-ins" under the Access Manager panel on the Launch Pad.

2. Click "TOTPPlugin".

   A configuration details page is displayed.

3. Configure the plugin properties KEY_OTP_SECRETKEY_ATTRIBUTE and KEY_IDENTITY_STORE_REF.

   Leave default values in the other properties.

   Note: The value of KEY_OTP_TIME_WINDOW is the number of OTP codes generated by the mobile device that Access Manager will accept for validation. Since the mobile device generates a new OTP every 30 seconds, if the property's value is 3, Access Manager will accept the current and last three OTPs generated by the mobile device.

4. Click Save.

19.20.2.3.3 Creating an OTP Authentication Scheme Follow this procedure to create an OTP Authentication Scheme to use with the module instance previously created.

1. From the Launch Pad, click Authentication Schemes under the Access Manager panel.
2. Under Authentication Schemes, click LDAPScheme.

   The LDAPScheme tab is displayed.

3. Under the LDAP Scheme tab, click Duplicate to create a copy.
4. Under the the new copy's tab, change the values of the name (currently, TOTPScheme) and the Challenge URL (currently, /pages/getOTP.jsp).

   The scheme name may be any valid name.

5. Click Apply.

19.20.2.3.4 Configuring Specific Use Case Values Configure details for a specific use case. This procedure is an example. Your procedure might differ.

1. From the Launch Pad, click Application Domains under the Access Manager panel.
2. Search for the Application Domain in which the protected resource is configured.

   Search results are displayed.

3. Click the name of the applicable Application Domain in the search results to display its configuration.
4. Navigate through Authentication Policies to the Protected Resource Policy that is protecting the resource.
5. Under the Protected Resource Policy, click the Advanced Rules tab and then Post Authentication Rules.
6. Create a new Rule.
   a. Click on the + icon to create a new Rule.
   b. Enter values for the Rule Name and Description.
   c. Enter a value for the condition.

Condition is a Jython script. An example value might be location.clientIP.startwith("127.1"). See Using Pre-Authentication Advanced Rules for details.

d. Specify what to do when the condition evaluates to *true*.

Two options are Deny Access and Change the Authentication Scheme. In the current example, change the authentication scheme to "TOTPScheme".

e. Click Add to add the Rule.

f. Click Apply to save the changes made to the policy.

7. Click Apply.

19.20.3 Configuring the Oracle Mobile Authenticator App

The following sections contain configuration details when using the Oracle Mobile Authenticator (OMA) app on an iOS or Android mobile device.

- Understanding Oracle Mobile Authenticator Configuration
- Configuring the Oracle Mobile Authenticator App on iOS
- Configuring the Oracle Mobile Authenticator App on Android

19.20.3.1 Understanding Oracle Mobile Authenticator Configuration

The Oracle Mobile Authenticator (OMA) app can retrieve the secret key required to generate a OTP. This can be done online or offline.

- Online Configuration enables the REST web services using the Mobile and Social OAuth functionality described in Configuring OAuth for the Oracle Mobile Authenticator. Once enabled, the Oracle Mobile Authenticator app can invoke this service to get a secret key from Access Manager.

  To invoke REST, the Oracle Mobile Authenticator needs to know its location URL so the administrator creates a web page with a link to configure it. When the user clicks this link (provided via e-mail), it launches the Oracle Mobile Authenticator, passes the URL to it and the REST location is configured. The format of the URL follows.

  ```
  oraclemobileauthenticator://settings?LoginURL::=http://host:port/secretKeyURL
  ```

  The value specified for the LoginURL query parameter is based on the OAuth settings for Oracle Mobile Authenticator. See Configuring OAuth for the Oracle Mobile Authenticator for details. Online configuration details are documented in Configuring OMA on iOS Using the Online Option and Configuring OMA on Android Using the Online Option.

- Offline Configuration supports use cases in which the mobile device does not have access to a network or could not connect to the REST end point. The Access Manager administrator sets up a web application which allows the user to generate or recreate a secret key. The user logs into this web application and, after authentication, the user is allowed to view the secret key and enter it in the Authenticator app manually (after clicking the Offline Configuration button). This web application is protected using OAuth as described in Configuring OAuth for the Google Authenticator. Offline configuration details are documented in Configuring OMA on Android Using the Online Option and Configuring OMA on Android Using the Offline Option.

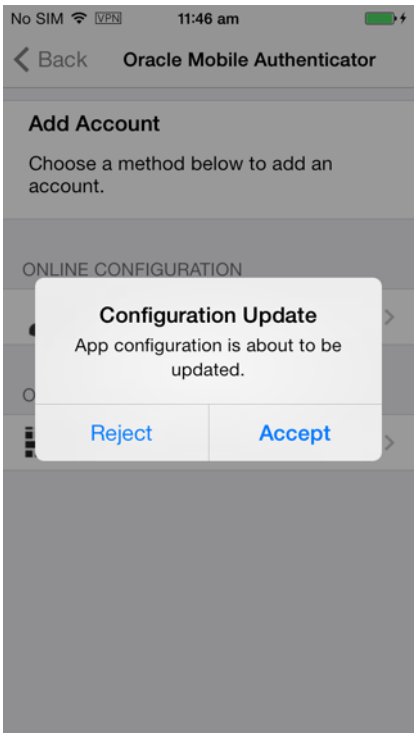
19.20.3.2 Configuring the Oracle Mobile Authenticator App on iOS

The following sections contain configuration details when using OMA on an iOS mobile device.

- Configuring OMA on iOS Using the Online Option
- Configuring OMA on iOS Using the Offline Option
- Copying a One-Time Password from the Oracle Mobile Authenticator
- Editing an Account on the Oracle Mobile Authenticator
- Deleting an Account on the Oracle Mobile Authenticator

19.20.3.2.1 Configuring OMA on iOS Using the Online Option This procedure will configure the OMA on iOS using the administrator URL and create an account. Details about the URL are in Understanding Oracle Mobile Authenticator Configuration.

1. Use the browser on your mobile device to navigate to the URL provided by the Access Manager administrator.



2. Click the link provided on that page to configure Oracle Mobile Authenticator.

   The OAM app will open and the user is prompted to accept the update

3. Tap Accept to update.

   When the update is complete, a notification is displayed.

4. Tap OK on the notification screen.

5. Tap Sign in.

   This will take you to a new screen.

6. Enter your user name, password and tap Submit.

If the user name and password is correct, the OTP screen with details of the new account is displayed. If authentication with the server is successful but an account with the same user name already exists, you will be asked to enter a new user name. Once the user name is unique, you will be taken to the OTP screen with details of the new account.

19.20.3.2.2 Configuring OMA on iOS Using the Offline Option You can also create an account and retrieve the OTP by manually entering the secret key.

1. Tap on Enter Provided Key.

   This will take you to a new screen.

2. Enter a user name and secret key and tap Add Account.

   If the user name and key are valid, you will be taken to the OTP screen with details of the new account. If user name is not unique or the key is not valid, you will be prompted to enter the information again.

19.20.3.2.3 Copying a One-Time Password from the Oracle Mobile Authenticator

1. Tap on the account from which you want to copy the OTP.

   Three icons are displayed.

2. Tap on the left icon to copy the account.

   The OTP will be copied to the clipboard and you can paste it in any text input area.

19.20.3.2.4 Editing an Account on the Oracle Mobile Authenticator

1. Tap on the account you want to edit.

   Three icons are displayed.

2. Tap the middle icon to edit an account.

   A new screen in which you can edit the user name and secret key is displayed. You can update both user name and password

3. Tap Update Account to complete the modifications.

19.20.3.2.5 Deleting an Account on the Oracle Mobile Authenticator

1. Tap on the account you want to delete.

   Three icons are displayed.

2. Tap the right icon to delete an account.

   You will be prompted to confirm your decision.

3. Tap Delete Account to confirm and delete.

19.20.3.3 Configuring the Oracle Mobile Authenticator App on Android

The following sections contain configuration details when using OMA on an Android mobile device.

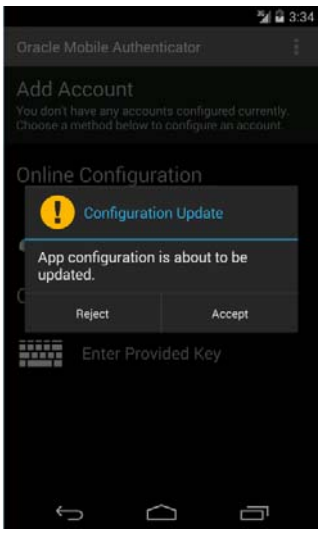
- Configuring OMA on Android Using the Online Option
- Configuring OMA on Android Using the Offline Option
- Copying a One-Time Password from the Oracle Mobile Authenticator
- Editing an Account on the Oracle Mobile Authenticator

- Deleting an Account on the Oracle Mobile Authenticator

19.20.3.3.1 Configuring OMA on Android Using the Online Option This procedure will configure the OMA on Android using the administrator URL and create an account. Details about the URL are in Understanding Oracle Mobile Authenticator Configuration.

1. Use the browser on your mobile device to navigate to the URL provided by the Access Manager administrator.

   The OMA app will open and the user is prompted to accept the update.



2. Tap Accept to update.

   When the update is complete, a notification is displayed.

3. Tap OK on the notification screen.

   After configuring the account, get the secret key and generate a OTP.

4. Open the OMA app.

5. Tap Sign in.

   This will take you to a new screen.

6. Enter your user name, password and tap Submit.

   If the user name and password is correct, the Authentication Code screen with details of the new account is displayed. If authentication with the server is successful but an account with the same user name already exists, you will be asked to enter a new one. If authentication with the server is successful but the account is already configured on a different device, you cannot configure that account as an account can be configured from the server only on a single device. It will show an error as below.

19.20.3.3.2 Configuring OMA on Android Using the Offline Option You can also create an account and retrieve the OTP by manually entering the secret key.

1. Open the OMA app.

2. Tap on Enter Provided Key.

   This will take you to a new screen.

3. Enter a name and key and tap Add Account.

   If the user name and key are valid, you will be taken to the OTP screen with details of the new account. If the user name is not unique or the key is not valid, you will be prompted to enter the information again.

4. Tap Sign in.

   This will take you to a new screen.

5. Enter your user name, password and tap Submit.

   If the user name and password is correct, the Authentication Code screen with details of the new account is displayed. If authentication with the server is successful but an account with the same user name already exists, you will be asked to enter a new one. If authentication with the server is successful but the account is already configured on a different device, you cannot configure that account as an account can be configured from the server only on a single device. It will show an error as below.

19.20.3.3.3 Copying a One-Time Password from the Oracle Mobile Authenticator

1. Long click on the account from which you want to copy the OTP.

   A menu bar opens and three icons are displayed.

2. Tap on the left icon to copy the account.

   The OTP will be copied to clipboard. You can then paste it in any text input area.

19.20.3.3.4 Editing an Account on the Oracle Mobile Authenticator

1. Long click on the account you want to edit.

   A menu bar opens and three icons are displayed.

2. Tap the middle icon to edit an account.

   A pop-up is displayed in which you can edit user name and key.

3. Enter the new name and/or key value.

4. Tap Save to update the account.

19.20.3.3.5 Deleting an Account on the Oracle Mobile Authenticator

1. Long click on the account you want to delete.

   A menu bar opens and three icons are displayed.

2. Tap the right icon to delete an account.

   You will be prompted to confirm your decision.

3. Tap Delete Account to confirm and delete.

19.20.4 Configuring the Google Authenticator App

After receipt of the secret key, it is entered manually into the TOTP client mobile app by the user. For example, to initiate configuration in the supported Google Authenticator, the user creates an account for two-factor authentication using the app. After account creation, the user manually enters the shared secret key received from the resource owner. Additionally, ensure that Time Based OTP is enabled at the bottom of the Google Authenticator screen. The Google Authenticator app generates the OTP code in an offline, disconnected mode; it does not interact with Access Manager.

20

Managing Policies to Protect Resources and Enable SSO

Access Manager Application Domains and policies can be accessed and managed through the Oracle Access Management Console. This chapter describes how to create and manage policies, and identify the resources to be governed by these policies. It includes the following topics:

20.1 Prerequisites

Preview:

- Understanding Application Domain and Policy Management

> **See Also:** Appendix D, "Reviewing Bundled, Generated, and Migrated Artifacts"

System level requirements for tasks in this chapter include the following:

- OAM Server should be running
- Users and groups who can access a protected resource should already be created in the User Identity Store associated with Oracle Access Management.
- Policy-enforcement Agents should be registered as described in Chapter 15.
- Shared components for use in any Application Domain should be defined, as described in Chapter 19.

20.2 Introduction to Application Domain and Policy Creation

Application domains are the top-level constructs of the Access Manager 11g policy model. Each Application Domain provides a logical container for resources or sets of resources, and the associated policies that dictate who can access specific protected resources. Certain shared components are used within each Application Domain. Each Application Domain represents a singular application on a particular host or Administrators can define different Application Domains for resources that reside on the same Web server and are closely tied to each other in one way or another. For example, an Administrator can create a single Application Domain for a financial application and an accounts receivable application, or have a different Application Domain for each. Configurable policies allow or deny access to the resources.

Note: To enhance security, Access Manager, by default, will deny access when a resource is not protected by a policy that explicitly allows access.

Each Access Manager Application Domain contains information regarding:

- Resource Definitions

  Each resource definition in an Application Domain requires a Resource Type, Host Identifier (for HTTP resources), and a URL to the specific resource. You can have as many resource definitions as you need in an Application Domain.

- Authentication Policies and Responses for Specific Resources

  Each authentication policy includes a unique name, one authentication scheme, success and failure URLs, one or more resources to which this policy applies, and Administrator-defined responses to be applied after successful authentication.

  Note: Depending on the policy responses specified for authentication or authorization success and failure, the end user might be redirected to a specific URL, or user information might be passed to other applications through a header variable or a cookie value.

- Authorization Policies, Conditions, Rules, and Responses for Specific Resources

  Each authorization policy includes a unique name, success and failure URLs, and one or more resources to which this policy applies. In addition, Administrators can define specific conditions that must be fulfilled for a successful authorization and define responses to be applied after successful authorization.

- Token Issuance Policies, Conditions, and Rules for Specific Resources

A Token Issuance Policy defines the rules under which the Security Token Service can issue a token for a resource (Relying Party Partner) based on the client's identity, with the client either being a Requester Partner or an end user.

- Policy Ordering

  Policy ordering is a new feature in which the administrator manually designates the order in which policies within an application domain will be matched to incoming requests for access to protected resources. Previous versions of Access Manager used the best match algorithm for this purpose.

When a new application is placed behind an existing agent, the Administrator must decide if the application should be protected by a separate (new) Application Domain and policies or an existing Application Domain and policies. This section provides information in the following sections to inform your choice.

- Generating Application Domains and Policies Automatically
- Managing Application Domains and Policies Remotely
- Creating or Managing an Application Domain and Policies

20.2.1 Generating Application Domains and Policies Automatically

When you register a policy-enforcement Agent with Access Manager, you can choose to have the domain and policies generated automatically or decline the automatic generation. An automatically generated Application Domain is named for the Agent and seeded with default resources and basic policies (authentication and authorization). No Token Issuance Policy is defined, though an empty container is provided.

During Agent registration, it is presumed that the Agent resides on the same Web Server as the application it protects. However, the Agent can be on a proxy Web server and the application can be on a different host. Default resources are protected by basic policies until an Administrator adds more resources or modifies or adds policies.

Note: IAMSuiteAgent is a pre-registered Java Agent filter that provides an Application Domain (IAMSuite) to protect the Oracle Fusion Middleware console and other consoles. For more information, see "Bundled 10g IAMSuiteAgent Artifacts" on page D-1.

20.2.2 Managing Application Domains and Policies Remotely

Access Manager provides two modes to manage Application Domains and their policies without registering or modifying the companion agent. Remote policy and Application Domain management supports only create and update functions. Remote management does not support removing Application Domains or policies. For more information, see "Understanding Remote Policy and Application Domain Management" on page 20-76.

20.2.3 Creating or Managing an Application Domain and Policies

The following overview outlines the procedures that must be performed to manually create or manage an Application Domain and policies, and identifies the topics that provide the steps to complete the procedure.

Task overview: Managing an Application Domain

1. Get acquainted with the following details:

- Chapter 18, "Understanding Single Sign-On with Access Manager"
- Chapter 19, "Managing Authentication and Shared Policy Components"
- Understanding Application Domain and Policy Management
- Understanding Remote Policy and Application Domain Management

2. Perform all prerequisite tasks for this chapter, as described in:
   - Prerequisites
3. Start a fresh Application Domain (or view an existing one), as described in:
   - Creating a Fresh Application Domain
   - Viewing or Editing an Application Domain
   - Managing Policies and Application Domains Remotely
4. Add resource definitions to your Application Domain as described in:
   - Adding and Managing Policy Resource Definitions
5. Define your Authentication Policy, as described in:
   - Creating an Authentication Policy for Specific Resources
   - Adding and Managing Policy Responses for SSO
6. Define your Authorization Policy, as described in:
   - Creating an Authorization Policy and Specific Resources
   - Adding and Managing Policy Responses for SSO
   - Defining Authorization Policy Conditions
   - Defining Authorization Policy Rules
7. Define your Token Issuance Policy, as described in:
   - Chapter 38: Managing Token Issuance Policies and Conditions
   - Adding and Managing Policy Responses for SSO
   - Defining Authorization Policy Conditions
   - Defining Authorization Policy Rules
8. Configure SSO settings and policy evaluation caches, as described in:
   - Chapter 14: "Managing SSO Tokens and IP Validation"
   - Chapter 14: Managing Run Time Policy Evaluation Caches
9. Validate your policies and configuration, as described in:
   - Chapter 22: Validating Global Sign-On and Centralized Logout

20.3 Understanding Application Domain and Policy Management

Whether you create an Application Domain manually or you accept automatic policy generation when registering an Agent, the elements of an Application Domain are the same. All policies and Application Domains are managed using the Oracle Access Management Console. For details, see the following topics:

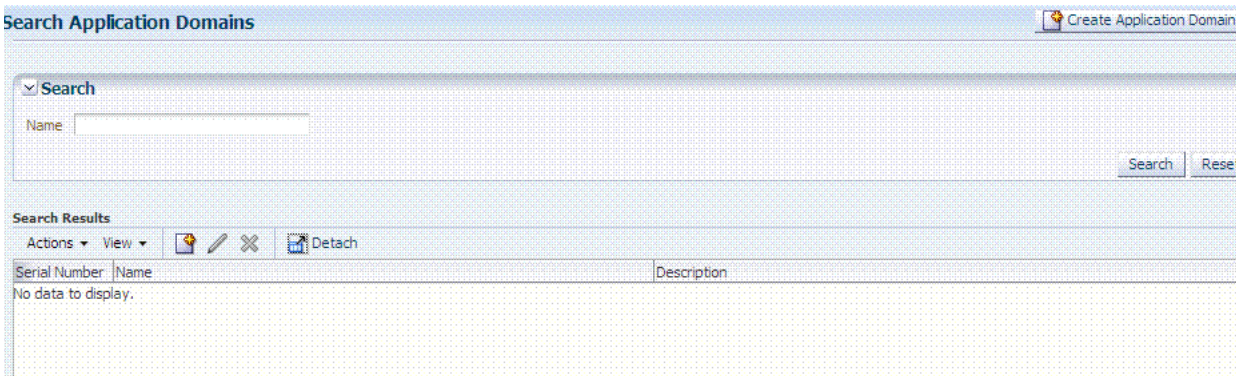
- About Application Domain Pages and Navigation
- About the Application Domain Summary Page

- Defining an Application
- About the Resource Container in an Application Domain
- About Authentication Policy Pages
- About Authorization Policy Pages
- About Token Issuance Policy Pages

20.3.1 About Application Domain Pages and Navigation

Regardless of the method you choose to create an Application Domain, a unique name is required to be used as an identifier. When you click Application Domains, a Search page is displayed. The Create Application Domain button in the upper-right corner enables you to start a fresh domain definition. Otherwise, enter a name (or leave the Name field blank) and click the Search button to list existing Application Domains. Figure 20–1 is the Application Domains Search page, controls, and the Search Results table with its own tool bar.

Figure 20–1 Application Domains Search Page



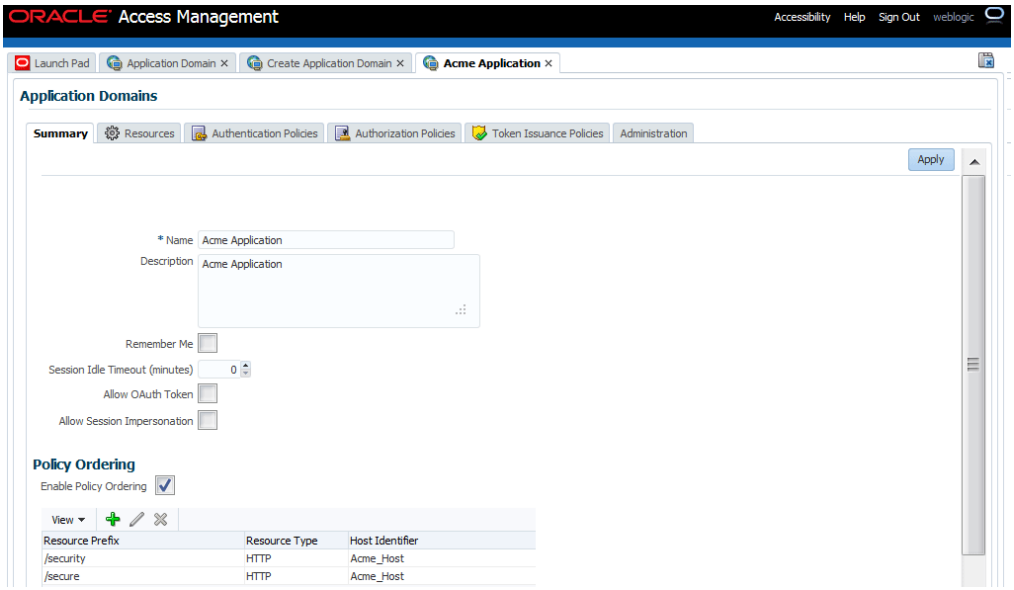
20.3.2 About the Application Domain Summary Page

When you display an Application Domain by clicking its name in the Search results, the Name, an optional description and Policy Ordering configuration are displayed on the Summary tab. Other information is organized in the following tabs.

- Resources
- Authentication Policies
- Authorization Policies
- Token Issuance Policies
- Administration

Figure 20–2 is a screenshot of the Application Domain page for the Acme Application Application Domain. In a generated Application Domain, the Name and Description are populated as shown. When you create an Application Domain manually, the Description is entered by the Administrator.

Figure 20–2 Application Domain Page for Acme Application

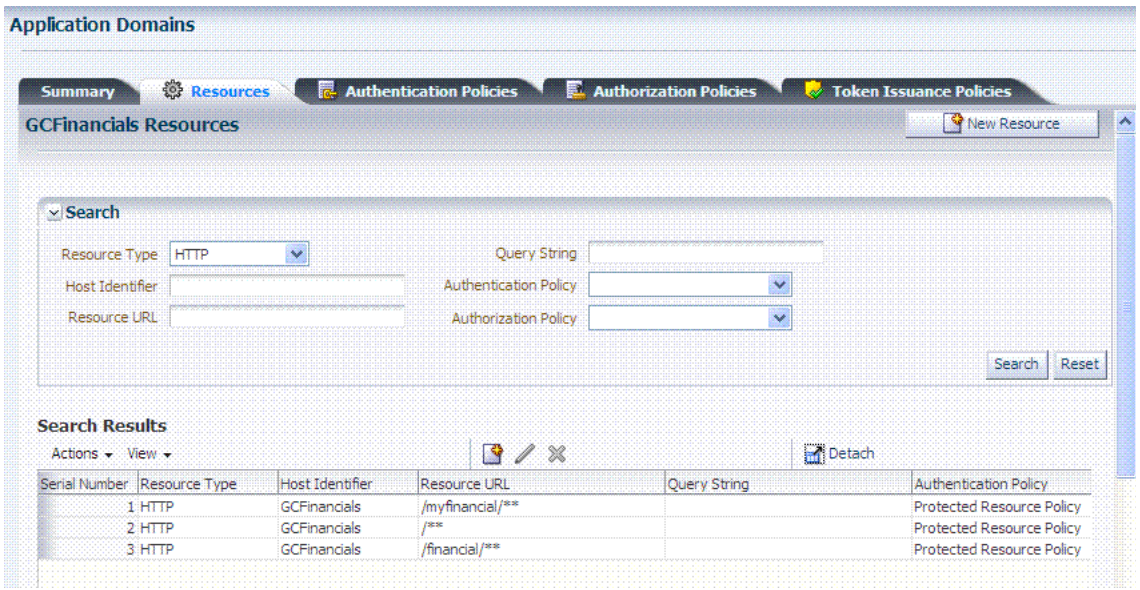


20.3.3 About the Resource Container in an Application Domain

The Resources tab in the Application Domain represents the container for all resource definitions in that domain. When the Resources tab is displayed, the Search controls are available to help you find specific definitions quickly.

Figure 20–3 illustrates Search controls that you can use to refine your resource definition search. There is also a New Resource button in the upper-right corner. The Search Results table provides key information about each definition found.

Figure 20–3 Search Results for Resources in an Application Domain



The default Resource Type is HTTP; default Resource URL is /**. With HTTP resource definitions you can also search on a query string defined for that resource. The query string can be only the Base URL and can include optional pattern-matching special

characters to represent a set of URLs. In this generated domain, the Host Identifier matches the name of the HTTP agent that was registered. Basic information about the policies is also provided.

See Also:

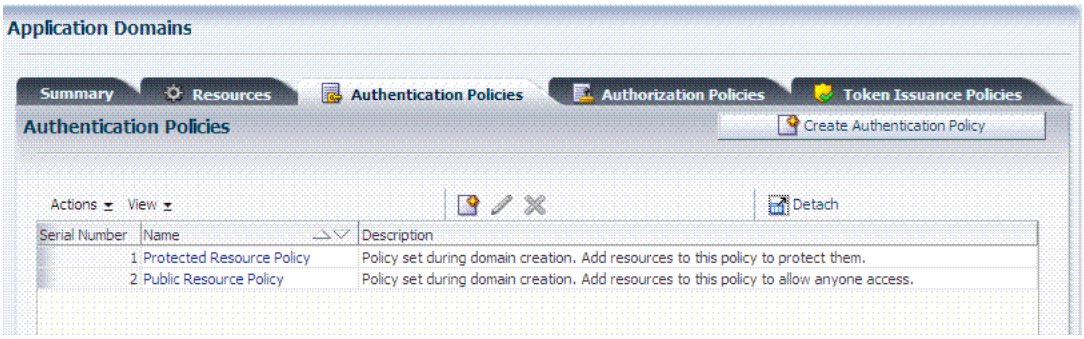
- "Adding and Managing Policy Resource Definitions" on page 20-14
- Appendix D, "Reviewing Bundled, Generated, and Migrated Artifacts"

20.3.4 About Authentication Policy Pages

The Authentication Policies tab provides access to defined or generated policies with no search controls needed. When an Administrator creates an Application Domain manually she must also manually create all policies. In a generated Application Domain, two Authentication policies are created automatically, as shown in Figure 20–5:

- Authentication Policy: Protected Resource Policy
- Authentication Policy: Public Resource Policy

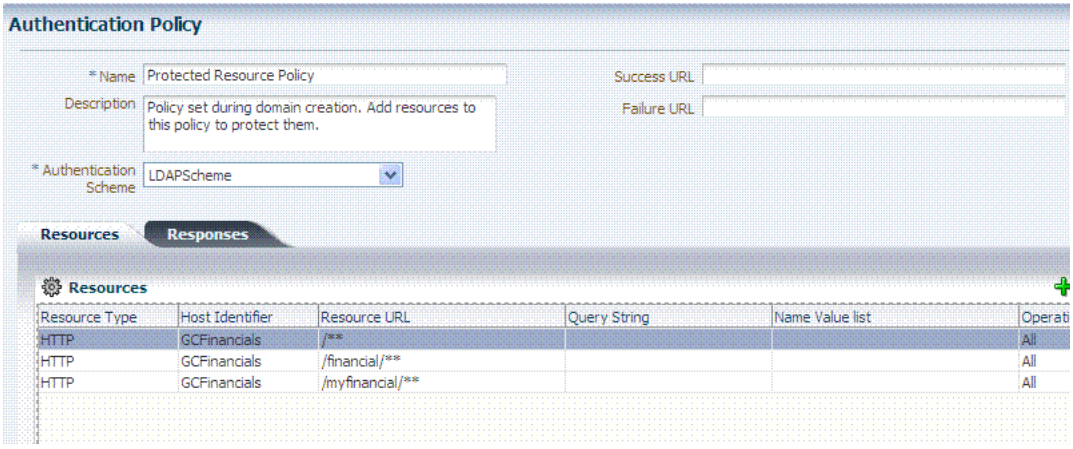
Figure 20–4 Authentication Policies Tab



Authentication policies are local, which means that each policy applies only to the resources specified for the policy. Each resource can be protected by only a single authentication policy.

Figure 20–5 shows the Protected Resource Policy and the columns of information displayed automatically on the policy's Resources tab. The Responses tab is available.

Figure 20–5 Authentication Policy Page: Resources and Responses



> **Note:** Initially, all resources are protected. Success and Failure URLs and Responses must be added manually; no default values are supplied.

A description is provided during automatic generation:

```
"Policy set during domain creation. Add resources to this policy to protect them."
```

This generated policy uses the LDAPScheme as the authentication scheme. However, the optional elements of the policy are not yet defined.

Protected Resources are identified on the Resources tab as *HostIdentifier*/**.

> **Note:** Administrators can change the authentication scheme, specify Success and Failure URLs, add other resources, and define SSO Responses.

Public Resource Policy: A second authentication policy is also generated automatically. This policy uses AnonymousScheme as the default scheme for authentication, which allows anyone access.

Initially, this Public Resource Policy does not include or serve any Resources. The Description tells Administrators what is needed:

```
Policy set during domain creation. Add resources to this policy to allow anyone
access.
```

See Also: "Introduction to Policy Responses for SSO" on page 20-41

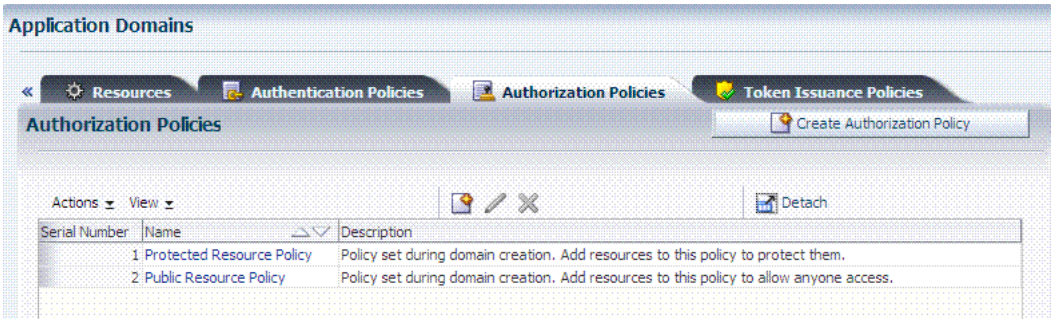
20.3.5 About Authorization Policy Pages

The Authorization Policies tab also provides access to defined or generated policies with no search controls needed. In a generated Application Domain, two Authorization policies are created automatically; however, each resource can be protected by only a single authorization policy:

- Protected Resource Policy
- Public Resource Policy

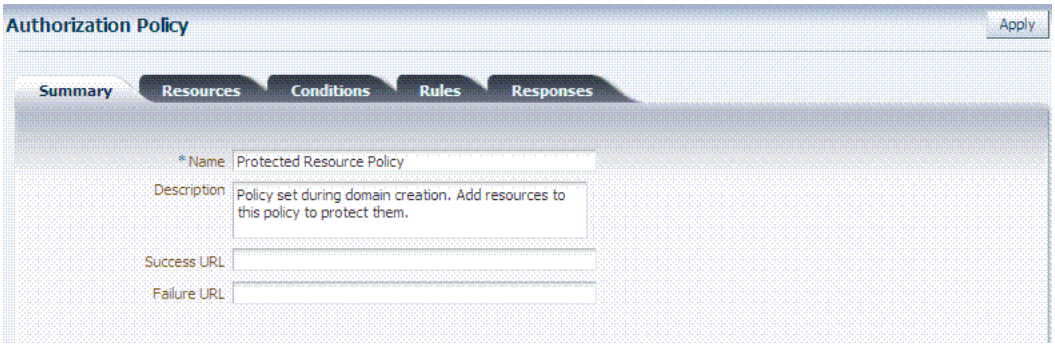
The Authorization Policy tab is shown in Figure 20–7. From this tab, you can select a policy to edit or create a new policy.

Figure 20–6 Authorization Policies Page



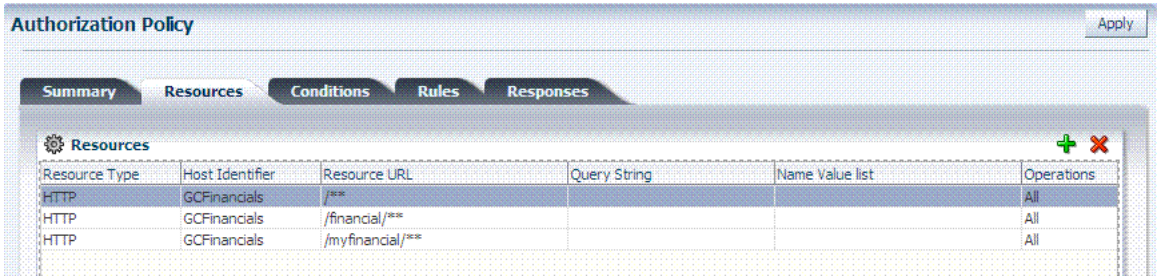
The Authorization Policy page is shown Figure 20–7. It provides several tabs where you can define the various components of this Authorization policy. Initially, all resources are protected and access is denied. Success and Failure URLs Conditions, Rules, and Responses must be added manually (no default are supplied).

Figure 20–7 Individual Authorization Policy Page



The Authorization Policy Resources tab is shown in Figure 20–8. You use this page to add (or remove) resources for this policy.

Figure 20–8 Individual Authorization Policy Resources tab



Administrators can also define Conditions, Rules, and Responses for this policy. None are generated automatically.

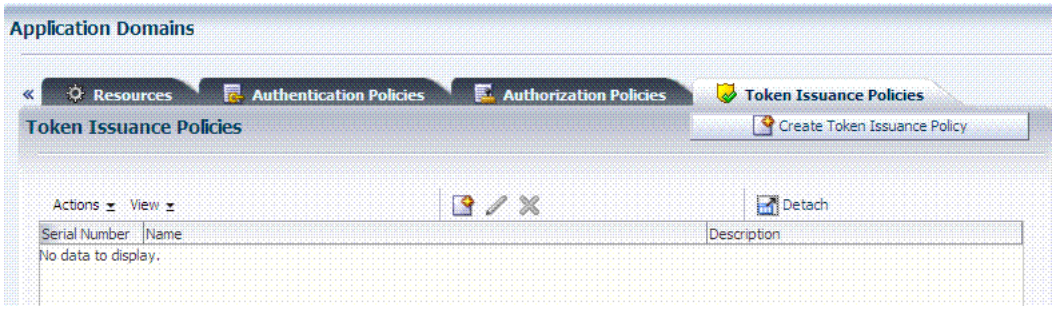
See Also:

- "Introduction to Policy Responses for SSO" on page 20-41
- "Introduction to Authorization Policy Rules and Conditions" on page 20-49

20.3.6 About Token Issuance Policy Pages

By default, only a container for Token Issuance Policies is provided in a generated Application Domain. Any Resources, Conditions, Rules, and Responses must be added manually.

Figure 20–9 Token Issuance Policies Page



For specific information on this policy type, see:

- "Managing TokenServiceRP Type Resources" on page 38-30
- "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27

20.4 Managing Application Domains and Policies Using the Console

This section describes how to create and manage an Application Domain using Oracle Access Management Console. It includes the following topics:

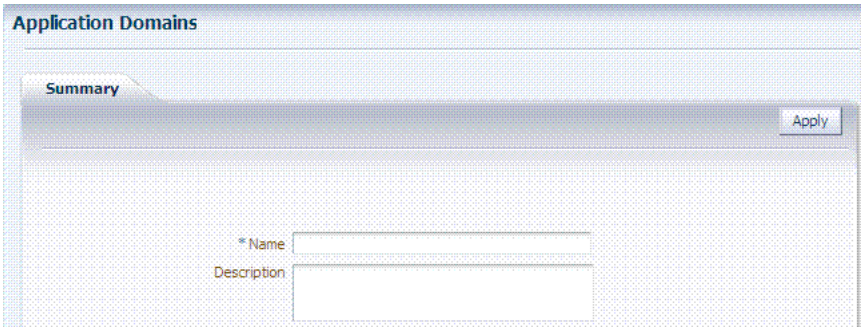
- About Application Domains Summary Page
- Creating a Fresh Application Domain
- Searching for an Existing Application Domain
- Viewing or Editing an Application Domain
- Deleting an Application Domain and Its Contents

20.4.1 About Application Domains Summary Page

Managing an Application Domain involves adding, modifying, or deleting general and resource-related settings and policies.

When creating or editing an Application Domain using the Oracle Access Management Console, several pages are involved. Initially, you add general details (name and optional description) on the form show in Figure 20–10.

Figure 20–10 Create Application Domain



Each Application Domain must have a unique name that matches the agent name. After applying the name and optional description for the new Application Domain, it is created. If this was a manual creation, the complete series of tabs becomes available: Summary, Resources, Authentication Policies, Authorization Policies, Token Issuance Policies. If this was created using remote registration or while registering an agent, basic policy information is generated with it.

20.4.2 Creating a Fresh Application Domain

Decide whether you need a fresh Application Domain or if you can add resources to an existing Application Domain. You can protect multiple applications using the same Agent by manually creating one Application Domain and manually adding resources and policies.

Users with valid Administrator credentials can perform the following task to manually create an Application Domain using the Oracle Access Management Console.

Alternatively, Application Domains can be generated automatically during agent registration, as described in Chapter 15 and Chapter 16.

Prerequisites

See Prerequisites at the beginning of this chapter.

To create a fresh Application Domain

1. From the Oracle Access Management Console, click Application Domains, and then click the Create button.
2. On the Create Application Domains page, add a unique name, an optional description and other details, then click Apply and close the Confirmation window.

   See Configuring Policy Ordering.
3. View and manage the following containers (tabs) within the Application Domain container:

   - **Resources:** See "Adding and Managing Policy Resource Definitions" on page 20-14.
   - **Authentication Policies**: See "Defining Authentication Policies for Specific Resources" on page 20-32.
   - **Authorization Policies**: See "Defining Authorization Policies for Specific Resources" on page 20-37.

- **Token Issuance Policies**: See "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27.

20.4.3 Searching for an Existing Application Domain

Users with valid Administrator credentials can use the following procedure to search for a specific Application Domain.

> **Note:** This Search operation is case sensitive.

To search for an Application Domain

1. From the Oracle Access Management Console, click Application Domains.
2. In the field provided, enter the name of the Application Domain you want to find (or partial name and wild card, *, or leave the field blank to retrieve all domains). For example:

   ```
   DesiredDomain
   ```

3. Click the **Search** button to initiate the search.
4. Choose a name in the Search Results table to perform the desired task. For instance:
   - **Edit:** Click the Edit button in the tool bar to display the configuration page and go to "Viewing or Editing an Application Domain".
   - **Delete:** See "Deleting an Application Domain and Its Contents" before you perform this task.
   - **Detach**: Click Detach in the tool bar to expand the table to a full page.
   - **View**: Select a View menu item to alter the appearance of the results table.

20.4.4 Viewing or Editing an Application Domain

Users with valid Administrator credentials can perform the following task to view or modify an Application Domain (including its resources, policies, conditions, and responses) using the Oracle Access Management Console.

Oracle recommends that you consider grouping similar applications into the same Application Domain. While editing the Application Domain, be aware that different applications are using the same domain. Editing the description and domain name are supported.

> **See Also:** "Managing Policies and Application Domains Remotely"

To view or modify an Application Domain and its content

1. Locate the desired Application Domain as described in "Searching for an Existing Application Domain".
2. Click to open each of the following tabs to add, view, modify, or delete specific details:
   - **Resources:** See "Adding and Managing Policy Resource Definitions" on page 20-14.
   - **Authentication Policies**: See "Defining Authentication Policies for Specific Resources" on page 20-32.

- **Authorization Policies**: See "Defining Authorization Policies for Specific Resources" on page 20-37
- **Token Issuance Policies**: See "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27.

20.4.5 Deleting an Application Domain and Its Contents

Users with valid Administrator credentials can perform the following task to delete an Application Domain (including its resources, policies, conditions, and responses) using the Oracle Access Management Console.

Deleting the Application Domain and its content removes all referenced objects, including the Agent registration. Using this method, if you later need to re-register the same Agent, you can because there are no remaining references to the previous Application Domain and its content.

> **Note:** During a Delete operation, if the Application Domain contains any policy elements, you are alerted.

Prerequisites

Ensure that resources in the domain to be deleted are placed in another Application Domain for protection.

To delete an Application Domain

1. Locate the desired Application Domain as described in "Searching for an Existing Application Domain".
2. Ensure that resources in the domain to be deleted are placed in another Application Domain for protection.
3. In the Search Results table, click the Serial Number beside the desired name, and then click the Delete (x) button in the tool bar.
4. In the Warning window, click Delete (or click Cancel to dismiss the window).
5. Check the results table to confirm the Application Domain has been removed.

20.5 Configuring Policy Ordering

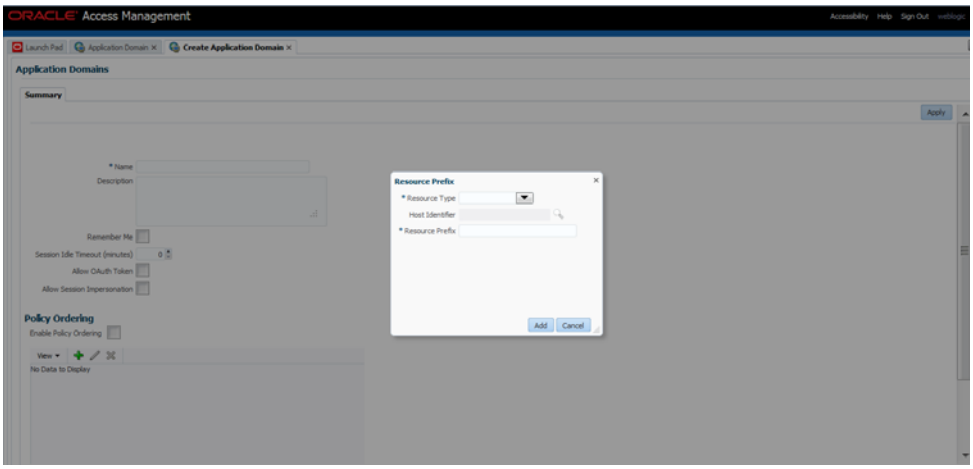
Previous releases of Access Manager used a policy matching algorithm to match incoming resource URLs with the stored patterns in an Application Domain. A best match is arrived at based on a predefined algorithm. (This algorithm can not be changed.) If multiple patterns are matched with an incoming URL, the best match pattern is selected and its associated policy is evaluated.

With this 11gR2 PS2 release, rather than the best match algorithm, an Administrator manually designates the order of policies within an Application Domain. To turn on Policy Ordering, the Administrator must first add one or more resource prefixes to the Application Domain. Once these have been added, you can click the Enable Policy Ordering flag. (See Figure 20–2, "Application Domain Page for Acme Application".)

> **Note:** You may create resource prefixes and not enable policy ordering. In this case, the resource prefixes are ignored and the best match algorithm is used.

Figure 20–11 is a screenshot of the Resource Prefix configuration pop up.

Figure 20–11 Adding a Resource Prefix for Policy Ordering



During runtime, the incoming URL of the protected resource is checked to determine if it starts with any resource prefix defined in the Application Domain. If the URL matches a resource prefix, the policies in the Application Domain configured with that resource prefix are checked (in the order defined by the Administrator) to see if any resource in the policy matches the incoming resource. If the incoming resource matches a particular policy, it is evaluated and the results are returned; the other policies are not checked.

To configure Policy Ordering

1. From the Oracle Access Management Console, click Application Domains, and then click the Create button.
2. On the Create Application Domain page, add a unique name and an optional description.
3. Click Add to add a Resource Prefix.
4. Tick the Enable Policy Ordering box.
5. Select the ResourceType from the drop down list.

   See Table 20–1 for definitions of the default Resource Types.
6. Add an optional host identifier.

   Host identifier is mandatory for an HTTP Resource Type.
7. Add the Resource Prefix.

   For example, if the policy Resource being protected is /em/**, the Resource Prefix is /em. If the policy Resource being protected is /blog/**, the Resource Prefix is /blog.
8. Click Add.

20.6 Adding and Managing Policy Resource Definitions

Each Application Domain includes a container for resource definitions, the Resources tab. Once you have defined a resource in this container, you can add it to a policy in the Application Domain.

Protecting resources requires an Application Domain containing specific resource definitions. With OAM, you can protect different types of resources, including non-HTTP/HTTPS-based resources and HTTP/HTTPS-based resources such as:

- An entire external Web site
- Specific pages in a Web site
- Partner portals
- A parts order application
- Invoice applications
- A benefits enrollment application on Web servers of an enterprise in many countries

This section provides the following topics:

20.6.1 Defining Resources in an Application Domain

Each resource must be defined separately in an Application Domain. Within an Application Domain, resource definitions exist as a flat collection of objects. Each resource is defined as a specific type, and the URL prefix that identifies the resource (document or entity) stored on a server and available for access by a large audience. The location is specified using an existing shared Host Identifier.

> **Note:** If a resource that is not explicitly marked as excluded, is not associated with a policy, then access is denied to all users because there is no policy match.

Resource Definition Guidelines

1. No URL prefixes. Resource definitions are treated as complete URLs.
2. Pattern matching (with limited features) for:

   ' * ' and '...' are supported
3. Resources need not be unique across domains.
4. Query-string protection for HTTP URLs.
5. Each HTTP resource is defined as a URL path, and associated with a host identifier. However, resources of other types are associated with a specific name (not a host identifier).
6. Non-HTTP resource types are supported, with definition of specific operations. Non-HTTP resource types are never associated with a host identifier.
7. Resources can designated as either Protected, Unprotected, or Excluded.
8. Custom resource types are allowed.

Figure 20–12 illustrates a fresh Resources definition page.

Figure 20–12 Fresh Resources (Definition) Page in the Application Domain

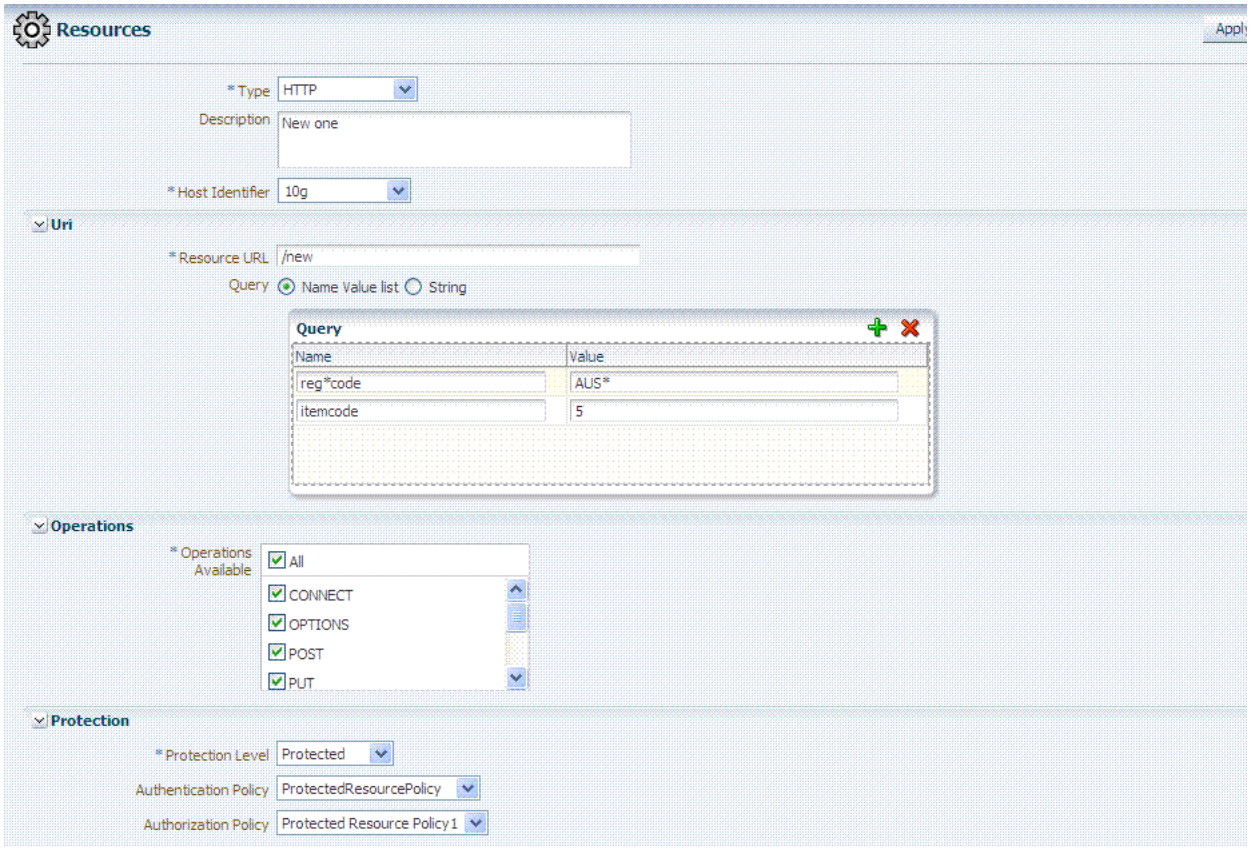


Table 20–1 describes elements that comprise a resource definition.

Table 20–1 Resource Definition Elements

Elements	Description
Resource Type	The `HTTP` type is the default; it covers resources that are accessed using either the HTTP or HTTPS protocol. Policies that govern a particular resource apply to all operations defined for the resource. The `wl_authen` resource type is used for Fusion Middleware application scenarios, as described in the Oracle Fusion Middleware Application Security Guide. The `TokenServiceRP` resource type is used to represent the Token Service Relying Party as described in "Managing TokenServiceRP Type Resources" on page 38-30. Any custom resource type that has been defined is listed with default resource types when you add a resource definition (or search for resources). See Also: "About the Resource Type in a Resource Definition" on page 20-18.
Host Identifier	A list of host identifiers is available, which contains all identifiers that were defined as a shared component. You must choose a host identifier to assign this resource. **Note**: The combination of the host identifier and URL string that make up a resource definition must be unique across all Application Domains. See Also: "Managing Host Identifiers" on page 19-7.
Description	An optional unique description for this resource.
URI Section	Information will differ depending on the selected Resource Type.
Query Name-Value list	For HTTP resource types only. You can provide a list of Name and Value pairs for use in access policies. **See Also**: "About Query String Name and Value Parameters for Resource Definitions" on page 20-22.

Table 20–1 (Cont.) Resource Definition Elements

Elements	Description
Query String	For HTTP resources, you can provide a query string for literal full query string matching within access policies. **See Also**: "About Literal Query Strings in Resource Definitions" on page 20-26.
Resource URL	The value must be expressed as a single relative URL string that represents a path component of a full URL composed of a series of hierarchical levels separated by the '/' character. The URL value of a resource must begin with / and must match a resource value for the chosen host identifier. Based on its contents, a URL is matched in response to an incoming request as a literal or a wild card pattern. The special characters available to define a pattern, if included, are: ■ The asterisk (*) is allowed only at the lowest, terminating level of the path. The asterisk matches zero or more characters. ■ An ellipses (…) is allowed at any level of the path except the terminating level. The ellipses represents a sequence of zero or more intermediate levels. See Also Table 20–2.
Operations Section	You can define specific allowed operations to customize you own resource definitions. Note: Oracle-provided Resource Types are read-only. Operations associated with Oracle-provided Resource Types need not be defined and cannot be modified. Policies developed and applied to resources of Oracle-provided types apply to all operations.
Operations Available	Identify all HTTP operations that are allowed for this resource definition. Policies developed and applied to this customized resource apply to only the operations you identify. Unless explicitly noted, all of the following possible operations are for HTTP resource types: ■ Connect ■ Options ■ Put ■ Post ■ Trace ■ Head ■ Delete ■ Connect ■ Login (wl_authen resource type only) ■ Issue (TokenServiceRP resource type only) **Note**: During Agent registration, if no operation is specified for the resource definition itself, then All operations for that resource type are supported. **See Also**: "About Resource Types and Their Use" on page 19-3.
Protection	Using the controls in this section of the Resource Definition, you can identify the desired level of protection for this resource and name the policies to be used.

Table 20–1 (Cont.) Resource Definition Elements

Elements	Description
Protection Level	Choose the appropriate protection level from the following: ■ Protected (the default) Protected resources are associated with a protected-level Authentication policy that uses a variety of authentication schemes (LDAP, or example). Authorization policies are allowed for protected resources. Responses, conditions, auditing, and session management are enabled for protected resources using a policy that protects the resource. ■ Unprotected Unprotected resources are associated with an unprotected-level Authentication policy (level 0) that can use a variety of authentication schemes (LDAP, for example). Authorization policies are allowed for unprotected resources, and a basic one is needed to allow such access. However, an elaborate policy with conditions and responses is irrelevant. Responses, conditions, and auditing are enabled for Unprotected resources using a policy that protects the resource. Only Session Management is not enabled. Access to Unprotected resources incur an OAM Server check from Webgate, which can be audited. ■ Excluded (these are public) Only HTTP resource types can be excluded. Typically security insensitive files like Images (*.jpg, *.png), protection level Excluded resources do not require an OAM Server check for Authentication, Authorization, Response processing, Session management, and Auditing. Excluded resources cannot be added to any user-defined policy in the console. While allowing access to excluded resources, Webgate does not contact the OAM Server.Therefore, such access is not audited. Most regular resource validations apply to Excluded resources. However, excluded resources are not listed when you add resources to a policy. There is no Authentication or Authorization associated with the resource. Note: If a resource protection level is modified from "Protected" to "Excluded" and a policy exists for that resource, modification will fail until the resource is first disassociated with the policy.
Authentication Policy	A list of Authentication policies based on the specified resource protection level becomes available. Only policies within this domain, and that match the specified protection level, are listed.
Authorization Policy	A list of authorization policies defined in the domain become available from which you can choose the one to protect this resource.

After adding the resource, it is grouped under the Resources node of the named Application Domain. When you create policies all defined resources for the domain are listed and you can choose one or more for inclusion in the policy.

For more information about different specifications within a resource definition, see the following topics:

- About the Resource Type in a Resource Definition
- About the Host Identifier in a Resource Definition
- About the Resource URL, Prefixes, and Patterns
- About Query String Name and Value Parameters for Resource Definitions
- About Literal Query Strings in Resource Definitions
- About Run Time Resource Evaluation

20.6.1.1 About the Resource Type in a Resource Definition

When adding a resource definition to an Application Domain, Administrators must choose from a list of defined Resource Types. Native Resource Types are read-only cannot be modified or deleted; these include HTTP, TokenserviceRP, and wl_authen.

See Also: "About Resource Types and Their Use" on page 19-3

When adding an HTTP type resource to an Application Domain, Administrators choose from a list of existing host identifiers and then add the resource URL. Operations associated with the HTTP resource type need not be defined by an Administrator. Instead, policies apply to all HTTP operations.

Table 20–2 shows sample URL values for resources. For more information, see "About the Resource URL, Prefixes, and Patterns" on page 20-19.

Table 20–2 HTTP Resources Sample URL Values

Resource	Sample URL Values
Directories	▪ /mydirectory ▪ /mydirectory/**
Pages	▪ /mydirectory/projects/index.html ▪ /mydirectory/projects/*.html ▪ /mydirectory/.../*.html
Web applications	▪ /mydirectory/projects/example.exe ▪ /mydirectory/projects/*.exe ▪ /mydirectory/**

20.6.1.2 About the Host Identifier in a Resource Definition

Administrations identify resources in an Application Domain by the host where the resources reside and the resource URL.

> **Note:** Non-HTTP resource types are not associated with a host identifier. Instead, Administrators must enter the type's name into the Resource URL field of the resource definition page.

Host identifiers create a context for each resource, which is useful when adding resources that have the same URL paths on different computers. Administrations can protect all of these resources in the same way within the same Application Domain. The only variable that distinguishes one set of resources from another is identification of its host computer.

All defined host identifiers appear on the Host Identifiers list on the Resources page. When adding a resource to an Application Domain, administrations must choose one host identifier for the computer hosting the resource.

To ensure that Access Manager recognizes the URL for a resource, Access Manager must know the various ways used to refer to that resource's host computer.

20.6.1.3 About the Resource URL, Prefixes, and Patterns

During automated Application Domain generation, a URL prefix is defined under which all resources are protected. Resources are linear, not hierarchical. Resource definitions are treated as complete URLs.

> **Note:** No host identifier is associated with a non-HTTP resource type.

Administrations identify individual resources in the Application Domain using a specific resource URL. Individual resource URLs need not be unique across domains. However, the combination of a resource URL, Query String, and a host identifier must be unique across domains.

An HTTP type resource is expressed as a single relative URL string representing a path. The string is composed of a series of hierarchical levels separated by the '/' character. Based on its content, a URL is matched in response to an incoming request as a literal or a wild card pattern.

URL Prefixes

The Access Manager policy model does not support a resource prefix. In other words, there is no policy inheritance.

If a policy is defined for `/mydirectory/projects/`, it only applies to this URL (and does not apply to `/mydirectory/projects/index.html`, for example).

If you need a policy for all resources with the same prefix string, you can define the resource using special characters (three periods ... (ellipsis) or * (asterisk) for instance: `/mydirectory/projects/.../*`.

> **Note:** The Access Manager policy model does not support a resource prefix. In other words, there is no policy inheritance.

URL Patterns, Matching, and Precedence

Administrators can create granular URL patterns to specify the fine-grained portion of a resource's namespace. All matching is case insensitive.

- Supported wildcard matching is provided for the patterns in Table 20–3
- Sample Resource URLs and their correctness are shown in Table 20–4

Table 20–3 Supported Wildcards in Resource URL Patterns (Precedence Order)

Pattern	Description	Example

/**	The default. Matches any sequence of zero or more characters that starts with the forward slash character (/).
	You can use this pattern to protect a path under a specific, named directory.
	Note: This is not an existing 10g wildcard. In 10g, the /.../* pattern yielded an exclusive match that did not include the root of the level at which the pattern was defined. For example, /foo/.../* matched /foo/bar but not directory /foo/ itself. 10g had the notion of a prefix (the "root"), and most evaluation occurred after striping off the prefix.
		·/**
		Matches
		`/foo/bar`
		`/foo/`
		Compare with `/foo/…/*` for which `/foo/bar` would match but `/foo/` would not.

Literals	The resource's pattern contains no special characters.	
{*pattern1*,*pattern2*,...}	Matches one from a set of patterns. The patterns inside the braces can themselves include any other special characters (except braces; sets of patterns cannot be nested).	▪ a{ab,bc}b matches aabb and abcb. ▪ a{x*y,y?x}b matches axyb, axabayb, ayaxb, and so on.

Table 20–3 (Cont.) Supported Wildcards in Resource URL Patterns (Precedence Order)

Pattern	Description	Example
[*range or set*]	Matches one from a set of characters. A set can be specified as a series of literal characters or as a range of characters. A range of characters is any two characters (including -) with a hyphen (-) between. A range of characters is any two characters (including -) with a hyphen (-) between them. The forward slash character (/) is not a valid character to include in a set. A set of characters will not match / even if a range that includes / is specified.	▪ [nd] matches only n or d. ▪ [m-x] matches any character between m and x, inclusive. ▪ [--b] matches any character between - and b inclusive (except for /; see /usr/pub/ascii for order of punctuation characters). ▪ [abf-n] matches a, b, and any character between f and n, inclusive. ▪ [a-f-n] matches any character between a and f inclusive, -, or n. (The second - is interpreted literally because the f preceding it is already part of a range.)
Single Character Wildcard ?	The ? (question mark) matches any one character other than /. This is not treated as a query string delimiter.	a?b matches aab and azb but not a/b.
Wildcard *	The * (asterisk) wildcard matches any sequence of zero or more characters. However, the * (asterisk) does not match the forward slash character (/).	a*b matches ab, azb, and azzzzzzb but not a/b.

*	The * (asterisk) can be used only at the lowest, terminating level of the path. It matches zero or more characters.
	Every character in a URL pattern must match the corresponding character in the URL path exactly.
	Exceptions:
	▪ At the end of a pattern, /* matches any sequence of characters from that point forward.
	▪ The pattern *.extension matches any file name ending with the named extension.
	▪ Does not match /.
		The following URL pattern:
		`/.../update.html`
		Matches:
		`/humanresources/benefits/update.html`
		`/corporate/news/update.html`
		`update.html`
		See Also: Table 20–4

/.../ Hierarchy	Matches any sequence of one or more characters that starts and ends with the forward slash character (/). Evaluation descends from the root /. At each directory level, resources matching the highest precedence level are selected as candidates for continued evaluation and then descend to the next level. This continues until resources representing the best match possible, based solely on the path information, is obtained. Host wide; the entirety of the pattern.	▪ The pattern /.../index.html matches: /index.html /oracle/index.html /oracle/sales/index.html index.html It does not match xyzindex.html or xyz/index.html.
/.../* Host wide		▪ /oracle/.../*.html matches: /oracle/index.html /oracle/sales/order.html, and so on.
\	The backslash character is used to escape special characters. Any character preceded by a backslash matches itself. ▪ Escaped special characters need to be ignored if putting the pattern in wildcard buckets ▪ Escaped special characters are matched literally to the special characters, if any, within the incoming URL	▪ abc*d only matches abc*d ▪ abc\\d only matches abc\d

Table 20–4 illustrates a number of resource definitions within an Application Domain, organized alphabetically according to the Host Identifier and Resource URL. The right-hand column in Table 20–4 declares whether the form is correct or not.

Table 20–4 Sample Resource URLs

Resource URL	Correct Form
/bank/accounts/*	Yes
/bank/accounts/*.jsp	Yes
/bank/accounts/checking	Yes
/bank/.../checking.jsp	Yes
/.../*.jsp	Yes
/bank/accounts/checking*.jsp	No
/bank/accounts/c*.jsp	No
/bank/.../accounts/def.gif	No

20.6.1.4 About Query String Name and Value Parameters for Resource Definitions

The Policy Model supports Query String Name and Value parameters in a Resource pattern definition:

- Name: A string literal that can contain any characters, including symbols; all characters are treated as literal.
- Value: Can be a string literal with any characters and can contain a wildcard (* only) to match a sequence of 0 or more characters. Asterisk (*) is treated as a wildcard.
- Amount: There is no limit to the number of name and value pairs in a query string. However, for a single resource there will be only a few pairs.
- Order: Any order can be used for name and value pairs because at run time these might come in any order as part of the query string.

Resource Matching and Precedence: Query String Name and Value Parameters

Access Manager uses an algorithm that locates the least specific match and continues to the most specific possible resource. When you have candidates defined with both a single-query string and query parameters, those with the single string take precedence.

For resources containing parameter lists, the best match is determined as follows:

1. **Path Matching**: Access Manager attempts to match the path of the requested resource. There may be multiple candidates matched, differing by query component and/or operations declared.
2. **Query String Matching**: For matches obtained, Access Manager attempts to match the query string (if present in the requested URL). If candidates are defined with both single query string and query parameters, those with the literal string take precedence. There may be multiple candidates remaining, differing by operation.
3. **Operation Matching**: For matches obtained, attempt to match the requested operation. If there is no exact match present, then check for resources for which no specific operation(s) have been defined. In other words, they apply to any operation defined as part of the resource's type. In either case, this yields a single, best match.

Path Matching: Defined resources are evaluated for potential match, against the requested URL's path component, in the following precedence order:

- Literals (as in, the resource's pattern contains no special characters)

- Choice: {*pattern1*,*pattern2*,...} , each of which may itself contain the below special characters and is evaluated, in turn, using this same precedence order
- Range: [ ]
- Single-char wildcard: ?
- Wildcard: *
- Hierarchy: /.../
- Hostwide: /…/* is the entirety of the pattern

Evaluation descends from the root '/'. At each directory level, resource(s) matching with the highest precedence level are selected as candidates for continued evaluation and then descent to the next level occurs. This continues until resource(s) representing the best match possible, based solely on the path information, is obtained.

Note: All matching in 11g has been, and remains, case insensitive.

Table 20–5 illustrates the matching pattern for each of several requested URLs.

Table 20–5 Pattern Matching for Requested URLs

Requested URL	Matching Pattern
/oam/sales/oam/page8.html	/oam/.../*.html
/oam/Dept1/page8.html	/oam/Dept?/page8.html
/oam/DeptQ/page8.html	/oam/Dept[A-Z]/page[1-8].html
/oam/DeptQ/page8.html	/oam/Dept[A-Z]/page?.html
/oam/saals/foo/aba/zzz/indexp.html	sa{*,le,l?,a[k-m],[a-f-m]}s/.../{*b,?a}{a,/../ii}/.../{index,test}[pa].?tml

Query String Matching

When you have candidates defined with both single query string and query parameters, those with the single string take precedence. Single query strings are scored using the algorithm already-mentioned.

For resources containing parameter lists, the best match is determined as follows:

- Resources with parameter values without wildcards are given higher order of precedence; the combined length of the parameter names and values is used to determine the best match among the set of such resources.
- As for query string literals, if there are two or more matches with the same combined length, then matching will fail.
- Resources with parameter values containing wildcards are considered next. The total number of wildcards within each resource is used to determine the best match among such resources. If there are two or more matches having same number of wildcards, then the combined length of the parameter names and values determines the best match
- Matching fails if multiple resources contain the same combined length.

Query String Matching Patterns: Second and subsequent patterns use parameter lists:

/oam/index.html::a=*d (a single query string)
/oam/index.html::a:b
/oam/index.html::a:b,c:d
/oam/index.html::a:b*

/oam/index.html::a:b*,c:d
/oam/index.html::a:b*,c:d*
/oam/index.html::a:b*,c:*d*

Table 20–6 illustrates the matching pattern for each of several requested URLs.

Table 20–6 Query String Matching: Examples

Requested URL	Matching Pattern
/oam/index.html?a=b&c=d	/oam/index.html::a=*d
/oam/index.html?a=b1&c=d	/oam/index.html::a:b*,c:d
/oam/index.html?a=b1,c=d1	/oam/index.html::a:b*,c:d*
/oam/index.html?a=b1,c=1d1	/oam/index.html::a:b*,c:*d*

Operation Matching Examples: At this point in request processing, there are one or more candidate resources, all of which match the requested URL path and query string components equally. Access Manager now matches the requested operation to one of those candidates: a resource defined to protect that operation specifically (as well as other, specific operations). As only a single resource can be defined to protect any given operation, this will give the single best match.

Run Time Evaluation: Name value pairs are evaluated at run time as follows:

NAME	VALUE
a	ab
a	a*

Same Resource URL Specified Differently: Resources with the same URL and with the same characters in the query string (although specified differently in the console (one as a key and value and the other as a single string)) are considered different and are allowed. For example, the two following resource patterns are considered as different:

Resource URL: `/test.html`
Query string: `area=*&dept=*`

Resource URL: `/test.html`

Query	NAME	VALUE
	area	*
	dept	*

Resource Matching During Policy Evaluation: The order in which name and value pairs arrive at run time does not matter. As long as all the names and values match the query string, the match is successful. The incoming request can have more name and value parameters than defined and still have a successful match.

Example 1: The following pattern matches the incoming URL if no other pattern is defined with the same URL, query string variables, and the extra query string variable (revenue=1000):

Incoming URL => `/test.html?area=emea&dept=engg&revenue=1000`
resource pattern => `/test.html`

Query String	NAME	VALUE
	area	emea
	dept	engg

Example 1: For a resource with the same resource URL and the same query string, with one defined as a single string and the other defined as name and value pairs, the policy evaluation preference matches the literal query string before considering name and value pairs. For instance, in the following example, a) is matched:

Runtime Request: URL => `/test.html?area=emea&dept=engg`

Resource Patterns:
a)
Resource:`/test.html`
Query string: `area=emea&dept=engg`

b)
Resource:`/test.html`

Query String	NAME	VALUE
	area	emea
	dept	engg

Best Match, Multiple Resources: When you have multiple resources with query string name and value pairs defined, the best resource match is the pattern that matches the most number of query string parameters. When wildcard values are used, this is followed by how closely each parameter value matches.

For example: With the following two query string patterns defined:

Query String	NAME	VALUE
	area	e*
	dept	e*
and		
	area	em*
	dept	en*

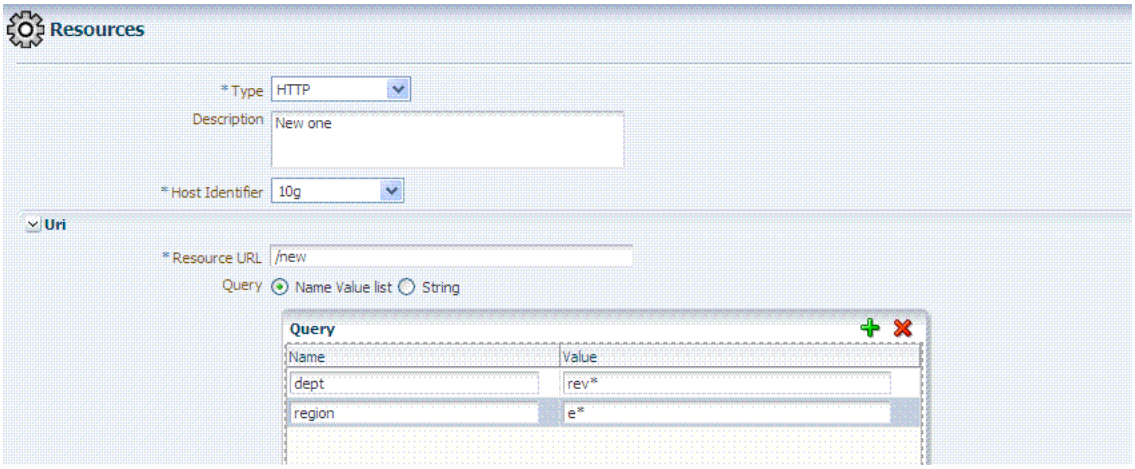
Run Time Query String Parameters:

	area	emea
	dept	engg

Result: The second name and value pattern match order is higher.

Figure 20–13 shows the resource definition page. Here, "rev*" is a valid name (the asterisk character is allowed and treated as a literal character, which is equivalent to 10g behavior). The Oracle Access Management Console enables you to add query strings as name and value pairs. You can also add the query string as a literal string. If If you select a literal query string, then the name and value option is disabled (and vice versa).

Figure 20–13 HTTP Resources, Query String Resource URL Controls



Behavior When Migrating to Access Manager: If you upgrade to Access Manager (from 10g), previous query strings are created in 11g appropriately (whether a single string or a name and value pair). The appropriate type of query string is created in Access Manager.

20.6.1.5 About Literal Query Strings in Resource Definitions

The Policy Model supports resource protection based on matching literal, full query-string-based HTTP resource definitions within Access Policies.

A single Query String Pattern that would be matched against the entire input Query string (as opposed to matching only portions (selected name and value pairs) of the query string. For example:

```
status=active&adminrole=*
```

A Query String pattern specified as a regular free form string with these extra features:

- Optional: Special character (*) that matches zero or more characters, which is applied to a set of names in the run time Query String.
- Two resource definitions can exist with same URL base path pattern and different Query String patterns. These two are independent and non-equal resources. For example, these are all valid and can exist at same time:

  ```
  /foo
  /foo?bar=true
  /foo?bar=false
  ```

The Query String is free form with no restriction in terms of format or characters. It is not required to specify Query String as key/value pairs

At run time, only the Query String that is part of HTTP GET requests is processed; Query String pattern does not apply to HTTP POST data.

Resource Matching at run time:

- The base URL path is matched and then the Query String is matched
- Multiple resource patterns that contain matching Query Strings: The best match is determined based on the number of tokens (pattern delimited by '*') and the length of the token at each position. Patterns with longer tokens in the beginning are preferred and then the pattern that contains more number of tokens. (If there

are matching patterns that contain same number of tokens and same length at each position then the match would fail.)

Conflicts:

- **Super Set**: The input resource definition contains a set of name-value Query String patterns that are a super set of patterns of an existing resource definition in the policy store.
- **Overlap**: The input resource specification contains a set of name-value Query string patterns that overlap a set of patterns of an existing resource definition in the policy store.

Remote Registration: For OAM Agents, the remote registration tool (oamreg) accepts Query-string based HTTP resource definitions and generates the relevant policy objects for securing access of these resources. If any conflicts are encountered during policy provisioning, only policies for resources that do not have any conflicts are provisioned. This feature does not apply to 10g OSSO agent-based partners and applications. OSSO agents are not capable of enforcing authentication scheme per resource. Instead, a single authentication scheme is applied to all resources of an application.

20.6.1.6 About Run Time Resource Evaluation

While processing requests for resources, an evaluation is made to ensure that the proper policy is invoked for the resource.

> **See Also:** Other processing details in the following topics:
>
> - "About the Resource URL, Prefixes, and Patterns" on page 20-19
> - "About Query String Name and Value Parameters for Resource Definitions" on page 20-22
> - "About Literal Query Strings in Resource Definitions" on page 20-26
> - "Managing Run Time Policy Evaluation Caches" on page 14-9

Process overview: Resource evaluation

1. A user specifies the URL for a requested resource.
2. Access Manager creates a fully qualified URL that includes the URL pattern, based on the host identifier and URL.
3. Access Manager compares the incoming URL for the requested resource to the fully-qualified URL constructed from Application Domain information and the policy's URL pattern:
   - If there is a match, the various policies are evaluated to determine whether the requester should be allowed or denied access to the resource.
   - If the requester is allowed access, the resource is served.

Table 20–7 describes the possible outcomes.

Table 20–7 Resource Evaluation Outcomes

Outcome	Description
Best Match	The best match is when a resource definition has the least resource scope compared to other possible matches to the run time resource. The term resource scope represents all possible resources that could be matched using a particular resource definition

Table 20–7 (Cont.) Resource Evaluation Outcomes

Outcome	Description
No Match1	If no match is found, the default evaluation outcome is FAILURE. Depending on what kind of policy was being evaluated, this could mean no authentication is attempted, or no resource access is granted.

Look Up Mechanism Examples

- The default resource URL in an Application Domain defines the broadest scope of content possible (all directories and below):

  `/.../*`

- The pattern /.../index.html matches:

  ```
  /index.html
  /oracle/index.html
  /oracle/sales/index.html
  index.html
  ```

  It does not match, for example, *xyz*`index.html`.

- /oracle/.../*.html matches:

  ```
  /oracle/index.html
  /oracle/sales/order.html
  and so on
  ```

Resource Scope Examples

- Resource scope of the following resource definition (includes the asterisk):

  /mybank/…/*

  includes all URLs prefixed with "/mybank/"

- Resource scope of the following resource definition (no special characters in the definition):

  /mybank/account.html

  includes only one URL: "/mybank/account.html"

20.6.2 Defining Resources in an Application Domain

Users with valid Administrator credentials can use the following procedure to add the resource definitions to protect to the corresponding Application Domain.

Resource protection based on a list of discrete query parameters is more secure and easier to administer than literal query strings. You might want to create a policy based on resource URL with query parameters (string and name-value pairs).

> **Note:** An error can occur if you specify a host identifier value that is invalid: `The challenge URL is invalid`.

Prerequisites

The Resource Type must be defined as a Shared Component. Several elements in the Resource definition page are based on the defined and selected Resource Type. For details, see "Managing Resource Types" on page 19-2.

See Also: "Defining Resources in an Application Domain" on page 20-15

To add resource definitions to an Application Domain

1. In the Oracle Access Management Console, locate and view the desired Application Domain, as described in "Searching for an Existing Application Domain" on page 20-12.
2. In the Application Domain, click the **Resources** tab, then click the **New Resource** button in the upper-right corner of the Search page.
3. On the **Resource Definition** page:
   a. Select or enter your details for a single resource (Table 20–1):

      Type
      Description
      Host Identifier
      Resource URL (Table 20–4)
      Operations
      Query String (Table 20–6)
      Protection Level
      Authentication Policy (*if level is Protected*)
      Authorization Policy (if *level is Protected and Authentication Policy is chosen*)

   b. Click Apply to add this resource to the Application Domain.
   c. Repeat this procedure to add other resources to this Application Domain.
4. Proceed by adding defined resources to specific policies in the Application domain as described in:
   - Defining Authentication Policies for Specific Resources
   - Defining Authorization Policies for Specific Resources
   - Managing Token Issuance Policies, Conditions, and Rules

20.6.3 Searching for a Resource Definition

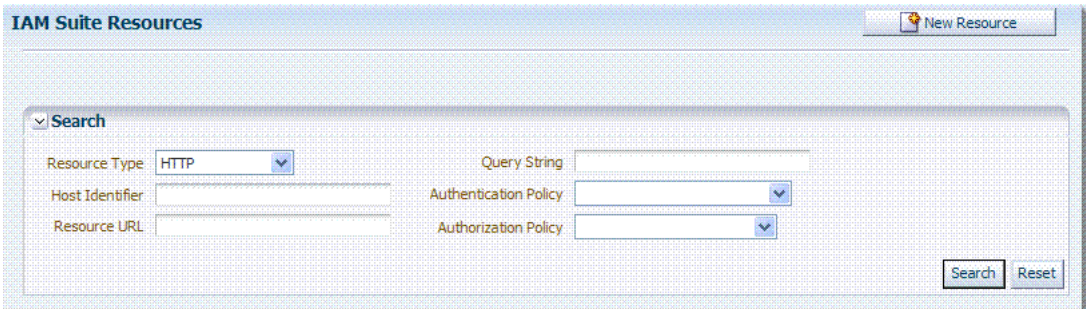
This section provides the following topics:

- About Searching for a Specific Resource Definition
- Searching for a Specific Resource Definition

20.6.3.1 About Searching for a Specific Resource Definition

Figure 20–14 shows the default Search elements and Search Results table for resource definitions in an Application Domain.

Figure 20–14 Sample Resource Definitions Search within an Application Domain



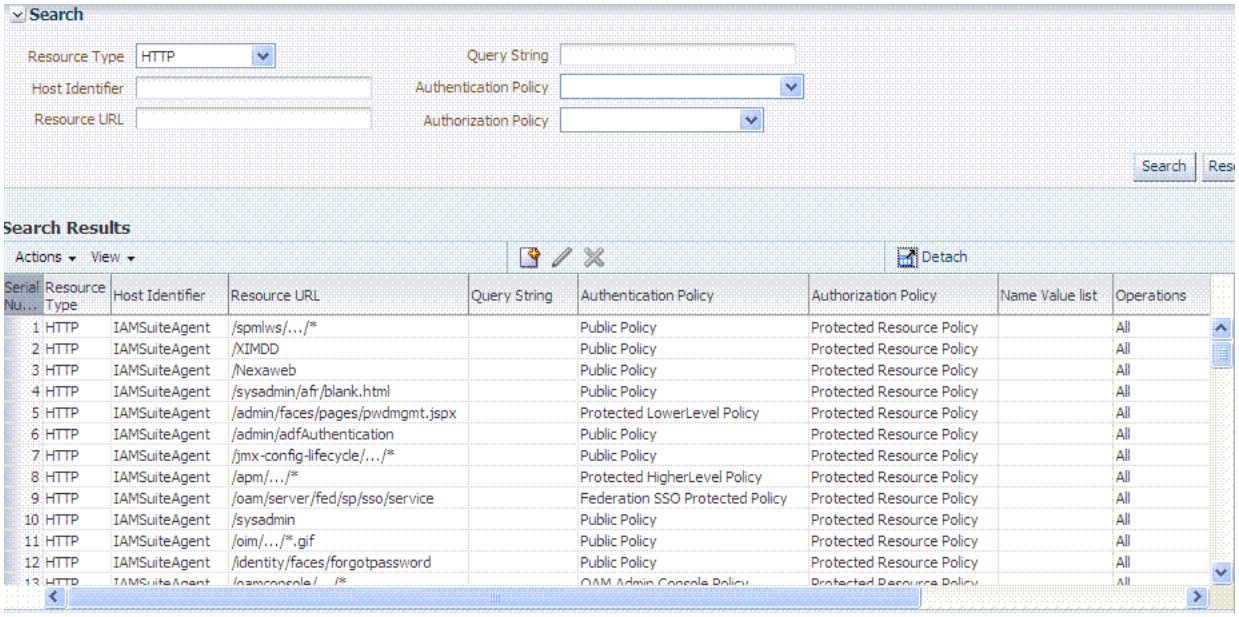
You can simply click the Search button using the defaults or refine your search by supplying as much or as little of the information in Table 20–8 as needed to find the resource.

Table 20–8 Search Elements for a Resource in an Application Domain

Search Elements	Description
Resource Type	Provides a list of defined resource types from which you can choose. You can also leave this blank. Default: HTTP
Host Identifier	Enter a host identifier here, if desired. You can leave this blank Default: blank
Resource URL	Enter a resource URL, if desired. You can leave this blank Default: blank
Query String	Enter a query string for the resource, or leave this blank. You can include this in the search criteria if a query string was defined for the resource when it was added to the Application Domain. Default: blank
Authentication Policy	Provides a list of defined authentication policies for this Application Domain. You can choose one or leave the space blank. Default: blank
Authorization Policy	Provides a list of defined authorization policies for this Application Domain. You can choose one or leave the space blank. Default: blank

You can click Reset to clear the form or Search to initiate the search. The results table is shown in Example 20–15. Each resource listed includes everything specified when it was added to the domain. The Actions and View menus are available for use with the table. Also you can click the Create command button to add a new resource definition to this domain.

Figure 20–15 Sample Search Results for Resource Definitions in an Application Domain



20.6.3.2 Searching for a Specific Resource Definition

Users with valid Administrator credentials can use the following procedure to search for a specific resource definition.

To find a resource definition

1. In the Oracle Access Management Console, locate and view the desired Application Domain, as described in "Searching for an Existing Application Domain" on page 20-12.
2. Click the **Resources** tab to display Resources Search controls.
3. Fill in your search criteria (Table 20–8), and click the **Search** button.
4. In the Search Results table, click the desired resource definition and take the desired action:
   - **Actions Menu**: Select an item to Create, Edit, or Delete the selected resource.
   - **View Menu**: Select an item to alter the appearance of the results table.
   - **Edit Button:** Click the button in the tool bar to display the configuration page.
   - **Delete:** See "Viewing, Editing, or Deleting a Resource Definition".
   - **Detach**: Click Detach in the tool bar to expand the table to a full page.

20.6.4 Viewing, Editing, or Deleting a Resource Definition

Users with valid Administrator credentials can use the following procedure to modify resource definitions within a specific Application Domain.

If a resource protection level is modified from "Protected" to "Excluded" while it is associated with a policy, the modification will fail. First, remove the resource from the policy, make the change, and add the resource to the policy.

Note: During a Delete, you are alerted if the resource is associated with a policy. Without a policy association, the resource is deleted.

Prerequisites

You must have the desired resource type defined as a shared component. For details, see "Managing Resource Types" on page 19-2.

See Also: "Defining Resources in an Application Domain" on page 20-15

To view, modify, or delete resource definitions

1. Find the Resource, as described in "Searching for a Resource Definition".
   - **View Only**: Close the page when you finish.
   - **Modify**: Alter the definition as desired and then click Apply to submit changes (or close the page without applying changes).
   - **Delete**:
     - Open the resource definition and confirm this is the one to be deleted, then close the page.
     - Click the name of the desired resource definition and then click the Delete button in the tool bar.
     - In the Confirmation window, click Delete (or click Cancel to dismiss the window).

       If the Resource is associated with a policy, remove it from the policy first.
     - Repeat as needed to delete other resources in the Application Domain.

20.7 Defining Authentication Policies for Specific Resources

Each resource assigned to an Application Domain can be protected by only one authentication policy. After adding a resource definition to the Application Domain, the Administrator can begin refining a default authentication policy, adding a new policy, and assigning resources to the authentication policy.

In an automatically generated Application Domain, the following authentication policies are seeded as defaults to help streamline the Administrator's tasks:

- Protected Resource
- Public Resource

See Also: "Understanding Application Domain and Policy Management" on page 20-4

This section provides the following topics:

20.7.1 About the Authentication Policy Page

Administrators use authentication policies to protect specific resources. The authentication policy provides the sole authentication method for resources governed by the policy.

Each authentication policy defines the type of verification that must be performed to provide a sufficient level of trust for Access Manager to grant access to the user making the request.

Authentication policies are local. A single policy can be defined to protect one or more resources in the Application Domain. However, each resource can be protected by only one authentication policy.

Authentication Policy Guidelines

1. Authentication policies include resources, success responses, and an authentication scheme.
2. Authentication and Authorization policies can evaluate to Success or Failure.
3. Query Builder and support for LDAP filters (for retrieving matches based on an attribute of a certain display type, for example).
4. Define a policy for resource: /…/* which can be used within a determined scope.
5. Token Issuance Policies can be defined using resources and user- or partner-based conditions.

Figure 20–16 shows the Authentication Policies page of an Application Domain.

Figure 20–16 Sample Authentication Policies Page in the Application Domain

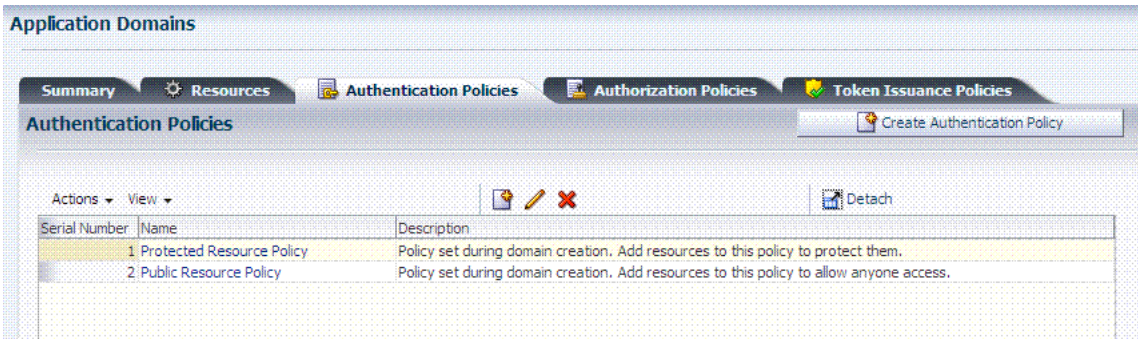


Figure 20–17 shows a specific Authentication Policy. The resources assigned to this policy are displayed on the Resources tab of the policy. This example is from the IAM Suite Application Domain.

Figure 20–17 Sample Individual Authentication Policy Page

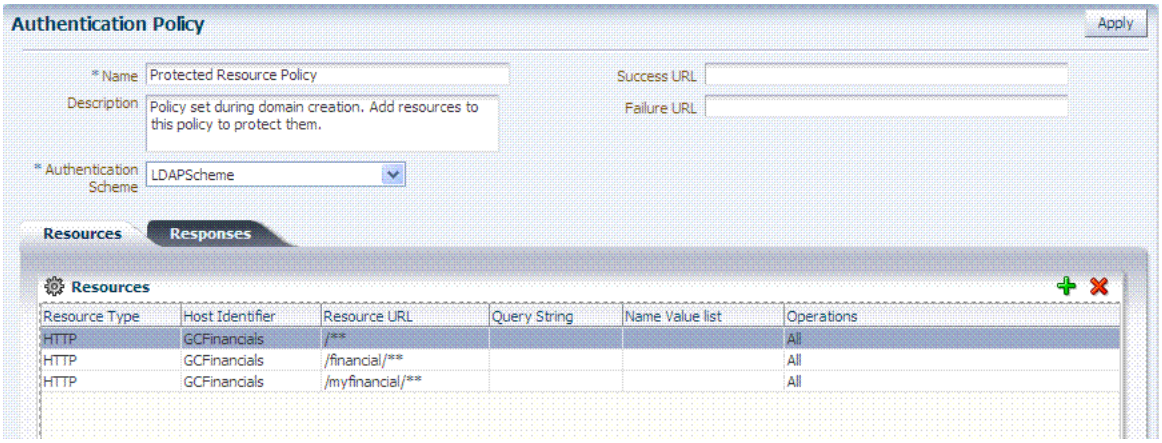


Table 20–9 describes authentication policy elements. The IAM Suite Application Domain is shown simply as an example.

Table 20–9 Authentication Policy Elements and Descriptions

Element	Description
Name	A unique name used as an identifier.
Description	Optional unique text that describes this authentication policy.
Authentication Scheme	A single, previously-defined authentication scheme to be used by this policy for user authentication. See Also: "Managing Authentication Schemes" on page 19-64 for details.
Success URL	The redirect URL to be used upon successful authentication.
Failure URL	The redirect URL to be used if authentication fails.
Resources	The URL of a resource chosen from those listed. The listed URLs were added to this Application Domain earlier. You can add one or more resources to protect with this authentication policy. The resource definition must exist within the Application Domain before you can include it in a policy. See Also: "About Resources in an Authentication Policy" on page 20-34.
Responses	The obligations (post authentication actions) to be carried out by the Web agent. After a successful authentication, the application server hosting the protected application should be able to assert the User Identity based on these responses.After a failed authentication, the browser redirects the request to a pre-configured URL See Also: "Introduction to Policy Responses for SSO" on page 20-41.

20.7.1.1 About Resources in an Authentication Policy

You can choose to add one or more resources to be protected by the authentication policy. The Resources tab on the Authentication Policy page provides a table where you can enter resource URLs. A list is also provided from which you can choose from defined resources within the Application Domain.

To add a resource, click the + button and select from the list. To delete a resource, select the name from the Resources table and click the Delete button in the table.

20.7.2 Creating an Authentication Policy for Specific Resources

Users with valid Administrator credentials can use the following procedure to add an authentication policy and resources to an Application Domain. You can use a pre-configured authentication scheme or a custom authentication scheme in the authentication policy.

See Also:

- "About the Authentication Policy Page" on page 20-33
- "Managing Authentication Schemes" on page 19-64

Prerequisites

Any resource to be added to a policy must be defined within the same Application Domain as the policy.

To add an authentication policy for specific resources

1. Locate the desired domain as described in "Searching for an Existing Application Domain".
2. Click the **Authentication Policies** tab, then click the **Create Authentication Policy** button to open a fresh page.
3. **Required Elements**: Add your information for this policy.
   - Name
   - Authentication Scheme
4. **Optional Elements** (Table 20–9): Add as needed for your policy.
   - Description (optional)
   - Success URL
   - Failure URL
5. **Add Resources**: A Resource must be defined within the Application Domain before you can add the resource to a specific policy.
   - Click the Resources tab on the Authentication Policy page.
   - Click the Add button on the Resources tab.
   - Click the Search button.
   - Click a URL in the Results table, then click Add Selected.
   - Repeat these steps as needed to add more resources.
6. Click **Apply** to save changes and close the Confirmation window.
7. **Responses**: Add policy Responses as described in "Adding and Managing Policy Responses for SSO" on page 20-47.
8. Close the page when you finish.

20.7.3 Searching for an Authentication Policy

Users with valid Administrator credentials can use the following procedure to search for a specific authentication policy.

To search for an authentication policy in an Application Domain

1. Locate the desired domain as described in "Searching for an Existing Application Domain".
2. Click the **Authorization Policies** tab and:
   - **Edit:** See "Viewing or Editing an Authentication Policy".
   - **Delete:** "Deleting an Authentication Policy".

- **Detach Table**: Click **Detach** in the tool bar to expand the table to a full page.
- **View Menu**: Select a menu item to alter the appearance of the results table.

20.7.4 Viewing or Editing an Authentication Policy

Users with valid Administrator credentials can use the following procedure to modify an authentication policy in an Application Domain. This includes changing the authentication scheme, adding or removing resources or responses, and altering the Success or Failure URLs.

See Also: "About the Authentication Policy Page" on page 20-33

To view or modify an authentication policy

1. Locate the desired policy as described in "Searching for an Authentication Policy".
2. Click the desired policy name to display its configuration.
3. Edit Policy Elements (Table 20–9):
4. **Resource**: Click the Resources tab and:
   - **Add**: Click the Add button on the Resources table, click a URL in the list, click Apply.
   - **Delete**: Click a URL in the Resources table, click the Delete button on the table.
5. Click **Apply** to submit changes and close the Confirmation window (or close the page without applying changes)
6. **Responses**: View or edit responses as described in "Adding and Managing Policy Responses for SSO" on page 20-47.
7. Close the page when you finish.

20.7.5 Deleting an Authentication Policy

Users with valid Administrator credentials can use the following procedure to delete an authentication policy from an Application Domain.

When you remove the policy, all resource definitions remain within the Application Domain. However, the policy and all responses are eliminated.

Note: During a Delete operation, you are alerted to confirm removal of the policy. Confirmation is required to complete the operation.

The following procedure describes how to delete the entire policy. To simply alter an element in the policy, see "Viewing or Editing an Authentication Policy".

See Also: "About the Authentication Policy Page" on page 20-33

To delete an authentication policy

1. Locate the desired policy as described in "Searching for an Authentication Policy".
2. Click the desired policy name to display and confirm this configuration.
3. Ensure that resources governed by this policy are added to a different policy.
4. Delete all responses, as described in "Adding and Managing Policy Responses for SSO" on page 20-47.

5. On the **Authentication Policies** tab, click the Serial Number beside the policy, then click the Delete button in the tool bar.
6. In the Confirmation window, click **Delete** to confirm (or click Cancel to dismiss the window).

20.8 Defining Authorization Policies for Specific Resources

Each resource assigned to an Application Domain can be protected by only one authorization policy.

In an automatically generated Application Domain, the following authorization policies are seeded as defaults:

- Protected Resource
- Public Resource

See Also: "Understanding Application Domain and Policy Management" on page 20-4

After adding resource definitions to the Application Domain, Administrators can begin refining a default authorization policy, adding a new policy, and adding resources to authorization policies. This section provides the following topics:

- About Authorization Policies for Specific Resources
- Creating an Authorization Policy and Specific Resources
- Searching for an Authorization Policy
- Viewing or Editing an Authorization Policy and Resources
- Deleting an Entire Authorization Policy

20.8.1 About Authorization Policies for Specific Resources

Administrators can create an authorization policy to protect access to one or more resources based on attributes of an authenticated user or the environment. The authorization policy provides the sole authorization protection for resources included in the policy.

Authorization policies are local, which means that each policy applies only to the resources specified for the policy. A policy cannot be derived or applied to any other resource.

A single policy can be defined to protect one or more resources in the Application Domain. However, each resource can be protected by only one authorization policy.

Figure 20–18 shows the Authorization Policy page within an Application Domain. The resources assigned to this policy are displayed on the Resources tab of the policy.

Figure 20–18 Sample Individual Authorization Policy Page

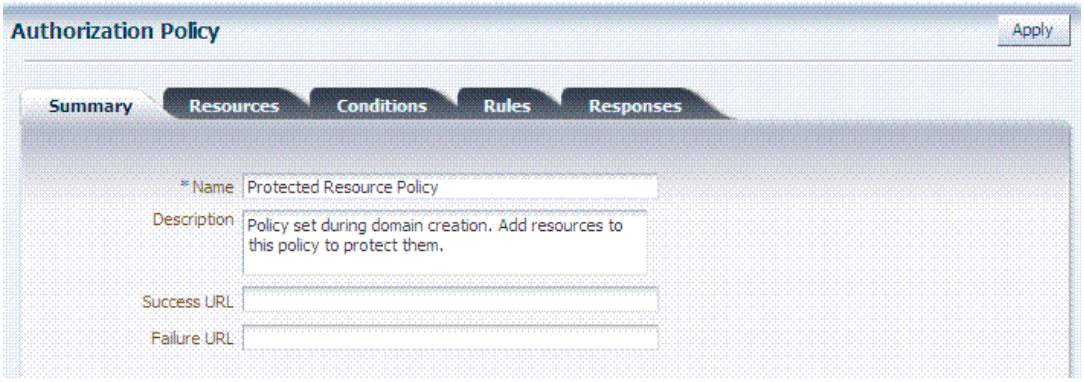


Table 20–10 describes authorization policy elements. The elements are the same regardless of the domain; only the details will differ.

Table 20–10 Authorization Policy Elements and Descriptions

Element	Description
Name	A unique name used as an identifier in the navigation tree.
Description	Optional unique text that describes this authorization policy.
Success URL	The redirect URL to be used upon successful authorization.
Failure URL	The redirect URL to be used if authorization fails.
Summary	General information (usually Name and optional Description).
Resources	One or more previously-defined resource URLs to be protected by this authorization policy.
Conditions	See Also "Introduction to Authorization Policy Rules and Conditions" on page 20-49.
Rules	See Also "Introduction to Authorization Policy Rules and Conditions" on page 20-49.
Responses	See Also "Introduction to Policy Responses for SSO" on page 20-41.

20.8.2 Creating an Authorization Policy and Specific Resources

Users with valid Administrator credentials can use the following procedure to add an authorization policy to an Application Domain.

Prerequisites

Any resource to be added to a policy must be defined within the same Application Domain as the policy.

> **See Also:** "About Authorization Policies for Specific Resources" on page 20-37

To create an authorization policy and resources

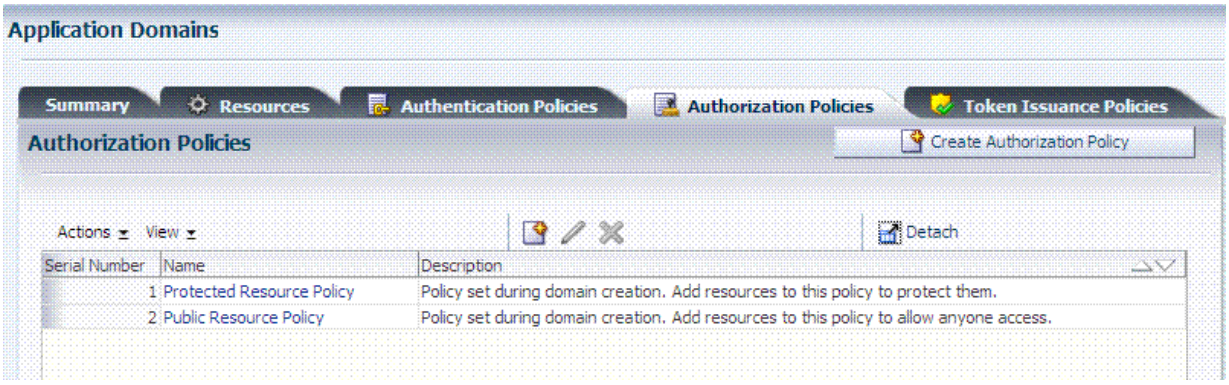
1. Locate the desired domain as described in "Searching for an Existing Application Domain".
2. Click the **Authorization Policies** tab, then click the **Create Authorization Policy** button to open a fresh page.
3. **Summary Tab**: Add your information to the Summary tab (Table 20–10).

4. **Add Resources**: The Resource must be defined in the Application Domain before you can add the resource to a specific policy.
   - Click the **Resources** tab on the Authorization Policy page.
   - Click the **Add** button on the Resources tab.
   - Click the **Search** button.
   - Click a URL in the Results table, then click **Add Selected**.
   - Repeat these steps to add more resources.
5. Click **Apply** to save changes and close the Confirmation window.
6. **Responses**: Add policy Responses as described in "Adding and Managing Policy Responses for SSO" on page 20-47.
7. **Conditions**: Add authorization conditions, as described in "Defining Authorization Policy Conditions" on page 20-52.
8. **Rules**: Add authorization rules, as described in "Defining Authorization Policy Rules" on page 20-52.
9. Close the page when you finish.

20.8.3 Searching for an Authorization Policy

Users with valid Administrator credentials can use the following procedure to locate a specific authorization policy.

Figure 20–19 Authorization Policies Page



To search for an authorization policy

1. Locate the desired domain as described in "Searching for an Existing Application Domain".
2. Click the **Authorization Policies** tab and:
   - **Edit:** See "Viewing or Editing an Authorization Policy and Resources".
   - **Delete:** "Deleting an Entire Authorization Policy".
   - **Detach Table**: Click **Detach** in the tool bar to expand the table to a full page.
   - **View Menu**: Select a menu item to alter the appearance of the results table.

20.8.4 Viewing or Editing an Authorization Policy and Resources

Users with valid Administrator credentials can use the following procedure to view or modify an authorization policy within an Application Domain.

> **See Also:** "About Authorization Policies for Specific Resources" on page 20-37

To view or edit an authorization policy

1. Locate the desired domain as described in "Searching for an Authorization Policy".
2. **Summary**: Edit as needed (Table 20–10):
3. **Resource**: Click the **Resources** tab and add or delete resources as needed:
   - **Add**: Click the Add button on the Resources table, click a URL in the list, click Apply.
   - **Delete**: Click a URL in the Resources table, click the Delete button on the table then confirm.
4. Click **Apply** to submit changes and close the Confirmation window (or close the page without applying changes).
5. **Conditions**: See "Viewing, Editing, or Deleting Authorization Policy Conditions" on page 20-69.
6. **Rules**: See "Defining Authorization Policy Rules" on page 20-52.
7. **Responses**: See "Viewing, Editing, or Deleting a Policy Response for SSO" on page 20-48.
8. Close the page when you finish.

20.8.5 Deleting an Entire Authorization Policy

Users with valid Administrator credentials can use the following procedure to delete an authorization policy or simply delete resources within the policy.

> **Note:** During a Delete operation, you are alerted to confirm removal of the policy. Confirmation is required to complete the operation.

When you remove the entire policy, all resource definitions remain within the Application Domain. However, the authorization policy and the conditions and rules governing access are eliminated.

To simply alter an element in the policy see "Viewing or Editing an Authentication Policy".

> **See Also:** "About Authorization Policies for Specific Resources" on page 20-37

Prerequisites

Assign resources governed by this policy to another authorization policy, either before or after deleting the policy.

To delete an authorization policy

1. Locate the desired domain as described in "Searching for an Authorization Policy".

2. **Optional**: Double-click the policy name to review its content, and then close the page when finished.
3. **Delete**: Click the policy name, and then click the Delete button in the tool bar.
4. In the Confirmation window, click Delete (or click Cancel to dismiss the window).
5. Confirm that the policy is no longer listed in the navigation tree.

20.9 Introduction to Policy Responses for SSO

Each policy can optionally contain one or more authentication or authorization responses, or both. Responses are post-processing actions (obligations) to be carried out by the web agent.

> **Note:** There are no responses in Token Issuance Policies.

This section provides the following information:

- About Authentication and Authorization Policy Responses for SSO
- About the Policy Response Language
- About the Namespace and Variable Names for Policy Responses
- About Constructing a Policy Response for SSO
- About Policy Response Processing
- About Assertion Claims and Processing

20.9.1 About Authentication and Authorization Policy Responses for SSO

Administrators can define responses that declare the actions that must be fulfilled after successful authentication or authorization. Authentication and authorization data is returned to the client (typically a Web Agent).

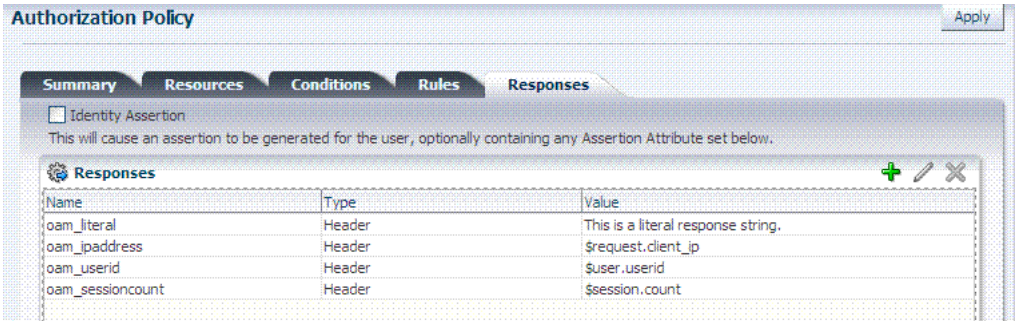
Policy responses enable the insertion of information into a session or application and the ability to withdraw the information at a later time to enable SSO. For instance, identity mappings can be inserted into the customer's application or actions can be carried out by the Agent or the application.

Depending on the responses specified for authentication or authorization success and failure, the user might be redirected to a specific URL, or user information might be passed on to other applications through a header variable or a cookie value.

> **Note:** Oracle Access Manager 10g provided data passage to (and between) applications only by redirecting to URLs in a specific sequence.

There are no default response provided. Figure 20–20 illustrates an Authorization Policy Response defined by an Administrator in the Oracle Access Management Console. Authorization responses can operate in conjunction with authorization conditions.

Figure 20–20 Authorization Policy Response in the Console



Each response consists of two inputs (a type and an expression) and a single output (the value of the evaluated expression). The expression declares how the value should be constructed when the expression is processed. The response type defines the form of action to be taken with the value string.

- The authentication policy determines the identity of the user. Each authentication policy requires an authentication scheme and responses (expressions).
- The authorization policy determines whether the user has the right to access the resource. Each authorization policy requires authorization conditions and responses (expressions).

Response Guidelines

1. Cookie, Header, and Session responses are supported.
2. URL redirection can be set.
3. Response definitions are part of each policy. Response values can be literal strings or can contain additional embedded expressions that derive values from request, user, and session attributes.

Administrators set Responses in the Oracle Access Management Console, as described Table 20–11.

Table 20–11 Response Elements

Element	Description
Name	A unique name to distinguish this response from other responses that use the same mechanism (type).
Type	The mechanism used to convey the response. form of the action to be taken with the value string: ▪ **HEADER (Header variables)**: Sets an HTTP request header for downstream applications using the defined value to dictate the action to be taken (such as the assertion of a User ID using a pre-defined HTTP header name). Another example gets the subscriber information (realm DN and so on) for OSSO and creates a response during the upgrade; a fresh OSSO Agent requires manual configuration. ▪ **SESSION**: Sets an attribute inside the user session by the client (to enable single sign-on) based on the defined session variable name and value. ▪ **COOKIE**: Sets a variable name and value (typically set by Web agents) inside the authentication session cookie to enable single sign-on. In cookie-less mode, Web-cache is currently used to store cookies from Webgate. However, in cookie-less mode, the end application does not have access to cookies and cannot use them. ▪ **Asserted Attribute**: With this type, Identity Assertion must be enabled for the policy to collect Assertion Attribute type responses when this policy is executed. The Name list provides valid identifiers from which to choose.

Table 20–11 (Cont.) Response Elements

Element	Description
Value	The response expression, set as a variable. For more information, see "About the Policy Response Language".
Identity Assertion	Identity Assertion is required for ID propagation for any issued token from Access Manager that represents an end user (and possibly its Access Manager session). Security Token Service clients that are Web applications protected by Access Manager requesting tokens to gain proxy access to a Relying Party (ID Propagation use case) are required to pass an Access Manager Identity Assertion token that represents the end user. The Identity Assertion Token is generated and returned as a policy response (HTTP HEADER named "OAM_IDENTITY_ASSERTION", value as a SAML token) after a successful authentication. As you add each (non-Asserted Attribute Type) Response, you might be informed that `Identity Assertion has not been enabled for this policy...`. Enable Identity Assertion to collect Assertion Attribute type responses when this policy is executed. See Also: ■ "Scenario: Identity Propagation with the Access Manager Token" on page 35-2 ■ "Authentication Policy Response for Identity Assertion by Webgate" on page 35-13 ■ Chapter 48, "Using Identity Context"

20.9.2 About the Policy Response Language

Access Manager authentication and authorization responses are defined using a very small, domain-specific language (DSL) with two main constructs:

- Literal strings: For example: `This is a valid expression`
- Variable references:
  - Declared using a dollar sign prefix `$`
  - Scoped to a namespace: `$namespace.var_name`

Note: Certain variables include an attribute: `$ns.name.attribute`

20.9.3 About the Namespace and Variable Names for Policy Responses

With the namespace mechanism, the following variable types are to enable single sign-on:

- Request: Information on the requested resource, the client making the request, and the policy matched during evaluation
- Session: User session details
- User: User details (user ID, group, and attribute information)

For details of each, see:

- Table 20–12, " Namespace Request Variables for Single Sign-On"
- Table 20–13, " Namespace Session Variables for Single Sign-On"
- Table 20–14, " Namespace User Variables"

Table 20–12 Namespace Request Variables for Single Sign-On

Namespace	Description
agent_id	Name of the requesting agent

Table 20–12 (Cont.) Namespace Request Variables for Single Sign-On

Namespace	Description
client_ip	IP address of the user browser
policy_appdomain	Name of the Application Domain holding the policy matched for the request
policy_eval_success_conditions	List of policy conditions that evaluated to true, separated by COLON or configured response separator
policy_eval_failure_conditions	List of policy conditions that evaluated to false, separated by COLON or configured response separator
policy_res	Resource host ID and URL pattern matched for the request
policy_name	Name of the specific policy matched for the request
res_host	Requested resource's hostname
res_port	Requested resource's port number
res_type	Requested resource's type
res_url	Requested resource URL

Table 20–13 Namespace Session Variables for Single Sign-On

Namespace	Description
attr	Reference to an arbitrary session attribute, the name of which is passed to us as a variable attribute. Its value has been bound to the session by executing a session response during a previous request
authn_level	Current authentication level for the session
authn_scheme	Name of the authentication scheme executed to achieve the current authentication level
count	Session count for the user bound to this session
creation	Session creation time
expiration	Session expiration time

Table 20–14 Namespace User Variables

Namespace	Description
attr.<attrName>	Value of user attribute attrName. If attrName is multivalued, contains a list of attr values, separated by COLON or configured response separator
groups	List of user's group membership, separated by COLON or configured response separator
userid	The user ID
user.id_domain	The user's identity domain (essentially the same as the identity store)
guid	A unique identifier that locates the user entry in an Identity Store

20.9.4 About Constructing a Policy Response for SSO

This section is divided as follows:

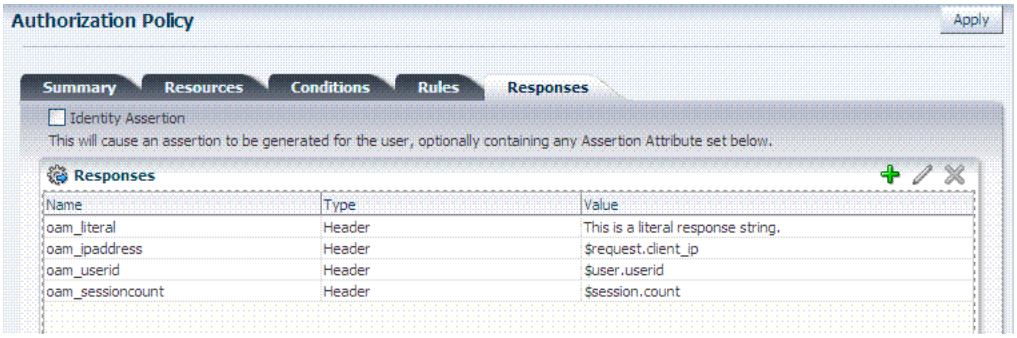
- Simple Responses
- Compound and Complex Responses
- Multi-Valued Responses

See Also: Guidelines for Authorization Responses Based on Conditions

20.9.4.1 Simple Responses

After deciding on the response type and determining which namespace and variable, you simply enter the response attributes in the Oracle Access Management Console. A simple response might look like one of the several authorization responses shown in Figure 20–21.

Figure 20–21 Simple Response Samples



Simple responses stand alone. Each is preceded with the dollar sign ($), followed by the namespace, which is separated from the variable Value by a dot (.). For example:

```
$namespace1.var1
```

Table 20–15 illustrates several simple responses and a description of what each one returns.

Table 20–15 Simple Responses and Descriptions

Name	Type	Value (Simple $Namespace.Variable)	Returned Environment Variables and Values
oam_sessioncount	Header	$session.count	HTTP_OAM_SESSIONCOUNT *integer*
oam_userid	Header	$user.userid	HTTP_OAM_USERID *name*
oam_ipaddress	Header	$request.client_ip	HTTP_OAM_IPADDRESS *nnn.nn.nn.nnn*
oam_literal	Header	This is a response string.	HTTP_OAM_LITERAL *This is a response string*

20.9.4.2 Compound and Complex Responses

When crafting a compound or complex policy response, Administrators can combine literals and variables arbitrarily using braces { } to construct an expression. A colon (:) is used as a separator. For example:

```
${namespace1.var1}:${namespace2.var2}
```

```
Literal String (LS): ${namespace1.var1}:${namespace2.var2}
```

```
LS: ${namespace1.var1}, LS:${namespace2.var2}
```

Figure 20–22 illustrates several complex responses defined by an Administrator. All are Header type responses, which set values in a header variable of an HTTP request for consumption by a downstream application.

Figure 20–22 Complex Response Sample

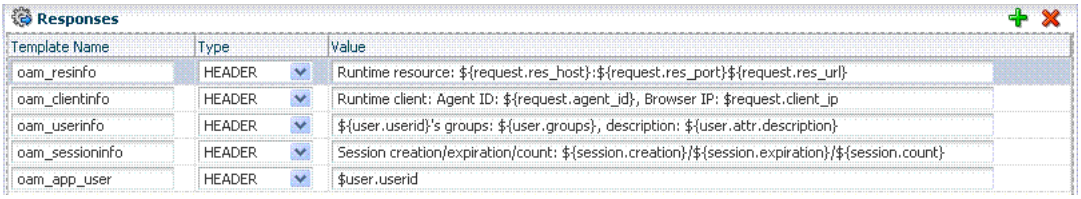


Table 20–16 describes the complex responses shown in Figure 20–22.

Table 20–16 Complex Responses

Name	Value	Returned Environment Variables and Values
oam_resinfo	Runtime resource: ${request.res_host}:${request.res_port}${request.res_url}	HTTP_OAM_RESINFO Runtime resource: myhost.domain.com:1234/cgi-bin/myres3
oam_clientinfo	Runtime client: Agent ID: ${request.agent_id}, Browser IP: $request.client_ip	HTTP_OAM_CLIENTINFO Runtime client: Agent ID: *RREG_OAM*, Browser IP: 123.45.67.891
oam_userinfo	${user.userid}'s groups: ${user.groups}, description: ${user.attr.description}	HTTP_OAM_USERINFO *WebLogic's groups: Administrators, description: This user is the default Administrator*
oam_sessioninfo	Session creation/expiration/count: ${session.creation}/${session.expiration}/${session.count}	HTTP_OAM_SESSIONINFO Session creation/expiration/count: *Tue Oct 23 17:47:42 PST 2011/Wed Oct 24 01:47:42 PST 2011/7*
oam_app_user	$user.userid	HTTP_OAM_USERID *name*

For more information, see "About Policy Response Processing".

20.9.4.3 Multi-Valued Responses

Access Manager 11g supports responses with multiple values. These can be multivalued user attribute responses, user's group membership responses and the like. For multivalued responses, Access Manager uses a COLON as the separator and a BACKSLASH as the escape character. For example, if a user attribute `genType` has the values "Gold", "Platinum" and "Silver", the policy response for `$user.attr.genType` would be:

```
"Gold:Platinum:Silver"
```

If a COLON appears in any of the attribute values, it will be escaped with BACKSLASH. For example, for a user with group memberships as "Administrators", "Special:Users", the policy response for `$user.groups` would be

```
"Administrators:Special\:Users"
```

It is possible to change the default separator and escape character using the configurePolicyResponses(responseSeparator, responseEscapeChar) WLST command. Refer to the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference for details.

20.9.5 About Policy Response Processing

Policy response processing occurs during the authorization request for which the authentication responses are replayed. Variable references are filled with appropriate

values to ensure that all variables have a value set, and can be set consistently with authorization values.

Processing a response expression is done through a series of steps:

- Scanner/tokenizer
- Parser
- Interpreter

  During interpretation, variable references are resolved to values. The result after processing is a simple String value, which is propagated to the Agent or saved within the session for future use.

Authentication success responses are saved and then "replayed" along with any authorization responses on the first applicable authorization request.

Authorization response expressions create the actions to be taken, depending on the evaluation of the expression: success, failure, or inconclusive.

> **Note:** Oracle Access Manager 10g exhibits the same behavior in the "authenticating Webgate" configuration. This is also employed by Access Manager 11g with 10g Webgates: The 10g Webgate always redirects to the Access Manager 11g credential collector which acts like the authenticating Webgate.

When referencing a variable, either the value is returned, or the following is returned:

- NOT FOUND is returned if the variable is not set
- NULL is returned if the variable is set to a null value

> **Note:** Verify the Responses.

Pass Through Without Processing

A value that must be passed through without processing, can be identified using a `\`. For example:

```
\$1000
```

results in the value `$1000` appearing in the returned value.

20.9.6 About Assertion Claims and Processing

For details, see Chapter 48, "Using Identity Context".

20.10 Adding and Managing Policy Responses for SSO

Policies and responses enable single sign-on and can override other directives. Before starting activities in this section, be sure to review the "Introduction to Policy Responses for SSO" on page 20-41.

Unless explicitly stated, information in this section applies equally to authentication and authorization responses.

- Adding a Policy Response for SSO
- Viewing, Editing, or Deleting a Policy Response for SSO

20.10.1 Adding a Policy Response for SSO

Users with valid Administrator credentials can use the following procedure to add a policy response for authentication or authorization to the Protected Resource Policy.

For example, you can collect the DN of the realm that is created when Oracle Internet Directory is installed. Optionally, you can also configure the global user ID of the subscriber in Oracle Internet Directory or a subscriber name rather than the default company as shown in Table 20–17.

Table 20–17 Fresh OSSO Installation: Protected Policy Response (Header)

Response Parameter	Collect Realm DN when OID is Installed	Configure GUID of Subscriber IN OID to Different Company	Configure GUID of Subscriber IN OID to Default Company
Name	*osso-subscriber-dn* (lowercase)	*osso-subscriber* (optional)	*osso-subscriber-guid* (optional)
Type	Header	Header	Header
Value	dc=*country*,dc=*example*,dc=*com*	dc=*country_or_region*,dc=*com*	,dc=*default_company*,dc=*com* Go to the subscriber DN (in Oracle Internal Directory for example) and find the value (of orclguid for the DN, for example).

Prerequisites

Analyze desired conditions before crafting authorization responses to ensure the appropriate actions are taken by the response. You need an Application Domain with an existing authentication or authorization policy.

See Also: "Introduction to Policy Responses for SSO" on page 20-41

To add a policy Response

1. Locate the desired domain as described in "Searching for an Authorization Policy".
2. In the individual policy page, click to activate the Responses tab, then click the **Add** button and:
   - In the Name field, enter a unique name for this response.
   - From the Type list, choose a response type (Session or Header or Cookie).
   - In the Value field, enter a value for this response. For example: $*namespace1.var1*

     See Also: "About the Namespace and Variable Names for Policy Responses" on page 20-43

   - Repeat as needed.
3. Click **Apply**, then close the Confirmation window.
4. Close the page when you finish.
5. Verify the Responses based on your definitions.

20.10.2 Viewing, Editing, or Deleting a Policy Response for SSO

Users with valid Administrator credentials can use the following procedure to view or edit a policy response for authentication or authorization.

Prerequisites

You must have an Application Domain with an existing authentication or authorization policy.

See Also: "Introduction to Policy Responses for SSO" on page 20-41

To view, modify, or delete a policy response

1. Locate the desired domain as described in "Searching for an Existing Application Domain".
2. Click the Authentication (or Authorization) Policies tab, then click the desired policy name.
3. On the individual policy page, click the **Responses** tab and proceed as needed:
   - **Add**: See "Adding a Policy Response for SSO"
   - **Edit**: Click the desired Response Name, Type, or Value, edit as needed, and click Apply.
   - **Delete**: Click the desired response, then click the Delete button for the Response table.
4. Close the Confirmation window.
5. Close the page when you finish.
6. Verify Responses based on your definitions for:
   - Header
   - Session
   - Cookie: Use a browser plug-in tool or turn on the browser "show cookies" settings.
   - Assertion Claim

20.11 Introduction to Authorization Policy Rules and Conditions

In Access Manager 11g, each Authorization policy includes a rule that defines whether the policy allows or denies access to resources protected by the policy. The rule references conditions that define the user or population to be granted or denied access and other considerations for authorization. Authorization rules and conditions apply to all resources within a specific authorization policy.

Evaluation of conditions and rules determines if the authorization policy applies to the incoming request. The appropriate obligations take affect after successful authentication and work in concert with defined authorization rules, conditions, and responses. For each incoming request, the authorization policy determines if there are any conditions that apply. If so, these conditions are evaluated.

This section provides the following topics:

- About Allow or Deny Rules
- About Authorization Policy Conditions
- About Classifying Users and Groups for Conditions
- Guidelines for Authorization Responses Based on Conditions

20.11.1 About Allow or Deny Rules

In an authorization policy, a Rule contains all (or a subset) of conditions defined for the policy. The effect of the Rule determines the effect of the policy.

You can set one or more rule effects (outcomes) per policy. However, you can specify only one Rule per outcome. The following outcomes can be applied to authorization and token issuance policies:

- Allow authorized users access to a protected resource. If Allow conditions do not apply to a user, the user is not qualified by the policy and, by default, the user is denied access to the requested resource.
- Deny authorized users access to a protected resource.

You can develop simple rules that rely on a single condition, or use expressions to define more complex rules based on multiple conditions. For more information, see "About Expressions and Expression-Based Policy Evaluation" on page 20-72.

20.11.2 About Authorization Policy Conditions

A condition is an element that specifies one or more criteria to be satisfied by the access request. In structure, conditions are similar to constraints (in 11.1.1.3 and 11.1.1.5). However, earlier constraints included Allow and Deny rules that are now specified independently on the Rules tab.

Each authorization policy can contain one or more conditions. Using different condition types, you can:

- Identify the users or groups of users who are either allowed or denied access (based on the rule) to protected resources.
- Stipulate the range of IP addresses who are either allowed or denied access to protected resources.

> **Note:** If the user's IP address falls outside the range of denied addresses, this by itself is not enough for authorization to be successful. For authorization to be successful, the user must specifically be granted access based on an Allow rule.

- Set a time period defining when the condition applies.
- Specify attributes that enforces evaluation of request context, user session state, and user attributes

The Conditions tab provides a table of defined conditions, organized by name, and a table of details for the selected condition, as shown in Figure 20–23.

Figure 20–23 Individual Authorization Policy Conditions Tab

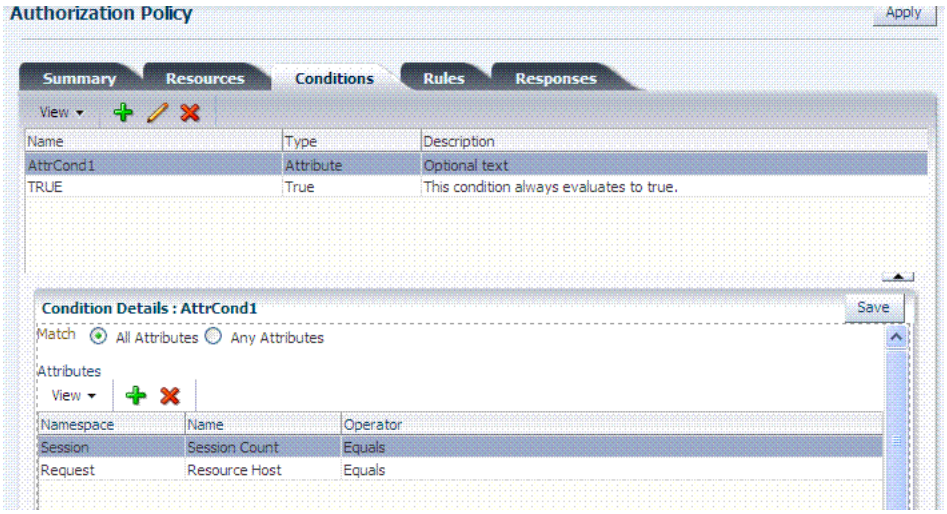


Table 20–18 describes elements and controls on the Conditions tab.

Table 20–18 Authorization Policy Condition Tab

Element	Description
Conditions Table Elements	Lists all conditions defined for this policy.
Name	A unique name used as an identifier for the condition.
Type	The kind of condition you want to use. Only one Type can be specified: ▪ Identity ▪ IP4 Range ▪ Temporal ▪ Attribute ▪ True (see Table 18–5)
Description	Optional unique text that describes this condition.
Condition Details Section	Depending on the Type of the selected condition, the information in this table will differ. For details, see: ▪ "About Identity Conditions" on page 20-55 ▪ "About IP4 Range Condition Types" on page 20-62 ▪ "About Temporal Conditions" on page 20-63 ▪ "About Attribute Conditions" on page 20-65

20.11.3 About Classifying Users and Groups for Conditions

Oracle recommends that you consider the same information for the policies and conditions when analyzing users and groups to determine who is explicitly allowed or denied access. For example, one authorization policy might be constrained to a particular time of day (Temporal Type) while another might be constrained to a specific group of users (Identity Type).

Note: Do not be concerned about users who are denied access under any conditions. Users are denied access by default if none of the conditions qualify them for access.

When classifying users Oracle recommends that you divide the users, and groups of users, into groups for whom different conditions apply. For example, conditions can determine when the users can access the resources, the computers from which they must make their requests, and so on.

If some users fall into multiple categories, for example, a user in the marketing group belongs to a certain project group, or a user in the human resources group also belongs to the project group, put the user in both categories. You can require that the user meet the conditions of two conditions.

To create policies for subsets of resources in an Application Domain and protect them with different authorization rules and conditions, consider the same information: who can access the resources protected by this policy and under what conditions you want explicitly to allow or deny access to the resources.

20.11.4 Guidelines for Authorization Responses Based on Conditions

For each condition type, consider the response actions that you want to occur for authorized users. For example, you might want the system to return user profile information and pass that information to a downstream application. For example:

- If the user is authorized, you might want to pass the user's common name (cn) to another application so that the application can present a customized greeting to the user.
- If the user is not authorized, you might also want to return information about the user for security purposes.

20.12 Defining Authorization Policy Conditions

You use conditions in an authorization policy to:

- Identify the users by user name, role, or an LDAP filter whose criteria the user must satisfy.
- Stipulate the computers where users can access resources.
- Set a time period when the rule applies.
- Specify attributes that enforces evaluation of request context, user session state, and user attributes

The mechanism to add a condition is the same regardless of the type you choose. A dialog box pops up where you define the name and type to create the condition container. Afterward you are presented with controls to define the specifics of the condition.

This section is divided as follows:

20.12.1 Choosing a Condition Type

This section provides the following topics:

- About Choosing a Condition Type
- Choosing a Condition Type

20.12.1.1 About Choosing a Condition Type

You can have more than one instance of a given type of condition within a policy.

When an Administrator adds a condition to an authorization policy, a window (Figure 20–24) appears where you enter capture the Name, Type, and optional Description. When submitted, this information is used to create a container for condition details that must be also specified.

Figure 20–24 Add Condition Window

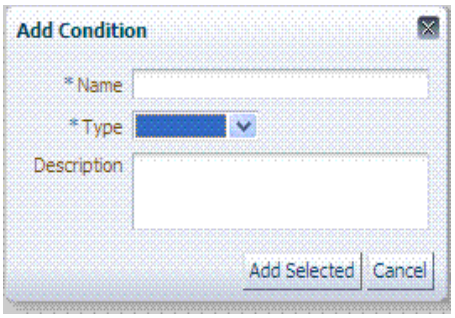


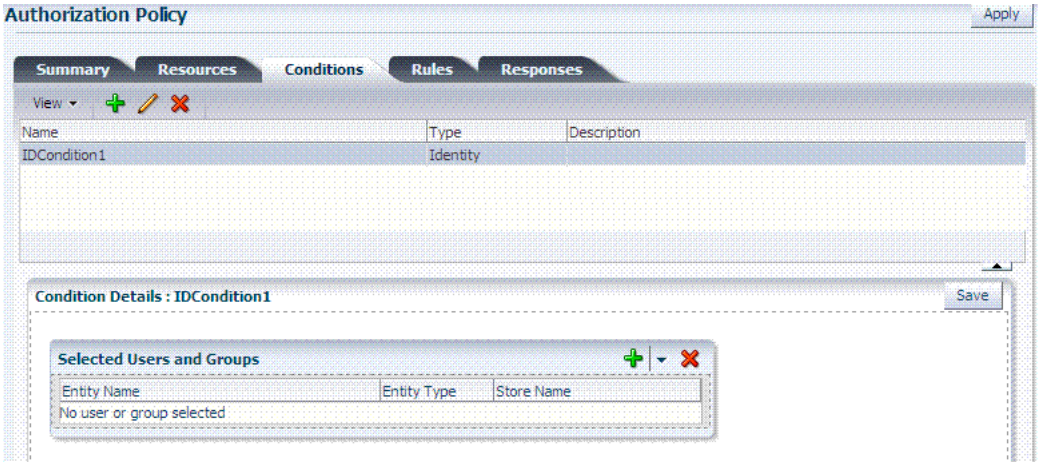
Table 20–19 describes the Add Condition elements.

Table 20–19 Add Condition Window Elements

Element	Description
Name	A unique name for this condition.
Type	Only one Type can be specified: ▪ Identity (See "About Identity Conditions" on page 20-55) ▪ IP4 Range (See "About IP4 Range Condition Types" on page 20-62) ▪ Temporal (See "About Temporal Conditions" on page 20-63) ▪ Attribute (See "About Attribute Conditions" on page 20-65)
Description	Optional.

After the container is added it is displayed on the Condition tab as shown in Figure 20–25. The Name, Type, and Description are displayed in the Results table at the top of the tab. The lower panel contains the details of the condition

Figure 20–25 Condition Containers on the Authorization Policy Page



See Also: "Defining Authorization Policy Conditions" for information and procedures

20.12.1.2 Choosing a Condition Type

Users with valid Administrator credentials can use the following procedure to choose a condition class for the authorization policy.

Note: You can have more than one instance of a given class of condition in a policy.

Prerequisites

The Application Domain must exist.

See Also: "About Choosing a Condition Type" on page 20-53

To choose a condition class

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the policy name to open its configuration.
3. On the individual policy page, click the **Conditions** tab.
4. Click the **Add** (+) button and (Table 20–19):
   - Name: Enter a unique name.
   - Type list, choose the kind of condition (Identity, for example).
   - Click the Add Selected button.
5. Proceed to one of the following topics to complete your definition:
   - Defining Identity Conditions
   - Defining IP4 Range Conditions
   - Defining Temporal Conditions
   - Defining Attribute Conditions

20.12.2 Defining Identity Conditions

This section provides all information about Identity Conditions in the following topics:

- About Identity Conditions
- Specifying Identity Type Conditions

20.12.2.1 About Identity Conditions

When defining an Identity Condition, you must add one or more members of a user population from one or more User Identity Stores. You can add the user population as a list of users or groups. Alternatively, you can add LDAP search filters to be used at runtime to identify the user population. LDAP search filters provide a simple way to specify a target identity population without having to reorganize or create new groups in the identity store (directory server). For details see:

- About Identity Conditions and User Populations
- About LDAP Search Filter Support in Identity Conditions
- About LDAP Search Filter Syntax

20.12.2.1.1 About Identity Conditions and User Populations After opening the condition container, any defined user population is displayed. As with the other condition types, the Identity type can be used in conjunction with identity and temporal conditions.

When adding an identity condition, you open the popup menu beside the Add (+) button (labeled 1 in Figure 20–26), choose to Add Users and Groups or Add Search Filter (2). Figure 20–26 shows the popup menu and the Add Identities window that appears (3). After locating the desired identities, select the desired Identities and click Add Selected (4).

Figure 20–26 Add Identities Window

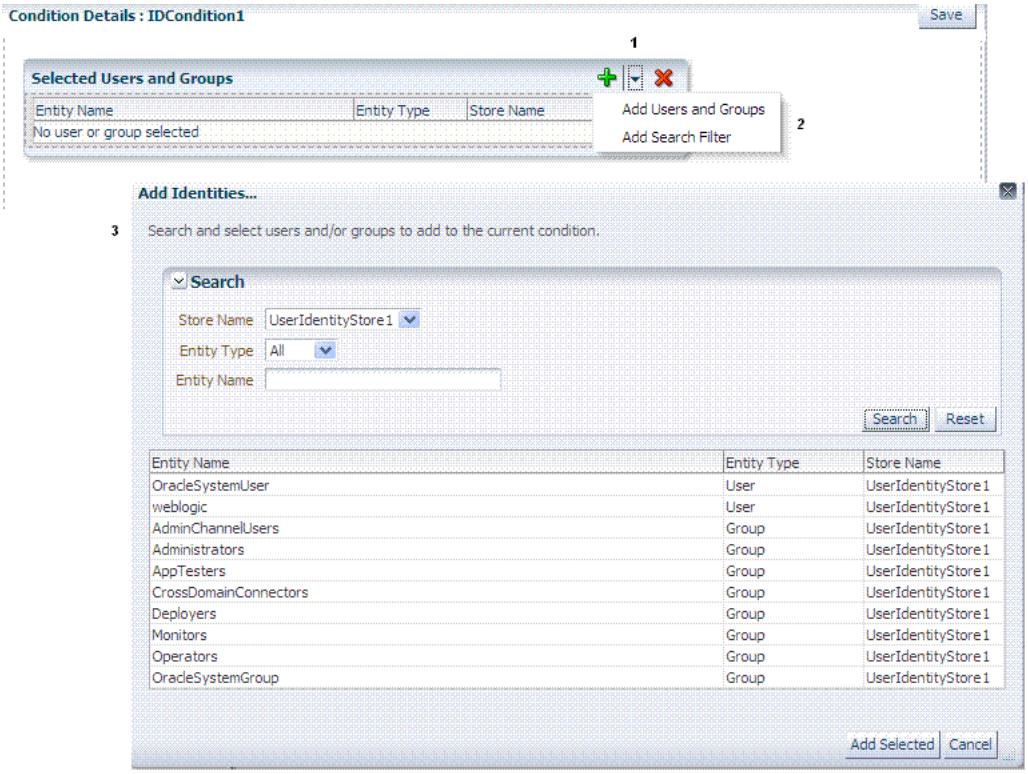


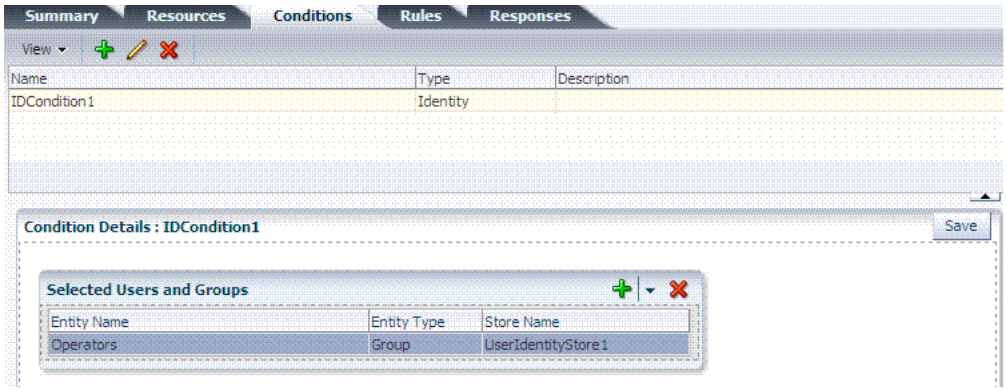
Table 20–20 describes the Add Identities elements.

Table 20–20 Add identities Elements

Element	Description
Store Name	Select the desired LDAP store for this search from the list of registered LDAP stores.
Entity type	Choose either Users, Groups, or All to define your search criteria.
Entity Name	Enter information to further refine your search criteria.
Search	Click this button when your search criteria are defined.
Results table	Displays the results of your search.
Add Selected	Click to add the selected users or groups from the results table to the Condition's Details.

After selecting one or more identities and clicking the Add Selected button, your Conditions tab might look something like Figure 20–27.

Figure 20–27 Identity Condition and Details



To save these details as a condition, click the Save button in the upper-right corner of the tab.

20.12.2.1.2 About LDAP Search Filter Support in Identity Conditions Access Manager 11g authorization conditions accept a list of users, groups, and LDAP search filters as part of allowed or denied identities. An LDAP filter is a text string that expresses specific criteria for the search operation. LDAP search filters provide a simple way to specify a target population without reorganizing or creating new groups in the identity store (directory server).

Access Manager 11g accepts LDAP search filter data for the following conditions and resource types:

- Identity Conditions
- Token Requestor Identity Conditions
- All resource types (HTTP, TokenServiceRP, and other custom resource types)

When a user tries to access a resource protected by a condition containing an LDAP search filter, Access Manager performs a directory lookup (LDAP search) on the identity domain (identity store) specified as a part of the filter. Search results are cached to avoid repeated directory server lookups.

If you choose `Add Search Filter ...`, the controls shown in Figure 20–28 appear. You can add more than one LDAP Search Filter in an authorization rule for evaluation at runtime. The field where you enter your LDAP search filter is used to identify allowed/denied users.

Figure 20–28 Add Search Filter Controls

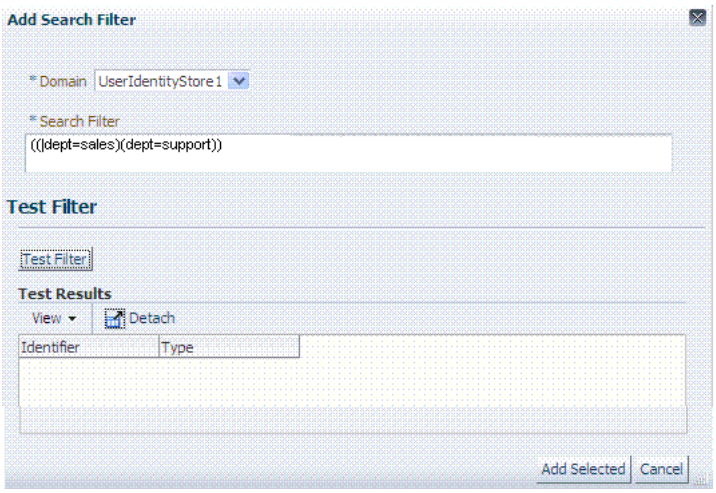


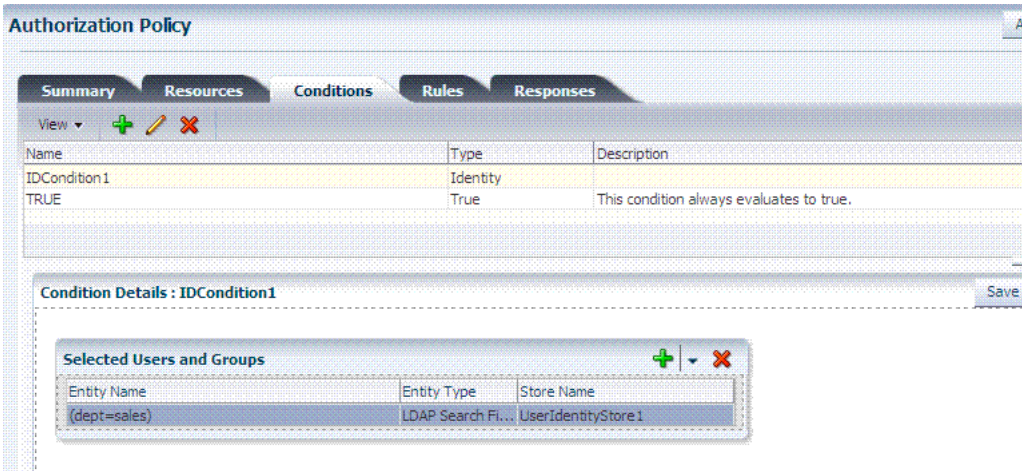
Table 20–21 describes elements associated with adding a Search Filter.

Table 20–21 Add Search Filter Elements

Element	Description
Domain	The Identity Domain (registered user identity store) in which the search should be conducted during runtime. Each filter must be associated with a specific user identity store. With Access Manager 11g, a directory lookup (LDAP Search) is performed only on the specified identity domain (identity store).
Search Filter	The field where you enter your LDAP search filter. For example: ((|dept=sales)(dept=support)) See Also: "About LDAP Search Filter Syntax" on page 20-59
Test Filter	This button enables you to test your LDAP Search Filter to ensure it returns the expected result.
Test Results	The results of your filter test are displayed with your own designations for: ■ Type: LDAPSearchFilter ■ Identifier: Your LDAP Search Filter
Add Filter	Click to Add the filter to this identity condition.
Cancel	Click to dismiss the Add Search Filter dialog without adding a filter.

Figure 20–29 shows the Identity Conditions: Details page, displayed after adding an LDAP Search Filter.

Figure 20–29 Identity Conditions: Details



See Also:

- "About LDAP Search Filter Syntax" on page 20-59
- "Defining Identity Conditions" on page 20-55

20.12.2.1.3 About LDAP Search Filter Syntax Only standard LDAP attributes can be used when defining an LDAP search filter. Exact syntax depends on your identity store; see your vendor documentation. Table 20–22 illustrates LDAP Search Filter examples for Access Manager.

Table 20–22 LDAP Search Filter Examples for Access Manager

Filter Type and Operators	Description	Syntax Example

Static LDAP Search Filters	When you implement a static search filter, all search results must match a fixed value. For example, you can restrict a search to return only people whose directory profiles show an organizational unit of Sales.
	As an example of a simple static filter, suppose you want to provide Selector searches for the seeAlso attribute. The filter returns search results that show only people whose directory profiles contain a businessCategory value of dealership.
		`(attribute=value)`
		For example:
		`(businessCategory=dealership)`

Static Searches Using Wild Cards	As an example of a static filter that uses wild cards, suppose you want only people with the word Manager in their title to be returned on a search using the Selector. You can create a filter that searches for the string Manager with the asterisk (*) wildcard.	`(attribute=*value*)`
		For example:
		`(title=*manager*)`

Dynamic LDAP Search Filters	A dynamic filter allows a search to return results that are based on a user profile. A dynamic filter is a conventional LDAP search filter with filter substitution syntax.	`(attribute=$attribute$)`

Table 20–22 (Cont.) LDAP Search Filter Examples for Access Manager

Filter Type and Operators	Description	Syntax Example

Substitution syntax	Substitution syntax is evaluated dynamically, according to the person executing a task. For instance, you can enter substitution syntax where the attribute value for the source DN (the person logged into the application) is substituted and evaluated against the target DN (the entry you are trying to view).
	Note: Setting a searchbase can present significant administrative overhead. A filter-based approach accomplished by substitution syntax can provide the same functionality in a more scalable and simplified design.
	Using substitution syntax, you can create a function that starts searches higher in the directory structure, but filters the search data by comparing an attribute of information from the search initiator's record (for example, using the substitution `$ou$`) to an attribute of data on each possible result (for example, `ou=`). You can use substitution syntax for attribute access control and searchbases. For example, by placing a filter on the type attribute Login for inetOrgPerson, the ability of a user to view any records outside their scope is removed.
	Note: For the selected searchbase, users can search only for entries from the same `ou` as their own. This applies only to the attribute on the person's record, not the ou of the branch of the directory in which they reside. Additionally, users from `ou=`people can search for entries within the selected searchbase.
		`(attribute=$attribute$)`
		For example: The following filter finds all those in the same organizational unit as the person logged in to the application:
		`(ou=$ou$)`

Dynamic Searches Using Wild Cards	Wildcards are supported in a dynamic filter.
	For example, suppose you want to supply a contactPerson attribute in an organizationalUnit object. The contactPerson attribute should return people in same Zip code as the organizationalUnit object. If the organizationalUnit profile contains an attribute zipCode, and the Zip code is specified at the end of a postalAddress directory attribute.
		`(attribute=*$attribute$)`
		For example:
		`(postalAddress=*$zipCode$)`

Searches Using the Not Operator: (!)	The Not operator is supported when constructing a filter. The optimized algorithm causes the filter (!(sn=white)) to not give the expected result.	`((!(sn=white))(objectclass=personOC))`

See Also: "Specifying Identity Type Conditions" on page 20-60

During migration to Access Manager 11g (from 10g), each LDAP Rule maps to corresponding 11g identity domains (user identity stores) based on Oracle Access Manager 10g directory profiles. Access Manager 11g identity domains (user identity stores) must be associated with each LDAP search filter.

See Also: Oracle Fusion Middleware Upgrade Guide for Oracle Identity Management

20.12.2.2 Specifying Identity Type Conditions

Users with valid Administrator credentials can use the following procedure to add identity type conditions to an Application Domain.

Note: You must save each condition definition individually, before adding or selecting another condition.

Prerequisites

The Application Domain must exist.

See Also:

- "About Identity Conditions" on page 20-55
- "About LDAP Search Filter Support in Identity Conditions" on page 20-57

To add identity conditions to an authorization policy

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the **Conditions** tab, click the Add (+) button.
3. Enter a **Name**, select **Identity** from the **Type** list (or Token Requestor Identity) and click **Add Selected**.
4. **Add Users/Groups**:
   - In the Condition Details section click the **Add (+)** button.
   - Choose **Add Users and Groups** from the list.
   - Store Name: Choose the desired name from the list of registered LDAP stores.
   - Enter criteria (Identity Type and Identity Name) for the population you want to find, and click the Search button.
   - Select desired results.
   - Click **Add Selected**.
   - Repeat to add another User or Group condition.
5. **Add Search Filter**:
   - In the Condition Details section click the **Add (+)** button.
   - Domain Name: Choose the desired user identity store for this filter.
   - Search Filter: Enter your search filter syntax (Table 20–21).
   - Test: Click the Test Filter button and review the results table.
   - Click the **Add Selected** button.
   - Repeat to add another LDAP Search Filter condition.
6. Click **Apply** and then close the Confirmation window.
7. Close the page when you finish.
8. Verify the Conditions by logging in as different users and test access to the resource.

20.12.3 Defining IP4 Range Conditions

This section provides the following information:

- About IP4 Range Condition Types
- Defining IP4 Range Conditions

20.12.3.1 About IP4 Range Condition Types

With the IP4 Range condition type, Administrators can specify a list of IP address ranges that will either be allowed or denied access. Like the other authorization conditions, IP4 Range condition types can be used in conjunction with identity and temporal conditions.

Explicit Addresses: Each IP address you specify must be an explicit, valid address (format *nnn.nnn.nnn.nnn)*: *192.2.2.2*, for example.

> **Note:** Oracle Access Manager 10g accepts a wildcard as the last entry (*192.2.2.** or *192.2.**, for example). IP4 Ranges with no wildcards can be easily ported to 11g by creating a Condition containing multiple IP4 Range values. However, 10g IP4 Ranges with wildcards are expanded by upgrade tooling into multiple ranges relevant to the wildcard.

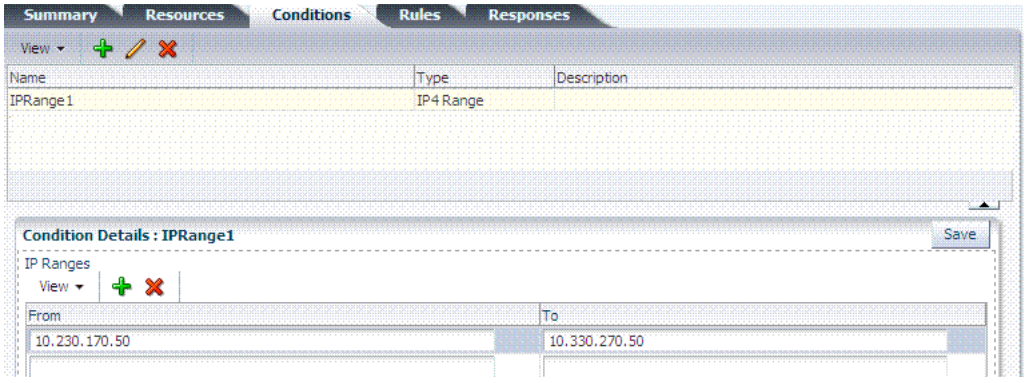
IP4 Range: You define a range by entering `From` (start) and `To` (end-range) address values. Each IP address you specify must be an explicit, valid address (format *nnn.nnn.nnn.nnn)*: *192.2.2.2*, for example. The address specified in the `To` field should be greater than the address specified in the `From` field. During authorization, Access Manager checks to ensure that the client IP address falls between the `From` (start)) and `To` (end-range) addresses specified. If multiple overlapping ranges are specified, and the client's IP address falls within even one of the ranges, the condition evaluates to "`true`" and allows (or denies) access based on the condition that was set for the condition.

If multiple overlapping ranges are specified, and the client's IP address falls within any one of the ranges, the condition evaluates to "`true`" and allows (or denies) access based on the condition.

> **Note:** If the `From` IP address is greater than the `To` address, the condition cannot match any client IP address.

Figure 20–30 illustrates the IP4 Range Conditions table with a sample starting and ending IP4 Range. If you enter an invalid range, you are notified and unable to save it.

Figure 20–30 IP4 Range Conditions



20.12.3.2 Defining IP4 Range Conditions

Users with valid Administrator credentials can use the following procedure to add IP4 Range type conditions to an Application Domain. You must save each condition definition individually, before adding or selecting another condition.

> **Note:** If the user's IP address falls outside the range of denied addresses, this by itself is not enough for authorization to be successful. For authorization to be successful, the user must specifically be granted access based on an Allow rule.

Prerequisites

The Application Domain must exist.

> **See Also:** "About IP4 Range Condition Types" on page 20-62

To add IP4 Range type conditions to an authorization policy

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the **Conditions** tab, click the Add (+) button.
3. Enter a **Name**, select **IP Range** from the **Type** list, enter an optional Description, and click **Add Selected**.
4. Add the desired IP address range (Table 20–30):
   - In the Details panel, click the **Add** (+) button to display the Add IP Range dialog.
   - `From`: Enter the start of the range.
   - `To`: Enter the end of the range.
   - Click the **Add** button to include this range in the Condition Details section.
   - Repeat these steps to add another range.
5. Click **Apply** and then close the Confirmation window.
6. Verify your IP4 Range Conditions by logging from different clients with different IP addresses to test access to the protected resource.

20.12.4 Defining Temporal Conditions

This section provides the following topics:

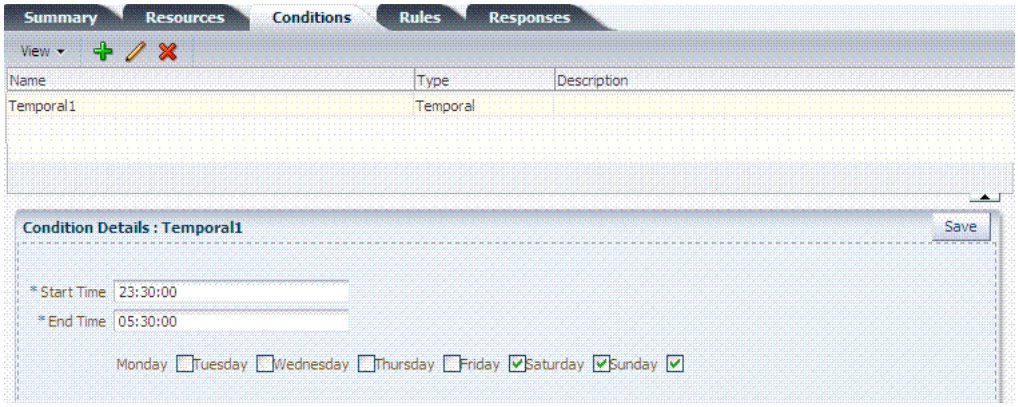
- About Temporal Conditions
- Defining Temporal Conditions

20.12.4.1 About Temporal Conditions

With the Temporal condition type, Administrators must add the start and end time and the range of days. Like the other conditions, this one can be used in conjunction with identity and IP4 Range conditions.

By default, all days in the range are enabled (though none are checked in the form as shown in Figure 20–31.

Figure 20–31 Temporal Condition Type Details Page



Time periods must be specified in the HH:MM:SS (hour, minute, and second) format based on a 24-hour clock based on Greenwich Mean Time (GMT). Midnight is specified as 00:00:00 (start). The day ends at 24:59:59.

Table 20–23 Temporal Condition Details

Elements	Description
Start Time **Notes**: Time is specified using a full 24-hour range. For instance, midnight is specified as 00:00:00 and 11:00 PM is specified as 23:00:00.	Specifies the hour, minute, and second that this condition begins. **Notes**: Time is based on Greenwich Mean Time (GMT). GMT is the same all year with no adjustments for daylight savings time or summer time.
End Time	Specifies the hour, minute, and second that this condition concludes.
Days	Specifies the days where this policy is active. Default: All Days (even though these are not checked).

Save the details before closing this page.

See Also: "Defining Temporal Conditions"

20.12.4.2 Defining Temporal Conditions

Users with valid Administrator credentials can use the following procedure to add temporal type conditions to an Application Domain.

Note: You must save each condition definition individually, before adding or selecting another condition.

Prerequisites

The Application Domain must exist.

See Also: "About Temporal Conditions" on page 20-63

To add temporal conditions to an authorization policy

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the Conditions tab, click the **Add** (+) button.

3. Enter a **Name**, select **Temporal** from the **Type** list, enter an optional Description, and click **Add Selected**.
4. In the Details panel (Table 20–23): Click the condition name in the table to open the details panel:
   - Enter the Start time.
   - Enter the End time.
   - Click the days of the week to which this condition applies (or leave all blank to specify every day of the week).
   - Click **Save**.
5. Click **Apply** and then close the Confirmation window.
6. Verify the Temporal Conditions by logging in at different times to validate access to the protected resource.

20.12.5 Defining Attribute Conditions

This section provides the following topics:

- About Attribute Conditions
- Defining Attribute Type Conditions

20.12.5.1 About Attribute Conditions

An attribute-type condition enforces the evaluation of request context, user session state and user attributes for Allow or Deny access pertaining to all resource types and authorization policies in the Application Domain. With an attribute-type condition defined, access is based on a list of name-value pairs scoped by the:

- Request context: Information on the requested resource, the client making the request, and the policy that was matched during evaluation.
- Session: User Session details (pre-defined session attributes or a reference to an arbitrary session attribute) when the user has an established session.
- User: User attribute information (reference to a LDAP attribute). This condition is used to define a condition on a reference to a user's arbitrary LDAP attribute only. However, conditions based on userID or groupID are defined using Identity Conditions.

Attribute type conditions are required when access is based on one of the situations described in Table 20–24.

Table 20–24 Access Conditions that Require Attribute-Type Conditions

When Access is based on ...	Description
Session attribute	A user is authorized to access the resource if the session attribute "Authentication level" is *xx* and Session Attribute "*s1*" = "*v1*" and Session Start Time = "*xxxx*". See: Table 20–27, " Attribute Names for Session Built-ins"
Requested resource	hostname and port number See: Table 20–26, " Attribute Names for Request Built-ins"
User details	A user is authorized to access the resource if its "*Empno*" = "*xxxx*" (department=sales, for example) See: Table 20–28, " Attribute Condition Data (Aggregation of Conditions)"

Table 20–24 (Cont.) Access Conditions that Require Attribute-Type Conditions

When Access is based on ...	Description
Token Issuance based on a session attribute	The Requester Partner can issue a token to the Relying Party if the claim contains an attribute "SessionActiveTime" = "15000". You define claims-based conditions of the Token Issuance policy based on the assertions created using session data.

An Administrator defining attribute type conditions enters data into fields for built-in attributes and known attributes. The attribute name can be entered in a text field or selected from a list of values. The condition to be executed is constructed using "AND" or "OR" conjunctions on the condition. Figure 20–32 illustrates the Attribute Conditions page.

Figure 20–32 Attribute Conditions Page

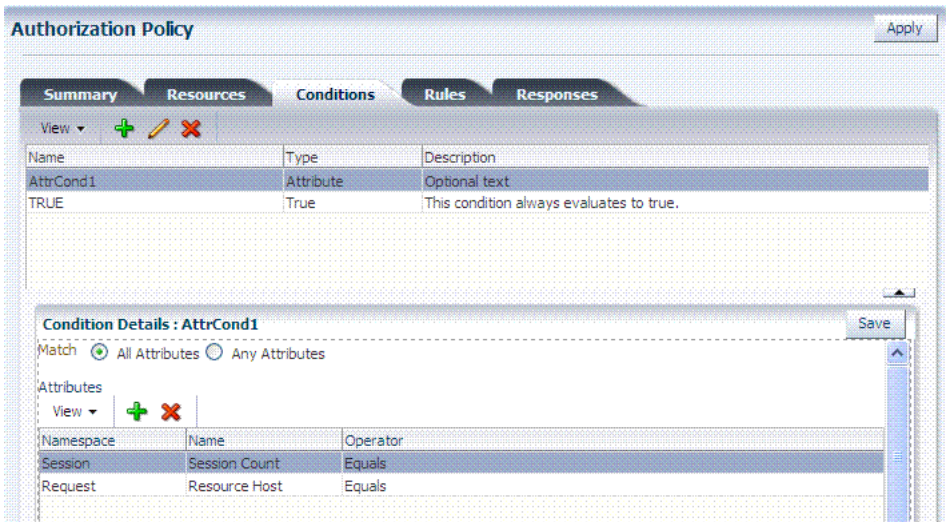


Figure 20–33 shows the Add Attributes dialog box. Each attribute condition is defined by the fields described in Table 20–25.

See Also: "Defining Attribute Conditions"

Figure 20–33 Add Attributes Dialog

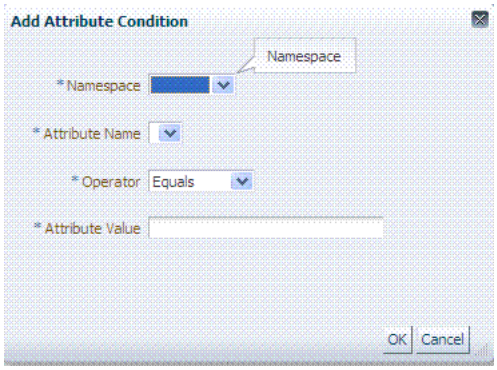


Table 20–25 Attribute Condition Elements

Condition	Description
Namespace	Supported namespaces: ■ Request Built-ins ■ Session Built-ins ■ Session (User Session) ■ User (User Attributes)
Name	Attribute name, which can be added as follows, depending on the: ■ Selected from a list if the Namespace is Request (Table 20–26) or Session (Table 20–27) ■ Entered manually into a text field if the Namespace is User
Operator	Allowed operators: ■ STARTS WITH ■ EQUALS ■ CONTAINS ■ ENDS WITH
Value	Literal value with no special wildcard characters.

Request Built-ins

Table 20–26 identifies the list of built-in attribute names for Request Built-ins:

Table 20–26 Attribute Names for Request Built-ins

Attribute Name	Description
agent_id	Name of the requesting agent.
client_ip	IP address of the user browser.
Policy_appdomain	Name of the Application Domain holding the policy matched for the request.
Policy_res	Resource host ID and URL pattern matched for the request.
policy_name	Name of the specific policy matched for the request.
res_host	Requested resource's hostname.
res_port	Requested resource's port number.
res_type	Requested resource's type.
res_url	Requested resource URL.

Session Built-ins

Table 20–27 identifies the list of attribute names for Session-based attribute-type conditions.

Table 20–27 Attribute Names for Session Built-ins

Attribute Name	Description
Authentication Level	Current authentication level for the session.
Authentication Scheme	Name of the authentication scheme executed to achieve the current authentication level.
Session Count	Session count for the user bound to this session.
Session Creation Time	Session creation time.

Table 20–27 (Cont.) Attribute Names for Session Built-ins

Attribute Name	Description
Session Expiry Time	Session expiration time.

Example: Attribute Condition Data (Aggregation of Conditions)

Table 20–28 illustrates sample condition data for each allowable namespace.

Table 20–28 Attribute Condition Data (Aggregation of Conditions)

Namespace	Name	Operator	Value
Request-Builtins	Res_host	Equals	7777
Session-Builtins	Authn_level	Equals	2
Session	*Sessionattr1*	Contains	Foo
User	*department*	Equals	sales

20.12.5.2 Defining Attribute Type Conditions

Users with valid Administrator credentials can use the following procedure to add attribute type conditions to an Application Domain.

> **Note:** You must save each condition definition individually, before adding or selecting another condition.

Prerequisites

The Application Domain must exist.

> **See Also:** "About Attribute Conditions" on page 20-63

To add attribute type conditions to an authorization policy

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the **Conditions** tab, click the **Add** (+) button.
3. Enter a **Name**, select **Attribute** from the **Type** list, enter an optional Description, and click **Add Selected**.
4. **Add Details for Attribute Condition**: Click the name of the condition to expand the details panel, and:
   - Match: Click either All or Any.
   - Namespace: Select from the list (Table 20–25).
   - Name: Select from the list or enter manually (Table 20–26 or Table 20–27).
   - Operator: Select from the list (Table 20–25).
   - Value: Enter manually (Table 20–28).
   - Click **Save**.
   - Repeat as needed.
5. Click **Apply** and then close the Confirmation window.
6. Verify the Attribute Conditions by logging in with different scenarios.

20.12.6 Viewing, Editing, or Deleting Authorization Policy Conditions

Users with valid Administrator credentials can use the following procedure to add identity type conditions to an Application Domain.

Prerequisites

The Application Domain and authorization policy exist.

> **See Also:** "Introduction to Authorization Policy Rules and Conditions" on page 20-49

To view, edit, or delete authorization policy conditions

1. Locate the desired policy as described in "Searching for an Authorization Policy".
2. Click the **Conditions** tab.
3. **Edit Condition Details**: Click the desired condition, click the Edit button to display the Details panel. Depending on the condition type, perhaps only the Description can be edited.
   - "Defining Identity Conditions" on page 20-55
   - "Defining IP4 Range Conditions" on page 20-61
   - "Defining Temporal Conditions" on page 20-63
   - "Defining Attribute Conditions" on page 20-65
   - True: Click the name, click the Edit button; only the Description can be edited.
4. **Delete Conditions**: Click the condition to remove and click the Delete button on the Condition tab.
5. Click **Apply** and then close the Confirmation window.
6. Close the page when you finish.
7. Verify the Conditions by accessing the resource and evaluating the results.

20.13 Defining Authorization Policy Rules

When Allow access rules, Deny access rules, or both are specified and do not apply to a user, the user is not qualified by the rule, and is denied access to the requested resource by default.

To specify who is allowed or denied access to the resource, the rule can do the following:

- Identify the users by user name, role, or an LDAP filter whose criteria the user must satisfy.
- Stipulate the computers where users can access resources.
- Set a time period when the rule applies.

This section provides the following topics:

- About Defining Rules in an Authorization Policy
- About Expressions and Expression-Based Policy Evaluation
- Defining Rules in an Authorization Policy

20.13.1 About Defining Rules in an Authorization Policy

Rules are new constructs in the Access Manager 11g policy model. A Rule specifies of how to combine condition evaluation outcomes. Each Rule also contains a rule effect (ALLOW or DENY), which determines the overall policy outcome.

Authorization rules define the actions to take during evaluation of the policy, conditions, and rules as well as what to do based on the outcome. There are three possible outcomes:

- True (Allow access): If the user meets the Allow access condition, the user qualifies for the Allow access part of the rule.
- False (Deny access): If the user meets the Deny access condition, the user qualifies for the Deny access part of the rule.
- Inconclusive: If the user satisfies neither the Allow access nor the Deny access conditions, the rule is said to be unqualified for that user. You can also think of this as the user not qualifying for the rule. If evaluation of a rule results in an unqualified user, the user is denied access to the resource based on that rule.

In some cases, a single authorization rule is all that is required to protect the resources of an Application Domain or a policy. You can configure a rule to identify who is allowed access to the resources it protects, who is denied access to them, and under what conditions these controls apply (for example, when they apply and from which computer). An authorization rule does not need to cover all users in its Allow access and Deny access conditions. Users who request access to a resource that is protected by the rule but do not qualify for any of the conditions are, by default, denied access to the resource.

For other cases, it may be necessary to configure multiple authorization conditions into rules to protect resources. You can impose complex conditions on different users. For example, you can define a rule that includes several authorization conditions, one or more of which a user must meet to qualify for access to a protected resource (or to qualify for denial of access to it). For example, you might require the user to meet two conditions—such as belonging to one group and using a computer assigned a specific IP address—to be granted access to the resource.

Oracle Access Management Console makes it easy for you to form expressions for an authorization rule. Conditions are declared outside of rules and are referenced within rules. Evaluation outcomes are combined in either Simple mode or Expression mode. Figure 20–34 shows the Rules tab in an authorization policy.

Figure 20–34 Authorization Policy Rules Tab: Simple Mode

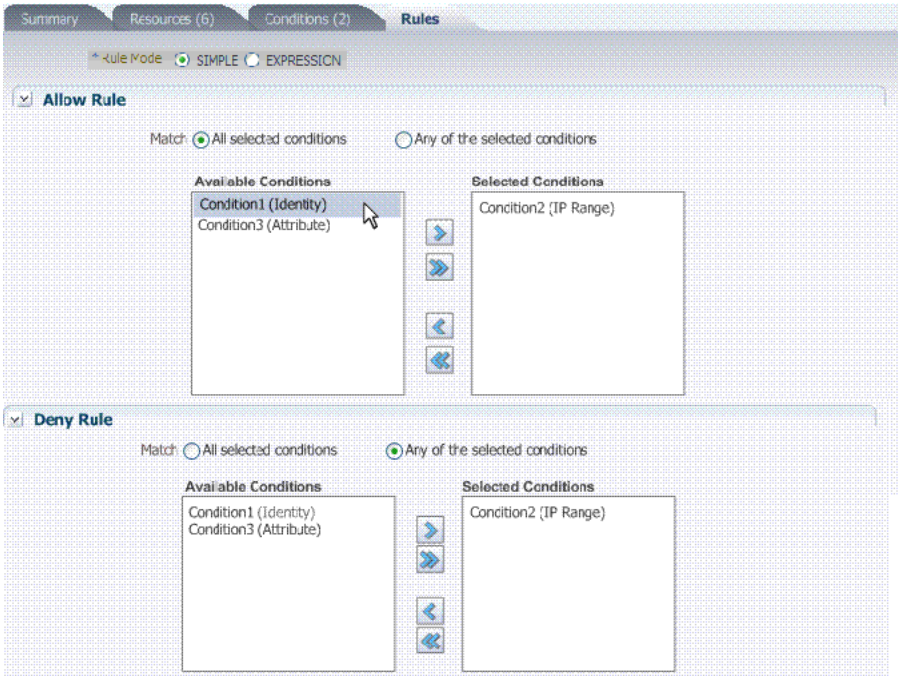


Table 20–29 describes the elements and controls on the Rules tab for Simple Mode evaluations.

Table 20–29 Authorization Policy Rules Elements

Element	Description
Rule Mode	The method used for evaluation of conditions and rules: ▪ Simple: Accepts a list of condition names that are combined using a simple algorithm: ALLOW conditions are combined using logical AND. All Allow conditions must be met to get access. DENY conditions are combined using logical OR. Any Deny condition that is true denies access. DENY always takes precedence over ALLOW. ▪ Expression: Accepts a user-specified Boolean expression to combine conditions using condition names, "(", ")", "|", "&" and "!" special characters. Combines conditions into complex policies. See Also: "About Expressions and Expression-Based Policy Evaluation" on page 20-72 ▪ A policy in which there are one or more conditions that are not part of either Allow rule or Deny rule is treated as a valid policy.
Allow Rule	The rule that allows access based on evaluation of your rules and the Selected Conditions list.
Deny Rule	The rule that denies access based on the evaluation of your rules and the Selected Conditions list.
Match	Criteria you choose to either match All conditions in the Selected Conditions list or Any conditions the Selected Conditions list.

Table 20–29 (Cont.) Authorization Policy Rules Elements

Element	Description
Available Conditions	A list of all defined conditions for this authorization policy.
Selected Conditions	A list of the specific conditions that you build by moving items from the Available Conditions list to this list for use during the policy evaluation process.
	Controls in the form of arrows enable you to add a condition to the Selected Conditions list (or vice versa to remove a condition from those selected).

20.13.2 About Expressions and Expression-Based Policy Evaluation

When a user requests access to a resource that is protected by an authorization condition and rule, information about the user is checked against the rule. If the condition stipulates other information, such as time period or time of day the condition applies, that, too, is checked. This process is referred to as *evaluation of the rule*.

An authorization expression consists of a single rule or a group of rules combined to express more complex conditions. For example, you can create an expression that requires a user to meet the Allow access conditions of two rules to be granted access to the resource. You use the Oracle Access Management Console to create these expressions, which include the following elements:

- Authorization conditions that you select from those that are defined and available in the authorization policy
- Operators that you use to combine rules to provide the kind of authorization protection that you want (Table 20–31)

For expressions that contain multiple conditions, a user may qualify for none of the expression's conditions, one of the conditions, or for the conditions of multiple rules. In any case, it is the result of evaluation of the expression—all of its conditions and how they are combined—not any one condition, that determines whether a user is allowed or denied access to a resource.

About the Definitive Result of an Authorization Expression: Access Manager evaluates the rules of an expression until it can produce a definitive result. Evaluation of an authorization expression may produce a definitive Allow access result, a Deny access result, or an Inconclusive result.

Figure 20–35 shows the Rules tab when you use Expression as a Rule Mode.

Figure 20–35 Rules Tab: Expression Rule Mode

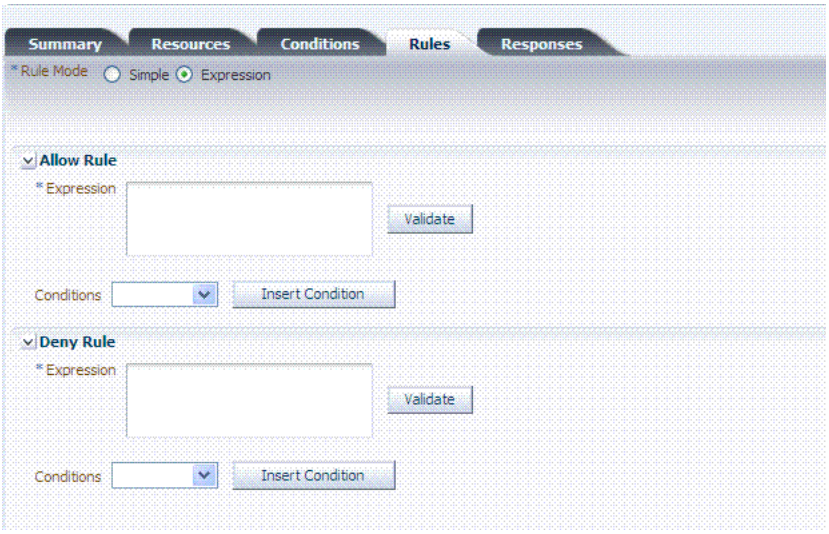


Table 20–30 describes the elements on the Rule tab in Expression mode.

Table 20–30 Rule Tab in Expression Mode

Element	Description
Rule Mode	The method used for evaluation of conditions and rules: ▪ Expression: Accepts a user-specified Boolean expression to combine conditions using condition names, "(", ")", "|", "&" and "!" special characters. Combines conditions into complex policies. ▪ A policy in which there are one or more conditions that are not part of either Allow rule or Deny rule is treated as a valid policy. See Also: Table 20–31, " Operators for Expressions in Authorization Rules"
Allow Rule	The rule that allows access based on evaluation of your rules and the Selected Conditions list.
Deny Rule	The rule that denies access based on the evaluation of your rules and the Selected Conditions list.
Conditions	Provides a list of all conditions defined for this authorization policy.
Insert Condition	Adds the selected Condition to the expression window.
Validate	Automatically tests the validity of the expression and reports results.

Table 20–31 identifies the operators you can use when building an authorization expression.

Table 20–31 Operators for Expressions in Authorization Rules

Operator	Description
( )	By default, two rules on either side of an AND operator compose the compound AND condition. Rules on either side of an OR operator are alternatives. When no parenthesis are used to enforce grouping of rules, the AND operator takes precedence over the OR operator. You can use parenthesis to override the default way in which the rules of an expression are grouped. Evaluation still occurs from left to right, but the rules are organized within the couplings and groups you create through use of parenthesis.

Table 20–31 (Cont.) Operators for Expressions in Authorization Rules

Operator	Description
&	The AND operator, which you use to form a compound condition which combines authorization rules. Any number of rules can be combined using the AND operator to implement the full scope of conditions a user must meet to satisfy the authorization requirement. However, a user must satisfy the same kind of condition—either Allow Access or Deny Access—of all of the rules of the AND compound condition for the AND clause to produce a definitive result. An authorization expression can contain more than one coupling or grouping of rules combined using AND. For example, it may contain several AND clauses, one connected to another by an OR operator.
|	The AND operator. An authorization expression can include a complex rule containing two or more alternative authorization conditions. Authorization rules forming a complex condition are combined using the OR operator. Each of the authorization rules specified by a complex OR condition stands on its own. Unlike compound conditions using the AND operator, the user need qualify for the condition of only one of the authorization rules connected by OR operators. An authorization expression can contain as many authorization rules connected using the OR operator as are required to express the authorization policy for the resources it protects. You can use the OR operator to connect authorization rules all of which have Deny Access conditions, all of which have Allow Access conditions, or which specify a mix of Deny Access and Allow Access conditions. You can connect single rules to single rules using OR, and you can connect a single rule to a clause containing rules combined using AND.

20.13.2.1 Expression Evaluation in Authorization Rules

The result of evaluation of an authorization rule, in conjunction with other authorization rules, if more than one is included in the expression, determines if a user is granted access to the requested resource. Evaluation of the rule occurs as follows:

- Each authorization rule specified in the expression is evaluated from left to right. The outcome is combined progressively with the previously evaluated rules.
- When the evaluation outcome is good enough to decide the overall policy outcome without having to evaluate any more rules, evaluation stops and the overall outcome is returned.
- Each evaluation outcome can be either True, False, or Inconclusive.

  Authorization Success: In this case, the user succeeds in gaining access to the requested resource. This result is associated with the Allow Access condition of the expression.

  Authorization Failure: In this case, the user fails to gain access to the requested resource. This result is associated with the Deny Access condition of the expression.

  Authorization Inconclusive: In this case, the rules of the expression produce conflicting results, and the user is denied access to the resource. If the match for Identity, IP4 address, or timing condition fails then expression evaluation stops and the result of the overall evaluation is deemed Inconclusive. However, based on the other rules present in the expression, this result might not affect the overall policy evaluation.

For example, the following expression:

```
(Rule1 AND Rule 2) OR (Rule 3 AND Rule 4)
```

Yields the following outcomes:

- Rule1 - INCONCLUSIVE
- Rule2 - FALSE

- Rule3 - TRUE
- Rule4 - TRUE
- Overall: TRUE (Allow)

The following sample expression uses (in order of type) Identity, Temporal, IP4Range, and Attribute conditions:

```
(IsEMEAemployee & IsEMEAWorkingHours & !(ConnectedOverVPN |NotReadDisclaimer))
```

Condition names that include spaces, tabs, or special characters (if properly escaped when defining the expression) are properly handled

20.13.3 Defining Rules in an Authorization Policy

Users with valid Administrator credentials can use the following procedure to add rules to an authorization policy.

Prerequisites

Defining Authorization Policy Conditions.

See Also: "About Defining Rules in an Authorization Policy"

To define authorization policy rules

1. Locate the desired domain as described in "Searching for an Authorization Policy".
2. Click the **Rules** tab.
3. **Expression**:
   a. Click **Expression** as the Rule Mode.
   b. In the Allow Rule Expression field, build your expression by entering operators (Table 20–31) and choosing and inserting conditions (Table 20–30).
   c. Click the **Validate** button to confirm your expression.
   d. Repeat Steps b and c for the Deny Rule.
   e. Click Apply.
4. **Simple Rule Mode**:
   a. Click **Simple** as the Rule Mode.
   b. **Allow Rule**:

      Click to **Match** either:

      All selected conditions
      Any of the selected conditions

      Using arrows for Allow (or Deny) Rule, move desired conditions from the Available Conditions column into the Selected Conditions column.

      Click **Apply**.
   c. Repeat step b for the Deny Rule.
5. Click **Apply** and then close the Confirmation window.
6. Verify the rules by accessing the resource and evaluating the results.

20.14 Validating Authentication and Authorization in an Application Domain

The procedure here provides several methods for confirming that Agent registration and authentication and authorization policies are operational. The procedures are nearly identical for both OAM Agents and OSSO Agents (mod_osso). However, OSSO Agents use only the authentication policy and not the authorization policy.

Prerequisites

- Users and groups who are granted access must exist in the primary LDAP User Identity Store that is registered with Oracle Access Management
- Agents must be registered to operate with Access Manager. After registration, protected resources should be accessible with proper authentication without restarting the Administration or Managed Server.
- Application domain, authentication policies, and authorization policies must be configured.
- Logout should be configured as described in Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates"

To verify authentication and access

1. Using a Web browser, enter the URL for an application protected by the registered Agent to confirm that the login page appears (proving that the authentication redirect URL was specified appropriately). For example:

   `http://exampleWebserverHost.example.com:8100/resource1.html`

2. Confirm that you are redirected to the login page.
3. On the Sign In page, enter a valid username and password when asked, and click Sign In.
4. Confirm that you are redirected to the resource and proceed as follows:
   - **Success**: If you authenticated successfully and were granted access to the resource; the configuration is working properly.
   - **Failure**: If you received an error during login or were denied access to the resource, check the following:
     - Authentication Failed: Sign in again using valid credentials.
     - **Access to URL ... denied**: This userID is not authorized to access this resource.
     - **Resource not Available**: Confirm that the resource is available.
     - **Wrong Redirect URL**: Verify the redirect URL in the Oracle Access Management Console.

   See Also: Chapter 21, "Validating Connectivity and Policies Using the Access Tester"

20.15 Understanding Remote Policy and Application Domain Management

Several remote management modes enable Administrators to update, or validate, or delete an existing agent registration. This section provides the following topics:

20.15.1 About Managing Policies Remotely

Access Manager provides two modes to manage Application Domains and their policies without registering or modifying the companion agent. Remote policy and Application Domain management supports only create and update functions. Remote management does not support removing Application Domains or policies.

> **Note:** Application Domain removal is a manual task that must be performed using the Oracle Access Management Console.

Table 20–32 describes these remote Application Domain management modes. Again, command parameters include the mode, and an input `*Request.xml` file using a relative path with respect to $OAM_REG_HOME, the preferred location for input files):

```
./oamreg.sh <mode> <input_file> [prompt_flag] [component.oam.config_file] <mode>
value
```

Table 20–32 Remote Policy Management Modes, Templates, and Flags

Mode and Template	Description
policyCreate $OAM_REG_HOME/input/ *CreatePolicyRequest.xml*	Allows Administrators to create Host Identifiers and an Application Domain without registering an Agent. `./bin/oamreg.sh policyCreate input/myCreatePolicyRequest.xml` See Also: "About the Create Policy Request Template" on page 20-78
policyUpdate $OAM_REG_HOME/input/ *UpdatePolicyRequest.xml*	Allows Administrators to update existing Host Identifiers and Application Domain without updating an Agent. `./bin/oamreg.sh policyUpdate input/UpdatePolicyRequest.xml` See Also: "About the Update Policy Request Template" on page 20-79
Flag	**Optional**

[prompt_flag] value: [-noprompt]	When the optional -noprompt flag is used, oamreg can read input from system.in by using echo and pipe to pass data.
	Examples from $OAM_REG_HOME location:
	`(echo username; echo password; echo webgate_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt component.oam.conf`
	
	`(echo username; echo password; echo webgate_password; echo httpscert_trust_prompt;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`
	
	`(echo username; echo password; echo webgate_password; echo cert_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`
	
	`(echo username; echo password; echo webgate_password; echo httpscert_trust_prompt; echo cert_password;) | ./bin/oamreg.sh inband input/Request.xml -noprompt`

Table 20–32 (Cont.) Remote Policy Management Modes, Templates, and Flags

Mode and Template	Description

component.oam.config_file	Optional. Remote registration accepts a configuration file with a URI list as an argument. component.oam.config_file defines the full path to a file containing any number of protected or public URIs. Ensure that the file uses the following syntax and format:
	■ At least one protected URI is required
	■ Only one product family is allowed per file
	■ Comments begin with '#'
	■ Keyword 'public_uris': list public URIs on separate lines after this key word.
	■ Keyword 'protected_uris': list URIs to be protected on separate lines after this key word
	Note: You can configure the authentication scheme for a policyusing the following format (the policy name and authentication scheme name must be separated by a Tab character):
	`<Policy Name> 'tab' <Authentication Scheme Name>`
	For example:
	`########################`
	`protected_uris`
	`########################`
	`protected policy1 Basic Over LDAP`
	`/finance/protected1/**`
	`/finance/protected2/**`
	
	`protected policy2 Client Certificate`
	`/finance/protected3/*.js,*.png,*.gif`
	
	`########################`
	`public_uris`
	`########################`
	`/finance/public`
	`/finance/test1/public`

20.15.2 About the Create Policy Request Template

The `CreatePolicyRequest.xml` file with the remote `policyCreate` mode allows Administrators to create Host Identifiers and an Application Domain without creating or updating an agent registration.

- Create a Host Identifier add multiple `hostPortVariations` (host port pairs).
- Create an Application Domain.
- Add multiple protected, public, and excluded resources. Resources can be with or without query strings, both are supported.
- Create default authentication and authorization policies for the resources that do not require customized policies.

Many of the same parameters are found in the `CreatePolicyRequest.xml` file and the expanded (full) Agent registration templates discussed earlier. `CreatePolicyRequest.xml` provides elements for Authentication and Authorization Policies and resources (with no <agentName> element).

Some parameters in the `CreatePolicyRequest.xml` file are new and not included in the full agent registration XML files, while certain elements in the original agent registration file are used to create or update. However, some elements are The primary differences of `CreatePolicyRequest.xml` are specific to:

- Elements for Authentication and Authorization Policies and resources are provided
- No <agentName> element or related elements are provided

> **See Also:** "About Remote Policy Management and Templates" on page 20-79

20.15.3 About the Update Policy Request Template

`UpdatePolicyRequest.xml` and `CreatePolicyRequest.xml` are nearly identical. Both provide the same elements, with the exception of the `<protectedAuthnScheme>` element.

> **See Also:** "About Remote Policy Management and Templates" on page 20-79

Using `UpdatePolicyRequest.xml`, Administrators can:

- Update a Host Identifier add multiple `hostPortVariations` (host port pairs)
- Update an Application Domain
- Add multiple protected, public, and excluded resources.(with or without query strings).
- Update default authentication and authorization policies for the resources that do not require customized policies
- Create customized policies that include:
  - Policy display name
  - Policy description
  - Authentication scheme (Authentication policies only)
  - A subset of resources to be associated with the policy

20.15.4 About Remote Policy Management and Templates

This section describes the unique remote management elements for Application Domain management found in the `CreatePolicyRequest.xml` and `UpdatePolicyRequest.xml` files. These elements are described in Table 20–33.

> **See Also:** Table 16–8, " Common Elements in Remote Registration Requests" for a description of elements common to remote registration and remote management.

Table 20–33 Remote Management Template Elements

Element	Description	Example
<rregAuthenticationPolicies> <rregAuthenticationPolicy>	Specifies the name and description for the Authentication Policy (to use when creating a new policy or updating an existing policy).	<rregAuthenticationPolicies> <rregAuthenticationPolicy> <name>AuthenticationPolicy1</name> <description>Authentication policy created using policyUpdate mode of rreg tool</description> . . </rregAuthenticationPolicy> </rregAuthenticationPolicies>
<authnSchemeName>	Specifies the Authentication Scheme to use in the Authentication Policy.	<rregAuthenticationPolicies> . . authnSchemeName>LDAPScheme </authnSchemeName> . . </rregAuthenticationPolicy> </rregAuthenticationPolicies>
<uriList>	Identifies a resource that requires authentication using the policy.	<rregAuthenticationPolicies> . . <uriList> - <uriResource> <uri>/res1</uri> <queryString /> </uriResource> </uriList> . . </rregAuthenticationPolicy> </rregAuthenticationPolicies>
<rregAuthorizationPolicies> <rregAuthorizationPolicy>	Specifies the name and description for the Authorization Policy (to use when creating it anew or updating an existing policy).	<rregAuthorizationPolicies> <rregAuthorizationPolicy> <name>AuthorizationPolicy1</name> <description>Authorization policy created using policyUpdate mode of rreg tool</description> . . </rregAuthorizationPolicy> </rregAuthorizationPolicies>
<uriList>	Identifies a resource that requires Authorization using the Authorization Policy.	<rregAuthorizationPolicies> . . <uriList> - <uriResource> <uri>/res1</uri> <queryString /> </uriResource> </uriList> . . </rregAuthorizationPolicy> </rregAuthorizationPolicies>

20.16 Managing Policies and Application Domains Remotely

The following procedure describes how Administrators can create or update existing policies remotely, without revising an agent's registration.

Prerequisites

Review About Managing Policies Remotely

To managing policies or an Application Domain remotely without an Agent

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. Copy the appropriate request template and develop your own policy-management request (including any Application Domain revisions needed):
   - Create Policy Request File
   - Update Policy Request File
3. On the Agent host, run the following command with the appropriate mode and your own *Request*.xml input file. For example:

   policyCreate Mode:

   ```
   ./bin/oamreg.sh policyCreate input/myCreatePolicyRequest.xml
   ```

   policyUpdate Mode:

   ```
   ./bin/oamreg.sh policyUpdate input/myUpdatePolicyRequest.xml
   ```

4. Provide the registration Administrator user name and password when asked.
5. Confirm success by reading on-screen messages, then use the Oracle Access Management Console to manage the domain and policies:

   ```
   agentUpdate process completed successfully!

   Native Configuration File Location: "... created in output folder ..."
   ```

   The output folder is in the same location where RREG.tar.gz was expanded: .../rreg/output/*AgentName*/

20.17 Defining an Application

Application is a new concept introduced in PS2. An Application contains:

- launch-url (that will be used by the end user of the application)
- icons, description and other meta-data that is used to display it in the Access Portal (which is user facing)

The following Application types are supported:

- SSO Agent Application (protected by a WebGate)
- Federation Service Provider Partner Application (through Federation, launch a third-party partner application)
- Form-Fill Application (Access Portal Application template based application)

The Application should have the configuration required to SSO enable it. However, for PS2, only Form-Fill application and Federation SP applications have their configuration in the Application. SSO applications have only the launch URL. Additional functionality will be added in subsequent releases.

Note: Application registration will work only if ESSO is configured and enabled. In order to register an Application, an ESSO IDS Profile must be created because the Application's policy information is stored in the ESSO directory store.

21

Validating Connectivity and Policies Using the Access Tester

Oracle provides a portable, stand-alone Java application, Access Tester, which simulates registered Agents connecting to OAM Servers. The scripted execution allows for command-line processing. You can record and playback scripts and capture output for different functions. Encrypted and multiple-server connections are supported.

IT professionals and Administrators can use the Access Tester to troubleshoot agent to server connections in addition to on-the-fly testing of request and response semantics and access policy designs.

This chapter introduces the Access Tester and how to use it in the following sections:

21.1 Prerequisites

Before you can perform tasks in this chapter:

- Ensure that the Oracle Access Management Console and OAM Server are running.
- Confirm the Application Domain and policies for one or more resources, as described in Chapter 20.

21.2 Introduction to the Access Tester for Access Manager 11g

The Access Tester is a portable, stand-alone Java application that ships with Access Manager 11g. The Access Tester provides a functional interface between an individual IT professional or Administrator and the OAM Server.

IT professionals can use the Access Tester to verify connectivity and troubleshoot problems with the physical deployment. Application Administrators can use the Access Tester to perform a quick validation of policies. In this chapter, the term "Administrator" represents any individual who is using the Access Tester.

The Access Tester can be used from any computer having a network connection to the OAM Server. Both a graphical user interface (known as the Tester Console in this chapter) and a command-line interface are provided. Command line mode enables complete automation of test script execution in single or multi-client mode environments.

By appearing to be a real agent, the Access Tester helps with policy configuration design and troubleshooting, and sometimes with troubleshooting OAM Server responsiveness. When using the Access Tester, you must appear to be the real end user; the Access Tester does not actually communicate with a real end user.

To use the Access Tester, you must understand and administer authentication and authorization policies for an application or resource that is protected by Access Manager.

The Access Tester enables you to:

- Configure a request to be sent to the OAM Server that emulates what a real agent would send to the OAM Server in a real environment.
- Send your request to the OAM Server and receives a response that is the same as the response that would received by a real Agent. The Access Tester uses the OAM Access Protocol (OAP) API to send requests over the OAP channel to the OAM Proxy running as part of the OAM Server. The OAM Server processes the request and returns a response.
- Process and display the server response.
- Proceed in the manner a real agent would to handle the response. For example, if a Webgate determines that a resource is protected by a certificate authentication scheme, then it must obtain the end user's certificate from the http SSL connection.

  In the case of a certificate authentication scheme, you must point the Access Tester to a certificate to be used as the end user's credentials.

In addition to simulating the Agent while performing functions in the previous list, the Access Tester enables you to:

- Review performance characteristics of intended policy changes
- Track the latency of authentication and authorization requests
- Stress test the OAM Server to establish low- and high-performance watermarks relative to desired user loads, and to size back-end hardware
- Stress test the policy server by running multiple concurrent tests (multi-threaded mode) with command-line mode only.
- Establish performance metrics and measuring on an ongoing basis to prove desired outcomes

During basic operations, the Access Tester does not make any determination about the Server response and whether it is a right or wrong response (for instance, whether or not resource X is protected, or user Y is authorized to access resource X). When operating the Access Tester, you must be aware of the policy configuration to determine if a specific response is appropriate.

The Access Tester offers advanced functionality that enables you to group a number of individual requests into a test script that can be sent to the OAM Server for processing. The output of such a test run can be captured by the Access Tester and used to compare against a similar document containing "known good" responses. In this way, the Access Tester can be used for automated testing of policy configuration against errant changes.

Additionally, the Access Tester provides a multi-threaded capability designed to stress test the policy server. In the multi-threaded approach, you identify the number of virtual test clients to connect to the policy server and the number of iterations that each virtual client should execute a test script. This enables you to stress test the policy server.

For more information, see the following topics in this chapter:

- About OAM Agent and Server Interoperability
- About Access Tester Security and Processing
- About Access Tester Modes and Administrator Interactions

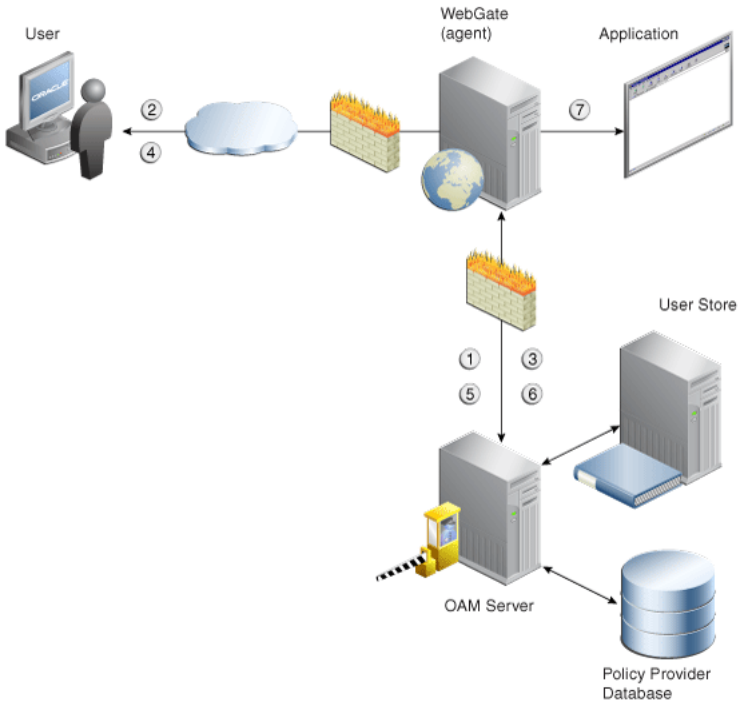
21.2.1 About OAM Agent and Server Interoperability

The two primary types of actors in the OAM architecture are the policy servers (OAM Servers) and OAM policy enforcement agents (Webgates or Access Clients). In the security world, Agents represent the policy enforcement point (PEP), while OAM Servers represent the policy decision point (PDP):

- The Agent plays the role of a gatekeeper to secure resources such as http-based applications and manage all interactions with the user who is trying to access that resource. This is accomplished according to access control policies maintained on the policy server (OAM Server).
- The role of the OAM Server is to provide policy, identity, and session services to the Agent to properly secure application resources, authenticate and authorize users, and manage user sessions.

This core OAM product architecture revolves around the following exchanges, which drive the interaction between the Agent and OAM Server. To expose inter-operability and the key decision points, Figure 21–1 illustrates a typical OAM Agent and OAM Server interaction during a user's request for a resource.

Figure 21–1 OAM Agent (PEP) and OAM Server (PDP) Inter-operability



The following overview outlines the processing that occurs between OAM Agents and OAM Servers. During testing, the Access Tester emulates the Agent and communicates with the OAM Server while the Administrator emulates the end user.

Process overview: Interoperability between OAM Agents and OAM Servers

1. Establish server connectivity: The registered OAM Agent connects to the OAM Server.
2. The user requests accesses to a resource.
3. Validate resource protection: The Agent forwards the request to the OAM Server to determine if the resource is protected.

   Protected: The OAM Server responds with the type of credentials required.
4. User credentials: Establishing the user identity enables tracking for Audit and SSO purposes, and conveyance to the application. For this, the Agent prompts the user for his credentials.
5. Authenticate user credentials: The Agent forwards the supplied user credentials to the OAM Server for validation.

   Authentication Success: The Agent forwards the resource request to the OAM Server.
6. Authorize user access to a resource: The Agents must first determine if the user is allowed to access the resource by forwarding the request for access to the OAM Server for authorization policy evaluation.
7. The Agent grants or denies access based on the policy response.

21.2.2 About Access Tester Security and Processing

This topic provides information about secure communications, connections, storage, input, logging, and Analysis.

Secure Communication: The Access Tester supports Open, Simple, or Cert connection modes for communication with the OAM Server:

- Open mode: No security on the physical connection
- Simple mode: The physical connection is encrypted using built-in certificates. With Simple mode, you are asked to enter the Global Pass Phrase that is configured for the OAM Server.
- Cert mode: The physical connection is encrypted using a field-provided certificates. Access Tester Cert Mode requires:
  - Configuring the agent (either existing or new) for Cert mode communication.
  - Obtaining certificates for the agent being emulated.

Access Tester Cert Mode requires two JKS key stores, created using the importcert tool from the supplied PEM (BASE64-encoded ASCII) certificates: aaa_trust.pem, aaa_key.pem, aaa_cert.pem:

- A Trust Store (file containing the JKS key store with the root CA certificate) is required.
- A Key Store (file containing the JKS key store with the agent's private key and certificate) is required.
- A Key Store Password is used to encrypt the Key Store with the agent certificates.

See Also:

- Appendix C, "Securing Communication" for details about Simple and Cert mode configuration for OAM Server and clients (Webgates)
- "Introduction to the Access Tester Console and Navigation" on page 21-12

Connections: The Access Tester encrypts all password-type values that it saves to configuration files and test cases. Access Tester validates whether the pool contains valid connections. Cache flush requests are sent over an established connection (not an out-of-band connection to delete the user session (to simulate logout) over OAP. Using an already established connection can improve performance.

Persistent Storage: The Access Tester manages a number of data structures that require persistent storage between Access Tester invocations. XML-file-based storage is provided for the following types of information:

- Configuration data to minimize data entry between invocations of the application (OamTestConfiguration)
- Test scripts consisting of captured test cases (OamTestScriptCase)
- Statistical data representing execution metric from a test run (OamTestStats)

XML Files for Input, Logging, and Analysis: The Access Tester uses a single XML schema to define all the XML documents it generates. The following XML files are produced when you run the Access Tester to process test scripts:

- Configuration Script: config.xml is the output file generated using the Save Configuration command within the Access Tester. The name of this document is

used within the input script to provide proper connection information to the Access Tester running in command line mode. For details, see "About the Saved Connection Configuration File" on page 21-33.

- Input Script: script.xml represents a script that is generated by the Access Tester after capturing one or more test cases. For details, see "About the Generated Input Test Script" on page 21-33.
- Target Output Script: oamtest_target.xml is generated by running the Access Tester in command line mode and specifying the input script. For details, see "About the Target Output File Containing Test Run Results" on page 21-35. For example: `-Dscript.scriptfile="script.xml" -jar oamtest.jar`
- Statistics: oamtest_stats.xml is generated together with the output script. For details, see "About the Statistics Document" on page 21-37.
- Execution Log: lamtest_log.log is generated together with the output script. For details, see "About the Execution Log" on page 21-39.

For more information, see "About Access Tester Modes and Administrator Interactions".

21.2.3 About Access Tester Modes and Administrator Interactions

This topic describes modes, interactions, and the jar files needed to start and run the Access Tester.

Console: The Access Tester provides a single window for interactions with the user. All Access Tester operations are available in the main window, which performs as a central dashboard where users can submit specific details for the test case and view responses.

Command Line and Scripts: You can use the Access Tester command line and develop test scripts, which you can run interactively or in batches for computerized execution to maximize productivity and minimize costs and resources.

Startup and Run Time JAR Files: The Access Tester requires nap-api.jar in the same directory as the main jar oamtest.jar, which is used to start the application.

Interactions: Regardless of the mode you choose for running the Access Tester, your primary interactions with the Access Tester include:

- Issuing Requests and Reviewing Results

  You use the Access Tester to issue requests to the OAM Server to validate resource protection, policy configuration, user authentication, and user authorization. You can immediately analyze test case results and also retain the data for longer-term analysis, if needed.

- Managing Test Scripts

  You can build test scripts by capturing the data generated by test execution, which is available as stand-alone documents. You can run the test script for manual or automated analysis. The Access Tester provides for some automated analysis after each test run, while collecting full set of statistics to enable analysis after the fact.

- Managing OAM Server Connectivity

  You can manage application settings that include server connection information.

Figure 21–2 depicts the flow of information during operations in both Console and command-line modes. Details follow the figure. Advanced operations include building and executing test scripts.

Note: Command-line mode enables complete automation of test script execution in single or multi-client mode environments. The Access Tester exposes a control mechanism to configure test runs without having to change "known good" input test scripts which are available in read-only mode.

Figure 21–2 User Interactions with the Access Tester

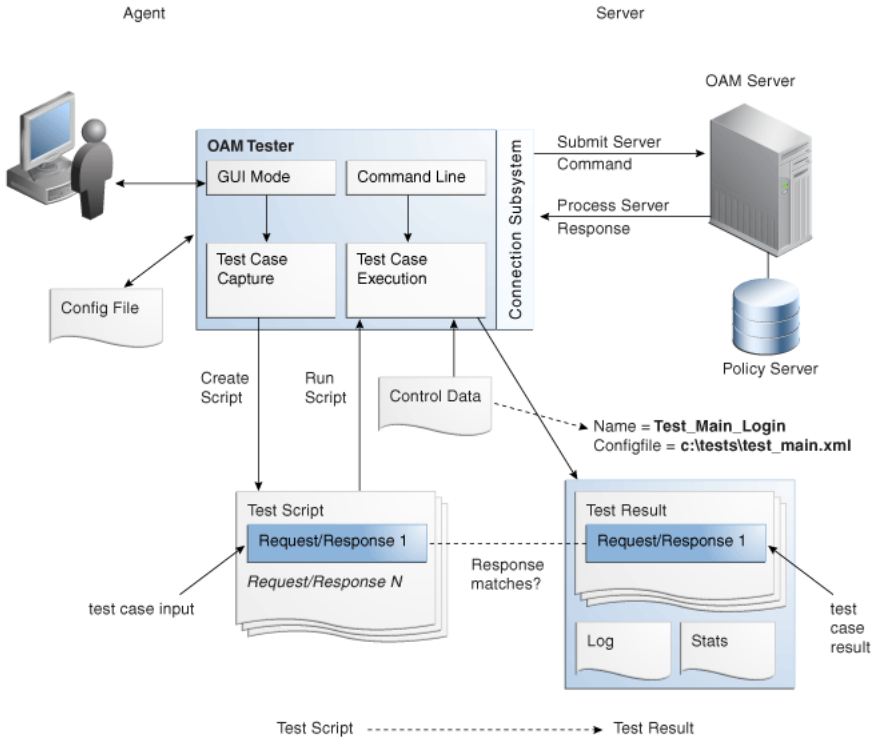


Table 21–1 describes the process flow of information during both Tester Console mode operations and command-line mode operations.

Table 21–1 User Interactions: Tester Console Mode versus Command Line Mode Operations

Tester Console mode	Command Line Mode
The user starts the Access Tester from the command line.	The user or a shell script starts the Access Tester in command line mode. Cert mode for secure communication: The keystores are specified in the OamTestConfiguration.xml file containing previously saved configuration information.
The user opens a previously saved OamTestConfiguration.xml file to populate the application fields and minimize data entry, including server connection fields. **Alternatively**, the user can use the Tester Console and enter data manually	The Access Tester starts processing test cases based on the input script.
The user clicks the Connect button to open the connection with the OAM Server.	The Access Tester opens a connection with the OAM Server based on details in the input script.
Resource Protection: The user performs steps in a sequence to validate resource protection, authenticate user credentials, and authorize user access.	Resource Protection: The Access Tester starts processing test cases based on the input script.

Table 21–1 (Cont.) User Interactions: Tester Console Mode versus Command Line Mode Operations

Tester Console mode	Command Line Mode
When the test completes, the Access Tester generates: ■ A script with results ■ A file with execution statistics including information about mismatched responses ■ A log file detailing processing flow	Once the script completes, the Access Tester generates: ■ A script with results ■ A file with execution statistics including information about mismatched responses ■ A log file detailing processing flow
The user repeats steps as needed to complete validation	The user repeats steps as needed to complete validation.
In Cert mode, you will be prompted to identify the necessary keystores.	In Cert mode, the keystores are specified in the XML file containing previously saved configuration information.

The following overview outlines the tasks involved with using the Access Tester, and the topics where more information can be found in this chapter.

Task overview: Testing Access Manager connections and policies

1. Review the following topics:
   - Installing and Starting the Access Tester
   - Introduction to the Access Tester Console and Navigation
2. Perform and capture tests using the Access Tester Console as described in "Testing Connectivity and Policies from the Access Tester Console"
3. Proceed to "Creating and Managing Test Cases and Scripts"

21.3 Installing and Starting the Access Tester

The Access Tester consists of two jar files that can be used from any computer, either within or outside the WebLogic Server domain. This section describes how to install the Access Tester, which involves copying the Access Tester jar files to a computer from which you want to run tests. The Access Tester must be started from a command line regardless of the mode you choose for test input: Tester Console mode or command line mode. This section is divided into the following topics:

- Installing the Access Tester
- About Access Tester Supported System Properties
- Starting the Tester Without System Properties For Use in Tester Console Mode
- Starting the Access Tester with System Properties For Use in Command Line Mode

21.3.1 Installing the Access Tester

This topic describes how to install the Access Tester for use on any computer. Following installation, the Access Tester is ready to use. No additional setup is required.

To install the Access Tester

1. Ensure that the computer from which the tester will be run includes JDK/JRE 6. For example, you can test for Java as follows:

   ```
   java -version
   ```

   The previous command returns the following information:

   ```
   java version "1.6.0_18"
   ```

```
Java(TM) SE Runtime Environment (build 1.6.0_18-b07)
Java HotSpot(TM) Client VM (build 16.0-b13, mixed mode)
```

2. On a computer hosting the OAM Server, locate and copy the Access Tester Jar files. For example:

```
$ORACLE_HOME/oam/server/tester/oamtest.jar
$ORACLE_HOME/oam/server/tester/nap-api.jar
```

3. Store the jar file copies together in the same directory on any computer from which you want to run the Access Tester.
4. Cert Mode: If the OAM Server communication mode is Cert, ensure that the computer from which you will run the Access Tester includes the same keystores that are defined on the agent registration page of the Oracle Access Management Console. See Chapter 15.
5. Proceed as follows, depending on your environment and requirements:
   - Starting the Tester Without System Properties For Use in Tester Console Mode enables you to manually drive requests.
   - Starting the Access Tester with System Properties For Use in Command Line Mode
   - Executing a Test Script enables you to use a test script that has been created against a "Known Good" policy configuration and marked as "Known Good"

21.3.2 About Access Tester Supported System Properties

The Access Tester supports a number of configuration options that are used for presentation or during certain aspects of testing. These options are specified at startup using the Java-D mechanism, as shown in Table 21–2, which describes all supported system properties.

Table 21–2 Access Tester Supported System Properties

Property	Access Tester Mode	Description and Command Syntax
log.traceconnfile	Tester Console and Command Line modes	Logs connection details to the specified file name. -Dlog.traceconnfile="<file-name>"
display.fontname	Tester Console mode	Starts the Access Tester with the specified font. This could be useful in compensating for differences in display resolution. - Ddisplay.fontname ="<font-name>"
display.fontsize	Tester Console mode	Starts the Access Tester with the specified font size. This could be useful in compensating for differences in display resolution. - Ddisplay.fontsize ="<font-size>"
display.usesystem	Tester Console mode	Starts the Access Tester with the default font name and size (Dialog font, size 10). - Ddisplay.usesystem
script.scriptfile	Command Line mode	Runs the script <file-name> in command line mode. -Dscript.scriptfile="<file-name>"

Table 21–2 (Cont.) Access Tester Supported System Properties

Property	Access Tester Mode	Description and Command Syntax
control.configfile	Command Line mode	Overwrites script's "configfile" attribute containing the absolute path to the configuration XML file with the connection information. The Access Tester uses the configuration file to establish a connection to the Policy Server indicated by Connection element. -Dcontrol.config="<file-name>"
control.testname	Command Line mode	Overwrites script's "testname" attribute of the Control element containing a string representing a name of the test series to be used in naming output script, stats, and log files. Output log files begin with <testname>_ <testnumber>. -Dcontrol.testname="<String>"
control.testnumber	Command Line mode	Specifies the control number to be used in naming output script, stats, and log files. Output log files begin with <testname>_ <testnumber>. -Dcontrol.testnumber="<String>". Although the auto generated string is a 7 digit number based on current local time (2 character minutes + 2 character seconds + 3 character hundredths), any string can be used to denote the control number as long as it can be used in a filename.
control.ignorecontent	Command Line mode	Overwrites script's "ignorecontent" attribute of the Control element indicating the Access Tester should ignore differences in Content between the original test case and current results. -Dcontrol.testname="true | false"
control.displayiteration stats	Command Line mode	Controls whether or not to display intermediate statistics after each iteration of the test run. -Dcontrol.displayiterationstats="true | false"
control.loopback	Command Line mode	Runs the Access Tester in loopback mode to test the Access Tester for internal regressions against a known good script. Used for unit testing the Access Tester. -Dcontrol.loopback="true"

21.3.3 Starting the Tester Without System Properties For Use in Tester Console Mode

To manually drive (and capture) requests and view real-time response through the graphical user interface, start the tester in Tester Console mode. This procedure omits all system properties, even though several can be used with Tester Console mode.

The jar file defines the class to be started by default; no class name need be specified. Ensure that the nap-api.jar is present in the same directory as oamtest.jar.

See Also:

- "About Access Tester Supported System Properties"
- "Starting the Access Tester with System Properties For Use in Command Line Mode"

To start the Access Tester in console mode without system properties

1. From the directory containing the Access Tester jar files, enter the following command:

   ```
   java -jar oamtest.jar
   ```

2. Use the -help option to list all the options available for the oamtest command-line tool.

   ```
   java -jar oamtest.jar -help
   ```

3. Proceed to one of the following topics for more information:
   - Introduction to the Access Tester Console and Navigation
   - Testing Connectivity and Policies from the Access Tester Console
   - Creating and Managing Test Cases and Scripts

21.3.4 Starting the Access Tester with System Properties For Use in Command Line Mode

This section is divided into the following topics:

- About the Access Tester Command Line Mode
- Starting the Tester Without System Properties For Use in Tester Console Mode

21.3.4.1 About the Access Tester Command Line Mode

To run a test script, or to customize Access Tester operations, you must start the tester in command line mode and include system properties using the Java -D option.

See Also: "About Access Tester Supported System Properties" on page 21-9

When running in command line mode, the Access Tester returns completion codes that can be used by shell scripts to manage test runs. When you run the Access Tester in Console mode, you do not need to act upon codes that might be returned by the Access Tester.

Shell scripts that wrap the Access Tester to execute specific test cases must be able to recognize and act upon exit codes communicated by the Access Tester. In command line mode, the Access Tester exits using System.Exit (N), where N can be one of the following codes:

- 0 indicates successful completion of all test cases with no mismatches. This also includes a situation where no test cases are defined in the input script.
- 3 indicates successful completion of all test cases with at least one mismatch.
- 1 indicates that an error prevented the Access Tester from running or completing test cases. This includes conditions such as No input script specified, Unable to read the input script, Unable to establish server connection, Unable to generate the target script.

These exit codes can be picked up by shell scripts ($? In Bourne shell) designed to drive the Access Tester to execute specific test cases.

21.3.4.2 Starting the Access Tester with System Properties

Use the following procedure to start the Access Tester in command line mode and specify any number of configuration options using the Java-D mechanism.

See Also: "About Access Tester Supported System Properties" on page 21-9

To start the Access Tester with system properties or for use in command line mode

1. From the directory containing the Access Tester jar files, enter the command with the appropriate system properties for your environment. For example:

```
java -Dscript.scriptfile="\tests\script.xml" -Dcontrol.ignorecontent="true"
-jar oamtest.jar
```

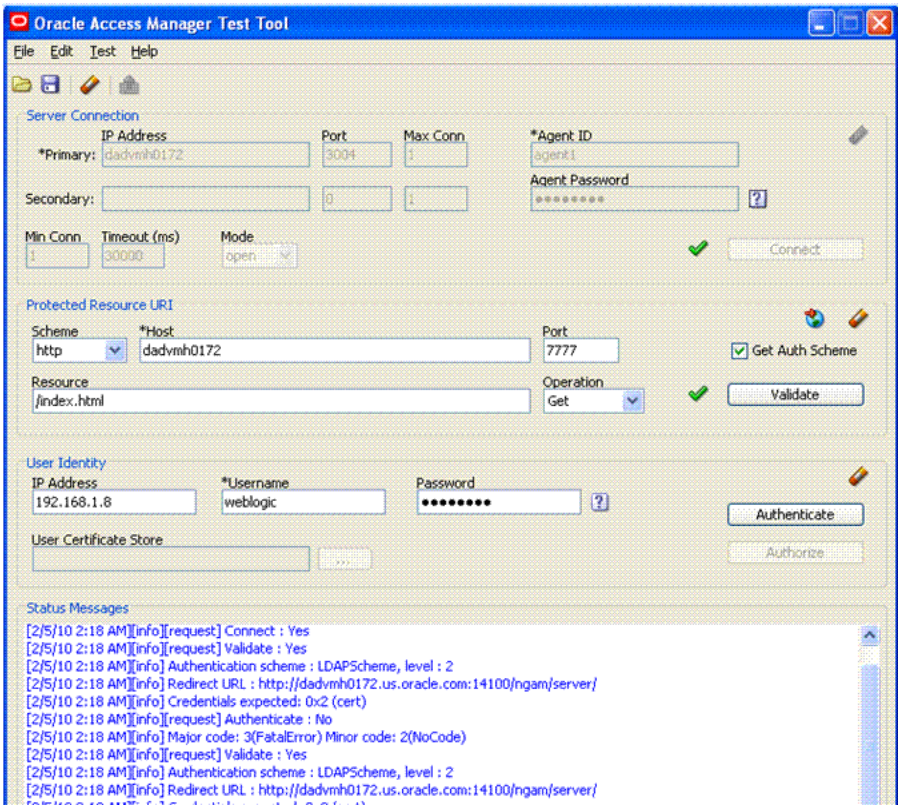
2. After startup, proceed to one of the following topics for more information:
   - Testing Connectivity and Policies from the Access Tester Console
   - Creating and Managing Test Cases and Scripts

21.4 Introduction to the Access Tester Console and Navigation

This section introduces the Access Tester Console, navigation, and controls.

Figure 21–3 shows the fixed-size Access Tester Console. This is the window through which users can interact with the application if the Access Tester is started in Console mode. The window can not be resized. Details follow the screen.

Figure 21–3 Access Tester Console



At the top of the main window are the menu names within a menu bar. Under the menu bar is the tool bar. All of the commands represented by buttons in the tool bar are also available as menu commands.The Access Tester Console is divided into four panels, described in Table 21–3.

Table 21–3 Access Tester Console Panels

Panel Name	Description
Server Connection	Provides fields for the information required to establish a connection to the OAM Server (a single primary server and a single secondary server), and the Connect button: See also: "Establishing a Connection Between the Access Tester and the OAM Server" on page 21-16.
Protected Resource URI	Provides information about a resource whose protected status needs to be validated. The Validate button is used to submit the Validate Resource server request. See also: "Validating Resource Protection from the Access Tester Console" on page 21-19.
User Identity	Provides information about a user whose credentials need to be authenticated. The Authenticate button is used to submit the Authenticate User server request. See also: "Testing User Authentication from the Access Tester Console" on page 21-21.
Status Messages	Provides a scrollable status message area containing messages displayed by the application in response to user gestures. The Authorize button is used to submit the Authorize User server request. See also: "Observing Request Latency" on page 21-24.

Text fields support right-clicking to display the Edit menu and drag-and-drop operations using the mouse and cursor.

There are four primary buttons through which you submit test requests to the OAM Server. Each button acts as a trigger to initiate the named action described in Table 21–4.

Table 21–4 Command Buttons in Access Tester Panels

Panel Button	Description
Connect	Submits connection information and initiates connecting.
Validate	Submits information provided in the Protected Resource URI panel and initiates validation of protection.
Authenticate	Submits information provided in the User Identity panel and initiates authentication confirmation.
Authorize	Submits information provided in the User Identity panel and initiates authorization confirmation.

See Also: "Access Tester Menus and Command Buttons"

21.4.1 Access Tester Menus and Command Buttons

Table 21–5 identifies additional Access Tester Console buttons and their use. All command buttons provide a tip when the cursor is on the button.

Table 21–5 Additional Access Tester Buttons

Command Buttons	Description
	Loads connection configuration details that were saved to an XML file (config.xml, by default). You can refresh the information in the Console by clicking this button.
	Saves connection configuration details to a file (default name, config.xml). You can add the name of this document to the input script to provide proper connection information to the Access Tester running in command line mode. The Save command button at the bottom of the Console saves the content of the Status Message panel to a log file.
	Clears fields on a panel containing the icon. Tool bar action clears all fields except connection fields if the connection has already been established.
 	Captures the last named request to the capture queue with the corresponding response received from the OAM Server. Together, the request and response create a test case. The capture queue status at the bottom of the Console is updated to reflect the number of test cases in the queue. You can save the contents of the capture queue to create a test script containing multiple test cases using the Generate Script command on the Test menu or a command button.
	Generates a test script that includes every test case currently in the capture queue, and asks if the queue should be cleared. Do not clear the queue until all your test cases have been captured and saved to a test script.
	Runs a test script against the current OAM Server. The Status message window is populated with the execution status as the script progresses through each test case.

Table 21–5 (Cont.) Additional Access Tester Buttons

Command Buttons	Description
	Imports a copied URI from the clipboard after parsing it to populate fields in the URI panel.
	Displays a dialog showing the password in clear text

The Access Tester provides the menus described in Table 21–6. All menu items have mnemonics that are exposed by holding down the ALT key (on Windows systems). There are also command accelerators (keyboard activation) available using the CTRL-<KEY> combination defined for each menu command.

Table 21–6 Access Tester Menus

Menu Title	Menu Commands
File	▪ Open Configuration ▪ Save Configuration ▪ Exit **Note**: To minimize the amount of data entry the Save Configuration and Open Configuration menu (and tool bar command buttons) allow for specific Connection, URI, and Identity information to be saved to (and read from) a file. Thus, it becomes fairly simple to manage multiple configurations. Also, the configuration file can be used as input to the Access Tester when you run it in command line mode and execute a test script.
Edit	Provides standard editing commands, which act on fields: ▪ Cut ▪ Copy ▪ Paste ▪ Clear all fields ▪ Import URI fields from a saved URL
Test	▪ Capture last "..." request (for example, Capture last "authorize" request) ▪ Save test script ▪ Run test script **Note**: You can use functions here to capture the last request and response to create a test case that you can save to a test script to be run at a later time.
Help	The command About, which displays usage information.

21.5 Testing Connectivity and Policies from the Access Tester Console

This section describes how to perform quick spot checks using the Access Tester in Console mode with OAM Servers.

Spot checks or troubleshooting connections between the Agent and OAM Server can help you assess whether the Agent can communicate with the OAM Server, which is especially helpful after an upgrade or product migration. Spot checks or troubleshooting resource protection that can be exercised by Agents and OAM Servers can help you develop end-to-end tests of policy configuration during the application lifecycle.

The following overview identifies the tasks and sequence to be performed and where to locate additional information about each task.

Note: You can capture each request and response pair to create a test case, and save the test cases to a script file that can be run later. For details, see "Creating and Managing Test Cases and Scripts" on page 21-25.

Task overview: Performing spot checks from the Access Tester Console

1. Start the Access Tester, as described in "Installing and Starting the Access Tester" on page 21-8.
2. Add relevant details to the Server Connection panel and click Connect, as described in "Establishing a Connection Between the Access Tester and the OAM Server" on page 21-16.
3. Enter or import details into the Protected Resource URI pane and click Validate, as described in "Validating Resource Protection from the Access Tester Console" on page 21-19.
4. Add relevant details to the User Identity panel and click Authenticate, as described in "Testing User Authentication from the Access Tester Console" on page 21-21.
5. After successful authentication, click Authorize in the User Identity panel, as described in "Testing User Authorization from the Access Tester Console" on page 21-23.
6. Check the latency of requests, as described in "Observing Request Latency" on page 21-24.

21.5.1 Establishing a Connection Between the Access Tester and the OAM Server

Before you can send a request to the OAM Server you must establish a connection between the Access Tester and the server. This section describes how to establish that connectivity.

- About the Connection Panel
- Connecting the Access Tester with the OAM Server

21.5.1.1 About the Connection Panel

You enter required information for the OAM Server and the Agent you are emulating in the Access Tester Connection panel and then click the Connect button. The Tester initiates the connection, and displays the status in the Status Messages panel. Once the connection is established, it is used for all further operations.

Caution: Once the connection is established, it cannot be changed until you restart the Access Tester Console.

Figure 21–4 illustrates the Server Connection panel and controls. This panel contains information needed to establish a connection to the OAM Server's Proxy port.

Figure 21–4 Server Connection Panel in the Access Tester

Table 21–7 describes the information needed to establish the connection. The source of your values is the Oracle Access Management Console, System Configuration tab.

Table 21–7 Connection Panel Information

Fields	Description
IP Address	The IP Address of the Primary and Secondary OAM Proxy listens on for this set of tests. **Note**: Oracle recommends that you enter values for only the Primary OAM Proxy. The Secondary OAM Proxy is needed only if you want to test failover between the primary and secondary OAM Server. However, a more practical use of the Secondary Server is reserved for later use, when the OAP API supports load balancing between Primary and Secondary OAM Server.
Port	Enter the port number of the Primary and Secondary OAM Server.
Max Conn	The maximum number of physical connection (TCP) sockets the Access Tester will use. Access Tester emulates a single threaded Agent. **Note**: Oracle recommends that you accept the default value, 1.
Min Conn	The minimum number of physical connection (TCP) sockets the Access Tester will use. The Access Tester emulates a single threaded Agent. **Note**: Oracle recommends that you accept the default value, 1.
Timeout	The number of milliseconds the Access Tester should wait for the connection to be established or to receive a response from the OAM Server. **Note**: Oracle recommends that you accept the default value.
Mode	The level of communication security that is designated for the Agent to be emulated. ▪ Open--No special configuration needed for this mode. ▪ Simple--Presents a field for the global pass phrase set for the OAM Server. See Also: "Retrieving the Global Passphrase for Simple Mode" on page C-14. ▪ Cert--Presents a Configure Certs ... button that opens a dialog asking for the following: Trust Store (Root Store Alias): A file containing the JKS key store with the root CA certificate. Key Store: A file containing the JKS key store with the agent's private key and certificate. Currently, the agent certificate is used for encrypting the connection and not the agent identification. Key Store Password: The password used to encrypt the Key Store with the agent certificates. See Also: "About Access Tester Security and Processing" on page 21-5, and "Generating Client Keystores for OAM Tester in Cert Mode" on page C-5.
Agent ID	Enter the identity of the OAM Agent the Tester is simulating.
Agent Password	Enter the password for the OAM Agent the Tester is simulating, if there is one configured.
	Click ? beside the Agent Password field for help.

Table 21–7 (Cont.) Connection Panel Information

Fields	Description
	The green check mark beside the Connect button indicates a "Yes" response; the connection is made. The Status Messages panel also indicates a "Yes" response for the connection.
	The red circle beside the Connect button indicates a "No" response; no connection exists. The Status Messages panel also indicates a "No" response for the connection.

After entering information and establishing a connection, you can save details to a configuration file that can be re-used later.

> **See Also:** "Establishing a Connection Between the Access Tester and the OAM Server"

21.5.1.2 Connecting the Access Tester with the OAM Server

Use the following procedure to submit your connection details for the OAM Server.

> **Note:** Cert mode requires the presence of keystores generated as described in Appendix C, "Securing Communication"

Prerequisites

Installing and Starting the Access Tester

> **See Also:** "About the Connection Panel"

To test connectivity between the Access Tester and the OAM Server

1. Start the Access Tester, as described in "Installing and Starting the Access Tester" on page 21-8.
2. In the Server Connection Panel (Table 21–7), enter:
   - Primary and secondary OAM Proxy details
   - Timeout period
   - Communication encryption mode
   - Agent details
3. Click the Connect button.
4. Beside the Connect button, look for the green check mark indicating the connection is established.
5. In the Status Messages panel, verify a Yes response.

   Not Successful: If there is a problem connecting to the OAM Server, ensure that you entered all connection information correctly (IP address and port, Agent name and password, connection mode and related certificates and passwords, as needed).

   If the connection still cannot be made, start the Access Tester Console using the Trace Connection command mode and look for additional details in the connection log. Also, ask the Administrator of the OAM Server to review the policy server log.

21.5.2 Validating Resource Protection from the Access Tester Console

Before a user can access a resource, the Agent must first validate that the resource is protected. Using the Access Tester, you can act as the Agent to have the OAM Server validate whether or not the given URI is protected and communicate the response to the Access Tester, as described here.

- About the Protected Resource URI Panel
- Validating Resource Protection

21.5.2.1 About the Protected Resource URI Panel

You must enter required information for the resource you want to validate in the Access Tester Protected Resource URI panel, and then click the Validate button.

To minimize data entry, you can import long URIs that you have copied from a browser and then click the Import URI command button. The Tester parses the URI saved to the clipboard and populates the URI fields in the Access Tester.

Figure 21–5 illustrates the panel where you enter the URI details to validate that the resource is protected. When combined, the URI fields follow RFC notation. For example: `http://oam_server1:7777/index.html`.

Figure 21–5 Protected Resource URI Panel in the Access Tester

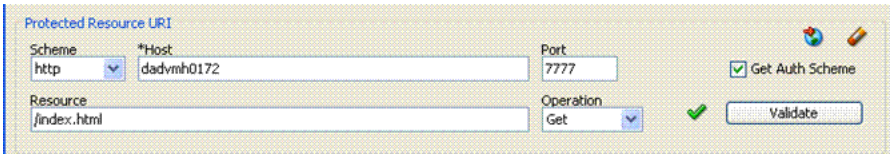


Table 21–8 describes the information needed to perform this validation.

Table 21–8 Protected Resource URI Panel Fields and Controls

Field or Control	Description
Scheme	Enter http or https, depending on the communication security specified for the resource. **Note**: The Access Tester supports only http or https resources. You cannot use the Access Tester to test policies that protect custom non-http resources.
Host	Enter a valid host name for the resource. **Note**: Your <*host:port*> combination specified in the Access Tester must match one of the Host Identifiers defined in the Oracle Access Management Console. If the host identifier is not recognized, OAM cannot validate resource protection.
Port	Enter a valid port for the URI. **Note**: The <host:port> combination specified in the Access Tester must match one of the Host Identifiers as defined in the OAM Server. If the host identifier is not recognized, OAM cannot validate resource protection.

Table 21–8 (Cont.) Protected Resource URI Panel Fields and Controls

Field or Control	Description
Resource	Enter the Resource component of the URI (/index.htm in the example). This resource should match a resource defined for an authentication and authorization policy in the Oracle Access Management Console. **Note**: If protected, the resource identifier that you provide here must match the one specified in an authorization policy in the Oracle Access Management Console.
	Click this button to parse and import a URI that is saved on a clipboard.
Operation	Select the operational component of the URI from the list provided in the Access Tester. The OAM Server does not distinguish between different actions, however. Therefore, leaving this set to Get should suffice.
Get Auth Scheme	Check this box to request the OAM Server to return details about the Authentication Scheme that is used to secure the protected resource. If the URI is protected, this information is displayed in the Status Messages panel.
Validate	Click the Validate button to submit the request to the OAM Server. When the response is received, the Access Tester displays it in the Status Messages panel.
	A green check mark appearing beside the Validate button indicates a "Yes" response; the resource is protected. The Status Messages panel provides the redirect URL for the resource and that credentials are expected. **Note**: If you checked the Get Auth Scheme box, the name and level of the Authentication Scheme that protects this resource are also provided in the Status Messages panel.
	A red circle appearing beside the Validate button indicates that the resource is not protected. A No response will also appear in the Status Messages.

You can capture each request and response pair to create a test case, and save multiple test cases to a script file that can be run later.

See Also:

- "Validating Resource Protection from the Access Tester Console"
- "Creating and Managing Test Cases and Scripts" on page 21-25

21.5.2.2 Validating Resource Protection

Use the following procedure to submit your resource information to the OAM Server and verify responses in the Status Messages panel.

Prerequisites

Establishing a Connection Between the Access Tester and the OAM Server

See Also: "About the Protected Resource URI Panel"

To confirm that a resource is protected

1. In the Access Tester Protected Resource URI panel, enter or import your own resource information (Table 21–8).

2. Click the Validate button to submit the request.
3. Review Access Tester output, including the relevant data about the resource such as how the resource is protected, level of protection, and so on.
4. Beside the Validate button, look for the green check mark indicating the resource is protected.
5. In the Status Messages panel, verify the redirect URL, authentication scheme, and that credentials are expected.
6. Capture the request and response to create a test case for use later, as described in "Creating and Managing Test Cases and Scripts" on page 21-25.
7. Retain the URI to minimize data entry and server processing using one of the following methods.
8. Proceed to "Testing User Authentication from the Access Tester Console"

21.5.3 Testing User Authentication from the Access Tester Console

This topic provides the following information:

- About the User Identity Panel
- Testing User Credential Authentication

21.5.3.1 About the User Identity Panel

Before a user can access a resource, the Agent must validate the user's identity based on the defined authentication policy on the OAM Server. Using the Access Tester, you can act as the Agent to have the OAM Server authenticate a specific userID for the protected resource. All relevant authentication responses are considered during this policy evaluation.

Figure 21–6 illustrates the Access Tester panel where you enter the information needed to test authentication.

Figure 21–6 Access Tester User Identity Panel

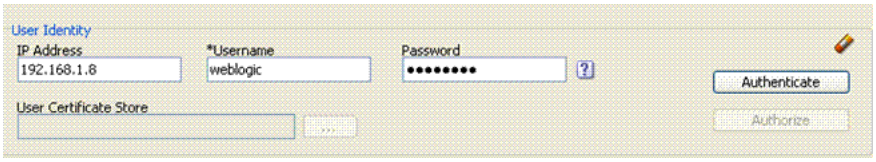


Table 21–9 describes the information you must provide.

Table 21–9 Access Tester User Identity Panel Fields and Controls

Field or Control	Description
IP Address	Enter the IP Address of the user whose credentials are being validated. All Agents communicating with the OAM Server send the IP address of the end user. Default: The IP address that is filled in belongs to the computer from which the Access Tester is run. To test a policy that requires a real user IP address, replace the default IP address with the real IP address.

Table 21–9 (Cont.) Access Tester User Identity Panel Fields and Controls

Field or Control	Description
User Name	Enter the userID of the individual whose credentials are being validated. Note: The Access Tester enables or disables the username and password fields if the resource is protected by an authentication scheme that requires those credentials. Similarly the Access Tester enables or disables the certificate field if the resource is protected by an authentication scheme that requires a user's X509 certificate.
Password	Enter the password of the individual whose credentials are being validated.
?	Click this button to display the password in clear text within a popup window.
User Certificate Store	The PEM format file containing the X.509 certificate of the user whose credentials should be authenticated. If the URI is protected by the X509 Authentication Scheme then the Tester will use the PEM-formatted X509 certificate as a credential instead of or in addition to the username/password. The X509 cert may also be used for authorization if security policies are so configured on the OAM Server. Note: For certificate-based authentication to work, the OAM Server must be properly configured with root CA certificates and SSL keystore certificates. See Appendix C for details about securing communication between OAM Servers and Webgates.
...	Click this button to browse the file system for the user certificate store path.
Authenticate	Click the Authenticate button to submit the request to the OAM Server and look for a response in the Status Messages panel. Note: The type of credentials supplied (username/password or X.509 certificate) must match the requirements of the authentication scheme that protects the URI. Note: For certificate-based authentication, the OAM Server deployment must be properly configured with certificates as described in Appendix C.
Authorize	After the user's credentials are validated, you can click the Authorize button to submit the request for the resource to the OAM Server. Check the Status Messages panel for a response. This request submits information collected in the URI and Identity panels to the OAM Server to decide if the user defined on the Identity panel can access the resource defined on the URI panel. The server returns Yes (user can access the resource) or No (user can not access the resource). The OAM Server might return additional information such as actions (responses) that the real Agent would normally handle.
	A green check mark appearing beside the Authenticate button indicates authentication success; The Status Messages panel also indicates "yes" authentication was successful, and provides the user DN and session id. A green check mark appearing beside the Authorize button indicates authorization success; The Status Messages panel also indicates "yes" authorization was successful, and provides Application Domain details.
	A red circle appearing beside the Authenticate button indicates authentication failure; The Status Messages panel also indicates "no" authentication was not successful. A red circle appearing beside the Authorize button indicates authorization failure; The Status Messages panel also indicates "no" authorization was not successful.

You can capture each request and response pair to create a test case, and save multiple test cases to a script file that can be run later.

See Also:

- "Testing User Authentication from the Access Tester Console"
- "Creating and Managing Test Cases and Scripts" on page 21-25

21.5.3.2 Testing User Credential Authentication

Use the following procedure to submit the end user credentials to the OAM Server and verify authentication. All relevant authentication responses are considered during this policy evaluation.

Prerequisites

Validating Resource Protection from the Access Tester Console with URI information retained in the Console.

See Also: "About the User Identity Panel"

To test user credential authentication

1. In the Access Tester User Identity panel, enter information for the user to be authenticated (Table 21–9).
2. Click the Authenticate button to submit the request.
3. Beside the Authenticate button, look for the green check mark indicating the user is authenticated.

   Not Successful: Confirm that you entered the correct userID and password and try again. Also, check the Oracle Access Management Console for an active user session that you might need to end, as described in Chapter 17.
4. Capture the request and response to create a test case for use later, as described in "Creating and Managing Test Cases and Scripts" on page 21-25.
5. Retain the URI and user identity information and proceed to "Testing User Authorization from the Access Tester Console".

21.5.4 Testing User Authorization from the Access Tester Console

Before a user can access a resource, the Agent must validate the user's permissions based on defined policies on the OAM Server. Using the Access Tester, you can act as the Agent to have the OAM Server validate whether or not the authenticated user identity can be authorized to access the resource.

Use the following procedure to verify the authenticated end user's authorization for the resource. All relevant authorization conditions and responses are considered during this policy evaluation.

Prerequisites

Testing User Authentication from the Access Tester Console with all information retained in the Console.

See Also: "About the User Identity Panel"

Note: Once the protected resource URI is confirmed and the user's identity is authenticated from the Access Tester, no further information is needed. You simply click the Authorize button to submit the request. However, if the resource is changed to another you must start the sequence anew and validate, then authenticate, and then authorize.

To test user authorization

1. In the Access Tester User Identity panel, confirm the user is authenticated (Table 21–9).
2. In the Access Tester User Identity panel, click the Authorization button.
3. Beside the Authorization button, look for the green check mark indicating the user is authorized.

   Not Successful: Confirm the authorization policy using the Oracle Access Management Console.
4. In the Status Messages panel (or execution log file), verify details about the test run.
5. Capture the request and response to create a test case for use later, as described in "Creating and Managing Test Cases and Scripts" on page 21-25.
6. Proceed to:
   - Observing Request Latency
   - Creating and Managing Test Cases and Scripts
   - Evaluating Scripts, Log File, and Statistics

21.5.5 Observing Request Latency

To understand OAM Server performance you must know how well the OAM Server handles requests passed by the Agent. While there are many ways to expose a server's metrics, it is sometimes useful to expose server performance from the standpoint of the Agent. Using the Access Tester, you can do just that as described here.

Prerequisites

"Installing and Starting the Access Tester" on page 21-8

Task overview: Observing request latency includes

1. "Validating Resource Protection" on page 21-20
2. "Testing User Authentication from the Access Tester Console" on page 21-21
3. "Testing User Authorization from the Access Tester Console" on page 21-23
4. Check latency information in the execution log file as shown here, as well as in other files generated during a test run. For example:

```
...
[2/3/12 11:03 PM][info] Summary statistics
[2/3/12 11:03 PM][info] Matched 4 of 4, avg latency 232ms vs 238ms
[2/3/12 11:03 PM][info] Validate: matched 2 of 2, avg latency 570ms vs 578ms
[2/3/12 11:03 PM][info] Authenticate: matched 1 of 1, avg latency 187ms vs
187ms
[2/3/12 11:03 PM][info] Authorize: matched 1 of 1, avg latency 172ms vs 188ms
...
```

5. Proceed to:
   - Creating and Managing Test Cases and Scripts
   - Evaluating Scripts, Log File, and Statistics

21.6 Creating and Managing Test Cases and Scripts

Test management refers to the creation of repeatable tests that can be executed at any time by an individual Administrator or system. Quick spot checks are very useful and effective in troubleshooting current issues. However, a more predictable and repeatable approach to validating server and policy configuration is often necessary. This approach can include testing OAM Server configuration for regressions after a product revision, or during a policy development and QA cycle.

To be useful such tests must allow for multiple use cases to be executed as group. Once the test scripts have been designed and validated as correct, replaying the tests against the OAM Server helps identify regressions in a policy configuration.

This section provides the information you need to perform test management in the following topics:

- About Test Cases and Test Scripts
- Capturing Test Cases
- Generating an Input Test Script
- Personalizing an Input Test Script
- Executing a Test Script

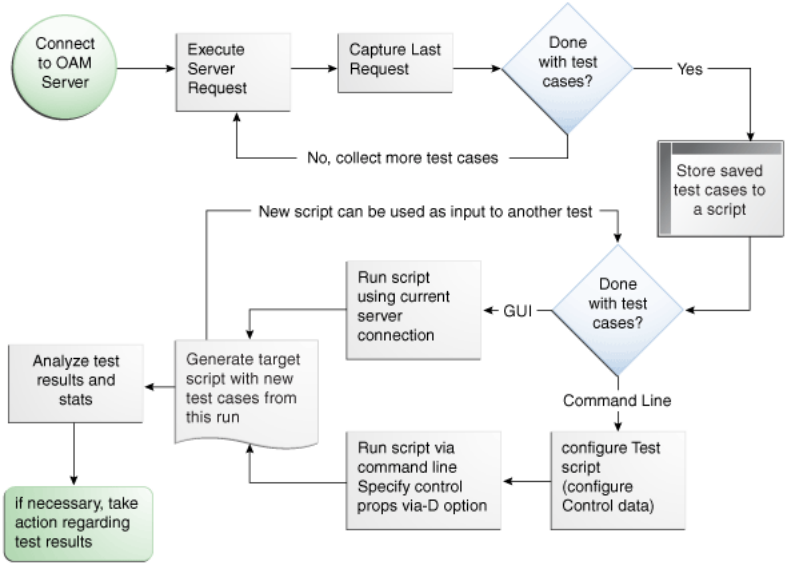
21.6.1 About Test Cases and Test Scripts

A test case is created from the request sent to, and response data received from, the OAM Server using the Access Tester. Among other data elements, a test case includes request latency and other identifying information that enables analysis and comparison of old and new test cases.

Once captured, the test case can be replayed without new input, and then new results can be compared with old results. If the old results are marked as "known good" then deviations from those results constitute failed test cases.

The test case workflow is illustrated by Figure 21–7.

Figure 21–7 Test Case Workflow



Task overview: Creating and managing a test case

From the Access Tester Console, you can connect to the OAM Server and manually conduct individual tests. You can save the request to the capture queue after a request is sent and the response is received from the OAM Server. You can continue capturing additional test cases before generating a test script and clearing the capture queue. If you exit the Access Tester before saving the capture queue, you are asked if the test cases should be saved to a script before exiting. Oracle recommends that you do not clear the queue until all your test cases have been captured.

Once you have the test script, you can run it from either the Access Tester Console or from the command line.

21.6.2 Capturing Test Cases

You can save each test case to a capture queue after sending the request from the Access Tester to the OAM Server and receiving the response. You can capture as many individual test cases as you need before generating a test script that will automate running the group of test cases. For instance, the following outlines three test cases that must be captured individually:

- A validation request and response
- An authentication request and response
- An authorization request and response

Table 21–10 describes the location of the capture options.

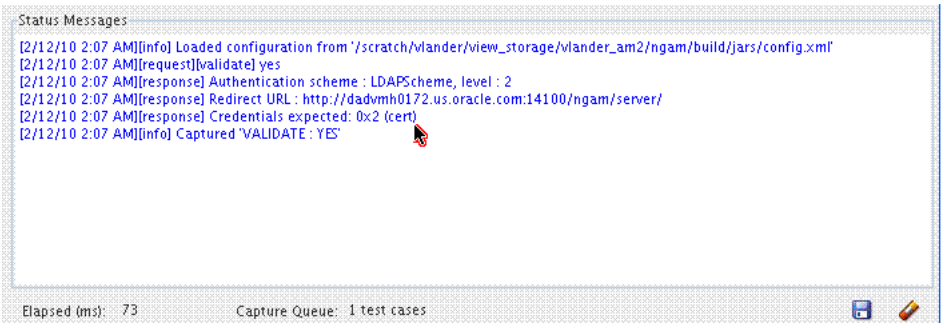
Table 21–10 Access Tester Capture Request Options

Location	Description
Test menu Capture last "..." request	Select this command from the Test menu to add the last request issued and results received to the capture queue (for inclusion in a test script later).
	Select this command button from the tool bar to add the last request issued and results received to the capture queue (for inclusion in a test script later).

If you exit the Access Tester before saving the capture queue, you are asked if the test cases should be saved to a script before exiting. Do not clear the Access Tester capture queue until all your test cases have been captured.

To capture one or more test cases

1. Initiate a request from the Access Tester Console, as described in "Testing Connectivity and Policies from the Access Tester Console" on page 21-15.
2. After receiving the response, click the Capture last "..." request command button in the tool bar (or choose it from the Test menu).
3. Confirm the capture in the Status Messages panel and note the Capture Queue test case count at the bottom of the Console, as shown here.



4. Repeat steps 1, 2, and 3 to capture in the queue each test case that you need for your test script.
5. Proceed to "Generating an Input Test Script".

21.6.3 Generating an Input Test Script

A test script is a collection of individual test cases that were captured using the Access Tester Console. When individual test cases are grouped together, it becomes possible to automate test coverage to validate policy configuration for a specific application or site.

You can create a test script to be used as input to the Access Tester and drive automated processing of multiple test cases. The Generate Script option enables you to create an XML file test script and clear the capture queue. If you exit the Access Tester before saving the capture queue, you are asked if the test cases should be saved to a script before exiting.

Note: Do not clear the capture queue until you have captured all the test cases you want to include in the script.

21.6.3.1 About Generating an Input Test Script

You can create a test script to be used as input to the Access Tester and drive automated processing of multiple test cases. Such a script must follow these rules:

- Allows possible replay by a person or system
- Allows possible replay against different policy servers w/o changing the script, to enable sharing of test scripts to drive different Policy Servers
- Allows comparison of test execution results against "Known Good" results

Following are the locations of the Generate Script command.

Table 21–11 Generate Script Command

Location of the Command	Description
Test menu Generate Script	Select Generate Script from the Test menu to initiate creation of the script containing your captured test cases.
	Select the Generate Script command button from the tool bar to initiate creation of the script containing your captured test cases. After you specify or select a name for your script, you are asked if the capture queue should be cleared. Do not clear the capture queue until all your test cases are saved to a script.

21.6.3.2 Generating an Input Test Script

Prerequisites

Capturing Test Cases

To record a test script containing captured test cases

1. Perform and capture each request that you want in the script, as described in "Capturing Test Cases" on page 21-26.
2. Click the Generate Script command button in the tool bar (or choose it from the Test menu to include all captured test cases.
3. In the new dialog box, select or enter the name of your new XML script file and then click Save.
4. Click Yes to overwrite an existing file (or No to dismiss the window and give the file a new name).
5. In the Save Waning dialog box, click No to retain the capture queue and continue adding test cases to your script (or click Yes to clear the queue of all test cases).
6. Confirm the location of the test script before you exit the Access Tester.
7. Personalize the test script to include details such as who, when, and why the script was developed, as described next.

21.6.4 Personalizing an Input Test Script

This section describes how to personalize and customize a test script.

- About Customizing a Test Script
- Customizing a Test Script

21.6.4.1 About Customizing a Test Script

The control block of a test script is used to tag the script and specify information to be used during the execution of a test. You might want to include details about who created the script and when and why the script was created. You might also want to customize the script using one or more control parameters.

The Access Tester provides command line "control" parameters to change processing of the script without changing the script. (test name, test number, and so on). This enables you to configure test runs without having to change "known good" input test scripts. Table 21–12 describes the control elements and how to customize these.

Table 21–12 Test Script Control Parameters

Control Parameter	Description
`ignorecontent=true`	Ignores differences in the Content section of the use case when comparing the original OAM Server response to the current response. The default is to compare the Content sections. This parameter can be overwritten by a command line property when running in the command line mode. Default: false (Compare Content sections). Values: true or false In command line mode, use ignorecontent=true to over ride the specified value in the Control section of the input script.

Table 21–12 (Cont.) Test Script Control Parameters

Control Parameter	Description
testname="oamtest"	Specifies a prefix to add to file names in the "results bundle" as described in the previous section. In command line mode, use Testname=name to over ride the specified value in the Control section.
configfile="config.xml"	Specifies the absolute path to a configuration XML file that was previously created by the Access Tester. In command line mode, this file is used by the Access Tester to locate connection details to establish a server connection.
numthreads="1"	Indicates the number of threads (virtual clients) that will be started by the Access Tester to run multiple copies of the test script. Each thread opens its own pool of connections to the policy server. This feature is designed for stress testing the Policy Server, and is available only in command line mode. Default: 1 Note that when running a test script in GUI mode, the number of threads is ignored and only one thread is started to perform a single iteration of the test script.
numiterations="1"	Indicates the number of iterations that will be performed by the Access Tester. This feature is designed for stress testing and longevity testing the Policy Server and is available only in command line mode. Default: 1

21.6.4.2 Customizing a Test Script

Prerequisites

Generating an Input Test Script

To customize a test script

1. Locate and open the test script that was generated by the Access Tester.
2. Add any details that you need to customize or personalize the script.
3. Save the file and proceed to "Executing a Test Script".

21.6.5 Executing a Test Script

Once a test script has been created against a "Known Good" policy configuration and marked as "Known Good", it is important to drive the Access Tester using the script rather than specifying each test manually using the Console. This section provides the following topics:

- About Test Script Execution
- Running a Test Script

21.6.5.1 About Test Script Execution

You can interactively execute tests scripts from within the Access Tester Console, or use automated test runs performed by command scripts. Automated test runs can be scheduled by the operating system or a harness such as Apache JMeter, and executed without manual intervention. Other than lack of human input in command line mode, the two execution modes are identical.

Note: A script such as .bat (Windows) or .sh (Unix) executes a test script in command line mode. Once a test script is created, it can be executed using either the Run Script menu command or the Access Tester command line.

Table 21–13 describes the commands to execute a test script.

Table 21–13 Run Test Script Commands

Location	Description
Test menu Run Script	Select the Run Script command from the Test menu to begin running a saved test script against the current policy server. The Status message panel is populated with the execution status as the script progresses.
	Select the Run Script command button from the tool bar to begin running a saved test script against the current policy server. The Status message panel is populated with the execution status as the script progresses.
Command line mode	A script such as .bat (Windows) or .sh (Unix) executes a test script in command line mode. Once a test script is created, it can be executed using either the Run Script menu command or the Access Tester command line.

The following overview describes how the Access Tester operates when running a test. Other than lack of human input in command line mode, the two execution modes are identical.

Process overview: Access Tester behavior when running a test script

1. The Access Tester loads the input xml file.

   In command line mode, the Access Tester opens the configuration XML file defined within the input test script's Control element.

2. The Access Tester connects to the primary and secondary OAM Proxy using information in the Server Connection panel of the Console.

   In command line mode, the Access Tester uses information in the Connection element of the configuration XML file.

3. In command line mode, the Access Tester checks the Control elements in the input script XML file to ensure none have been overwritten on the command line (command line values take precedence).

4. For each original test case defined in the script, the Access Tester:

   a. Creates a new target test case.

   b. Sends the original request to the OAM Server and collects the response.

   c. Makes the following comparisons:

      Compares the new response to the original response.

      Compares response codes and marks as "mismatched" any new target test case where response codes differ from the original test case. For instance, if the original Validate returned "Yes", and now returns "No", a mismatch is marked.

      When response codes are identical, and "the ignorecontent" control parameter is "false", the Access Tester compares Content (the name of the Authentication

scheme or post authorization actions that are logged after each request). If Content sections differ, the new target test case is marked "mismatched".

d. Collect new elapsed time and store it in the target use case.

e. Build a new target test case containing the full state of the last server request and the same unique ID (UUID) as the original test case.

f. Update the internal statistics table with statistics for the target test case (request type, elapsed time, mismatched, and so on).

5. After completing all the input test cases, the Access Tester:

a. Displays summary results.

b. Obtains and combines the *testname* and *testnumber*, and generates a name for the "results bundle" (three files whose names start with <*testname*>_<*testnumber*>.

Note: Shell scripts can automate generating the bundle by providing testname and testnumber command line parameters.

Obtain *testname* from the command line parameter. If not specified in the command line, use the *testname* element of the input script's Control block.

Obtain *testnumber* from the command line parameter. If not specified, *testnumber* defaults to a 7-character numeric string based on the current local time: 2 character minutes, 2 character seconds, 3 character hundredths.

c. Generates the "results bundle": three files whose names start with <*testname*>_<*testnumber*>:

The target XML script contains the new test cases: <*testname*>_<*testnumber*_results.xml.

The statistics XML file contains a summary and detailed statistics of the entire test run, plus those test cases marked as "mismatched": <*testname*>_<*testnumber*_stats.xml

The execution log file contains information from the Status Message panel: <*testname*>_<*testnumber*_log.log.

d. When running in multi-threaded mode, only the statistics XML file and execution log file will be generated.

e. In command line mode, the Access Tester exits with the exit code as described in "About the Access Tester Command Line Mode" on page 21-11.

21.6.5.2 Running a Test Script

Prerequisites

Generating an Input Test Script

To run a test script

1. Confirm the location of the saved test script before exiting the Access Tester., as described in "Generating an Input Test Script" on page 21-27.
2. Submit the test script for processing using one of the following methods:

- From the Access Tester Console, click the Run Script command button in the tool bar (or select Run Script from the Test menu), then follow the prompts and observe messages in the Status Message panel as the script executes.
- From the command line, specify your test script with the desired system properties, as described in "Starting the Access Tester with System Properties For Use in Command Line Mode" on page 21-11.

```
java -Dscript.scriptfile="\tests\script.xml" -Dcontrol.ignorecontent="true"
-jar oamtest.jar
```

3. Review the log and output files and perform additional analysis after the Access Tester compares newly generated results with results captured in the input script, as described in "Evaluating Scripts, Log File, and Statistics".

21.7 Evaluating Scripts, Log File, and Statistics

This section provides the following information:

21.7.1 About Evaluating Test Results

At the end of a test run a "results bundle" gets generated containing three documents:

- Target script: An XML document containing new test cases

> **Note:** The target script is not created if the Access Tester is configured to run in multi-threaded mode.

- Execution log: A text file containing the messages displayed during script execution
- Execution statistics: An XML document containing test metrics and a list of mismatched elements

The matching pair of test cases in the original and target scripts shares the test case ID. This ID is represented by a UUID value, which makes it possible to compare individual test cases in the original script with those in the target script. For more information, see "About the Generated Input Test Script" on page 21-33.

The statistics document contains the summary and detail statistics, as well as a list of test cases that did not match. The detailed statistics can be used for further analysis or to keep a historical trail of results. The summary statistics are the same statistics displayed at the end of the test run and can be used to quickly assess the state of a test run. The list of mismatched test cases as created in the statistics document contains test case IDs that have triggered mismatch and includes the reason for the mismatch, as seen in Table 21–14.

Table 21–14 Mismatched Results Reasons in the Statistics Document

Reason for a MisMatch	Description
Result	The test cases did not match because of the difference in OAM Server response codes (Yes versus No).
Content	The test cases did not match because of the differences in the specific data values that were returned by the OAM Server. The specific values from the last test run that have triggered the mismatch are included.

21.7.2 About the Saved Connection Configuration File

This is the output files that is saved using the Save Configuration command on the File menu; the default file name is config.xml. This connection configuration file includes details that were specified in the Access Tester Console, Server Connection panel.

> **Note:** An input test script file is also generated as described in the following topic. The name of the configuration file is used in the input test script to ensure that running the Access Tester in command line mode picks up connection information defined in the connection file.

Example 21–1 Connection Configuration File

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<oamtestconfig xmlns="http://xmlns.example.com/idm/oam/oamtest/schema"
version="1.0">
    <connection timeout="30000" minnconn="1" mode="open">
        <agent password="00030d05101b050c42" name="agent1"/>
        <keystore rootstore="" keystore_password="" keystore=""
global_passphrase=""/>
        <primary>
            <server maxconn="1" port="2100" addr="oam_server1"/>
        </primary>
        <secondary>
            <server maxconn="1" port="0" addr=""/>
        </secondary>
    </connection>
    <uri getauthscheme="true">
        <scheme>http</scheme>
        <host>oam_server1</host>
        <port>7777</port>
        <resource>/index.html</resource>
        <operation>Get</operation>
    </uri>
    <identity>
        <id>admin1</id>
        <password>00030d05101b050c42</password>
        <certstore></certstore>
        <ipaddr>111.222.3.4</ipaddr>
    </identity>
</oamtestconfig>
```

21.7.3 About the Generated Input Test Script

The input test script is generated by using the Access Tester and capturing your own test cases. The "configfile" attribute of the "Control" element is updated after creation to specify the connection configuration file to be used in command line mode for establishing a connection to the OAM Server.

Example 21–2 Generated Input Test Script

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<oamtestscript xmlns="http://xmlns.example.com/idm/oam/oamtest/schema"
version="1.0">
    <history description="Manually generated using agent 'agent1'"
createdon="2012-02-03T22:28:00.468-05:00" createdby="test_user"/>
    <control numthreads="1" numiterations="1" ignorecontent="false"
testname="samplerun1" configfile="config.xml"/>
    <cases numcases="4">
        <case uuid="465a4fda-d814-4ab7-b81b-f3f1cd72bbc0">
            <request code="Validate">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
            </request>
            <response elapsed="984" code="Yes">
                <comment></comment>
                <status>Major code: 4(ResrcOpProtected) Minor code:
2(NoCode)</status>
                <content>
                    <line type="auth.scheme.id">LDAPScheme</line>
                    <line type="auth.scheme.level">2</line>
                    <line type="auth.scheme.required.creds">2</line>
                    <line
type="auth.scheme.redirect.url">http://emerald.uk.example.com:14100/oam/server/</l
ine>
                </content>
            </response>
        </case>
        <case uuid="009b44e3-1a94-4bfc-a0c3-84a38a9e0f2a">
            <request code="Authenticate">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
                <identity>
                    <id>weblogic</id>
                    <password>00030d05101b050c42</password>
                    <certstore></certstore>
                    <ipaddr>192.168.1.8</ipaddr>
                </identity>
            </request>
            <response elapsed="187" code="Yes">
                <comment></comment>
                <status>Major code: 10(CredentialsAccepted) Minor code:
2(NoCode)</status>
                <content>
                    <line
type="user.dn">cn=weblogic,dc=uk,dc=example,dc=com</line>
                </content>
            </response>
        </case>
        <case uuid="84fe9b06-86d1-47df-a399-6311990743c3">
```

```
            <request code="Authorize">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
                <identity>
                    <id>weblogic</id>
                    <password>00030d05101b050c42</password>
                    <certstore></certstore>
                    <ipaddr>192.168.1.8</ipaddr>
                </identity>
            </request>
            <response elapsed="188" code="Yes">
                <comment></comment>
                <status>Major code: 8(Allow) Minor code: 2(NoCode)</status>
                <content/>
            </response>
        </case>
        <case uuid="61579e47-5532-42c3-bbc7-a00828256bf4">
            <request code="Validate">
                <uri getauthscheme="false">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
            </request>
            <response elapsed="172" code="Yes">
                <comment></comment>
                <status>Major code: 4(ResrcOpProtected) Minor code:
2(NoCode)</status>
                <content/>
            </response>
        </case>
    </cases>
</oamtestscript>
```

21.7.4 About the Target Output File Containing Test Run Results

This example was generated by running the Access Tester in command line mode and specifying the script.xml file as input to execute the 4 captured test cases:

```
Dscript.scriptfile="script.xml" -jar oamtest.jar
```

Notice the various sections in Example 21–3. As shown in the execution log, this test run found no mismatches, and shows that 4 out of 4 requests matched.

Example 21–3 Output File Generated During a Test Run

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<oamtestscript xmlns="http://xmlns.example.com/idm/oam/oamtest/schema"
version="1.0">
    <history description="Generated from script 'script.xml' using agent 'agent1'"
createdon="2012-02-03T23:03:02.171-05:00" createdby="test_user"/>
    <control numthreads="1" numiterations="1" ignorecontent="false"
```

```
testname="oamtest" configfile=""/>
    <cases numcases="4">
        <case uuid="465a4fda-d814-4ab7-b81b-f3f1cd72bbc0">
            <request code="Validate">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
            </request>
            <response elapsed="969" code="Yes">
                <comment></comment>
                <status>Major code: 4(ResrcOpProtected) Minor code:
2(NoCode)</status>
                <content>
                    <line type="auth.scheme.id">LDAPScheme</line>
                    <line type="auth.scheme.level">2</line>
                    <line type="auth.scheme.required.creds">2</line>
                    <line
type="auth.scheme.redirect.url">http://emerald.uk.example.com:14100/oam/server/
</line>
                </content>
            </response>
        </case>
        <case uuid="009b44e3-1a94-4bfc-a0c3-84a38a9e0f2a">
            <request code="Authenticate">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
                <identity>
                    <id>weblogic</id>
                    <password>00030d05101b050c42</password>
                    <certstore></certstore>
                    <ipaddr>111.222.3.4</ipaddr>
                </identity>
            </request>
            <response elapsed="187" code="Yes">
                <comment></comment>
                <status>Major code: 10(CredentialsAccepted) Minor code:
2(NoCode)</status>
                <content>
                    <line type="user.dn">cn=weblogic,dc=us,dc=oracle,dc=com</line>
                </content>
            </response>
        </case>
        <case uuid="84fe9b06-86d1-47df-a399-6311990743c3">
            <request code="Authorize">
                <uri getauthscheme="true">
                    <scheme>http</scheme>
                    <host>oam_server1</host>
                    <port>7777</port>
                    <resource>/index.html</resource>
                    <operation>Get</operation>
                </uri>
```

```
                    <identity>
                        <id>weblogic</id>
                        <password>00030d05101b050c42</password>
                        <certstore></certstore>
                        <ipaddr>111.222.3.4</ipaddr>
                    </identity>
                </request>
                <response elapsed="172" code="Yes">
                    <comment></comment>
                    <status>Major code: 8(Allow) Minor code: 2(NoCode)</status>
                    <content/>
                </response>
            </case>
            <case uuid="61579e47-5532-42c3-bbc7-a00828256bf4">
                <request code="Validate">
                    <uri getauthscheme="false">
                        <scheme>http</scheme>
                        <host>oam_server1</host>
                        <port>7777</port>
                        <resource>/index.html</resource>
                        <operation>Get</operation>
                    </uri>
                </request>
                <response elapsed="171" code="Yes">
                    <comment></comment>
                    <status>Major code: 4(ResrcOpProtected) Minor code:
2(NoCode)</status>
                    <content/>
                </response>
            </case>
        </cases>
</oamtestscript>
```

21.7.5 About the Statistics Document

The statistics file (_stats.xml) is generated together with the target output script during the test run identified in the Execution log. The script.xml file was used as input to execute the 4 captured test cases. The test run found no mismatches, and shows that 4 out of 4 requests matched.

A sample statistics document is shown in Example 21–4. The various sections that provide statistics for this run, which you can compare against statistics for an earlier "known good" run.

Example 21–4 Sample Statistics Document

```
A sample statistics document is shown here. Notice,
<oamteststats xmlns="http://xmlns.example.com/idm/oam/oamtest/schema"
version="1.0">
     <history description="Generated from script 'script.xml' using agent
       'agent1'" createdon="2012-02-03T23:03:02.171-05:00" createdby="test_user"/>
     <summary>
          <total>
              <nummatched>4</nummatched>
              <numtotal>4</numtotal>
              <avgelapsedsource>238</avgelapsedsource>
              <avgelapsedtarget>232</avgelapsedtarget>
          </total>
          <validate>
```

```
    <nummatched>2</nummatched>
    <numtotal>2</numtotal>
    <avgelapsedsource>578</avgelapsedsource>
    <avgelapsedtarget>570</avgelapsedtarget>
</validate>
<authenticate>
    <nummatched>1</nummatched>
    <numtotal>1</numtotal>
    <avgelapsedsource>187</avgelapsedsource>
    <avgelapsedtarget>187</avgelapsedtarget>
</authenticate>
<authorize>
    <nummatched>1</nummatched>
    <numtotal>1</numtotal>
    <avgelapsedsource>188</avgelapsedsource>
    <avgelapsedtarget>172</avgelapsedtarget>
</authorize>
<summary>
<detail>
     <source>
          <validate>
             <yes>2</yes>
             <no>0</no>
             <error>0</error>
             <mismatch>0</mismatch>
             <elapsed>1156</elapsed>
          </validate>
      <authenticate>
             <yes>1</yes>
             <no>0</no>
             <error>0</error>
             <mismatch>0</mismatch>
             <elapsed>187</elapsed>
     </authenticate>
     <authorize>
             <yes>1</yes>
             <no>0</no>
             <error>0</error>
             <mismatch>0</mismatch>
             <elapsed>188</elapsed>
     </authorize>
</source>
<target>
     <validate>
             <yes>2</yes>
             <no>0</no>
             <error>0</error>
             <mismatch>0</mismatch>
             <elapsed>1140</elapsed>
     </validate>
<authenticate>
             <yes>1</yes>
             <no>0</no>
             <error>0</error>
             <mismatch>0</mismatch>
             <elapsed>187</elapsed>
</authenticate>
<authorize>
             <yes>1</yes>
             <no>0</no>
```

```
                    <error>0</error>
                    <mismatch>0</mismatch>
                    <elapsed>172</elapsed>
          </authorize>
      <target>
      </detail>
    <mismatch numcases="0"/>
</oamteststats>
```

21.7.6 About the Execution Log

This sample execution log was generated together with the target output script during a test run using script.xml to execute 4 test cases. The test run found no mismatches, and shows that 4 out of 4 requests matched.

As you review this example, notice the information provided which is the same as the information you see in the Status Messages panel of the Access Tester. Notice the test cases, test name, connection configuration file, agent name, connection status, request validation status, authentication scheme, redirect URL, credentials expected, authentication status and user DN, session ID, authorization status, validation status, and summary statistics. Also notice that the target script and statistics document were generated by this run.

Example 21–5 Execution Log

```
[2/3/12 11:02 PM][info] Setting up to run script 'script.xml'
[2/3/12 11:02 PM][info] Loading test cases and control parameters from script
[2/3/12 11:02 PM][info] Loaded 4 cases
[2/3/12 11:02 PM][info] Control data for this test run:
[2/3/12 11:02 PM][info] Test name : 'samplerun1'
[2/3/12 11:02 PM][info] Configuration file : 'config.xml'
[2/3/12 11:02 PM][info] Ignore content : 'false'
[2/3/12 11:02 PM][info] Loading server configuration from file
[2/3/12 11:02 PM][info] Loaded server configuration
[2/3/12 11:02 PM][info] Connecting to server as agent 'oam_agent1'
[2/3/12 11:03 PM][info][request] Connect : Yes
...
[2/3/12 11:03 PM][info] Test 'samplerun1' will process 4 cases
[2/3/12 11:03 PM][info][request] Validate : Yes
[2/3/12 11:03 PM][info] Authentication scheme : LDAPScheme, level : 2
[2/3/12 11:03 PM][info] Redirect URL :
http://oam_server1.uk.example.com:2100/server/
[2/3/12 11:03 PM][info] Credentials expected: 0x01 (password)
[2/3/12 11:03 PM][info][request] Authenticate : Yes
[2/3/12 11:03 PM][info] User DN : cn=admin1,dc=us,dc=company,dc=com
[2/3/12 11:03 PM][info] Session ID : -1
[2/3/12 11:03 PM][info][request] Authorize : Yes
[2/3/12 11:03 PM][info][request] Validate : Yes
[2/3/12 11:03 PM][info] Summary statistics
[2/3/12 11:03 PM][info] Matched 4 of 4, avg latency 232ms vs 238ms
[2/3/12 11:03 PM][info] Validate: matched 2 of 2, avg latency 570ms vs 578ms
[2/3/12 11:03 PM][info] Authenticate: matched 1 of 1, avg latency 187ms vs 187ms
[2/3/12 11:03 PM][info] Authorize: matched 1 of 1, avg latency 172ms vs 188ms
[2/3/12 11:03 PM][info] Generated target script 'samplerun1_0302171__target.xml'
[2/3/12 11:03 PM][info] Generated statistics log 'samplerun1_0302171__stats.xml'
```

22

Configuring Centralized Logout for Sessions Involving 11g WebGates

This chapter describes Access Manager single logout (also known as global logout) for sessions involving 11g Webgates. With Access Manager, single logout refers to the process of terminating an active session. Oracle recommends using the logout mechanism provided by Access Manager in the manner described in this chapter (not custom logout scripts).

This chapter provides the following sections:

- Prerequisites
- Introduction to Centralized Logout for Access Manager 11g
- Configuring Centralized Logout for 11g Webgates
- Validating Global Sign-On and Centralized Logout

> **See Also:** Different agents require different logout implementation steps described as follows:
>
> - 10g Webgate logout Chapter 25
> - OSSO Agent (mod_osso) logout Chapter 24

22.1 Prerequisites

Before you can perform tasks in this chapter:

- The application must be deployed on the Web server where the agent is configured and registered with Access Manager
- One OAM Agent, on any supported Web server and platform, must be running and registered with Access Manager 11g (Chapter 16)
- Policies must be configured to protect the resource in an Access Manager 11g Application Domain (Chapter 20)

22.2 Introduction to Centralized Logout for Access Manager 11g

Unless explicitly stated, information in this chapter applies to OAM 11g Webgate Agents using the default embedded credential collector (ECC).

This section provides the following topics:

- About Centralized Logout for 11g Webgates
- About Logout Parameters for 11g Webgates

22.2.1 About Centralized Logout for 11g Webgates

Access Manager provides centralized logout (also known as global log out) for sessions. Centralized logout refers to the process of terminating an active session, which means that:

- Applications must not provide their own logout page for use in an SSO environment.
- Applications must make their logout links configurable with a value that points to the logout URL specified by the Webgate Administrator.

> **Note:** Oracle strongly recommends that applications use the ADF Authentication servlet, which interfaces with OPSS where a domain-wide configuration parameter can be used to specify the logout URL. This way applications need not be modified or redeployed to change logout configuration.

Unlike partner applications, external applications (Yahoo! Mail, for example), do not delegate authentication to OAM and do not cede logout control to the OAM single sign-on server. It is the user's responsibility to log out of each of these applications.

Table 22–1 describes the circumstances under which centralized logout occurs. When the logout URL is encountered and the cookie is removed (OAMAuthnCookie for 11g Webgates; ObSSOcookie for 10g Webgates). Webgate logs out the user and requires user re-authentication.

Table 22–1 Centralized Logout Circumstances

Circumstance	Description
Explicitly	The client state is invalidated and the session ends. If a new attempt is made to access the resource, the client must re-authenticate.
	When the user logs out.
	When the Administrator terminates the session
	When the session is terminated based on changes on the identity side
Implicitly	When no user activity occurs within the defined session timeout period, the user is logged out automatically and redirected back to the partner with a new session ID and a new prompt for credentials. This occurs if no lower-level authentication is configured for the resource.
	With Access Manager, the user is not logged out if 10g Webgate simply encounters a logout URL unless the logout.html provides an explicit redirection to the Server logout. The Webgate redirects the user to the Server logout.

22.2.2 About Logout Parameters for 11g Webgates

Generally speaking, during centralized logout, the SSO Engine receives a `user-session-exists` request. The Session Management Engine looks up the session and responds with `the-session-exists` response. The SSO engine sends a `Clear Session` request. The Session management engine clears the token and session context. The SSO engine then sends a `Session Cleared` response.

Clearing the user token and the session context clears the server-side state, which includes clearing the OAM_ID cookie set on the server side. When the agent is notified, the agent clears the client-side state of the application.

Configuring 11g Webgates for logout against OAM Servers requires a `Logout Callback URL` (Table 16–3). Centralized logout for 11g agents sets the cookie from

`loggedout` to `empty` and expires OAMAuthnCookie_<*host:port*>_<*random number*> to explicitly clear it during logout, (rather than leaving behind an empty or logged out cookie).

11g Webgates differ only slightly from 10g Webgates, and match only the URI part of `Logout Callback URL`.

The SSO Engine supports the central logout page on the OAM Server and:

- Calls back to `Logout Callback URL` of 11g Webgates during logout

  The Webgate parameter `Logout Callback URL` can be configured using a URI format (recommended), without *host:port*. OAM Server dynamically constructs the full URL based on the *host:port* in the original request and calls back on it. This can also be a full URL format with a *host:port*, where OAM Server calls back directly without reconstructing callback URL.

- Lands on `end_url` (passed in as query parameter) after logout

Several elements in the 11g Webgate registration page enable centralized logout for 11g Webgates. After registration, the ObAccessClient.xml file is populated with the information in Table 22–2.

Table 22–2 Logout Details After Registration (ObAccessClient.xml)

Element	Description
Logout URL ***10g and 11g Webgates***	The Logout URL triggers the logout handler, which removes the cookie (ObSSOCookie for 10g Webgates; OAMAuthnCookie for 11g Webgates) and requires the user to re-authenticate the next time he accesses a resource protected by Access Manager. ▪ If there is a match, the Webgate logout handler is triggered. ▪ If Logout URL is not configured the request URL is checked for "`logout.`" and, if found (except "`logout.gif`" and "`logout.jpg`"), also triggers the logout handler. Default = [] (not set) **Note**: This is the standard 10g Webgate configuration parameter used to trigger initial logout through a customized local logout page as described in "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers" on page 25-22.
Additional Logout for 11g Webgate Only	For 11g Webgate single sign-off behavior, the following elements and values automate the redirect to a central logout URL, callback URL, and end URL. This replaces 10g Webgate single sign-off only through a customized local logout page.

Table 22–2 (Cont.) Logout Details After Registration (ObAccessClient.xml)

Element	Description
Logout Callback URL	The URL to `oam_logout_success`, which clears cookies during the call back. This can be a URI format without *host:port* (recommended), where the OAM Server calls back on the *host:port* of the original resource request. For example: Default = /oam_logout_success This can also be a full URL format with a *host:port*, where OAM Server calls back directly without reconstructing callback URL. When the request URL matches the Logout Callback URL, Webgate clear its cookies and streams an image .gif in the response. This is similar to OSSO agent behavior. When Webgate redirects to the server logout page, it records an "end" URL as a query parameter (`end_url=http://host:port/...`"), which becomes the landing page that the OAM Server redirects back to after logout. **Note**: In the remote registration template this parameter is named logoutCallbackUrl (Table 16–10). Other Oracle Access Management services support the central logout page on the server. The end_ url relies on the target URL query parameter passed from OPSS integrated applications. See Also: "Configuring Centralized Logout for Oracle ADF-Coded Applications" on page A-7.
Logout Redirect URL	This parameter is automatically populated after agent registration completes. By default, this is based on the OAM Server host name with a default port of 14200. For example: Default = http://*OAMServer_host*:14200/oam/server/logout The Logout URL triggers the logout handler, which removes the OAMAuthnCookie_<*host:port*>_ <*random number*> and requires the user to re-authenticate the next time he accesses a resource protected by Access Manager. ▪ When Webgate logout handler is triggered, it redirects to the central logout page specified by the Logout Redirect URL parameter if it is configured. ▪ If this is explicitly cleared (and not configured), then 10g behavior is triggered. The local logout page can have a customized script to redirect to the central logout page and can clear additional 3rd party cookies if desired.
Logout Target URL	The value for this is name for the query parameter that the OPSS applications passes to Webgate during logout. This query parameter specifies the target URL of the landing page after logout. Default: end_url **Note**: The end_url value is configured using param.logout.targeturl in jps-config.xml. ▪ If Logout Target URL is configured, Webgate searches for the value passed in the logout request's query parameter and passes it as end_url query parameter in the redirect URL to OAM Server. ▪ If Logout Target URL is not configured, Webgate searches for the default name "end_url" and passes that end_url query parameter along.

22.3 Configuring Centralized Logout for 11g Webgates

This section provides the following topics:

- Configuring Centralized Logout for 11g Webgates When the ECC is Used
- Configuring Logout When Using Detached Credential Collector-Enabled Webgate

See Also:

- "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers" on page 25-22
- "Configuring Logout for OSSO Agents with Access Manager 11.1.2" on page 24-16
- "Configuring Centralized Logout for Oracle ADF-Coded Applications" on page A-7

22.3.1 Configuring Centralized Logout for 11g Webgates When the ECC is Used

During 11g Resource Webgate registration or editing, you configure the logout parameters as described here.

Note: If the `LogOutUrl` parameter is already configured for the 11g Webgate (with a value other than `/oamsso/logout.html`), then ensure that is also present as part of the `LogOutUrl` parameter.

See Also: "Configuring Logout When Using Detached Credential Collector-Enabled Webgate" on page 22-6

To configure centralized logout for 11g Webgates

1. Choose your method for registration described in Chapter 16, "Registering and Managing OAM 11g Agents"
2. When creating or editing an agent registration, include appropriate logout values for your environment (Table 22–2):
   - Logout URL
   - Logout Callback URL
   - Logout Redirect URL
   - Logout Target URL
3. Finish and save your agent registration, as usual.
4. **Multiple DNS Domains**: Perform the following steps if you have multiple DNS domains configured for Access Manager 11g SSO.

   Note: The `Logout Callback URL` can be unique for each Webgate; however, to construct the `Logout Callback URL` for each Webgate, it is sufficient for the OAM Server to know the host and port of each Webgate from each domain. The file that the `Logout Callback URL` points to must differ from the logout.html script in the Webgate installation directory.

   ---

   a. Configure the `Logout Callback URL` as the second value in the `logOutUrls` parameter on each resource Webgate.

      `Logout Callback URL` is the location on Webgate that the request must be sent to, for clearing the SSO Cookie in that domain. The `Logout Callback URL` cannot be logout.html.

   b. Ensure that a file physically exists on each Web server at the `Logout Callback URL` location (usually, at the same location as logout.html).

      For example, if you configure a file named logout.png in the same location as logout.html, then the `Logout Callback URL` of logout.png would be:

      ```
      /oamsso/logout.png
      ```

5. Perform steps in "Validating Global Sign-On and Centralized Logout" on page 22-6.

22.3.2 Configuring Logout When Using Detached Credential Collector-Enabled Webgate

When the DCC receives a logout request from the Agent, the DCC:

- Decrypts the logout request, if needed
- Retrieves the `end_url`, constructs the full URL with the Agent's *host:port* if needed
- Clears the DCC cookie (DCCCtxCookie)
- Sends the logout request across the back channel to terminate the session
- `Logout Callback URLLogout Callback URLs`Gets a logout page containing links to all visited agent from OAM Sever (which has this information), or get only a list of the visited from OAM Sever to construct a logout page locally, and redirect user to this page on DCC.
- Returns to the `end_url` after logout completes

To configure logout for Resource Webgates separate from DCC

1. Confirm that the Perl scripts for DCC logout include the actual location of the Perl executable on the Webgate host `$WEBGATE_HOME/oamsso-bin/*pl`.
2. **Resource Webgate**: Modify the Logout Redirect URL to point to DCC's logout.pl:
   a. **Find the Resource Webgate Registration**: See "Searching for an OAM Agent Registration".
   b. Modify the `Logout Redirect URL to` point to the DCC's logout.pl. For example:

      `http://DCCWGhost:port/oamsso-bin/logout.pl`

      Note: The DCC ignores the `Logout Redirect URL` parameter in the Webgate registration page. However, if the Resource Webgate `Logout Redirect URL` is anything other than `logout.*`, then that URL must be defined in DCC `Logout URLs`. See Table 19–34, " Specifying Credential Collectors and Related Forms for Authentication"
3. Perform steps in "Validating Global Sign-On and Centralized Logout" on page 22-6.

22.4 Validating Global Sign-On and Centralized Logout

This section provides the following topics:

- Confirming Global Sign-On
- Validating Global Sign-On with Mixed Agent Types
- Observing Centralized Logout

22.4.1 Confirming Global Sign-On

Use the following procedure to observe single sign-on global login.

Prerequisites

- Agents and Servers must be registered with Access Manager and running

- Resources and policies controlling SSO must be defined within Access Manager Application Domains

To observe global sign-on

1. From a browser, enter the URL to a protected resource.
2. On the login page, sign in using proper credentials.
3. Verify that the resource is presented; do not log out.
4. In the same browser window, enter the URL to another protected resource and confirm that the resource is presented without having to re-authenticate.

22.4.2 Validating Global Sign-On with Mixed Agent Types

Use the following procedure to observe single sign-on global login with different applications and agents that have the same authentication level.

For example, suppose you have:

- OSSO Partner at `http://host1.example.com:7777/private/index.html` protected using mod_osso
- Webgate Partner at `http://host2.example.com:8888/mydomain/finance/index.html` protected using OAM Agent

Within the same browser session, you can access all applications protected by either agent with only a single sign in.

Prerequisites

- Agents and Servers must be registered with Access Manager and running
- Resources and policies must be defined within Access Manager Application Domains
- Both partners must be protected at the same authentication level
- Single sign-on must be configured as described in this chapter

To observe global sign-on with mixed agent types

1. **OSSO Agent Protected Application**:
   a. From a browser, enter the URL of the OSSO-protected resource
   b. Confirm that the login page appears and sign in using proper credentials.
   c. Confirm that the protected resource is served.
   d. Remain in the same browser session and proceed to Step 2.
2. **Same Browser Session, OAM Agent Protected Application**:
   a. In the same browser session as Step 1, enter the URL of the OAM Agent-protected resource.
   b. Confirm that the protected resource is served and that no login page appears.
3. Log out of the browser session.
4. **Fresh Browser Session, OAM Agent Protected Application**:
   a. In a fresh browser session, enter the URL of the OAM-protected resource.
   b. Confirm that the login page appears and sign in using proper credentials.

c. Confirm that the protected resource is served.

d. Remain in the same browser session and proceed to Step 5.

5. Same Browser Session, **OSSO Agent Protected Application**:

a. In the same browser session as Step 4, enter the URL of the OSSO Agent-protected resource.

b. Confirm that the protected resource is served and that no login page appears.

22.4.3 Observing Centralized Logout

Use the following procedure to observe centralized logout:

- With OAM Agents, the logout URL redirects to the server and cookies are cleared and invalidated so that a subsequent request cannot locate the cookie.
- With mod_osso, each agent destroys its own cookies. The logout URL redirects to the global logout page on the server and each partner sends cookies to the server.

Prerequisites

- Agents must be registered and running
- Resources must be protected by Access Manager Application Domains
- Single sign-on must be configured with authentication and authorization policies and responses in Access Manager Application Domains

To observe centralized logout

1. **Single Application**:

a. From a browser, enter the URL of the protected resource.

b. Confirm that the login page appears and sign in using proper credentials.

c. Confirm that the protected resource is served.

d. Open a new browser tab or window and access the same resource to confirm that the second attempt does not require another login.

e. Logout from one tab.

f. Access the resource again to confirm that a login page appears.

2. **Two Applications**:

a. From a browser, enter the URL of the protected resource.

b. Confirm that the login page appears and sign in using proper credentials.

c. In a new tab or window, access another protected application and confirm that the second application does not require another login.

d. Log out of the first application.

e. Access the second application and confirm that the login page appears.

Part VI

Registering and Using Agents with Access Manager

When your enterprise includes Web server types other than Oracle HTTP Server, you can install 10g WebGates to use with Access Manager.

Part VI contains the following chapters:

23

Registering and Managing Legacy OpenSSO Agents

If OpenSSO is already in place as the enterprise solution for your existing Oracle deployment, Oracle Fusion Middleware continues to support this as a solution. Additionally, you can register existing OpenSSO agents for use with Access Manager.

This chapter explains how to register or manage legacy OpenSSO agents for use with Access Manager 11.1.2 and provides the following sections:

23.1 Introduction to OpenSSO, Agents, Migration and Co-existence

OpenSSO is the open source version of the Sun Access Management, Federation Management, and Web Services Security product. Each OpenSSO Agent is a filter that is plugged into a container (Oracle WebLogic Server, JBoss, Apache, and so on) that hosts applications.

OpenSSO Agents can co-exist together with Webgates, Access Clients, or OSSO Agents. Oracle provides OpenSSO Assessment and OpenSSO Migration tools that you can use to transition existing OpenSSO agents, profiles, and policies in to Access Manager.

> **See Also:** Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management for details about Oracle-provided tools and processes to assess and transition OpenSSO agents, profiles, and policies in to Access Manager.

Each OpenSSO Agent provides restricted access to applications by intercepting requests to these applications. After provisioning, OpenSSO Agents use OAM Server instead of the OpenSSO Server.

Note: OpenSSO Agents must be registered with Access Manager to use OAM Server instead of the OpenSSO Server.

After provisioning, OpenSSO Agents use OAM Server instead of the OpenSSO Server. Restricted access to applications is provided by intercepting requests to these applications. OAM Server provides an OpenSSO Proxy that enables communication between the agent and OAM Server and facilitates SSO to the agent-protected application.

OAM Server provides an OpenSSO Proxy that enables communication between the agent and OAM Server and facilitates SSO to the agent-protected application. Using registered OpenSSO Agents, Access Manager provides the features outlined in Table 23–1 (authentication features and a subset of authorization features).

Table 23–1 Features: OpenSSO Agents with Access Manager

Agent Authentication	User Authentication
User Single-Sign-On	User Single Logout
SSO in mixed agents case (between OpenSSO agent and WebGate agent)	User Authorization
Self and Sub-tree mode search	Policy Conditions (Identity, LDAP filter, Session attribute, IP Range, Temporal)
User profile attributes retrieval	Centralized Agent configuration with REST request or response
Migration of Agent profiles, Policies, User Stores, Authentication Stores	Migration Assessment tool

For more information, see:

- About Migration and Co-existence Between OpenSSO and Access Manager
- About OpenSSO Agent Reliance on Access Manager
- Runtime Processing Between OpenSSO Agents and Access Manager

23.1.1 About Migration and Co-existence Between OpenSSO and Access Manager

Access Manager supports co-existence with an existing OpenSSO Server deployment that has been migrated using the OpenSSO to Access Manager upgrade tool.

The OpenSSO to Access Manager Upgrade makes use of OpenSSO Discovery Agents and Policy mapping logic, which fulfills requirements described in following topics:

- OpenSSO Policy Migration
- Application Domain Creation During OpenSSO Migration
- OpenSSO Authentication Policy Migration
- Host Identifier Creation in Access Manager

For System Requirements and Supported Platforms for Access Manager and OpenSSO, see the Oracle Identity and Access Management matrix on the following site:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

See Also: Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management

OpenSSO Policy Migration

The OpenSSO policy is mapped to Access Manager authentication and authorization policies based on available artifacts in the OpenSSO deployment. Table 23–2 table outlines the mapping that occurs between OpenSSO and Access Manager during Policy migration.

See Also: "Migrated Artifacts: OpenSSO" on page D-12

Table 23–2 OpenSSO Policy Migration

Serian	OpenSSO	Access Manager
1	Policy Realm	Policy Domain
2	Policy	Authentication and Authorization Policies
3	Resources	Resources plus Host Identifier
4	Actions	Not specified (By default only "GET")
5	Subject	Identity Conditions in Authorization Policies
6	Conditions	Authentication Scheme plus Authorization Conditions
7	Response Providers	Policy Responses

Application Domain Creation During OpenSSO Migration

If an existing Access Manager Application Domain and policies do not match an OpenSSO policy domain, a new Application Domain is created in Access Manager. The created Application Domain corresponds to an OpenSSO Realm. With respect to each Realm, (OpenSSO Top-level and Sub -level Realms), an Application Domain is created in Access Manager.

All existing Application Domains are compared against OpenSSO Policy Domains. The policy name is checked against all existing policies. If a policy of the same name exists, an error occurs. Otherwise, a new policy is created in Access Manager.

Note: An OpenSSO policy referral policy is not migrated.

OpenSSO Authentication Policy Migration

An OpenSSO policy containing valid rules and conditions is migrated to an Access Manager Authentication Policy: either a new policy to be created or an existing policy to be updated. During policy creation, the OpenSSO policy rule *host:port* information is used to create the host identifier and exact resource URL (or URI) to the Application Domain.

Note: An OpenSSO policy containing artifacts with no rules is not a valid policy.

A policy with conditions is valid for OpenSSO. However, these are migrated based on the default Authentication Policy for Access Manager. Such policies with IP or Temporal conditions can be migrated to Access Manager Authorization Policy conditions.

If the OpenSSO policy is a non-referral policy, an Access Manager Authentication Policy is created containing an authentication scheme with the corresponding authentication module from OpenSSO, host identifier, and resources from OpenSSO policy. In the Access Manager Authorization policy, corresponding OpenSSO constraints and subjects are set.

Limitation: Authentication policy creation exception if the resource already exists (in one of the policy in same Application Domain or Realm. If the resource is already protected by another policy (already exists under the host identifier), new policy creation for the same resource causes an exception. This new policy is not created. The errors are logged in a log file and also displayed in the Oracle Access Management Console.

Host Identifier Creation in Access Manager

One Host Identifier is created within Access Manager for each unique *host:port* combination from OpenSSO. Need to retrieve all the *host:port* from each policy rules in each realm and will create the number of hostIdentifiers = number of unique *host:port* combinations.

Top Realm: By default, OpenSSO has only one top-level realm (/). All other realms can be created under this top-level realm. Ideally, the top-level realm will contain all the *host:port* combinations for which Host Identifiers are created in Access Manager.

Sub Realm: *host:port* combinations in policy rules within sub realms depend on the *host:port* in the Referral policy created under the top realm. The *host:port* in referral policy is not necessarily from any of the *host:port* in other non-referral policies in top realm (also referral policy is not applicable for migration). Hence, the *host:port* in sub realm's policies can be different from the *host:port* in top realm's policies which are applicable for migration.The *host:port* from each realm's policies is checked.

Limitation: In OpenSSO, if there are 2 (or more) policies with same rule yet with different authentication schemes to protect the same resource, then only one (the first one in occurrence) can be migrated to Access Manager; the others are ignored and are not created in Access Manager. There are rare chances for such an occurrence.

23.1.2 About OpenSSO Agent Reliance on Access Manager

Access Manager supports OpenSSO Agents and processing as outlined in Table 23–3.

Table 23–3 OpenSSO Reliance on Access Manager

Component	Description
OpenSSO Agent	OpenSSO agents must be registered with Access Manager to establish trust by authenticating themselves. The OAM Server: ▪ Authenticates the agents with the credentials provided. ▪ Creates a session for the agent. ▪ Stores this information in the cache so that any server in the group/cluster can service the next request from the agent. ▪ Passes the session identifier to the agent so that it can present this to OAM Server during subsequent interactions. This agent session does not expire, which enables the Agent to maintain trust continuity with the OAM Server. The agent registration can be enabled or disabled. When disabled, the Agent does not respond. Multiple OpenSSO agents can share same centralized configuration (if required and if registered in centralized configuration mode). Even so, each agent has its own unique session and session ID. The agent registration can be configured for the "maximum number of agent sessions allowed" per registration. It might have a session timeout property that defines whether the agent's session should expire or not. See Also: "Registering and Managing OpenSSO Agents Using the Console" on page 23-20 "Introducing Access Manager Credential Collection and Login" on page 18-14
OpenSSO Proxy	This Oracle-provided proxy is bundled and installed with Access Manager 11.1.2. OpenSSO Proxy enables communication between the OpenSSO Agent and OAM Server. OpenSSO Proxy serves all OpenSSO Agent requests and responses for Authentication, Authorization, and SSO. OpenSSO Proxy provides protocol binding and message (request or response) conversion functionality. See Also: "Runtime Processing Between OpenSSO Agents and Access Manager" on page 23-6
Protocol Binding Layer	This Oracle-provided framework is responsible for agent-specific protocol handling and mapping authentication protocol messages. This framework also unmarshals incoming protocol-specific requests to protocol agnostic requests and marshals back protocol-agnostic responses to protocol-specific responses.
Partner and Trust Store	Stores OpenSSO Agent centralized configuration. The Access Manager Partner and Trust Store also supports Agent authentication by providing GET APIs for the Agent ID and Agent Password.
OpenSSO Application Domain	This can be generated automatically by using the Auto Create Policies option during OpenSSO Agent registration.
Cookies	The end user has the following valid cookies: ▪ OAM_ID cookie (represents the end session after agent authentication); see ▪ OpenSSO cookie (the agent finds this cookie after the OpenSSO Proxy triggers session validation). The default name of the OpenSSO cookie is: iPlanetDirectoryPro
Authorization Policy for Protected Resources	Set up the Authorization policy with ▪ An IP Range Condition that allows access to only the specified range of IP Addresses. ▪ A Temporal Condition that allows access to only during the specified time period. ▪ An Identity Condition that allows only the configured Identity (user or group) to access the protected resource. ▪ An LDAP Filter condition that allows access only if the filter condition is satisfied. ▪ A Session attribute condition that allows access only if the session has the configured session attribute with required value ▪ An attribute condition for namespaces Request, User, and Session that allows access only if the attribute has been configured with required values
SSO Controller	Fulfills protocol requests by invoking functional components (SSO Engine, Authentication Engine, and so on):
SSO Engine	Provides enterprise and same domain Sign-on and Single logout (SLO) during an online session. Manages the session lifecycle. Facilitates Global logout by orchestrating logout across all Relying Parties in the valid session. Communicates with the Token Processing Engine to create a valid session and persist the user.

Table 23–3 (Cont.) OpenSSO Reliance on Access Manager

Component	Description
Session Management Engine	Manages session and token context information with support for user- and Administrator-initiated and time-out based events. The SSO Engine uses Session Management Engine capabilities for session management: ▪ Create Session ▪ Read Session ▪ Update Session ▪ Delete Session ▪ Validate Session ▪ Get Session Id ▪ Set/Get creation instant ▪ Set/Get expiry instant ▪ Set/Get Last access time ▪ Set/Get Session state ▪ Purge Sessions Note: There is no support for viewing or managing OpenSSO agent sessions using the Oracle Access Management Console. The OpenSSO engine controller layer invokes the appropriate session management interfaces as required. Session manager invokes the agent session cache manager internally to manage the distributed cache for the agent session. A unique session is created for each registered OpenSSO agent, which becomes the trust mechanism between the Agent and the OAM Server. The unique session ID accompanies all XML/HTTP requests for session validation, user authorization, and so on, as the agent token that must be validated by the OAM Server before it can serve any user requests. By default, the agent session does not expire. Agent sessions are stored within the in-memory session cache. Agent sessions are not required to be persisted if the OAM Server restarts. The agent session resides on the OAM Server and the unique agent session ID is passed back to Agent in a form it can use. The agent session supports two states: Invalid (unauthenticated), and Valid (authenticated). The OAM Server can successfully communicate with only an agent with a Valid session state.
Token Processing Engine	Responsible for token generation and token validation in response to token issuance and validation protocol requests. Default capability manages (issues, validates, renews, cancels) Username, SAML, and X509 tokens. This can also be extended to handle custom tokens beyond out-of-box/default supported security token types.
Oracle Access Management Console	Administrators use the console to: ▪ Provision/register OpenSSO Agents ▪ Manage an Application Domain and authentication and authorization policies for protected resources.
Remote registration utility	Administrators can use the remote registration utility to provision the agent and generate configuration files to be consumed by the agent in Centralized mode. The agent has a copy of all required configuration information and does not contact the OAM Server for this. Note: If you are migrating an OpenSSO agent profile to Access Manager, both localized and centralized modes are supported.
WLST commands	Administrators can use WLST commands to: ▪ Migrate OpenSSO Agents to the OAM Server See Also: "Migrated Artifacts: OpenSSO" on page D-12.

23.2 Runtime Processing Between OpenSSO Agents and Access Manager

The OAM Server includes an OpenSSO Proxy to handle communication with the OpenSSO Agent and facilitate interoperability with the OpenSSO server. Single Sign On (SSO) and Single Logout (SLO) between OpenSSO policy agents and the OAM Server, for instance. Interoperability is accomplished by honoring HTML/HTTP Authentication requests for end-user authentication (as an HTTP redirect) and XML/HTTP SSO requests for end-user session validation.

Figure 23–1 shows a deployment that includes OpenSSO and Access Manager. The OpenSSO Agent resides with the Web/Java EE container and the protected resource. The OpenSSO Server resides on a different host.

Figure 23–1 Typical Deployment with OpenSSO and Access Manager

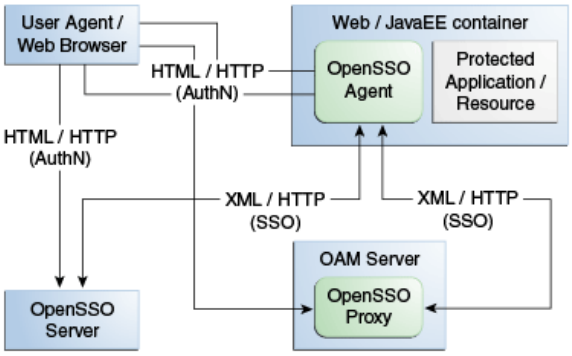


Table 23–4 describes SSO processing between Access Manager and OpenSSO Agents.

Table 23–4 Access Manager Processing with OpenSSO

Functionality	Description
OpenSSO Agent Authentication	OpenSSO agents are authenticated and a valid agent session is established before user authentication. The OpenSSO agent authenticates itself to the OAM Server through the OpenSSO Proxy. OpenSSO Agent Authentication (Agent authenticating itself to the OpenSSO Proxy occurs based on the Agent type: J2EE Agents: Upon Agent container startup. Web Agents: With the first user authentication request to the Web Server. 1. End user sends a request to access an application or resource protected by the OpenSSO agent. 2. OpenSSO agent redirects this un-authenticated user to the OAM Server for authentication as follows: J2EE Agents: Upon Agent container startup. Web Agents: With the first user authentication request to the Web Server. 3. Agent sends the naming request to the proxy to fetch all the other service URLs (Authentication service, Session Service, and so on). 4. Agent sends the xml Authentication request to the Proxy with its credentials on the Authentication service endpoint (obtained from the naming request in Step 3). 5. Proxy authenticates the Agent against an Agent authentication module and creates a non-expiry session in the proxy layer itself. 6. Proxy sends the Authentication xml Response with the agent session details to the agent over http. Once the agent is authenticated, a valid agent session is created. The key that is generated following agent authentication is stored in the Partner and Trust store.
SSO User Login and Authentication	After the agent is authenticated by the OAM Server, the user request is authenticated by the OAM Server. SSO is then provided to the authenticated user accessing resources protected by the agent. After the OpenSSO agent is authenticated and logged in, the gent verifies whether the user has an OpenSSO cookie. If not, the user authentication request is initiated from the OpenSSO agent. User Login 1. OpenSSO agent intercepts the request to protected application. OpenSSO agent checks if the user has an OpenSSO cookie. If not, OpenSSO agent redirects the user to the OpenSSO Proxy for authentication service. OpenSSO Proxy fetches the requested resource URL and the agent ID. 2. The OpenSSO Login event in the OpenSSO proxy wraps this request in a way that the core login events can understand. The OpenSSO login event passes the resource URL and the agent ID to the core login event. 3. Core Login events are performed, which checks if the request object contains an OAM_ID cookie. If yes, OAM Server checks if the session represented by the OAM_ID cookie is a valid session. 4. If the session represented by the OAM_ID cookie is valid, core login event returns the Login response event, which is wrapped by the OpenSSO Login event and is passed on to the OpenSSO login response handler. Core login event returns the identifier of the validated session. 5. OpenSSO login response handler (part of OpenSSO proxy) creates an OpenSSO session identifier in the format that the OpenSSO agent understands and extends this identifier with the OAM session identifier. OpenSSO cookie is created, which contains the OpenSSO session identifier and this cookie is set in the user's browser.

Table 23–4 (Cont.) Access Manager Processing with OpenSSO

Functionality	Description
End User Session Validation	OpenSSO agents intercept the request to the protected application. End user Session Validation 1. OpenSSO agent intercepts the request to the protected application and finds an OpenSSO cookie. 2. OpenSSO agent constructs an XML/HTTP request to validate this OpenSSO cookie. Here XML request would have Application / Agent token ID and session ID. This request reaches the OpenSSO proxy layer. 3. OpenSSO Proxy gets the Application Token associated with the request and validates the Application Token with the OAM Server. 4. OAM Server validates the token and sends the response to the OpenSSO Proxy 5. If the Application Token is invalid, the OpenSSO proxy communicates that to the OpenSSO agent and OpenSSO agent starts the agent authentication flow to obtain that valid Application Token. 6. If the Application Token is valid, OpenSSO proxy decrypts the OpenSSO cookie, fetches the OpenSSO session ID and gets the OAM session ID which is stored as the extension in the OpenSSO session ID. 7. The OpenSSO Proxy triggers the session validation flow. 8. If the session represented by the OAM session ID valid, the OpenSSO proxy communicates that to the Agent and the protected application is displayed to the user. This session validation returns the session data (session attributes and values) to the proxy layer as the output of session validation event response. 9. If the session is invalid, authentication flow is initiated by the OAM Server, where the OAM Server collects the user credentials and validates the user.
User profile attributes retrieval for Web Agent types	OpenSSO agents can request user profile attributes once the user is successfully logged in and a valid session is created, by providing the session ID. The OpenSSO proxy layer must receive these requests and fetch the OAM session ID from the OpenSSO session ID extension. OpenSSO Web agents use the Policy service URL for these requests. OpenSSO proxy then fetches these attributes and passes the session ID to the OAM Server (which uses the responses framework to fetch the User Profile attributes and return the data to the OpenSSO Proxy).
User profile attributes retrieval for J2EE Agent types	OpenSSO J2EE agents use jax-rpc calls to retrieve user profile attributes. The flow is similar as the one for Web agents types to retrieve these properties.
User Single Logout	1. The OpenSSO Proxy receives a User logout request and forwards the user to the OAM logout URL 2. OpenSSO Proxy decrypts the OpenSSO cookie, fetches the OpenSSO session identifier and, from that, fetches the OAM session ID. OpenSSO proxy sends the logout request to controller through the OpenSSO logout event with the OAM session ID. 3. Core logout events are performed, which includes the controller calls to the SSO engine to confirm the session exists. If the session exists, the OAM_ID cookie is deleted, and global logout is performed. 4. The SSO engine returns the response to the controller indicating the session has been cleared. 5. The controller sends a request to the proxy to clear tokens. 6. The Proxy sends the request to the agent to clear tokens through the OpenSSO Logout response handler.

Table 23–4 (Cont.) Access Manager Processing with OpenSSO

Functionality	Description
SSO Agent Logout	Access Manager handles single logout requests originating from the OpenSSO agents. Note: The user must be logged out from resources protected by other agents (WebGate and MOD_OSSO, for instance). Agent logout is not required other than in the multi-domain environment. 1. The OpenSSO Agent requests logout to OpenSSO Proxy. 2. The Proxy fetches the Application token from the request and verifies that the request is initiated by an authenticated agent. 3. Opensso Agent Logout is handled within the proxy as the session is created in an independent Agent Session Management Module. 4. The decrypted token is returned to the OpenSSO Proxy. If there is no OpenSSO token present, steps 2 and 3 are absent. 5. The OpenSSO Login event in the OpenSSO proxy wraps this request in a way that the core login events can understand. 6. Core Login events are performed, which includes forwarding the request to the SSO Engine through the controller and authenticating the user. A new session is created for the authenticated user. 7. Core login event returns the Login response event, which is wrapped by the OpenSSO Login event and is passed on to the OpenSSO login response handler. 8. OpenSSO login response handler sends the response to the OpenSSO agent.
Token Generation for OpenSSO Agents	Access Manager processes the tokens generated for, and to be consumed by the OpenSSO agents.
Logging	Enables you to track events during end user access enforcement for following events, using the OAM Server log component: ■ Login success and login failure events ■ Logout success and logout failure events ■ Log messages at different logging levels (FATAL, ERROR, WARNING, DEBUG, TRACE), each of which indicates severity in descending order.
Auditing	Using the OAM Server audit component to: ■ Audit Login events ■ Audit Logout success events
Polling	Polling is not Supported. Only Session Destroy notifications are supported by the OpenSSO Proxy.

23.3 Understanding OpenSSO Agent Registration Parameters

Whether you migrate existing OpenSSO Agents to Access Manager or register a fresh OpenSSO Agent, the Oracle Access Management Console provides centralized registration and management of OpenSSO Agents.

- About OpenSSO Agent Registration Parameters
- About the Expanded OpenSSO Agent Page and Parameters

23.3.1 About OpenSSO Agent Registration Parameters

Figure 23–2 shows the New OpenSSO Agent page where Administrators enter information during new OpenSSO agent registration.

Figure 23–2 New OpenSSO Agent Page

Table 23–5 describes the elements on the New OpenSSO Agent page.

Table 23–5 Elements on the New OpenSSO Agent Page

Element	Description
Agent Type	OpenSSO agent types can be either: ▪ Web: Use with Web resources and Web resource URLs. ▪ J2EE: Default agent type. Use J2EE type agents for Java EE resources and applications. For the J2EE Agent, Filter modes must be set by choosing either: SSO_ONLY (Access Manager Authentication Only): Enables the least restrictive mode of operation for the filter; the agent simply ensures that all users who try to access protected web resources are authenticated. URL_Policy (Access Manager Authentication and Authorization): Enables the agent filter to enforce URL policies. By default, with Web Agents, .com.sun.identity.agents.config.sso.onlyattribute is set to "false". **Note**: Both agent types provide access protection when you also choose SSO only.
Agent Name	Unique name for this agent.
Password Re-enter Password	A required, unique password for this OpenSSO agent, which can be assigned during this registration process. The entry will appear in obfuscated format in the console, in oam-config.xml, and in OpenSSOAgentBootstrap.properties. When a registered agent connects to an OAM Server, the user is prompted for the password. The password is used for authentication to prevent unauthorized agents from connecting and obtaining policy information.
Host Identifier	A name that identifies the host and port for the OpenSSO agent. Default: *Agent Name* See Also: "About Virtual Web Hosting" on page 19-10.
Base URL	The protocol, host, and port of the computer on which the OpenSSO agent is installed. For example, http://*host.example.domain.com:port* or https://*example.domain.com:port*.
Auto Create Policies	During agent registration, you can have authentication and authorization policies created automatically. This option is checked (enabled) by default. The agent name is used as the Application Domain name by default. Default: Enabled **See Also**: "Generated Artifacts: OpenSSO" on page D-8. **Notes**: An Application Domain in Access Manager corresponds to a Realm in OpenSSO. If you already have an Application Domain and policies, you can simply add new resources to it. If you clear this option (no check), no Application Domain or policies are generated automatically.

OpenSSO Agent Properties

OpenSSO Agent properties are stored in the following files, which are updated during agent registration and configuration changes and consumed during run time:

- OpenSSOAgentBootstrap.properties
- OpenSSOAgentConfiguration.properties

These files are stored on the console host (AdminServer) and must be relocated to the OpenSSO Agent /config directory as shown in Table 23–6.

Table 23–6 Relocating OpenSSO Artifacts

From AdminServer . . .	To OpenSSO Agent /config Directory
$*MW_HOME*/Oracle_IDM1/oam/server/rreg/client/rreg/output	$*Policy-Agent-base*/*AgentInstance-Dir*/config/

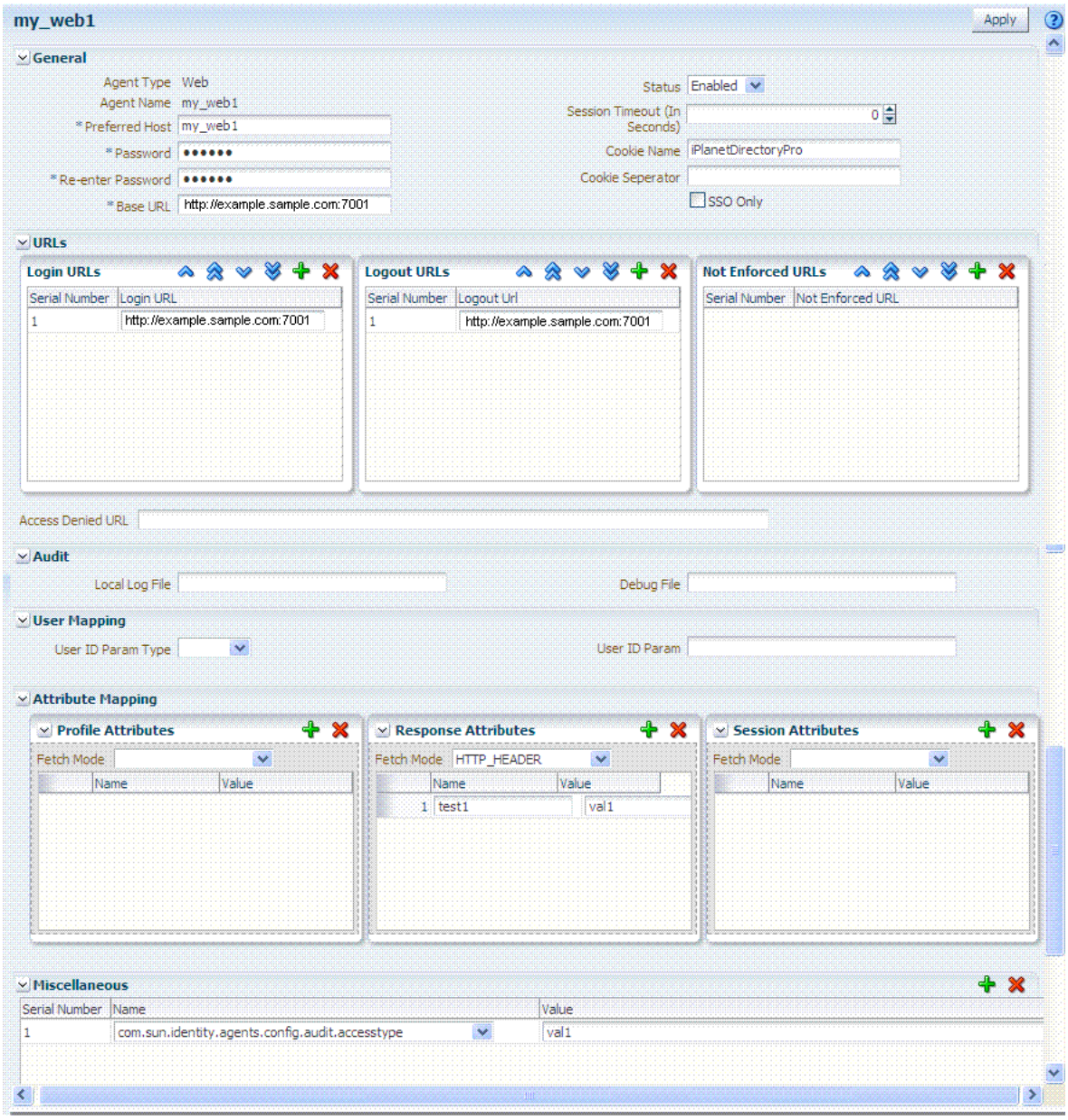
For details about the generated Application Domain for an Open SSO Agent, see "Generated Artifacts: OpenSSO" on page D-8.

23.3.2 About the Expanded OpenSSO Agent Page and Parameters

This topic describes expanded OpenSSO Agent page that is available when managing the agent using the Oracle Access Management Console.

During registration, only a small subset of available parameters is displayed to streamline the process. Whether you registered the agent using the Oracle Access Management Console or the remote registration utility, you can view the full agent configuration page in the console. Default values populate the page after initial registration and are displayed when you open the Agent's page, as shown in Figure 23–3.

Figure 23–3 Expanded OpenSSO Web Agent Registration Page



Information on the J2EE Agent registration page is nearly the same as details for Web Agents. The J2EE Agent registration page is shown in Figure 23–4.

Figure 23–4 Expanded OpenSSO J2EE Agent Registration Page

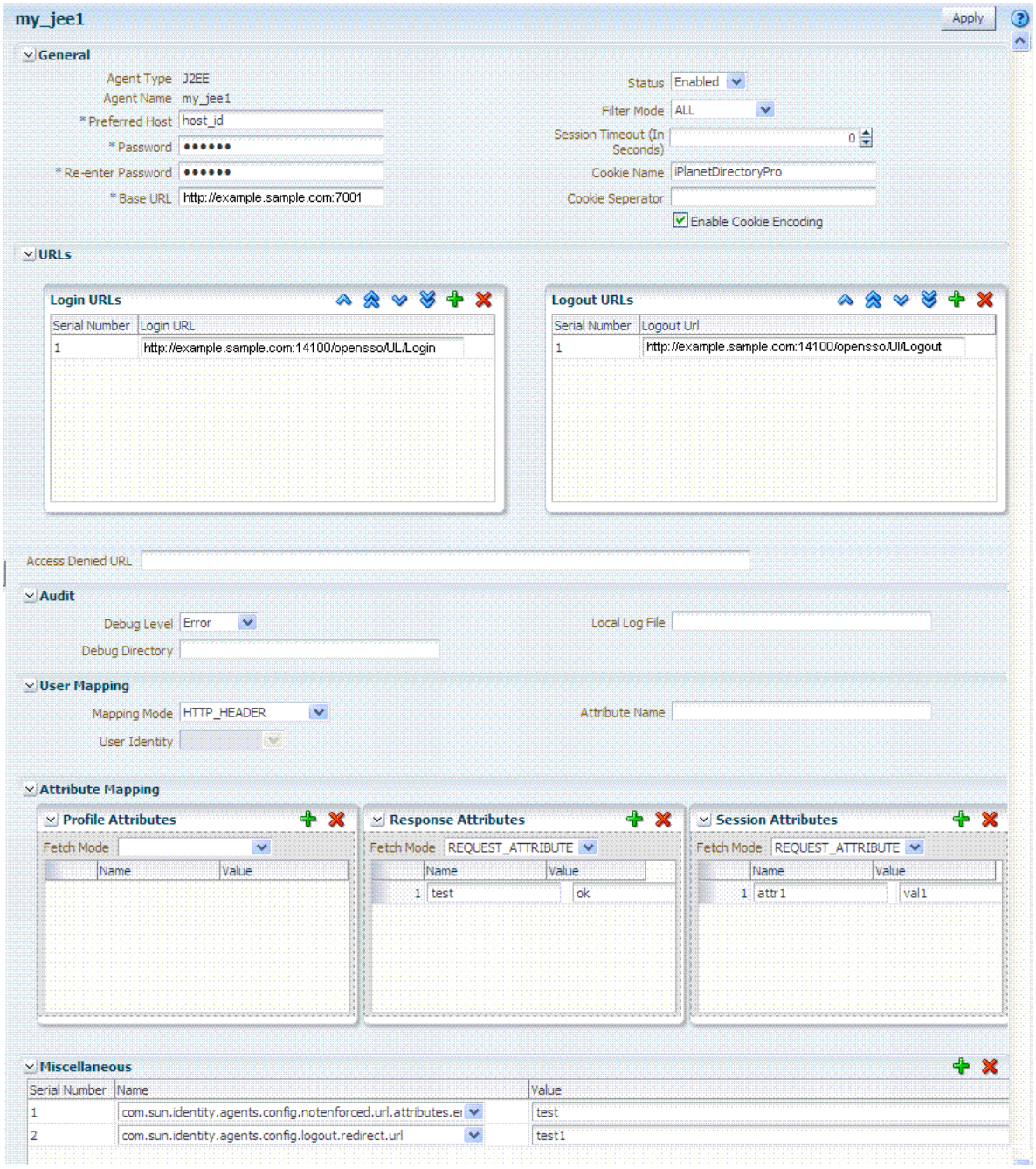


Table 23–7 describes all elements on expanded OpenSSO Agent registration pages.

Table 23–7 Expanded OpenSSO Agent Registration Elements

Element	Description
Status	The state of this agent registration: Enabled or Disabled. Default: Enabled See Also: Table 23–5, " Elements on the New OpenSSO Agent Page"
Filter mode ***J2EE Agent Type only***	The Agent filter is installed within the protected application. It facilitates the enforcement of security policies, governing the access to all resources within the protected application. Every application protected by the J2EE Agent must have its deployment descriptors changed to reflect that it is configured to use the agent filter. Applications that do not have this setting are not protected by J2EE the Agent and might malfunction or become unusable if deployed on a deployment container where the Agent realm is installed. Filter modes must be set for the J2EE Agent by choosing one of the following options: SSO_ONLY or URL_Policy. Default: URL_Policy ■ SSO_ONLY (Access Manager Authentication Only): Enables the least restrictive mode of operation for the filter; the agent simply ensures that all users who try to access protected web resources are authenticated. ■ URL_Policy (Access Manager Authentication and Authorization): Enables the agent filter to enforce URL policies. By default, with Web Agents, .com.sun.identity.agents.config.sso.onlyattribute is set to "false". **Process overview: Authentication Only (SSO_ONLY J2EE Filter Mode)** 1. End user requests access to an application or resource protected by OpenSSO Agent. 2. OpenSSO Agent redirects this un-authenticated user to OAM Server for authentication. 3. After successful authentication, OpenSSO Proxy redirects the user back to the protected resource with OpenSSO session ID set in the response cookie. 4. Authenticated end user with valid OpenSSO session, accesses application or resource protected by OpenSSO Agent. 5. OpenSSO Agent validates the OpenSSO Session against OAM Server through the OpenSSO Proxy and enables SSO for the end user. 6. End user gets access to the protected application or resource. **Process overview: Authentication and Authorization with URL_Policy J2EE Filter Mode** 1. End user requests access to an application or resource protected by OpenSSO agent. 2. OpenSSO Agent redirects this un-authenticated user to OAM Server for authentication. 3. After successful authentication, OpenSSO Proxy redirects the user back to the protected resource with OpenSSO session ID set in the response cookie. 4. Authenticated end user with valid OpenSSO session, accesses application or resource protected by OpenSSO Agent. 5. OpenSSO Agent validates the OpenSSO Session against OAM Server through the OpenSSO Proxy. 6. OpenSSO Agent sends Policy requests to OAM Server through the OpenSSO Proxy to ensure the authenticated user is authorized to access the resource. 7. OpenSSO Proxy evaluates the Policies for the protected resource (using OAM Policy Engine) and sends the Policy decision to the Agent: `Allow` or `Deny`. 8. End user gets access if the Policy decision is `Allow`. **Note**: The following Filter Modes are not supported: NONE, J2EE_Policy, All. **See Also**: "Understanding OpenSSO Agent Registration Parameters" on page 23-10.
Session Timeout in seconds (User)	Click the arrows to specify the period, after which the session times out and the user must re-authenticate. Default: 0
Cookie Name	The default name of the OpenSSO cookie is: Default: iPlanetDirectoryPro
Cookie Separator	Defines the character to be used as a separator when multiple values of the same attribute are being set as a cookie. For example, the pipe symbol "`|`", can be used. Default:

Table 23–7 (Cont.) Expanded OpenSSO Agent Registration Elements

Element	Description
Enable Cookie Encoding ***J2EE-type Agent Only***	Identifies whether cookie encoding is enabled or not. Default: Enabled
SSO Only ***Web-type Agent Only***	Enables OpenSSO Agent to bootstrap and authenticate with the OAM Server using the OpenSSO proxy provided by Access Manager: The end user accesses the application or resource protected by the OpenSSO Agent, which redirects the unauthenticated user to the OAM Server for authentication. After successful authentication, the OpenSSO proxy redirects the user back to the protected application or resource and sets the OpenSSO Session ID in the response cookie. The authenticated user with a valid OpenSSO session accesses the application or resource protected by the OpenSSO Agent, which validates the session against the OAM Server using the OpenSSO Proxy. The end user gets access based on Access Manager authorization policy.
Urls	
Login URLs	Enter the login URL, which must include the appropriate protocol (HTTP or HTTPS), host, domain, and port in the following form: `http://example.domain.com:port` Default: `http://oamhost:port/opensso/UI/Login` Note: The port number is optional.
Logout URLs	The Logout URL triggers the logout handler, which requires the user to re-authenticate the next time he accesses a resource protected by Access Manager. When yo enter the Logout URL, it must include the appropriate protocol (HTTP or HTTPS), host, domain, and port. For example: `http://example.domain.com:port/opensso/UI/Logout` Default: http://oamhost:port/opensso/UI/Logout Note: The port number is optional. The user must be logged out from resources protected by other agents (WebGate and MOD_OSSO, for instance). Agent logout is not required other than in the multi-domain environment.
Not enforced URLs ***Web-type Agent Only***	The URLs you enter in this list have no policy enforcement. These equate to Public URLs, with no protection and access is allowed by all.
Access Denied URI	The URI to which the user is directed if access to the requested resource is denied. This is available for both Web and J2EE Agents, each with its own format requirements: Web Agent (full URL): http://*host:port*/context/accessDeniedURL.html J2EE Agent (relative URI): /context/accessDeniedURL.htm Default: (blank)
Audit	
Debug Level ***J2EE-type Agent Only***	When set, the OAM Server logs messages for: ▪ Login success and login failure events ▪ Logout success and logout failure events ▪ Log messages at different logging levels (ERROR, WARNING, MESSAGE, each of which indicates severity in descending order. Default: Error See Also: Chapter 8, "Logging Component Event Messages"
Debug Directory ***J2EE-type Agent Only***	The filesystem directory path for audit logs from the OAM Server: ▪ Audit Login events ▪ Audit Logout success events See Also: Chapter 9, "Auditing Administrative and Run-time Events"
Debug File ***Web-type Agent Only***	Defines the filesystem directory path to the local component event logging file. Default:

Table 23–7 (Cont.) Expanded OpenSSO Agent Registration Elements

Element	Description
Local Log File	Defines the filesystem directory path to the local component event logging file. Default:
User Mapping	
Mapping Mode	■ HTTP_HEADER ■ USER_ID ■ PROFILE_ATTRIBUTE ■ SESSION_PROPERTY Default: User_ID
User Identity	Default: User ID
User Attribute Name	Default:
Attribute Mapping	Attribute retrieval fetches and sets user attributes in the HTTP request for consumption by the applications. The following Attribute Mapping panels are available: ■ Profile Attributes ■ Response Attributes ■ Session Attributes **Fetch Mode**: Certain applications rely on the presence of user-specific profile information in some form to process user requests appropriately. The agent can make these attributes from the user's profile available in various forms. when you specify a Fetch Mode for Profile, Response, or Session Attributes: ■ NONE: No attributes are fetched. ■ HTTP_HEADER: When the agent is configured to provide the LDAP attributes as HTTP headers, these attributes can be retrieved. ■ REQUEST_ATTRIBUTE: When the agent is configured to provide the LDAP attributes as request attributes, the agent populates these attribute values into HttpServletRequest as attributes that can later be used by the application as necessary. For example, fetch profile attributes, assign a mode to the profile attribute property, and map the profile attributes to be populated under specific names for the currently authenticated user. ■ HTTP_COOKIE: When the agent is configured to provide the LDAP attributes as cookies, the necessary values are set as server specific cookies by the agent with the path specified as "/." Multi-valued attributes are set as a single cookie value such that all values of the attribute are concatenated into a single string using a separator character that can be specified by the property labeled Cookie Separator. Default: None
Profile Attributes	User profile information can be populated under specific names for the currently authenticated user. For example: Fetch Mode: REQUEST_ATTRIBUTE Name (Map key): cn Value: CUSTOM-Common-Name Name (Map key): mail Value: CUSTOM-Email Default: No data
Response Attributes	Obtains user-specific information by fetching policy response attributes, assigns a mode to the policy response attribute property, and maps the policy response attributes to be populated under specific names for the currently authenticated user. Fetch Mode: REQUEST_ATTRIBUTE Name (Map key): cn Value: CUSTOM-Common-Name Name (Map key): mail Value: CUSTOM-Email_Addr Default: No data

Table 23–7 (Cont.) Expanded OpenSSO Agent Registration Elements

Element	Description
Session Attributes	The attributes in the session object maintained by the OAM Server. These are sent as part of a session validation response to the Agents. Fetch Mode: REQUEST_ATTRIBUTE Name (Map key): UserToken Value: CUSTOM-userid Default: No data

Table 23–7 (Cont.) Expanded OpenSSO Agent Registration Elements

Element	Description

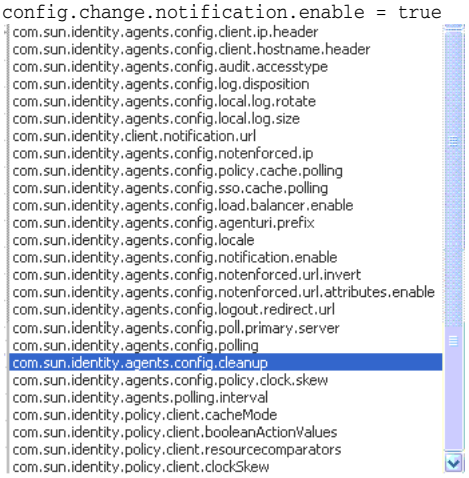
Miscellaneous	Most agent properties are hot-swap enabled. Changing configuration properties can have unexpected results. Hot-swappable properties take effect immediately. Therefore, mistakes are instantly implemented.
	
	Most agent properties are presented in a format that is most useful for configuring using Oracle Access Management Console. However, this format is not used in the OpenSSOAgentBootstrap.properties file.
	
	List Properties: Certain properties are specified as lists composed of a key that represents the property name; a positive number (starting from 0) that increments by 1 for every value specified in the list; and a value. For example:
	
	`com.sun.identity.agents.config.notenforced.uri[0]=/agentsample/public/*`
	`com.sun.identity.agents.config.notenforced.uri[1]=/agentsample/images/*`
	`com.sun.identity.agents.config.notenforced.uri[2]=/agentsample/index.html`
	
	Map Constructs: Certain properties are specified as map constructs composed of a key that represents the property name; a name string that forms the lookup key as available in the map; and the value associated with the name in the map. For example:
	
	`com.sun.identity.agents.config.filter.mode[app1]=ALL`
	`com.sun.identity.agents.config.filter.mode[app2]=SSO_ONLY`
	
	Note: For a given name, there can only be one entry in the configuration for a given configuration key. If multiple entries with the same <name> for a given configuration key are present only one of the values will be loaded in the system and the other values are discarded.
	
	Application-Specific Properties: Certain properties can be configured for specific applications. Thee agent can use different values of the same property for different applications as defined in the configuration file. Application Specific configuration properties must follow the rules and syntax of the map construct. The following settings for a single property serve as an example which illustrates that for applications other than the ones deployed on the root context and the context /Portal, the value of the property defaults to *value3*.
	
	`com.sun.identity.agents.config.example[Portal] = value1`
	`com.sun.identity.agents.config.example[DefaultWebApp] = value2`
	`com.sun.identity.agents.config.example = value3`
	
	Global Properties: Properties that are not configured for specific applications apply to all the applications on that deployment container. Such properties are called global properties.
	
	Serial number: Assigned automatically
	
	Name: Select from one of the following
	
	Value: Enter the appropriate value for the Name you chose.
	
	Note: To enable OpenSSO Agent configuration hotswap, make sure the opensso agents have the following properties in the Miscellaneous properties section of their profile in the OpenSSO Proxy on OAM Server, and the agent servers are restarted:
	
	J2ee Agents: `com.sun.identity.client.notification.url =http://<AGENT_SERVER_HOST>:<AGENT_SERVER_PORT>/agentapp/notification`
	
	Web Agents:
	
	`com.sun.identity.client.notification.url =http://AGENT_SERVER_HOST:AGENT_SERVER_PORT/UpdateAgentCacheServlet?shortcircuit=false`
	
	Not Supported, Web Agents: `com.sun.identity.agents.config.change.notification.enable = true`
	
	 

Table 23–7 (Cont.) Expanded OpenSSO Agent Registration Elements

Element	Description
See Also:	"Reviewing OpenSSO Bootstrap Configuration Mappings"
Element	Description
See Also:	Table 23–5, " Elements on the New OpenSSO Agent Page"
Status	The state of this agent registration: Enabled or Disabled. Default: Enabled
Filter mode *J2EE Agent Type only*	The Agent filter is installed within the protected application. It facilitates the enforcement of security policies, governing the access to all resources within the protected application. Every application protected by the J2EE Agent must have its deployment descriptors changed to reflect that it is configured to use the agent filter. Applications that do not have this setting are not protected by J2EE the Agent and might malfunction or become unusable if deployed on a deployment container where the Agent realm is installed. Filter modes must be set for the J2EE Agent by choosing one of the following options: SSO_ONLY or URL_Policy. Default: URL_Policy ■ SSO_ONLY (Access Manager Authentication Only): Enables the least restrictive mode of operation for the filter; the agent simply ensures that all users who try to access protected web resources are authenticated. ■ URL_Policy (Access Manager Authentication and Authorization): Enables the agent filter to enforce URL policies. By default, with Web Agents, .com.sun.identity.agents.config.sso.onlyattribute is set to "false". **Process overview: Authentication Only (SSO_ONLY J2EE Filter Mode)** 1. End user requests access to an application or resource protected by OpenSSO Agent. 2. OpenSSO Agent redirects this un-authenticated user to OAM Server for authentication. 3. After successful authentication, OpenSSO Proxy redirects the user back to the protected resource with OpenSSO session ID set in the response cookie. 4. Authenticated end user with valid OpenSSO session, accesses application or resource protected by OpenSSO Agent. 5. OpenSSO Agent validates the OpenSSO Session against OAM Server through the OpenSSO Proxy and enables SSO for the end user. 6. End user gets access to the protected application or resource. **Process overview: Authentication and Authorization with URL_Policy J2EE Filter Mode** 1. End user requests access to an application or resource protected by OpenSSO agent. 2. OpenSSO Agent redirects this un-authenticated user to OAM Server for authentication. 3. After successful authentication, OpenSSO Proxy redirects the user back to the protected resource with OpenSSO session ID set in the response cookie. 4. Authenticated end user with valid OpenSSO session, accesses application or resource protected by OpenSSO Agent. 5. OpenSSO Agent validates the OpenSSO Session against OAM Server through the OpenSSO Proxy. 6. OpenSSO Agent sends Policy requests to OAM Server through the OpenSSO Proxy to ensure the authenticated user is authorized to access the resource. 7. OpenSSO Proxy evaluates the Policies for the protected resource (using OAM Policy Engine) and sends the Policy decision to the Agent: `Allow` or `Deny`. 8. End user gets access if the Policy decision is `Allow`. **Note**: The following Filter Modes are not supported: NONE, J2EE_Policy, All. **See Also**: "Understanding OpenSSO Agent Registration Parameters" on page 23-10.

23.4 Registering and Managing OpenSSO Agents Using the Console

This topic provides the following topics:

- Registering an OpenSSO Agent using the Oracle Access Management Console
- Configuring and Managing Registered OpenSSO Agents Using the Console

23.4.1 Registering an OpenSSO Agent using the Oracle Access Management Console

Users with Oracle Access Management Administrator credentials can either use Oracle-provided tools to analyze and migrate an OpenSSO environment or use the Oracle Access Management Console, as described here, to manually provision OpenSSO Agents.

Registration steps are the same regardless of the OpenSSO agent type you choose: Web or J2EE. You can register an OpenSSO agent before you deploy it. Users with valid Administrator credentials can perform the following task to register an OpenSSO agent using the Oracle Access Management Console.

Note: Only centralized configuration mode is supported for new OpenSSO Agent creation.

After agent registration, you can change the communication mode of the OAM Server if needed. Communication between the agent and server continues to work as long as the Agent uses SSO Only filter mode.

Prerequisites

Confirm that at least one OAM Server is running in the same mode as the agent to be registered. Install the Agent, as described in:

- Oracle Sun OpenSSO Enterprise Policy Agent 3.0 User's Guide for Web Agents
- Oracle Sun OpenSSO Enterprise Policy Agent 3.0 User's Guide for J2EE Agents

See Also: "Understanding OpenSSO Agent Registration Parameters"

To register an OpenSSO agent using the console

1. From the Oracle Access Management Console, click the New OpenSSO Agent link:

   Welcome page
   SSO Agent panel
   New OpenSSO Agent link

   Alternatively: Open the System Configuration tab, Access Manager section, SSO Agents node, OpenSSO Agent node, then click the Create ... OpenSSO Agent button in the upper-right corner.
2. On the New: OpenSSO Agent page, enter required details (with an *) (Table 23–5).
3. Confirm that the Auto Create Policies box is checked (or clear the box to disable this function if you do not need a new Application Domain).
4. Click Apply to submit the registration (or close the page without submitting it):
5. Check the Confirmation window for the location of generated artifacts and then close the window.
6. In the navigation tree, confirm the Agent name is listed.
7. Copy OpenSSO Agent bootstrap and configuration files from the console host (AdminServer) to the Agent host Web server:

OpenSSO Properties Files From ...	Path ...
From the AdminServer (Console) host	*$DOMAIN_HOME*/output/$*Agent_Name*/ ■ OpenSSOAgentBootstrap.properties ■ OpenSSOAgentConfiguration.properties
To the OpenSSO Agent host Web server $*OHS_dir*/config.	For example: $W*ebTier_MW_HOME*/Oracle_WT1/instances1/config/OHS/ohs1/config/

8. Restart the OAM Server hosting the Agent.
9. Proceed to the following topics, as needed:
   - "Configuring and Managing Registered OpenSSO Agents Using the Console"
   - Part V, "Managing Access Manager SSO, Policies, and Testing"

23.4.2 Configuring and Managing Registered OpenSSO Agents Using the Console

Steps in this procedure are the same whether you are editing (view, modify, or delete) a J2EE or Web type OpenSSO agent. Users with valid Administrator credentials can change any setting for a registered agent using the Oracle Access Management Console.

After changes, updated details are propagated through a runtime configuration update process. There is usually no need to copy the artifacts over to OpenSSO agent configuration area. Artifacts need only be copied to the OpenSSO agent directory path if the agent name, password, or security mode is changed.

> **Note:** Deleting an agent registration removes only the registration (not the associated host identifier, Application Domain, resources, or the agent instance itself), which prevents registering the same agent again if required. However, deleting the Application Domain and its content removes all referenced objects including the Agent registration, as described in "Deleting an Application Domain and Its Contents" on page 20-13.

Prerequisites

The agent must be registered and the registration visible in the Oracle Access Management Console. The AdminServer and one OAM Server must be running.

> **See Also:** "About the Expanded OpenSSO Agent Page and Parameters" on page 23-12

To view or modify registration details (or delete a registration)

1. From the System Configuration tab, Access Manager section, expand the SSO Agents node.
   a. Open the OpenSSO Agents node to display the Search page.
   b. **Find a Registration**: Fill in the form (Agent Name or Agent Type or both) or simply click the Search button.
   c. **Open a Registration**: Click the Agent name in the results table to open the page.
2. **Modify Existing Details**:

a. Add or modify agent details as desired (Table 23–5).

b. Click Apply to submit changes, then dismiss the Confirmation window.

c. Copy OpenSSO Agent configuration files only if the Agent name, password, or security mode was changed.

3. **Delete OpenSSO Agent Registration**: This does not remove the Agent instance itself, only the registration page from the console.

a. Close the agent's registration page if it is open.

b. Click the desired agent's name, click the Delete button in the tool bar, and confirm the removal in the Confirmation window.

c. Confirm the Agent name is absent in the navigation tree.

4. Restart the OAM Server hosting the Agent.

5. Proceed to Part V, "Managing Access Manager SSO, Policies, and Testing".

23.5 Performing Remote Registration for OpenSSO Agents

This section provides a brief review of remote registration using the Oracle-provided tool: oamreg. this section provides the following topics:

- Understanding Request Templates for OpenSSO Agent Remote Registration
- Reviewing OpenSSO Bootstrap Configuration Mappings
- Performing In-Band Remote Registration with OpenSSO Agents
- Performing Out-of-Band Remote Registration with OpenSSO Agents

23.5.1 Understanding Request Templates for OpenSSO Agent Remote Registration

Each OpenSSO Agent provides restricted access to applications by intercepting requests to these applications. OpenSSO Agent provisioning is the process of registering an OpenSSO agent to use Access Manager.

Both `inband` and `outofband` remote registration modes require a request file with the input argument, as listed in Table 23–8

Table 23–8 OpenSSO Request Files for Remote Registration

Templates for . . .	Description
Register OpenSSO Agents	$OAM_REG_HOME/input/OpenSSORequest.xml
	$OAM_REG_HOME/input/OpenSSORequest_short.xml When you run oamreg with the short request, default values are applied automatically for elements found only in the extended request.
Other Templates	
Update Agent:	$OAM_REG_HOME/input/OpenSSOUpdateAgentRequest.xml See Also: "Updating Agents Remotely" on page 16-37
Create Policies: Create New Host Identifiers and an Application Domain without Registering an Agent	$OAM_REG_HOME/input/CreatePolicyRequest.xml See Also: "Managing Policies and Application Domains Remotely" on page 20-81

Table 23–8 (Cont.) OpenSSO Request Files for Remote Registration

Templates for . . .	Description
Update Policies:	$OAM_REG_HOME/input/UpdatePolicyRequest.xml
Existing Host Identifiers and Application Domain (not associated with an Agent Registration)	See Also: "Managing Policies and Application Domains Remotely" on page 20-81

Remote OpenSSO Agent registration automatically:

- Creates the agent page for the Oracle Access Management Console
- Creates an Application Domain and basic policies to protect applications
- Produces OpenSSO properties files on the client to be consumed by the agent at run time

Table 23–9 identifies the elements in OpenSSO Agent request templates. Unless explicitly stated, all elements are found in both the short and the extended request files.

Table 23–9 OpenSSO Agent Remote Registration Request

Element	Description	Example
<serverAddress> <agentName> <hostIdentifier> <agentBaseUrl> <autoCreatePolicy> <applicationDomain> <virtualhost>	Elements common to all remote registration request templates.	See Table 16–8, " Common Elements in Remote Registration Requests"
<agentType>	Choose between J2EE or Web type OpenSSO agents.	`<agentType>WEB</agentType>`
Password Re-enter Password	A required, unique password for this OpenSSO agent, which can be assigned during this registration process. The entry will appear in obfuscated format in the console, in oam-config.xml, and in OpenSSOAgentBootstrap.properties. When a registered agent connects to an OAM SServer, the user is prompted for the password. The password is used for authentication to prevent unauthorized agents from connecting and obtaining policy information.	You are asked to supply a password during remote registration. This does not appear in the template.
Extended OpenSSO Template Only		
<agentDebugDir>	With <debug> set to true, you can configure the directory path for logged agent messages. Default: None **See Also**: Chapter 8, "Logging Component Event Messages"	`<agentDebugDir>/scratch/debug</agentDebugDir>`
<agentAuditDir>	Defines the directory path for audit logs from the OAM Server: ▪ Audit Login events ▪ Audit Logout success events See Also: Chapter 9, "Auditing Administrative and Run-time Events"	`<agentAuditDir>/scratch/audit</agentAuditDir>`

Table 23–9 (Cont.) OpenSSO Agent Remote Registration Request

Element	Description	Example
<agentAuditFileName>	Defines the audit log file name.	`<agentAuditFileName>audit.log</agentAuditFileName>`
<debug>	When set to `true`, the OAM Server logs messages for: ▪ Login success and login failure events ▪ Logout success and logout failure events ▪ Log messages at different logging levels (FATAL, ERROR, WARNING, DEBUG, TRACE), each of which indicates severity in descending order. Default: false See Also: Chapter 8, "Logging Component Event Messages"	`<debug>false</debug>`
<cookieName>	The name of the cookie, which the agent finds this cookie after the OpenSSO Proxy triggers session validation The end user has the following valid cookies: ▪ OAM_ID cookie (represents the end user session after agent authentication) ▪ OpenSSO cookie	`<cookieName>iPlanetDirectoryPro</cookieName>`
<accessDeniedUrl>	If access is denied, the user is redirected to this URL.	`<accessDeniedUrl></accessDeniedUrl>`
<protectedAuthnScheme>	Specifies the Authentication Scheme to use in the Authentication Policy. In an upgraded environment, use SSOCoExistMigrateScheme for the Protected Resource Policy for any new OSSO Agents you register.	`<protectedAuthnScheme></protectedAuthnScheme>`

23.5.2 Reviewing OpenSSO Bootstrap Configuration Mappings

This section describes the bootstrap configuration mappings of an OpenSSO Agent.

- Table 23–10, " J2EE Request File Mappings to the Properties File"
- Table 23–11, " Mapping the Web Request File to the Properties File"

Table 23–10 J2EE Request File Mappings to the Properties File

Property Name	Default Value	Sample Value
com.iplanet.am.naming.url	from input xml as <serverAddress>/opensso/namingservice	http://*example*.com:7575/opensso/namingservice
com.sun.identity.agents.app.username	from input xml as <agentName>	<Agent registration ID>
com.iplanet.am.service.secret	from input xml as <agentPassword> **Note**: This is not collected as part of the input XML file but is prompted for by the remote registration tool.	<Encrypted Agent registration ID password>

Table 23–10 (Cont.) J2EE Request File Mappings to the Properties File

Property Name	Default Value	Sample Value
com.iplanet.services.debug.directory	from input xml as <agentDebugDir>	/opt/30j2ee/j2ee_agents/tomcat_v6_agent/Agent_001/logs/debug
com.sun.identity.agents.config.local.logfile	from input xml as <agentAuditDir>/<agentAuditFileName>	/opt/30j2ee/j2ee_agents/tomcat_v6_agent/Agent_001/logs/audit/amAgent_*example*_com_7676.log
com.sun.identity.agents.config.organization.name	from input xml as <realmName> **Note**: This is the <hostIdentifier> value collected from the input xml file. By default it is taken as the <agentName> unless explicitly provided.	
com.sun.identity.agents.config.profilename	from input xml as <agentName>	<Agent registration ID>
Not included in the remote registration file ...		
com.iplanet.am.naming.url	N/A	N/A
com.sun.identity.agents.config.service.resolver	N/A	N/A
com.sun.services.debug.mergeall	N/A	N/A
com.sun.identity.agents.config.lock.enable	FALSE N/A	N/A
am.encryption.pwd	N/A	N/A

Table 23–11 shows the mappings between a Web Agent request file and properties file.

Table 23–11 Mapping the Web Request File to the Properties File

Property Name	Default Value	Sample Value
com.iplanet.am.naming.url	from input xml as <serverAddress>/<serverAddress>/opensso/namingservice	http://*example*.com:7575/opensso/namingservice
com.sun.identity.agents.config.username	from input xml as <agentName>	<Agent profile ID>
com.sun.identity.agents.config.password	from input xml as <agentPassword> **Note**: This is not collected as part of the input XML file but is prompted for by the remote registration tool.	<Encrypted Agent registration ID password>
com.iplanet.services.debug.directory	from input xml as <agentDebugDir>	/opt/30j2ee/j2ee_agents/tomcat_v6_agent/Agent_001/logs/debug
com.sun.identity.agents.config.local.logfile	from input xml as <agentAuditDir>/<agentAuditFileName>	/opt/30j2ee/j2ee_agents/tomcat_v6_agent/Agent_001/logs/audit/amAgent_redsky_red_iplanet_com_7676.log
com.sun.identity.agents.config.organization.name	from input xml as <realmName> Note: It is the <hostIdentifier> value collected from the input xml. Status: Open Fixed or Closed	
com.sun.identity.agents.config.profilename	from input xml as <agentName>	

23.5.3 Performing In-Band Remote Registration with OpenSSO Agents

This is a brief summary of tasks required to perform in-band remote registration for your OpenSSO agent. Full details are provided in other chapters, as described here.

Prerequisites

"Introduction to Remote Registration" on page 15-8

Task overview: In-band Administrators performing remote registration

1. Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

   ```
   $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
   ```

2. Create your input file with unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.

   From: OpenSSORequest.xml
   To: *myopenssoagent_request*.xml

3. Run the registration tool to configure the Agent, create a default Application Domain for the resources, and copy the updated agent configuration file as described in "Performing In-Band Remote Registration" on page 16-33.

   From the console host (AdminServer):

   /rreg/output/Agent_Name/

   - OpenSSOAgentBootstrap.properties
   - OpenSSOAgentConfiguration.properties

   To the OpenSSO Agent host Web server $*OHS_dir*/config. For example:

   $WebTier_MW_HOME/Oracle_WT1/instances1/config/OHS/ohs1/config/

4. Validate the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.
5. Perform access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

23.5.4 Performing Out-of-Band Remote Registration with OpenSSO Agents

This is a brief summary of tasks required to perform out-of-band remote registration for your OpenSSO agent. Full details are provided in other chapters, as described here.

Prerequisites

"Introduction to Remote Registration" on page 15-8

Task overview: Out-of-band remote registration (Agent is outside the network)

1. **Out-of-band Administrator**: Creates a starting request input file containing specific application and agent details and submits it to the in-band Administrator.

   - Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

     ```
     $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
     ```

   - Copy and edit a template to input unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.

     ```
     $OAM_REG_HOME/input/OpenSSORequest.xml
     ```

- Submit the starting request input file to the in-band Administrator using a method you choose (email or file transfer).

2. **In-band Administrator**:
   - Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

     ```
     $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
     ```

   - Use the out-of-band starting request with the registration tool to register the agent and create the response and native agent configuration files to return to the out-of-band Administrator. See "Performing Out-of-Band Remote Registration" on page 16-34:
     - *opensso*_Response.xml is generated for the out of band Administrator to use in Step 3.
     - OpenSSO properties files are modified for the out-of-band Administrator to bootstrap the OSSO module.
3. **Out-of-band Administrator**: Use the registration tool with the response file and copy artifacts to the appropriate file system directory.
   - *opensso*_Response.xml.
   - opensso....properties files
4. **In-band Administrator**: Validates the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.
5. **Out-of-band Administrator**: Performs several access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

23.6 Updating Registered OpenSSO Agents Remotely

This section describes how to update, validate, and delete OSSO Agents using remote registration templates and modes described in "Introduction to Updating Agents Remotely" on page 16-36.

The update request file passes specific values to the remote registration tool, oamreg. The primary differences between the update template and the original registration template is that the update template.

Table 23–12 Delta: OpenSSO Remote Registration versus Remote Updates

Delta	Element
Adds	<startDate>*yyyy_mm_dd*</startDate> element to track changes
Adds	<homeUrl> element that specifies the agent_base_url_port
Omits	<hostidentifier>
Omits	<agentbaseURL>

See Also:

- Table 23–7, " Expanded OpenSSO Agent Registration Elements"
- Updating OpenSSO Agents Remotely

23.6.1 Updating OpenSSO Agents Remotely

To remotely update OAM 10g Agent registration

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. **Update Agent**:
   a. Create your update request using the `OAMUpdateAgentRequest.xml` template.
   b. On the computer hosting the Agent, run the following command with `agentUpdate` mode specify your own *Request*.xml as the input file. For example:

      ```
      ./bin/oamreg.sh agentUpdate input/OpenSSOUpdateAgentRequest.xml
      ```

   c. Provide the registration Administrator user name and password when asked.
   d. Confirm success with on-screen messages.
   e. Relocate to the agent host OpenSSOAgentBootstrap and OpenSSOAgentConfiguration.properties files:

      From the AdminServer (Console) host: /rreg/output/*Agent_Name*/

      To the OpenSSO Agent host Web server $*OHS_dir*/config. For example:

      $WebTier_MW_HOME/Oracle_WT1/instances1/config/OHS/ohs1/config/*.properties

   f. Restart the OAM Server that is hosting this agent
3. **Validating Agent**:
   a. On the Agent host, run the following command in `agentValidate` mode. For example:

      ```
      ./bin/oamreg.sh agentValidate agentname
      ```

   b. Provide the registration Administrator user name and password when asked.
   c. Confirm success with on-screen messages.
4. **Deleting an Agent**:
   a. On the computer hosting the Agent, run the following `agentDelete` command. For example:

      ```
      ./bin/oamreg.sh agentDelete agentname
      ```

   b. Provide the registration Administrator user name and password when asked.
   c. Confirm success with on-screen messages.

      Success: On-screen message confirms

      `AgentDelete process completed successfully!`

23.7 Locating Other OpenSSO Agent Information

See Table 23–13 for additional information on legacy OpenSSO agents with Access Manager.

Table 23–13 Other OpenSSO Information in this Guide

Topic	Location
Component Loggers	Table 8–3, " Oracle Access Management Server-Side Component Loggers"
OpenSSO Metrics in the DMS Console	"Reviewing OpenSSO Metrics in the DMS Console" on page 12-11
Sessions and Session Management	Chapter 17, "Maintaining Access Manager Sessions"
Artifacts	"Generated Artifacts: OpenSSO" on page D-8 "Migrated Artifacts: OpenSSO" on page D-12

24

Registering and Managing Legacy OSSO Agents

If legacy OracleAS SSO 10g is already in place as the enterprise solution for an existing deployment, Oracle Fusion Middleware continues to support this as a solution. Additionally, you can register existing OSSO 10g mod_osso modules as agents for Access Manager as described in Chapter 15.

This chapter explains how to register or manage legacy OSSO agents for use with Access Manager 11.1.2 and provides the following sections:

- Understanding OSSO Agents with Access Manager
- Registering OSSO Agents Using Oracle Access Management Console
- Configuring and Managing Registered OSSO Agents Using the Console
- Performing Remote Registration for OSSO Agents
- Updating Registered OSSO Agents Remotely
- Configuring Logout for OSSO Agents with Access Manager 11.1.2
- Locating Other OSSO Agent Information

24.1 Understanding OSSO Agents with Access Manager

This section provides the following topics:

- About OSSO Agents with Access Manager
- Comparing Access Manager 11g SSO versus OSSO 10g

24.1.1 About OSSO Agents with Access Manager

The mod_osso module is an Oracle HTTP Server module that simplifies the authentication process by serving as the sole application to the single sign-on server. In this way, mod_osso renders authentication transparent to OracleAS applications. It enables applications protected by OracleAS Single Sign-On to accept HTTP headers in lieu of a user name and password once the user has logged in. The values for these headers are stored in a mod_osso cookie.

The Administrator for these applications is spared the burden of integrating them with an SDK. After authenticating a user, mod_osso transmits the simple header values that applications may use to authorize the user:

- User name
- User GUID (global user identity)

- Language and territory

After registration with Access Manager, OSSO 10g Agents can communicate directly with Access Manager 11g services through the OSSO proxy. The OSSO proxy supports existing OSSO agents when upgrading to Access Manager. The proxy handles requests from OSSO Agents and translates the OSSO protocol into a protocol for Access Manager 11g authentication services.

The OSSO Proxy supports inter-operability between Access Manager and OSSO agents (using an OSSO agent to access a valid SSO session created for a Webgate or Access Client and vice versa).

OSSO Proxy Supports	Description
SSO login	From an OSSO Agent to the OAM Server (and OSSO-specific tokens)
SSO logout	From the OSSO Agent to the OAM Server
OSSO Agent requests and protocols	OSSO Proxy translates the OSSO protocol into a protocol for Access Manager.

After registering 10g mod_osso as an agent, Access Manager gives mod_osso the redirect URL for the user based on the authentication scheme associated with the OAM policy defined for the resource (Table 24–1).

Table 24–1 OSSO Agents with Access Manager

Checks for an existing valid Oracle HTTP Server cookie	Redirects to the OAM Server if needed to contact the directory during authentication
Decrypts the encrypted user identity populated by the OSSO server	Sets the headers with user attributes

24.1.2 Comparing Access Manager 11g SSO versus OSSO 10g

This topic introduces key components for implementing and enforcing Access Manager 11g single sign-on policies as compared to OSSO 10g. Access Manager 11g default behavior is to deny access when a resource is not protected by a policy that explicitly allows access. OracleAS SSO 10g provides only authentication. Table 24–2 summarizes the differences.

Table 24–2 11g Access Manager SSO versus OSSO 10g Component Summary

Component Description	11g Access Manager	OSSO 10g
Oracle Identity Management Infrastructure	Enables secure, central management of enterprise identities.	Enables secure, central management of enterprise identities.
Agents Resides with the relying parties and delegate authentication and authorization tasks to OAM Servers.	▪ 11g OAM Agents ▪ 10g OAM Agents ▪ 10g OSSO Agents (mod_osso) ▪ OpenSSO Agents **Note**: Nine Administrator languages are supported.	▪ mod_osso (partner) Note: The mod_osso module is an Oracle HTTP Server module that provides authentication to OracleAS applications.
Servers **Notes**: Administrative users access the console home page by typing the URL: https://*host:port*/oamconsole. Non-administrative users first gain access to the single sign-on server by entering the URL of an application, which returns the SSO login page.	▪ OAM Server ▪ Oracle Access Management Console (installed on the WebLogic Administration Server) **See Also**: "Using the New Oracle Access Management Console" on page 2-4. "Introducing Access Manager Credential Collection and Login" on page 18-14.	▪ OracleAS SSO server (OSSO server) **See Also**: *Oracle Application Server Single Sign-On Administrator's Guide.*
Proxy Provides support for legacy systems:	▪ OAM Proxy supports legacy Access Manager implementations by acting as a legacy Access Server. ▪ OSSO Proxy supports OSSO Agents by acting as the legacy OSSO Server. ▪ Oracle-provided OpenSSO Proxy handles requests for resources protected by OpenSSO Agents	▪ OSSO Proxy supports legacy SSO implementations by acting as the legacy OSSO Server.
Console	Oracle Access Management Console	No console equivalent before Access Manager 11g.
Protocols that secure information exchange on the Internet	Front channel protocols exchanged between Agent and Server: HTTP/HTTPS. 11g Webgate secures information exchange using the Agent key. -See Also: Cryptographic keys.	N/A
Policy Store	Database	mod_osso and partner application
Applications	An application that delegates authentication and authorization to Access Manager and accepts headers from a registered Agent. **Note**: External applications do not delegate authentication. Instead, these display HTML login forms that ask for application user names and passwords. For example, Yahoo! Mail is an external application that uses HTML login forms.	An application that delegates authentication to mod_osso and the OracleAS Single Sign-On server. **Note**: After registering mod_osso with Access Manager 11g, mod_osso delegates authentication to OAM. The mod_osso module enables the applications to accept authenticated user information once the user is logged in. Re authenticating is avoided by accepting headers from the registered OSSO Agent. The application is responsible for determining whether the authenticated user is authorized to use the application.

Table 24–2 (Cont.) 11g Access Manager SSO versus OSSO 10g Component Summary

Component Description	11g Access Manager	OSSO 10g
SSO Engine	Manages the session lifecycle, facilitates global logout across all relying parties in the valid session, and provides consistent service across multiple protocols. Uses Agents registered with Access Manager 11g: ▪ Authentication (credential collection) occurs across the HTTP (HTTPS) channel ▪ Authorization occurs across the Oracle Access Protocol (OAP) channel	▪ mod_osso delegates authentication only and communicates exclusively through the HTTP channel.
Cryptographic keys	▪ During 11g agent registration, a key is generated for the agent and also shared with the OAM Server The key is used for encrypting and decrypting SSO cookies ▪ During 10g agent registration, a global shared secret key is generated across all of Access Manager 11g (all Agents and OAM Servers). ▪ During OSSO agent registration, One key per partner shared between mod_osso and OSSO server. ▪ OpenSSO Agent: Host- or Domain-based key stored locally in bootstrap file on Agent host. ▪ During OAM Server installation, one OAM Server key is generated **Note**: One key is generated and used per registered mod_osso Agent. However, one single key is generated for all 10g Webgates.	▪ One key per partner shared between mod_osso and OSSO server ▪ OSSO server's own key ▪ One global key per OSSO setup for the GITO domain cookie
Keys storage	▪ **Agent side**: A per-agent key is stored locally in the Oracle Secret Store in a wallet file ▪ **OAM Server side:** A per- agent key, and server key, are stored in the credential store on the server side ▪ Security Token Service	▪ **mod_osso side**: partner keys and GITO global key stored locally in obfuscated configuration file ▪ **OSSO server side**: partner keys, GITO global key, and server key are all stored in the directory server
Cookies See Also: Table 18–8 and "About Single Sign-On Cookies During User Login"	Host-based authentication cookie: ▪ **11g Webgate, One per agent**: OAMAuthnCookie_<host:port>_<random number> ▪ **10g Webgate**, One ObSSOCookie for all 10g Webgates. ▪ **One for the OAM Server**: OAM_ID (Table 18–8)	▪ Host-based authentication cookie: **one per partner**: OHS-*host-port* **one for OSSO server**: (not with Access Manager 11g) ▪ Domain-level session cookie for global inactivity timeout (GITO) if enabled
Policies	Registered agents rely on Access Manager authentication, authorization, and token issuance policies to determine who gets access to protected applications (defined resources).	mod_osso uses only Access Manager 11g authentication policies to determine who gets access to defined resources. mod_osso provides authentication only.

Table 24–2 (Cont.) 11g Access Manager SSO versus OSSO 10g Component Summary

Component Description	11g Access Manager	OSSO 10g
Client IP	▪ Maintain this Client IP, and include it in the host- based OAMAuthnCookie.	▪ Include the original client IP inside the host cookie. In later authentication requests, when the cookie is presented, the original client IP is compared with the presenter's IP. Rejection occurs if there is no match
Encryption / Decryption (converting encrypted data back into original form)	Introduces client-side cryptography and ensures that cryptography is performed at both the agent and server ends: **1.** Webgate encrypts obrareq.cgi using the agent key. **Note**: obrareq.cgi is the authentication request in the form of a query string redirected from Webgate to OAM Server. **2.** OAM Server decrypts the request, authenticates, creates the session, and sets the server cookie. **3.** OAM Server also generates the authentication token for the agent (encrypted using the agent key), packs it in obrar.cgi with a session token (if using cookie-based session management), authentication token and other parameters, then encrypts obrar.cgi using the agent key. **Note**: obrar.cgi is the authentication response string redirected from the OAM Server to Webgate. **4.** Webgate decrypts obrar.cgi, extracts the authentication token, and sets a host-based cookie.	Cryptography is performed at both mod_osso and OSSO server: **1.** site2pstore token (request from mod_osso to server) is encrypted using the partner key locally at mod_osso. **2.** OSSO server decrypts site2pstore token, authenticates, and generates its own cookie. **3.** urlc token (the response from OSSO server to mod_osso) is encrypted using the partner key at the server. **4.** mod_osso decrypts the urlc token locally and re-encrypts using its own format to set in a host-based cookie.
Session Management	▪ Session idle timeout behavior is supported through the 11g Session Management Engine (SME).	▪ Single domain supported through a domain-level cookie for global inactivity timeout (GITO). **Multi-domain SSO**: After a user logs in to one domain, and then goes to a different domain, he is considered idle from the first domain. When the idle times out on the original domain, the user must re-authenticate on the original domain.

Table 24–2 (Cont.) 11g Access Manager SSO versus OSSO 10g Component Summary

Component Description	11g Access Manager	OSSO 10g
Response token replay prevention	▪ Include RequestTime (the timestamp just before redirect) in obrareq.cgi and copy it to obrar.cgi to prevent response token replay.	▪ Include RequestTime (timestamp just before redirect) in the site2pstore token and copy it to the urlc token to prevent token replay.
Multiple network domain support	Access Manager 11g supports cross-network-domain single sign-on out of the box. Oracle recommends you use Oracle Federation for this situation.	N/A

Centralized log-out	▪ The `logOutUrls` (10g Webgate configuration parameter) is preserved. 10g logout.html requires specific details for Access Manager 11g.
	▪ 11g Webgate parameters are new:
	`Logout Redirect URL`
	`Logout Callback URL`
	`Logout Target URL`
	See Chapter 22.
		There is no change required for Access Manager 11g with mod_osso (OSSO Agents).
		Applications that use dynamic directives require no entry in mod_osso.conf. Instead, protection is written into the application as one or more dynamic directives.
		See Chapter 22.

See Also: "Introducing Access Manager Credential Collection and Login" on page 18-14

24.2 Registering OSSO Agents Using Oracle Access Management Console

This section describes how to manage OSSO Agent registrations (mod_osso) using the Oracle Access Management Console. For details, see:

- Understanding the Create OSSO Agent Registration Page and Parameters
- Registering an OSSO Agent (mod_osso) Using the Console

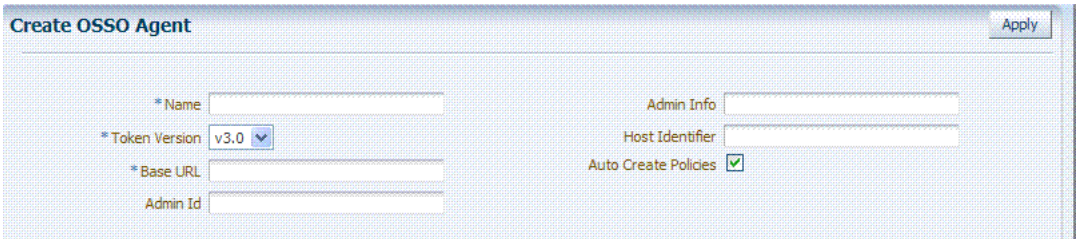
24.2.1 Understanding the Create OSSO Agent Registration Page and Parameters

This topic describes OSSO Agent registration using the Oracle Access Management Console.

Note: Before you register an OSSO Agent, ensure that the Oracle HTTP Server is installed on the client computer and that the Web server is configured for mod_osso.

Figure 24–3 shows a Create OSSO Agent page, under the System Configuration tab in the Oracle Access Management Console.

Figure 24–1 Create OSSO Agent Page



On the Create OSSO Agent page, required information is identified by the asterisk (*). Table 24–3 describes the required and optional details that you can specify when you register a new agent.

Table 24–3 Create OSSO Agent Page Elements

Element	Description
Name	The identifying name for this mod_osso Agent.
Token Version	The default version of the token is 3.0; the following options are available: ▪ 1.2 ▪ 1.4 ▪ 3.0
Base URL Required for OSSO agents.	The required protocol, host, and port of the computer on which the Web server for the agent is installed. For example, http://*host.example.domain.com:port* or https://*example.domain.com:port*. Note: The host and port are used as defaults for the expanded registration. See Table 24–5.
Admin ID	Optional Administrator log in ID for this mod_osso instance. For example, *SiteAdmin*.
Admin Info	Optional Administrator details for this mod_osso instance. For example, *Application Administrator*.
Host Identifier	The host identifier is filled in automatically based on the Agent name
Auto Create Policies	During agent registration, you can have authentication and authorization policies created automatically. This option is checked (enabled) by default. The OSSO Proxy requires an Application Domain that includes a resource with the generic URL (/**) protected by a policy based on the LDAP scheme (default). This is why a generic URL is used at the server side. Default: Enabled **Notes**: If you already have a domain and policies registered, you can simply add new resources to it. If you clear (uncheck) this option, no Application Domain or policies are generated automatically. In an upgraded deployment, you must change the Authentication Scheme in your Authentication Policy to use SSOCoExistMigrateScheme.

To help streamline Agent registration, several elements are concealed and default values are used during registration with the console. When you view an agent's registration page in the Oracle Access Management Console, all elements and values are revealed as described in "Understanding the Expanded OSSO Agent Page in the Console" on page 24-9.

OSSO Agent Configuration File

The OSSO Agent configuration file, osso.conf, is updated during agent registration and configuration changes. It is stored on the console host (AdminServer). Following registration or configuration updates, you must relocate the artifacts to the mod_osso

directory path on the Agent host as shown in Table 24–4.

Table 24–4 Relocating OSSO Artifacts

From AdminServer . . .	To *OHS_dir*/osso.conf
$*DOMAIN_HOME*/output/$*Agent_Name*/	*$WebTier_MW_HOME*/Oracle_WT1/instances1/config/OHS/ohs1/config/osso

24.2.2 Registering an OSSO Agent (mod_osso) Using the Console

Users with Oracle Access Management Administrator credentials can perform the following procedure to register an OSSO Agent using the Oracle Access Management Console.

Prerequisites

Ensure that the Oracle HTTP Server is installed and running on the client computer, and is configured for mod_osso.

> **See Also:** Understanding the Create OSSO Agent Registration Page and Parameters

To register an OSSO Agent

1. From the Oracle Access Management Console, click the New OpenSSO Agent link:

   Welcome page
   SSO Agent panel
   New OSSO Agent link

   Alternatively: Open the System Configuration tab, Access Manager section, SSO Agents node, OSSO Agent node, then click the Create ... OSSO Agent button in the upper-right corner.

2. On the Create: OSSO Agent page, enter required details, as shown in Table 24–3:
   - Name
   - Base URL
3. Select the desired Token Version, and enter optional details as desired (Table 24–3).
4. Click Apply to submit the registration (or close the page without applying changes).
5. In the Confirmation window, check the path to generated artifacts and then close the window. For example:

   ```
   Artifacts are generated in following location : /.../base_domain/output/$Agent_Name
   ```

6. Copy osso.conf file from the console host (AdminServer) to the Agent host Web server. For example:

osso.conf From ...	Path ...
From the AdminServer (Console) host	$*DOMAIN_HOME*/output/$*Agent_Name*/
To the mod_osso directory path on the Agent host Web server: $*OHS_dir*/osso.conf.	*$WebTier_MW_HOME*/Oracle_WT1/instances1/config/OHS/ohs1/config/osso.conf

7. In an upgraded deployment, change the Authentication Scheme in the Protected Resources Policy to use SSOCoExistMigrateScheme.
8. Restart the OAM Server hosting the Agent.
9. Proceed as needed:
   - "Configuring and Managing Registered OSSO Agents Using the Console"
   - Part V, "Managing Access Manager SSO, Policies, and Testing"

24.3 Configuring and Managing Registered OSSO Agents Using the Console

This section describes how to manage OSSO Agent registrations (mod_osso) using the Oracle Access Management Console. For details, see:

- Understanding the Expanded OSSO Agent Page in the Console
- Searching for an OSSO Agent (mod_osso) Registration
- Viewing or Editing OSSO Agent (mod_osso) Registration
- Deleting an OSSO Agent (mod_osso) Registration

24.3.1 Understanding the Expanded OSSO Agent Page in the Console

During registration, only a subset of available parameters is displayed to streamline the registration process. Whether you registered the agent using the Oracle Access Management Console or the remote registration utility, you can view the full agent configuration page in the console after registration. Default values populate previously concealed elements, which are visible when you open the Agent's page, as shown in Figure 24–2. The Confirmation window is still visible.

Figure 24–2 OSSO Agent Page and Confirmation Window

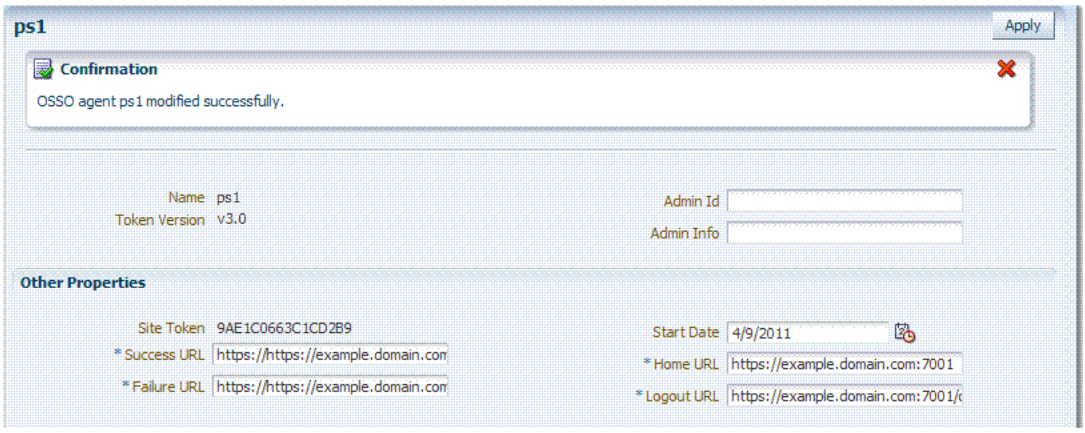


Table 24–5 summarizes the expanded elements and defaults that are used by the OSSO Agent.

Table 24–5 Expanded OSSO Agent Elements

Element	Description
Site Token	The Application Token used by the partner when requesting authentication. This cannot be edited.

Table 24–5 (Cont.) Expanded OSSO Agent Elements

Element	Description
Success URL	The redirect URL to be used upon successful authentication. By default, osso_login_success on the fully qualified host and port specified with the Base URL are used. For example: Default: https://*example.domain.com:7001*/osso_login_success
Failure URL	The redirect URL to be used if authentication fails.By default, osso_login_failure on the fully qualified host and port specified with the Agent Base URL are used: Default: https://*example.domain.com:7001*/osso_login_failure
Start Date	First month, day, and year for which log in to the application is allowed by the server. Default: The date the Agent was registered.
Home URL	The redirect URL to be used for the Home page after authentication. By default, the fully qualified host and port specified with the Agent Base URL are used: Default: https://*example.domain.com:7001*
Logout URL	The redirect URL to be used when logging out. This redirects the user to the global logout page on the server: osso_logout_success. By default, the fully qualified host and port specified with the Agent Base URL are used: Default: https://*example.domain.com:7001*/osso_logout_success See Also: "Introduction to Centralized Logout for Access Manager 11g" on page 22-1.

24.3.2 Searching for an OSSO Agent (mod_osso) Registration

When you first open the OSSO Agents node, the Search form appears. The Results table lists all OSSO Agents. If there are too many to quickly locate the one you want, you can use the controls to refine your search.

There are only two element on which you can refine an OSSO Agent search: The Agent Name that assigned during registration or the Agent ID assigned by the system.

Prerequisites

The OSSO Agent must be registered to be available in the Oracle Access Management Console.

To search for an OSSO Agent registration

1. Activate the System Configuration tab, Access Manager section.
2. Expand the SSO Agents node, and open the OSSO Agents node.
3. In the Name field, enter criteria for your search (with or without including the wild card (*)). For example:

   *my**

4. Click the Search button.
5. In the Search Results table:
   - Crreate: Click the Create OSSO Agent button at the top of the Search page.
   - **Edt or View:** Click the Edit command button in the tool bar to display the configuration page.
   - **Delete:** Proceed to "Deleting an OSSO Agent (mod_osso) Registration" on page 24-11.
   - **Detach**: Click Detach in the tool bar to expand the table to a full page.
   - **Reconfigure Table**: Select a View menu item to alter the appearance of the results table.

6. Apply any changes (or dismiss the page) when finished.

24.3.3 Viewing or Editing OSSO Agent (mod_osso) Registration

Users with valid Administrator credentials can change any setting for a registered OSSO Agent using the Oracle Access Management Console, as described in the following procedure. For example, you might want to revise the end date or add Administrator information.

Prerequisites

Ensure that the Oracle HTTP Server is installed and running on the client computer, and is configured for mod_osso.

See Also:

- Understanding the Expanded OSSO Agent Page in the Console

To view or modify an OSSO Agent registration

1. From the System Configuration tab, Access Manager section, expand the SSO Agents node.
2. Double-click the OSSO Agents node.
3. **Find the Agent**: See "Searching for an OSSO Agent (mod_osso) Registration".
4. **View or Modify**: On the registration page, view or modify details as needed (Table 24–3 and Table 24–5).
5. Click Apply to submit the changes (or close the page without applying changes), and close the Confirmation window.
6. Copy osso.conf file from the console host (AdminServer) to the Agent host Web server. For example:

osso.conf From ...	Path ...
From the AdminServer (Console) host	*$DOMAIN_HOME*/output/*$Agent_Name*/
To the mod_osso directory path on the Agent host Web server: *$OHS_dir*/osso.conf.	*$WebTier_MW_HOME*/Oracle_WT1/instances1/config/OHS/ohs1/config/osso.conf

7. Restart the OAM Server hosting the Agent.
8. Proceed to Part V, "Managing Access Manager SSO, Policies, and Testing".

24.3.4 Deleting an OSSO Agent (mod_osso) Registration

Users with valid Administrator credentials can perform the following procedure to delete a registered OSSO Agent from the Oracle Access Management Console.

Note: Deleting an agent registration removes only the registration (not the associated host identifier, Application Domain, resources, or the agent instance itself), which prevents registering the same agent again if required. However, deleting the Application Domain and its content removes all referenced objects including the Agent registration, as described in "Deleting an Application Domain and Its Contents" on page 20-13.

Prerequisites

Evaluate the Application Domain, resources, and policies associated with this agent and ensure that these are configured to use another agent or that they can be removed.

See Also: Searching for an OSSO Agent (mod_osso) Registration

To delete an OSSO Agent registration

1. From the System Configuration tab, Access Manager section, expand the SSO Agents node, and open the OSSO Agents node.
2. Click Search and choose the desired name (or refine your search as needed).
3. Optional: Double-click the desired name to display the registration page; confirm this is the agent to remove, and close the page.
4. Click the Agent name, click the Delete button in the tool bar, and confirm removal in the Confirmation window.

24.4 Performing Remote Registration for OSSO Agents

This section provides a brief review of remote registration using the Oracle-provided tool (oamreg) with OSSO Agents.

This section provides the following topics:

- Understanding Request Templates for OSSO Remote Registration
- Performing In-Band Remote Registration of OSSO Agents
- Performing Out-of-Band Remote Registration for OSSO Agents

24.4.1 Understanding Request Templates for OSSO Remote Registration

This topic provides the OSSO Registration Request for use with the remote registration tool oamreg.sh (Linux) or oamreg.bat (Windows). The information highlighted in bold must be modified for a mod_osso agent. However, all other fields can use the default values.

Both `inband` and `outofband` remote registration modes require a request file with the input argument, as listed in Table 24–6.

Table 24–6 OpenSSO Request Files for Remote Registration

Templates for . . .	Description
Register OSSO Agents (mod_osso)	$OAM_REG_HOME/input/OSSORequest.xml
Other Templates	
Update Agent:	$OAM_REG_HOME/input/OSSOUpdateAgentRequest.xml See Also: "Updating Agents Remotely" on page 16-37
Create Policies: Create New Host Identifiers and an Application Domain without Registering an Agent	$OAM_REG_HOME/input/CreatePolicyRequest.xml See Also: "Managing Policies and Application Domains Remotely" on page 20-81
Update Policies: Existing Host Identifiers and Application Domain (not associated with an Agent Registration)	$OAM_REG_HOME/input/UpdatePolicyRequest.xml See Also: "Managing Policies and Application Domains Remotely" on page 20-81

Table 24–7 describes elements in the OSSO request file: OSSORequest.xml.

Table 24–7 OSSO-Specific Elements in a Remote Registration Request

Elements	Description	Example
<serverAddress> <agentName> <hostIdentifier> <agentBaseUrl> <autoCreatePolicy> <applicationDomain> <virtualhost>	Elements common to all remote registration request templates.	See Table 16–8, " Common Elements in Remote Registration Requests"
<ssoServerVersion>	SSO Token version values: ■ v3.0: Most secure token using AES encryption standard for encrypting tokens exchanged between OAM Server and mod_osso. This is the default value. This was supported by OSSO 10.1.4.3 patch set. ■ v1.4: This is supported by OSSO 10g prior to OSSO 10.1.4.3 patch set. Uses DES encryption standard. ■ v1.2: This used to be version of tokens exchanged between OSSO partners prior to OSSO 10.1.4.0.1. Uses DES.	`<ssoServerVersion>` `>...</ssoServerVersion> >`

<OracleHomePath>	The absolute file system directory path to the mod_osso agent.	`<oracleHomePath>`
		`$ORACLE_HOME`
		`</oracleHomePath>`

<updateMode>	Default: None specified	`<updateMode></updateMode>`
<adminInfo>	Optional. Administrator details for this mod_osso instance. For example, *Application Administrator*. Default: None specified	`<adminInfo></adminInfo>`
<adminId>	Optional. Administrator log in ID for this mod_osso instance. For example, *SiteAdmin*. Default: None specified	`<adminId></adminId>`
<logoutUrl>	Include the Logout URLs for consumption during remote registration. Default: None specified	`<logoutUrl>logout1.html</logoutUrl>`
<failureUrl>	Include the Failure URLs for consumption during remote registration. Default: None specified	`<failureUrl>failure1.html</failureUrl>`

Remote OSSO Agent registration automatically:

- Creates the agent page for the Oracle Access Management Console
- Creates an Application Domain and basic policies to protect applications
- Updates the OSSO configuration file on the client to be consumed by the agent at run time

24.4.2 Performing In-Band Remote Registration of OSSO Agents

This is a brief summary of tasks required to perform in-band remote registration for your OSSO agent. Full details are provided in Chapter 16.

Prerequisites

Introduction to Remote Registration on page 15-8

Task overview: In-band Administrators performing remote registration

1. Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

   `$ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz`

2. Create your input file with unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.

   From: OSSORequest.xml
   To: *myossoagent_request*.xml

3. Run the registration tool to configure the Agent, create a default Application Domain for the resources, and copy the updated agent configuration file as described in "Performing In-Band Remote Registration" on page 24-13.

   From AdminServer (Console) host:

   $*DOMAIN_HOME*/output/$*Agent_Name*/osso.conf

   To: mod_osso directory path on the Agent host: $*OHS_dir*/osso.conf. For example:

   $WebTier_MW_HOME/Oracle_WT1/instances1/config/OHS/ohs1/config/osso.conf

4. Validate the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.
5. Perform access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

24.4.3 Performing Out-of-Band Remote Registration for OSSO Agents

The term *out-of-band registration* refers to manual registration that involves coordination and actions by both the in-band Administrator and the out-of-band Administrator.

In `outofband` mode, the in-band Administrator uses the starting request file submitted by the out-of-band Administrator, and returns a generated response file to the out-of-band Administrator for additional processing. The out-of-band Administrator runs the remote registration tool with the response file as input to update the agent configuration file.

This is a brief summary of tasks required to perform out-of-band remote registration for your OSSO agent. Full details are provided in other chapters, as described here.

Prerequisites

"Introduction to Remote Registration" on page 15-8

Task overview: Out-of-band remote registration (Agent is outside the network)

1. **Out-of-band Administrator**: Creates a starting request input file containing specific application and agent details and submits it to the in-band Administrator.
   - Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

```
$ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
```

- Copy and edit a template to input unique values for the agent and Application Domain as described in "Creating Your Remote Registration Request" on page 16-33.

  ```
  $OAM_REG_HOME/input/OSSORequest.xml
  ```

- Submit the starting request input file to the in-band Administrator using a method you choose (email or file transfer).

2. **In-band Administrator**:

   - Acquire the registration tool and set environment variables as described in "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.

     ```
     $ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz
     ```

   - Use the out-of-band starting request with the registration tool to register the agent and create the response and native agent configuration files to return to the out-of-band Administrator. See "Performing Out-of-Band Remote Registration" on page 16-34:

     – *osso*_Response.xml is generated for the out of band Administrator to use in Step 3.

     – osso.conf is modified for the out-of-band Administrator to bootstrap the OSSO module.

3. **Out-of-band Administrator**: Use the registration tool with the response file and copy artifacts to the appropriate file system directory.

   – *osso*_Response.xml.

   – osso.conf

4. **In-band Administrator**: Validates the configuration as described in "Validating Remote Registration and Resource Protection" on page 16-38.

5. **Out-of-band Administrator**: Performs several access checks to validate that the configuration is working, as described in "Validating Authentication and Access After Remote Registration" on page 16-39.

24.5 Updating Registered OSSO Agents Remotely

This section describes how to update, validate, and delete OSSO Agents using remote registration templates and modes described in "Introduction to Updating Agents Remotely" on page 16-36.

The update request file passes specific values to the remote registration tool, oamreg. The primary differences between the update template and the original registration template is that the update template.

Table 24–8 Delta: OSSO Remote Registration versus Remote Updates

Delta	Element
Adds	<startDate>*yyyy_mm_dd*</startDate> element to track changes
	<homeUrl> element that specifies the agent_base_url_port
Omits	<hostidentifier>
Omits	<agentbaseURL>

To remotely update OSSO Agent registration

1. Set up the registration tool as described in, "Acquiring and Setting Up the Remote Registration Tool" on page 16-32.
2. **Update Agent**:
   a. Create your update request using the `OSSOUpdateAgentRequest.xml` template.
   b. On the computer hosting the Agent, run the following command with `agentUpdate` mode specify your own *Request*.xml as the input file. For example:

      ```
      ./bin/oamreg.sh agentUpdate input/*OSSOUpdateAgentRequest.xml
      ```

   c. Provide the registration Administrator user name and password when asked.
   d. Confirm success with on-screen messages.
   e. Relocate to the agent host osso.conf:

      From the AdminServer (Console) host: /rreg/output/*Agent_Name*/

      To the mod_osso directory path (Agent host Web server $*OHS_dir*/osso.conf):

      $WebTier_MW_HOME/Oracle_WT1/instances1/config/OHS/ohs1/config/osso.conf

   f. Restart the OAM Server that is hosting this agent
3. **Validating Agent**:
   a. On the Agent host, run the following command in `agentValidate` mode. For example:

      ```
      ./bin/oamreg.sh agentValidate agentname
      ```

   b. Provide the registration Administrator user name and password when asked.
   c. Confirm success with on-screen messages.
4. **Deleting an Agent**:
   a. On the computer hosting the Agent, run the following `agentDelete` command. For example:

      ```
      ./bin/oamreg.sh agentDelete agentname
      ```

   b. Provide the registration Administrator user name and password when asked.
   c. Confirm success with on-screen messages.

      Success: On-screen message confirms

      `AgentDelete process completed successfully!`

24.6 Configuring Logout for OSSO Agents with Access Manager 11.1.2

This section provides the following topics:

- About Centralized Logout with OSSO Agents (mod_OSSO) and Access Manager
- Removing Custom mod_osso Cookies on Logout

24.6.1 About Centralized Logout with OSSO Agents (mod_OSSO) and Access Manager

With OSSO Agents (mod_osso 10g), partner applications also cede logout control to the OAM Server (single sign-on server). When the user logs out of one application, she is automatically logged out of all other applications.

> **Note:** No change is needed in the logout URL configuration of existing applications that use the OSSO Agent.

Process overview: Centralized logout with mod_osso

1. Clicking Logout in an application takes the user to the page where logout occurs
2. When a user has signed off successfully, each of the applications listed on the centralized logout page has a check mark beside the application name.
3. A broken image beside an application name identifies an unsuccessful logout.
4. Once all of the application names activated in a session have a check mark, you can click Return to go to the application from which you initiated logout.
5. Delete the custom mod_osso agent cookies on logout.

24.6.2 Removing Custom mod_osso Cookies on Logout

The OSSO server cookie includes a list of partner IDs.

Process overview: When a user logs off from one partner application

1. OSSO server pulls a list of the logout URLs.
2. OSSO server clears its own cookie.
3. OSSO server redirects to a customized JSP page (hosted on the OSSO server), and passes the list of logout URLs in the request.
4. The JSP page loads those logout URLs that contains some image tags of check marks, and as a result of the loading, the cookies for those mod_osso instances are cleared

However, on user logout, some custom cookies set by OAM Server through authentication response settings might not get deleted. However, you can edit oam-config.xml to configure the OAM Server to delete custom cookies set during authentication when a user logs out of OAM. For instance, when integrating with Oracle E-Business Suite, the ORASSO_AUTH_HINT cookie is set by the application and should be included in the `CookieNames` list (or the UCM cookie, for example).

Syntax (beneath `PluginClass" Type=...`):

```
<Setting Name="CookieDelMap" Type="htf:map">
  <Setting Name="CookieNames" Type="xsd:string">COOKIE_NAME</Setting>
</Setting>
```

The following procedure guides as you edit the `CookieDelMap` element and add CookieNames as a single value or a comma-separated list of custom cookies to delete when a user logs out. This procedure also explains how to increment the oam-config.xml file version to propagate your change to all managed servers without restarting.

Caution: Work carefully. In general, Oracle recommends that you do not edit the oam-config.xml file. This, however, is a rare exception.

To delete custom mod_osso cookies on logout

1. Back up $*DOMAIN_HOME*/config/fmwconfig/oam-config.xml.
2. In oam-config.xml, add (or edit) the `CookieDelMap` element and `CookieNames`. For example:

```
<Setting Name="ResponsePluginSetting" Type="htf:map">
  <Setting Name="PluginClass" Type=... </Settings>
  <Setting Name="CookieDelMap" Type="htf:map">
    <Setting Name="CookieNames" Type="xsd:string">ORASSO_AUTH_HINT
    </Setting>
  </Setting>
</Setting>
```

3. **Configuration Version:** Increment the `Version xsd:integer` as shown in the next to last line of this example (existing value (25, here) + 1):

   Example:

```
<Setting Name="Version" Type="xsd:integer">
  <Setting xmlns="http://www.w3.org/2001/XMLSchema"
    Name="NGAMConfiguration" Type="htf:map:>
  <Setting Name="ProductRelease" Type="xsd:string">11.1.1.3</Setting>
    <Setting Name="Version" Type="xsd:integer">25</Setting>
</Setting>
```

4. Save the file.

24.7 Locating Other OSSO Agent Information

See Table 24–9 for additional information on legacy OSSO agents with Access Manager.

Table 24–9 Other OSSO Information in this Guide

Topic	Location
Component Loggers	Table 8–3, " Oracle Access Management Server-Side Component Loggers"
OSSO Metrics in the DMS Console	"Reviewing OSSO Agent Metrics" on page 12-8
Sessions and Session Management	Chapter 17, "Maintaining Access Manager Sessions"

25

Registering and Managing 10g WebGates with Access Manager 11g

The Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management describes initial deployment of Access Manager 11g with the Oracle HTTP Server. However, when your enterprise includes Web server types other than Oracle HTTP Server you might want to use existing 10g WebGates or install fresh 10g WebGates for use with Access Manager. Also, you might want to switch from using the pre-registered IAMSuiteAgent to using a 10g WebGate to protect Oracle Identity Management Consoles.

The following sections describe how to install fresh instances of 10g WebGates for use with Access Manager:

25.1 Prerequisites

Review the latest certification matrix from Oracle Technology Network to locate the latest WebGates for your deployment:

`http://www.oracle.com/technetwork/middleware/id-mgmt/fusion-certification-100350.html`

Ensure that your Oracle Access Management Console is running and get familiar with:

- Introduction to Policy Enforcement Agents on page 15-1
- Introduction to 10g OAM Agents for Access Manager 11g in this chapter

25.2 Introduction to 10g OAM Agents for Access Manager 11g

This section provides the following topics:

- About IAMSuiteAgent: A Pre-Configured 10g WebGate Registered with Access Manager
- About Legacy Oracle Access Manager 10g Deployments and WebGates
- About Installing Fresh 10g WebGates to Use With Access Manager 11.1.2
- About Centralized Logout with 10g OAM Agents and 11g OAM Servers

25.2.1 About IAMSuiteAgent: A Pre-Configured 10g WebGate Registered with Access Manager

IAMSuiteAgent is a Java agent filter that is pre-registered with Access Manager 11.1.2 out of the box. This agent and the companion Application Domain are installed pre-configured with Access Manager.

The IAMSuiteAgent is a domain-wide agent:

- Once Access Manager is deployed, the IAMSuiteAgent is installed on every server in the domain
- Unless disabled, every request coming into the WebLogic Application Server is evaluated and processed by the IAMSuiteAgent
- Certain IAMSuiteAgent configuration elements are available in the WebLogic Administration Console (in the Security Provider section) and others in the Oracle Access Management Console.

IAMSuiteAgent and related policies provide SSO protection for the IDM Administration Console, Oracle Identity Console, Oracle Access Management Console, and specific resources in the Identity Management domain.

You can replace the IAMSuiteAgent with a 10g WebGate to protect Oracle Identity Management Consoles and resources in the Identity Management domain, if you choose.

See Also:

- Section 25.4, "Configuring Centralized Logout for IAMSuiteAgent"
- Section 16.11, "Replacing the IAMSuiteAgent with an 11g WebGate"
- Section D.1, "Bundled 10g IAMSuiteAgent Artifacts"

25.2.2 About Legacy Oracle Access Manager 10g Deployments and WebGates

11g OAM Servers support 10g WebGates that are registered to operate with Access Manager 11.1.2. Such WebGates might include:

- Legacy 10g WebGates currently operating with Oracle Access Manager 10g.
- Legacy 10g WebGates configured as the Identity Assertion Provider (IAP) for SSO (for applications using IAP WebLogic container-based security with Oracle Access Manager 10g, as described in the Oracle Fusion Middleware Application Security Guide).
- Legacy 10g WebGates currently operating with Web Applications coded for Oracle ADF Security and the OPSS SSO Framework

You can register these agents to use Access Manager SSO using either the Oracle Access Management Console or the remote registration tool. After registration, 10g WebGates directly communicate with Access Manager through a Java-based OAM Proxy that acts as a bridge.

See Also:

- Table 1–2
- Appendix A, "Integrating Oracle ADF Applications with Access Manager SSO"

The following overview outlines the tasks that must be performed to set up an existing 10g WebGate to operate with Access Manager.

Task overview: Setting up a legacy 10g WebGate to operate with Access Manager

1. Registering a 10g WebGate with Access Manager 11g Remotely
2. Configuring Centralized Logout for 10g WebGate with 11g OAM Servers
3. Optional: Deploying Applications in a WebLogic Container as described in the Oracle Fusion Middleware Application Security Guide.

25.2.3 About Installing Fresh 10g WebGates to Use With Access Manager 11.1.2

You can install fresh 10g WebGates for use with Access Manager 11g as described in this chapter. 10g WebGates are available for a number of Web server platforms.

After installation and registration, 10g WebGates directly communicate with Access Manager through a Java-based OAM proxy that acts as a bridge.

Note: When installing fresh 10g WebGates for Access Manager, Oracle recommends that you use the latest WebGates. Oracle also recommends that you install multiple WebGates for failover and load balancing.

There are several differences between installing a 10g WebGate to operate in an 11g Access Manager deployment versus installing the 10g WebGate in an 10g Oracle Access Manager deployment. Table 25–1 outlines these differences.

Table 25–1 Installation Comparison with 10g WebGates

10g WebGates in 11g Deployments	10g WebGates in 10g Deployments
1. Packages: 10g WebGate installation packages are found on media and virtual media that is separate from the core components. 2. Provisioning: Before installation, provision WebGate with Access Manager 11g as described in "Registering a 10g WebGate with Access Manager 11g Remotely" on page 25-11. 3. Associating with OAM Server: Occurs during WebGate registration (task 2 of this sequence). 4. Installing: Install the 10g WebGate in front of the application (or for Fusion Middleware, in front of the WebLogic Server). 5. Language Packs: 10g WebGate Language Packs are supported with Access Manager. 6. Web Server Configuration: Copy Access Manager generated files to the WebGate installation directory path to update the Web server configuration. 7. Certificate Installation: Copy files to the WebGate installation directory path. 8. Forms: 10g forms provided with 10g WebGates cannot be used with 11g OAM Servers. Using 10g WebGates with 11g OAM Servers is similar in operation and scope to a resource WebGate (one that redirects in contrast to the Authentication WebGate). With a 10g WebGate and 11g OAM Server, the 10g WebGate always redirects to the 11g credential collector which acts like the authenticating WebGate. 9. Single Log Out: Configure using information in Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates." 10. Multi-Domain Support: Does not apply with Access Manager 11g.	1. Packages: 10g WebGate installation packages are found on media and virtual media that is separate from the core components. 2. Provisioning: Before installation, you create a WebGate instance in the Access System Console. 3. Associating with AAA: Before installation, you associated the WebGate with an Access Server in the Access System Console. 4. Installing: Using 10g WebGate packages. 5. Language Packs: 10g WebGate Language Packs could be installed during WebGate installation (or later). 6. Web Server Configuration: Automatic during WebGate installation (or manually after WebGate installation). 7. Certificate Installation: You copied files to the WebGate installation directory path. 8. Forms: Were provided for use in 10g deployments. 9. Centralized Log Out for Oracle Access Manager 10g. 10. Multi-Domain Support: Could be configured for Oracle Access Manager 10g.

The following overview lists the topics in this chapter that describe 10g WebGate installation and registration tasks for Access Manager 11g in detail. You must complete all procedures for successful operation with Access Manager 11g.

Task overview: Registering and installing a 10g WebGate for Access Manager 11g

1. Registering a 10g WebGate:
2. Locating and Downloading 10g WebGates for Use with Access Manager 11g
3. Configuring Centralized Logout for 10g WebGate with 11g OAM Servers
4. Optional: Deploying Applications in a WebLogic Container as described in Oracle Fusion Middleware Application Security Guide.

25.2.4 About Centralized Logout with 10g OAM Agents and 11g OAM Servers

Logout is initiated when an application causes the invocation of the logout.html file configured for any registered 10g WebGate.

Generally speaking, during centralized logout with 10g WebGates the SSO Engine receives a user-session-exists request. The Session Management Engine looks up the session and responds that the session exists. The SSO engine sends a Clear Session request. The Session management engine clears the token and session context. The SSO engine sends a Session Cleared response.

Clearing the user token and the session context clears the server-side state, which includes clearing the OAM_ID cookie set on the server side. When the agent is notified, the agent clears the client-side state of the application. For more information, see Section 25.8, "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers."

> **See Also:** Section 25.4, "Configuring Centralized Logout for IAMSuiteAgent"

25.3 Comparing Access Manager 11.1.2 and 10g

This topic provides a comparison against the 10g architecture for Access Manager and OSSO. Included are the following topics:

- Comparing Access Manager 11g versus 10g
- Comparing Access Manager 11g versus 10g Policy Model

25.3.1 Comparing Access Manager 11g versus 10g

Access Manager 11g differs from 10g in that the identity administration features have been transferred to Oracle Identity Manager 11g (including user self-service and self registration, workflow functionality, dynamic group management, and delegated identity administration).

Access Manager 10g supported Single Sign-on using a single session cookie (the ObSSOCookie) that contained the user identity and session information required to access target resources that had the same or lower authentication level. The ObSSOCookie was encrypted and decrypted using a global shared secret key, the value of which was stored in the directory server. The ObSSOCookie was consumed by Access System components to verify the user identity and allow or disallow access to protected resources.

To close any possible security gaps, Access Manager 11g provides new server-side components that maintain backward compatibility with existing Access Manager 10g policy-enforcement agents (WebGates) and OSSO 10g agents (mod_osso). New Access Manager 11g WebGates are enhanced versions of 10g WebGates, that support a per-agent secret key for the Single Sign-on (SSO) solution. Thus, cookie-replay type of attack are prevented. The 11g WebGates are all trusted at the same level; a cookie specific for the WebGate is set and cannot be used to access any other WebGate-protected applications on a user's behalf.

Unless explicitly stated, the term "WebGate" refers to both an out of the box WebGate or a custom Access Client.

Access Manager 11g uses technology from Oracle Coherence to provide centralized, distributed, and reliable session management.

Table 25–2 provides a comparison of Access Manager 11g versus 10g. For a list of names that have changed with Access Manager 11g, see "Product and Component Name Changes with 11.1.2."

Table 25–2 Comparison: Access Manager 11g versus 10g

	Access Manager 11g	10g
Agents	▪ Agents: WebGate, Access Client, OpenSSO, OSSO (mod_osso), IAMSuiteAgent Note: Nine Administrator languages are supported.	▪ Resource WebGate (RWG) ▪ Authentication WebGate (AWG) ▪ AccessGate ▪ Access Server ▪ Policy Manager ▪ Identity System Note: Nine Administrator languages are supported.
Server-side components	▪ OAM Server (installed on a WebLogic Managed Sever) Security Token Service and Identity Federation run on OAM Server	▪ Access Server ▪ Policy Manager ▪ Identity Server
Console	Oracle Access Management Console	Access System Console Identity System Console
Protocols that secure information exchange on the Internet	Front channel protocols exchanged between Agent and Server: HTTP/HTTPS. 11g WebGate secures information exchange using the Agent key. -See Also: Cryptographic keys.	10g Agent information exchange is unsecured, in plain text.
Cryptographic keys	▪ One per-agent secret key shared between 11g WebGate and OAM Server ▪ One OAM Server key, generated during Server registration **Note**: One key is generated and used per registered mod_osso agent.	One global shared secret key per Access Manager deployment which is used by all the 10g WebGates
Keys storage	▪ **Agent side**: A per-agent key is stored locally in the Oracle Secret Store in a wallet file ▪ **OAM Server side:** A per- agent key, and server key, are stored in the credential store on the server side ▪ Security Token Service	Global shared secret stored in the directory server only (not accessible to WebGate)
Cookies	Host-based authentication cookie, described in Table 1–2, " Features in Access Manager 11.1.2"	▪ One domain-based ObSSOCookie for all WebGates (including the AWG), for both authentication and session management
Encryption / Decryption (The process of converting encrypted data back into its original form)	Introduces client-side cryptography and ensures that cryptography is performed at both the agent and server ends: 1. WebGate encrypts obrareq.cgi using the agent key. **Note**: obrareq.cgi is the authentication request in the form of a query string redirected from WebGate to OAM Server. 2. OAM Server decrypts the request, authenticates, creates the session, and sets the server cookie. 3. OAM Server also generates the authentication token for the agent (encrypted using the agent key), packs it in obrar.cgi with a session token (if using cookie-based session management), authentication token and other parameters, then encrypts obrar.cgi using the agent key. **Note**: obrar.cgi is the authentication response string redirected from the OAM Server to WebGate. 4. WebGate decrypts obrar.cgi, extracts the authentication token, and sets a host-based cookie.	▪ Token generation/ encryption, and validation/ decryption are delegated to the Access Server. ▪ Both obrareq.cgi and obrar.cgi are sent unencrypted, relying on the underlying HTTP(S) transport for security.

Table 25–2 (Cont.) Comparison: Access Manager 11g versus 10g

	Access Manager 11g	10g
Session Management	▪ Chapter 17, "Maintaining Access Manager Sessions"	▪ Single domain supported. **Multi-domain**: If a user idles out on one domain, but not on the authentication WebGate, the AWG cookie is still valid (re-authentication is not needed).A new cookie is generated with the refreshed timeout.
Client IP	▪ Maintain this Client IP, and include it in the host- based OAMAuthnCookie.	▪ Include the original client IP inside the ObSSOCookie. If IP validation is configured, when cookie presented in later authentication or authorization requests this original client IP is compared with the presenter's IP. Rejection occurs if there is no match
Response token replay prevention	▪ Include RequestTime (the timestamp just before redirect) in obrareq.cgi and copy it to obrar.cgi to prevent response token replay.	N/A
Multiple network domain support	Cross-network-domain single sign-on out of the box. Oracle recommends you use Oracle Federation for multiple network domain support.	A proprietary multiple network domain SSO capability predates Oracle Access Management Identity Federation. If this is implemented in your 10g deployment, register 10g Agents with Access Manager 11g to continue this support. ▪ Single domain is supported. Once a user logs off from one WebGate, the domain cookie is cleared and the user is considered to be logged off the entire domain. ▪ Multi-domain SSO can be supported through chained customized logout pages.

Centralized log-out	▪ The `logOutUrls` (10g WebGate configuration parameter) is preserved. 10g logout.html requires specific details for Access Manager 11g.
	▪ 11g WebGate parameters are new:
	`Logout Redirect URL`
	`Logout Callback URL`
	`Logout Target URL`
	See Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates."
		logout.html requires specific details when using a 10g WebGate with Access Manager 11g. See Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates."
		▪ Single domain is supported.
		Once a user logs off from one WebGate, the domain cookie is cleared and the user is considered to be logged off the entire domain.
		▪ Multi-domain SSO can be supported through chained customized logout pages.

25.3.2 Comparing Access Manager 11g versus 10g Policy Model

Access Manager 11g default behavior is to deny access when a resource is not protected by a policy that explicitly allows access.

Access Manager 10g provides authentication and authorization based on policies within a policy domain. Access Manager 10g default behavior allowed access when a resource was not protected by a rule or policy that explicitly denied access to limit the number of WebGate queries to the Access Server.

Table 25–3 compares the Access Manager 11g policy model with the 10g model. Access Manager 11g default behavior is to deny access when a resource is not protected by a policy that explicitly allows access. In contrast, Access Manager 10g default behavior allowed access when a resource was not protected by a rule or policy that explicitly specified access.

Table 25–3 Comparing Access Manager 11g Policy Model versus 10g

Policy Elements	11g Policy Model	10g Policy Model
Policy Authoring	Oracle Access Management Console	Policy Manager
Policy Store	Database	LDAP directory server
Domain	Application Domain	Policy Domain
Resources	1. No URL prefixes. Resource definitions are treated as complete URLs. 2. Pattern matching (with limited features) for: ' * ' and '...' are supported 3. Resources need not be unique across domains. 4. Query-string protection for HTTP URLs. 5. Each HTTP resource is defined as a URL path, and associated with a host identifier. However, resources of other types are associated with a specific name (not a host identifier). 6. Non-HTTP resource types are supported, with definition of specific operations. Non-HTTP resource types are never associated with a host identifier. 7. Resources can designated as either Protected, Unprotected, or Excluded. 8. Custom resource types are allowed.	1. URL prefixes are defined in domains 2. Pattern matching for: { } * … 3. Resources need not be unique across domains. 4. http resources can be protected based on URL query string contents and/or HTTP operation. 5. Non-HTTP resource types and operations can be defined.
Host identifiers	1. Host Identifiers are defined outside of policies and are used while defining HTTP resources. 2. Host Identifiers are mandatory for defining HTTP resources.	1. Host Identifiers are defined outside of policies and are used while defining HTTP resources. 2. Host Identifiers are not mandatory, for defining HTTP resources, till there are no Host Identifiers defined in the system.
Authentication Policies	1. Authentication policies include resources, success responses, and an authentication scheme. 2. Authorization policies can also contain success responses, and time based, IP based and user-based conditions. 3. Only one authentication policy and one authorization policy can be associated with any resource. 4. Authentication and Authorization policies can evaluate to Success or Failure. 5. No Query Builder and no support for LDAP filters for (for retrieving matches based on an attribute of a certain display type, for example). 6. There is no notion of a default policy in an Application Domain. However, you can define a policy for resource: /…/* which can be used as a default policy within a determined scope). 7. Token Issuance Policies can be defined using resources and user- or partner-based conditions. See Section 20.3.6, "About Token Issuance Policy Pages.".	1. Authentication policies are simple and contain only authentication-scheme-based rule. 2. One resource can be associated with a set of Authorization policies. Evaluation of these policies can be based on an expression that combines the policies within the set using logical operators as desired. A resource can also be associated with multiple authentication policies and authorization policy sets. However, only one set applies. 3. An Authorization policy can evaluate to Success or Failure, or Inconclusive. 4. Users can be specified using LDAP filters. 5. Default authentication policy and authorization policy set can be defined for a policy domain. This policy is only applicable if there are no other applicable policies for a runtime resource in that domain. 6. There is no support for Token Issuance Policies.

Table 25–3 (Cont.) Comparing Access Manager 11g Policy Model versus 10g

Policy Elements	11g Policy Model	10g Policy Model
Authentication Schemes	Authentication Schemes are defined globally and can be shared (referenced within authentication policies). The trust level is expressed as an integer value between 0 (no trust) and 99 (highest level of trust). Note: Level 0 is unprotected. Only unprotected resources can be added to an Authentication Policy that uses an authentication scheme at protection level 0. See Also: Table 19–20, " Authentication Scheme Definition".	Authentication Schemes can be defined outside of policies and can be referenced within authentication policies.
Authorization Policy	Each resource assigned to an Application Domain can be protected by only one authorization policy. Each policy can include one or more conditions and a rule. See Also: Rule, later in this table, and Section 20.8, "Defining Authorization Policies for Specific Resources.".	To protect resources, you define authorization rules that contain one or more conditions.You also configure authorization expressions using one or more authorization rules. A policy domain (and a policy) can each contain only one authorization expression.
Token Issuance Policy	By default, only a container for Token Issuance Policies is provided in a generated Application Domain. No Conditions or Rules are generated automatically. You must add these manually. See Also: Section 20.3.6, "About Token Issuance Policy Pages.".	N/A
Responses	Available for all policy types: 1. Authentication and Authorization success Responses can be defined within the policies. These are applied after evaluation of policies. 2. Cookie, Header, and Session responses are supported. 3. URL redirection can be set. 4. Response definitions are part of each policy. Response values can be literal strings or can contain additional embedded expressions that derive values from request, user, and session attributes.	1. Authentication and Authorization Responses can be defined within the policies for Success, Failure, and Inconclusive events. These are returned to the caller after evaluation of policies. 2. HTTP_HEADER and Cookie based variables can be set. 3. Redirect URLs can be set for Success and Failure events of authentication and authorization policy evaluations. 4. Response values can contain literal strings and list of user attribute values.
Cookies	See Also: Table 18–8 and Section 18.6.1, "About Single Sign-On Cookies During User Login."	See Also: Table 18–8 and Section 18.6.1, "About Single Sign-On Cookies During User Login."

Table 25–3 (Cont.) Comparing Access Manager 11g Policy Model versus 10g

Policy Elements	11g Policy Model	10g Policy Model
Query String-based HTTP Resource Definitions	Supported within Access Policies, as described in Table 20–1, " Resource Definition Elements"	This Policy Model supports query string-based HTTP resource definitions within Access Policies. At run time, the OAM Proxy passes the Query String to the policy layer after URL encoding, just like for base resource URL. Only Query String that are part of HTTP GET requests are passed. Query String pattern does not apply to HTTP POST data.
Rule	Available for only Authorization and Token Issuance Policies. Each Authorization policy includes a rule that defines whether the policy allows or denies access to resources protected by the policy. The rule references Authorization conditions, described next. See Also: Section 20.11, "Introduction to Authorization Policy Rules and Conditions.".	A policy is defined using authorization rules (among other policy elements). Authorization rules: ▪ Are defined outside of policies (but scoped within a policy domain) and are referenced in policies. ▪ Appear in two places: 1) as part of default rules for the domain and 2) in policy definitions. Each rule specifies who (which users, groups or IP4 addresses) is allowed or denied access and the time period in which this rule applies. There is also a provision to specify whether Allow takes precedence over Deny.
Condition	Available for only Authorization and Token Issuance Policies. Each Authorization policy rule references conditions that define to whom the rule applies, if there is a time Condition, and how evaluation outcomes are to be applied. Conditions are declared outside of rules and are referenced within a rule. See Also: Section 20.11, "Introduction to Authorization Policy Rules and Conditions."	N/A

25.4 Configuring Centralized Logout for IAMSuiteAgent

The IAMSuiteAgent is pre-configured with the logout parameters needed to perform central logout against the OAM Server. While similar to a 10g WebGate, the IAMSuiteAgent does not have a local logout.html page to be configured. Instead, the IAMSuiteAgent is delivered with a pre-deployed application oamsso_logout), that is used by the agent to perform the logout.

The logout functionality for the IAMSuiteAgent requires that the oamsso_logout application is deployed in the Server where the IAMSuiteAgent is used. The initial installation adds this application to AdminServer and to OAM Servers. However, you must update this application's Target servers to include all those that are using the IAMSuiteAgent.

To configure logout for the IAMSuiteAgent

1. Log in to the WebLogic Server Administration Console.
2. Navigate to Domain, Deployments, oamsso_logout, Targets.
3. Select all the Servers where the IAMSuiteAgent is enabled and where logout is performed. For example, oim_server, oaam_admin, oaam_server, and so on.
4. Click Save.
5. Proceed to:

- Section 20.14, "Validating Authentication and Authorization in an Application Domain"
- Chapter 21, "Validating Connectivity and Policies Using the Access Tester"

25.5 Registering a 10g WebGate with Access Manager 11g Remotely

Whether you have a legacy 10g WebGate installed, or you are installing a fresh 10g WebGate instance to use with Access Manager 11g, you must register WebGate to use Access Manager 11g authentication and authorization services.

You can use either the Oracle Access Management Console or the remote registration tool to perform this task. The remote registration tool enables you to specify all WebGate parameters before registration using a template.

The following procedure walks through provisioning using the remote registration tool, in-band mode. In this example, OAMRequest_short.xml is used as a template to create an agent named *my-10g-agent1*, protecting */.../**, and declaring a public resource, /public/index.html. Your values will be different. You can use a full registration template to specify public, private, and excluded resources.

See Also: The following, if needed:

- Section 16.7, "Performing Remote Registration for OAM Agents"

To use remote registration with a 10g WebGate for Access Manager 11g

1. Acquire the remote registration tool and set up the script for your environment. For example:
   a. Locate RREG.tar.gz file in the following path:

      `$ORACLE_HOME/oam/server/rreg/client/RREG.tar.gz`

   b. Untar RREG.tar.gz file to any suitable location. For example: rreg/bin/oamreg.
   c. In the oamreg script (oamreg.bat or oamreg.sh), set the following environment variables based on your situation (client side or server side) and information in Table 16–5:

      OAM_REG_HOME = *exploded_dir_for_RREG*.tar/rreg
      JAVA_HOME = *Java_location_on_the_computer*

2. Create the registration request:
   a. Locate OAMRequest_short.xml and copy it to a new file. For example:

      `$OAM_REG_HOME/input/OAMRequest_short.xml/`

      Copy: OAMRequest_short.xml

      To: *my-10g-agent1*.xml

   b. Edit *my-10g-agent1*.xml to include details for your environment. For example:

```
<OAMRegRequest>
    <serverAddress>http://ruby.uk.example.com:7001</serverAddress>
    <hostIdentifier>my-10g</hostIdentifier>
    <agentName>my-10g-agent1</agentName>
      <protectedResourcesList>
        <resource>/myapp/</resource>
        <resource>/myapp/.../*</resource>
```

```
      </protectedResourcesList>
      <publicResourcesList>
        <resource>/public/index.html</resource>
      </publicResourcesList>
      <excludedResourcesList>
        <resource>/excluded/index.html</resource>
      </excludedResourcesList>
    <autoCreatePolicy>true</autoCreatePolicy>
    <primaryCookieDomain>.uk.example.com</primaryCookieDomain>
    <logOutUrls>
      <url>/oamsso/logout.html</url>
    </logOutUrls>
</OAMRegRequest>
```

See Also: Section 16.7.2, "Creating Your Remote Registration Request"

3. Register the agent. For example:
   a. Locate the remote registration script.

      Linux: rreg/bin/oamreg.sh

      Windows: rreg\bin\oamreg.bat

   b. From the directory containing the script, execute the script using inband mode. For example:

      $ ./bin/oamreg.sh inband input/*my-10g-agent1*.xml

      ```
      Welcome to OAM Remote Registration Tool!
      Parameters passed to the registration tool are:
      Mode: inband
      Filename: ...
      ```

   c. When prompted, enter the following information using values for your environment:

      ```
      Enter your agent username: userame
         Username:  userame
      Enter agent password: ********
      Do you want to enter a WebGate password?(y/n)
          n
      iv.Do you want to import an URIs file?(y/n)
          n
      ```

   d. Review the final message to confirm that this was a successful registration:

      ```
      Inband registration process completed successfully! Output artifacts are
      created in the output folder"
      ```

4. Ignore the ObAccessClient.xml file created during registration for now.
5. Log in to the Oracle Access Management Console and add resources the new registration:
   a. From the System Configuration tab, Access Manager section, expand the following nodes to reveal Search controls:

      System Configuration
        Access Manager
          SSO Agents
            OAM Agents

b. Use the Search controls to locate your WebGate registration page, then click the name in the Results table to display the page.

c. **OAM Proxy Port**—From the System Configuration tab, Common Configuration section, double click Server Instances and locate the port on which the OAM Proxy is running (Table 6–3).

6. Add resources to the Application Domain (Table 20–1).

7. Proceed as needed for your environment:

- **Existing WebGate**: Configuring Centralized Logout for 10g WebGate with 11g OAM Servers
- **Uninstalled WebGate**: Locating and Installing the Latest 10g WebGate for Access Manager 11g
- **Optional**: Managing 10g OAM Agents Remotely

25.6 Managing 10g OAM Agents Remotely

This section describes how to update, validate, and delete OAM 10g Agents using remote registration templates and modes described in Section 16.8, "Introduction to Updating Agents Remotely."

To remotely update OAM 10g Agent registration

1. Set up the registration tool as described in Section 16.7.1, "Acquiring and Setting Up the Remote Registration Tool."

2. **Update Agent**:

a. Create your update request using the `OAMUpdateAgentRequest.xml` template.

b. On the computer hosting the Agent, run the following command with `agentUpdate` mode specify your own *Request*.xml as the input file. For example:

```
./bin/oamreg.sh agentUpdate input/*OAMUpdateAgentRequest.xml
```

c. Provide the registration Administrator user name and password when asked.

d. Confirm success with on-screen messages.

e. Relocate to the agent host ObAccessClient.xml:

From the AdminServer (Console) host: /rreg/output/Agent_Name/

To the Agent host: $*10gWG_install_dir*/oblix/lib. For example:

$WebTier_MW_HOME/Oracle_WT1/instance1/config/OHS/ohs1/oblix/lib

f. Restart the OAM Server that is hosting this agent

3. **Validating Agent**:

a. On the Agent host, run the following command in `agentValidate` mode. For example:

```
./bin/oamreg.sh agentValidate agentname
```

b. Provide the registration Administrator user name and password when asked.

c. Confirm success with on-screen messages.

4. **Deleting an Agent**:

   a. On the computer hosting the Agent, run the following `agentDelete` command. For example:

   ```
   ./bin/oamreg.sh agentDelete agentname
   ```

   b. Provide the registration Administrator user name and password when asked.

   c. Confirm success with on-screen messages.

   Success: On-screen message confirms

   ```
   AgentDelete process completed successfully!
   ```

25.7 Locating and Installing the Latest 10g WebGate for Access Manager 11g

Use the procedures in this section if you need to install a fresh 10g WebGate for use with Access Manager 11g. Otherwise, skip this section and proceed to Section 25.8, "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers."

Task overview: Installing the WebGate includes

1. Preparing for a Fresh 10g WebGate Installation with Access Manager 11g
2. Locating and Downloading 10g WebGates for Use with Access Manager 11g
3. Starting WebGate 10g Installation
4. Specifying a Transport Security Mode
5. Specifying WebGate Configuration Details
6. Requesting or Installing Certificates for Secure Communications
7. Updating the WebGate Web Server Configuration
8. Finishing WebGate Installation
9. Installing Artifacts and Certificates
10. Confirming WebGate Installation

25.7.1 Preparing for a Fresh 10g WebGate Installation with Access Manager 11g

Table 25–4 outlines the requirements that must be met before starting an 10g WebGate installation.

Table 25–4 Preparing for 10g WebGate Installation with Access Manager 11g

About the ...	Description
Latest Supported WebGates	Always use the latest supported 10*g* (10.1.4.3) WebGates with Access Manager 11g. However, if the desired 10*g* (10.1.4.3) WebGate is not provided, use the next latest WebGate (10*g* (10.1.4.2.0). See Also: Section 25.7.2, "Locating and Downloading 10g WebGates for Use with Access Manager 11g."
Location for installation	Consider: ▪ WebGate in front of the application server. ▪ Applications using WebLogic Server container-managed security: In front of the WebLogic Application Server in which your application is deployed
User Accounts	The account that is used to install the WebGate is not the account that runs the WebGate: ▪ The 10g WebGate should be installed using the same user and group as the Web server. ▪ Unix: You can be logged in as root to install the WebGate. The WebGate can be installed using a non-root user if the Web server process runs as a non-root user
Root Level versus Site Level	▪ The WebGate can be installed at the root level or the site level. ▪ Installing WebGate on multiple virtual sites amounts to only one instance of WebGate.
Transport Security Mode	Ensure that at least one OAM Server is configured to use the same mode as the agent to be installed. See Also Appendix C, "Securing Communication."
Computer Level or Virtual Web Server Level	The WebGate can be configured to run at either the computer level or the virtual Web server level. Do not install at both the computer level and the virtual Web server levels.
Oracle HTTP Server Web Server:	The 10g WebGate for Oracle HTTP Server is based on open source Apache. WebGate package names include: ▪ OHS (based on Apache v1.3) ▪ OHS2 (based on Apache v2) ▪ OHS11g (based on Apache v2.2 and is not the subject of this chapter)
Apache Web Servers	Access Manager 11g provides a single package for components that support Apache with or without SSL enabled: ▪ The APACHE2_WebGate supports v2 with or without SSL (and with or without reverse proxy enabled on Solaris and Linux). See also Chapter 26, "Configuring Apache, OHS, IHS for 10g WebGates." ▪ The APACHE22_WebGate supports v2.2 with or without SSL (and with or without reverse proxy enabled on Solaris and Linux). See also Chapter 26, "Configuring Apache, OHS, IHS for 10g WebGates." Note: For SSL-enabled communication, Access Manager supports Apache with mod_ssl only, not Apache-SSL. mod_ssl is a derivative of, and alternative to, Apache-SSL.
IBM HTTP Server (IHS) v2 Web Servers:	IHS2_WebGate is powered by Apache v2 on IBM-AIX. Access Manager supports IHS v2 and IHS v2 Reverse Proxy servers with or without SSL enabled. For details, see Chapter 26, "Configuring Apache, OHS, IHS for 10g WebGates."

Table 25–4 (Cont.) Preparing for 10g WebGate Installation with Access Manager 11g

About the ...	Description
Domino Web Servers:	Before you install the 10g WebGate with a Domino Web server, you must have properly installed and set up the Domino Enterprise Server R5. See Also: Chapter 29, "Configuring Lotus Domino Web Servers for 10g WebGates."
IIS Web Servers	Before installing WebGate, ensure that your IIS Web server is *not* in lock down mode. Otherwise things will appear to be working until the server is rebooted and the metabase re-initialized, at which time IIS will disregard activity that occurred after the lock down. If you are using client certificate authentication, before enabling client certificates for the WebGate you must enable SSL on the IIS Web server hosting the WebGate. Setting various permissions for the /access directory is required for IIS WebGates only when you are installing on a file system that supports NTFS. For example, suppose you install the ISAPI WebGate in Simple or Cert mode on a Windows 2000 computer running the FAT32 file system. The last installation panel provides instructions for manually setting various permissions that cannot be set on the FAT32 fleshiest. In this case, these instructions may be ignored. Each IIS Virtual Web server can have it's own WebGate.dll file installed at the virtual level, or can have one WebGate affecting all sites installed at the site level. Either install the Webgate.dll at the site level to control all virtual hosts or install the Webgate.dll for one or all virtual hosts. You may also need to install the postgate.dll file at the computer level. The postgate.dll is located in the *\WebGate_install_dir*, as described in Section 28.5.3.4.2, "Installing the Postgate ISAPI Filter." If you perform multiple installations, multiple versions of this file may be created which may cause unusual Access Manager behavior. In this case, you should verify that only one webgate.dll and one postgate.dll exist. **See Also**: Chapter 28, "Configuring the IIS Web Server for 10g WebGates" **Removal**: To fully remove a WebGate and related filters from IIS, you must do more than simply remove the filters from the list in IIS. IIS retains all of its settings in a metabase file. On Windows 2000 and later, this is an XML file that can be modified by hand. There is also a tool available, MetaEdit, to edit the metabase. MetaEdit looks like Regedit and has a consistency checker and a browser/editor. To fully remove a WebGate from IIS, use MetaEdit to edit the metabase.
ISA Proxy Servers	On the ISA proxy server, all ISAPI filters must be installed within the ISA installation directory. They can be anywhere within the ISA installation directory structure: 1. Before installing the WebGate on the ISA proxy server: Check for general ISAPI filter with ISA instructions on: `http://msdn.microsoft.com/library/default.asp?url=/library/en-us/isa/isaisapi_5cq8.asp` Ensure that the internal and external communication layers are configured and working properly. 2. During installation you will asked if this is an ISA installation; be sure to: Indicate that this is an ISA proxy server installation, when asked. Specify the ISA installation directory path as the WebGate installation path. Use the automatic Web server update feature to update the ISA proxy server during WebGate installation. 3. After WebGate installation, locate the file configureISA4webgate.bat, which calls a number of scripts and the process to configure the ISA server filters that must be added programmatically. **See Also**: Chapter 27, "Configuring the ISA Server for 10g WebGates"

25.7.2 Locating and Downloading 10g WebGates for Use with Access Manager 11g

Use the following procedure to obtain an 10g WebGate, if needed. Be sure to choose the appropriate installation package for your Web server.

To find and download 10g WebGates

1. Review the latest Oracle Access Manager 10g certification information on the Oracle Technology Network at:

   `http://www.oracle.com/technetwork/middleware/id-mgmt/fusion-certification-100350.html`

2. Go to Oracle Fusion Middleware 11gR1 Software Downloads at:

   `http://www.oracle.com/technology/software/products/middleware/htdocs/fmw_11_download.html`

3. Click **Accept License Agreement**, at the top of the page.
4. From the **Access Manager WebGates (10.1.4.3.0)** row, click the download link for the desired platform and follow on-screen instructions.
5. Store the WebGate installer in the same directory with any 10g Access System Language Packs you want to install.
6. Proceed to Section 25.7.3, "Starting WebGate 10g Installation."

25.7.3 Starting WebGate 10g Installation

The following procedure walks through the steps, which are the same regardless of Web server type.

Installation options are identified and can be skipped if they do not apply to your environment. During WebGate installation, information is saved at specific points. You can cancel WebGate installation processing if needed. However, if you cancel WebGate installation after being informed that the WebGate is being installed, you must uninstall the component.

> **Note:** On HP-UX and AIX systems, you can direct an installation to a directory with sufficient space using the -is:tempdir path parameter. The path must be an absolute path to a file system with sufficient space.

To start WebGate 10g installation

1. On the computer to host WebGate 10g, log in as a user with Web server Administrator privileges.
2. Stop the Web server instance.
3. Launch the WebGate installer for your preferred platform, installation mode, and Web server. For example:

   GUI Method:

   ```
   Windows— Oracle_Access_Manager10_1_4_3_0_Win32_API_Webgate.exe
   ```

   Console Method:

   ```
   Solaris—./ Oracle_Access_Manager10_1_4_3_0_sparc-s2_API_Webgate
   Linux—./ Oracle_Access_Manager10_1_4_3_0_linux_API_Webgate
   ```

   where API refers to the API used by your Web server (for example, ISAPI for IIS Web servers).
4. Dismiss the Welcome screen; follow on-screen instructions with Administrator privileges.
5. Specify the installation directory for the WebGate.
6. **Linux or Solaris**: Specify the location of the GCC runtime libraries on this computer.
7. **Language Pack**—Choose a Default Locale and any other Locales to install, then click Next.
8. Record the installation directory name in the preparation worksheet if you haven't already, then click Next to continue.

The WebGate installation begins, which may take a few seconds. On Windows systems, a screen informs you that the Microsoft Managed Interfaces are being configured.

The installation process is not yet complete. You are asked to specify a transport security mode. At this point, you cannot go back to restate information.

9. Specify the location where you unzipped the previously downloaded GCC libraries, if needed.

25.7.4 Specifying a Transport Security Mode

Transport security between at least one OAM Server must match.

See Also: Appendix C, "Securing Communication"

To specify a transport security mode

1. Choose Open, Simple, or Cert for the WebGate.
2. Proceed according to your specified transport security mode:
   - **Simple or Certificate Mode**—Go to "Requesting or Installing Certificates for Secure Communications"
   - **Open Mode**—Skip to Section 25.7.7, "Updating the WebGate Web Server Configuration"

25.7.5 Requesting or Installing Certificates for Secure Communications

If your Access Manager 11g environment uses Open mode transport security, you can skip to Section 25.7.7, "Updating the WebGate Web Server Configuration."

WebGate Certificate Request: Generates the request file (aaa_req.pem), which you must send to a root CA that is trusted by the OAM Server. The root CA returns signed certificates, which can then be installed for WebGate.

Requested certificates must be copied to the *WebGate_install_dir*\access\oblix\config directory and then the WebGate Web server should be restarted.

See Also: Appendix C, "Securing Communication"

To request or install certificates for WebGate 10g

1. Indicate whether you are requesting or installing a certificate, then click Next and continue. For example:
   - Requesting a certificate, proceed with step 2.
   - Installing a certificate, skip to step 3.
2. **Request a Certificate**:
   - Enter the requested information, then click Next and issue your request for a certificate to your CA.
   - Record certificate file locations, if these are displayed.
   - Click Yes if your certificates are available and continue with step 3. Otherwise, skip to Section 25.7.7, "Updating the WebGate Web Server Configuration."
3. **Install a Certificate During Installation**: Specify the full paths to the following files, then click Next:

WebGate_install_dir\access\oblix\config

- cacert.pem the certificate request, signed by the Oracle-provided openSSL Certificate Authority
- password.xml contains the random global passphrase that was designated during installation, in obfuscated format. This is used to prevent other customers from using the same CA. Access Manager performs an additional password check during the initial handshake between the OAM Agent and OAM Server.
- aaa_key.pem contains your private key (generated by openSSL).
- aaa_cert.pem signed certificates in PEM format.
- Proceed to Section 25.7.7, "Updating the WebGate Web Server Configuration."

25.7.6 Specifying WebGate Configuration Details

You perform the following task using information provided during WebGate provisioning and registration with Access Manager 11g.

To provide WebGate configuration details

1. Provide the information requested for the WebGate as specified in the Access System Console.
   - **WebGate ID**—Enter the agent name that you supplied during registration.
   - **WebGate password**—Enter the password supplied during registration, if any. If no password was entered, leave the field blank.
   - **Access Server ID**—Enter the name of the OAM Server with which this WebGate is registered, if desired, or use any name you choose.
   - **Access Server Host Name**—Enter the DNS host name for the OAM Server with which this WebGate is registered
   - **Port number**—Enter the port on which the OAM Proxy is running. If a port was not entered during provisioning, the default port is 3004.
2. Click Next to continue.

25.7.7 Updating the WebGate Web Server Configuration

Your Web server must be configured to operate with the WebGate. Oracle recommends automatically updating your Web server configuration during installation. However, procedures for both automatic and manual updates are included.

Note: To manually update your Web server configuration

1. Click No when asked if you want to proceed with the automatic update, then click Next.
2. Review the screen that appears to assist you in manually setting up your WebGate Web server, and see Section 25.7.7.1, "Manually Configuring Your Web Server."
3. Return to the WebGate installation screen, click Next, and proceed to Section 25.5, "Registering a 10g WebGate with Access Manager 11g Remotely."

To automatically update your Web server configuration

1. Click Yes to automatically update your Web server then click Next (or click No and see Section 25.7.7.1, "Manually Configuring Your Web Server"):

   - **Most Web servers**—Specify the absolute path of the directory containing the Web server configuration file.
   - **IIS Web Servers**—The process begins immediately and may take more than a minute. For more information, see Chapter 28, "Configuring the IIS Web Server for 10g WebGates."

     You might receive special instructions to perform before you continue. Setting various permissions for the /access directory is required for IIS WebGates only when you are installing on a file system that supports NTFS. The last installation panel provides instructions for manually setting various permissions that cannot be set on the FAT32 file system. In this case, these instructions may be ignored.
   - **Sun Web Servers**—Be sure to apply the changes in the Web server Administration console before you continue.

   A screen announces that the Web server configuration has been updated.
2. Click Next and continue with Section 25.7.8, "Finishing WebGate Installation."

25.7.7.1 Manually Configuring Your Web Server

If, during WebGate installation, you declined automatic Web server updates, you must perform the task manually.

> **Note:** If the manual configuration process was launched during WebGate installation, you can skip Step 1 in the following procedure.

To manually configure your Web server for the WebGate

1. Launch your Web browser, and open the following file, if needed. For example:

   WebGate_install_dir\access\oblix\lang*langTag*\docs\config.htm

   where *WebGate_install_dir* is the directory where you installed the WebGate.

   > **Note:** If you choose manual IIS configuration during 64-bit WebGate installation, you can access details in the following path
   >
   > *WebGate_install_dir*\access\oblix\lang\en-us\docs\dotnet_isapi.htm

2. Select from the supported Web servers and follow all instructions, which are specific to each Web server type, as you:

   - Make a back up copy of any file that you are required to modify during WebGate set up, so it is available if you need to start over.
   - Ensure that you return to and complete all original setup instructions to enable your Web server to recognize the appropriate Access Manager files.

Note: If you accidentally closed the window, return to step 1 and click the appropriate link again. Some setups launch a new browser window or require you to launch a Command window to input information.

3. Continue with Section 25.7.8, "Finishing WebGate Installation."

25.7.8 Finishing WebGate Installation

The ReadMe information provides details about documentation and Oracle.

Note: If you are installing a 64-bit IIS WebGate, see Section 28.8, "Finishing 64-bit Webgate Installation."

To finish the WebGate installation

1. Review the ReadMe information, then click Next to dismiss it.
2. Click Finish to conclude the installation.
3. Restart your Web server to enable configuration updates to take affect.
   - **IIS Web Servers**—Consider using `net stop iisadmin` and `net start w3svc` after installing the WebGate to help ensure that the Metabase does not become corrupted.
   - **Security-Enhanced Linux**: Run the chcon commands for the WebGate you just installed on this platform.
4. Proceed with following topics before installing artifacts and certificates:
   - **Native POSIX Thread Library**: When installing Access Manager WebGate for use with NPTL, there is no need to set the environment variable LD_ASSUME_KERNEL to 2.4.19.
   - **Apache2, OHS2, IHS2 Web Servers**: Chapter 26, "Configuring Apache, OHS, IHS for 10g WebGates."
   - **IIS Web Servers**: Consider using `net stop iisadmin` and `net start w3svc` after installing the WebGate to help ensure that the Metabase does not become corrupted. See also Chapter 28, "Configuring the IIS Web Server for 10g WebGates."
   - **ISA Web Servers**: Chapter 27, "Configuring the ISA Server for 10g WebGates."
   - **Lotus Domino Web Servers**: Chapter 29, "Configuring Lotus Domino Web Servers for 10g WebGates."
5. Proceed to Section 25.7.9, "Installing Artifacts and Certificates."

25.7.9 Installing Artifacts and Certificates

The ObAccessClient.xml file is one result of product of provisioning. After WebGate installation, you must copy the file to the WebGate installation directory path. If you received signed WebGate 10g certificates after installing WebGate, you can use the following procedure to install these as well.

Prerequisites

Configuring your Web server

To install artifacts (and certificates) for WebGate 10g

1. Copy `ObAccessClient.xml`
   - **From:** *$WLS_DOMAIN_HOME*`/output/AGENT_NAME`
   - **To**: *$WebGate_install_dir*`/oblix/lib`

   Copy `password.xml`
   - **From:** *$WLS_DOMAIN_HOME*`/output/AGENT_NAME`
   - **To**: *$WebGate_install_dir*`/oblix/config`
2. Copy aaa_key.pem and aaa_cert.pem:
   - From: *$IDM_DOMAIN_HOME*`/output/AGENT_NAME`
   - To: *$WebGate_install_dir*`/oblix/config/simple`
3. Restart the WebGate Web server.

25.7.10 Confirming WebGate Installation

After WebGate installation and Web server updates, you can enable WebGate diagnostics to confirm that your WebGate is running properly.

To review WebGate diagnostics

1. Confirm Access Manager 11g components are running.
2. Specify the following URL for WebGate diagnostics. For example:

   Most Web Servers—http(s)://*hostname*:*port*/access/oblix/apps/webgate/bin/webgate.cgi?progid=1

   IIS Web Servers—http(s)://*hostname*:*port*/access/oblix/apps/webgate/bin/webgate.dll?progid=1

   where *hostname* refers to the name of the computer hosting the WebGate; *port* refers to the Web server instance port number.
3. The WebGate diagnostic page should appear.
   - **Successful**: If the WebGate diagnostic page appears, the WebGate is functioning properly and you can dismiss the page. Go to Section 25.8, "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers."
   - **Unsuccessful**: WebGate should be uninstalled and reinstalled, as described in Section 25.9, "Removing a 10g WebGate from the Access Manager 11g Deployment."

25.8 Configuring Centralized Logout for 10g WebGate with 11g OAM Servers

This section provides the following topics:

- About Centralized Logout with 10g OAM Agents and 11g OAM Servers
- About the Centralized Logout Script for 10g WebGates with 11g OAM Servers

- Configuring Centralized Logout for 10g WebGates with Access Manager

25.8.1 About Centralized Logout Processing for 10g WebGate with 11g OAM Server

The following process overview outlines the Access Manager centralized logout process that occurs when the application is deployed on the Web server for which the protecting 10g WebGate is configured.

Logout is initiated when an application causes the invocation of the logout.html file configured for the OAM agent (in this case, a 10g WebGate).

Process overview: Centralized logout for 10g WebGate with 11g OAM Server

1. The application causes invocation of the logout.html file configured for the 10g WebGate.

   The application might also pass `end_url` as a query string to logout.html. The end_url parameter could either be a URI or a URL. For example:

   ```
   /oamsso/logout.html?end_url=/welcome.html
   or
   /oamsso/logout.html?end_url=http://my.site.com/welcome.html
   ```

2. WebGate clears the ObSSOCookie for its domain and loads the logout.html script.

3. If the `end_url` parameter does not include *host:port*, the logout.html script gets the *host:port* of the local server and constructs the `end_url` parameter as a URL. For example:

   ```
   http://serverhost:port/oam/server/logout?end_url=http://my.site.com/
   welcome.html
   ```

4. Logic in logout.html redirect to the OAM Server. For example:

   ```
   http://myoamserverhost:port/oam/server/logout?end_url=http://my.site.com/
   welcome.html
   ```

5. The OAM Server executes logout as follows:

   a. Cleans up the session information associated with the user at the server side.

   b. Validates the `end_url` and sends a page with callback URLs to the user's browser.

   Note: The `Logout Callback URL` is specified in the expanded OAM Agent registration page, as described in "About Create OAM WebGate Page and Parameters" on page 16-2 (or remote registration template in Table 16–3, " Elements on Expanded 11g and 10g WebGate/Access Client Registration Pages").

   c. From the callback page, a new request is initiated to a specific URI on each WebGate. When this request reaches the specific WebGate in the specific domain, the ObSSOCookie for that domain is cleared.

   d. The user is redirected to the `end_url` in the logout script. However, if the `end_url` parameter is not present, an appropriate message is sent by the OAM Server.

For more information, see Section 25.8.2, "About the Centralized Logout Script for 10g WebGates with 11g OAM Servers."

25.8.2 About the Centralized Logout Script for 10g WebGates with 11g OAM Servers

With an 10g WebGate, the logout.html script is required for both single- and multiple DNS-domain centralized logout processing. The logout.html activates JavaScripts that perform the actual logout.

> **Note:** 11g WebGates do not use the logout.html script and instead require additional details in their Agent registration configuration, as described in Section 25.8, "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers."

Example 25–1 is a logout.html script that you can use as a template by editing certain lines for your own environment, which are described at the top of the script. For instance, `SERVER_LOGOUTURL` must be changed. Additional information is provided after the example.

Example 25–1 logout.html Script

```
<html>
<head>
<script language="javascript" type="text/javascript">
////////////////////////////////////////////////////////////////////////////
//Before using, you need to change the values of:
//a. "oamserverhost" to point to the host where the OAM Server is running.
//b. "port" to point to the port where the OAM Server is running.
////////////////////////////////////////////////////////////////////////////
var SERVER_LOGOUTURL = "http://oamserverhost:port/oam/server/logout";
////////////////////////////////////////////////////////////////////////////

function handleLogout() {

    //get protocol used at the server (http/https)
    var webServerProtocol = window.location.protocol;
    //get server host:port
    var webServerHostPort = window.location.host;
    //get query string present in this URL
    var origQueryString = window.location.search.substring(1);
    var newQueryString = "";

    //vars to parse the querystring
    var params = new Array();
    var par = new Array();
    var val;

    if (origQueryString != null && origQueryString != "") {
        params = origQueryString.split("&");
        for (var i=0; i<params.length; i++) {
          if (i == 0)
            newQueryString = "?";

        if (i > 0)
            newQueryString = newQueryString + "&";

        par = params[i].split("=");

        //prepare a new query string, if the end_url value needs to be changed
        newQueryString = newQueryString + (par[0]);
        newQueryString = newQueryString + "=";
```

```
        val = par[1];

        if ("end_url" == par[0]) {
        //check if val (value of end_url) begins with "/" or "%2F" (is it an URI?)
        if (val.substring(0,1) == "/" || val.substring(0,1) == "%") {
                //modify the query string now
                val = webServerProtocol + "//" + webServerHostPort + val;
            }
        }
        newQueryString = newQueryString + val;
    }
    }
    //redirect the user to this URL
    window.location.href = SERVER_LOGOUTURL + newQueryString;
}
</script>
</head>

<body onLoad="handleLogout();">

</body>
</html>
```

Process overview: Logic in logout.html

1. Gets the host and port from the incoming request.
2. Gets the `end_url` parameter from the query string.

   If the `end_url` parameter is not a URL, then the logout.html script constructs a URL using the host and port from task 1. See "Guidelines for the end_url parameter in logout.html" following this section.
3. Redirects to the OAM Server logout URL (SERVER_LOGOUTURL). For example: http://*myoamserver/host:port*/oam/server/logout.
   - Use the `end_url` constructed in process 2 as the query string.
   - Preserve all other query string parameters in the query string.

Guidelines for the end_url parameter in logout.html

The `end_url` parameter can be either a URI or an URL.

- If the `end_url` query string is a URI, without host and port, then the logout.html must construct the URL by determining the host and port of the Web Server where logout.html is hosted. For example:

  http://myoamserverhost:port/oam/server/logout?end_url=http://my
  `.site.com/welcome.html`

- If the `end_url` parameter is a URL with the host and port, the logout.html script simply passes that on without reconstructing it.

Note: An ADF application must pass the `end_url` parameter indicating where to redirect the user after logout, as described in Section A.3, "Configuring Centralized Logout for Oracle ADF-Coded Applications."

/<app context root>/adfAuthentication?logout=true&end_url=*<any uri>*

Table 25–5 illustrates how a logout link in the logout.html file might be specified:

Table 25–5 Sample end_url Parameter Specifications

As a ...	Sample end_url Value

URI	`/oamsso/logout.html?end_url=<someUri>`
	
	For example:
	`/oamsso/logout.html?end_url=/welcome.html`

URL	`/oamsso/logout.html?end_url=<someUrl>`
	
	For example:
	`/oamsso/logout.html?end_url=http://my.site.com/welcome.html`

25.8.3 Configuring Centralized Logout for 10g WebGates with Access Manager

The following procedures describe how to configure centralized logout for 10g WebGates with Access Manager.

> **Note:** Optional tasks or those required for only multiple DNS domain logout are identified and can be skipped unless needed.

Oracle Fusion Middleware Application Security Guide includes a sample procedure that includes steps for deploying an application in a WebLogic Server domain.

Task overview: Configuring centralized logout for 10g WebGates

1. Create a default logout page (logout.html) and make it available on the WebGate installation directory:
   a. Create and edit logout.html for the WebGate based on Example 25–1, "logout.html Script".
   b. Store your logout.html script in the following directory path:

      `WebGate_install_dir/oamsso/logout.html`

      > **Note:** If the logout.html file is located elsewhere, ensure that the logout link is correctly specified in the agent registration to point to the correct location of the logout.html file.

   c. Proceed with following steps, as needed.
2. Ensure that the logout.html (from Step 1) redirects the user to this central logout URI, "/oam/server/logout' on the 11g OAM Server.
3. **Optional**: Allow the application to pass the end_url parameter indicating where to redirect the user after logout, as described in "Guidelines for the end_url parameter in logout.html" in Section 25.8.2.
4. Check the Web server file for which the 10g WebGate is configured and perform the appropriate step:
   - OHS Web server, httpd.conf file: If the following lines exist, delete them:

     ```
     <LocationMatch "/oamsso/*">
     ```

```
Satisfy any
</LocationMatch>
```

- Other Web servers, configuration file: Add the following line:

```
Alias /oamsso "WebGateInstallationDirectory/oamsso"
```

25.9 Removing a 10g WebGate from the Access Manager 11g Deployment

Use the following procedure to remove the 10g WebGate from the Access Manager 11g deployment, if needed.

> **Note:** Deleting an agent registration does not remove the associated host identifier, Application Domain, resources, or the agent instance.

Considerations

Web Server Configuration Changes: Web server configuration changes must be manually reverted after uninstalling the WebGate). For more information about what is added, see the appropriate chapter for your Web server.

WebGate IIS Filters: To fully remove a WebGate and related filters from IIS, you must do more than simply remove the filters from the list in IIS. IIS retains all of its settings in a metabase file. On Windows 2000 and later, this is an XML file that can be modified by hand.

Prerequisites

Evaluate the Application Domain, resources, and policies associated with this agent and ensure that these are configured to use another agent or that they can be removed.

To uninstall the 10g WebGate

1. Turn off the Web server for the WebGate you will remove.

> **Note:** If you don't turn off the Web server, uninstall might fail and the backup folder will not be removed. If this happens, you need to manually remove the backup folder.

2. On the WebGate registration page in the Oracle Access Management Console, click the Disable box beside the State option to disable the WebGate.
3. **Language Packs**: Remove installed Language Packs (except the one selected as the default Administrator language (locale)) as follows:
   - Locate the appropriate Language Pack file in the component's uninstall directory. For example:

     WebGate_install_dir\uninstIdentityLP_fr-fr
     \uninstaller.exe

   - Run the Language Pack Uninstaller program to remove the files.
   - Repeat this process to remove the same Language Pack from associated components.
   - Stop and restart WebGate Web server to re-initialize proper language support.

- Repeat this process to remove each Language Pack (except the one selected as the default Administrator language (locale)).

4. Perform the following steps to remove 10g WebGate configuration data:
   - If you have only one instance of an Access Manager component, complete step 4 to remove it.
   - If you have multiple instances of a component, see also step 5.
5. Locate and run the Uninstaller program for the specific component to remove Access Manager files. For example:

   WebGate_install_dir\access_uninstWebGate\uninstaller.exe

   Note: On UNIX systems, use uninstaller.bin

6. **Multiple Instances**: If you have multiple WebGate instances and want to remove one or all of them, you must use a specific method for your platform:
   - **Windows**: The last component can be uninstalled from Add/Remove programs. Others can be uninstalled by running the uninstall program from the \access \uninstComponent directory.
   - **UNIX**: You must always run uninstaller.bin.
7. Remove Access Manager-related updates to your Web server configuration. For details about specific Web servers, see Chapter 26, "Configuring Apache, OHS, IHS for 10g WebGates," Chapter 27, "Configuring the ISA Server for 10g WebGates," Chapter 28, "Configuring the IIS Web Server for 10g WebGates,", and Chapter 29, "Configuring Lotus Domino Web Servers for 10g WebGates."
8. Restart the Web server.
9. Remove the *WebGate_install_dir* directory if it remains, especially if you plan to reinstall it.

26

Configuring Apache, OHS, IHS for 10g WebGates

Oracle provides Webgates for Web servers powered by Apache v2. This includes Apache, Oracle HTTP Server, and IBM HTTP Server (IHS).

This chapter provides details about configuring the three Web server types, and includes:

26.1 Prerequisites

Ensure that your Oracle Access Management Console is running and get familiar with:

- "Introduction to Policy Enforcement Agents" on page 15-1
- "About Installing Fresh 10g WebGates to Use With Access Manager 11.1.2" on page 25-3

26.2 About Oracle HTTP Server and Access Manager

Access Manager Web component package names for Oracle HTTP Server are designated with OHS, as follows:

- Oracle HTTP Server 11g is based on Apache v2.2; package names include OHS11g, for example:

Oracle_Access_Manager10_1_4_3_0_ *platform*_OHS11g_Webgate

- Oracle HTTP Server 10*g* R2 (10.1.2) and 10g (10.1.3.1.0) provide packages based on Apache v1.3 and Apache v2.0:

  Apache v2.0-based packages include OHS2, for example:
  Oracle_Access_Manager10_1_4_3_0_*platform*_OHS2_Webgate

  Apache v1.3-based packages include OHS, for example:
  Oracle_Access_Manager10_1_4_3_0_*platform*_OHS_Webgate

The following Oracle HTTP Server releases operate with Access Manager:

Oracle HTTP Server 11g: Access Manager Webgates Oracle HTTP Server 11g can be used like Webgates for any other Web server. In addition, this Webgate for Oracle HTTP Server 11g is a key component when configuring enterprise-level single sign-on for Oracle Fusion Middleware 11g. For details, see the *Oracle Fusion Middleware Security Guide*. See also the *Oracle Fusion Middleware Administrator's Guide for HTTP Server 11g Release 1 (11.1.1).*

Oracle HTTP Server 10g (10.1.3.1.0): Provides two packages (one based on Apache v1.3 and another based on Apache v2.0). Webgates can be installed on a standalone Oracle HTTP Server. OHS2 Webgate must be installed on the Oracle Application Server to enable integration with Oracle single sign-on. During installation, the Webgate is installed as a module on OHS2.

Be sure to familiarize yourself with Oracle HTTP Server Web component requirements, as described in "Preparing Your Web Server" on page 26-7.

26.3 About Access Manager with Apache and IHS v2 Webgates

Access Manager provides components for Apache v2 Web servers and the IBM HTTP Server in addition to the Oracle HTTP Server. The IBM HTTP Server (IHS2) is a variation of Apache v2. Unless otherwise stated, the following information applies to all three:

- Apache v2.0.5.2 Webgate
- Apache v2.0.48 Webgate, including reverse proxy if you choose to activate this capability.
- Apache v2.0.47 Webgate for the IBM HTTP Server (IHS2) powered by Apache, including reverse proxy if you choose to activate this capability.

Note: For the latest Access Manager certification information, see:

http://www.oracle.com/technology/products/id_mgmt/coreid_acc/pdf/oracle_access_manager_certification_10.1.4_r3_matrix.xls

---

Each platform-specific installation package supports both plain and SSL-capable Apache modes. The number 2 in a file name indicates that this component is based on Apache v2. For example:

AIX: Oracle_Access_Manager10_1_4_3_0_power-aix_IHS2_Webgate

Linux: Oracle_Access_Manager10_1_4_3_0_ linux_Apache2_Webgate

Solaris: Oracle_Access_Manager10_1_4_3_0_sparc-s2_Apache2_Webgate

Windows: Oracle_Access_Manager10_1_4_3_0_Win32_APACHE2_Webgate

Earlier Access Manager releases included separate platform-specific installation packages for plain versus SSL-capable modes. For example, two Webgate files were provided for each platform: the APACHE_Webgate, and the APACHESSL_Webgate.

There have been no functional changes to Access Manager components to support these Web servers. Access Manager authentication occurs through the Webgate using HTTP basic, form, or SSL client certificates. Authorization for Web resources by authenticated users, and simple and multi-domain SSO with other Web servers or applications, also occurs through the Webgate.

26.3.1 About the Apache HTTP Server

The Apache HTTP Server is an open-source HTTP Web server project of the Apache Software Foundation. The project goal is to provide a secure, efficient and extensible server and HTTP services that meet current HTTP standards.

For more information, see "About Apache v2 Architecture and Access Manager" on page 26-4.

26.3.2 About the IBM HTTP Server

The IBM HTTP Server (IHS) is a variation of Apache v2. Portions of the IBM HTTP Server are based on software developed by The Apache Group. The IBM HTTP Server component also includes software developed by the OpenSSL Project and software developed by Eric Young.

Details about the Apache architecture and Access Manager, discussed in "About Apache v2 Architecture and Access Manager" on page 26-4 apply to IHS with the following exceptions:

- Previous versions of IHS required a separate IDS Client to use the mod_ibm_ldap module. With IHS powered by Apache v2.0.47, this is not a requirement.
- IHS v2.0.47 supports FIPS 140-2. FIPS support is disabled by default. To enable FIPS support, just add the SSLFIPSEnable directive to the httpd.conf file. Similarly, use SSLFIPSDisable directive to disable FIPS support.
- On AIX, ensure that the appropriate runtime library is installed before you install IHS v2.0.47.

For example on AIX 5.1, the xlC.rte 6.0 runtime library (for example: xlC.rte.6.0.0.0) must be installed before you install IHS v2.0.47. This library is required on AIX to install and use SSL with IHS v2. You can download this library from the following Web site:

```
http://www-912.ibm.com/eserver/support/fixes/fcgui.jsp
```

26.3.3 About the Apache and IBM HTTP Reverse Proxy Server

Typically, a reverse proxy is used in the following situations:

- To provide Internet users with access to a server behind a firewall
- To balance the load among several back-end servers, or to provide caching for a slower back-end server
- To bring several servers into the same URL space

The proxy_module implements a proxy/gateway for Apache and IHS powered by Apache. The client requires no special configuration; a reverse proxy appears like an

ordinary Web server. The client makes requests as usual for content in the name-space of the reverse proxy. It is the reverse proxy that decides where those requests are sent. Content is returned as if the reverse proxy was the origin.

> **Important:** The proxy_module can be used to implement a proxy capability for FTP, CONNECT (for SSL), HTTP/0.9, HTTP/1.0, and HTTP/1.1. However, only the reverse proxy capability is supported with the Webgate.

For more information, see "Requirements for Apache v2 Web Servers" on page 26-6.

26.4 About Apache v2 Architecture and Access Manager

The Apache v2 Web server provides a hybrid multi-threaded, multi-process architecture that is compatible with the thread-safe Access Manager libraries.

> **Important:** Unless explicitly stated otherwise, all details in this discussion apply equally to Apache v2 and IHS v2 Web Servers for 10g Webgates.

In addition to the standard set of modules, the Apache v2 Web server includes Multi-Process Modules (MPMs) to bind network ports on the computer and to accept and process requests. The appropriate MPM must be compiled into the server and activated before you install an Apache or IHS v2 Webgate:

- **On Windows**: mpm_winnt is the default MPM on Windows platforms. mpm_winnt can use native networking features rather than the POSIX layer used in Apache 1.3.
- **On UNIX**: The prefork MPM is the default MPM for Apache v2 Web servers on UNIX platforms. The prefork MPM implements a non-threaded, pre-forking Web server that handles requests in a manner similar to Apache v1.3.

  > **Note:** If you compile Apache on UNIX with the mpm_worker_ module for Webgate, you need to optimize the default pthread stacksize for Webgate to ensure optimal performance during multithreaded server implementation as described in "Apache v2 on UNIX with the mpm_worker_module for Webgate" on page E-31.

- **On AIX**: The worker MPM is the default MPM for IHS v2 on the AIX platform. The worker MPM implements a hybrid multi-process, multi-threaded server. The most important directives used to control this MPM are ThreadsPerChild and MaxClients. For details, see "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27.

The Apache v2 Web server includes an Apache Portable Runtime (APR) library that provides an interface to platform-specific implementations, assures API developers predictable if not identical behavior regardless of platform, and eliminates the need for conditional compilation #lfdefs. Although backward compatibility is supported with the include/apu_compat.h file, using the Apache v2 APR is recommended.

For more information, see your Apache v2 documentation. See also, "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27.

The Apache architecture affects Access Manager components in different ways, as discussed in the following sections.

For Webgates installed with IHS and Apache v2

- There is no shared cache between processes.
- Each process maintains its own connections to the Access Server. Therefore, you should limit the number of Webgate connections. This issue is partially affected by the performance of the systems running the Web servers and Access Servers.

> **Note:** Webgates for Apache v2 (and derivatives) can be used in installations that contain Webgates for other Web servers.
>
> If you compile Apache on UNIX with the mpm_worker_module for Webgate, you need to optimize the default pthread stacksize for Webgate to ensure optimal performance during multithreaded server implementation as described in "Apache v2 on UNIX with the mpm_worker_module for Webgate" on page E-31.

Limitations of Apache and IHS v2 Web Servers

Due to limitations of the Apache v2 Web server, plug-ins configured for the Access Manager form-based authentication scheme do not pass variables when:

- The optional challenge parameter, passthrough:Yes, is included in the authentication scheme to pass login credentials through to a post-processing program.
- The form action is a CGI script that dumps all headers and variables passed to it and the method is called using the HTTP POST method.

For example:

```
<html>
<form name="myloginform" action="/access/...cgi" method="post">
```

26.5 Requirements for Oracle HTTP Server, IHS, Apache v2 Web Servers

Access Manager HTML pages use UTF-8 encoding. Apache-based Web servers, including Apache, Oracle HTTP Server, and IBM HTTP Server (IHS) allow Administrators to specify a default character set for all HTML pages sent out using the `AddDefaultCharset` directive. This directive overrides any character specified by the application generating the HTML pages. If the `AddDefaultCharset` directive enables a character set other than UTF-8, Access Manager HTML pages are garbled.

Oracle recommends that you specify the `AddDefaultCharset` directive in the Web server configuration file (httpd.conf) as follows to ensure the correct display of Access Manager HTML pages:

```
AddDefaultCharset Off
```

See your Web server documentation for more information about this directive.

The following topics provide additional details you should be aware of:

- Requirements for IHS2 Web Servers
- Requirements for Apache and IHS v2 Reverse Proxy Servers

- Requirements for Apache v2 Web Servers

26.5.1 Requirements for IHS2 Web Servers

This discussion identifies specific requirements for IHS v2 with Access Manager. With IHS v2, you do not compile any source code to get the binaries. However, the following requirements do apply to IHS v2 Web servers:

- For an SSL capable configuration on AIX, the xLC.rte.6.0 runtime library is required.
- For an SSL capable configuration, the GSKit7 is required and can be downloaded from `https://techsupport.services.ibm.com/server/aix.fdc`.

26.5.2 Requirements for Apache and IHS v2 Reverse Proxy Servers

As discussed earlier, the proxy_module implements a proxy/gateway. The client requires no special configuration. Although the proxy_module can be used to implement a proxy capability for FTP, CONNECT (for SSL), HTTP/0.9, HTTP/1.0, and HTTP/1.1, only the reverse proxy capability is supported with certain Access Manager Apache and IHS v2 Webgates.

For Apache Web Servers: To use reverse proxy functions with Access Manager, you need to include the proxy module in the configure command. For example:

--enable-proxy: Apache proxy module

--enable-proxy-connect: Apache proxy CONNECT module

--enable-proxy-ftp: Apache proxy FTP module

--enable-proxy-http: Apache proxy HTTP module

You also need to load mod_proxy and the mod_proxy_http module into the server dynamically. A reverse proxy is activated using the ProxyPass directive or the [P] flag to the RewriteRule directive.

For IHS Web Servers: After installing the IHS Web server, reverse proxy configurations must be completed in the httpd.conf file in the following directory:

IHS_install_dir/conf directory

For more information, see "Activating Reverse Proxy for Apache v2 and IHS v2" on page 26-19.

26.5.3 Requirements for Apache v2 Web Servers

This discussion identifies specific requirements for Apache v2 with Access Manager. Additional information can be found in your Apache documentation:

PATH Variable: On UNIX systems, your PATH variable must contain the gcc location before you compile Apache v2. However, the Sun C compiler location must not be in your PATH variable. On Windows systems, Apache can be built using either command-line tools or the Visual Studio IDE Workbench. The command-line build requires that the environment reflect the PATH, INCLUDE, LIB and other variables that can be configured with the vcvars32 batch file.

Multi-Process Module (MPM): With Apache v2, a default MPM is provided for each platform to bind network ports on the computer and to accept and process requests. Apache must have one, and only one, MPM in use at any time. If no MPM is selected during compilation, the default will be loaded into the Web server. You may activate the MPM during compilation.

mod_ssl: Access Manager supports Apache with or without SSL-capable communication. The base Apache Web server does not use SSL for browser connections and will not respond to HTTPS requests. For SSL-capable communication, Access Manager supports Apache with mod_ssl only. No SSL-specific Access Manager features operate with Apache-SSL.

mod_ssl relies on OpenSSL to provide the cryptography engine; mod_ssl provides an interface to the OpenSSL library. The OpenSSL library provides Strong Encryption using the Secure Sockets Layer and Transport Layer Security protocols.

With previous versions of Apache, the mod_ssl module had to be downloaded separately and compiled into the server. With Apache HTTP Server v2 module, mod_ssl comes as a loadable module that you can enable during configuration.

Multi-threading: Multi-threading is required for installations with Apache v1.3.27 or later.

Dynamic Shared Object (DSO): DSO support is required for Webgate. Apache modules that extend basic core server functionality may be either statically compiled for permanent inclusion in the Apache binary, or dynamically compiled and stored separately to load at runtime without recompiling. With Apache v1.3, mod_so had to be compiled. With Apache v2 on Windows systems, mod_so is a Base module and always included. With Apache v2 on UNIX, the loaded code typically comes from shared object files.

Note: Dynamically loaded Apache 1.3 modules cannot be used directly with Apache v2. Apache v1.3 modules must be modified to load dynamically or compile into Apache v2.

---

mod_perl: mod_perl embeds the Perl programming language in the Apache Web server. Without Perl, Apache v2 can still be built and installed; however, some support scripts written in Perl cannot be used.

Note: With Apache v.1.3.2x, some operating systems required additional options during configuration. However, to build Apache v2, there is no need to set any additional variables.

26.6 Preparing Your Web Server

The methods and steps to prepare your host computer for the Access Manager Web component installation depends upon the specific Web server and platform, as discussed in the following task overview.

To use reverse proxy functions with Access Manager, you need to include the proxy module in the configure command, as discussed in "About the Apache and IBM HTTP Reverse Proxy Server" on page 26-3. See also "Activating Reverse Proxy for Apache v2 and IHS v2" on page 26-19.

Task overview: Preparing your Web server and installing Access Manager

1. Install the IHS v2 Web server or compile and install the Apache v2 Web server as discussed in:
   - Preparing the IHS v2 Web Server
   - Preparing Apache and Oracle HTTP Server Web Servers on Linux

- Preparing Oracle HTTP Server Web Servers on Linux and Windows Platforms
- Setting Oracle HTTP Server Client Certificates
- Preparing the Apache v2 Web Server on UNIX
- Preparing the Apache v2 SSL Web Server on AIX
- Preparing the Apache v2 Web Server on Windows

2. Activate reverse proxy capability if desired, as described in "Activating Reverse Proxy for Apache v2 and IHS v2" on page 26-19.
3. Install Oracle Access Management, as described in Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
4. Finish Web server configuration, as described in "Verifying httpd.conf Updates for Webgates" on page 26-22.
5. Refer to the following topics as needed:
   - "Tuning Oracle HTTP Server Webgates for Access Manager" on page 26-25
   - "Tuning OHS /Apache Prefork and Worker MPM Modules for OAM" on page 26-25
   - "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27

Note: In all the procedures that follow, path name variables, modules, and options are examples provided only to illustrate the steps. Your environment will vary. Refer to your Web server documentation for additional details.

26.6.1 Preparing the IHS v2 Web Server

To prepare your IHS v2 Web server to accept and use the Webgate for IHS v2, you need to complete one or more of the following procedures, depending on your environment and requirements:

- Preparing the Host for IHS v2 Installation
- Installing the IBM HTTP Server v2
- Setting Up SSL-Capability
- Starting a Secure Virtual Host
- Activating Reverse Proxy for Apache v2 and IHS v2

When you have completed the appropriate procedures, you are ready to install the Webgate for IHS v2.

26.6.1.1 Preparing the Host for IHS v2 Installation

You need to complete this procedure to set up the host computer before you install the IHS Web server. For additional information, see "Requirements for IHS2 Web Servers" on page 26-6 and "Requirements for Apache v2 Web Servers" on page 26-6.

This example illustrates installation on AIX 5.1. Your environment may vary.

To prepare for IHS v2 installation

1. On the host computer, download and install the IBM Developer Kit, Java Technology Edition version 1.4 from the following site:

http://www.ibm.com/java/jdk

The IBM Developer Kit ships with the WebSphere Application Server or can be downloaded from this site.

2. On the host computer, download and install the xlC.rte 6.0 runtime for AIX 5.1, which is required by the GSKit7 runtime executable from the following site:

   https://techsupport.services.ibm.com/server/aix.fdc

3. On the host computer, create a new directory in which you will uncompress the IBM HTTP Server install image.
4. On the host computer, download the IBM HTTP Server install image from the following Web site:

   http://www-306.ibm.com/software/webservers/httpservers/

5. On the host computer, uncompress the install image in your new directory.

   For example:

   ```
   tar -xf IHS.tar
   ```

   A listing of the following files appears, based on your operating system:

   ```
   gskit.sh
   setup.jar
   gskta.rte (a GSKit runtime executable for AIX)
   ```

   You are ready to begin the installation, as described next.

6. Proceed to "Installing the IBM HTTP Server v2" on page 26-9.

26.6.1.2 Installing the IBM HTTP Server v2

The procedure that follows walks you through a typical IBM HTTP Web server installation. Alternatively, you may choose to perform a silent installation. In this case, you use silent.res file with the `java -jar setup.jar` -silent -options silent.res command. You can customize silent install options by editing the silent.res text file. All options are set to true by default. To disable an option, set its value to false.

To install the IBM HTTP Web server powered by Apache v2

1. Set your path to point to the Java Technology Edition version 1.4 installed on your computer in the previous example. For example:

   ```
   export PATH=$PATH:/usr/java14/java/bin
   ```

2. From to the directory where you uncompress the install image, type the following command:

   ```
   java -jar setup.jar
   ```

3. Choose the language in which to run the installation.

   The Welcome to the InstallShield Wizard for the IBM HTTP Server appears.

4. Click Next to dismiss the Welcome screen.
5. Specify the directory name. For example:

   ```
   AIX: /usr/IBMIHS/
   ```

6. Click Next to continue.

   Options appear for a typical, custom, or developer installation. When you choose a typical installation, a list will appear with everything included and the size of the image. If you choose a custom installation, a list of components appears and you can clear the box next to the any components you do not want to install.

7. Select the type of installation you would like to perform, then click Next. For example:

   ```
   Typical
   ```

   The following message appears. You can click Cancel to stop the installation.

   ```
   Installing IBM HTTP Server. Please wait.
   ```

   The next message also appears. You can click Cancel to stop the inventory update.

   ```
   Updating the inventory.
   ```

8. Click Finish to complete your installation.

9. Stop then start the IHS server using the apachectl commands, as follows:

   For example:

   ```
   IHS2_install_dir/bin
   ./apachectl stop
   ./apachectl start
   ```

   where *IHS2_install_dir* is the directory where you installed the IHS v2 Web server.

You may configure the IHS v2 Web server in several modes either before or after installing the Webgate for IHS v2:

- Setting Up SSL-Capability
- Starting a Secure Virtual Host
- Activating Reverse Proxy for Apache v2 and IHS v2

26.6.1.3 Setting Up SSL-Capability

If you need to setup SSL-capability, use the following procedure either before or after installing the Webgate for IHS v2.

To setup SSL for IHS v2 using the default configuration file

1. Locate and open the following file:

   IHS2_install_dir/conf/httpd.conf

2. Specify the SSLEnable directive to enable SSL.

3. Specify a Keyfile directive and any SSL directives you want to enable.

4. Stop then start the IHS server, as follows. For example:

   ```
   IHS2_install_dir/bin
   ./apachectl stop
   ./apachectl start
   ```

   where *IHS2_install_dir* is the directory where you installed the IHS v2 Web server.

5. Continue with the following procedures:

   - Starting a Secure Virtual Host

- Activating Reverse Proxy for Apache v2 and IHS v2

26.6.1.4 Starting a Secure Virtual Host

If you need to start a secure virtual host, use the following procedure either before or after installing the Webgate for IHS v2.

To start an IHS v2 secure virtual host

1. Locate and open the following file:

   ```
   IHS2_install_dir/conf/httpd.conf
   ```

   where *IHS2_install_dir* is the directory where you installed the IHS v2 Web server.

2. Specify the SSLEnable directive in the virtual host stanza of the configuration file, to enable SSL for a virtual host.

   You can specify any directive, with the exception of the cache directives, inside a virtual host.

3. Specify a Keyfile directive and any SSL directives you want to enable for that particular virtual host.

4. Load the mod_ibm_ssl.so using the LoadModule directive in the conf file.

5. Stop then start the IHS virtual host, as follows. For example:

   ```
   IHS2_install_dir/bin
   ./apachectl stop
   ./apachectl start
   ```

   Note: The start and stop instructions for an SSL implementation are the same as non-SSL-capable implementations.

6. Continue with Activating Reverse Proxy for Apache v2 and IHS v2.

26.6.2 Preparing Apache and Oracle HTTP Server Web Servers on Linux

When installing Webgates for Apache or Oracle HTTP Server on Linux, you are prompted to install as the same user under which the Web server is running. See the User and Group directive entries in the httpd.conf file.

When installing Access Manager Webgates for vendor-bundled Apache v2 on Red Hat Enterprise Linux 4, ensure that all Webgates are installed for Web server user & group (default: apache). See also "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27.

Note: On Linux, Webgates for Oracle HTTP Server 11g use only NPTL; you cannot use the LinuxThreads library. In this case, do not set the environment variable LD_ASSUME_KERNEL to 2.4.19.

26.6.3 Preparing Oracle HTTP Server Web Servers on Linux and Windows Platforms

When using Webgates for Oracle HTTP Server v2 on Windows and Linux platforms, both the Perl module and the PHP module must be commented out in the httpd.conf.

Note: With Oracle HTTP Server 11g, there is no need to comment out any module for Webgates on any platform.

26.6.4 Setting Oracle HTTP Server Client Certificates

When using cert_decode and credential_mapping authentication modules, you must ensure that the Client Certificate authentication scheme works properly with SSL-enabled Oracle HTTP Server by adding `+EarlierEnvVars` and `+ExportCertData` to the existing SSL options in the Oracle HTTP Server Web server configuration file. For example:

credential_mapping:

```
obMappingBase="o=company,c=us",obMappingFilter=
"(&(objectclass=InetOrgPerson)(mail=%certSubject.E%))"
```

ssl.conf must include:

```
SSLOptions +StdEnvVars +ExportCertData +EarlierEnvVars
```

To add ssl options to Oracle HTTP Server

1. Locate and open the Oracle HTTP Server Web server configuration file with a text editor. For example:

   $ORACLE_INSTANCE/ohs/conf/ssl.conf

2. In the ssl.conf file, add the following information to existing SSL options. For example:

   ```
   SSLOptions +StdEnvVars +ExportCertData +EarlierEnvVars
   ```

3. Save the file and restart the Web server.

26.6.5 Preparing the Apache v2 Web Server on UNIX

This discussion provides an overview and steps to prepare the Apache v2 HTTP Web server for Access Manager on UNIX platforms, including Solaris, UNIX, Linux, and AIX. See also "Preparing the Apache v2 SSL Web Server on AIX" on page 26-16

Apache v2 can be configured, built, and installed plain or as SSL-capable. After downloading and extracting Apache source files, you use a script (configure script on UNIX and the makefile.win make script for Windows) to compile the source tree for your environment.

Note: Basic requirements are the same regardless of your platform. However, the remainder of this discussion and the procedures that follow focus on UNIX platforms. For more information, see also "Preparing the Apache v2 SSL Web Server on AIX" on page 26-16.

When you configure Apache v2 on UNIX platforms, you specify the installation directory path name using the `-prefix=` option with the `./configure` command. During configuration you enable the modules that are appropriate for your environment. For example, mod_so is included in the server automatically when dynamic modules are included in the compilation. However, you can ensure the server is capable of loading DSOs by including the `-enable-so` option with the configure

command. If you have multiple Perl interpreters installed, you can include the -with-perl option to ensure the correct interpreter is selected during configuration.

In the configure command, you can also include the options to enable mod_ssl, and to activate an MPM. After configuration, you can verify which MPM was chosen using `./httpd -l` to list every module that is compiled into the server.

When you finish configuring Apache, you build the various parts that form the Apache package using the make command then install the package under the installation directory you specified with the `-prefix=` option during configuration.

For steps and examples, see the following procedures and your Apache documentation:

- To prepare plain Apache v2 for UNIX
- To prepare SSL-capable Apache v2 on UNIX
- To prepare Apache v2 for Windows
- Activating Reverse Proxy for Apache v2 and IHS v2

In the procedures that follow, path name variables, modules, and options are examples provided only to illustrate the steps. Your environment will vary. Refer to your Web server documentation for additional details. There is no difference in the build procedure between Apache v2.0.48 and v2.0.52.

To prepare plain Apache v2 for UNIX

1. Confirm that your environment meets Apache requirements for the appropriate compiler and build tools, as described in Apache documentation located at:

   `http://httpd.apache.org/docs-2.0/install.html#requirements`

   Note: There are no known restrictions with regard to supported compiler versions for Apache v2 and Access Manager plug-ins. See the Apache documentation.

2. Download a complete, unmodified version of the Apache HTTP Server v2, as described in the Apache documentation. For example:

   `http://httpd.apache.org/download.cgi`

   Note: Be sure to download Perl, if needed.

3. Extract (uncompress, then untar) source files from the tarball, as described in the Apache documentation. For example:

   ```
   gzip -d httpd-2_0_48.tar.gz
   tar -xvf httpd-2_0_48.tar
   ```

   You can use the following step as an example of configuring the Apache source tree. If you compile Apache on UNIX with the mpm_worker_module for Webgate, see "Apache v2 on UNIX with the mpm_worker_module for Webgate" on page E-31.

> **Note:** To use reverse proxy functions with Access Manager, you need to include the proxy module in the configure command, as discussed in "About the Apache and IBM HTTP Reverse Proxy Server" on page 26-3.

4. Ensure that you have the correct version of GNU gcc libraries in the proper path to build the Apache source; gcc libraries should be in the PATH:

   ```
   export PATH=/usr/local/packages/gcc-3.4.6/bin:$PATH
   ```

5. Configure the Apache source tree and enable or activate the desired modules using details in the Apache documentation. For example:

   ```
   cd apache_source_dir
   ./configure --with-mpm=prefork --prefix=apache_install_dir --with-included-apr
   ./configure --with-mpm=worker --prefix=apache_install_dir --with-included-apr
   ```

   where *apache_source_dir* refers to the directory where you extracted Apache and *apache_install_dir* refers to the directory where you want to install Apache.

6. Compile the Apache package you configured using the make command. For example:

   ```
   make
   ```

7. Install the Apache package in the configured directory path that you specified earlier using the --prefix= option. For example:

   ```
   make install
   ```

8. Customize the installation using instructions in the Apache documentation.

   For example, you may need to tune the httpd.conf to set basic values for:

   ```
   ServerName
   User/owner of the WebServer
   Group
   ```

   > **Note:** To view the complete list of values, use the command: ./configure --help.

9. Stop then restart the Apache Web server to test the installation using commands in the *apache_install_dir*/bin directory. For example:

   ```
   ./apachect1 stop
   ./apachectl start
   ```

10. Continue with appropriate tasks for your environment, as follows:

    - To prepare SSL-capable Apache v2 on UNIX
    - Preparing the Apache v2 Web Server on UNIX
    - Activating Reverse Proxy for Apache v2 and IHS v2

The following procedure outlines how to prepare an SSL-capable Apache v2 Web server on UNIX. The Apache mod_ssl is loadable; however, this installation requires the Open Source toolkit for SSL/TLS. Again, be sure to download Perl, if needed. If AIX is the platform you are using, be sure to see "Preparing the Apache v2 SSL Web

Server on AIX" on page 26-16 for additional information.

To prepare SSL-capable Apache v2 on UNIX

1. Confirm that your environment meets Apache requirements for the appropriate compiler and build tools, as described in Apache documentation located at:

   http://httpd.apache.org/docs-2.0/install.html

2. Download a complete, unmodified version of the Apache HTTP Server v2 and Open Source, as described in the Apache documentation.

   http://httpd.apache.org/download.cgi
   http://www.openssl.org/

3. Extract (uncompress, then untar) source files from the tarballs, as described in the Apache documentation. For example:

   ```
   gzip -d httpd-2_0_48.tar.gz
   tar -xvf httpd-2_0_48.tar
   gzip -d openssl-0_9_6f.tar.gz
   tar -xvf openssl-0_9_6f.tar
   ```

4. Configure the OpenSSL source tree, as described in Apache documentation. For example:

   ```
   cd openssl_source_dir
   ./config -fPIC --prefix=openssl_install_dir
   ```

   where *openssl_source_dir* refers to the directory where you extracted OpenSSL and *openssl_install_dir* refers to the directory where you want to install the configured OpenSSL package.

5. Compile the OpenSSL package in the installation directory you configured using the make command with the --prefix= option. For example:

   ```
   make
   ```

6. Issue the make test command to complete any sanity testing of OpenSSL and check the correct version of the tools required. For example:

   ```
   make test
   ```

7. Install the OpenSSL package in the configured directory path that you specified earlier using the --prefix= option. For example:

   ```
   make install
   ```

8. Configure the Apache source tree and enable or activate desired modules, as described in your Apache documentation. For example:

   ```
   cd apache_source_dir ./configure --prefix=apache_install_dir
    --enable-so \ --with-mpm='prefork' --with-perl=perl_interpreter_path \
   --with-port=non_ssl_port --enable-ssl \ --with-ssl=openssl_install_dir
   ```

   where *apache_source_dir* refers to the directory where you extracted Apache; *apache_install_dir* refers to the directory where you want to install Apache; and *openssl_install_dir* refers to the directory where you installed the configured OpenSSL package.

9. Compile using the make command to build the Apache SSL-capable package in the installation directory you configured using the --prefix= option. For example:

```
make install
```

10. Install the Apache SSL-capable package in the configured directory path that you specified earlier using the --prefix= option. For example:

    ```
    make install
    ```

    You must explicitly make certificates for the Apache v2 server to enable SSL using the openssl tool located at *openssl_install_dir*/bin/. The make certificate command does not work with Apache v2.

11. Make certificates using the OpenSSL tool in the *openssl_install_dir*/bin directory, as described in your OpenSSL documentation and remember that "Common Name" is the fully qualified host name.

12. Customize the installation using instructions in the Apache documentation:

    - Tune the httpd.conf to set basic values for:

      ```
      ServerName
      User/owner of the WebServer
      `Group
      ```

    - Tune the ssl.conf to set basic values for:

      ```
      Listen 7000
      <VirtualHost _default_:7000>
      ServerName ps0733.persistent.co.in:7000
      SSLCertificateFile /home/qa/software/ws/apache/
      apache-2.0.48_ssl_7000/conf/ssl.crt/server.crt
      SSLCertificateKeyFile /home/qa/software/ws/apache/
      apache-2.0.48_ssl_7000/conf/ssl.key/server.key
      ```

13. Stop then restart the Apache Web server to test the installation using commands in the *apache_install_dir*/bin directory. For example:

    ```
    ./apachectl stop
    ./apachectl startssl
    ```

14. Continue with Activating Reverse Proxy for Apache v2 and IHS v2, if needed.

26.6.6 Preparing the Apache v2 SSL Web Server on AIX

While building the Apache v2 SSL Web server, the symbols from the OpenSSL Library libssl.a are exported into the httpd executable in Apache. The symbols needed by Access Manager from the OpenSSL library are:

- SSL_get_peer_certificate( )
- i2d_X509( )

During linking and binding on the AIX platform, any unused or unreferenced symbols are deleted. Therefore, the two symbols required by Access Manager are missing from the httpd executable.

You need to use openssl-0.9.7d to compile on AIX (openssl-0.9.7e does not compile on AIX). The rest of the steps are the same as on UNIXopenssl-0.9.7d.

Client Cert Authentication: If you are using Client Cert Authentication on the AIX platform, be sure to use AIX 5.2 Maintenance Level 4 with the following hot fix applied for dlsym problem on AIX:

http://www-1.ibm.com/support/docview.wss?uid=isg1IY63366

To prepare the AIX platform for Apache v2

1. Ensure that your AIX platform meets the system requirements for Access Manager.
2. See details in "Preparing the Apache v2 Web Server on UNIX" on page 26-12 and when building the Apache v2 Web server:
   - Use openssl-0.9.7d to compile the Web server for AIX.
   - Use the make command in the following manner:

     ```
     make MFLAGS=EXTRA_LDFLAGS='-Wl,-bE:OpenSSL_Symbols.exp'
     ```

where OpenSSL_Symbols.exp is the file containing the two required symbols. The symbol must be exported using the export file only, as shown.

Note: Do not export the symbol on AIX with the following methods: -bnog: To suppress garbage collection of symbols -bexpal: To export all symbols -uSymbolName: To export a particular symbol.

26.6.7 Preparing the Apache v2 Web Server on Windows

Following are some details about how installing and configuring Apache v2 on Windows differs from Apache v2 on UNIX. For more information, see your Apache documentation.

During Installation: Apache will configure files in the \conf subdirectory to reflect the chosen installation directory. If any configuration files in this directory already exist, a new copy of the corresponding file will be written with the extension .ORIG. For example, \conf\httpd.conf.ORIG.

After Installation: Apache is configured using the files in the \conf subdirectory. These are the same files used to configure the UNIX version. However, there are a few differences.

You must edit the configuration files in the \conf subdirectory to customize Apache for your environment. These files will be configured during the installation; Apache is ready to run from the installation directory, with the documents server from the subdirectory htdocs. There are many options you should set before starting to use Apache. For example, Apache listens on port 80 unless you change the Listen directive in the configuration files or install Apache only for the current user.

Multi-Threading: Apache for Windows is multi-threaded, which means that it does not use a separate process for each request as Apache does on UNIX. Instead there are usually only two Apache processes running: a parent process, and a child which handles the requests. Within the child process each request is handled by a separate thread.

UNIX-Style Names: Apache uses UNIX-style names internally. The directives that accept filenames as arguments must use Windows filenames instead of UNIX filenames. However, you must use forward slashes, not back slashes. Drive letters may be used. However, if a drive letter is omitted, the drive with the Apache executable is assumed.

LoadModule Directive: Apache for Windows includes the ability to load modules at runtime without recompiling the server. If Apache is compiled normally, it will install a number of optional modules in the \Apache2\modules directory. To activate these or other modules, you must use the LoadModule directive. For example, to activate

the status module, use the following (in addition to the status-activating directives in access.conf):

```
LoadModule status_module modules/mod_status.so
```

On UNIX, the loaded code typically comes from shared object files (.so extension), on Windows this may be either the .so or .dll extension.

Process Management Directives: These directives are also different for Apache on Windows.

Error Logging: During Apache startup, any errors are logged into the Windows event log, which provides a backup to the error.log file. For more information, see your Apache documentation.

Apache Service Monitor: Apache comes with an Apache Service Monitor utility. With it you can see and manage the state of all installed Apache services on any computer on your network. To manage an Apache service with the monitor, you must first install the service. Apache may be run as a service on Windows. For details, see your Apache documentation.

Starting, Restarting, Shutting Down: Running Apache as a service is the recommended method. An Apache service is typically started, restarted, and shut down using the Apache Service Monitor and commands like NET START Apache2 and NET STOP Apache2. You may also use standard Windows service management.

You may work with Apache from the command line using the apache command. Apache will execute and remain running until it is stopped by pressing Control-C. You may also run Apache from the Start Menu during installation.

Note: Pressing Control-C may not allow Apache to end any current operations and clean up gracefully.

Apache Services Accounts: By default, all Apache services are registered to run as the system user (the LocalSystem account). The LocalSystem account has no network privileges through any Windows-secured mechanism. However, the LocalSystem account has wide privileges locally. For details about creating a separate account to run one or more Apache services, see your Apache documentation.

To prepare Apache v2 for Windows

1. Confirm that your environment meets Apache requirements, as described in Apache documentation located at:

   http://httpd.apache.org/docs-2.0/install.html

   For Windows installations a list of HTTP and FTP mirrors from which you can download Apache v2 is provided online.

   When you complete the next step, be sure to download the version of Apache for Windows with the .msi extension.

2. Download a complete, unmodified version of the Apache HTTP Server v2 (and OpenSSL), as described in the Apache documentation. For example:

   http://httpd.apache.org/download.cgi
   http://www.openssl.org/

3. Install Apache v2 (run the .msi file you downloaded and supply requested information), using your Apache documentation as a guide.

4. Locate the .default.conf file, verify new settings, then update your existing configuration file if needed.
5. Start Apache, either in a console window or as a service.
6. Launch a browser and enter the following URL to connect to the server and access the default page. For example:

   ```
   http://localhost/
   ```

   A welcome page and a link to the Apache manual should appear. If not, look in the error.log file in the logs subdirectory.

   Once your basic installation is working, you need to configure it properly by editing the files in the \conf subdirectory.
7. Configure the Apache installation for your environment, using the Apache documentation as a guide.
8. Test your customized environment.
9. Continue with Activating Reverse Proxy for Apache v2 and IHS v2, if needed.

26.7 Activating Reverse Proxy for Apache v2 and IHS v2

The Webgates for Apache v2 and IHS v2 powered by Apache support reverse proxy capability, if you choose to activate this capability. The procedures to implement reverse proxy capability differ, depending on your environment:

- To activate reverse proxy capability for Apache v2 Web servers
- To activate reverse proxy capability for IHS v2 Web servers

26.7.1 Activating Reverse Proxy For Apache v2 Web Servers

For reverse proxy functions with Access Manager, you need to include the Apache proxy module in the configure command for the Web server. You also need to load mod_proxy and the mod_proxy_http module into the server dynamically. A reverse proxy is activated using the ProxyPass directive or the [P] flag to the RewriteRule directive.

Reverse proxy capability is activated using the ProxyPass directive or the [P] flag to the RewriteRule directive. It is not necessary to turn ProxyRequests on to configure a reverse proxy. Access control is less critical when using a reverse proxy (ProxyPass directive with ProxyRequests Off), because clients can contact only the hosts that you have specifically configured. You can control access to your proxy using the <Proxy> control block.

To activate reverse proxy capability for Apache v2 Web servers

1. Review "About the Apache and IBM HTTP Reverse Proxy Server" on page 26-3.
2. Include the Apache proxy module in the configure command for the Web server, if needed.

   For example:

   ```
   --enable-proxy
   --enable-proxy-connect
   --enable-proxy-ftp
   --enable-proxy-http
   ```

   See the Apache documentation for more information.

3. Use the ProxyPass directive or the [P] flag to the RewriteRule directive to activate a reverse proxy, as follows:

```
Reverse Proxy
ProxyRequests Off
<Proxy *>
 Order deny,allow
 Allow from all
</Proxy>
ProxyPass /foo http://foo.example.com/bar
ProxyPassReverse /foo http://foo.example.com/bar
```

4. Control access to your proxy using the <Proxy> control block as follows:

```
<Proxy *>
 Order Deny,Allow
 Deny from all
 Allow from 192.168.0
</Proxy>
```

5. Perform steps in Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g", if you haven't yet done so.

26.7.2 Activating Reverse Proxy For IHS v2 Web Servers

Use the following procedure after installing the Web server.

To activate reverse proxy capability for IHS v2 Web servers

1. Review "About the Apache and IBM HTTP Reverse Proxy Server" on page 26-3
2. Install the IHS v2 Web server, as described in "Preparing the IHS v2 Web Server" on page 26-8.
3. Load the modules by including these lines (uncommented) in the Dynamic Shared Object section of the httpd.conf file in:

   IHS_install_dir/conf/httpd.conf

```
LoadModule access_module modules/mod_access.so
LoadModule auth_module modules/mod_auth.so
LoadModule auth_dbm_module modules/mod_auth_dbm.so
LoadModule include_module modules/mod_include.so
LoadModule log_config_module modules/mod_log_config.so
LoadModule env_module modules/mod_env.so
LoadModule unique_id_module modules/mod_unique_id.so
LoadModule setenvif_module modules/mod_setenvif.so
LoadModule proxy_module modules/mod_proxy.so
LoadModule proxy_connect_module modules/mod_proxy_connect.so
LoadModule proxy_ftp_module modules/mod_proxy_ftp.so
LoadModule proxy_http_module modules/mod_proxy_http.so
LoadModule mime_module modules/mod_mime.so
LoadModule dav_module modules/mod_dav.so
LoadModule autoindex_module modules/mod_autoindex.so
LoadModule asis_module modules/mod_asis.so
LoadModule info_module modules/mod_info.so
LoadModule cgid_module modules/mod_cgid.so
LoadModule dav_fs_module modules/mod_dav_fs.so
LoadModule vhost_alias_module modules/mod_vhost_alias.so
LoadModule dir_module modules/mod_dir.so
LoadModule imap_module modules/mod_imap.so
LoadModule actions_module modules/mod_actions.so
```

```
LoadModule userdir_module modules/mod_userdir.so
LoadModule alias_module modules/mod_alias.so
LoadModule rewrite_module modules/mod_rewrite.so
```

4. Directives Under the IfModule mod_proxy.c Tag--Use the information and the following examples to ensure that:

   - Allow or Deny conditions are appropriately commented.

     For example:

```
   <Proxy *>
      Order deny, allow
#    Deny from all
      Allow from all
#   Allow from .domain.com
</Proxy>
```

   - URLs to be protected are mentioned in both the ProxyPass and the ProxyPassReverse directives.

     For example:

```
<IfModule mod_proxy.c>
ProxyRequests Off
ProxyPass /testproxy http://bedford: 8809/testrev/
ProxyPassReverse /testproxy http://bedford: 8809/testrev/
ProxyPass /test2 http://bedford: 8809/testrev/
ProxyPassReverse /test2 http://bedford: 8809/testrev/
```

5. Restart the Web server after any modifications to the httpd.conf file.

6. **Testing**: To access the proxy URL, access `http://<proxy_host>:80/testproxy/`

   Note:

   While testing, make sure the URLs have a trailing forward slash. Sometimes resources cannot be accessed without the forward slash at the end.

7. Enabling SSL on Reverse Proxy Server: Use the documentation on the IHS default page.

   For example, sample SSL settings in the DSO section of the httpd.conf file load the ibm_ssl_module as:

```
LoadModule ibm_ssl_module modules/mod_ibm_ssl.so
```

8. Include the following directives in your httpd.conf file:

```
SSLEnable
   Keyfile /opt/IBMIHS/bin/key.kdb
   SSLClientAuth none
   SSLProxyEngine on
```

9. Restart server.

10. Access the Web server URL and confirm that the browser is presented with a certificate.

Note: You can switch back to open mode for the Web server simply by commenting out the preceding directives and restarting the server.

11. **key.kdb**: To generate the key.kdb, use the ikeyman utility (preferably in GUI mode) provided in the *IHS_install_dir*/bin directory.

Note: The ikeyman utility uses the gsk7bas utility. However, you need to apply fix pack PQ83048 on gsk7bas.

12. Perform the following steps:
    - Complete 10g Webgate installation with Access Manager 11g as described in Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g", if you haven't yet done so
    - Return to this chapter to perform remaining tasks in this chapter as needed.

26.8 Verifying httpd.conf Updates for Webgates

It is a good idea to complete the following procedures to ensure that the Apache or IHS v2 httpd.conf file includes Web server configuration updates for Access Manager. For details, see:

- Verifying Webgate Details
- Verifying Language Encoding

To update httpd.conf for reverse proxy on IHS Web servers, see "Activating Reverse Proxy For IHS v2 Web Servers" on page 26-20. To customize httpd.conf for your Web server, see your Web server documentation.

26.8.1 Verifying Webgate Details

The example that follows shows the Webgate section in the httpd.conf file. The details will vary, depending on your environment. This example is provided only to illustrate the type of changes you will see in httpd.conf.

To verify the Webgate section in httpd.conf

1. Locate the updated httpd.conf file on the computer hosting the Webgate.
2. Open the httpd.conf file and ensure that the section that loads the Webgate in your platform is present.

   For example:

   On Windows

```
#*** BEGIN Oblix NetPoint Webgate Specific ****
<IfModule mod_ssl.c>
LoadModule obWebgateModule "WebGate_install_
dir\access\oblix\apps\webgate\bin\webgatessl.d ll"
      WebGateInstalldir "WebGate_install_dir"
      WebGateMode PEER
      </IfModule>
<IfModule !mod_ssl.c>
LoadModule obWebgateModule "WebGate_install_
dir\access\oblix\apps\webgate\bin\webgate.dll"
```

```
      WebGateInstalldir "WebGate_install_dir"
      WebGateMode PEER
      </IfModule>
<Location "\oberr.cgi">
SetHandler obwebgateerr
      </Location>
      <LocationMatch "/*">
      AuthType Oblix
      require valid-user
      </LocationMatch>
#*** END Oblix NetPoint Webgate Specific ****
```

On UNIX

```
#*** BEGIN Oblix NetPoint Webgate Specific ****
LoadFile "/home/qa/netpoint/703/c1-copy/wg/access/oblix/lib/libgcc_s.so.1"
LoadFile "/home/qa/netpoint/703/c1-copy/wg/access/oblix/lib/libstdc++.so.5"
<IfModule mod_ssl.c>
   LoadModule obWebgateModule "/home/qa/netpoint/703/c1-copy/wg/access/oblix/
apps/webgate/bin/webgatessl.so"
</IfModule>
<IfModule !mod_ssl.c>
   LoadModule obWebgateModule "/home/qa/netpoint/703/c1-copy/wg/access/oblix/
apps/webgate/bin/webgate.so"
</IfModule>
WebGateInstalldir "/home/qa/netpoint/703/c1-copy/wg/access"
WebGateMode PEER
<Location /access/oblix/apps/webgate/bin/webgate.cgi>
SetHandler obwebgateerr
</Location>
<Location "/oberr.cgi">
SetHandler obwebgateerr
</Location>
<LocationMatch "/*">
AuthType Oblix
require valid-user
</LocationMatch>
#*** END Oblix NetPoint Webgate Specific ****
```

Notes for UNIX

When running Apache v2 on HP-UX, do not use nobody for User or Group, because shared memory may not work. Instead, use your login name as User Name with a group Group as "Oblix" (or "www" as User Name and "others" as Group Name). On HP-UX, "www" is equivalent to "nobody" on Solaris.

When running Apache v2 on HPUX 11.11, ensure that the AcceptMutex directive in the Apache httpd.conf file is set to "fcntl". If the directive is not present, add it to the httpd.conf file (AcceptMutex fcntl). For more information, see http://issues.apache.org/bugzilla/show_bug.cgi?id=22484).

Notes for IHS on AIX

```
#*** BEGIN Oblix NetPoint Webgate Specific ****
   LoadModule obWebgateModule DR/oblix/apps/webgate/bin/webgate.so
   WebGateInstalldir DR
   WebGateMode PEER
   <Location "/oberr.cgi">
      SetHandler obwebgateerr
   </Location>
```

```
   <LocationMatch "/*">
      AuthType Oblix
         require valid-user
   </LocationMatch>
#*** END Oblix NetPoint Webgate Specific ****
```

1. Use the chmod -r username:groupname directory/file to change the User Name and Group Name of a directory or a file.

   When you do this, you need to change the User and Group parameters in the httpd.conf file accordingly.

2. See "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27 for more information and complete any additional steps needed to finish the Access Manager implementation for Apache v2.

Important: You use the following procedure only if you need to clear the httpd.conf file of Webgate-related changes, then complete the Apache v2 Web server configuration for the Webgate anew.

To start httpd.conf updates anew

1. Restore the original httpd.conf file to remove any Access Manager entries that are present.
2. Update the httpd.conf file for Access Manager using one of the following methods:
   - **Either** open the file *component_install_dir*/access/oblix/lang/LangTag/docs/config.htm and perform a manual configuration, as described in Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g".
   - **Or** launch the ManageHttpConf program in *component_install_dir*/access/oblix/tools/setup/InstallTools/ManageHttpConf without any options to print instructions on its use.

Note: If the ManageHttpConf program is run with Webgate entries already present in the httpd.conf file, an error message will be printed and the httpd.conf file will not be updated.

---

3. Complete activities in "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27.

26.8.2 Verifying Language Encoding

As mentioned earlier, Access Manager HTML pages use UTF-8 encoding. Apache-based Web servers allow Administrators to specify a default character set for all HTML pages sent out using the `AddDefaultCharset` directive, which overrides any character specified by the application generating the HTML pages. If the `AddDefaultCharset` directive enables a character set other than UTF-8, Access Manager HTML pages are garbled.

To ensure proper language encoding

1. Open the httpd.conf file.
2. Locate the `AddDefaultCharset` directive.

3. Complete one of the following activities to ensure that proper encoding of Access Manager HTML pages:
   - Either set the `AddDefaultCharset` directive to Off.
   - Or Comment out the `AddDefaultCharset` directive.
4. Save the httpd.conf file and restart the Web server.

26.9 Tuning Oracle HTTP Server Webgates for Access Manager

After installing the Access Manager Web component for Oracle HTTP Server, you need to complete the steps that follow.

As mentioned earlier, before installing Webgates for Oracle HTTP Server, in the httpd.conf file you must change the user and group to match the user that is installing the component.

> **Note:** On Linux, Webgates for Oracle HTTP Server 11g use only NPTL; you cannot use the LinuxThreads library. In this case, do not set the environment variable LD_ASSUME_KERNEL to 2.4.19.

To tune Oracle HTTP Server for Webgates

1. Shut down opmn, as you usually do.
2. Locate and open the opmn.xml file for editing. For example:

   $ORACLE_HOME/opmn/bin/opmn.xml

3. In the opmn.xml file, adjust items as follows:

```
<ias-component id="HTTP_Server">
<process-type id="HTTP_Server" module-id="OHS2">
         <environment>
                <variable id="TMP" value="/tmp"/>
                <variable id="LD_ASSUME_KERNEL" value="2.4.19"/>
         </environment>
          <module-data>
            <category id="start-parameters">
              <data id="start-mode" value="ssl-disabled"/>
            </category>
          </module-data>
          <process-set id="HTTP_Server" numprocs="1"/>
        </process-type>
      </ias-component>
```

4. Refresh the OPMN configuration by executing the following script:

```
#ORACLE_HOME/opmn/bin/opmnctl reload
```

5. Start the Oracle HTTP Server Web server, as described in "Starting and Stopping Oracle HTTP Server Web Servers"

26.10 Tuning OHS /Apache Prefork and Worker MPM Modules for OAM

Oracle recommends specific tuning parameters with Webgates for these Web servers.

The tuning parameters described in this section are configured in the httpd.conf file with Apache v2.0 and OHS11g.

For Apache v2.2, however, tuning is configured in the following files:

apache_install_dir/conf/extra/httpd-mpm.conf

apache_install_dir/conf/extra/httpd-default.conf

Also for Apache v2.2, the entries for httpd-mpm.conf and httpd-default.conf should be uncommented, as follows:

From:

```
#Include conf/extra/httpd-mpm.conf
#Include conf/extra/httpd-default.conf
```

To:

```
Include conf/extra/httpd-mpm.conf
Include conf/extra/httpd-default.conf
```

Use the following topics as needed for your environment:

- Tuning Oracle HTTP Server /Apache Prefork MPM Module
- Tuning Oracle HTTP Server /Apache Worker MPM Module
- Tuning Kernel Parameters

26.10.1 Tuning Oracle HTTP Server /Apache Prefork MPM Module

Oracle recommends the following as broad guidelines when using Access Manager with either the Oracle HTTP Server or Apache Prefork MPM module:

Timeout 300

KeepAlive On

MaxKeepAliveRequests 500

KeepAliveTimeout 10

StartServers: 5 (Initial number of processes to start; used only on startup.)

MaxClients: 500 (Total number of processes to handle load at peak time. Determines how many child processes will be created to handle requests at peak period.

ServerLimit: 500 (The maximum configured value for MaxClients for the lifetime of the process. If MaxClients is set to a value higher than the default, ServerLimit value should be specified above the rest of the parameters.

MinSpareServers, MaxSpareServers: Default values should suffice requirements to handle a heavy load. During operation, these values regulate how the parent process creates children to serve requests.

MaxRequestsPerChild: 0 - Number of requests sent to each child process. 0 indicates the process never expires/dies

26.10.2 Tuning Oracle HTTP Server /Apache Worker MPM Module

Oracle recommends the following as broad guidelines when using Access Manager with either the Oracle HTTP Server or the Apache Worker MPM module:

Timeout 300

KeepAlive On

MaxKeepAliveRequests 500

KeepAliveTimeout 10

StartServers: 2 (Initial number of processes to start; used only on startup.)

MaxClients: 500 (Total number of processes to handle load at peak time. Determines how many child processes will be created to handle requests at peak period.

ServerLimit: 25 (The maximum configured value for MaxClients for the lifetime of the process. If MaxClients is set to a value higher than the default, ServerLimit value should be specified above the rest of the parameters.

MinSpareServers, MaxSpareServers: 25, 75. During operation, these values regulate how the parent process creates children to serve requests.

ThreadsPerChild: 25 (The number of worker threads in single httpd process.)

MaxRequestsPerChild: 0 (This directive sets the limit on the number of requests that an individual child server process will handle. The value 0 will ensure that the process never expires.)

26.10.3 Tuning Kernel Parameters

Oracle recommends that you ensure the kernel parameters for the soft and hard limit on the file descriptors are set to a high value. For example:

Hard limit (rlim_fd_max): 65535

Soft limit (rlim_fd_cur): 65535

The high value of the file descriptor is a strong recommendation for the Apache server that will open and close sockets for requests.

26.11 Starting and Stopping Oracle HTTP Server Web Servers

Starting and stopping an Oracle HTTP Server Web server is the same procedure for both v1.3 and v2, on all platforms.

To start the Oracle HTTP Server Web server

1. Locate and change to the following directory:

   $ORACLE_HOME\opmn\bin\

2. From the command line, enter the following command:

   ```
   opmnctl/startproc process-type=HTTP_Server
   ```

To stop the Oracle HTTP Server Web server

1. Locate and change to the following directory:

   $ORACLE_HOME\opmn\bin\

2. From the command line, enter the following command:

   ```
   opmnctl/stopproc process-type=HTTP_Server
   ```

26.12 Tuning Apache/IHS v2 Webgates for Access Manager

Unless explicitly stated, information here applies to both Apache and IHS v2 Webgate (also known as plug-ins). For details about Oracle HTTP Server, see the *Oracle HTTP Server Administrator's Guide 10 g R2 (10.1.2)*.

Apache v2 bundled with Security-Enhanced Linux: With SELinux, errors could be reported in WebServer logs/console when starting a Web server on Linux distributions that have more strict SELinux policies in place after installing an Access Manager Webgate. You can avoid these errors by running appropriate `chcon` commands for the installed Web component before restarting the Web server.

See Also: "SELinux Issues" on page E-24

Apache v2 bundled SELinux-enabled Linux Distribution: Security-enhanced Linux (SELinux) is an automatically enabled implementation of a mandatory access-control mechanism. As described in your Linux documentation, SELinux policies provide access to certain pre-defined system directories such as /etc/httpd/conf, /usr/sbin/apachect, and /var/log/ (to name a few) for system daemons.

When Webgates are installed with the bundled Apache Web server, certain policies must be added to allow Apache processes to access installation files.

The bundled Apache Web server runs as user "apache" with a security context defined as `context=user_u:system_r:unconfined_t`. As a result, when Webgates are installed in any of the user folders, the Apache Web server will not start.

The $SELINUX_SRC variable represents the SELinux policy source directory. The default value is /etc/selinux/targeted/src/policy. However, your environment may vary. Be sure to consult your system Administrator for the actual value for your system.

To add Access Manager policies to Apache bundled with Red Hat Enterprise Linux 4

1. After installing each Access Manager Webgate, log in as the 'root' user.
2. Ensure that all Webgates are installed for Web server user & group (default: apache).
3. Create an oracle_access_manager.te policy file in the *$SELINUX_SRC*/domains/programs/directory and add the following rules:

```
type oracle_access_manager_t, file_type, sysadmfile;
allow httpd_t oracle_access_manager_t:file { rw_file_perms create rename
link unlink setattr execute };
allow httpd_t oracle_access_manager_t:dir  { rw_dir_perms create append
rename link unlink setattr };
```

4. Create an oracle_access_manager.fc file context in the directory *$SELINUX_SRC*/file_contexts/program, then register the Webgate installation directory (without identity or access suffix). For example:

```
Oracle_Access_Manager_install_dir(/.*)? system_u:object_r:oracle_access_
manager_t
```

> **Note:** When the Webgate is installed in a separate directory from the Access Manager, be sure to register the Webgate installation directory separately.

5. Compile and deploy the policy files as follows:

```
cd $SELINUX_SRC
make load
Label Oracle Access Manager files
```

```
run restorecon -R Oracle_Access_Manager_install_dir (without the identity or
access suffix)
```

Apache v2 Directives: Apache 1.3 uses a process model for serving multiple HTTP requests at once. This differs from the single process (thread) model employed by other Web servers, which manage several requests simultaneously in one process.

> **Note:** Only the prefork MPM in Apache v2 uses the same process model for serving HTTP requests as Apache v1.3. For all other MPMs, Apache v2 uses a hybrid process-thread model.

Several directives in the Apache v2 Web server configuration file (httpd.conf) affect how the Apache Web server decides to create or destroy worker processes. The following parameters affect the performance of the Apache v2 Web server:

- **ThreadsPerChild**: This directive sets the number of threads created by each child process. The child creates these threads at startup and never creates more.
  - If you are using an MPM like mpm_winnt, where there is only one child process, this number should be high enough to handle the entire load of the server.
  - If you are using an MPM like mpm_worker, where there are multiple child processes, the total number of threads should be high enough to handle the common load on the server.
- **MinSpareThreads**: This value is only used with mpm_worker. Since Access Manager plug-in initialization is deferred until the first request, there is minimal advantage of keeping high value for this directive. However, it is useful to keep this parameter as high as possible.
- **MaxSpareThreads**: This value is only used with mpm_worker. The value for MaxSpareThreads must be greater than or equal to the sum of MinSpareThreads and ThreadsPerChild or the Apache HTTP Server automatically corrects it.

  Recommendation: Keep the value high. For a dedicated server this will not be a problem.
- **MaxSpareServers**: With Apache v2, this is used only with the prefork MPM model. To preserve as much state as possible in the server, set the MaxSpareServers to a high value. Setting this value to the maximum of 255 keeps all Apache worker-processes available indefinitely, but it does not provide an opportunity for worker-process recycling during low-load periods.
- **MinSpareServers**: With Apache v2, this is used only with the prefork MPM model. Since Access Manager plug-in initialization is deferred until the first request, using a high value for the MinSpareServers parameter provides minimal advantage. However, it is useful to keep this parameter as high as possible. For dedicated Web server systems, this should pose no great burden.
- **MaxClients**: With IHS v2 and the worker MPM, MaxClients restricts the total number of threads that will be available to serve clients. For hybrid MPMs, the default value is 16 (ServerLimit) multiplied by a value of 25 (ThreadsPerChild). To increase MaxClients to a value that requires more than 16 processes, you must also raise ServerLimit.

Appropriate values for the preceding parameters depend on the expected load and the performance class of the systems involved, including the Access Server and LDAP server.

Apache servers on very high performance systems with high expected loads may be recompiled with a larger limit on the number of worker processes. These systems may see a greater performance impact on the StartServers and MinSpareServers parameters for dealing with sudden load spikes.

You may need to adjust operating system limits for the Access Server for proper operation. In particular, the maximum number of file descriptors available for any one Access Server may need to be increased beyond the default value. Configuring more than one connection between each Apache-based Webgate and an Access Server may quickly exceed this limit.

For additional information, see your Apache documentation.

26.13 Removing Web Server Configuration Changes After Uninstall

Web server configuration changes that occur during installation must be manually removed after uninstalling the Webgate). This type of information must be removed manually.

Further, you must remove any changes that you manually made to your Web server configuration file for the Webgate) should be removed. For more information about what is added for each component, look elsewhere in this chapter.

26.14 Helpful Information

Consult the following manual for more information about the Oracle HTTP Server:

Oracle HTTP Server Administrator's Guide 10 g R2 (10.1.2)

The following URLs provide information about building an Apache release and source code:

Apache v2 documentation:

http://httpd.apache.org/docs-2.0/

Apache v2 source code:

http://httpd.apache.org/download.cgi

Mod-SSL documentation:

http://httpd.apache.org/docs-2.0/mod/mod_ssl.html

OpenSSL documentation:

http://www.openssl.org/docs/

OpenSSL source code:

http://www.openssl.org/source/

Compiling and Installing Apache v2:

http://httpd.apache.org/docs-2.0/install.html#test

IHS:

http://www-306.ibm.com/software/webservers/httpservers/doc/v2047/manual/readme.html

27

Configuring the ISA Server for 10g WebGates

This chapter describes how to configure the Access Manager ISAPI Webgate and Microsoft Internet Security and Acceleration Server (ISA Server) to operate together. Topics include:

27.1 Prerequisites

Ensure that your Oracle Access Management Console is running and get familiar with:

- "Introduction to Policy Enforcement Agents" on page 15-1
- "About Access Manager and the ISA Server" on page 27-1

27.2 About Access Manager and the ISA Server

The ISA Server is Microsoft's "integrated edge security gateway". It is designed to protect IT environments from Internet-based threats and to give users secure remote access to applications and data.

Webgate is the Access Manager Web server plug-in access client that intercepts HTTP requests for Web resources and forwards them to the Access Server for authentication and authorization. ISAPI is the Internet Web server extension that Access Manager uses to identify Webgates that communicate with the ISA Server (and the IIS Web Server).

This Webgate has been tested to operate with the ISA Server in scenarios that use both Access Manager Basic and Form (form-based) authentication schemes. You develop Basic and Form authentication schemes and policy domains using Access Manager as usual.

Note: Access Manager Client Certificate authentication is not supported for the ISA Server.

See Also: Oracle Fusion Middleware Administrator's Guide for Oracle Access Management for more information about authentication management and policy domains.

Using ISA Server with Access Manager is similar to using the IIS Web server. However, the ISA Server provides firewall and Virtual Private Network (VPN) functions.

ISA Server can be configured for third-party security filters. To enforce Access Manager security during authentication and authorization when you use ISA Server, both webgate.dll and postgate.dll must be registered as ISA Server Web filters. Every request to the Access Server that passes through ISA Server requires webgate.dll and postgate.dll.

The following overview outlines the tasks that you must perform and the topics where you will find the steps to set up the ISAPI Webgate with the ISA Server.

Task overview: Installing and configuring the ISAPI Webgate on ISA Server

1. Confirming "Compatibility and Platform Support" on page 27-2
2. "Installing and Configuring Webgate for the ISA Server" on page 27-2.
3. "Configuring the ISA Server for the ISAPI Webgate" on page 27-3.
4. Perform the following tasks, as described in:
   a. "Ordering the ISAPI Filters" on page 27-6
   b. "Removing Access Manager Filters Before Webgate Uninstall on ISA Server" on page 27-7

27.3 Compatibility and Platform Support

Get the latest certification matrix from Oracle Technology Network at the following URL:

http://www.oracle.com/technology/products/id_mgmt/coreid_acc/pdf/oracle_access_manager_certification_10.1.4_r3_matrix.xls

27.4 Installing and Configuring Webgate for the ISA Server

After ISA Server installation, you perform the following tasks to install Webgate for use with ISA Server.

See Also: "Compatibility and Platform Support" on page 27-2

Task overview: Performing Webgate configuration for ISA Server includes

1. "Installing Webgate with ISA Server" on page 27-2
2. "Changing /access Directory Permissions" on page 27-3
3. "Registering Access Manager Plug-ins as ISA Server Web Filters" on page 27-3

27.4.1 Installing Webgate with ISA Server

When you install Webgate with the ISA Server, the destination for the ISAPI Webgate installation (also known as the *Webgate_install_dir*) should be same as that of the

Microsoft ISA Server. For example, if ISA Server is installed on C:\Program Files\Microsoft ISA Server, the ISAPI Webgate should also be installed there.

> **Note:** During Webgate installation, do not automatically update the ISA Server configuration. Instead, choose "No" when asked about automatic updates to the ISA Server configuration.

Task overview: Installing the ISAPI Webgate for the ISA Server

1. See Chapter 25 for details on the following topic, as these apply to your environment:
   - Registering a 10g WebGate with Access Manager 11g Remotely
   - Locating and Installing the Latest 10g WebGate for Access Manager 11g
   - Configuring Centralized Logout for 10g WebGate with 11g OAM Servers
2. Changing /access Directory Permissions on page 27-3

27.4.2 Changing /access Directory Permissions

After finishing ISAPI Webgate installation and configuration for the ISA Server, you need to change permissions to the \access subdirectory. This subdirectory was created in the ISA Server (also Webgate) installation directory. You need to add the user NETWORK SERVICE and grant full control to NETWORK ADMINISTRATOR.

This enables the ISA Server to establish a connection between the Webgate and Access Server. Certain configuration files should be readable by network Administrators, which is why you grant NETWORK ADMINISTRATOR full control.

To change permissions for the \access subdirectory

1. In the file system, right-click *Webgate_install_dir*\access, and select **Properties**.
2. In the Properties window, click the **Security** tab.
3. Add user "NETWORK SERVICE" and then select "Allow" to give "**Full Control**".
4. For the "NETWORK ADMINISTRATOR", select "**Full Control**".

27.5 Configuring the ISA Server for the ISAPI Webgate

The following topics describe how to configure the ISA Server to operate with the Access Manager ISAPI Webgate.

Task overview: Performing Webgate configuration for ISA Server includes

1. "Registering Access Manager Plug-ins as ISA Server Web Filters" on page 27-3
2. "Configuring ISA Firewall Policies for ISA Web Filters" on page 27-4

27.5.1 Registering Access Manager Plug-ins as ISA Server Web Filters

After resetting ISAPI Webgate permissions, you need to register Access Manager webgate.dll and postgate.dll plug-ins as Web Filters within ISA Server. Web filters screen all HTTP traffic that passes through the ISA Server host. Only compliant requests are allowed to pass through.

Access Manager authentication schemes define how the user is challenged for credentials, maps user-supplied information, verifies it, and so forth. With the ISA

Server, you must choose either Form or Basic authentication as the challenge method. You must also specify a Challenge Parameter to map the credentials provided by the user to the corresponding user profile stored in the directory server.

Note: If Access Manager libraries are not registered as ISA Web filters, Access Manager authentication could fail. Do not point to webgate.dll in the action path for form-based login in the authentication scheme. Instead, specify the path to a dummy file in the /access directory as shown here:

```
action= "/access/dummy"
```

For form based authentication, postgate.dll must be installed and should be at a higher level than webgate.dll.

The following procedure describes how to register Access Manager plug-ins in the ISA Server.

Note: If you need to undo the filter registration, you can use the following procedure with the `/u` option in the `regsvr32` command. For example: `regsvr32 /u ISA_install_dir\access\oblix\apps\webgate\bin\webgate.dll`

To register Access Manager plug-ins as ISA Server Web filters

1. Locate the ISA Server installation directory, from which you will perform the following tasks.
2. Run `net stop fwsrv` to stop the ISA Server.
3. Register the webgate.dll as an ISAPI Web filter by running `regsvr32 ISA_install_dir\access\oblix\apps\webgate\bin\webgate.dll`.
4. Register the postgate.dll as an ISAPI Web filter by running `regsvr32 ISA_install_dir\access\oblix\apps\webgate\bin\postgate.dll`.
5. Restart the ISA Server by running `net start fwsrv` to restart the ISA Server.
6. Proceed to "Configuring ISA Firewall Policies for ISA Web Filters".

27.5.2 Configuring ISA Firewall Policies for ISA Web Filters

To authenticate users, ISA Server must be able to communicate with the authentication servers. After registering Access Manager webgate.dll and postgate.dll as ISA Web filters, you must configure the ISA Firewall Policy rule to protect resources using these Web filters.

Web publishing rules essentially map incoming requests to the appropriate Web servers. Access rules determine how clients on a source network access resources on a destination network. ISA Firewall Policy rules require client membership in a user set: either Firewall clients, authenticated Web clients, or virtual private network (VPN) clients. The ISA Server attempts to match authenticated users based upon ISA Firewall Policy rules.

See Also: Your ISA Server documentation for details about ISA Firewall Policies and rules

The following procedure describes how to configure an ISA Firewall Policy rule to use with ISA Web filters for Access Manager webgate.dll and postgate.dll.

> **Note:** After you perform the following procedure, when you create a listener in the authentication click Allow client authentication over HTTP in Advanced Properties.

To configure ISA policies to enable Access Manager authentication and authorization

1. From the Start menu, click **All Programs**, click **Microsoft ISA Server**, and then click **ISA Server Management**.
2. From the tree of the ISA Server Management console, locate the name of this server, and then click **Firewall Policy**.
3. From the Tasks tab, click **Publish Web Sites**.
4. In the **Web publishing rule** name field, type a descriptive name for the rule, and then click **Next**.
5. On the Select Rule Action page, confirm that the Allow option is selected, and then click **Next**.
6. In the **Publishing type**, confirm that the **Publish a single Web site or load balancer** option is selected, and then click **Next**.
7. On the Server Connection Security page, click **Use non-secured connections to connect the published Web server or server farm**, and then click **Next**.

> **Note:** If you are using secured connections, see the server connection security settings provided by ISA Server.

8. Perform the following steps to set internal publishing details:
   a. In the **Internal site name** box, type the internally-accessible name of the Web server.
   b. Check the **Use a computer name or IP address to connect to the published server** check box.
   c. Type the internally-accessible and fully qualified domain name, or type the IP address of the Web server computer, in the **Computer name or IP address** box
   d. Click **Next**.
9. In the **Public name** box, type the publicly-accessible domain name of the Web server computer, and then click **Next**.
10. To publish a particular folder in the Web site:
    a. Type the folder name in the **Path (optional)** box to display the full path of the published Web site in the Web site box.
    b. Click **Next**.
11. In the **Accept requests for** list:
    a. Click **This domain name (type below)**.
    b. In the Public name box, type the publicly-accessible fully qualified domain name of the Web site.

c. Click **Next**.

12. In the **Web listener** list, either click the **Web listener** to use for this Web publishing rule; otherwise or create a new Web listener, as follows:

    a. Click **New**, type a descriptive name for the new Web listener, and then click Next.

    b. Click **Do not require SSL secured connections with clients**, and then click **Next**.

    c. In the **Listen for requests from these networks** list, click the required networks and click to check the **External** box, then click **Next**.

    d. In the **Select how clients will provide credentials to ISA Server** list, click **No Authentication**, and then click **Next**.

    e. On the Single Sign On Settings page, click **Next**, and then click **Finish**.

13. **Authentication Delegation**: Perform the following steps in the **Select the method used by ISA Server to authenticate to the published Web server** list:

    a. Click **No Delegation**.

    b. Click **Client Cannot Authenticate Directly**.

    c. Click **Next**.

    This is used by ISA Server to authenticate to the published Web server.

14. On the User Sets page:

    a. Choose **All** (the default user setting) to set the rule that applies to requests from the user sets box.

    b. Click **Next** and then click **Finish**.

15. Click **Apply** to update the firewall policy, and then click **OK**.

16. Validate that only applicable ports are open and that the traffic that you would like to pass through is allowed.

27.5.3 Ordering the ISAPI Filters

It is important to ensure that the Webgate ISAPI filters are included in the right order. postgate.dll should be loaded before webgate.dll.

To order the Webgate ISAPI filters for ISA Server

1. From the Start menu, click All Programs, click Microsoft ISA Server, and then click ISA Server Management.
2. Expand Configuration, then check Add-ins to display your Web-filters.
3. Right-click the Web-filters and select Properties.
4. Confirm the following .dll files appear.

   For example:

   postgate.dll
   webgate.dll

5. Add any missing filters, if needed, then select a filter name and use the up and down arrows to arrange the filter order as shown in step 5.

WARNING: Confirm that there is only one webgate.dll and one postgate.dll filter and ensure that these are in an enabled state. Also, ensure that postgate.dll is installed at higher priority level than webgate.dll.

27.6 Starting, Stopping, and Restarting the ISA Server

When instructed to restart your ISA Server during Access Manager Web component installation or setup, be sure to follow any instructions that appear on the screen. Also, consider using `net stop fwsrv` and `net start fwsrv` are good ways to stop and start the ISA Server. The `net` commands help to ensure that the Metabase does not become corrupted following an installation.

For more information, see your ISA Server documentation.

27.7 Removing Access Manager Filters Before Webgate Uninstall on ISA Server

If you plan to uninstall the Webgate that is configured to operate with the ISA Server, you must first unregister the Access Manager filters manually, and then uninstall Webgate.

See Also: Chapter 25 for details about uninstalling 10g Webgates

To unregister filters before Webgate uninstall

1. Stop the ISA Server.
2. Run the following command to unregister webgate.dll. For example:

   ```
   regsvr32 /u ISA_install_dir\access\oblix\apps\webgate\bin\webgate.dll
   ```

3. Run the following command to unregister postgate.dll. For example:

   ```
   regsvr32 /u ISA_install_dir\access\oblix\apps\webgate\bin\postgate.dll
   ```

28

Configuring the IIS Web Server for 10g WebGates

This chapter summarizes activities that you need to perform to configure 10.1.4 Webgate with a Microsoft Internet Information Server (IIS Web server for Windows environments). Unless explicitly stated, information and steps in this chapter apply equally to 32-bit and 64-bit Webgate installations. Topics include:

28.1 Prerequisites

Ensure that your Oracle Access Management Console is running and get familiar with:

- Introduction to Policy Enforcement Agents on page 15-1
- About Installing Fresh 10g WebGates to Use With Access Manager 11.1.2 on page 25-3

28.2 Webgate Guidelines for IIS Web Servers

ISAPI is an Internet Web server extension that the Webgate that communicates with the IIS Web server. For example, you will need the following package to install the Webgates for IIS:

Oracle_Access_Manager10_1_4_3_0_Win32_*ISAPI*_Webgate

64-bit Webgate: Oracle_Access_Manager10_1_4_3_0_Win64_ISAPI_Webgate.exe

Updating the IIS Web server configuration file is required when installing Webgates. With IIS Web servers, a configuration update involves updating the Web server directly by adding the ISAPI filter and creating extensions required by Access Manager. A filter listens to all requests to the site on which it is installed. Filters can examine and modify both incoming and outgoing streams of data to enhance IIS functionality. ISAPI extensions are implemented as DLLs that are loaded into a process that is controlled by IIS. Like ASP and HTML pages, IIS uses the virtual location of the DLL file in the file system to map the ISAPI extension into the URL namespace that is served by IIS.

Oracle recommends that you update the IIS Web server configuration file automatically during Webgate installation. Automatic updates may take more than a minute. However, updating the IIS Web server configuration file manually takes longer and could introduce unintended errors.

For more specific guidelines, see:

- Guidelines for ISAPI Webgates
- Prerequisite for Installing Any 10g Webgate for IIS 7
- Prerequisite for Installing a 32-bit Webgate for IIS 7

28.2.1 Guidelines for ISAPI Webgates

General Webgate preparation and installation details apply to ISAPI Webgates. Additionally, this topic provides specific guidelines for ISAPI Webgates installed with an IIS Web server. You can install multiple Webgates with a single IIS Web server instance or you might have a 64-bit Webgate.

Note: Unless explicitly stated, details apply equally to 32-bit and 64-bit Webgates.

---

lockdown Mode: Before installing the Webgate, ensure that your IIS Web server is *not* in lockdown mode. Otherwise things will appear to be working until the server is rebooted and the metabase re-initialized, at which time IIS will disregard activity that occurred after the lockdown.

Permissions: Setting various permissions for the /access directory is required for IIS Webgates only when you are installing on a file system that supports NTFS. For example, suppose you install the ISAPI Webgate in Simple or Cert mode on a Windows 2000 computer running the FAT32 file system. The last installation panel provides instructions for manually setting various permissions that cannot be set on the FAT32 file system. In this case, these instructions may be ignored.

Virtual Hosts: Each IIS Virtual Web server can have it's own Webgate.dll file installed at the virtual level, or can have one Webgate affecting all sites installed at the site level. Either install the Webgate.dll at the site level to control all virtual hosts or install the Webgate.dll for one or all virtual hosts.

postgate.dll: You may also need to install the postgate.dll file at the computer level. The postgate.dll is located in the *Webgate_install_dir*, as described in "Installing the Postgate ISAPI Filter". If you perform multiple installations, multiple versions of this file may be created which may cause unusual Access Manager behavior. In this case, you should verify that only one webgate.dll and one postgate.dll exist.

Note: The postgate.dll is always installed at the site level. If for some reason the Webgate is reinstalled, the postgate.dll is also reinstalled. In this case, ensure that only one copy of the postgate.dll exists at the site level.

Updating Web Server Configuration for Webgate: As with other Webgates, your Web server must be configured to operate with the Webgate. Oracle recommends automatically updating your Web server configuration during installation. However, you can decline the automatic update and instead manually configure your Web server as described in "Registering a 10g WebGate with Access Manager 11g Remotely" on page 25-11.

FAT32 file system: You may receive special instructions to perform during Webgate installation. For example: Setting various permissions for the /access directory is required for IIS Webgates only when you are installing on a file system that supports NTFS. The last installation panel provides instructions for manually setting various permissions that cannot be set on the FAT32 file system. In this case, these instructions can be ignored.

SSL and Client Certificate Authentication: On IIS, if you are using client certificate authentication you must enable SSL on the IIS Web server hosting the Webgate before enabling client certificates for Webgate. You must also ensure that various filters are installed in a particular order. In addition, you may need to install the postgate.dll as an ISAPI filter.

Web Server Releases: Web server details in this chapter apply to the stated release. If the release is not stated, you can presume it is IIS v5. Details specific to IIS v6 or IIS v7 are identified.

See Also:

- Webgates for IIS v7 on page 28-4
- Webgates for IIS v6 on page 28-4

32-bit versus 64-bit Webgates: Unless explicitly stated, all information applies equally to both 32-bit and 64-bit Webgates.

See Also:

- Webgates for IIS v6 on page 28-4
- Finishing 64-bit Webgate Installation on page 28-24

General Webgate Preparation and Installation Details: Refer to this chapter for IIS-specific guidelines. Refer to Chapter 25 for general preparation and installation details.

Completing and Confirming Webgate Installation: Perform tasks relevant to your ISAPI Webgate and IIS version:

See Also:

- Completing Webgate Installation with IIS
- Finishing 64-bit Webgate Installation
- Confirming Webgate Installation on IIS

28.2.1.1 Webgates for IIS v7

General guidelines and Webgate installation are usually the same regardless of the IIS release for which you are installing a Webgate. However, there are several specific topics to review when you are installing one or more Webgates for IIS v7:

- Prerequisite for Installing Webgate for IIS 7 on page 28-5
- Updating IIS 7 Web Server Configuration on Windows 2008 on page 28-6
- Installing and Configuring Multiple 10g Webgates for a Single IIS 7 Instance on page 28-14

28.2.1.2 Webgates for IIS v6

General guidelines and Webgate installation are usually the same regardless of the IIS release for which you are installing a Webgate. However, there are several specific topics of interest.

Multiple Webgates with a Single IIS 6 Instance: IIS v6.0 supports hosting multiple Web sites on a single Web server instance and ISAPI Webgate allows you to protect each Web site with a different Webgate.

> **See Also:** Multiple Webgates with a Single IIS 6 Instance

64-bit IIS v6 Webgate: Perform installation as you do for all others, using instructions available in Chapter 25. If you choose manual Web server configuration during Webgate installation, you can access details in the following path:

Webgate_install_dir\access\oblix\lang\en-us\docs\dotnet_isapi.htm

Following Webgate installation and IIS configuration, perform tasks in "Finishing 64-bit Webgate Installation" on page 28-24.

Earlier Release Webgate Installations: Previously Oracle recommended that Webgate be installed in the same physical directory location as Policy Manager. This required a virtual directory named "access" for both Policy Manager and Webgate, which is mapped to the physical location of both Policy Manager and Webgate.

Note: You can install Webgate 10*g* (10.1.4.3) for IIS in any location, separate from that of Policy Manager.

If you have an earlier, combined Webgate and Policy Manager installation, you can de-couple the components using the following steps.

To de-couple an earlier Webgate/Policy Manager installation

1. Uninstall any patches applied to the earlier Webgate and Policy Manager, if any.
2. Uninstall the earlier Policy Manager and Webgate combination.
3. Install Policy Manager 10*g* (10.1.4.3).
4. In a separate directory location, install Webgate 10*g* (10.1.4.3)

28.2.1.3 Multiple Webgates with a Single IIS 6 Instance

Unless explicitly stated, details in this topic apply equally to 32-bit and 64-bit Webgates.

IIS v6.0 supports hosting multiple Web sites on a single Web server and ISAPI Webgate allows you to protect each Web site with a different Webgate.

Note: Previous ISAPI Webgate releases did not support multiple Webgates with a single IIS Web server instance. You either had to install one Webgate for all Web sites at the top level, or protect a single Web site by configuring Webgate at the Web site level.

IIS 6 provides application pools that are used to run virtual servers. You can think of an application pool as a group of one or more URLs that are served by a worker process or a set of worker processes. An application pool is a configuration that links one or more applications to a set of one or more worker processes. Because applications in this pool are separated from other applications by worker process boundaries, an application in one application pool is not affected by problems caused by applications in other application pools. Today, Webgate instances can run in different process spaces.

When you have multiple Web sites on a single IIS v6.0 Web server instance, you need to ensure that user requests reach the correct Web site. To do this, you need to configure a unique identity for each site on the server using at least one of three unique identifiers:

- Host header name
- IP address
- TCP port number

Note: If you have multiple Web sites on a single server and these are distinguished by IP address and port, multiple Webgates are not required. Starting with release 10.1.4.2.0 virtual hosts on Apache and IIS 6.0 are supported. As a result, a single Webgate on the top level can protect all the Web sites even if the IP addresses are different. This is handled by using different Host Identifiers for each Web site.

You can install multiple Webgates on different Web sites of the same IIS Web server instance. However, several manual steps are required.

See Also: "Installing and Configuring Multiple Webgates for a Single IIS 6 Instance" on page 28-19

28.3 Prerequisite for Installing Webgate for IIS 7

This section provides prerequisites for installing Webgates with IIS v7 Web servers. It includes the following topics:

28.3.1 Prerequisite for Installing Any 10g Webgate for IIS 7

The following procedure applies to 32-bit and 64-bit Webgates equally.

With Webgate for IIS v7 Web Server, you can use Form-based authentication without enabling pass through functionality only when the **`<add segment="bin"/>`** entry is not present in the applicationHost.config file. For example, if you have access/oblix/apps/webgate/bin/webgate.dll as an action in the Form-based authentication scheme, ensure that the **`<add segment="bin"/>`** entry is not present in

the applicationHost.config file. If the entry is present, you must remove it, as described next

To locate and remove the `<add segment="bin"/>` entry

1. Go to Windows\System32\inetsrv\config and open the applicationHost.config file.
2. Search for the `<hiddenSegments>` module.
3. Remove the entry **`<add segment="bin"/>`** if it is present.
4. Save the file.

28.3.2 Prerequisite for Installing a 32-bit Webgate for IIS 7

The following procedure applies to 32-bit Webgates only.

The following procedure provides steps to configure a 32-bit Webgate for IIS 7 Web Server to use either Simple or Cert transport security mode. This configuration requires that the IIS 6 Management Compatibility module be installed.

To add the IIS 6 Management Compatibility module for a 32-bit Webgate for IIS 7 and Simple or Cert security

1. From the State menu, click Administrative Tools, and then click Server Manager.
2. In the Server Manager tree, expand Roles, and then click Web Server (IIS).
3. In the Web Server (IIS) pane, Role Services section, click Add Role Services.
4. On the Select Role Services page of the Add Role Services Wizard, click IIS6 Management Compatibility under Management Tools.
5. On the Confirm Installation Selections page, click Install.
6. On the Results page, click Close.

28.4 Updating IIS 7 Web Server Configuration on Windows 2008

You can display these steps when you decline automatic Web server updates during Webgate installation.

To display steps to configure IIS 7 Web server on Windows 2008 for ISAPI Webgates

1. When installing Webgate, click No when asked if you want the automatic Web server update and:
   a. Read information on a new screen to assist in manually setting up your Web server for the Webgate.
   b. Click the following item in the table that appears perform the steps that are displayed.

Table 28–1 IIS 7 Webgate Windows Server 2008

Supported Server OS	Microsoft IIS
Windows Server 2008	ISAPI
...	...

2. After performing steps to update the IIS 7 Web server on Windows 2008, return to the Webgate installation screen and click Next, as described in the chapter on Webgate installation.
3. Proceed with "Completing Webgate Installation with IIS".

28.5 Completing Webgate Installation with IIS

Unless explicitly stated, details in this topic apply equally to 32-bit and 64-bit Webgates.

See Also:

As needed, see:

- Finishing 64-bit Webgate Installation on page 28-24
- Installing and Configuring Multiple Webgates for a Single IIS 6 Instance on page 28-19

If you have IIS v7, Oracle recommends the following topics:

- Updating IIS 7 Web Server Configuration on Windows 2008 on page 28-6
- Installing and Configuring Multiple 10g Webgates for a Single IIS 7 Instance on page 28-14

Completing Webgate installation with an IIS Web server, includes the following activities after the installation is complete.

Task overview: Completing IIS Webgate installations includes

1. Enabling Client Certificate Authentication on the IIS Web Server on page 28-7
2. Ordering the ISAPI Filters on page 28-8
3. Enabling Pass-Through Functionality for POST Data on page 28-9
4. Protecting a Web Site When the Default Site is Not Setup on page 28-13

28.5.1 Enabling Client Certificate Authentication on the IIS Web Server

Unless explicitly stated, details in this topic apply equally to 32-bit and 64-bit Webgates.

If you are using client certificate authentication, you must enable SSL on the IIS Web server. If you select client certificate authentication during setup, you must also add the cert_authn.dll as one of the ISAPI filters.

Note: The procedures here reflect the sequence for IIS v5. Your environment might be different.

To enable SSL on the IIS Web server

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Information Services.
2. Expand the local computer to display your Web Sites.
3. Expand the Default Web Site (or the appropriate Web site), then expand \access\oblix\apps\webgate\bin.

4. Right click cert_authn.dll and select Properties.
5. In the Properties panel, select the File Security tab.
6. In the Secure Communications sub-panel, click Edit.
7. In the Client Certificate Authentication sub-panel, click Accept Certificates and click OK.
8. Click OK in the cert_authn.dll Properties panel.
9. Proceed to the next procedure: "To add cert_authn.dll as an ISAPI filter".

To add cert_authn.dll as an ISAPI filter

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Information Services.
2. Expand the local computer to display your Web Sites.
3. Right click the appropriate Web Site to display the Properties panel.
4. Click the ISAPI Filters tab, then click the Add button to display the Filter Properties panel.
5. Enter filter name "cert_authn".
6. Click the Browse button and navigate to the following directory:

   Webgate_install_dir\access\oblix\apps\webgate\bin
7. Select cert_authn.dll as the executable.
8. Click OK on the Filter Properties panel.
9. Click Apply on the ISAPI Filters panel.
10. Click OK.
11. Ensure the filters are listed in the correct order.

28.5.2 Ordering the ISAPI Filters

Unless explicitly stated, details in this topic apply equally to 32-bit and 64-bit Webgates.

It is important to ensure that the Webgate ISAPI filters are included in the right order.

Note: This task is the same whether you are installing one or more Webgates per IIS Web server instance.

To order the Webgate ISAPI filters

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Information Services.
2. Expand the local computer to display your Web Sites.
3. Right-click the Web Site and select Properties.
4. Click Properties, select ISAPI filters.
5. Confirm the following .dll files appear.

   For example:

cert_authn.dll
webgate.dll

6. Add any missing filters, if needed, then select a filter name and use the up and down arrows to arrange the filter order as shown in step 5.

> **WARNING:** **Confirm that there is only one webgate.dll and one postgate.dll filter. If you perform multiple Webgate installations on one computer, multiple versions of the postgate.dll file might be created and cause unusual Access Manager behavior.**

28.5.3 Enabling Pass-Through Functionality for POST Data

This section describes how the Webgate can be set up in conjunction with IIS 6.0 Worker Process Isolation Mode. It also covers configuration steps required for IIS 6.0 running in IIS 5.0 Isolation Mode.

> **Note:** This section supersedes information in "Installing Postgate.dll on IIS Web Servers" in the 10g Oracle Access Manager Installation Guide. For the IIS 5.0 Web server, the existing functionality using postgate.dll continues to be supported.

Topics here include:

- About ISAPI Webgate 10.1.4.2.3
- About Pass-Through Functionality for POST Data
- Implementing Pass-Through: IIS 6.0 in Worker Process Isolation Mode
- Implementing Pass-Through with IIS 6.0 Web Server in IIS 5.0 Isolation Mode

28.5.3.1 About ISAPI Webgate 10.1.4.2.3

Starting with ISAPI Webgate release 10.1.4.2.3, Access Manager pass-through functionality is supported with IIS 6.0 running in a Worker Process Isolation Mode. ISAPI Webgate 10.1.4.2.3 also operates with IIS 6.0 running in IIS 5.0 Isolation Mode using postgate.dll.

> **Note:** Oracle recommends using Worker Process Isolation Mode for new or existing implementations. Worker Process Isolation Mode is a default setting for the IIS 6.0 Web server. For the IIS 5.0 Web server, the existing functionality (using postgate.dll) continues to be supported.

This section describes how to set up ISAPI Webgate release 10.1.4.2.3 in conjunction with IIS 6.0 Worker Process Isolation Mode. It also provides configuration steps required for IIS 6.0 running in IIS 5.0 Isolation Mode. This section supersedes information in Section 19-6 (Installing Postgate.dll on IIS Web Servers) of the *Oracle Access Manager Installation Guide*.

28.5.3.2 About Pass-Through Functionality for POST Data

POST data is required for pass through during a form login on the IIS Web server when using the Webgate extension method (where the Webgate is the action of the form). In other words, if a form authentication scheme on the IIS Web server is

configured with the pass-through option, and the target of the login form requires the data posted by the form, the Webgate extension method (where the Webgate DLL is the action of the form) cannot be used. The Webgate filter method (where the action of the form is a protected URL that is not the Webgate DLL) must be used instead, and based on IIS version, the postgate.dll must be installed or configure webgate.dll as ISAPI extension.

IIS 6.0 in Worker Process Isolation Mode: webgate.dll must be configured as an ISAPI filter and also as an ISAPI extension to achieve pass-through functionality. (This does not apply to ISA server integration.) Pass-through functionality is supported with 10.1.4.2.3 and higher ISAPI Webgates. However, you must also set a new user-defined parameter `"UseWebGateExtForPassthrough"` to `true` in the Webgate configuration profile in the Access System Console.

IIS 5.0 or IIS6.0 running in IIS 5.0 Isolation Mode: postgate.dll must be configured as an ISAPI filter to achieve the pass-through functionality.

28.5.3.3 Implementing Pass-Through: IIS 6.0 in Worker Process Isolation Mode

The following steps outline this task.

Task overview: Implementing Pass-Through Functionality with IIS 6.0 Web Server in Worker Process Isolation Mode

1. Install Webgate as described in "Locating and Installing the Latest 10g WebGate for Access Manager 11g" on page 25-14.
2. Set the pass-through parameter as described in "Setting the UseWebGateExtForPassthrough Parameter in the Webgate Profile".
3. Configure webgate.dll as described in "Configuring webgate.dll as an ISAPI Extension".

28.5.3.3.1 Setting the UseWebGateExtForPassthrough Parameter in the Webgate Profile You must set the new user-defined parameter, `UseWebGateExtForPassthrough`, in the Webgate profile to implement pass-through functionality with the IIS 6.0 Web server in Worker Process Isolation Mode. You must set `UseWebGateExtForPassthrough` to `true`. If this parameter is set to `false`, pass-through functionality will not work.

> **See Also:** "IIS Web Server Issues" on page E-18

To set the UseWebGateExtForPassthrough Parameter in the Webgate Profile

1. Launch the Access System Console and click Access System Configuration.
2. Click AccessGate Configuration.
3. Enter your search criteria for the Webgate, and then click Go.
4. In the Search Results table, click a Webgate name.
5. At the bottom of the Details for AccessGate page, click Modify.
6. On the Modify AccessGate page, locate the User Defined Parameters section of the page, enter the following parameter, and value, and then click the Add button:

   Parameter: `UseWebGateExtForPassthrough`

   Value: `true`
7. Click the Add button if you want to add more user-defined parameters.
8. Save to save this new information.

9. Repeat for each Webgate in your deployment.
10. Proceed to "Configuring webgate.dll as an ISAPI Extension".

28.5.3.3.2 Configuring webgate.dll as an ISAPI Extension

The webgate.dll is part of the Webgate installation. The following procedure describes how to configure webgate.dll as an ISAPI extension. This task must also be performed to implement pass-through functionality with IIS 6.0 Web Server in Worker Process Isolation Mode.

> **Note:** You can have multiple webgate.dlls configured at different website levels from the top level Web Sites. In this case, you also need to configure webgate.dll as an ISAPI extension for each website protected by Webgate.

To configure webgate.dll as an ISAPI extension

1. Go to websites, right click, and select Properties.
2. In the Properties dialog box, select the Home Directory tab.
3. Click the Configurations button to open the Application Configurations dialog box.
4. In Wild Card Application Maps, click the Inset button.
5. Provide the path to webgate.dll. For example:

   ```
   Webgate_install_dir/access/oblix/apps/webgate/bin/webgate.dll
   ```

6. Uncheck the "verify that file exists" box.
7. Confirm and finalize the changes: click OK, then click OK again; click Apply, and then click OK.
8. Stop the IIS Administration Server from Services and restart the IIS Web server.

28.5.3.4 Implementing Pass-Through with IIS 6.0 Web Server in IIS 5.0 Isolation Mode

The following steps outline this task.

> **Note:** Skip this task if you are using IIS 6.0 Web server in Worker Process Isolation Mode.

Task overview: Implementing Pass-Through Functionality with IIS 6.0 Web Server in IIS 5.0 Isolation Mode

1. Install Webgate as described in the Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g".
2. Set up IIS 6.0 as described in "Setting Up IIS 6.0 Web Server in IIS 5.0 Isolation Mode" on page 28-11.
3. Install postgate.dll as described in "Installing the Postgate ISAPI Filter""Installing the Postgate ISAPI Filter".

28.5.3.4.1 Setting Up IIS 6.0 Web Server in IIS 5.0 Isolation Mode The following information is updated for the 10.1.4.2.3 Webgate.

When IIS 6.0 Web server is used, the following steps outline how to set up the WWW Service to run in IIS 5.0 Isolation Mode. This is required by the ISAPI postgate filter.

To set IIS 5.0 isolation on IIS 6 Web servers

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Information Services.
2. Expand the local computer to display your Web Sites.
3. Right-click the Web Site and select Properties.
4. Select the Service tab in the Web Site Properties window.
5. Check the box beside Run WWW service in IIS 5.0 Isolation Mode.
6. Click OK.
7. Proceed with "Installing the Postgate ISAPI Filter".

28.5.3.4.2 Installing the Postgate ISAPI Filter

The following information is updated for the 10.1.4.2.3 Webgate.

For single Webgate installations, you should install the filters in the following order:

- The ISAPI Webgate filter should be installed after the sspifilt filter and before any others.
- The postgate filter should be installed before the Webgate filter, only if needed.
- All other Access Manager filters can be installed at the end.

> **Note:** Before installation (or after uninstallation) the filters must be removed manually. If multiple copies of a filter are installed, this means that they were not manually removed before installing the new filters.

You can have multiple webgate.dlls configured at different levels from the top level Web Sites. However, they share the same postgate.dll. If you perform multiple Webgate installations on one computer, multiple versions of the postgate.dll file can be created which might cause unusual Access Manager behavior. There can only be one postgate.dll configured at the (top) Web Sites level of a computer

> **Note:** postgate.dll is not supported when you have more than one Webgate installed and configured for a single IIS Web server instance.

The following procedures guide as you install and position the postgate ISAPI filter when you have a single Webgate installed with a single IIS Web server instance.

To install the postgate ISAPI filter

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Information Services.
2. Expand the local computer to display your Web Sites.
3. Right-click the Web Site and select Properties.
4. Select the ISAPI Filters tab in the Web Site Properties window.

5. Click the Add button to display the Filter Properties panel.
6. Enter the filter name "postgate".
7. Click the Browse button and navigate to the following directory:

   Webgate_install_dir\access\oblix\apps\webgate\bin
8. Select postgate.dll as the executable.
9. Click OK on the Filter Properties panel.
10. Click Apply on the ISAPI Filters panel.
11. Reposition the postgate ISAPI filter, as follows:
    a. Start the Internet Information Services console, if needed.
    b. Right-click your local computer, then select All Tasks, select Restart IIS.
    c. Select the ISAPI Filters tab on the Properties panel.
    d. Select the postgate filter and move it before Webgate, using the up arrow.

       For example:

       postgate.dll
       webgate.dll
    e. Restart IIS.

Note: Consider using `net stop iisadmin` and `net start w3svc` to help ensure that the Metabase does not become corrupted.

28.5.4 Protecting a Web Site When the Default Site is Not Setup

Unless explicitly stated, this topic applies equally to 32-bit and 64-bit Webgates.

See Also: "Setting Access Permissions, ISAPI filters, and Directory Security Authentication" on page 28-25

When you install a Webgate on an IIS Web server that does not have the "Default Web Site" configured, the installer does not create "Virtual Directory access", which must be done manually using the following procedure.

To protect a Web site (not the default site)

1. Start the Internet Information Services console, if needed
2. Select the name of the Web site to protect.
3. Right-click the name of the Web site to protect and select New, and then select Virtual Directory in the menu.
4. Click Next.
5. Select Alias: access, then click Next.
6. Directory: Enter the full path to the /access directory, then click Next.

   Webgate_install_dir\access
7. Select Read, Run Scripts, and Execute, then click Next.
8. Click Finish.
9. Restart IIS. For example:

Select Start, then Run.
Type `net start w3svc`.
Click OK.

28.6 Installing and Configuring Multiple 10g Webgates for a Single IIS 7 Instance

This section describes how to install and configure multiple Webgates for different Web sites on the same IIS 7 Web server instance. Several steps are manual and will differ from those that are performed when you install a single Webgate with a single IIS instance. When installing multiple Webgates for a single IIS instance:

- The webgate.dll must be configured as an ISAPI filter at the individual Web site level, not the default (top) Web server level
- The /access virtual directory is mapped at the Web site level to the respective /access directory in the Webgate installation.

When configuring the impersonation DLL for multiple Webgates, you need to configure a user to act as the operating system.

Task overview: Installing and configuring multiple Webgates for a single IIS 7 instance

1. Installing Each IIS 7 Webgate in a Multiple Webgate Scenario
2. Setting the Impersonation DLL for Multiple IIS 7 Webgates
3. Enabling Client Certification for Multiple IIS 7 Webgates
4. Configuring IIS 7 Webgates for Pass Through Functionality
5. Confirming IIS 7 Webgate Installation
6. Perform the following tasks, which are the same whether you install one or more Webgates per IIS Web server instance:
   - "Ordering the ISAPI Filters" on page 28-8
   - "Confirming Webgate Installation on IIS" on page 28-26

See Also: "Confirming Multiple Webgate Installation" on page 28-24

28.6.1 Installing Each IIS 7 Webgate in a Multiple Webgate Scenario

After installing the ISAPI Webgate, there are several manual steps to perform as described here.

By default, webgate.dll is configured as an ISAPI filter at the host name (top) level. When installing multiple Webgates with a single IIS 7 instance, you need to remove the respective webgate.dll from the top level and configure it for the appropriate individual Web site after each Webgate installation.

To install each Webgate when you will have several with one IIS 7 instance

1. Install the ISAPI 7 Webgate as described in Chapter 25.
2. Go to the Web site to protect, and configure webgate.dll as the ISAPI filter using these steps:
   a. Start the Internet Information Services (IIS) Manager: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.

b. Select the *hostname* from the Connections pane.

c. From the hostname Home pane, double-click ISAPI Filters, look for any Webgate.dll; if it is present, select it and click **Remove** from the Action pane.

d. In the Connection pane, under Sites, click the name of the Web Site for which you want to configure a Webgate filter.

e. In the Home pane, double-click ISAPI Filters.

f. In the Actions pane, click Add…

g. In the Filter name text box of the Add ISAPI Filter dialog box, type "Webgate" as name for the ISAPI filter.

h. In the Executable box, type the file system path of the Webgate ISAPI filter file or click the ellipsis button (...) to go to the folder that contains the Webgate.dll ISAPI filter file, and then click OK.

```
Webgate_install_dir\access\oblix\apps\webgate\bin\webgate.dll
```

3. Creating a Virtual Directory:

a. Expand the Sites pane and select the Web Site for which you just configured the ISAPI filter (Webgate.dll).

b. On the Action pane, click View Virtual Directories and then select **Add Virtual Directory.**

c. Specify **access** in the Alias text box and the physical path to the Webgate **access** folder of Webgate or click the ellipsis button (...) to go to the "access" folder, and then click OK.

```
Webgate_install_dir\access\
```

d. Save and apply these changes.

4. Setting permissions to the Virtual Directory:

a. Select the "access" virtual directory created in Step 3.

b. From the access Home pane, double click Handler Mappings; from the Action pane, select Edit Feature Permissions….

c. Check boxes beside Read, Script, and Execute, then click OK.

5. Setting Directory Permissions for Webgate:

a. In Explorer, right click the Webgate installation directory *Webgate_install_dir*\access and select Properties.

b. Click the Security tab and click the Edit button.

c. Add user "IUSR", select "Allow" for "Modify".

d. Add user "IIS_IUSRS", select "Allow" for "Modify".

e. Add user "NETWORK", select "Allow" for "Modify".

f. Add user "NETWORK SERVICE", select "Allow" for "Modify".

g. For group "Administrators" select "Allow" for "Modify".

6. Webgate in Simple or Cert Mode:

a. In the file system, locate and right-click the "password.xml" file in Webgate_install_dir\access\oblix\config\password.xml, and select Properties.

b. Click the Security tab.

c. Give "Allow" for "Read" rights to users "IUSR", "NETWORK SERVICE", "IIS_WPG", "IIS_IUSRS".

7. Ensure that there is no webgate.dll in the top level (the hostname level).
8. Perform the next set of tasks using instructions in the following topics:
   a. "Setting the Impersonation DLL for Multiple IIS 7 Webgates" on page 28-16
   b. "Enabling Client Certification for Multiple IIS 7 Webgates" on page 28-17
9. Repeat these steps when you install the next Webgate for the IIS instance.

28.6.2 Setting the Impersonation DLL for Multiple IIS 7 Webgates

The client's access token is known as an impersonation token. The impersonation token identifies the client, the client's groups, and the client's privileges. The information in the token is used during access checks when the thread requests access to resources on the client's behalf.

Access Manager authenticates and authorizes the user. The Access Manager IISImpersonationExtension.dll in the wildcard extension behaves like a filter for each request to the Web server. Access Manager designates a special user that does have the right to impersonate another user by configuring it using the impersonation username/password on the AccessGate Configuration page. That designated user must have "act as operating system" rights. DLL impersonates the user authenticated and authorized by Access Manager and generates the impersonation token.

You perform the following steps to set the impersonation DLL for each Webgate that protects a Web site for a single IIS 7 Web server instance. You can do this either immediately after the installation task in the previous topic or all at one time.

Note: This task must be performed for each Webgate that protects an individual Web site for a single IIS Web server instance.

To add the impersonation DLL to IIS 7 configuration for individual Web sites

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Add "IISImpersonationExtension.dll" as a Wildcard Script Map to the required Web Site:
   a. Expand Sites in the connection pane.
   b. Click the Web Site name to which you want to add IISImpersonationExtension.dll.
   c. Double click Handler Mappings from the selected Web Site's "home" pane.
   d. From the Action pane, click Add Wildcard Script Map.
   e. In the Name text box of the Add Wildcard Script Map dialog box, type "Oracle Impersonation Plugin" as name for the dll.
   f. In the Executable box, type the file system path of the Webgate IISImpersonationExtension.dll or click the ellipsis button (...) to go to the folder that contains IISImpersonationExtension.dll, and then click OK.

   ```
   Webgate_install_dir/access/oblix/apps/Webgate/bin/
   IISImpersonationExtension.dll
   ```

This example shows the default path, where *Webgate_install_dir* is the file system directory where you have installed this particular Webgate.

3. Proceed as follows:
   - **Client Certificate Authentication**: "Enabling Client Certification for Multiple IIS 7 Webgates"
   - "Confirming IIS 7 Webgate Installation" on page 28-19.

28.6.3 Enabling Client Certification for Multiple IIS 7 Webgates

You perform this task to set the enable client certification for each Webgate that protects a Web site for a single IIS 7 Web server instance. You can do this either immediately after the adding the impersonation DLL to an individual Web site or all at one time.

> **Note:** SSL should be enabled on the Web Site before configuring the client certification for Webgate. Follow these steps after the Web Site is SSL enabled.

If you select client certificate authentication during setup, you must also enable and then add the cert_authn.dll as one of the ISAPI filters in the respective Web site.

To enable cert_authn.dll on the IIS 7 Web server

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Expand Sites in the connection pane.
3. Expand the Web Site to \access\oblix\apps\webgate\bin.
4. Right click the "bin" directory and select Switch To Content View.
5. Right click the "cert_authn.dll".and from the drop down menu, select Switch To Feature View.
6. From the cert_authn.dll Home pane, double click SSL Settings.
7. From SSL Settings pane, select Require SSL check-box and select Accept from Client Certificates.
8. Select Apply from Action pane.
9. Repeat for each Webgate installed on this host, for which you want to enable client certification.
10. Restart the IIS 7 Web server.
11. Proceed to the next task: "To add cert_authn.dll as an ISAPI v7 filter".

To add cert_authn.dll as an ISAPI v7 filter

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Expand Sites in the connection pane.
3. Click on the Web Site name for which you want to add "cert_authn.dll".
4. In the Home pane, double-click ISAPI Filters.
5. In the Actions pane, click Add.

6. In the Filter name box of the Add ISAPI Filter dialog box, type *Oracle Certification Authentication Plugin* as name for the ISAPI filter.
7. In the Executable box, type the file system path of the Webgate cert_authn.dll or click the ellipsis button (...) to go to the folder that contains cert_authn.dll, and then click OK.

   ```
   Webgate_install_dir/access/oblix/apps/Webgate/bin/cert_authn.dll
   ```

   This example shows the default path, where *Webgate_install_dir* is the file system directory where you have installed this particular Webgate.
8. Click View Ordered List from the Action pane and arrange the filters as shown here by using "Move Up" or "Move Down":

   cert_authn.dll
   webgate.dll
9. Select Apply from Action pane.
10. Repeat for each Webgate installed on this host, for which you want to enable client certification.
11. Restart the IIS 7 Web server.
12. Proceed as needed for your deployment:
    - "Configuring IIS 7 Webgates for Pass Through Functionality"

28.6.4 Configuring IIS 7 Webgates for Pass Through Functionality

Here you will add Webgate.dll as a Wildcard Script Map to the required Web Site. While configuring Webgate to work with pass through functionality, you must ensure that "Physical Path" of the Web sites on which you are installing Webgates differ. Otherwise, the changes in "Handler Mappings" are reflected in all the Web Sites sharing the same physical path.

Note: "Physical Path" is the path that is provided at the time of creating the Web Site. To check this path after the creation of the Web Site, , In Action pane click on Basic Settings..., you will be presented with a window showing the physical path of the Web Site.

- Click the Web Site name.
- In the Action pane, click Basic Settings.

To configure Webgate for pass through functionality

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Expand Sites in the connection pane.
3. Click the Web Site name for which you want to enable pass through.
4. Double click Handler Mappings from the selected Web Site's "home" pane.
5. From the Action pane, click Add Wildcard Script Map.
6. In the Name text box of the Add Wildcard Script Map dialog box, type Webgate as name for the ISAPI filter.

7. In the Executable box, type the file system path of the Webgate ISAPI filter file (Webgate.dll) or click the ellipsis button (...) to go to the folder that contains the Webgate.dll ISAPI filter file, and then click OK.

   ```
   Webgate_install_dir/access/oblix/apps/Webgate/bin/Webgate.dll
   ```

8. In the Access System Console:
   a. Locate the Web Gate profile and click Modify.
   b. Under User Defined Parameters, enter the following parameter and value:

      UseWebGateExtForPassthrough

      true

   c. Save the profile.
9. Repeat for each Webgate installed on this host, for which you want to enable pass through.
10. Restart the IIS 7 Web server.
11. Proceed to the next task: "Confirming IIS 7 Webgate Installation".

28.6.5 Confirming IIS 7 Webgate Installation

You can use the following procedure to confirm IIS 7 Webgate installation.

To verify IIS 7 Webgate installation

1. Go to the URL:

   ```
   http(s)://hostname:port/access/oblix/apps/webgate/bin/webgate.dll?progid=1
   ```

   where *hostname* refers to the name of the computer hosting the Webgate; *port* refers to the Web server instance port number.
2. The Webgate diagnostic page should appear.
   - **Successful**: If the Webgate diagnostic page appears, the Webgate is functioning properly and you can dismiss the page.
   - **Unsuccessful**: If the Webgate diagnostic page does not open, the Webgate is not functioning properly. In this case, the Webgate should be uninstalled and reinstalled. For more information about removing Access Manager see the *OAM Installation Guide* Chapter 22, then return to the chapter on installing a Webgate.

28.7 Installing and Configuring Multiple Webgates for a Single IIS 6 Instance

Unless explicitly stated, this topic applies equally to 32-bit and 64-bit Webgates.

See Also: "Installing and Configuring Multiple 10g Webgates for a Single IIS 7 Instance" on page 28-14

This section describes how to install and configure multiple Webgates for different Web sites on same IIS Web server instance. Several steps are manual and will differ from those that are performed when you install a single Webgate with a single IIS instance. When installing multiple Webgates for a single IIS instance:

- The webgate.dll must be configured as an ISAPI filter at the individual Web site level, not the default (top) Web server level
- The /access virtual directory is mapped at the Web site level to the respective /access directory in the Webgate installation.

When configuring the impersonation DLL for multiple Webgates, you need to configure a user to act as the operating system.

There can only be one postgate.dll configured at the (top) Web Sites level of a machine. However, you might have multiple webgate.dlls configured at different levels below the top level Web Sites. If you perform multiple Webgate installations on one machine, multiple versions of the postgate.dll file might be created that can cause unusual Access Manager behavior.

Task overview: Installing and configuring multiple Webgates for a single IIS instance

1. Installing Each Webgate in a Multiple Webgate Scenario
2. Setting the Impersonation DLL for Multiple Webgates
3. Enabling SSL and Client Certification for Multiple Webgates
4. Perform the following tasks, which are the same whether you install one or more Webgates per IIS Web server instance:
   - "Ordering the ISAPI Filters" on page 28-8
   - "Confirming Webgate Installation on IIS" on page 28-26

See Also: "Confirming Multiple Webgate Installation" on page 28-24

28.7.1 Installing Each Webgate in a Multiple Webgate Scenario

Unless explicitly stated, this topic applies equally to 32-bit and 64-bit Webgates.

After installing the ISAPI Webgate, there are several manual steps to perform as described here.

By default, webgate.dll is configured as an ISAPI filter at the Web sites (top) level. When installing multiple Webgates with a single IIS instance, you need to remove the respective webgate.dll from the top level and configure it for the appropriate individual Web site after each Webgate installation.

Note: If you perform multiple Webgate installations on one machine, multiple versions of the postgate.dll file might be created which can cause unusual Access Manager behavior. The postgate.dll is not supported in environments where you have multiple Webgates configured with a single IIS v6 web server instance.

To install each Webgate when you will have several with one IIS instance

1. Install the ISAPI Webgate as described in Chapter 25.
2. Go to the Web site to protect, and configure webgate.dll as the ISAPI filter using these steps:
   a. Start the Internet Information Services (IIS) Manager: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager
   b. Right click **Web Sites**, and then click the **Properties** option.

c. Click the ISAPI filter tab, look for the path to webgate.dll; if it is present in the filter, then select it and click the **Remove** button.

d. Under Web Sites, right-click the name of the Web site to protect, and select the **Properties** option.

e. Click the ISAPI filter tab to add the filter DLLs.

f. Add the following filter to identify the path to the webgate.dll file, and name it "webgate".

```
Webgate_install_dir/access/oblix/apps/webgate/bin/webgate.dll
```

g. Save and apply these changes.

h. Go to the **Directory Security** tab.

i. Confirm that "anonymous access" and "basic authentication" are selected so that Access Manager provides authentication for this Web server.

j. Save and apply these changes.

3. Go to Web sites level to protect and create an /access virtual directory that points to the newly installed *Webgate_install_dir*:

a. Under **Web Sites**, right-click the name of the Web site to be protected.

b. Select **New** and create a new virtual directory named `access` that points to the appropriate *Webgate_install_dir*/access.

c. Under **Access Permissions**, check **Read**, **Run Scripts**, and **Execute**.

d. Save and apply these changes.

4. In the file system, set directory permissions for Access Manager:

a. In the file system, locate and right-click *Webgate_install_dir*\access, and the select **Properties**.

b. Click the **Security** tab.

c. Add user "IUSR_*machine_nam*e" and then select "**Allow**" for "**Modify**".

For example, for a *machine_name* of Oracle, select IUSR_ORACLE.

d. Add user "IWAM_*machine_nam*e" and then select "**Allow**" for "**Modify**"

For example, for a *machine_name* Oracle, select IWAM_ORACLE.

e. Add user "IIS_WPG" and then select "**Allow**" for "**Modify**".

f. Add user "NETWORK SERVICE" and then select "**Allow**" for "**Modify**".

g. For the group "Administrators", select "**Allow**" for "**Modify**".

5. If Webgate has been set up in Simple or Cert mode, perform the follow steps:

a. In the file system, locate and right-click the "password.xml" file in *Webgate_install_dir*\access\oblix\config\password.xml.

b. Click the Security tab.

c. Give "Allow" for "Read" rights to users "IUSR_*machine_nam*e", IWAM_*machine_name*, "IIS_WPG", and "NETWORK SERVICE".

6. Add a new Web service extension using the following steps:

a. Right click **Web Service Extensions**, and then select **Add a new Web service extension**....

b. Add the Extension name **`Oracle Webgate`**.

c. Click **Add** to add the path to the extension file, and then enter the path to the appropriate webgate.dll.

```
Webgate_install_dir\access\access\oblix\apps\webgate\bin\webgate.dll
```

d. Click **OK** to save the changes.

e. Check box beside **Set extension status to allowed**.

f. Click **OK** to save the changes.

7. Ensure that there is no webgate.dll in the ISAPI filter at the top Web site level ("web sites").
8. Perform the next set of tasks using instructions in the following topics:
   a. "Setting the Impersonation DLL for Multiple Webgates" on page 28-22
   b. "Enabling SSL and Client Certification for Multiple Webgates" on page 28-23
9. Repeat these steps when you install the next Webgate for the IIS instance.

28.7.2 Setting the Impersonation DLL for Multiple Webgates

Unless explicitly stated, this topic applies equally to 32-bit and 64-bit Webgates and IIS v6.

The client's access token is known as an impersonation token. The impersonation token identifies the client, the client's groups, and the client's privileges. The information in the token is used during access checks when the thread requests access to resources on the client's behalf.

The Access System authenticates and authorizes the user. IISImpersonationExtension.dll of Access Manager in the wildcard extension behaves like a filter for each request to the Web server. The Access System designates a special user that does have the right to impersonate another user by configuring it using the impersonation username/password on the AccessGate Configuration page. That designated user must have "act as operating system" rights. DLL impersonates the user authenticated and authorized by Access Manager and generates the impersonation token.

You perform the following steps to set the impersonation DLL for each Webgate that protects a Web site for a single IIS Web server instance. You can do this either immediately after the installation task in the previous topic or all at one time.

Note: This task must be performed for each Webgate that protects an individual Web site for a single IIS Web server instance.

To add the impersonation DLL to IIS configuration for individual Web sites

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Click the plus icon (+) beside the Local Computer icon in the left pane to display your Web Sites.
3. Click **Web Service Extensions** in the left pane.
4. Double-click **Webgate** in the right pane to open the Properties panel.
5. Click the **Required Files** tab.

6. Click **Add**.
7. In the Path to file text box, type the full path to IISImpersonationExtension.dll, and then click OK. For example:

   ```
   Webgate_install_dir\access\oblix\apps\webgate\bin\IISImpersonationExtension.dll
   ```

   This example shows the default path, where *Webgate_install_dir* is the file system directory where you have installed this particular Webgate.
8. Verify that the Allow button beside the Webgate icon is grayed out, which indicates that the dll is allowed to run as a Web service extension.
9. Right click the Web site name, and then click **Properties**.
10. Click the **Home Directory** tab, and then click the **Configuration** button.
11. In the list box for Wildcard application maps, click the entry for `IISImpersonationExtension.dll` to highlight it, then click **Edit**.
12. Ensure that the box is unchecked, and then click **OK**.
13. Repeat these steps for each Webgate and Web site pair for the IIS Web server instance.
14. Proceed as follows:
    - **Client Certificate Authentication**: "Enabling SSL and Client Certification for Multiple Webgates"
    - "Confirming Multiple Webgate Installation" on page 28-24.

28.7.3 Enabling SSL and Client Certification for Multiple Webgates

You perform this task to set the enable client certification for each Webgate that protects a Web site for a single IIS Web server instance. You can do this either immediately after the adding the impersonation DLL to an individual Web site or all at one time.

> **Note:** Procedures in this topic apply equally to 32-bit and 64-bit Webgates, and IIS 6, unless stated otherwise.

If you select client certificate authentication during setup, you must also add the cert_authn.dll as one of the ISAPI filters in the respective Web site.

To enable SSL on the IIS v6 Web server

1. Start the Internet Information Services (IIS) Manager, if needed: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager.
2. Expand the local computer icon to display your Web Sites.
3. Expand the appropriate individual Web Site, then expand \access\oblix\apps\webgate\bin.
4. Right click `cert_authn.dll` and select **Properties**.
5. In the Properties panel, select the **File Security** tab.
6. In the Secure Communications sub-panel, click **Edit**.
7. In the Client Certificate Authentication sub-panel, click **Accept Certificates** and click **OK**.

8. Click **OK** in the cert_authn.dll Properties panel.
9. Repeat for each Webgate installed on this host.
10. Proceed to the next task: "To add cert_authn.dll as an ISAPI filter".

To add cert_authn.dll as an ISAPI filter

1. Start the Internet Information Services console, if needed.
2. Expand the local computer to display your Web Sites.
3. Right click the appropriate Web Site to display the Properties panel.
4. Click the **ISAPI Filters** tab, then click the **Add** button to display the Filter Properties panel.
5. Enter filter name "`cert_authn`".
6. Click the **Browse** button and navigate to the following directory:

   Webgate_install_dir\access\oblix\apps\webgate\bin
7. Select `cert_authn.dll` as the executable.
8. Click **OK** on the **Filter Properties** panel.
9. Click **Apply** on the **ISAPI Filters** panel.
10. Click **OK**.
11. Repeat for each Webgate installed on this host.
12. Ensure the filters are listed in the correct order.
13. Proceed to "Confirming Multiple Webgate Installation".

28.7.4 Confirming Multiple Webgate Installation

This task applies equally to 32-bit and 64-bit Webgates, and IIS v6 Web servers.

If you perform multiple Webgate installations on one machine, multiple versions of the postgate.dll file might be created which can cause unusual Access Manager behavior. the postgate.dll is not supported in environments where you have multiple Webgates configured with a single IIS v6 web server instance.

See Also:

- "Finishing 64-bit Webgate Installation" on page 28-24
- "Confirming Webgate Installation on IIS" on page 28-26

28.8 Finishing 64-bit Webgate Installation

This section describes how to complete installation of a 64-bit Webgate. You can skip this section if you are installing a 32-bit Webgate. In this case, see instead, "Completing Webgate Installation with IIS" on page 28-7.

Before you start tasks here, be sure that you have completed Webgate installation according to information in Chapter 25. You must also have completed Web server configuration updates for this Webgate either automatically during Webgate installation or manually, as described in "Webgates for IIS v6" on page 28-4.

Task overview: Finishing installation of a 64-bit Webgate

1. Perform steps in "Setting Access Permissions, ISAPI filters, and Directory Security Authentication" on page 28-25.
2. Enable client certificates, if desired. See "Setting Client Certificate Authentication" on page 28-26.
3. When finished, you can:
   - Confirm operations as described in "Confirming Webgate Installation on IIS" on page 28-26
   - Implement Windows Impersonation, as described in the Oracle Fusion Middleware Integration Guide for Oracle Access Manager.

28.8.1 Setting Access Permissions, ISAPI filters, and Directory Security Authentication

Unless explicitly stated, this topic applies equally to 32-bit and 64-bit Webgates. It describes setting access permissions for the Web site that you are using as a default.

To set or confirm access Permissions, ISAPI filters, and Directory Security Authentication

1. Start the Internet Service Manager. For example, from the Start menu click Programs then click Administrative Tools, and click Internet Service Manager.
2. Expand the local computer by clicking +, in the left panel.
3. Click to expand the Web Sites tab.
4. Right-click Default Web Site (or the site you are using as a default), and create a virtual directory as described in "Protecting a Web Site When the Default Site is Not Setup" on page 28-13.
5. Right-click **Web Sites** in the Internet Information Services tab, click **Properties**, and perform the following steps:
   a. From the Internet Information Services tab, click the **Edit** button.
   b. Locate the ISAPI filter tab to confirm (or add) the filter DLLs, as follows:

      Filter: If you updated the IIS Web server configuration file, webgate.dll should be properly located.

      No Filter: Add the webgate.dll filter from *Webgate_install_dir*\oblix\access\apps\webgate\bin\webgate.dll
   c. Save and apply any changes.
   d. Click the Directory Security tab and confirm that both **Anonymous Access** and **Basic Authentication** are selected.

      Selected: Proceed to Step 6.

      Not Selected: Select **Anonymous Access** and **Basic Authentication**, then save and apply these changes.
6. Proceed as follows:
   - "Setting Client Certificate Authentication", if desired
   - **No Client Certificate Authentication**: Restart the IIS Web server.
   - **Filter Positions**: Perform instructions in "Ordering the ISAPI Filters" on page 28-8 to ensure that all filters have been added and are in the proper order.

28.8.2 Setting Client Certificate Authentication

This task is optional and should be performed only if you want to use client certificate authentication. In this case, IIS and Webgate must be SSL-enabled.

Information in this topic is a sub set of details in "Enabling Client Certificate Authentication on the IIS Web Server" on page 28-7.

To add cert_authn.dll as an ISAPI filter

1. Start the Internet Information Services console, if needed: Click Start, Programs, Administrative Tools, Internet Service Manager.
2. Expand the local computer to display your Web Sites.
3. Right-click the Default Web Site (or the Web site that you use as a default), then expand \access\oblix\apps\webgate\bin.
4. Right click cert_authn.dll and select Properties, then:
   a. In the Properties panel, select the File Security tab.
   b. In the Secure Communications sub-panel, click Edit.
   c. In the Client Certificate Authentication sub-panel, click Accept Certificates and click OK.
   d. Click OK in the Secure Communications panel.
   e. Click OK in the cert_authn.dll Properties panel.
5. Click the **ISAPI Filters** tab, click the **Add** button to display the Filter Properties panel, and then:
6. Ensure the filters are listed in the correct order, as described in "Ordering the ISAPI Filters" on page 28-8.
7. Proceed to "Confirming Webgate Installation on IIS" on page 28-26.

28.9 Confirming Webgate Installation on IIS

After installing Webgate and updating the IIS Web server configuration file, you can use the Webgate diagnostics to verify the Webgate is properly installed.

> **Note:** This task is the same for both 32-bit and 64-bit Webgates. It is the same whether you are installing one or more Webgates per IIS Web server instance.

To verify Webgate installation

1. Go to the URL:

   ```
   http(s)://hostname:port/access/oblix/apps/webgate/bin/webgate.dll?progid=1
   ```

   where *hostname* refers to the name of the computer hosting the Webgate; *port* refers to the Web server instance port number.
2. The Webgate diagnostic page should appear.
   - **Successful**: If the Webgate diagnostic page appears, the Webgate is functioning properly and you can dismiss the page.
   - **Unsuccessful**: If the Webgate diagnostic page does not open, the Webgate is not functioning properly. In this case, the Webgate should be uninstalled and

reinstalled. For more information about removing Access Manager see "Removing a 10g WebGate from the Access Manager 11g Deployment" on page 25-27, in the chapter on installing a 10g Webgate Chapter 25.

28.10 Starting, Stopping, and Restarting the IIS Web Server

When instructed to restart your IIS Web server during Webgate installation or setup, be sure to follow any instructions that appear on the screen. Also, consider using `net stop iisadmin` and `net start w3svc` are good ways to stop and start the Web server. The `net` commands help to ensure that the Metabase does not become corrupted following an installation.

28.11 Removing Web Server Configuration Changes Before Uninstall

The information in this section applies equally to 32-bit and 64-bit Webgates.

Web server configuration changes that occur during installation must be manually reverted after uninstalling the Webgate. For example, the ISAPI transfilter will be installed for IIS Webgate. However, if you uninstall Webgate this is not removed automatically. Also, the created Web service extension and the link to the identity directory will not be removed. This type of information must be removed manually. These are examples of information to remove, not a complete list.

Further, you must remove any changes that you manually made to your Web server configuration file for the Webgate should be removed. For more information about what is added for each component, look elsewhere in this chapter.

To fully remove a Webgate and related filters from IIS, you must do more than simply remove the filters from the list in IIS. IIS retains all of its settings in a metabase file. On Windows 2000 and later, this is an XML file that can be modified by hand. There is also a tool available, MetaEdit, to edit the metabase. MetaEdit looks like Regedit and has a consistency checker and a browser/editor. To fully remove a Webgate from IIS, use MetaEdit to edit the metabase.

29

Configuring Lotus Domino Web Servers for 10g WebGates

This chapter provides tips about installing and configuring Lotus Domino to operate with the WebGate. Topics include:

- Prerequisites
- Installing the Domino Web Server
- Setting Up the First Domino Web Server
- Starting the Domino Web Server
- Enabling SSL (Optional)
- Installing a Domino Security (DSAPI) Filter

> **Note:** The information here presumes that you are familiar with your operating system commands, Lotus Notes, and the Domino Web server.

29.1 Prerequisites

Ensure that your Oracle Access Management Console is running and get familiar with:

- "Introduction to Policy Enforcement Agents" on page 15-1
- "About Installing Fresh 10g WebGates to Use With Access Manager 11.1.2" on page 25-3

29.2 Installing the Domino Web Server

Before you install the WebGate with a Domino Web server, you need a properly installed and set up Domino Enterprise Server R5. The following information focuses on Solaris. However, with some modifications, these steps can be used as a guide for other UNIX systems.

> **Note:** You need to register if this is the first time you download from lotus.com.

To download the Domino Web server on UNIX

1. Download Lotus Domino from the following URL:

```
http://www-10.lotus.com/ldd/down.nsf
```

2. Untar the downloaded file to your staging area. For example:

   gct@planetearth[/export/users2/gct/temp] 433 : ls C37UUNA.tar

   gct@planetearth[/export/users2/gct/temp] 434 : tar xf C37UUNA.tar

   gct@planetearth[/export/users2/gct/temp] 435 : ls C37UUNA.tar sol/

You need to install Domino as user "root". The installation script creates soft link, /opt/lotus, to link to your Lotus Domino installation directory.

To install the Domino Web server on UNIX

1. Run the install script for the Domino Web server. For example:

```
gct@planetearth[/export/users2/gct/temp/sol] 441 : su root
Password:
root@planetearth[/export/users2/gct/temp/sol] 1 : ls
install* license.txt script.dat sets/ tools/
root@planetearth[/export/users2/gct/temp/sol] 2 :
root@planetearth[/export/users2/gct/temp/sol] 2 : ./install
=======================================================
Domino Server Installation
=======================================================
Welcome to the Domino Server Install Program.
Type h for help on how to use this program.
Press TAB to begin the installation.
-------------------------------------------------------
Type h for help
Type e to exit installation
Press TAB to continue to the next screen.
-------------------------------------------------------
```

   You are asked to select the setup type.

2. Select Setup type. For example:

```
Select Setup type: [Domino Enterprise Server]
```

3. Complete the installation with the following considerations in mind. For example:

   - The default program directory is set to /opt/lotus. You may over write it to another directory. For example, /export/home/WWW/lotus.
   - The default data directory is set to /local/notesdata1. You may also over write this to something else. For example, /export/home/WWW/lotus/data1.
   - Over write Domino UNIX user to own data directory. The default user is set to notes. You may change it to a valid UNIX user. For example, gct or root.
   - Over write "The UNIX user for this directory must be a member of this group". The default group is set to notes. You may change it to a valid UNIX group name. For example: oblix.

   Note: Be sure to put Domino data directory in your $PATH before you proceed from here.

29.3 Setting Up the First Domino Web Server

After successfully installing, you must set up the first Domino server.

To set up first Domino server

1. Run /opt/lotus/bin/http httpsetup.

   By default, Domino will use port 8081.
2. Ensure that port 8081 is not already in use.
3. Launch your browser and enter the URL that follows. For example:

   `http://hostname:8081`
4. Follow instructions on the screen and keep the following in mind.
   - Check HTTP to get the Web server.
   - Ensure the designated Administrator has a first and last name.
   - Keep passwords simple, and record them in a safe location. For example, oracleoracle.
5. Run all commands as the UNIX user that you've configured for this Domino Web server.

WARNING: Do not run as root.

29.4 Starting the Domino Web Server

After successfully setting up the first Domino Web server, you must start it.

To start Domino server

1. Run /opt/lotus/bin/server.
2. Launch your browser and enter the following URL.

   For example:

   http://*hostname*:*80*/names.nsf

   You will be prompted for login name and password.
3. Select Server-Server.
4. Select your intended server.
5. Select Edit Server.
6. Select Ports, select Internet Ports, then click Web.
7. Change the value for TCP/IP port number to your desired port number.
8. Click Save and Close to save all your changes.
9. Restart server /opt/lotus/bin/server.

29.5 Enabling SSL (Optional)

Enabling SSL is not mandatory for the WebGate. However, if you need to generate a keyring file (.kyr) and its corresponding stash file (.sth) from the Lotus Notes client on a Windows system to the UNIX system, use the steps that follow.

To generate the keyring and stash files

1. Launch the Lotus Notes Client on your Windows system.

For example:

File, select Databases, then click Open

2. Select Server Certificate Admin.
3. Create the key ring file.
4. Create the certificate request.
5. Install the trusted root certificate into the key ring file.
6. Install the certificate into the key ring file.
7. Copy or ftp the newly created keyring file and stash file from the Windows system to your UNIX computer.
8. Store both files in your Domino data directory.

To enable SSL

1. Launch your browser and enter the following URL.

   For example:

   http://*hostname*:*port*/names.nsf

   You will be prompted for login name and password
2. Select Server-Server.
3. Select your intended server.
4. Select Edit Server.
5. Select Ports, select Internet Ports, then click Web.
6. In the SSL Key file name field, enter the absolute path to the keyring file.
7. Change the SSL Port number value to your desired port number.
8. Enable SSL port status.
9. Select Client Certificate "Yes" for Client Certificate authentication.
10. Click Save and Close to save all your changes.
11. Restart the Web server.

    For example:

    /opt/lotus/bin/server

29.6 Installing a Domino Security (DSAPI) Filter

The Domino security API filter, DSAPI, is an authentication method that enables you to register a DLL with the Domino Web server. In this case, the Web server calls the WebGate DLL to authenticate the user when a request for authentication occurs rather than using SSL or basic authentication.

Authentication within Domino is optional with the Access Manager DSAPI filter. You can implement certain aspects of authentication that the default Web server does not support.

Task overview: Completing the WebGate and filter installation

1. Before you install the WebGate on a Domino Web server, complete all steps described earlier.

2. Complete the WebGate installation and Web server update as described in "Locating and Installing the Latest 10g WebGate for Access Manager 11g" on page 25-14.
3. Set `ObWebGateInstallDir=`*`$WEBGATE_INSTALL_DIR`* in your `notes.ini` file.
4. See "Completing the WebGate Installation" on page 29-5 and choose one of the two options discussed there.

29.6.1 Completing the WebGate Installation

To ensure the Domino Web Server can use the WebGate DLL, you need to edit the enter the name or names of the DLL/DLLs (DSAPI libraries) to be called for authentication in the DSAPI filter file names field of the HTTP tab under the Internet Protocols tab in the Server document.

Note: Relative paths will be based on the Domino executable directory. DSAPI filter libraries will be called to handle events in the order they appear in this list.

There are two ways to install the filter:

- Through a Web browser and names.nsf (option 1)
- Through a Lotus Notes workstation and the Address Book (option 2)

Option 1: To setup the DSAPI filter to access names.nsf

1. Go to the names.nsf URL and log in. For example:

   `http://`*`hostname:port`*`/names.nsf`

2. Click the Server-Servers link.

   A Java applet will be loaded.
3. Select a server from those listed.
4. Click the Edit Server link to go to Edit mode.
5. Click the Internet Protocols link.

   By default, the HTTP tab is selected and information is displayed in Edit mode.
6. Look for DSAPI where it says "DSAPI filter file names:", then type in the absolute path to the libwebgate.so file.
7. Save your changes.
8. Restart the Domino http server task.

Option 2: To access the Address Book through Lotus Notes

1. Open Domino Name and Address book. For example, select:

   File, Database, Open, then click Address Book
2. Switch to server view and open the server document.
3. Edit the server document.
4. Click the Internet Protocols tab.

   By default, the HTTP tab is selected and information is displayed in Edit mode.

5. Look for DSAPI where it says "DSAPI filter file names:", then type in the absolute path to the libwebgate.so file.
6. Save your changes.
7. Restart the Domino http server task.

Part VII

Managing Oracle Access Management Identity Federation

Part VII contains the following chapters:

30

Introducing Identity Federation in Oracle Access Management

A *federation* is defined as "an association formed by merging several groups or parties". A federated environment (as defined in the identity management realm) is one in which organizations that provide services and identity data (business partners) have established trust in order to share access to a set of protected resources while protecting the same from unauthorized access. Oracle Identity Federation enables business partners to achieve this by providing the mechanism with which companies can form a federation and securely share services and data across their respective security domains.

With the 11*g* Release 2 (11.1.2.2) of Oracle Access Management, the standalone Oracle Identity Federation product has begun it's integration with Oracle Access Manager. This chapter introduces the integrated Identity Federation and includes the following sections.

30.1 Understanding Identity Federation Concepts

The Identity Federation topics in this book presume familiarity with federation in general and how it works. See "Introduction to Oracle Identity Federation" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation* for background and conceptual information.

30.2 Integrating Identity Federation with Access Manager

The Oracle Identity Management framework supports either of the following approaches to cross-domain single sign-on. You cannot mix-and-match these approaches as each stands on its own.

1. Beginning with the 11g Release 2 (11.1.2), the Oracle Access Management Access Manager server (OAM Server) has been integrated with an Oracle Access Management Identity Federation server. All configuration for the Identity Federation server is performed using the Oracle Access Management Console.
2. Previous, separate releases of Oracle Identity Federation (11.1.1) and Oracle Access Manager can still be deployed to provide federation capabilities. Both servers must be configured and managed for this integration. This approach existed in 11*g* Release 1 (11.1.1) and is still available.

This current document is limited to describing Oracle Identity Federation functionality as it has been integrated with Access Manager in 11*g* Release 2 (11.1.2.2). For details about the previous separate release of Oracle Identity Federation, see *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*.

Benefits of using the new Identity Federation 11*g* Release 2 (11.1.2.2) server integrated with Access Manager include:

- Eliminating the need to install and maintain separate servers.
- Simplifying post-install configuration of the federation features, particularly when accessing those features through the Oracle Access Management Console.
- Improving the scalability of the two services working together.
- Providing enhanced diagnostics and troubleshooting.

30.3 Deploying Identity Federation with Oracle Access Management

From a functional perspective, the components in an 11*g* Release 2 (11.1.2.2) scenario using the Identity Federation service (when a user attempts to log in to a protected resource using a Web browser) include:

- The Access Manager server contains all the components needed to provide access management services in the federated context, including:
  - a credential collector
  - a federation authentication plugin
  - the Identity Federation engine to generate and process assertions
  - a federation data cache
- Oracle WebLogic Server hosts and provides key infrastructure services, including:
  - the authorization engine, which interacts with Oracle Entitlement Server
  - federation data including circle of trust details and other configuration
  - the Coherence map store
- Data stores, including the identity store and Coherence database, maintain the identity data needed for authentication tasks. Identity Federation supports the Access Manager common user store and provides multiple identity store support. Federation data for persistent account linking can be stored in a database.

Note: Calls are routine HTTP calls.

30.4 Exchanging Identity Federation Data

The integrated Identity Federation server supports the transport and receipt of request and response messages using either the Security Access Markup Language (SAML) 2.0 specifications, SAML 1.1 or OpenID 2.0. The following sections contain more information.

- Using SAML 2.0
- Using SAML 1.1
- Using OpenID 2.0
- Initiating Federation SSO

> **Note:** The specification describing how SAML might be used in a given context is referred to as a SAML profile. The specification describing how a SAML assertion and/or message is conveyed in, or transported over, another protocol is referred to as a SAML Binding.

30.4.1 Using SAML 2.0

SAML uses an eXtensible Markup Language (XML) framework to define a simple request-response protocol in order to achieve interoperability between vendor platforms that provide SAML assertions. A SAML requester sends a SAML Request element to a responder. Similarly, a SAML responder returns a SAML Response element to the requester.

Within the SAML 2.0 protocol, Identity Federation supports the functionality described in the following sections.

- SAML 2.0 Bindings for SSO and Federation
- SAML 2.0 Bindings for Single Logout
- SAML 2.0 NameID Formats
- Securing SAML 2.0 Data
- SAML 2.0 Service Details

30.4.1.1 SAML 2.0 Bindings for SSO and Federation

SSO and Federation relies on SAML artifacts and assertions to relay authentication information. The following bindings are supported for the exchange of data regarding SSO and federation.

- The HTTP Artifact Binding uses the Artifact Resolution Protocol and the SAML SOAP Binding (over HTTP) to resolve a SAML message by reference. The IdP will store the Assertion in its repository and redirect the user to the SP with a string (artifact) that references the stored Assertion. The SP will retrieve the Assertion by connecting to the IdP directly over SOAP/HTTP and presenting the artifact
- The HTTP POST Binding relies on an HTML form to communicate authentication information between providers. For example, the service provider may use HTTP Redirect to send a request while the identity provider uses HTTP POST to transmit the response. The IdP can also redirect the user to the SP in an HTML FORM that contains the Assertion itself.
- The Reverse SOAP binding (PAOS) is only supported when Access Manager is configured as an IdP. In this flow, the client sends a SOAP request containing a SAML 2.0 Authn Request message to the IdP. The IdP authenticates the user

locally, and returns a SOAP response containing a SAML 2.0 Assertion. The client then presents the results to the remote SP.

30.4.1.2 SAML 2.0 Bindings for Single Logout

Single Logout defines how providers notify each other of logout events. This message exchange terminates all sessions when a logout occurs at the SP or IdP. The following profiles are supported for exchanging data regarding single logout.

- The HTTP Redirect profile relies on HTTP redirects between providers. For example, the IdP redirects the user to the SP using a 302 redirect operation with the URL containing the Logout Request/Response message. This profile can be used for sending and receiving data regarding single logout.
- The HTTP POST profile occurs when the IdP redirects the user to the SP using an HTML FORM containing the Logout Request/Response message. This profile can be used for sending and receiving data regarding single logout.
- The SOAP Binding Profile allows the IdP to connect directly with the SP and send a Logout Request message. During logout, the IdP redirects the user to the various SPs in a sequential manner. The SP will respond with a Logout Response message. This profile relies on asynchronous SOAP over HTTP messaging calls between providers and can be used only for sending data regarding single logout.

30.4.1.3 SAML 2.0 NameID Formats

The Name Identifier Mapping defines how an SP can obtain name identifiers assigned to a principal that has authenticated in the name space of a different SP. When a principal authenticated to one SP requests access to a second site, the second SP can use this protocol to obtain the name identifier and communicate with the first SP about the principal - even though no federation for the principal exists between them. The SAML 2.0 NameID formats listed in Table 30–1 are supported in both IdP and SP mode.

Table 30–1 Supported SAML 2.0 NameID Formats

NameID Format	Description
urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:WindowsDomainQualifiedName	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:2.0:nameid-format:kerberos	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:2.0:nameid-format:persistent	SP/IdP will use either: ■ A user attribute to populate the NameID value ■ A user attribute (such as DN) to set the value (same for every operations) ■ A random value and will store that value in the Federation Data Store (only this mode will require the use of a Federation Data Store)

Table 30–1 (Cont.) Supported SAML 2.0 NameID Formats

NameID Format	Description
urn:oasis:names:tc:SAML:2.0:nameid-format:transient	IdP will generate a random value
custom value	When this NameID format is used, OIF/IdP will use a user attribute to populate the NameID value

30.4.1.4 Securing SAML 2.0 Data

Regarding the security of identity data transported using the SAML 2.0 specifications,the following is true.

- All outgoing Assertions will be signed.
- All outgoing responses containing Assertions will not be signed.
- All outgoing requests/responses not containing Assertions will be signed.
- The signing certificate will not be included in the messages.
- Identity Federation (acting as the IdP) will not require signatures on any messages except when specified in the SP Partner metadata.
- NameIDs, attributes and Assertions will not be encrypted.
- Information on the default XML Encryption algorithm is located at http://www.w3.org/TR/2002/REC-xmlenc-core-20021210/Overview.html#aes128-cbc
- The hashing algorithm for signatures is SHA-1 by default. Identity Federation can be configured to use SHA-256.

30.4.1.5 SAML 2.0 Service Details

The SAML 2.0 Metadata for the IdP and SP is contained in a single XML document and can be retrieved using either the Oracle Access Management Console or by accessing either of the following URLs:

```
http://public-oam-host:public-oam-port/oamfed/idp/metadata
http://public-oam-host:public-oam-port/oamfed/sp/metadata
```

The certificates used for signature and encryption operations are published via the SAML 2.0 Metadata. The certificates can be retrieved by using a Service URL that specifies the Key ID of the key/certificate entry as defined in the Keystore Settings. (See Section 32.5, "Defining Keystore Settings for Federation.") For example,

```
http://public-oam-host:public-oam-port/oamfed/idp/cert?id=osts_signing
```

The Provider ID and the Issuer ID of the IdP and SP profiles are identical and can be retrieved from the applicable Provider Partner profile using the Oracle Access Management Console.

Table 30–2 documents the SAML 2.0 URLs for use when Identity Federation is configured to act as an IdP.

Table 30–2 SAML 2.0 URLs for Identity Federation Acting As Identity Provider

Description	URL
Single Sign On Service URL for HTTP Redirect binding	http://public-oam-host:public-oam-port/oamfed/idp/samlv20

Table 30–2 (Cont.) SAML 2.0 URLs for Identity Federation Acting As Identity Provider

Description	URL
Single Sign On Service URL for HTTP POST binding	http://public-oam-host:public-oam-port/oamfed/idp/samlv20
Single Sign On Service URL for SOAP binding	http://public-oam-host:public-oam-port/oamfed/idp/soap
Artifact Resolution Service URL for SOAP binding	http://public-oam-host:public-oam-port/oamfed/idp/soap
Single Logout Service URL for HTTP Redirect binding	http://public-oam-host:public-oam-port/oamfed/idp/samlv20
Single Logout Service URL for HTTP POST binding	http://public-oam-host:public-oam-port/oamfed/idp/samlv20
Attribute Authority Service URL for SOAP binding	http://public-oam-host:public-oam-port/oamfed/aa/soap

Table 30–3 documents the SAML 2.0 URLs for use when Identity Federation is configured to act as an SP.

Table 30–3 SAML 2.0 URLs for Identity Federation Acting as Service Provider

Description	URL
Assertion Consumer Service URL for Artifact binding	http://public-oam-host:public-oam-port/oam/server/fed/sp/sso
Assertion Consumer Service URL for HTTP POST binding	http://public-oam-host:public-oam-port/oam/server/fed/sp/sso
Single Logout Service URL for HTTP Redirect binding	http://public-oam-host:public-oam-port/oamfed/sp/samlv20
Single Logout Service URL for HTTP POST binding	http://public-oam-host:public-oam-port/oamfed/sp/samlv20

30.4.2 Using SAML 1.1

Although the standards address the same use case, SAML 2.0 and SAML 1.1 get there in different ways. The most important type of SAML 1.1 request is a query. A SP makes a query directly to an IdP over a secure back channel (using SOAP). Within the SAML 1.1 protocol, Identity Federation supports the features described in the following sections.

- SAML 1.1 Profiles for Web Browser SSO
- SAML 1.1 Logout Profile
- SAML 1.1 NameID Formats
- Securing SAML 1.1 Data
- SAML 1.1 Service Details

30.4.2.1 SAML 1.1 Profiles for Web Browser SSO

SAML 1.1 profiles rely on pushing SAML artifacts and assertions to an SP to relay authentication information. The following profiles are supported.

- The Browser/Artifact Profile passes a SAML assertion from the IdP to the SP by reference (through the browser using HTTP Redirect). This artifact is subsequently

dereferenced through a back-channel exchange in which the SP retrieves the assertion from the IdP using SAML over SOAP over HTTP.

- The Browser/POST Profile passes an SSO assertion to an SP through the browser using HTTP POST. We say that the identity provider "pushes" the assertion to the service provider.

30.4.2.2 SAML 1.1 Logout Profile

The SAML 1.1 specifications do not define a logout profile thus Identity Federation is not able to notify remote partners regarding a user logging out.

30.4.2.3 SAML 1.1 NameID Formats

When a principal authenticated to one SP requests access to a second site, the second SP can obtain the name identifier and communicate with the first SP regarding the principal - even though no federation for the principal exists between them. The SAML 1.1 NameID formats listed in Table 30–4 are supported in both IdP and SP mode.

Table 30–4 Supported SAML 1.1 NameID Formats

NameID Format	Description
urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:1.1:nameid-format:WindowsDomainQualifiedName	SP/IdP will use the applicable user attribute to populate/process the NameID value
urn:oasis:names:tc:SAML:2.0:nameid-format:kerberos	SP/IdP will use the applicable user attribute to populate/process the NameID value
custom value	When this NameID format is used, OIF/IdP will use a user attribute to populate the NameID value

30.4.2.4 Securing SAML 1.1 Data

Regarding the security of identity data transported using the SAML 1.1 specifications,the following is true.

- All outgoing Assertions will be signed.
- All outgoing responses containing Assertions will not be signed.
- The signing certificate will not be included in the messages.
- Identity Federation (acting as the IdP) will not require signatures on any messages.
- The hashing algorithm for signatures is SHA-1 by default. Identity Federation can be configured to use SHA-256.

30.4.2.5 SAML 1.1 Service Details

The certificates used for signature and encryption operations can be retrieved by using a Service URL that specifies the Key ID of the key/certificate entry as defined in the Keystore Settings. (See Section 32.5, "Defining Keystore Settings for Federation.") For example,

```
http://public-oam-host:public-oam-port/oamfed/idp/cert?id=osts_signing
```

The Provider ID and the Issuer ID of the IdP and SP profiles are identical and can be retrieved from the applicable Provider Partner profile using the Oracle Access Management Console.

Table 30–5 documents the SAML 1.1 URLs for use when Identity Federation is configured to act as an IdP.

Table 30–5 SAML 1.1 URLs for Identity Federation Acting As Identity Provider

Description	URL
Single Sign On Service URL	http://public-oam-host:public-oam-port/oamfed/idp/samlv11sso
Artifact Resolution Service URL	http://public-oam-host:public-oam-port/oamfed/idp/soapv11

Table 30–6 documents the SAML 1.1 URL for use when Identity Federation is configured to act as an SP.

Table 30–6 SAML 1.1 URL for Identity Federation Acting as Service Provider

Description	URL
Assertion Consumer Service URL	http://public-oam-host:public-oam-port/oam/server/fed/sp/sso

30.4.3 Using OpenID 2.0

OpenID 2.0 allows users to create accounts with a preferred OpenID IdP and use the account as the basis for signing on to any website that accepts OpenID authentication. Identity data is communicated through the exchange of an OpenID identifier (a URL or XRI chosen by the end-user) and the IdP provides OpenID authentication. Within the OpenID protocol, Identity Federation supports the functionality described in the following sections.

- OpenID 2.0 Authentication/SSO
- OpenID 2.0 Logout
- OpenID 2.0 NameID Format
- Securing OpenID 2.0 Data
- Using OpenID 2.0 Extensions
- OpenID 2.0 Service Details

30.4.3.1 OpenID 2.0 Authentication/SSO

OpenID 2.0 allows a user to sign into a new web site using a special OpenID URL. For example, if you have a blog at myblog.com, you might have created the OpenID URL, yourname.myblog.com. Then if you navigate to a second web site that accepts OpenID logins and click on the OpenID button, you can type in the URL and click to log in. The second SP discovers the OpenID IdP URL with this OpenID identifier. When the OpenID IdP redirects the authenticated user to the SP, it includes the OpenID Assertion which contains the result of the operation, the NameID of the user and (optional) attributes.

30.4.3.2 OpenID 2.0 Logout

The OpenID 2.0 specifications do not define a logout profile thus Identity Federation is not able to notify remote partners regarding a user logging out.

30.4.3.3 OpenID 2.0 NameID Format

OpenID defines the NameID as being a random string thus Identity Federation will use one of the following as the value for the NameID.

- A hashed user attribute (such as DN)
- A generated, random value that will be stored in the Federation Data Store; this mode requires the use of a Federation Data Store

30.4.3.4 Securing OpenID 2.0 Data

Regarding the security of identity data transported using the OpenID 2.0 specifications,the following is true.

- All outgoing Assertions will be signed.
- The default Association Algorithm is HMAC SHA-1.
- The default Session Agreement Algorithm is Diffie-Hellmann SHA-1.

30.4.3.5 Using OpenID 2.0 Extensions

OpenID is an extensible specification. The following extensions are available when using the integrated Identity Federation.

- Attribute Exchange (AX): If enabled, a SP can request attributes to be included in the OpenID Assertion response. The IdP can include the requested attributes or attributes configured to be in the response. (Default: enabled)
- Provider Authentication Policy Extension (PAPE): If enabled, advanced authentication methods can be defined and specified. This might include, for example, a phishing-resistant authentication method or multi-factor authentication. (Default: disabled)
- GSA Level 1: identifier in the OpenID Assertion indicating if this server is compliant with the http://www.idmanagement.gov/schema/2009/05/icam/openid-trust-level1.pdf policy. If enabled and if PAPE is enabled, OIF will include this policy in the OpenID response (Default: disabled)
- Level Of Assurance (LOA): identifier in the OpenID Assertion indicating if this server is compliant with the http://csrc.nist.gov/publications/nistpubs/800-63/SP800-63V1_0_2.pdf policy. If enabled, OIF/IdP will use the mapping between Level of Assurance and schemeID to determine the value to use for LOA in the OpenID response (see 2.5.2 for more information) (Default: disabled)
- No Private Identifier Information (NoPII): identifier in the OpenID Assertion indicating if this server is compliant with the http://www.idmanagement.gov/schema/2009/05/icam/no-pii.pdf policy. Note, if enabled, OIF will not include attributes in the OpenID Assertion
- Persistent Personal Identifier (PPID): identifier in the OpenID Assertion indicating if this server is compliant with the http://schemas.xmlsoap.org/ws/2005/05/identity/claims/privatepersonalidentifier policy. If enabled and if PAPE is enabled, OIF will include this policy in the OpenID response (Default: disabled)

- Registration (SReg): extension for attributes in the OpenID Assertion. If enabled, the SP can request attributes to be included in the response, and the IdP can include requested attributes or attributes configured to be in the response (Default: disabled)
- UI Extension (UIExt): extension for UI. In OIF/IdP, support for this extension is limited to advertisement in the XRDS metadata (Default: disabled)

30.4.3.6 OpenID 2.0 Service Details

The following URL is the realm of the OpenID 2.0 SP component.

```
http://public-oam-host:public-oam-port
```

Table 30–7 documents the OpenID 2.0 URLs for use when Identity Federation is configured to act as an IdP.

Table 30–7 OpenID 2.0 URLs for Identity Federation Acting As Identity Provider

Description	URL
Single Sign On Service URL	http://public-oam-host:public-oam-port/oamfed/idp/openidv20
Discovery Service URL	http://public-oam-host:public-oam-port/oamfed/idp/openidv20

Table 30–8 documents the OpenID 2.0 URLs for use when Identity Federation is configured to act as an SP.

Table 30–8 OpenID 2.0 URLs for Identity Federation Acting as Service Provider

Description	URL
Single Sign On Service URL	http://public-oam-host:public-oam-port/oam/server/fed/sp/sso
Discovery Service URL	http://public-oam-host:public-oam-port/oamfed/sp/openidv20
Realm URL	http://public-oam-host:public-oam-port

30.4.4 Initiating Federation SSO

The following sections contain details about initiating the Federation SSO process.

- IdP Initiated Federation SSO Service
- SP Initiated Federation SSO Service

30.4.4.1 IdP Initiated Federation SSO Service

When Identity Federation is working as an IdP, the URL for initiating Federation SSO is:

```
http://public-oam-host:public-oam-port/oamfed/idp/initiatesso
```

The query parameters are:

- providerid: name of the SP partner with which to perform Federation SSO or the issuer ID / provider ID of the SP partner with which to perform Federation SSO. (required)
- returnurl: the SP URL where the user will be redirected after a successful Federation SSO (optional)

- acsurl: the SAML 2.0 Assertion Consumer Service URL where Identity Federation will redirect the user with the SAML 2.0 Assertion. This URL must be declared in the SP SAML 2.0 Metadata. (optional)

30.4.4.2 SP Initiated Federation SSO Service

When Identity Federation is working as an SP, the URL for initiating Federation SSO is:

```
http://public-oam-host:public-oam-port/oamfed/sp/initiatesso
```

The query parameters are:

- providerid: name of the IdP partner with which to perform Federation SSO or the issuer ID / provider ID of the IdP partner with which to perform Federation SSO. (required)
- returnurl: the URL where the user will be redirected after a successful Federation SSO (optional)

30.5 Understanding How Identity Federation Works

A federation can comprise any number of identity providers and service providers. One common federated network topology is referred to as the hub-and-spoke model. In this topology, there is either a single service provider accepting authentication from multiple identity providers, or a single identity provider authenticating users for multiple service providers. An instance of Identity Federation in a federated network can serve as either an identity provider, a service provider, or both.

- A service provider (SP) is a commercial or not-for-profit organization that offers a web-based service such as a news portal, a financial repository, or retail outlet. When configured as the SP in a federated network and a user wants to access a resource protected by an authentication engine such as Oracle Access Manager, Identity Federation redirects the user to an IdP for global authentication. The IdP will obtain credentials, authenticate the user, and redirect the user back to the Identity Federation server instance - which retrieves the asserted identity from the IdP and redirects the authenticated user to the authentication engine which provides access to the protected resource.
- An identity provider (IdP) is a service provider that stores identity profiles. (Identity providers might also offer services above and beyond those related to identity profile storage.) When configured as the IdP in a federated network and a user wants to access a protected resource, the resource's SP directs the user to the Identity Federation server instance - which uses the Access Manager authentication engine to obtain credentials and authenticate the user. Following successful authentication, the Identity Federation instance can assert the user's identity to the resource's SP - which then authenticates the user itself and provides access to the requested resource.

The integrated Identity Federation server can operate as an IdP or an SP. See Chapter 31, "Managing Identity Federation Partners" for information on configuring Identity Federation to operate in one of these provider modes and communicate with remote partners in the federation.

Note: If the Administrator terminates a user session using the Oracle Access Management Console, the logout is not propagated to any remote identity providers involved in the session. This could result in a logged-out user being automatically re-authenticated to Access Manager through Identity Federation.

The OIF WLST Authentication commands configure authentication based on specific Service Providers. See the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for details.

30.6 Using Identity Federation

In SP-initiated SSO, the federated SSO process begins when the SP sends an authentication request to the IdP. In IdP-initiated SSO, the IdP sends the SP an unsolicited assertion response (in the absence of an authentication request from the SP). Supported runtime flows in both modes include SSO, Logout (initiated from a remote federation partner or Access Manager protected application) and Attribute Query. The following sections have more information.

- Achieving SSO
- Logging Out
- Authorizing
- Forcing Authentication
- Indicating a Passive Identity Provider
- User and Assertion Mapping
- Platform Dependencies

Note: The OIF WLST Authentication commands configure authentication based on specific Service Providers. See the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for details.

30.6.1 Achieving SSO

When the Identity Federation (acting as an IdP) is performing federated SSO with an SP, the Access Manager server authenticates the user or ensures an authenticated user doesn't need to be challenged due to inactivity. Additionally, the Access Manager server will check that any requested federation authentication method specified by the SP does not require a challenge based on authentication level. The Authentication Scheme mappings to the authentication methods will determine this. (If the SP does not specify a Federation Authentication Method, the IdP will use the one specified for the SP partner in the defaultschemeid property.)

30.6.2 Logging Out

With Identity Federation, a logout operation is dissociated from the authentication operation. Logout can be initiated by user the (Access Manager server) or a partner in the federation.

- When initiated by the user accessing the Access Manager Logout service, Access Manager kills the user's Access Manager session and displays a logout page that

will instruct the various WebGate agents to remove the user cookies. Access Manager then redirects the user to the Identity Federation Logout service which notifies each partner involved in this session by either redirecting the user with a Logout Request message via HTTP Redirect or HTTP POST or by directly sending a Logout Request message via SOAP. Identity Federation then kills the OIF session and redirects the user to the defined return URL.

- When initiated by the user on a web site from a partner in the federation, the partner redirects the user to the Identity Federation server which marks the user session as logging out. Identity Federation then redirects the user to the Access Manager server which kills the user's Access Manager session. Access Manager then displays a logout page that will instruct the various WebGate agents to remove the user cookies, and redirects the user back to Identity Federation to resume the Federation logout process by notifying each partner involved in this session (except the one who first redirected the user) by either redirecting the user with a Logout Request message via HTTP Redirect or HTTP POST or by directly sending a Logout Request message via SOAP. Identity Federation then kills the OIF session and redirects the user with a Logout Response message to the partner who first redirected the user to the Identity Federation server.

30.6.3 Authorizing

When the Identity Federation server acts as an IdP, it has the need to issue an Identity Token to the SP during the Federation SSO operation. The Identity Token will contain user information as well as session information. By default, the authorization feature is turned off. It can be enabled or disabled using the `configureFedSSOAuthz` WLST command. You also need to create a resource of type TokenServiceRP (with the Resource URL set to the SP Partner ID) and a Token Issuance Policy to which the Resource is added. The Token Issuance Policy indicates the conditions under which the token should be issued.

30.6.4 Forcing Authentication

SAML 2.0 and OpenID 2.0 provide a way for a SP to indicate during Federation SSO whether the user should be challenged by the IdP, even if a valid user session already exists. In this case, the SP will send an authentication request with a parameter indicating that the IdP should re-challenge the user or force authentication.

30.6.5 Indicating a Passive Identity Provider

SAML 2.0 and OpenID 2.0 provide a way for the SP to indicate during Federation SSO whether the Identity Provider should interact with the user. In this case, the SP will send an authentication request with a parameter indicating that the IdP should not interact with the user or is passive. The IdP recognizes the parameter and returns to the SP:

- An error if the IdP must interact with the user but cannot because of this parameter.
- A Federation Assertion that indicates whether the user has a valid session.

30.6.6 User and Assertion Mapping

In Identity Federation, after a SP validates the SAML assertion created by it's IdP partner, it can map the assertion to the local user in one of the following ways.

- By mapping the SAML subject to a user record with a user attribute (for example, `mail`).
- By mapping a SAML Assertion Attribute to a user record with a user attribute (for example, the SAML Assertion Attribute `emailAddress` mapped to `mail`).
- By mapping one or more attributes contained in the SAML assertion's `AttributeStatement` element or the SAML subject with an LDAP query. You must configure both the SAML attribute name and the user attribute to which it is mapped.

30.6.7 Platform Dependencies

This architecture leverages the Oracle Fusion Middleware platform for the Credential Store Framework (CSF). CSF securely stores keystore passwords as well as server credentials such as HTTP Basic Authentication usernames and passwords.

30.7 Administrating Identity Federation

Identity Federation integrated with Access Manager can be administered with a combination of configurations using the Oracle Access Management Console and Oracle WebLogic Scripting Tool (WLST) commands. Use the Oracle Access Management Console to enable the Identity Federation service, manage IdP and SP partner profiles, and work with federated authentication schemes and policies. Use the WLST utilities to manage additional server and partner configuration properties.

> **Note:** Not all WLST command functionality is duplicated in the Oracle Access Management Console and not all console functionality is duplicated on the command line.

The Oracle Access Management Console enables Administrators to manage configuration related to the federation service and partners. Table 30–9 summarizes the types of information that you can configure for Identity Federation using Oracle Access Management Console.

Table 30–9 Configuring Identity Federation Settings

Configuring ...	Description
Federation Administrators	Administrators who can manage federated partners and related configuration. See "Understanding the Controls" on page 2-6.
Federation Service	Enable and disable the Identity Federation service in Access Manager. See "Enabling Identity Federation" on page 30-15.
Federation Settings	Manage basic Identity Federation service configuration properties. See Chapter 32, "Managing Settings for Identity Federation".
Providers for Federation	IdP partners are managed within the context of administering Identity Federation as a SP. Conversely, SP partners are managed within the context of administering Identity Federation as an IdP. See Section 31.3, "Administering Identity Federation As A Service Provider" or Section 31.4, "Administering Identity Federation As An Identity Provider.".
Authentication Schemes and Modules for Federation	Manage federation authentication schemes. See "Using Authentication Schemes and Modules for Identity Federation 11g Release 2 (11.1.2.2)" on page 33-2.
Policies for Use with Federation	Manage policies for use with federation partners. See "Managing Access Manager Policies for Use with Identity Federation" on page 33-8.

Table 30–10 outlines the tasks required to implement identity federation using the Oracle Access Management Console.

Table 30–10 Implementing Identity Federation

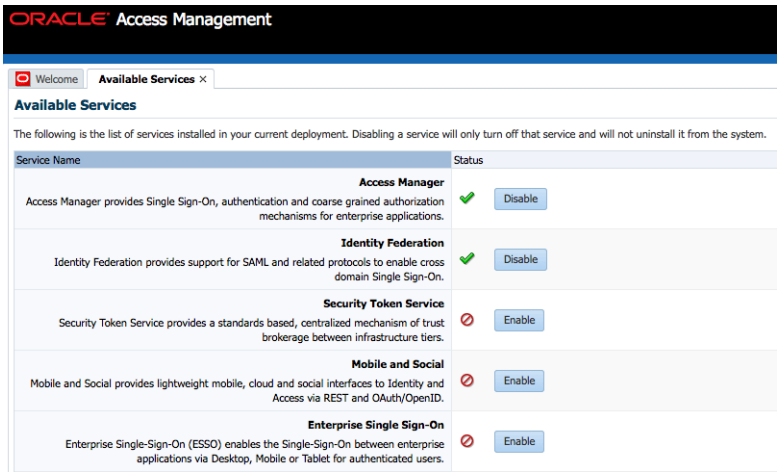
Task	Reference
Enable the Identity Federation service.	Section 30.8
Configure federation settings.	Section 32.3
Identity IdP and/or SP partners, and configure attributes for them.	Section 31.3
Configure an authentication or authorization policy.	Chapter 33
Protect a resource with this policy.	Chapter 20

30.8 Enabling Identity Federation

Identity Federation is an authentication module in Oracle Access Management so both the Access Manager service and Identity Federation must be enabled. Figure 30–1 illustrates the Available Services page in Oracle Access Management Console with the Access Manager service and Identity Federation aleady enabled. Use this page to enable (or disable) Identity Federation together with the Access Manager service.

> **Note:** Once enabled, it is possible to enable or disable specific Federation features such as IdP, SP, Attribute Authority and/or Attribute Requester. Use the `configureFederationService()` WLST command as documented in *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

Figure 30–1 Available Services Page



To enable the Identity Federation service with Access Manager

1. Log in to the Oracle Access Management Console.

   `https://hostname:port/oamconsole/`

2. From the Welcome page, under Configuration, click Available Services.
3. **Enable Identity Federation**: Click **Enable** beside Identity Federation (or confirm that the green Status check mark displays).

4. **Enable Access Manager**: Click **Enable** beside Access Manager (or confirm that the green Status check mark displays).

31

Managing Identity Federation Partners

This chapter introduces the concept of federation partners (service providers and identity providers) in Oracle Access Management Identity Federation. This chapter includes the following sections:

31.1 Understanding Federation And Partners

The topics in this chapter assume some familiarity with the federation and partner concepts described in the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*. The current chapter also assumes that you have performed Section 30.8, "Enabling Identity Federation" as described.

31.2 Managing Federation Partners

This 11g Release 2 (11.1.2.2) of the integrated Identity Federation provides the ability to be configured as a Service Provider (SP) or an Identity Provider (IdP). Following this provider definition, remote providers (whether service or identity) partnered in Federation SSO need to be managed as well. Towards this end, Identity Federation developed the configuration hierarchy concepts of a *partner* and a *partner profile*.

- A *partner profile* refers to settings specific to a partner type (IdP or SP) or a protocol version (SAML 2.0, SAML 1.1, OpenID 2.0). It is a configuration group that represents a sets of common properties that apply to all partners that reference it. It contains mostly secondary configuration objects such as Authentication Method mappings, cryptographic settings (SHA-1 vs SHA-256) and the like.
- A *partner* refers to the configuration for a specific organization partnered in the Federation SSO process. Each partner is associated with a partner profile. The

`partnerprofileid` property in a Partner entry defines the partner profile to which this partner is assigned. If the `partnerprofileid` property is not defined, the default Partner Profile for the Partner (based on the Partner type and the Partner protocol) will be used.

All Partners associated with the same Partner Profile will share its defined settings unless they are specifically overridden for a partner at the Partner configuration level. A Partner configuration overrides a Partner Profile configuration which, in turn, overrides a global configuration.

Partner profiles are only manageable using WLST commands. Each new partner created will be bound to one of the default partner profiles listed in Table 31–1. To assign a new partner profile to a partner, use the `setFedPartnerProfile()` WLST command after creating the partner. See Section 31.9, "Using WLST for Identity Federation Administration" for details.

Table 31–1 Default Partner Profiles

Default Partner Profile	Description
saml20-idp-partner-profile	SAML 2.0 Partner Profile for IdP partners
saml20-sp-partner-profile	SAML 2.0 Partner Profile for SP partners
saml11-idp-partner-profile	SAML 1.1 Partner Profile for IdP partners
saml11-sp-partner-profile	SAML 1.1 Partner Profile for SP partners
openid20-idp-partner-profile	OpenID 2.0 Partner Profile for IdP partners
openid20-sp-partner-profile	OpenID 2.0 Partner Profile for SP partners

31.3 Administering Identity Federation As A Service Provider

When the integrated Identity Federation is configured as an SP, you must define any remote IdP partners as trusted by creating and managing profiles that contain details regarding each remote IdP. To begin administration of the integrated Identity Federation server as an SP, click the Service Provider Administration link under Identity Federation from the Launch Pad in the Oracle Access Management Console. This section provides the following topics.

- Creating Remote Identity Provider Partners
- Managing the Remote Identity Provider Partners

31.3.1 Creating Remote Identity Provider Partners

Use the New Identity Provider Page to define an identity provider (IdP) partner record for Access Manager. You can specify service details manually or load them from a metadata file.

Figure 31–1 shows the Create Identity Provider Partner page when service details are configured by loading an XML metadata file.

Figure 31–1 New Identity Provider Page, Service Details Loaded from Metadata

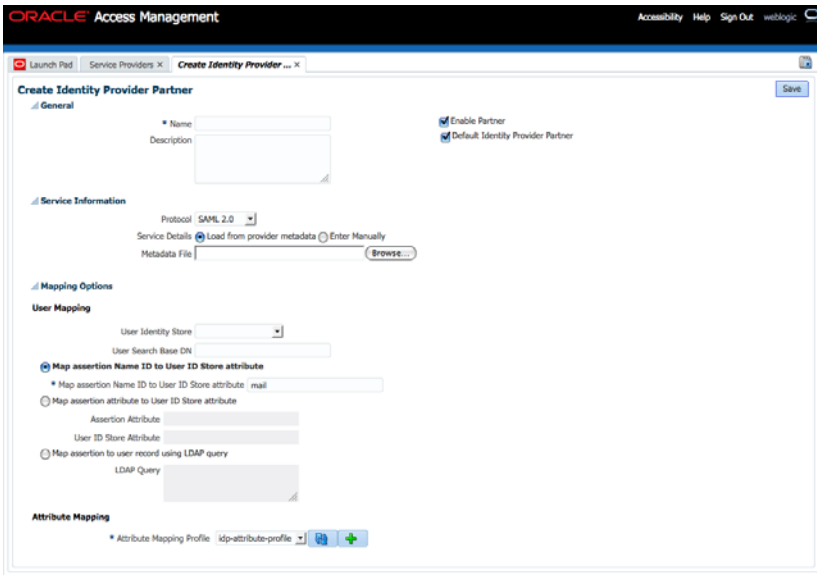


Figure 31–2 shows the Create Identity Provider Partner page when service details are configured by entering values manually.

Figure 31–2 New Identity Provider Page, Service Details entered Manually

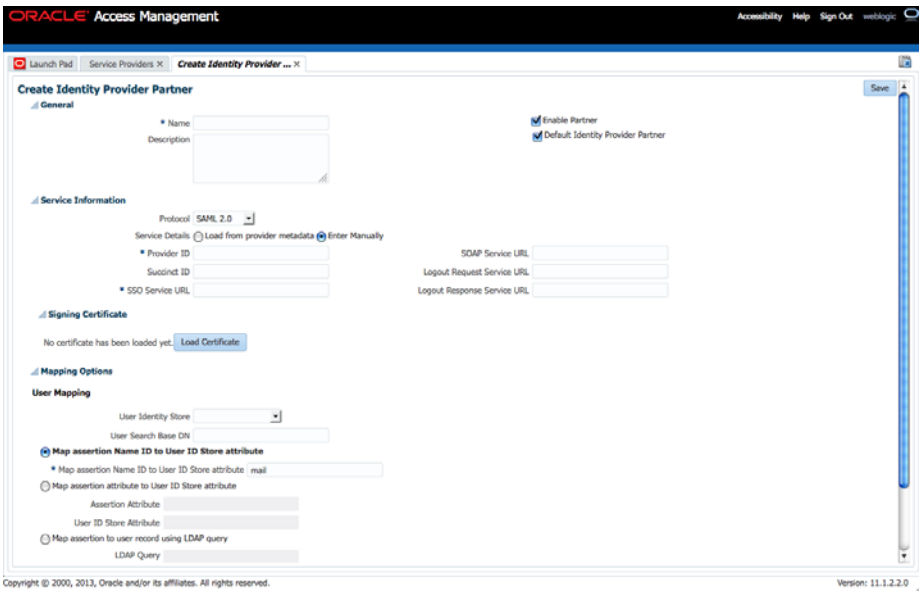


Table 31–2 describes each element on the New Identity Provider page.

Table 31–2 Identity Provider Partner Settings

Element	Description
Name	This is the provider name.
Description	This is a brief description of the provider. (Optional).
Protocol	This is the provider protocol (SAML 1.1, SAML 2.0 and so on).
Service Details	This drop-down enables you to choose whether to enter service details manually or load from metadata.

Table 31–2 (Cont.) Identity Provider Partner Settings

Element	Description
Metadata File	This field appears if loading metadata from a file. Click Browse to select a file to use. Applies to SAML 2.0 only.
Issuer ID	This is the issuer ID of the provider. Applies to SAML 2.0 and SAML 1.1 only.
Succinct ID	This is the succinct ID of the provider. This element is required if using the artifact profile. Applies to SAML 2.0 and SAML 1.1 only.
SSO Service URL	This is the URL address to which SSO requests are sent.
SOAP Service URL	This is the URL address to which a SOAP service request is sent. This element is required if using artifact profile.
Logout Request Service URL	This is the URL address to which a logout request is sent by the provider. This element is required if using the logout feature. Applies to SAML 2.0 only.
Logout Response Service URL	This is the URL address to which a logout response is sent. This element is required if using the logout feature. Applies to SAML 2.0 only.
Signing Certificate	This is the signing certificate used by the provider. You can specify it in `pem` and `der` formats. Applies to SAML 2.0 and SAML 1.1 only.
User Identity Store	This is the identity store in which the IdP's users will be located and mapped. Identity Federation supports multiple identity stores, defined on a per-partner basis. Optionally, if no user identity store is selected, the default Access Manager store is used.
User Search Base DN	This is the base search DN used when looking up user records. (Optional.) If omitted, the default user search base DN configured for the selected user identity store is used.)
Mapping Option	This setting indicates how an incoming assertion is mapped to a user in the identity store. Select one of the following: ■ Map Assertion Name ID to User ID Store Attribute Enter the identity store attribute to which the assertion NameID will be mapped. ■ Map Assertion Attribute to User ID Store Attribute Enter assertion attribute and the identity store attribute to which it will be mapped. ■ Map Assertion to User Record Using LDAP Query Enter an LDAP query with placeholders for incoming data. You may use: - an attribute from the SAML assertion's `AttributeStatement` element, referenced by its name prefixed and suffixed with the `%` character - the SAML assertion subject's `NameID`, referenced by `%fed.nameidvalue%` - the identity provider's partner name, referenced by %fed.partner%. For example, an LDAP query to map an incoming assertion based on two assertion attributes (lastname and email) would be (&(sn=%lastname%)(mail=%email%)).
Enable Basic HTTP Authentication	Check this box to accept HTTP basic credentials. (Advanced element, available only in provider Edit mode.)
Attribute Mapping Profile	Indicates the attribute profile to which the partner is bound.
Service Details	Indicates which of the following options Identity Federation (the RP) uses to perform Federation SSO with the IdP. Applies to OpenID 2.0 only. ■ By discovering the IdP SSO URLs via the IdP XRDS metadata available at the Discovery Service URL. ■ By using the specified static OpenID login endpoint which is the IDP SSO service URL.

Table 31–2 (Cont.) Identity Provider Partner Settings

Element	Description
Discovery URL	Defines the location where the IdP publishes its XRDS metadata. Applies to OpenID 2.0 only.
Endpoint URL	Defines the IdP SSO Service location. Applies to OpenID 2.0 only.
Enable Global Logout	Indicates whether or not Identity Federation should notify the remote partner when the user is signing off during the logout flow. Applies to SAML 2.0 only.
HTTP POST SSO Response Binding	Indicates whether the SAML Assertion should be sent back from the IdP using the HTTP POST Binding or the Artifact Binding. Applies to SAML 2.0 only.
Authentication Request NameID Format	Indicates the NameID format that Identity Federation will request from the IdP during the Federation SSO operation. If none is selected, a NameID format is not specified in the request. Applies to SAML 2.0 only.

Note: For IdP functionality, use the 11*g* Release 1 (11.1.1) Oracle Identity Federation server. For details, see *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*.

To Define SAML 2.0 Identity Providers for Federation

Take these steps to define a new SAML 2.0 identity provider (IdP):

1. From the Oracle Access Management Console, click Service Provider Administration.
2. Click the Create ID Provider button to display the New Identity Provider Page.
3. SAML 2.0 is typically configured with metadata. In the Service Details drop-down, select "Load from Provider Metadata."
4. A new field appears named Metadata File. Click **Browse**.
5. Select the metadata file of interest.
6. The metadata is loaded from the file.
7. Click **Save** to create the Identity Provider definition.

To Define SAML 1.1 Identity Providers for Federation

Take these steps to create a new SAML 1.1 identity provider (IdP):

1. From the Oracle Access Management Console, click Service Provider Administration.
2. Click the Create ID Provider button to display the New Identity Provider page.
3. Fill in the New Identity Provider page using values for your environment (Table 31–2). The information you provide depends on the protocol chosen for the provider and other factors.
4. Click **Save** to create the identity provider definition.

Note: Some SAML 1.1 configuration parameters are not exposed through the Oracle Access Management Console. The values of these parameters can be modified using the `updatePartnerProperty` WLST command. For details, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

To Define OpenID 2.0 Identity Providers for Federation

In 11*g* Release 2 (11.1.2.2) the Identity Federation supports OpenID, and acts as an OpenID RP/SP. OpenID Providers can be registered as IdP partners. Authentication schemes created using these OpenID partners protect Access Manager resources using authentication services provided by the OpenID identity providers. Take these steps to create a new OpenID 2.0 identity provider (IdP).

1. Log in to the Oracle Access Management Console.
2. From the Launch Pad, click Service Provider Administration under Identity Federation.
3. Click the Create Identity Provider Partner button.

   The Create Identity Provider Partner page is displayed.
4. Fill in the values appropriate for your environment either manually or by uploading a metadata file.

   The information you provide depends on the protocol chosen for the provider and other factors.
5. Click Save to create the identity provider definition.

Google IdP Partners

Take these steps to add Google as an OpenID 2.0 IdP.

1. Log in to the Oracle Access Management Console.
2. From the Launch Pad, click Service Provider Administration under Identity Federation.
3. Click the Create Identity Provider Partner button.

   The Create Identity Provider Partner page is displayed.
4. Select OpenID 2.0 from the Protocol drop down menu.
5. Select Google provider default settings from the Service Details drop down menu.
6. Click Save to create the identity provider definition.

The partner is configured so that the SP requests the assertion attributes listed in Table 31–3 from the Google IdP and maps them to the corresponding session attribute names:

Table 31–3 Attributes for Google OpenID Partner

Assertion Attribute Name	Session Attribute Name
http://axschema.org/contact/country/home	country
http://axschema.org/contact/email	email
http://axschema.org/namePerson/first	firstname
http://axschema.org/pref/language	language

Table 31–3 (Cont.) Attributes for Google OpenID Partner

Assertion Attribute Name	Session Attribute Name
http://axschema.org/namePerson/last	lastname

The Google partner uses `mail` as the user mapping attribute, so that an incoming `http://axschema.org/contact/email` attribute should match the `mail` attribute of the user in the user identity store.

Yahoo IdP Partners

Take these steps to add Yahoo as an OpenID 2.0 IdP.

1. Log in to the Oracle Access Management Console.
2. From the Launch Pad, click Service Provider Administration under Identity Federation.
3. Click the Create Identity Provider Partner button.

   The Create Identity Provider Partner page is displayed.
4. Select OpenID 2.0 from the Protocol drop down menu.
5. Select Yahoo provider default settings from the Service Details drop down menu.
6. Click Save to create the identity provider definition.

The partner is configured so that the SP requests the assertion attributes listed in Table 31–4 from the Yahoo IdP and maps them to the corresponding session attribute names:

Table 31–4 Attributes for Yahoo OpenID Partner

Assertion Attribute Name	Session Attribute Name
http://axschema.org/contact/country/home	country
http://axschema.org/contact/email	email
http://axschema.org/namePerson/first	firstname
http://axschema.org/pref/language	language
http://axschema.org/namePerson/last	lastname

The yahoo partner uses `mail` as the user mapping attribute, so that an incoming `http://axschema.org/contact/email` attribute should match the `mail` attribute of the user in the user identity store.

To Enable OpenID Simple Registration

By default, Identity federation uses the Attribute Exchange extension to obtain user identity attributes from an OpenID IdP. However, if you need to use the older Simple Registration (SREG) extension, you can enable it by running the following WLST commands:

```
putBooleanProperty("/spglobal/openid20axenabled", "false")
putBooleanProperty("/spglobal/openid20sregenabled", "true")
```

To Disable OpenID Simple Registration

To switch from the Simple Registration (SREG) extension to the Attribute Exchange extension to obtain user identity attributes from an OpenID IdP:

```
putBooleanProperty("/spglobal/openid20axenabled", "true")
```

```
putBooleanProperty("/spglobal/openid20sregenabled", "false")
```

31.3.2 Managing the Remote Identity Provider Partners

You can use the following procedure to manage an existing IdP for Identity Federation.

To Search for Existing Identity Providers

Follow these steps:

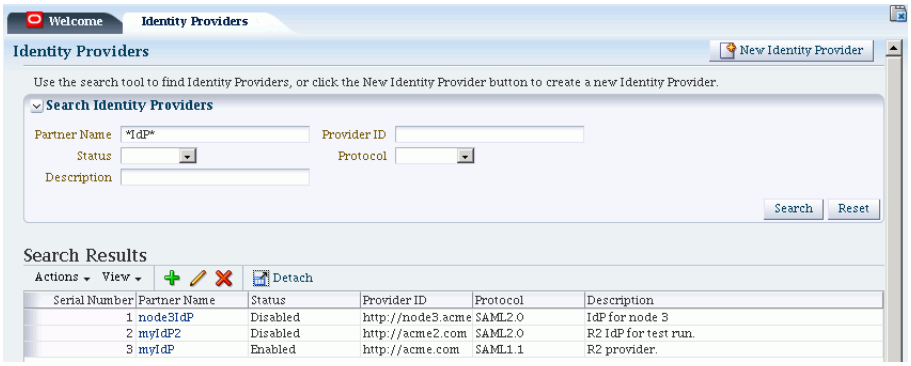
1. From the Oracle Access Management Console, click Service Provider Administration.
2. In the Search section of the page, enter appropriate search criteria for identity provider(s). The characters "*" (asterisk) and "." (period) are supported as search wildcards. See Table 31–5 for details about the search parameters.
3. Click **Search**.
4. The search results are displayed in a table.

Table 31–5 Elements Used for IdP Provider Search

Element	Description
Partner Name	Searches for a specific partner name.
Provider ID	Searches by provider ID.
Status	Searches providers matching a status.
Description	Searches by provider description.
Protocol	Searches for providers that use a specified protocol.

Table 31–5 demonstrates an example of search results from an IdP search.

Figure 31–3 Searching for Identity Providers



To Update Identity Providers for Federation

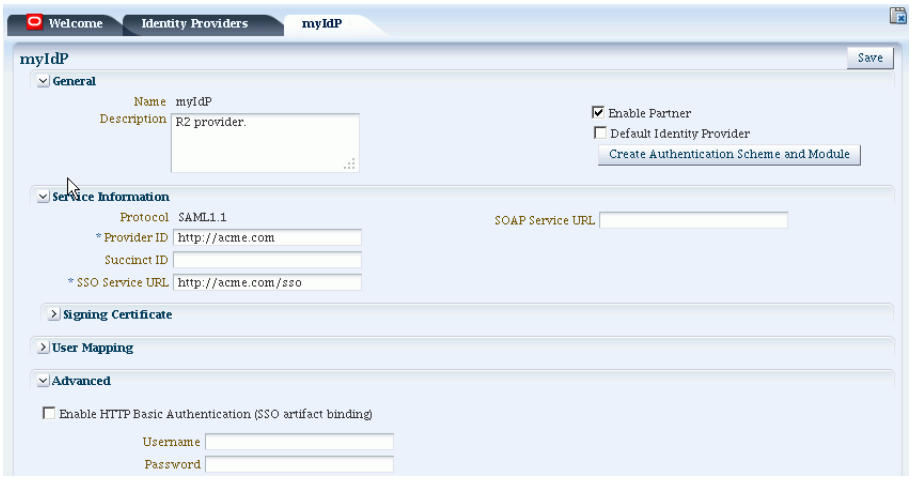
1. From the Oracle Access Management Console, click Service Provider Administration.
2. Search for the provider you wish to update. See "To Search for Existing Identity Providers" for details.
3. Select the provider of interest from the search results table.

4. Click the pencil icon to display the provider update page. The page is divided into sections for: Service Information, Signing Certificates, User Mapping, and Advanced.
5. Update the provider information. See Table 31–2 for details.

   For information on configuring HTTP Basic Authentication to protect SOAP URLs after it has been enabled, see the *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*.
6. Click **Save** to update the Identity Provider definition.

Figure 31–4 shows an example of updating an IdP definition.

Figure 31–4 Updating an Identity Provider



31.4 Administering Identity Federation As An Identity Provider

When the integrated Identity Federation is configured as an IdP, you must define any remote SP partners as trusted by creating and managing profiles that contain details regarding each remote SP. This section provides the following topics.

- Creating Remote Service Provider Partners
- Managing the Remote Service Provider Partners

31.4.1 Creating Remote Service Provider Partners

Use the Service Provider Partner page to define a partner profile when Identity Federation is configured as an IdP. You can specify service details manually or load them from a metadata file.

1. Log in to the Oracle Access Management Console as administrator.

   The Launch Pad is displayed.
2. Click Identity Provider Administration under Identity Federation.

   The Identity Provider Administration page is displayed.
3. Click the Create Service Provider Partner button.

   The Create Service Provider Partner page is displayed.
4. Enter values for the parameters.

Table 31–6 describes each element on the New Service Provider page.

Table 31–6 Service Provider Partner Settings

Element	Description
Name	This is the provider name.
Enable Partner	Select whether this partner is currently participating in the federation.
Description	This is a brief description of the provider. (Optional).
Protocol	This is the provider protocol (SAML 1.1, SAML 2.0 or OpenID 2.0).
Service Details	Select whether to enter service details manually or load from metadata. If selecting the latter, browse for the metadata file. Applies to SAML 2.0 only.
Metadata File	This field appears if loading metadata from a file. Click Browse to select a file to use. Applies to SAML 2.0 only.
Provider ID	The provider ID or issuer ID of the remote Service Provider. Applies to SAML 2.0 and SAML 1.1 only.
Assertion Consumer URL	A URL to which Assertion responses are sent. Applies to SAML 2.0 and SAML 1.1 only.
Load Signing Certificate	Upload the signing certificate used by this SP. Only visible when Enter Manually is selected. Applies to SAML 2.0 and SAML 1.1 only.
Logout Request URL	A URL to which logout requests are sent. Applies to SAML 2.0 only.
Logout Response URL	A URL to which responses to logout requests are sent. Applies to SAML 2.0 only.
Load Encryption Certificate	Upload the encryption certificate used by this SP. Only visible when Enter Manually is selected. Applies to SAML 2.0 only.
NameID Format	Indicates which NameID format should be used for this SP. Applies to SAML 2.0 and SAML 1.1 only. See Section 30.4.1, "Using SAML 2.0" or Section 30.4.2, "Using SAML 1.1" respectively for details on the NameID format.
NameID Value	Indicates how to populate the NameID Value. Applies to SAML 2.0 and SAML 1.1 only. ▪ If User ID Store Attribute is selected, specify the user attribute to be used. ▪ If Expression is specified, enter the expression to be used
Attribute Mapping Profile	Indicates the attribute mapping profile to which the partner is bound. Applies to SAML 2.0 and SAML 1.1 only.
User Identity Store	This is the identity store in which the IdP's users will be located and mapped. Identity Federation supports multiple identity stores, defined on a per-partner basis. If no user identity store is selected, the default store defined for Access Manager is used. (This is only relevant when OIF is an Attribute Authority for the SAML Attribute Sharing protocol. It is not used during SSO.)
User Search Base DN	This is the base search DN used when looking up user records. (Optional. If omitted, the default user search base DN configured for the selected user identity store is used.)
Enable Global Logout	Indicates whether or not OIF should notify the remote partner when the user is signing off, during the logout flow. Applies to SAML 2.0 only.
SSO Response Binding	Indicates whether the SAML Assertion should be sent back from the IdP using the HTTP POST Binding or the Artifact Binding, Applies to SAML 2.0 and SAML 1.1 only.
Encrypt Assertion	Indicates whether or not the Assertion should be encrypted for this partner. Applies to SAML 2.0 only.
Realm	The URL identifying an OpenID SP. Applies to OpenID 2.0 only.
Endpoint URL	The URL to which the IdP will redirect the user with the OpenID Assertion. Applies to OpenID 2.0 only.

5. Click Save to create the remote SP partner profile.

31.4.2 Managing the Remote Service Provider Partners

To edit and manage the profiles of remote SP partners, search for the profile and make changes to the attribute values.

To Search for Existing Service Provider Partner Profiles

1. Click Identity Provider Administration under Identity Federation in the Oracle Access Management Console Launch Pad.

   The Identity Provider Administration page is displayed.

2. In the Search section of the page, enter appropriate search criteria for identity provider(s). The characters "*" (asterisk) and "." (period) are supported as search wildcards. See Table 31–5 for details about the search parameters.

3. Activate the Search Service Provider Partners tab.

4. Enter the search criteria and click Search.

   The search results are displayed.

5. Select the appropriate partner in the Search Results table and select Edit under Actions (or click the pencil).

   A new tab is activated that displays the partner's attributes. In addition to the attributes documented in Table 31–6, the following advanced attributes can be modified.

   - Enable Global Logout
   - Encrypt Assertion
   - SSO Response Binding (HTTP POST or Artifact)

6. Click Save to keep the changes.

> **Note:** If using SAML 1.1, you can include a certificate in the signature. See *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for details.

31.5 Using Attribute Mapping Profiles

Identity Federation (when configured as an SP) supports the capability to request attributes from an IdP during the Federation process. To configure for this, map the name of an attribute from the incoming Assertion to a local attribute that will be available in the Access Manager session (`$session.attr.fed.attr.ATTR_NAME`, for example). An IdP Attribute Mapping Profile contains these mappings.

Similarly, Identity Federation (when configured as an IdP) supports including attributes in an SSO Assertion or allowing SP partners to request that attributes be placed in the SSO Assertion. Configuring Identity Federation as an IdP involves setting up an SP Attribute Mapping profile that defines the name of the attribute in the SSO assertion, the expression to be used to populate the attribute value, and whether or not to always send the attribute in the SSO Assertion.

> **Note:** The protocol used by the provider must support the feature; for example, OpenID 2.0.

Each partner type (IdP or SP) references an Attribute Mapping Profile that defines the applicable mappings. It indicates how to map attributes for that partner to attributes defined in the Identity Federation server. If a partner does not have an Attribute Mapping Profile defined, the default Attribute Mapping Profile (based on the partner type) will be used. There is a default Attribute Mapping Profile for each provider type.

- SP Attribute Mapping Profile: Each SP partner profile will reference an SP Attribute Mapping Profile. A default SP Attribute Mapping Profile will be used if none is configured. See Section 31.5.1, "Using the SP Attribute Mapping Profile" for details.
- IdP Attribute Mapping Profile: Each IdP partner profile will reference an IdP Attribute Mapping Profile. A default IdP Attribute Mapping Profile will be used if none is configured. See Section 31.5.2, "Using the IdP Attribute Mapping Profile" for details.

31.5.1 Using the SP Attribute Mapping Profile

When the Identity Federation instance is configured as an IdP, the SP Attribute Mapping Profile allows the administrator to define which message attributes (included in an incoming or outgoing Identity Federation message) map to which Access Manager session attributes. An expression is used to find the value for the Access Manager attribute when including it in an Assertion or outgoing message. Table 31–7 documents some sample SP attribute mappings.

Table 31–7 Sample SP Attribute Mappings

Message Attribute	Access Manager Session Attribute	Always Send
mail	$user.attr.mail	
firstname	$user.attr.givenname	true
lastname	$user.attr.sn	true
authn-level	$session.authn_level	true

Always Send indicates if the attribute should be sent even when it has not been specifically requested. If an attribute has to be included in an outgoing Assertion irrespective of whether it has been requested, Always Send should be set to true. If Always Send is false, this attribute will not be included in the Assertion unless requested. When an SP sends a request, message attributes are looked up and the mapping value for this message attribute is calculated by evaluating its expression.

> **Note:** The Value expression will use the OAM Policy Expression Language as documented in Section 20.9, "Introduction to Policy Responses for SSO." More than one message attribute can have the same value expression.

When creating or modifying an SP partner profile (as documented in Section 31.4.1, "Creating Remote Service Provider Partners"), the available Attribute Mapping Profiles are displayed in a drop-down list. `sp-attribute-profile` is the default profile. Select the default or click the green plus sign to create a custom mapping profile. When creating a new Attribute Mapping for an SP partner, the expressions documented in Table 31–8 can be embedded in the value string of the attribute. These expressions will be replaced by their runtime values.

Table 31–8 Attribute Mapping Value Expressions

Value Type	Accepted Values	Expression
request	httpheader.HTTP_HEADER_NAME	HTTP_HEADER_NAME being the name of an HTTP Header stored as $request.httpheader.HTTP_HEADER_NAME
	cookie.COOKIE_NAME	COOKIE_NAME being the name of a cookie stored as $request.cookie.COOKIE_NAME
	client_ip	stored as $request.client_ip
session	authn_level	stored as $session.authn_level
	authn_scheme	stored as $session.authn_scheme
	count	stored as $session.count
	creation	stored as $session.creation
	expiration	stored as $session.expiration
	attr.ATTR_NAME	ATTR_NAME being the name of an Access Manager Session Attribute stored as $session.attr.ATTR_NAME
user	userid	stored as $user.userid
	id_domain	stored as $user.id_domain
	guid	stored as $user.guid
	groups	stored as $user.groups
	attr.ATTR_NAME	ATTR_NAME being the name of an LDAP User Attribute stored as $user.attr.ATTR_NAME
expression (Based on the identifiers defined above and qualified with the type of data)	- request: ■ $request.httpheader.HTTP_HEADER_NAME ■ $request.cookie.COOKIE_NAME ■ $request.client_ip	- ■ HTTP_HEADER_NAME being the name of an HTTP Header ■ COOKIE_NAME being the name of a cookie ■
	- session: ■ $session.authn_level ■ $session.authn_scheme ■ $session.count ■ $session.creation ■ $session.expiration ■ $session.attr.ATTR_NAME	- ■ ■ ■ ■ ■ ■ ATTR_NAME being the name of an Access Manager Session Attribute

Table 31–8 (Cont.) Attribute Mapping Value Expressions

Value Type	Accepted Values	Expression
	- from user: ■ $user.userid ■ $user.id_domain ■ $user.guid ■ $user.groups ■ $user.attr.ATTR_NAME ■ can be any string, with '.' (dot) characters, spaces characters (like "$user.userid" or "$user.attr.givenname $user.attr.sn" or "This is the number of sessions: $session.count")	- ■ ■ ■ ■ ■ ATTR_NAME being the name of an LDAP User Attribute ■

31.5.2 Using the IdP Attribute Mapping Profile

When the Identity Federation instance is configured as an SP, the IdP Attribute Mapping Profile allows the administrator to define which attributes (included in an incoming or outgoing Identity Federation message) map to which Access Manager session attributes. The profile allows for the inclusion of the following data:

- Message Attribute: the name of the attribute in the incoming/outgoing Federation messages.
- Access Manager Session Attribute: the name by which the attribute is known to the local Access Manager server.
- Request From Partner: Indicates if this attribute is sent in the Request made to the IdP (a value for this attribute is requested by the SP).

Table 31–9 documents sample IdP attribute mappings.

Table 31–9 Sample IdP Attribute Mappings

Message Attribute	Access Manager Session Attribute	Request for Inclusion
mail	email	true
givenname		true
sn	surname	
uid	uid	

In a protocol where a SP can specify which attributes are required in a response from the IdP, a Message Attribute name is sent in the request to the IdP. In cases when the SP receives an assertion or response from an IdP, the Attributes from the assertion are stored in the Access Manager session. If no Access Manager value is specified, the Message Attribute is stored.

When creating or modifying an IdP partner profile (as documented in Section 31.3.1, "Creating Remote Identity Provider Partners"), the Attribute Mapping Profile is displayed with a drop-down list. The `idp-attribute-profile` is the default profile. Select the default or click the green plus sign to create a custom mapping profile.

The Ignore Umapped Attributes checkbox (in the configuration screen) indicates how to deal with Assertion Attributes not present (or that are present but have no value in

the Access Manager Session Attribute column). If this checkbox is not checked, all Assertion Attributes that are not present in the table (or don't have a value mapped to Access Manager) will be stored in the Access Manager session with the same attribute name it had in the Assertion. If checked, any Assertion Attribute not present in the table (or with no value mapped to Access Manager) will be ignored and not added to the Access Manager session.

Note: When the Identity Federation instance is configured as an SP it can request attributes only if the federation protocol used supports it. OpenID 2.0 supports this feature; SAML 2.0 and SAML 1.1 do not.

31.6 Mapping Federation Authentication Methods to Access Manager Authentication Schemes

A Federation Authentication Method (FAM) is an identifier representing an authentication mechanism in Federation messages. This identifier can either be well known (such as the identifiers defined in the SAML specifications like `urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport` or `urn:oasis:names:tc:SAML:1.0:am:password`) or it can be an arbitrary identifier agreed upon between the two communicating partners.

In its responsibilities as an IdP, Identity Federation generates an Assertion (SAML or OpenID) that might contain information on how the user was authenticated. During the Assertion generation process, the IdP will retrieve the Authentication Scheme with which the user was authenticated and attempt to map it to a FAM. If such a mapping exists, the IdP will include the FAM in the outgoing Assertion. If no mapping exists, the IdP will include the defined Authentication Scheme as the FAM in the Assertion.

Note: Session attributes can be used in proxy mode when a mapping is not defined. Identity Federation (when acting as an IdP) can use session attributes for the FAM value when creating the assertion, if both protocols are equivalent.

Table 31–10 lists the default, out-of-the-box mappings between FAMs and Access Manager Authentication Schemes.

Table 31–10 Default Federation Authentication Method and Access Manager Authentication Scheme Mappings

Protocol	Mapping
saml20-sp-partner-profile	urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport to: ■ LDAPScheme (scheme used if the SP Partner requests urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport) ■ FAAuthScheme ■ BasicScheme ■ BasicFAScheme

Table 31–10 (Cont.) Default Federation Authentication Method and Access Manager Authentication Scheme Mappings

Protocol	Mapping
saml11-sp-partner-profile	urn:oasis:names:tc:SAML:1.0:am:password to: ■ LDAPScheme (scheme used if the SP Partner requests urn:oasis:names:tc:SAML:1.0:am:password) ■ FAAuthScheme ■ BasicScheme ■ BasicFAScheme

More details are in the following sections.

- Understanding Federation SSO As An IdP
- Understanding Federation SSO As An SP
- Configuring an Alternate Authentication Scheme
- Using WLST For Mapping Administration

31.6.1 Understanding Federation SSO As An IdP

When Identity Federation acts as an IdP, it processes incoming Authentication Request messages sent by SP partners. These messages might specify a FAM with which the user should be challenged by Access Manager (the IdP). If the Authentication Request contains a FAM, the IdP will attempt to map it to an Access Manager Authentication Scheme. If such a mapping is defined, Access Manager will authenticate the user using that scheme - only if the user needs to be challenged. The user would need to be challenged if, for example, the session timed out or does not exist or, the authentication level of the current session is lower than the level of the mapped Authentication Scheme or, the user has not yet been authenticated by Access Manager. If no mapping is defined, the IdP will return an error to the SP indicating that the FAM is unknown.

When the IdP Authentication Module invokes Access Manager to challenge the user, it will determine the Authentication Scheme to be used for the operation in one of the following ways:

- The SP requests a specific means to authenticate the user with a Federation Authentication Request.
- The SP settings in the IdP configuration that define a default scheme. The Partner configuration is checked first, followed by the Partner Profile configuration and finally the global default Authentication Scheme defined in the IdP configuration (LDAPScheme).

> **Note:** By default, the Partner and Partner Profile configurations do not define a default Authentication Scheme. As such, the global default Authentication Scheme is in effect: LDAPScheme.

After authentication, the IdP creates an Assertion and maps the Access Manager Authentication Scheme (and appropriate level) to a FAM, if such a mapping exists. The FAM is set as the Authentication Context. If no mapping exists, Identity Federation sends the default Access Manager Authentication Scheme as the Authentication Context. Following this process, the user is redirected back to Identity Federation.

31.6.2 Understanding Federation SSO As An SP

When acting as an SP in a Federation SSO process, Identity Federation processes an incoming Assertion generated by an IdP partner. This process results in the creation of an Access Manager session for the user and the mapping of the FAM contained in the Assertion to the default SchemeID/Access Manager authentication scheme. Identity Federation provides the authentication level, if set, that should be used when Access Manager creates the user session. (By default, the Authentication Level of the Access Manager session will be set to the Authentication Level of the defined FederationScheme.) The FAM will be saved as a session attribute.

The administrator can define a mapping where the SP will create an Access Manager session with a level set to the mapped Authentication Level for the FAM contained in the Assertion. This provides a way to reflect the strength of the mechanism with which the user was originally authenticated by the IdP.

31.6.3 Configuring an Alternate Authentication Scheme

During a Federation SSO operation, the IdP invokes the Access Manager Authentication Module to challenge the user when required; for example, if the user is not authenticated in Access Manager, has an Access Manager session that has been inactive too long or timed out or, if the Service Provider indicates (with a Federation Authentication Request) that the IdP must re-challenge the user. For certain clients, an IdP might be required to use another Authentication Scheme to challenge a user besides the default one. This is especially true for mobile phones when an administrator might want to challenge a user with an Authentication Scheme that is different than the one used for computer-based browsers; for example, instead of an HTTP Basic Authentication Scheme, a scheme designed for mobile clients would be used.

Identity Federation (when working as an IdP) can be configured to evaluate whether an alternate Authentication Scheme should be used instead of the configured one by examining the HTTP Header sent by the user's browser. Identity Federation evaluates based on the following configurable settings:

- A setting indicating which HTTP Header attribute is sent by the user's browser.
- A setting containing a regular expression that will evaluate the value of the above HTTP Header attribute.
- A setting containing the alternate Authentication Scheme to use.

> **Note:** If the SP requested a specific Authentication Scheme, evaluation does not apply.

An alternate Authentication Scheme is only configurable using WLST commands and not the Oracle Access Management Console. For information on the `setSPPartnerAlternateScheme` and `setSPPartnerProfileAlternateScheme` WLST commands, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

31.6.4 Using WLST For Mapping Administration

All Authentication Method/Scheme/Level mappings are configured using the WLST commands. This can be done either at the partner level or, if not defined at the partner level, at the partner profile level. See Section 31.9, "Using WLST for Identity Federation Administration" for details.

31.7 Using the Attribute Sharing Plug-in for the Attribute Query Service

Identity Federation provides an attribute sharing plug-in to enable Access Manager to request user attributes from an IdP. In this interaction, the SP is an <AttributeQuery> requestor and the IdP is an <AttributeQuery> responder. The Attribute Sharing Plug-in depends on the Attribute Query Service, a request/response protocol transported using SOAP.

> **Note:** The Attribute Sharing Plug-in leverages the AttributeQuery requestor service to implement (a superset of) the X.509 Authentication Based Attribute Sharing Profile (XASP) in the context of Access Manager authentication flows.

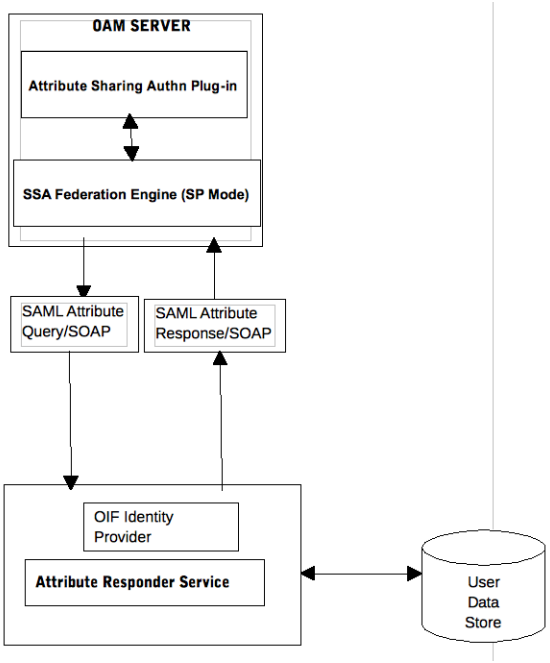
Identity Federation (when configured as an SP) can send a SAML 2.0 <AttributeQuery> to the IdP in response to a SOAP call. The plug-in can be configured as a step in an Authentication Scheme. It can be invoked after authentication (by another plug-in) to fetch attributes for the authenticated user and set them into the Access Manager session. The following sections contain additional details.

- Understanding the Plug-in and Query Service Design
- Configuring for Attribute Sharing

31.7.1 Understanding the Plug-in and Query Service Design

Identity Federation must be configured as an SP to request user attributes from a remote IdP. From a high level, the design of the Attribute Sharing plug-in is illustrated in Figure 31–5.

Figure 31–5 Attribute Sharing Plug-in Design



The Attribute Sharing plug-in can be part of an Access Manager Custom Authentication Module and is invoked after a user has been authenticated. The

Attribute Sharing plug-in will fetch the user attributes by invoking the Identity Federation Java API, setting the attributes into the Access Manager session and transforming the Java arguments into an Attribute Request that can be processed by the SP. The Identity Federation SP receives the Attribute Request (at an exposed SOAP endpoint), determines the attributes being requested and sends an (optionally) signed and encrypted SAML 2.0 <AttributeQuery> using the requested attribute names over a SOAP/HTTP/SSL channel to the IdP's Attribute Responder Service.

Note: When invoking the Attribute Sharing plug-in, the framework will provide the following for inclusion in the <AttributeQuery>:

- User ID of the authenticated user or SubjectDN if available
- Partner ID user session attribute (available only if the Federation Authentication plug-in was used to authenticate user)
- Tenant Name
- IdP Name if the plug-in was created specifically for an IdP

The Attribute Responder Service (at the remote IdP) receives the <AttributeQuery>, decrypts it (verifying the signature if necessary) and determines (from its local policy) if the SP is authorized to request the attributes. If so, it retrieves the attributes from a user repository, constructs and (optionally) signs and encrypts an <Assertion> (with an <AttributeStatement> containing the attribute values) and returns a <Response> with the assertion to the SP. On receiving the <Response>, the SP decrypts the assertion, verifies (if necessary) its signature, extracts the attributes from the assertion and set the information in the Access Manager session. The following sections contain more details.

- Using the SP Attribute Requester
- Using the IdP Attribute Responder
- Using the SOAP Endpoint

31.7.1.1 Using the SP Attribute Requester

The Attribute Requester Service processes the SOAP Attribute Request and returns a SOAP Attribute Response. (See Section 31.7.1.3, "Using the SOAP Endpoint" for details.) The Attribute Request will contain a SubjectDN and a list of other requested attributes and their values. The Attribute Requester Service identifies the IdP from which to fetch attributes by extracting one of the following (searched for in the order listed) from the request.

1. The partner/IdP name if the request comes from the Federation engine.
2. The IdP configured in the plug-in used for authentication.
3. The request's Subject DN to determine which IdP will get the query from the configured SubjectDN-IdP map. Map the SubjectDN from most specific (cn=Joe User,ou=Finance,o=Company,c=US) to least specific (c=US).
4. The default IdP.

Following this discovery, the Attribute Requester Service retrieves the SOAP Attribute Responder Service endpoint URL from the IdP's metadata and creates a list of attributes to fetch by processing the attributes in the request through the Attribute Mapping profile.

> **Note:** Attribute Mapping profile specified for the target IdP will be used to change any incoming attribute names as well as add any attributes that are configured as `send-with-sso` (always requested) in the Attribute Mapping for this IdP.

A SAML Attribute Query is generated with the attribute list and sent to the IdP's SOAP endpoint. Once a response is received, the subject is verified and the each attribute is extracted from the Assertion, its value is found and both attribute and value are cached. Finally, an Attribute Response SOAP message is constructed and returned to the caller. Example 31–1 is a sample SOAP Attribute Request.

Example 31–1 Sample SOAP Attribute Request

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
   <SOAP-ENV:Body>
      <attrreq:AttributeRequest TargetIDP="adc.example.com"
          xmlns:attrreq="http://www.example.com/fed/ar/10gR3">
      <attrreq:Subject
         Format="oracle:security:nameid:format:emailaddress">alice@example.com
      </attrreq:Subject>
         <attrreq:Attribute Name="cn">
         </attrreq:Attribute>
      </attrreq:AttributeRequest>
   </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example 31–2 is a sample SOAP attribute response.

Example 31–2 Sample SOAP Attribute Response

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
 <soap:Envelope xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:ns2="http://www.w3.org/2005/08/addressing"
  xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
  xmlns:enc="http://www.w3.org/2001/04/xmlenc#"
  xmlns:md="urn:oasis:names:tc:SAML:2.0:metadata"
  xmlns:wst14="http://docs.oasis-open.org/ws-sx/ws-trust/200802"
  xmlns:samlp="urn:oasis:names:tc:SAML:2.0:protocol"
  xmlns:ic="http://schemas.xmlsoap.org/ws/2005/05/identity"
  xmlns:mdext="urn:oasis:names:tc:SAML:metadata:extension"
  xmlns:wst="http://schemas.xmlsoap.org/ws/2005/02/trust"
  xmlns:ns11="http://docs.oasis-open.org/ws-sx/ws-trust/200512"
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:saml="urn:oasis:names:tc:SAML:1.0:assertion"
  xmlns:ns14="urn:oasis:names:tc:SAML:2.0:assertion"
  xmlns:xrds="xri://$xrds" xmlns:xrd="xri://$xrd*($v*2.0)"
  xmlns:tns="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy"
  xmlns:ns18="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702"
  xmlns:ns19="urn:oasis:names:tc:SAML:1.0:protocol"
  xmlns:ns20="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsse11="http://docs.oasis-open.org/wss/
   oasis-wss-wssecurity-secext-1.1.xsd"
  xmlns:dsig="http://www.w3.org/2000/09/xmldsig#"
  xmlns:query="urn:oasis:names:tc:SAML:metadata:ext:query"
  xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/
   oasis-200401-wss-wssecurity-utility-1.0.xsd"
  xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/
   oasis-200401-wss-wssecurity-secext-1.0.xsd"
```

```
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:x500="urn:oasis:names:tc:SAML:2.0:profiles:attribute:X500"
  xmlns:orafed-arxs="http://www.oracle.com/fed/ar/10gR3"
  xmlns:mdattr="urn:oasis:names:tc:SAML:metadata:attribute"
  xmlns:ns31="urn:oasis:names:tc:SAML:profiles:v1metadata"
  xmlns:ecp="urn:oasis:names:tc:SAML:2.0:profiles:SSO:ecp">

<soap:Body><orafed-arxs:AttributeResponse CacheFor="899">
 <orafed-arxs:Status>Success</orafed-arxs:Status>
 <orafed-arxs:Subject Format="oracle:security:nameid:format:emailaddress">
   alice@example.com</orafed-arxs:Subject>
 <orafed-arxs:Attribute Name="cn">
 <orafed-arxs:Value>alice</orafed-arxs:Value>
 </orafed-arxs:Attribute>
 </orafed-arxs:AttributeResponse>
</soap:Body>
</soap:Envelope>
```

31.7.1.2 Using the IdP Attribute Responder

The Identity Federation IdP Attribute Responder receives the SAML Attribute Query and returns a SAML response with an Attribute Statement that contains values for the requested attributes. The IdP first identifies the requester as an SP partner and then confirms that the user is in the user data store by searching on the NameId or SubjectDN value. It then uses the Attribute Mapping profile of the SP partner to retrieve values for each of the requested attributes. Finally, it constructs and returns a SAML response containing an Attribute Statement with attribute values. (This is only relevant when OIF is an Attribute Authority for the SAML Attribute Sharing protocol. It is not used during SSO.)

> **Note:** The Attribute Responder uses the SP partner's Attribute Mapping profile to retrieve values. An empty value is returned for an attribute if there is no mapping present in the Attribute Mapping profile. If the value expression contains variables in the namespace of a session or request, this also evaluates to an empty string. Value Expressions in the Attribute Mapping Profile can only use variables in the namespace of `user.attr` to be evaluated correctly.

31.7.1.3 Using the SOAP Endpoint

The Attribute Requester Service on the SP exposes a SOAP interface for client requests. The SOAP service is available on the SP at the following URL:

```
http://<SP-managed-server>:<SP-port>/oamfed/ar/soap
```

31.7.2 Configuring for Attribute Sharing

The Attribute Sharing Plug-in can optionally be provided with the configuration parameters documented in Table 31–11.

Table 31–11 Configuration Parameters for Attribute Sharing Plug-in

Parameter	Description
NameIDValueAttribute	The name of the session attribute from which the user's nameID can be retrieved.

Table 31–11 (Cont.) Configuration Parameters for Attribute Sharing Plug-in

Parameter	Description
NameIDFormatAttribute	The name of the attribute that contains the value to be used as the nameID format.
AttributeAuthorityAttribute	The name of the attribute that contains the value used as the IdP to which the SP will send the <AttributeQuery>.
RequestedAttributes	This parameter can be used to specify attributes to be requested in the URL query format; for example, `attr1&attr2&attr3=value1`. In this case, attr1 and attr2 will be fetched but attr3 will be present in the response ONLY if one of its values is value1.
DefaultNameIDFormat	The nameID format to be used if it is undetermined from the other parameters and session attributes.
DefaultAttributeAuthority	The default IdP partner from whom to request the user's attributes.

The Attribute Sharing Plug-in can also access the attributes documented in Table 31–12. These attributes may be present in the Access Manager session during its operation.

Table 31–12 Session Attributes Accessible To Attribute Sharing Plug-in

Attribute	Description
fed.partner	If Federation was used to authenticate the user, this value is used to determine the IdP used. The same IdP would then be used for Attribute Sharing.
fed.nameidformat	If Federation was used to authenticate the user, the value of this attribute is used to determine the NameID format.
fed.nameidvalue	If Federation was used to authenticate the user, the value of this attribute is used to determine the NameID of the user. If present in the session, it will be used as the DN to locate the user in the SP's identity store.
KEY_USERNAME_DN	If this value is present, it will be used as the DN to locate the user in the SP's identity store.

The following sections have additional details on parameters and how they determine how the Attribute Sharing process.

- NameID
- NameID Format
- IdP
- RequestedAttributes

31.7.2.1 NameID

This is the name identifier of the user for whom the SP is requesting attributes. To determine the NameID, the following searches will be conducted in order.

In the Attribute Sharing plug-in

1. If the NameIDValueAttribute is specified, retrieve the value of the specified attribute from the session and use it as the NameID.

2. If NameIDValueAttribute is not specified, use the value of `fed.nameidvalue` for the NameID.
3. If undetermined by the above, the Attribute Sharing Plug-in will invoke the Federation Engine with a null/empty NameID and the UserID (specified in the KEY_USERNAME_DN session attribute) is sent to the SP Attribute Requester.

In the Attribute Requester (SP)

1. If the NameID is in the Request, use its value for the user's nameID.
2. If a NameID is undetermined but a UserID is present (which occurs when invoking the Authentication Plug-in), retrieve the value of the `defaultattrrequestnameiduserattribute` attribute (found in the SP configuration for this IdP) and use it as the NameID.
3. When using SAML 2.0 only: If a NameID is not determined and SSO is configured for Simple NameID mapping, use the `nameiduserattribute` attribute (found in the SP configuration for this IdP). For example, if the value of this attribute is `$user.attr.mail`, extract the name of the user from this attribute and use it as the NameID.
4. If a NameID is still undetermined, an error is thrown.

31.7.2.2 NameID Format

This is the format of the user's NameID. To determine the NameID format, the following searches will be conducted in order.

In the Attribute Sharing plug-in

1. If the NameIDFormatAttribute parameter (Table 31–11) is specified, retrieve the value of the specified attribute and use it as the NameID format.
2. Use the value of the `fed.nameidformat` attribute (Table 31–12) as the NameID format.
3. Use the value of the `DefaultNameIDFormat` (Table 31–11) as the NameID format.
4. If NameID Format is still undetermined, the Attribute Sharing plug-in will invoke Federation with a null/empty NameID Format.

In the Attribute Requester (SP)

1. Use the NameID Format specified in the request.
2. Use the value of the `defaultattrrequestnameidformat` attribute (found in the SP configuration for this IdP).
3. When using SAML 2.0 only: If the NameID Format is still undetermined, use the value of the `defaultauthnrequestnameidformat` attribute (found in the SP configuration for this IdP).
4. If a NameID Format is still undetermined, an error is thrown.

31.7.2.3 IdP

This is the IdP partner to which the attribute request should be sent. To determine the IdP partner, the following searches will be conducted in order.

In the Attribute Sharing plug-in

1. If the AttributeAuthorityAttribute (Table 31–11) is specified, retrieve its value and use it as the IdP name.

2. Use the value of the `fed.partner` attribute (Table 31–12) as the IdP name.
3. Use the value of the `DefaultAttributeAuthority` parameter (Table 31–11) as the IdP name.
4. If the IdP is still undetermined, the Attribute Sharing plug-in will invoke Federation with a null/empty NameID Format.

In the Attribute Requester (SP)

1. Use the IdP name included with the request sent to the Attribute Sharing plugin.
2. When using x509 only: look up the dn-idp mapping to determine the IdP for this user DN.
3. Use the value of the `defaultattrauthority` attribute (found in the SP configuration).
4. Use the value of the `defaultssoidp` attribute (found in the SP configuration).
5. If an IdP name is still undetermined, an error is thrown.

31.7.2.4 RequestedAttributes

These are the attributes to be requested from the Attribute Authority. To determine the attributes, the following searches will be conducted in order.

In the Attribute Sharing plug-in

If the `RequestedAttributes` parameter (Table 31–11) is defined, use the attributes specified. If none are specified, no attributes are sent.

In the Attribute Requester (SP)

1. If the `RequestedAttributes` parameter (Table 31–11) is defined, use the attributes specified.
2. Append (or add) attributes to the `request from partner(send-with-sso)` attribute in the IdP partner profile.

In the Attribute Responder (IdP)

1. If the <AttributeQuery> from the SP contains requests for specific attribute values, return values for those attributes.
2. If no attribute values are requested, return any attributes specified as `Always Send (send-with-sso)` in the SP attribute profile configuration.

31.8 Using the Federation Proxy

When configured as an IdP, Identity Federation can enable the Federation Proxy to receive an Authentication Request from a remote SP partner. Rather than authenticating the user locally, the IdP begins a second Federation SSO flow (SP2) with a second, remote IdP (IdP2). IdP2 then authenticates the user, creates an Assertion and redirects the user back to the Federation Proxy (IdP/SP2). The proxy validates the Assertion, identifies the user and resumes the first Federation SSO flow by creating a second Assertion and redirecting the user back to the original SP. With Federation Proxy, the first IdP is proxying the authentication to the second IdP.

Note: The Federation Proxy does not refer to the HTTP Proxy settings listed under Federation Settings. That is used by Identity Federation to connect to remote servers when a firewall is present.

To use Federation IdP Proxy, the administrator configures Identity Federation to use FederationScheme for authentication rather than a local scheme (like LDAPScheme or BasicScheme). At runtime, if the user needs to be authenticated using the FederationScheme, Identity Federation will act as an SP and start the Federation SSO flow with a remote IdP.

Note: There is an option to include the proxied Federation authentication method used by the second IdP in the Assertion created for the first SP. This is only possible if the Federation SSO operation between SP2 and IdP2 use the same protocol as the one used between SP1 and IdP1.

For information on how to enable Federation Proxy using the `useProxiedFedAuthnMethod` WLST command, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

31.9 Using WLST for Identity Federation Administration

Identity Federation uses WLST commands for administration. There are commands for managing authentication mappings, partner profiles and SAML 1.1 that do not have applicable administrative fields for configuration in the Oracle Access Management Console. For information on these and other WLST commands, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

32

Managing Settings for Identity Federation

This chapter introduces the settings that must be configured for use by Oracle Access Management Identity Federation. This chapter includes the following sections:

32.1 Prerequisites

The topics in this chapter presume that you have performed tasks in Chapter 31, "Managing Identity Federation Partners".

32.2 Introduction to Federation Settings

This section introduces the federation settings that must be configured to enable the Identity Federation functionality available from the Oracle Access Management Console.

Figure 32–1 shows the Federations Settings page as it appears in the Oracle Access Management Console. This page is the same whether you choose Identity Federation Service Settings from the Welcome page, Configuration panel, or you display the Federation section of the System Configuration tab and choose Federation Settings.

Figure 32–1 Identity Federation Service Settings Page

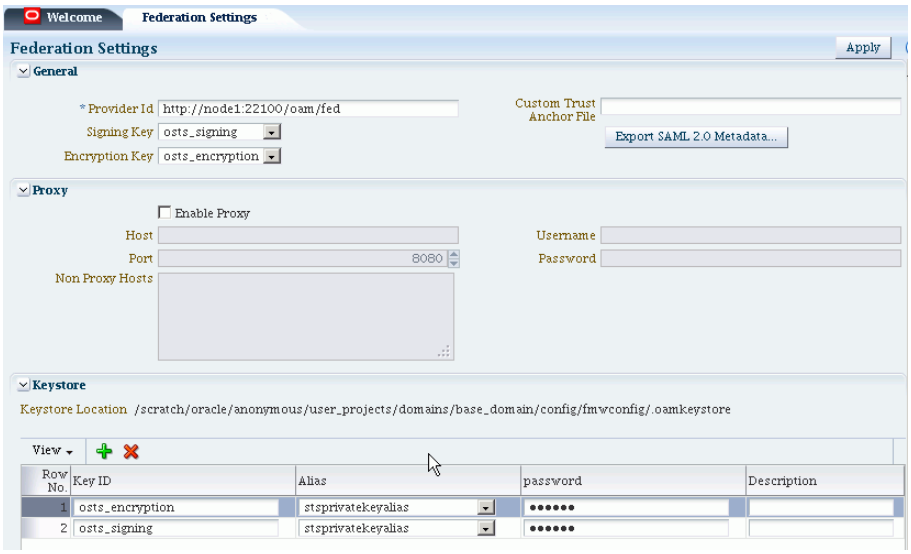


Table 32–1 outlines the types of federation settings you can configure.

Table 32–1 Federation Settings in the Console

Elements	Description
General	General federation settings include basic information about the provider and the keys used to send assertions. See Also: Managing General Federation Settings
Proxy	Proxy settings enable you to set up a proxy server for federation. See Also: Managing Proxy Settings for Federation
Keystore	Keystore settings enable you to create aliases (a short hand notation) for keys in the keystore. See Also: Defining Keystore Settings for Federation

32.3 Managing General Federation Settings

This topic is divided as follows:

- About Managing General Federation Settings
- Managing General Federation Settings

32.3.1 About Managing General Federation Settings

You view and manage general federation properties on the Federation Settings page of the console.

Figure 32–2 shows the General section of the Federation Settings page.

Figure 32–2 General Section of Federation Settings Page

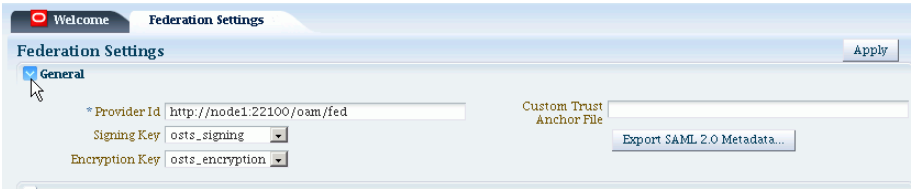


Table 32–2 describes each element on the General section of the Federation Settings page.

Table 32–2 General Federation Settings

Element	Description
Provider ID	This is the provider ID of this federation server. For example, `http://foo.example.com/fed`.
Signing Key	This key is used to sign assertions.
Encryption Key	This key is used to decrypt incoming messages.
Custom Trust Anchor File	Specifies a keystore that contains trusted root certificates use in federation. The default trust store is `$DOMAIN_HOME/config/fmwconfig/amtruststore`. In most cases, the default trust anchor should be enough. If necessary, specify the location of an alternate keystore to use. *Note*: When you use a custom trust anchor keystore, it will not be replicated automatically across the cluster. You must manage replication of this keystore.
Export SAML 2.0 Metadata	After changes to the General settings, you must export the metadata for use by federation partners. See Also: Exporting Metadata

32.3.2 Managing General Federation Settings

General settings include basic information about a provider.

Prerequisites

None.

To set or modify General settings for Federation

1. From the Oracle Access Management Console, click Federation Settings:
2. On the Federation Settings page, enter General Settings values for your (Table 32–2).
3. Click **Apply** to save your changes.
4. Proceed to "Managing Proxy Settings for Federation".

32.4 Managing Proxy Settings for Federation

This topic is organized in the following sections.

- About Proxy Settings for Federation
- Managing Proxy Settings for Identity Federation

32.4.1 About Proxy Settings for Federation

A proxy may be required when Identity Federation needs to directly connect to the federation partner, such as in a SAML artifact SSO operation.

You view and manage a proxy configured for use with federation partners on the Federation Settings page of the console.

Figure 32–3 illustrates the Federation Proxy Settings section of the Federation Settings page. Subsequently, Table 32–3 describes each element on this section of the page.

Figure 32–3 Federation Proxy Settings

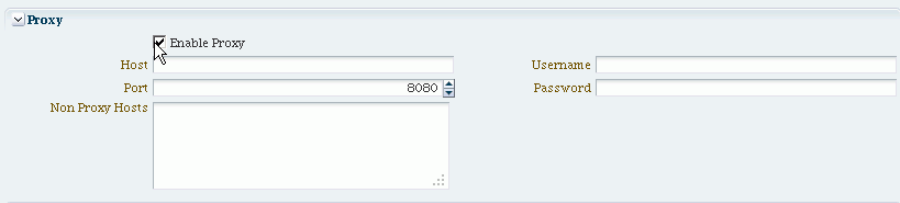


Table 32–3 describes each element on the Federation Proxy Settings section of the Federation Settings page.

Table 32–3 Federation Proxy Settings

Element	Description
Enable Proxy	Checking the box enables the proxy server. When the box is unchecked, the Proxy function is disabled and related fields are inaccessible for editing.
Host	This element specifies the proxy hostname.
Port	This element specifies the proxy port number.
Non-proxy Hosts	This is a list of hosts for which the proxy should not be used. Use ';' to separate multiple hosts.
Username	This is the proxy user name to use when connecting to the proxy.
Password	This is the proxy password to use when connecting to the proxy.

32.4.2 Managing Proxy Settings for Identity Federation

Skip Step 1 if viewing the Federation Settings page.

Prerequisites

None.

To set or modify Proxy settings for Federation

1. From the Oracle Access Management Console, click Federation Settings.
2. On the Federation Settings page, evaluate current proxy settings values against those needed for your environment.
3. Fill in the Proxy settings using values for your environment (Table 32–3).
4. Click **Apply** to save your changes.
5. Proceed to "Defining Keystore Settings for Federation".

32.5 Defining Keystore Settings for Federation

This topic is organized in the following sections.

- About Managing Keytore Settings for Identity Federation
- Managing Identity Federation Encryption/Signing Keys

32.5.1 About Managing Keytore Settings for Identity Federation

You view and manage keystores configured for use with federation partners on the Federation Settings page of the console.

Figure 32–4 Keystore Settings

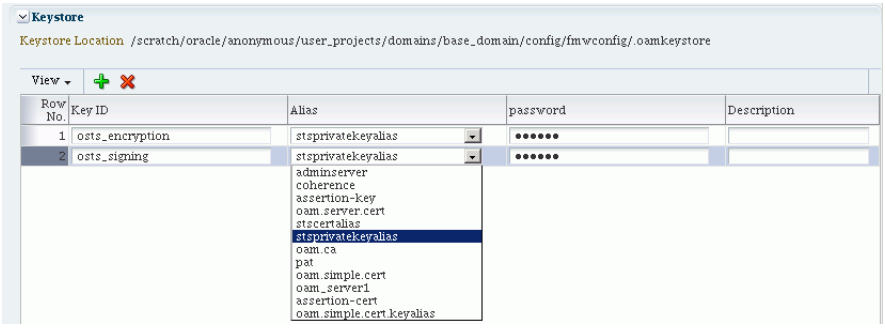


Table 32–4 describes each element on the Keystore Settings section of the Federation Settings page.

Table 32–4 Keystore Settings for Federation

Element	Description
Keystore Location	This element specifies the keystore path.
Key ID	This is the unique key ID.
Description	This element provides a brief description of the key, such as its usage type.
Alias	This element specifies the key alias. *Note*: You can choose one of the aliases that is available in the keystore using the drop-down.
Password	This element specifies the key password.

32.5.2 Managing Identity Federation Encryption/Signing Keys

As described in Chapter 5, Identity Federation uses keys in the following keystore to store encryption and signing certificates:

```
$DOMAIN_HOME/config/fmwconfig/.oamkeystore
```

Task overview: Managing Identity Federation Encryption/Signing Keys

- Resetting the System (.oamkeystore) and Trust (amtruststore) Keystore Password
- Adding a New Key Entry to the System Keystore (.oamkeystore)

> **Note:** AM denotes Access Manager, STS denotes Security Token Service, and IF denotes Identity Federation in this discussion.

32.5.2.1 Resetting the System (.oamkeystore) and Trust (amtruststore) Keystore Password

Use the following procedure to reset the password that protects the keystores as well as the key entries which use the same password as the keystore.

Note that the keystores were created and configured by the IM/OAMAM/OSTS installer, and the password and the key entries password were randomly generated. The WLST `resetKeystorePassword` method allows you to set the .oamkeystore password and any key entries with a password identical to the .oamkeystore password to a new value. The command:

- updates the .oamkeystore password
- updates the key entries in the .oamkeystore which had the same password as the keystore
- updates the OAMAM/STS/IF configuration to reflect the change
- updates the amtruststore password if the keystore is protected by the same password as the .oamkeystore (default)

To set the system keystore (.oamkeystore) password:

1. Enter the WLST scripting environment.
2. Connect to the WebLogic Server AdminServer, using the `connect()` command.
3. Navigate to the domain runtime tree: `domainRuntime()` .
4. Execute the following command:

   ```
   resetKeystorePassword()
   ```

5. Enter and confirm the password.

32.5.2.2 Adding a New Key Entry to the System Keystore (.oamkeystore)

You can add a new key entry into the system keystore (.oamkeystore) using the `keytool` command to create and add the new key entry. Once the entry has been added, it must be defined in the Identity Federation settings configuration screen so that it can be used to sign assertions and decrypt incoming messages.

This topic provides the following procedures to add a new entry to the system keystore to sign SAML assertions or decrypt XML-encrypted data not covered by WSS:

- Adding a New Entry in the .oamkeystore
- Adding a New Entry in the Identity Federation Settings
- Configuring the Signing and Encryption Key

32.5.2.2.1 Adding a New Entry in the .oamkeystore

Prerequisites

The system keystore (.oamkeystore) password has been reset.

To configure a new entry:

1. Locate keytool.
2. Use keytool to:
   - generate a self-signed certificate, or

- generate a certificate request, export the request to a remote Certificate Authority (CA), and finally import the certificate issued by the CA.

32.5.2.2.2 Adding a New Entry in the Identity Federation Settings

The steps are as follows:

1. From the Oracle Access Management Console, click Federation Settings.
2. On the Federation Settings page, navigate to the Keystore table.
3. Add a row.
4. Enter a key ID that will be used to reference this key when configuring Identity Federation.
5. Select the alias of the key entry stored in .oamkeystore.
6. Enter the key password.
7. Click **Apply**.

32.5.2.2.3 Configuring the Signing and Encryption Key

Once the key has been added to the keystore table, you can configure Identity Federation to use the key. The steps are as follows:

1. From the Oracle Access Management Console, click Federation Settings.
2. Navigate to the General section.
3. Select the Signing Key from the list of available key entries that were defined in the keystore table.
4. Select the encryption key from the list of available key entries that were defined in the keystore table.
5. Click **Apply**.

Identity Federation will now use those keys to sign and decrypt messages.

32.6 Exporting Metadata

After changes to the general settings, you can export the metadata for use by federation partners.

To Export SAML 2.0 Metadata

Take these steps to export the metadata:

1. From the Oracle Access Management Console, click Federation Settings.
2. On the Federation Settings page, click **Export SAML 2.0 Metadata**.
3. A dialog box appears where you must specify the file for the exported metadata.
4. Click **Save** to save your new metadata file.

33

Managing Federation-related Schemes and Policies

This chapter introduces the federation-related authentication schemes and policies that must be configured for Oracle Access Management Identity Federation.

This chapter includes the following sections:

33.1 Prerequisites

You define one or more authentication schemes to enable Oracle Access Management Access Manager to work with federation providers to authenticate users that request access to Access Manager-protected resources.

For Identity Federation concepts, background and high-level flows, see "Authentication Overview" in Chapter 3, Deploying Oracle Identity Federation, of *Oracle Fusion Middleware Administrator's Guide for Oracle Identity Federation*.

33.2 Using Identity Federation and Access Manager in Concert Together

The use of federation features with Access Manager varies depending on the release. When integrating with Identity Federation:

- 11g Release 1 (11.1.1) sites, and those upgrading from 11g Release 1 (11.1.1) to 11g Release 2 (11.1.2), can use the integration described in *Oracle Fusion Middleware Integration Guide for Oracle Identity Management Suite*.
- Sites with new 11g Release 2 (11.1.2) installations can leverage federation features using the Oracle Access Management Console.

33.3 Using Authentication Schemes and Modules for Identity Federation 11*g* Release 2 (11.1.2.2)

This topic is divided as follows:

- About the FederationScheme Authentication Scheme
- About the FederationPlugin Authentication Module

33.3.1 About the FederationScheme Authentication Scheme

`FederationScheme` is a general-purpose scheme for use with Identity Federation 11*g* Release 2 (11.1.2.2).

Figure 33–1 shows the Access Console page for `FederationScheme`:

Figure 33–1 FederationScheme

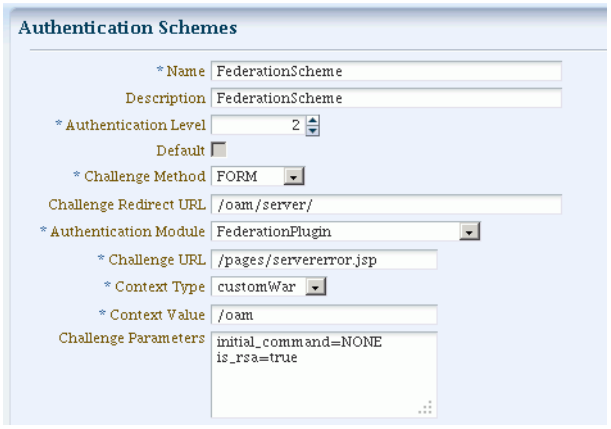


Table 33–1 describes the `FederationScheme`.

Table 33–1 FederationScheme Element Definitions

Element	Description
Name	This is the scheme name.
Description	This is a brief description of the scheme.
Authentication Level	This is the trust level of the authentication scheme.
Default	This is a non-editable box that is checked when the **Set as Default** button is clicked.
Challenge Method	You may select a challenge method from those available in the drop-down box.
Challenge Redirect URL	This is the URL of another server to which user requests must be redirected for processing.
Authentication Module	This is the authentication module to use with the scheme.
Challenge URL	This is the URL to which the credential collector will redirect for credential collection. Not used by the federation plug-in.
Context Type	This element is used to build the final URL for the credential collector.
Context Value	This element is used to build the final URL for the credential collector. The value depends on the context type.
Challenge Parameters	This is the list of parameters, if any, to use with the challenge.

See Also: Table 19–21 for `FederationScheme` specifications.

About Scheme FederationMTScheme

The authentication scheme `FederationMTScheme` is another scheme designed for use with 11*g* Release 2 (11.1.2.2). It is meant for multi-tenancy environments.

33.3.2 About the FederationPlugin Authentication Module

`FederationPlugin` provides a custom authentication module.

Figure 33–2 FederationPlugin

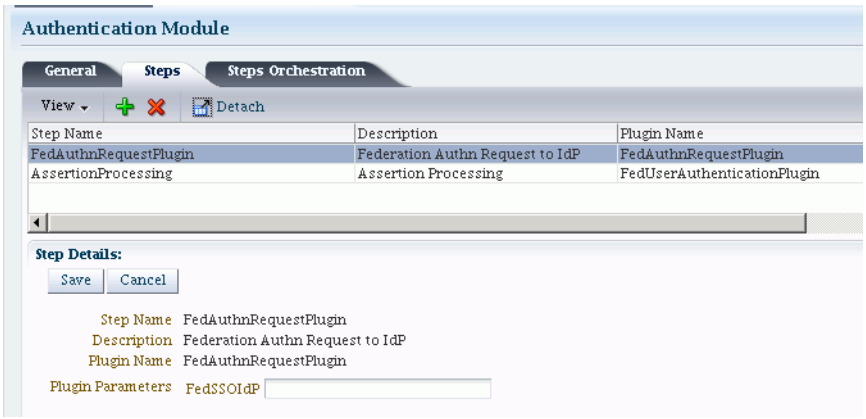


Table 33–2 describes the steps for FederationPlugin.

Table 33–2 FederationPlugin Steps

Element	Description
Step Name	This is the name of the step within the module.
Description	This element contains a brief description of the step.
Plugin Name	This element specifies the plugin associated with the step.
The value of FedSSOIdP is the IDP provider to be picked up by the authentication plugin.	

Figure 33–3 illustrates the orchestration of the `FederationPlugin`, which is similar to the orchestration described in Table 19–14, " Steps Orchestration Subtab".

Orchestration enables you to specify the ordering of steps within the plugin, and what to do if each of those steps succeeds or fails.

Figure 33–3 FederationPlugin Orchestration

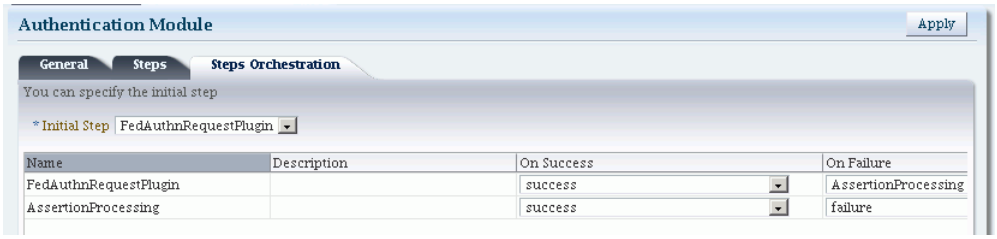


Table 33–3 describes the orchestration of the `FederationPlugin`.

Table 33–3 Orchestration of FederationPlugin

Element	Description
Name	This is the step name. The steps appear in this column in order of execution, which can be modified with the Initial Step drop-down.
Description	This is a brief description of the step.
On Success	This is the action to take upon successful completion of the step, such as execution of next step in the orchestration.
On Error	This is the action to take upon error, such as taking the specified failure action.
On Failure	This is the action to take upon step failure.

33.3.3 Managing Authentication with Identity Federation in 11g Release 2

This section explains how to manage the `FederationScheme`; and `Federation` plugin, a custom authentication module.

Prerequisites

None.

To view or modify FederationScheme

1. From the Oracle Access Management Console, click Authentication Schemes and open the FederationScheme.
2. Review `FederationScheme` details to ensure these are desired for your deployment. Table 33–1 describes field details.
3. Click the **Save** button.

To view or modify FederationPlugin

1. From the Oracle Access Management Console, click Authentication Modules, Custom Authentication Module and then `FederationPlugin`:
2. Review `FederationPlugin` details to ensure these are desired for your deployment. Table 33–2 provides plugin step details.
3. Use the icons above the step table to add a step (+) or delete a step (x).
4. Modify the order of steps as needed using the Steps Orchestration tab. Table 33–3 provides orchestration details.
5. Click the **Save** button.

To Add an Authentication Policy with FederationScheme

Prerequisite: Any resource to be added to a policy must be defined within the same Application Domain as the policy.

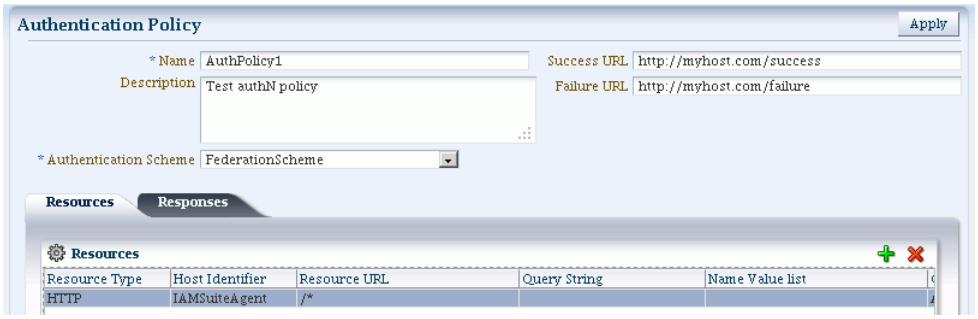
Take these steps to set up an authentication policy that uses `FederationScheme`, and associate a resource that will be protected using this policy:

1. From the Oracle Access Management Console, click Application Domains and search for the desired domain.
2. Again, from the console, click Authentication Policies, then click the **Create** button to open a fresh page.

3. Add these General Policy Details (Table 20–9, " Authentication Policy Elements and Descriptions"):
   - Name
   - Authentication Scheme
4. Add these Global Policy Elements and Specifications:
   - Description (optional)
   - Success URL
   - Failure URL
5. To add resources:
   a. Click the Resources tab on the Authentication Policy page.
   b. Click the **Add** button on the tab.
   c. Choose a URL from the list.
   d. Repeat these steps as needed to add more resources.
6. Click **Apply** to save changes and close the confirmation window.
7. **Responses**: See "Introduction to Policy Responses for SSO" on page 20-41 and "Adding and Managing Policy Responses for SSO" on page 20-47.

Figure 33–4 shows the console page to define the authentication policy and associate the policy to the resources.

Figure 33–4 Setting Up the Authentication Policy with FederationScheme



33.4 Using Authentication Schemes and Modules for Oracle Identity Federation 11g Release 1

This section describes the authentication schemes and modules available for use with the Oracle Identity Federation server in Oracle Fusion Middleware Release 11*g* R1 (11.1.1).

> **Note:** The schemes used for Identity Federation in 11*g* Release 2 (11.1.2.2) are described in Section 33.3.

An authentication scheme is a named component that defines the challenge mechanism required to authenticate a user. Each authentication scheme must also include a defined authentication module.

See Also: For additional information about schemes, see Section 19.9.

- About Scheme OIFScheme
- About Module OIFMTLDAPPlugin
- Managing Authentication with Oracle Identity Federation Release 11gR1

33.4.1 About Scheme OIFScheme

`OIFScheme` and `OIFMTScheme` are used for integration with Oracle Identity Federation 11*g* Release 1 (11.1.1).

Note: See Section 33.3 for the schemes available with Identity Federation 11*g* Release 2 (11.1.2.2).

Figure 33–5 OIFScheme

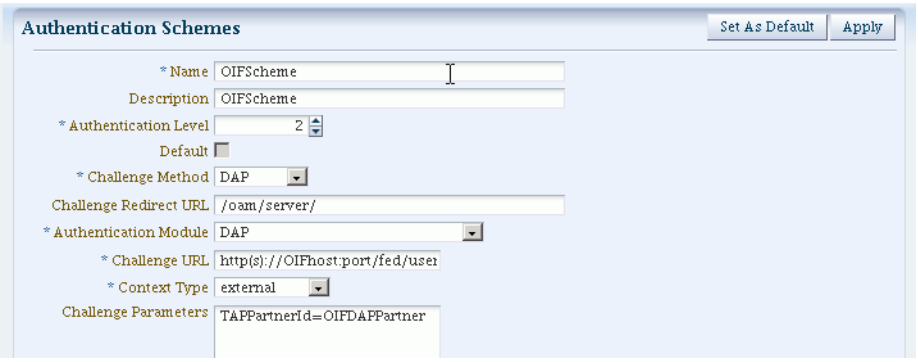


Table 33–4 describes the scheme `OIFScheme`.

Table 33–4 OIFScheme Definition

Element	Description
Name	This is the scheme name.
Description	This is a brief description of the scheme.
Authentication Level	This is the trust level of the authentication scheme.
Default	This is a non-editable box that is checked when the **Set as Default** button is clicked.
Challenge Method	Use to select a challenge method from those available in the drop-down box.
Challenge Redirect URL	This is the URL of another server to which user requests must be redirected for processing.
Authentication Module	This is the authentication module to use with the scheme.
Challenge URL	This is the URL the credential collector will redirect to for credential collection.
Context Type	Use this element to build the final URL for the credential collector.
Challenge Parameters	This is the list of parameters, if any, to use with the challenge.

See Also: Table 19–21 for `OIFScheme` specifications.

33.4.2 About Module OIFMTLDAPPlugin

`OIFMTLDAPPlugin` authenticates federated tenants through Identity Federation and non-federated tenants with the identity store associated with Access Manager.

Figure 33–6 OIFMTLDAPPlugin

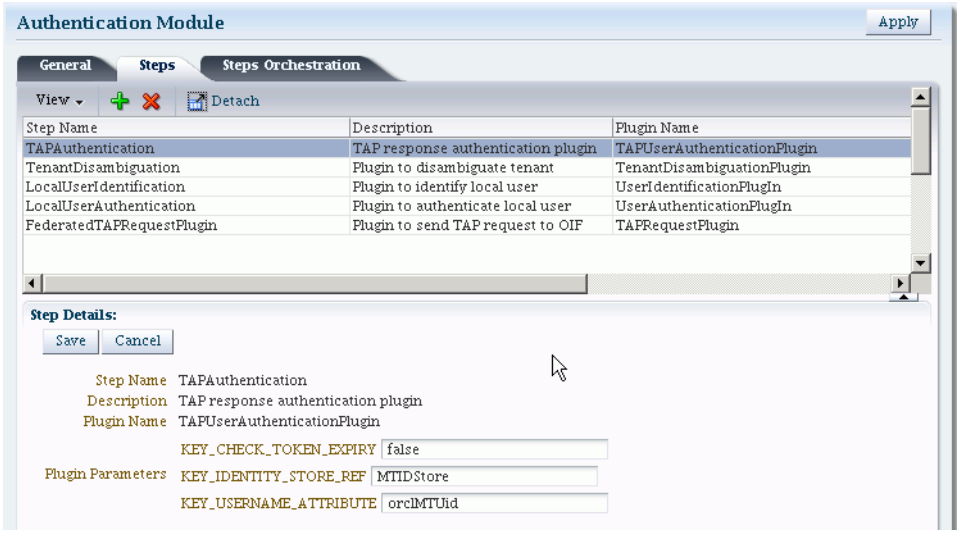


Table 33–5 describes the steps for `OIFMTLDAPPlugin`.

Table 33–5 OIFMTLDAPPlugin Steps

Element	Description
Step Name	This is the name of the step within the module.
Description	This element contains a brief description of this step.
Plugin Name	This element specifies the plugin associated with this step.
Plugin Parameters	This element lists the parameters, if any, needed for plugin execution. The parameter list varies with the plugin.

33.4.3 Managing Authentication with Oracle Identity Federation Release 11gR1

This section explains how to manage `OIFScheme`; and `OIFMTLDAPPlugin`, a custom authentication module for Identity Federation 11*g* Release 1 (11.1.1).

Prerequisites

None

To view or modify OIFScheme

1. From the Oracle Access Management Console, click Authentication Schemes and open the `OIFScheme`.
2. Review `OIFscheme` details to ensure these are desired for your deployment. For field details, see Table 33–4.
3. Click the **Save** button.

Prerequisites

None.

To view or modify OIFMTLDAPPlugin

1. From the Oracle Access Management Console, click Authentication Modules, Custom Authentication Module and open the `OIFMTLDAPPlugin`:
2. Review `OIFMTLDAPPlugin` details to ensure these are configured as desired for your deployment. For field details, see Table 33–5.
3. Click the **Save** button.

To add an Authentication Policy with OIFScheme

The procedure for this task is the same as described in "To Add an Authentication Policy with FederationScheme".

33.5 Managing Access Manager Policies for Use with Identity Federation

This section explains the use of policy responses in Access Manager in the context of federation policies.

- About Policy Responses with Assertion Attributes for Identity Federation
- Defining Policy Responses with Assertion Attributes for Identity Federation

33.5.1 About Policy Responses with Assertion Attributes for Identity Federation

A policy can optionally contain one or more authentication responses, or authorization responses, or both. You can configure the use of assertion attributes when setting up Access Manager policy responses with Identity Federation.

You use assertion attributes in the following contexts:

- Authorization policy conditions
- Response attributes as HTTP headers
- Response attributes for identity context

Figure 33–7 shows the Response configuration tab for an authorization policy:

Figure 33–7 Authorization Policy Response Tab

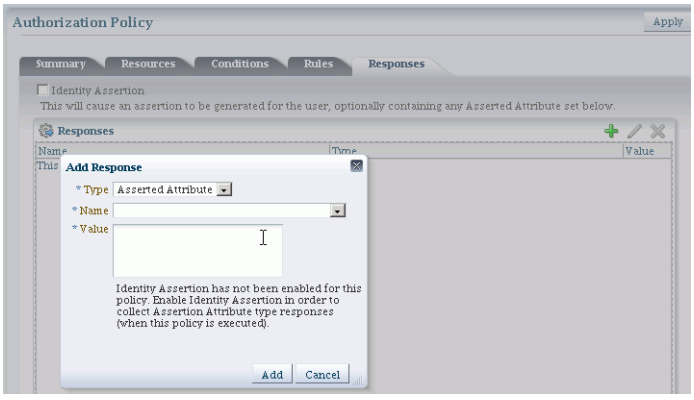


Table 33–6 describes the elements for a policy response.

Table 33–6 Policy Response Elements

Element	Description
Name	This is a unique name to distinguish this response from other responses that use the same mechanism (type).
Type	This is the mechanism used to convey the response form of the action to be taken with the value string. Select Assertion Attribute.
Value	This is the response expression, set as a variable. To provide the federation data as response attributes in the authentication or authorization policy, the values can reference: ■ $session.attr.fed.nameidvalue for the name ID value ■ $session.attr.fed.attr.*AttributeName* for any other assertion attribute

33.5.2 Defining Policy Responses with Assertion Attributes for Identity Federation

Use the Oracle Access Management Console to configure policy responses with assertion attributes.

Background on Conditions and Responses for Identity Federation

Identity Federation conditions and responses must be specified separately because they are used for different tasks.

A condition is used to control access to a resource within Access Manager.

For example, if the identity provider is sending a role assertion and the service provider wished to only allow people who had a role of `sales` to access the resource, you would add a condition wherein:

- the Condition Namespace would be "Session".
- the Name would be "fed.attr.role".
- the Operator is set to EQUALS.
- value is "sales".

Notes:

- Replace the role in this example to the actual SAML asserted attribute.
- If you wanted to use the standard SAML NameID value as the condition then the value would be "attr.fed.nameidvalue".

A response, on the other hand, enables you to pass an asserted attribute to the application. For example, if you wanted to pass the asserted attribute `role` to a back-end application in an HTTP header, you would:

- go to the Response tab.
- Add a Header, name `Role` (this is the name of the HTTP header).
- The value would be `$session.attr.fed.attr.role`.

Again, replace the role in this example to correspond to the actual SAML asserted attribute.

Prerequisites

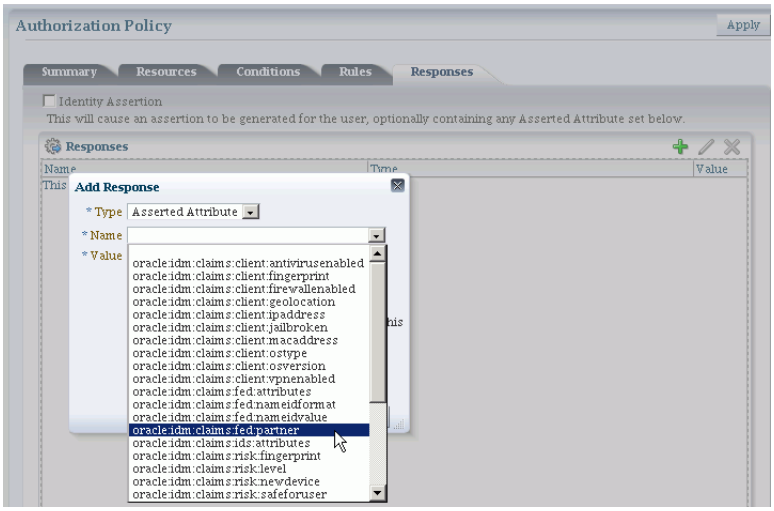
None.

To View or Configure Policy Responses with Assertion Attributes

1. From the Oracle Access Management Console, click Authentication Domains, search for the desitred domain and open the desired policy to view or configure a response.
2. Select the **Responses** tab.
3. Click the relevant icon to add, delete or update a response.
4. When updating, review the response details to ensure these are desired for your deployment. For field details, see Table 33–6.
5. Click the **Save** button.

Figure 33–8 shows an example of federation response attribute configuration:

Figure 33–8 Adding a Federation Response Attribute to an AuthZ Policy



33.6 Testing Identity Federation Configuration

After performing the procedure described in the previous section, you have completed all the steps to configure federation in SP mode. To recap, these steps are:

1. Enabling the Identity Federation service using Oracle Access Management Console.
2. Creating an IdP partner or using an existing IdP partner.
3. Ensuring that IdP setup including SAML attributes, global logout, and nameID format are configured.
4. Configuring an authentication/authorization policy that uses `FederationScheme` with federation response attributes; and
5. Protecting a resource with this policy.

To test this configuration, access the resource that is protected by the authentication policy and verify that access is granted or denied according to the policy.

Test SP Module

Identity Federation provides a Test SP module which allows you to:

- test Federation SSO with an IdP Partner

- see the result of the Federation SSO operation as well as the assertion sent by the Identity Provider

Follow these steps to enable or disable the Test SP Module:

1. Enter the WLST environment:

   ```
   $OH/common/bin/wlst.sh
   ```

2. Connect to the Admin Server:

   ```
   connect()
   ```

3. Move to the domain runtime location:

   ```
   domainRuntime()
   ```

4. Execute the following WLST command to enable the Test SP Module:

   ```
   configureTestSPEngine("true")
   ```

5. Execute the following WLST command to disable the Test SP Module:

   ```
   configureTestSPEngine("false")
   ```

> **Note:** The Test SP Module should be disabled in a production environment.

To access the Test SP module and perform a federation SSO operation with an IdP partner, perform the following steps:

1. Access the following service:

   ```
   http(s)://oam-hostname:oam-port/oamfed/user/testspsso
   ```

2. Select the IdP with which to perform a federation SSO (*note*: only enabled IdP partners are listed).
3. Start the federation SSO operation. The browser will be redirected to the IdP Partner for authentication and redirected back to Identity Federation with a federation response.
4. Identity Federation will process the federation assertion and the Test SP module will display the result of the processing (*note*: no Access Manager session will be created as a result of the operation).

33.7 Using the Default Identity Provisioning Plug-in

11*g* Release 2 (11.1.2.2) features a plug-in that you can optionally use to provision a missing identity during a federated SSO operation.

33.7.1 Why Use a Provisioning Plug-in?

When a federated SSO transaction is initiated, the processing flows as follows:

1. The IdP authenticates a user and sends an assertion to Oracle Access Management Identity Federation.
2. Acting as SP, Identity Federation maps the user to the local identity store.
3. If the user does not exist in the local store, the mapping fails.

Resolving this issue requires the ability to provision the user so the transaction can continue.

33.7.2 About the Default Provisioning Plug-in

To handle the identity mapping failure, Identity Federation supports the ability to set up a plug-in, known as the default provisioning plug-in, to provision the missing user in the identity store and enable the federated single sign-on to proceed.

The user is provisioned in the identity store associated with the IdP partner.

You can specify a list of attributes to use in provisioning the plug-in, as explained in the next section.

33.7.3 Using the Default Provisioning Plug-in

You can enable this default provisioning plug-in from the plug-in configuration interface. The steps are as follows:

1. From the plug-in configuration interface select `FedUserProvisioningPlugin`.
2. In the configuration parameters tab, set the following parameters:
   - `KEY_USER_RECORD_ATTRIBUTE_LIST` - This is the list of attributes with which the user should be provisioned. These attributes are available as part of the assertion, for example: `mail`, `givenname`. (optional)
   - `KEY_PROVIDERID_ATTRIBUTE_NAME` – This is the tenant ID attribute name in the identity store which Identity Federation populates at run-time with the tenant name. (optional)
   - `KEY_USERID_ATTRIBUTE_NAME` – This is the attribute name to use for the `userid` value from the assertion attributes. (optional)
3. Enable user provisioning with the default plug-in by executing the WLST command:

```
putBooleanProperty("/fedserverconfig/userprovisioningenabled","true")
```

33.7.4 Switching to a Custom Provisioning Plug-in

A custom provisioning plug-in is also available with Identity Federation.

To switch from the default plug-in to the custom plug-in, follow the guidelines in Developing a Custom User Provisioning Plug-in chapter of the Oracle Fusion Middleware Developer's Guide for Oracle Access Management.

When using the custom plug-in, set the plug-in name with the WLST command:

```
putStringProperty("/fedserverconfig/userprovisioningplugin","CustomPlugin")
```

33.8 Configuring the Identity Provider Discovery Service

Identity provider discovery is a service that selects an identity provider (possibly through interaction with the user) to use during SSO. While Identity Federation does not provide an identity provider discovery service, it provides support for using such a service to select an IdP, if one is not passed in the authentication request to the SP during SP-initiated SSO.

For more information about IdP discovery refer to the specifications at:

http://docs.oasis-open.org/security/saml/Post2.0/sstc-saml-idp-discovery-cs-01.pdf

When acting as a service provider, Identity Federation can be configured so that if an SSO operation is initiated without the provider ID of the partner IdP, the user is redirected to an IdP discovery service to select the identity provider with which to perform SSO.

After the user selects an identity provider, the custom page resubmits the SSO request with the chosen IdP to Identity Federation.

- Using the Bundled IdP Discovery Service
- Creating a custom IdP Discovery Service
- Disabling the use of an IdP Discovery Service

33.8.1 Using the Bundled IdP Discovery Service

Identity Federation provides a simple Identity Provider Discovery Service that can be used to determine the Federation IdP Partner to be used at runtime during a Federation SSO operation.

Follow these steps to configure IdP discovery:

1. Enter the WLST environment:

   ```
   $OH/common/bin/wlst.sh
   ```

2. Connect to the Admin Server:

   ```
   connect()
   ```

3. Move to the domain runtime location:

   ```
   domainRuntime()
   ```

4. Execute the following WLST command to configure Identity Federation to use an IdP Discovery Service:

   ```
   putBooleanProperty("/spglobal/idpdiscoveryserviceenabled", "true")
   ```

5. Execute the following WLST command to configure Identity Federation to use the default out-of-the-box IdP Discovery Service:

   ```
   putBooleanProperty("/spglobal/idpdiscoveryservicepageenabled", "true")
   putStringProperty("/spglobal/idpdiscoveryserviceurl", "/oamfed/discovery.jsp")
   ```

33.8.2 Creating a custom IdP Discovery Service

You can configure Identity Federation to interact with a custom IdP Discovery Service deployed remotely.

Follow these steps to configure Identity Federation to use a custom IdP discovery:

1. Enter the WLST environment:

   ```
   $OH/common/bin/wlst.sh
   ```

2. Connect to the Admin Server:

   ```
   connect()
   ```

3. Move to the domain runtime location:

   ```
   domainRuntime()
   ```

4. Execute the following WLST command to configure Identity Federation to use an IdP Discovery Service:

   ```
   putBooleanProperty("/spglobal/idpdiscoveryserviceenabled", "true")
   ```

5. Execute the following WLST command to configure Identity Federation to use a custom IdP Discovery Service (replace *IDP_DISCOVERY_SERVICE_URL* with the fully qualified URL of the Discovery Service):

   ```
   putBooleanProperty("/spglobal/idpdiscoveryservicepageenabled", "false")
   putStringProperty("/spglobal/idpdiscoveryserviceurl", "IDP_DISCOVERY_SERVICE_
   URL")
   ```

At runtime, Identity Federation redirects to the IdP Discovery Service page with the following parameters:

- `return`: This is the URL to which the page should send the new request containing the chosen IdP provider ID to Identity Federation.
- `returnIDParam`: This is the name of the parameter to use to specify the chosen IdP provider ID in the request sent to Identity Federation.

The discovery service gets the values of these parameters, displays a list of IdPs, and sends a new request to Identity Federation specifying the chosen IdP Provider ID.

Note: Check that the URL query parameter values are correctly URL-encoded.

Example

The following is an example of an IdP discovery service page. This page allows the user to select an identity provider (from the list of provider IDs: http://idp1.com, http://idp2.com, http://idp3.com), and submit the chosen provider ID to Identity Federation to continue the SSO flow.

```
<%@ page buffer="5kb" autoFlush="true" session="false"%>
<%@ page language="java" import="java.util.*, java.net.*"%>

<%
// Set the Expires and Cache Control Headers
response.setHeader("Cache-Control", "no-cache");
response.setHeader("Pragma", "no-cache");
response.setHeader("Expires", "Thu, 29 Oct 1969 17:04:19 GMT");

// Set request and response type
request.setCharacterEncoding("UTF-8");
response.setContentType("text/html; charset=UTF-8");
```

```
String submitURL = request.getParameter("return");
String returnIDParam = request.getParameter("returnIDParam");

List idps = new ArrayList();
idps.add("http://idp1.com");
idps.add("http://idp2.com");
idps.add("http://idp3.com");

%>

<html>
  <title>
  Select an Identity Provider
  </title>
<body bgcolor="#FFFFFF"><form  method="POST" action="<%=submitURL%>" id="PageForm"
name="PageForm" autocomplete="off">
    <center>
                <table cellspacing="2" cellpadding="5" border="0" width="500">
                    <tr><td colspan="2" align="center">
                         Select an Identity Provider
                    </td></tr>
                    </tr>
                    <tr>
                        <td align="right">Provider ID</td>
                        <td>
                           <select size="1" name="<%=returnIDParam%>">
<%
Iterator idpIT = idps.iterator();
while(idpIT.hasNext())
{
        String idp = (String)idpIT.next();
%>
                                  <option value="<%=(idp)%>"><%=idp%></option>
<%
}
%>

                           </select>
                        </td>
                    </tr>
                    <tr>
                         <td colspan="2" align="center">
                            <input type="submit" value="Continue"/>
                         </td>
                    </tr>
                </table>
      </center>
     </form>
    </body>
</html>
```

33.8.3 Disabling the use of an IdP Discovery Service

Follow these steps to configure Identity Federation to stop using an IdP discovery service:

1. Enter the WLST environment:

```
$OH/common/bin/wlst.sh
```

2. Connect to the Admin Server:

```
connect()
```

3. Move to the domain runtime location:

```
domainRuntime()
```

4. Execute the following WLST command to configure Identity Federation to stop using an IdP Discovery Service:

```
putBooleanProperty("/spglobal/idpdiscoveryserviceenabled", "false")
putBooleanProperty("/spglobal/idpdiscoveryservicepageenabled", "false")
putStringProperty("/spglobal/idpdiscoveryserviceurl", "/oamfed/discovery.jsp")
```

33.9 Configuring the Federation User Self-Registration Module

When Identity Federation is acting in Service Provider (SP) mode, the user assertion is mapped to a local user record in the LDAP directory to complete the federated single sign-on. If the mapping fails because the user performing the Federation SSO operation does not have a local account, Identity Federation can be configured to trigger a user self-registration flowto enable the user to create an account locally.

At runtime, when the Assertion mapping operation fails, if self-registration is enabled, the user self-registration framework will:

- redirect the user to a self-registration page.
- the self-registration page will contain the following fields:
  - username
  - password
  - confirm password
  - first name
  - last name
  - email address

  These fields might be pre-populated with data from the Assertion. Also, any field used in the Assertion Mapping process cannot be edited: the user will not be able to change the information used for the Assertion Mapping operation for security reasons.
- Once the user creates the account, the Federation SSO flow will resume and result with the creation of an Access Manager session. At that point, the user will be redirected to the protected resource.

Follow these steps to enable or disable the user self registration module:

1. Enter the WLST environment:

```
$OH/common/bin/wlst.sh
```

2. Connect to the Admin Server:

```
connect()
```

3. Move to the domain runtime location:

```
domainRuntime()
```

4. Execute the following WLST command to enable the user self-registration module:

```
putBooleanProperty("/fedserverconfig/userregistrationenabled", "true")
putStringProperty("/fedserverconfig/userregistrationurl",
"/oamfed/registration.jsp")
```

5. Execute the following WLST command to disable the user self-registration module:

```
putBooleanProperty("/fedserverconfig/userregistrationenabled", "false")
putStringProperty("/fedserverconfig/userregistrationurl",
"/oamfed/registration.jsp")
```

You can configure Identity Federation to pre-populate the fields of the self-registration page with the data contained in the Assertion. By default, the self-registration page will populate those fields based on the following:

- first name: Identity Federation will use either the firstname or givenname attributes contained in the Assertion. The userregistrationfirstnameattr configuration property indicates the list of comma separated attributes that should be used to populate this field. By default, that field is set to firstname,givenname.
- last name: Identity Federation will use either the lastname or sn attributes contained in the Assertion. The userregistrationlastnameattr configuration property indicates the list of comma separated attributes that should be used to populate this field. By default, that setting is set to lastname,sn.
- email address: Identity Federation will use either the mail attribute contained in the Assertion, or the Assertion's NameID (referenced by fed.nameidvalue). The userregistrationemailattr configuration property indicates the list of comma separated attributes that should be used to populate this field. By default, that setting is set to mail,fed.nameidvalue.
- username: Identity Federation is not configured to use any Assertion attributes to populate this field. The userregistrationusernameattr configuration property indicates the list of comma separated attributes that should be used to populate this field. By default, that setting is empty.

If the attributes or NameID are missing from the assertion, the fields will be empty.

To configure the userregistrationfirstnameattr, userregistrationlastnameattr, userregistrationemailattr and userregistrationusernameattr properties:

1. Enter the WLST environment:

```
$OH/common/bin/wlst.sh
```

2. Connect to the Admin Server:

```
connect()
```

3. Move to the domain runtime location:

```
domainRuntime()
```

4. Execute the following WLST command to set the first name field rule:

```
putStringProperty("/fedserverconfig/userregistrationfirstnameattr",
"firstname,givenname")
```

5. Execute the following WLST command to set the last name field rule:

```
putStringProperty("/fedserverconfig/userregistrationlastnameattr",
"lastname,sn")
```

6. Execute the following WLST command to set the email address field rule:

```
putStringProperty("/fedserverconfig/userregistrationemailattr",
"mail,fed.nameidvalue")
```

7. Execute the following WLST command to set the username field rule:

```
putStringProperty("/fedserverconfig/userregistrationusernameattr",
"uid,fed.nameidvalue")
```

Part VIII

Managing Oracle Access Management Security Token Service

Part VIII provides information to help Administrators manage the Security Token Services available with Oracle Access Management.

Part VIII contains the following chapters:

34

Introducing the Oracle Access Management Security Token Service

The Oracle Access Management Security Token Service provides the foundation for the security infrastructure, facilitating a consistent and streamlined model for token acquisition, renewal, and cancellation that is protocol and security infrastructure agnostic. It helps simplify the effort needed to bridge access to various systems by using a standardized set of interfaces. Security Token Service facilitates Federated SSO and Single Logout (SLO) for users accessing resources through a Web browser and across different security domains or administrative boundaries.

The following sections contain introductory material regarding the Security Token Service.

34.1 Understanding the Security Token Service

Security Token Service is a Web Service (WS) Trust-based token service that allows for policy-driven trust brokering and secure identity propagation and token exchange between Web Services. Security Token Service can be deployed as a Security and Identity Service and used to simplify the integration of distributed or federated Web services within an enterprise and its service providers.

> **Note:** Security Token Service is primarily based on the OASIS WS-Trust protocol but it also delegates the processing of other WS-* protocols present in the SOAP message.

Security Token Service brokers trust between a Web Service Consumer (WSC) and a Web Service Provider (WSP) and provides security token lifecycle management

services to both. It allows for the use of various federation protocols like SAML, WS-Federation, Liberty, or OpenID.The Oracle Access Management Security Token Service (Security Token Service) is deployed with Access Manager and must be activated as a service.

34.2 Using the Security Token Service

Security Token Service is installed with Oracle Access Management 11g on Managed Servers. Each Managed Server must be registered with Access Manager to open communication channels. Security Token Service leverages the common infrastructure for shared services and the Access Manager 11g administration model. All Security Token Service system configuration is done using the Oracle Access Management Console, providing a unified and consistent administration experience. Security Token Service also inter-operates with third party security token servers.

Security Token Service is compliant and co-exists with Access Manager (using Access Manager as the primary authenticator for Web clients requesting tokens). Security Token Service also uses Oracle Web Services Manager Agents. WebGate is used as an Agent for identity propagation. The WebGate must be registered with Access Manager 11g to open a communication channel. Security Token Service processing:

- Integrates with STS Audit events
- Publishes, in the Oracle Access Management Console and WLST scripts, available Security Token Service methods to manage partner data
- Performs validation operations specific to the Security Token Service use cases and configuration model

> **Note:** Security Token Service adopts the same frameworks, guidelines, and practices for diagnostics, monitoring, auditing, and high availability used by Oracle Access Management 11g. For more information, see Part III, "Logging, Auditing, Reporting and Monitoring Performance".

The Security Token Service 11g infrastructure is described in Table 34–1.

Table 34–1 Security Token Service 11g Infrastructure

Component	Description
Default Trust Keystore	Security Token Service private keys used for Signing/Encryption are stored in the common keystore used with Access Manager. Security Token Service and Access Manager use the common infrastructure certification validation module. Trusted Certificates and Certificate Revocation Lists (CRLs) used during certificate validation are stored in Trust Keystore and CRL ZIP file. The Security Token Service configuration stores the OCSP/CDP settings. The token security key pair is populated to Access Manager/Security Token Service keystore. Note: When the Oracle WSM Agent is used as the WS_Trust client in the Security Token Service deployment, Oracle strongly recommends that the Oracle WSM Agent keystore and the Security Token Service/Access Manager keystore always be different. Do not merge the two. Otherwise, Access Manager/Security Token Service keys could be available to any modules authorized by OPSS to access the keystore and Access Manager keys might be accessed. See Also: "About Access Manager Keystores" on page 5-28.
Default User Identity Store	Security Token Service authenticates and maps users against the User Identity stores configured through the Common Configuration section of System Configuration in the Oracle Access Management Console. Security Token Service maps the incoming token to user records and attributes in the default User Identity Store, which operates with both Access Manager and Security Token Service. See Also: "Setting the Default Store and System Store"
Certificates	The certificates used by Security Token Service are self signed. The subject and the issuer field are identical. Out of the box, the OAM Server hosting Security Token Service is uniquely identified: ▪ The keys and certificates used in Security Token Service are generated during installation. The subject and issuer fields are linked to the host name. This applies to the signing and encryption keys and certificates used by Security Token Service, as well as the keys/certificates used by the OWSM Agent protecting Access Manager. The OWSM Agent is the certified WS-Trust client that can be used to communicate with Security Token Service. ▪ The SAML Issuer settings are configured to refer to the host name of the local computer. This ensures that two servers are not identical in terms of cryptographic materials and identifiers. The trust granted to one server by third-party modules is not granted to the other server because the identifiers and cryptographic keys differ. There are no identical keys, no identical identifiers, and authorization policies are in denial mode.
Oracle Coherence	Security Token Service integrates with the Oracle Coherence module to store and share run time WS-Trust data across all the physical instances of Security Token Service. The UserNameToken Nonce are stored in the Coherence store. This implementation supports the following requirements, which might be specific to Security Token Service: ▪ Cleanup of timed out records ▪ Existence of the records limited to several minutes (< 30)

34.3 Security Token Service Key Terms and Concepts

Security tokens contain claims or statements that are used to assert trust. To secure communication between a Web service client and a Web service, the two parties must exchange security credentials. These credentials can be obtained from a trusted Security Token Service.

> **Note:** To provide interoperable security tokens, the Security Token Service must be trusted by both the Web service client and the Web service.

Modern IT environments have numerous types of security tokens (most of them based on browser cookies) for facilitating SSO and session management for Web applications. These token types include Kerberos (primarily for Windows Native Authentication), Security Assertion Markup Language (SAML) assertions, and even digital certificates.

Table 34–2 identifies common Security Token Service terminology.

Table 34–2 Security Token Service Terms

Term	Description
Security Token	A security mechanism that protects messages using a token issued by a trusted Secure Token Service for message integrity and confidentiality protection. The issued tokens contain a key, which is encrypted for the server and which is used for deriving new keys for signing and encrypting. Service providers and consumers in potentially different managed environments can use a single Security Token Service to establish a chain of trust. The service does not trust the client directly, but instead trusts tokens issued by a designated Security Token Service. The Security Token Service is taking on the role of a second service with which the client must securely authenticate.
Security Token Service	A trusted third party in an explicit trust relationship with the server (and a trust relationship with the client). Security Token Service is one example.
Secure Token Service	A shared Web service that provides a standards-based consolidated mechanism of trust brokerage between different identity domains and infrastructure tiers. The service implements the protocol defined in the WS-Trust specification by making assertions based on evidence that it trusts, to whoever trusts it (or to specific recipients). This protocol defines message formats and message exchange patterns for issuing, renewing, canceling, and validating security tokens. To communicate trust, a service requires something to prove knowledge of a security token or set of security tokens. An XML Signature binds the sender's identity (or "signing entity") to an XML document, for example. The document is signed using the sender's private key, the signature is verified using the sender's public key.
Request Security Token (RST)	Request for a security token.
Request Security Token Response (RSTR)	Response generated by Security Token Service in response to the Request for Security Tokens with claims for the requested user.
On Behalf Of (OBO)	An OBO Request Security Token (RST) is used when only the identity of the original client is important. An OBO RST indicates that the requestor wants a token containing claims about only one entity: ▪ the external entity represented by the token in the `OnBehalfOf` element.
ActAs	An `ActAs` RST requires composite delegation. The final recipient of the issued token can inspect the entire delegation chain (not just the client). An `ActAs` RST indicates that the requestor wants a token that contains claims about distinct entities: ▪ The requestor ▪ An external entity represented by the token in the `ActAs` element
Token Exchange	The exchange of one security token for another. The requestor (in order to invoke a web service) requires a particular token. It uses Security Token Service to exchange the incoming token with a token required by the service.

Table 34–2 (Cont.) Security Token Service Terms

Term	Description
WS-Security	Web Services Security (WS-Security) specifies SOAP security extensions that provide confidentiality using XML Encryption and data integrity using XML Signature. The most prevalent security tokens used with WS-Security are Username, X.509 Certificates, SAML assertions, and Kerberos tickets (all supported by Oracle Web Service Manager). WS-Security also includes profiles that specify how to insert different types of binary and XML security tokens in WS-Security headers for authentication and authorization purposes: WS-* specifications often depend on each other. For example, WS-Policy is used in conjunction with WS-Security. WS-* specifications also leverage non-WS-* specifications; for example, WS-Security uses XML Encryption and XML Signature. For WS-Security, only SAML assertions are used. The protocols and bindings are provided by the WS-Security framework. **Note**: WS-Security, WS-Trust, WS-Policy have been transferred over to standards bodies such as the Organization for the Advancement of Structured Information Standards (OASIS) or the World Wide Web Consortium (W3C).
WS-Trust	Web Services Trust Language (WS-Trust) is a specification that uses the secure messaging mechanisms of WS-Security to facilitate trust relationships. WS-Trust defines a request and response protocol that enables applications to construct trusted SOAP message exchanges. Trust is represented through the exchange and brokering of security tokens. In a message exchange using WS-Security only, it is assumed that both parties involved in the exchange have a prior agreement on which type of security tokens they must use for sharing security information. However, there are cases where these parties do not have such an agreement, as a result trust must be established before exchanging messages. Trust between two parties exchanging SOAP / WS-Security-based messages is established by implementing the WS-Trust specification.
WS-Policy	Web Services Policy (WS-Policy). Together with WS-Security, WS-Policy is another key industry standard for Oracle Fusion Middleware security. WS-Policy is used in conjunction with WS-Security. A web service provider may define conditions (or policies) under which a service is to be provided. The WS-Policy framework enables one to specify policy information that can be processed by web services applications, such as Oracle Web Services Manager. A policy is expressed as one or more policy assertions representing a web service's capabilities or requirements. For example, a policy assertion may stipulate that a request to a web service be encrypted. Likewise, a policy assertion can define the maximum message size that a web service can accept.
Certificates	The certificates used by Security Token Service are self signed. The subject and the issuer field are identical. Out of the box, the OAM Server hosting Security Token Service is uniquely identified:
Keystore	Security Token Service key stores include: ■ System Keystore ■ Trust Keystore ■ Partner Keystore See Also: Chapter 37, "Managing Security Token Service Certificates and Keys"
User Name Token (UNT)	Identifies the requestor by their username, and optionally using a password (or shared secret, or password equivalent) to authenticate that identity. When using a username token, the user must be configured in the Default User Identity Store.,

Table 34–2 (Cont.) Security Token Service Terms

Term	Description
X.509 Certificates	A signed data structure designed to send a public key to a receiving party. A certificate includes standard fields such as certificate ID, issuer's Distinguished Name (DN), validity period, owner's DN, owner's public key, and so on. Certificates are issued by certificate authorities (CA), for example Verisign. A CA verifies an entity's identity and grants a certificate, signing it with the CA's private key. The CA publishes its own certificate which includes its public key. Each network entity has a list of the certificates of the CAs it trusts. Before communicating with another entity, a given entity uses this list to verify that the signature of the other entity's certificate is from a trusted CA.
Security Assertion Markup Language (SAML) SAML Assertion	An open framework for sharing security information on the Internet through XML documents. SAML provides: ▪ Assertions that define authentication and authorization information. ▪ Protocols to ask (SAML Request) and get (SAML Response) the assertions you need. ▪ Bindings that define how SAML Protocols ride on industry-standard transport (HTTP for instance) and messaging frameworks (SOAP for instance). ▪ Profiles that define how SAML Protocols and Bindings combine to support specific use cases. For WS-Security, only SAML assertions are used. However, the protocols and bindings are provided by the WS-Security framework. SAML assertions can include three types of statements: ▪ Authentication statement: issued by an authentication authority upon successful authentication of a subject. It asserts that Subject S was authenticated by Means M at Time T. ▪ Attribute statement: issued by an attribute authority, based on policies. It asserts that Subject S is associated with Attributes A, B, etc. with values a, b, and so on. ▪ Authorization decision statement (deprecated in SAML 2.0, now supported by XACML): issued by an authorization authority which decides whether to grant the request by Subject S, for Action A (read, write, and so on.), to Resource R (e.g., a file, an application, a web service), given Evidence E.
Kerberos	A cross-platform authentication and single sign-on system. The Kerberos protocol provides mutual authentication between two entities relying on a shared secret (symmetric keys). Kerberos authentication requires a client, a server, and a trusted party to mediate between them called the Key Distribution Center (KDC). Also required: ▪ A Principal: An identity for a user (a user is assigned a principal), or an identity for an application offering Kerberos services. ▪ A Realm is a Kerberos server environment, which can be a domain name such as EXAMPLE.COM (by convention expressed in uppercase). Each Kerberos realm has at least one Web Services Security KDC. The Kerberos Token profile of WS-Security allows business partners to use Kerberos tokens in service-oriented architectures (SOAs).

34.4 Integrating the Oracle Web Services Manager

In the 11g release, Oracle Web Services Manager (WSM) security and management has been integrated into the Oracle WebLogic Server along with Oracle WSM Agent functionality. Table 34–3 describes the WSM components.

See Also: "About Access Manager Security Keys and the Embedded Java Keystore"

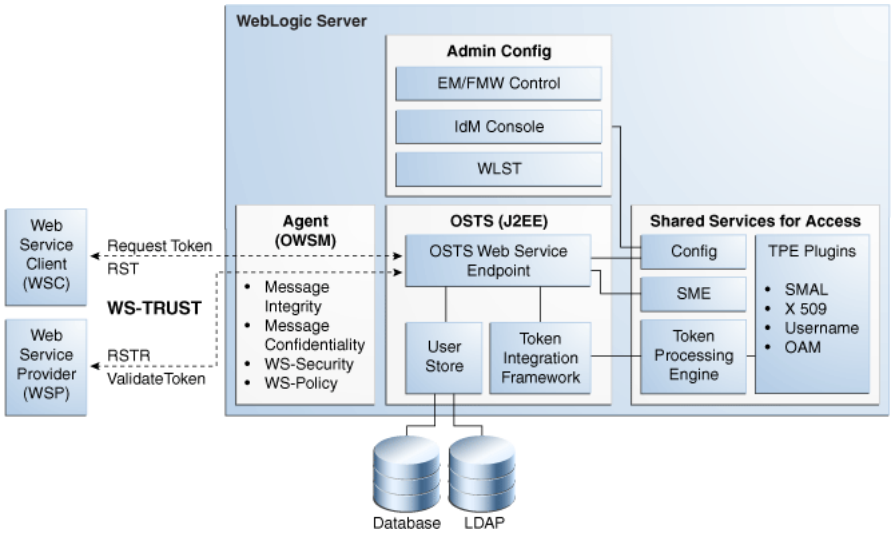
Table 34–3 Integrated Oracle Web Services Manager

Component	Description
Java Keystore (JKS)	Required to store the signature and encryption keys required by the X.509 token on the client. JKS the proprietary keystore format defined by Sun Microsystems. Trusted certificates and public and private keys are stored in the keystore. To create and manage the keys and certificates in the JKS, use the keytool utility. Keys are used for a variety of purposes, including authentication and data integrity. If the client and Web service are in the same domain with access to the same keystore, they can share the same private/public key pair: ■ The client can use the private key `orakey` to endorse the signature of the request message and the public key `orakey` to encrypt the symmetric key. ■ The Web service in turn uses the public key `orakey` to verify the endorsement, and the private key `orakey` to decrypt the symmetric key.
Policy Interceptors	In Oracle Fusion Middleware 11g, Oracle WSM Agents are managed by the security and management policy interceptors. Policy Interceptors enforce policies, including reliable messaging, management, addressing, security, and Message Transmission Optimization Mechanism (MTOM). The Oracle WSM Agent manages the enforcement of policies using the Policy Interceptor Pipeline. For complete Oracle Web Services Manager details, including the differences between release 10g and 11g, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.
Oracle WSM Agent	The OWSM agent is the certified WS-Trust client that can be used to communicate with Security Token Service. The OWSM agent is *embedded* and used by Security Token Service for message protection only (to publish WS Policy and to enforce message protection on inbound and outbound WS messages). Security Token Service performs token validation/request authentication. ■ Security Token Service embedded Oracle WSM Agent is used in the mode of "Message Protection Only" with authentication functionality disabled. This way all aspects related to authentication of incoming token are performed by Security Token Service only. ■ Oracle WSM supports disabling of authentication using configuration overrides that Security Token Service must declare with each policy. Exception: The Kerberos token is handled by Oracle WSM and Security Token Service is involved in mapping only the identity. ■ The OWSM Agent is one of the certified WS-Trust clients that can be used to communicate with Security Token Service. Other 3rd party WS-Trust clients can be used to interact with Security Token Service. Note: Embedded means that the OWSM Agent is available as part of the JRF layer on the WebLogic Server that Security Token Service uses:
Message/Token Protection	Security Token Service/Access Manager manages its own keystore and trust store. For Oracle WSM to enforce message protection for Security Token Service, the OWSM key store is seeded with its own self-signed certificate; passwords for its corresponding keys are stored in CSF. It does not work with Security Token Service keystore. Note: Conversely, Oracle WSM requires Access Manager/Security Token Service to store keys related to message protection in the OPSS Keystore. For cases where the client uses schemes such as SKI, Thumbprint, and so on to refer to its certificate, Oracle WSM requires that client certificate(s) are present in the OPSS Keystore.
Token Signing Key	Security Token Service has strong security requirements around its token signing key and uses the token signing key to broker trust between a client and a relying party. Therefore, this key must be stored in an exclusive partition that only Security Token Service can access.
Security Key Pairs	Security Token Service creates separate key pairs for issued token security and message security to provide security of token signing keys and eliminate the need for Oracle WSM agents to work with Access Manager/Security Token Service keystore: ■ The message security key pair is populated to OPSS Keystore ■ The token security key pair is populated to Access Manager/Security Token Service keystore
OPSS Keystore	The message security key pair is populated to OPSS Keystore. For special cases where clients use referencing schemes such as SKI (not a certificate token being received as part of the Web service request), Security Token Service populates OPSS Keystore with the requesting party's certificates. This is an uncommon scenario. Security Token Service can provide instructions on manually provisioning the keys to OPSS keystore to make it work.

34.5 Architecting the Security Token Service

Security Token Service is a centralized token service that supports WS-Trust protocol. It also defines extensions to the WS-Security specification for issuing and exchanging security tokens and establishing trust relationships. The Security Token Service is hosted as a web service endpoint and coordinates security based interactions between a WSC and a WSP. All communication with the Security Token Service occurs through a WS_Trust client, as shown in Figure 34–1.

Figure 34–1 Security Token Service Architecture



When a WSC makes a call to the WSP, it gets the WS-Security policy that will indicate that a security token issued by Security Token Service should be presented. The policy will contain the location of the Security Token Service, and the WSC will use that location to contact the Security Token Service to retrieve the token expected by the WSP. (Alternately, the WSP could register its acceptable security mechanisms with the Security Token Service and, before validating the incoming SOAP request, check with the Security Token Service to determine its security mechanisms). When an authenticated WSC (carrying credentials that confirm either the identity of the end user or the application) requests a token for access to a WSP, the Security Token Service verifies the credentials and, in response, issues a security token that provides proof that the WSC has been authenticated. The WSC presents the security token to the WSP which verifies that the token was issued by a trusted Security Token Service.

34.6 Security Token Service Supported Token Matrix

Figure 34–2 documents the token support matrix for Security Token Service.

Figure 34–2 Security Token Service Token Support

Requester / WSC	"On Behalf Of" (End user's tokens)	Output Token
• UserName • X509 • Kerberos • SAML 1.1 • SAML 2.0	1. UserName with password 2. UserName without password 3. X.509 4. Kerberos 5. SAML 1.1 / 2.0 6. OAM Session Propagation token 7. Custom token	• UserName without password • SAML 1.1 • SAML 2.0 • Custom token

34.7 Deploying Security Token Service

This section provides overviews of different deployment options:

- Centralized Token Authority Deployment
- Tokens Behind a Firewall Deployment
- Web Services SSO Deployment

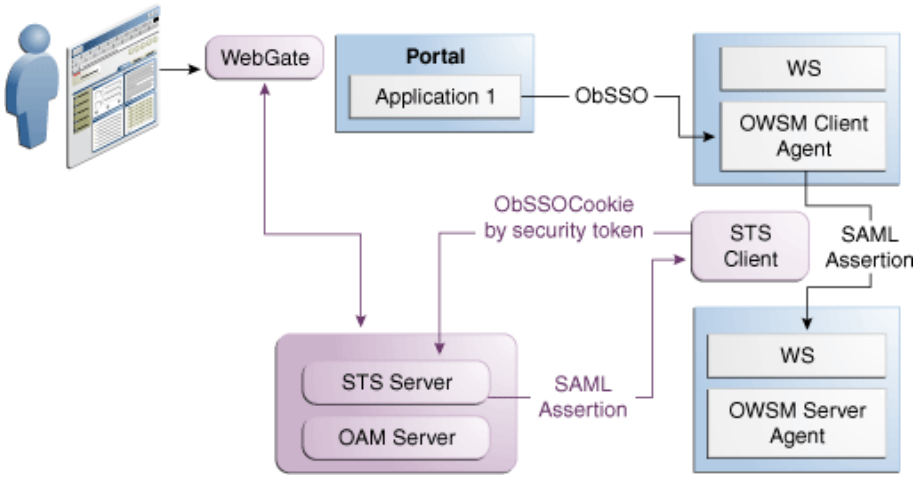
See Also: "Scenario: Identity Propagation with the Access Manager Token" on page 35-2

34.7.1 Centralized Token Authority Deployment

The need for a token exchange for security integration between Web SSO and Web service security tiers is in demand in a deployment where a Web application makes internal or external Web service calls. An example of this is an intranet portal integration with an external Web service provided by a partner or another organization within the same company. The portal needs a way to securely access the service but the difficulty of security integration in this case stems from the fact that the Web SSO tier and WS tier use different methods of user authentication.

In the Web SSO environment, the Web application can accept WAC-issued session tokens (SMSESSION, OBSSO), SAML assertions or proprietary tokens to authenticate the users. The WS* security tier also uses a variety of standard and proprietary tokens and, in most cases, local translation of token is required to achieve integration between the two tiers. Additionally, the WS performing the translation must contact the authority by which the token was issued (Oracle Adaptive Access Manager) to decompose the token before it can be translated. Decomposition requires every WS service to maintain trust with WAC systems; this is complex and not very secure because of multiple trust links that need to be maintained. With the introduction of Security Token Service, the translation of tokens can be done at the centralized authority as illustrated in Figure 34–3.

Figure 34–3 Token Translation at a Centralized Authority



34.7.2 Tokens Behind a Firewall Deployment

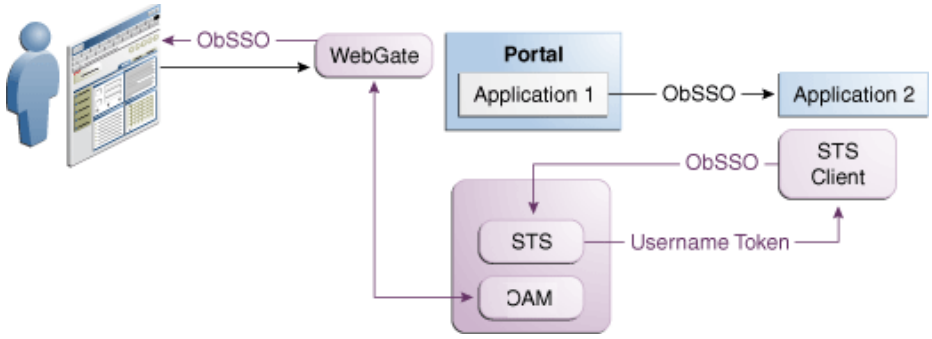
The situation when applications rely on special form of credentials for their business logic is very common in deployments of Oracle access products. Integrations of WAC

systems with both Oracle and custom applications almost always require extensive coding for:

1. Decomposing tokens issued by one token authority (such as OAM or SiteMinder) by calling a proprietary vendor API (SM agent API or ASDK).
2. Composing a new token format (PSFT, Siebel), that the application requires for its internal business logic.

Although such translations are often handled through application coding, it introduces the risk of exposing user names and passwords when the code is deployed on multiple application instances in the DMZ. Thus, Security Administrators need an ability to control the translation process by externalizing it from the application. Introducing the Security Token Service provides significant relief in this situation. Security Token Service plays the role of a centralized token authority, performing token translation behind the firewall, as shown in Figure 34–4.

Figure 34–4 Translating Tokens Behind a Firewall



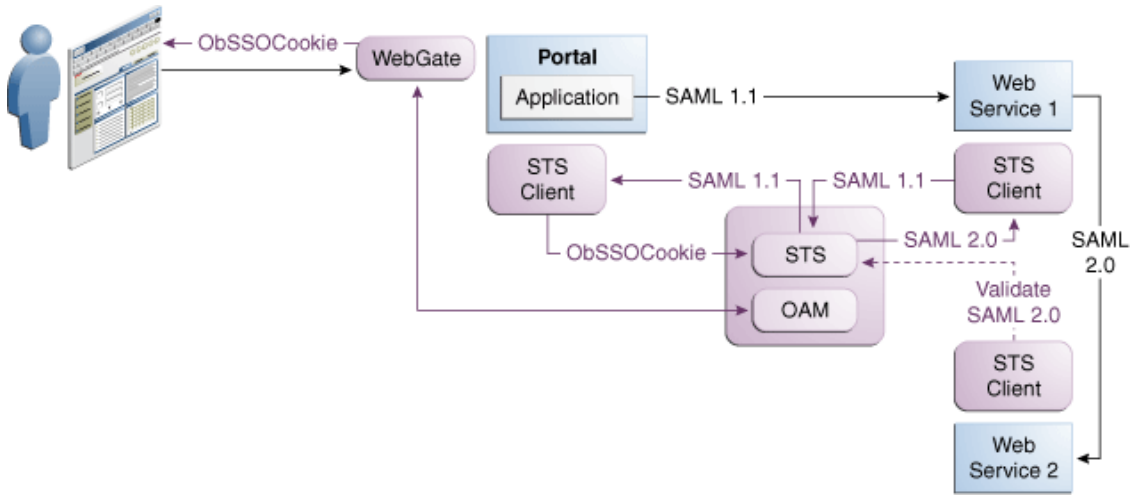
Application 1 and Application 2 are protected by Access Manager. Application 2 relies on a different type of token for its internal business logic. It has a client-side connector that contacts Security Token Service for exchanging the OBSSO token for a username token. The Security Token Service relies on Access Manager for decomposing the OBSSO token and generates the new token required by Application 2. This is more secure, because the same authority (Access Manager) performs both operations (composing and decomposing the OBSSO token) thus, there is no need to decompose the token on the application side.

34.7.3 Web Services SSO Deployment

As in the Web SSO case, Web services SSO is a convenience feature. The difference is that in the case of Web SSO the party who benefits from the feature is a user; in the WS SSO environment, the Security Administrator benefits.

With Web services SSO different Web services have different token requirements (that change often). Externalizing the exchange to Security Token Service enables the application to simply supply the target and the current token in its possession. Security Token Service takes charge of determining the token type for each requested service. When one or more Web services change their authentication requirements, Security Token Service can seamlessly verify the token type submitted by the application. If the token is not of the requested type, the old token is revoked and the new one of the correct type is issued. Figure 34–5 illustrates Web services SSO.

Figure 34–5 Web Services SSO



34.8 Installing Security Token Service

This section provides an overview of the installation options:

- Security Token Service Cluster in Single WLS Domain
- Endpoint Exposure through a Web Server Proxy
- Security Token Service Installation Overview
- Post-Installation Tasks: Security Token Service

34.8.1 Security Token Service Cluster in Single WLS Domain

This installation option leverages clustering across Security Token Service instances deployed in different managed servers within a single WebLogic domain. This deployment topology facilitates High Availability capabilities through a load balancer. By default, Access Manager co-exists on the same managed server as Security Token Service. However, Security Token Service is disabled by default and must be manually enabled before it can be used. This deployment topology supports:

- Deploying multiple instances of Security Token Service through the suite installer.
- Deploying a load balancer to support the High Availability and failover scenarios on the front of the Security Token Service cluster.

For more information, see the Oracle Fusion Middleware High Availability Guide.

34.8.2 Endpoint Exposure through a Web Server Proxy

This installation option provides inter-operability of Requester and Relying Party with Third-party STS Servers. At runtime, Security Token Service supports interoperability with Requesters and Relying Parties of third-party security token servers using the OPSS WS-Trust-Provider. For instance, a third-party Security Token Service can create a valid SAML Assertion that can be consumed by Security Token Service.

34.8.3 Interoperability of Requester and Relying Party with Other Oracle WS-Trust based Clients

All run-time scenarios for Requesters and Relying Parties are supported by other Oracle WS-Trust Clients, including WLSClient, MetroClient, and Oracle Web Services Manager (Oracle WSM). All Web services clients are supported with Security Token Service only through the WS-Trust binding.

34.8.4 Security Token Service Installation Overview

Access Manager and Security Token Service are installed together from a single EAR file and deployed on the same managed server in a WebLogic domain. The Oracle WSM Agent uses a keystore for various cryptographic operations. For those tasks, the Oracle WSM Agent uses the keystore configured for Oracle WSM tasks. During installation, if the Oracle WSM keystore service has not been configured, the installer:

- Creates a new keystore in the $*DOMAIN_HOME*/config/fmwconfig folder (default name is default-keystore.jks
- Creates a key entry with the corresponding certificate to be used by OWSM for signature and encryption operations. This key entry is stored in the OWSM Keystore under the `orakey` alias
- Stores the passwords of the key entry and of the keystore in CSF

Having access to the keystore is sometimes required to:

- Extract the signing or encryption certificate to distribute to clients, if needed
- Update or replace the signing or encryption key entry
- Add trusted certificates

For more information, see the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.

34.8.5 Post-Installation Tasks: Security Token Service

Any server hosting Security Token Service must be registered with Access Manager. This can occur automatically during installation, or manually after installation.

All Security Token Service system configuration is done using the Oracle Access Management Console. Elements in the Oracle Access Management Console enable Administrators to easily configure the Security Token Service to exchange WS Trust tokens with partners. Other Security Token Service elements provide for creation, viewing, modification, and removal of partners, endpoints, validation templates, issuance templates, and data store connections.

For more details on the Security Token Service, see Part VIII, "Managing Oracle Access Management Security Token Service".

34.9 Administrating the Security Token Service

During initial deployment, using the Oracle Fusion Middleware Configuration Wizard, the Administrator userID and password are set. Administrators can log in and use the Oracle Access Management Console (and WebLogic Server Administration Console). A single LDAP group, the WebLogic Server "Administrators" group, is set by default. For more information, see Chapter 2, "Getting Started with Oracle Access Management".

35

Security Token Service Implementation Scenarios

This chapter introduces several Security Token Service implementation and processing scenarios. Regardless of scenario specifics, there are many similarities in both configuration tasks and token handling. This chapter provides the following sections:

35.1 Prerequisites

"Introducing the Oracle Access Management Security Token Service" on page 34-1.

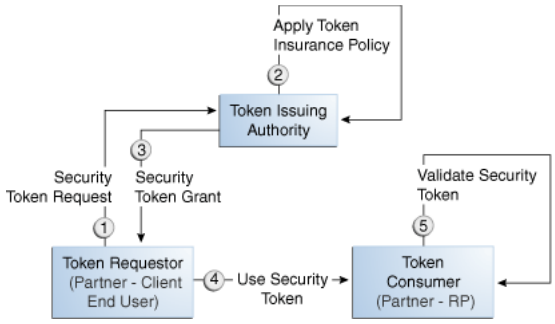
35.2 Typical Token Ecosystem

The abstract model chosen here is of interest because of the requirements placed on Security Token Service to support such models.

The phrase security token ecosystem is used here to represent a typical environment where security tokens are in use. In such environments the security token, based on the security model required for the environment, could be used to serve an end goal such as to enable brokered trust or single-sign-on and so on. Regardless of the environment and the type of security token, several aspects are common across all models, as shown and described here.

Figure 35–1 illustrates a typical token ecosystem, which includes: Token Issuing Authority, Token Requestor, Token Consumer, and the Security Token.

Figure 35–1 Typical Token Ecosystem



Actors and Process overview: In a typical token ecosystem

1. The Token Requestor places a request for a security token at the Token Issuing Authority.

   This security token is required to communicate and request access to a service provided by a Service Provider (a Token Consumer who accepts the security token).

   - A Token Requestor could be a Partner of the Token Issuing Authority (generally registered with the Token Issuing Authority).
   - A Token Requestor could be an End User (generally not registered with the Token Issuing Authority).

2. The Token Issuing Authority (Access Manager and Security Token Service, for example) receives and processes the security token request and returns a security token, as follows:

   - Authenticate the input credentials.
   - Authorize the security token request based on a Token Issuance Policy that specifies which Token Requestors are authorized to request a security token for a given Token Consumer.

3. The Token Consumer (typically a service provider).

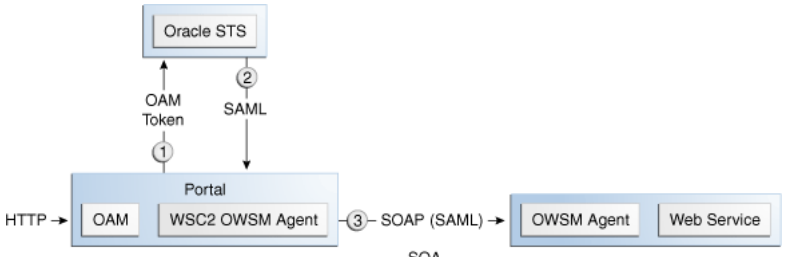
   - Accepts the security token as part of the service request and provides service based on the validity of the input security token.
   - Validates the input security token with Token Issuing Authority.

   Note: A Token Consumer is typically a registered Partner of the Token Issuing Authority. A Token Consumer is also known as a Relying Party, because it trusts and relies on the Token Issuing Authority for Token Requestor authentication. Token Consumers (Relying Party Partner) are Web Applications (for Access Manager, Security Token Service is the Token Issuing Authority) or STS Relying Party Web Services.

35.3 Scenario: Identity Propagation with the Access Manager Token

This is a deployment where the user's Identity information needs to be propagated from a Web application to a Web service provider. The Web service provider can reside in the same security domain as the web application or in a different security domain.

Figure 35–2 Identity Propagation with the OAM Token



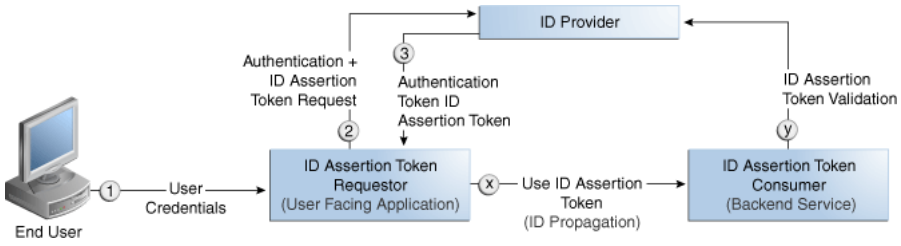
Identity propagation means that the original user context becomes visible outside its original security tier or domain boundaries. The user security context is propagated across different security tiers or domains to support tier-specific or domain-specific security needs such as step-up authentication, authorization, audit and/or internal application-specific business logic.

ID Propagation is said to occur in a distributed processing of a request when the identity context established in the first node is propagated to subsequent nodes to enable further processing of the request in the context of that identity.

ID Propagation can be achieved in several ways. One of them is based on a brokered-trust model where an ID provider acts as a trust-broker for ID Assertions. The discussion here is pertains to this model.

Figure 35–3 illustrates an ID Propagation scenario in a brokered-trust model, where a user-facing application needs to request processing by a backend service application in the context of the end user. To bring out the main aspects of ID propagation all other interaction and relationship details between end user, application, and backend service application are ignored.

Figure 35–3 Process Flow During Identity Propagation



Actors and Process overview: Identity Propagation

1. The ID Assertion Token Requestor (an End User-Facing Application), upon end user access, requests authentication and ID Assertion Token at the identity Provider.

   Note: Examples of ID Assertion Token Requestors include Web applications that are protected by OAM. The ID Assertion Token request could be either implicit or could be driven by a policy at the ID Provider.

2. The ID Provider (Security Token Service) processes the request and returns an Authentication Token and an ID Assertion Token. An ID Assertion Token, in itself,

does not represent a user session and cannot be used independently to request direct access to a resource or service.

3. The ID Assertion Token Requestor uses this Token later, during the end user session, as part of a backend service processing request (on behalf of the end user).
4. The ID Assertion Token Consumer (Security Token Service), as part of the request processing, first validates the ID Assertion Token and then (on validation success) processes the request in the context of the end user Identity

For more information, see the following topics:

- Component Processing: Identity Propagation with the OAM Token
- Request Security Token Attributes and Run Time Processing
- Configuration Requirements: Identity Propagation with the OAM Token

35.3.1 Component Processing: Identity Propagation with the OAM Token

Figure 35–4 illustrates a typical deployment topology for Identity propagation using Security Token Service with Access Manager.

Figure 35–4 Identity Propagation Deployment

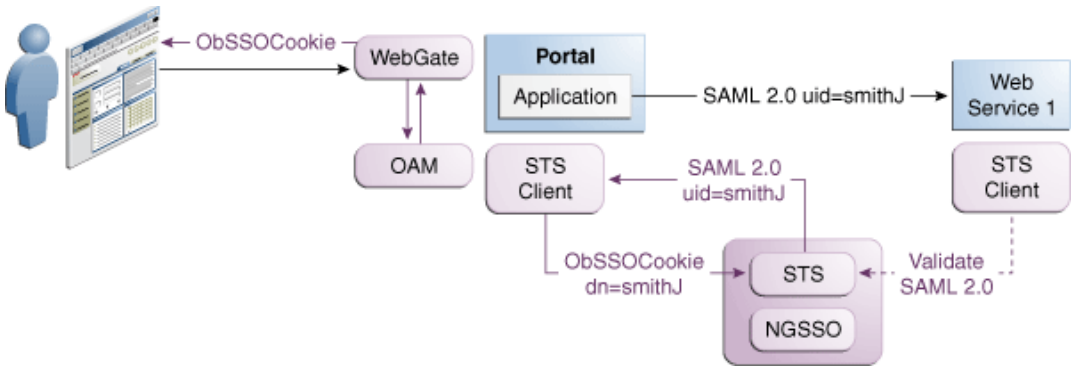
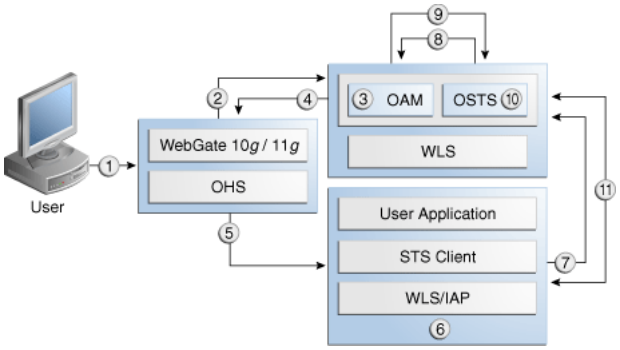


Figure 35–5 illustrates a processing of Identity propagation using Security Token Service with Access Manager. Details follow the figure.

Figure 35–5 Identity Propagation Processing



Process overview: Component interactions for Identity Propagation

1. User attempts to access a protected resource.
2. Webgate is protecting the resource; it sends request to Access Manager for authentication and authorization.
3. Access Manager authenticates the user using the policy configured for this Webgate Application Domain. It sees the response type "IDENTITY_ASSERTION" is configured for this Webgate, so it generates ID Assertion token as well.
4. Access Manager sends authentication and ID assertion token to Webgate
5. Webgate processes the response; sets ID assertion token to the header; (OHS where Webgate is installed on) then redirect the request to the WLS that hosts the resource.
6. IAP (Access Manager Identity Asserter on WebLogic Server) sees OAM_IDENTITY_ASSERTION header is set, processes the headers, then sets ID assertion token to Subject's private credential as `OamIdentity`.
7. When the resource is finally accessed, a Web Service Client can then obtain the ID assertion token from current user's Subject, generates a OnBehalfOf (OBO) token with it, then creates and sends Request Security Token (RST) to Security Token Service.
8. Security Token Service sees the ID assertion Token inside OBO token, it sends validation/authentication request to Access Manager using Access Manager library.
9. Access Manager validates and authenticates the ID Assertion Token, then sends response (user identity) to Security Token Service.
10. Security Token Service uses this user identity to do further processing: policy evaluation, token issuance, and so on. It then generates Request Security Token Response.
11. Security Token Service sends Request Security Token Response to the client, which can then use the token inside the Request Security Token Response (RSTR) to create a web service request to access a service hosted on a relying party.

35.3.2 Request Security Token Attributes and Run Time Processing

For an incoming Request Security Token (RST) with the following attributes, Security Token Service must be configured to process a request and issue a token):

RST Attributes for Identity Propagation with the OAM Token

- The SOAP header contains a Username token referencing a WS Requester. The Username token contains at least a username and a password.
- The SOAP body contains a WS-Trust RST message
- The RST contains a OAM ID Propagation token in the OnBehalfOf field referencing a user in LDAP. The token included in the OnBehalfOf element is a BinarySecrityToken, whose text value is the Base 64 encoded format of the OAM Session Propagation Token, and whose ValueType attribute is `http://something.example.com/am/2012/11/token/session-propagation` and whose EncodingType attribute is `http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soapmessage-security-1.0#Base64Binary`

- The RST can possibly contain an AppliesTo field holding a URL pointing to the endpoint of the Relying Party Web Service
- The RST can possibly contain a TokenType field holding the type of token that needs to be returned
- The RST can possibly contain an Entropy field holding random data that will be used when creating the SecretKey when a symmetric proof key is required in the SAML Assertion
- The RST can possibly contain a UseKey field holding the certificate or public key to be used as an asymmetric proof key in the SAML Assertion, but this field will be ignored by Security Token Service

Process overview: Identity Propagation with the OAM Token

1. Client prepares the request by:
   a. Creating the SOAP message
   b. Creating the Username token referencing the client and including it in the SOAP header
   c. Creating the WS-Trust RST message
   d. Creating the OAM ID Propagation token referencing the user and including it in the OnBehalfOf field of the RST
   e. Including the RST message in the SOAP body
2. Client sends the message to the Security Token Service, to an endpoint protected by a WS-Security User Name Token (UNT) Policy, with that endpoint being mapped to an Security Token Service WSS Validation Template.
3. Security Token Service will process the incoming request
4. Security Token Service validates the token included in the SOAP header by using the settings contained in the WS-Security Validation Template:
   a. Validates the format of the Username token
   b. Validates the credentials contained in the Username token against the Security Token Service Partner store, thus mapping this token to a Requester Partner
   c. Knowing the Requester Partner, Security Token Service will retrieve the Requester Partner Profile associated with this Requester
5. Security Token Service then validates the token present in the OnBehalfOf field:
   a. Determines the type of token present in the OnBehalfOf field
   b. Retrieves the WS-Trust Validation Template to be used for OAM Token Type, from the Requester Partner Profile
   c. Validates the format of the OAM token
   d. Validates the OAM token, and maps the token to a user
   e. Creating the OAM ID Propagation token referencing the user and including it in the OnBehalfOf field of the RST
6. Security Token Service then examines the AppliesTo field:
   - If present, Security Token Service will attempt to map the AppliesTo URL to a Relying Party Partner, using the WS Endpoint Mapping of the Relying Party Partner. If the mapping is successful, then the AppliesTo field has been mapped to a Relying Party Partner, and Security Token Service will retrieve

the Relying Party Partner Profile from this Partner. If mapping was not successful, then the AppliesTo field could not be mapped to a Relying Party Partner, and Security Token Service will retrieve the Default Relying Party Partner Profile from the Requester Partner Profile.

- If absent, Security Token Service will retrieve the Default Relying Party Partner Profile from the Requester Partner Profile.

7. Security Token Service then examines the TokenType field:
   - If present, Security Token Service will map the TokenType string to a local token type value using the Requester Partner Profile, and it will then use the Relying Party Partner Profile to retrieve the Issuance Template to be used to create the outgoing token.
   - If absent, Security Token Service will retrieve the default token type from the Relying Party Partner Profile, and it will then use the Relying Party Partner Profile to retrieve the Issuance Template to be used to create the outgoing token.
8. Security Token Service will perform an Authorization evaluation to check that the Requester Partner is authorized to request a token for the Relying Party referenced in the flow (see Authorization Trust Policy for more information)
9. Security Token Service will then create the token:
   - If the token to be issued is of SAML type, then the Issuance Template will list how to populate the NameID, the Relying Party Partner Profile will list which attributes need to be sent in the token, the Issuance Template will indicate whether or not to translate the names and values of the attributes, the Issuance Template will indicate whether or not to sign/encrypt the token.
   - If the token to be issued if of SAML type, the Security Token Service server will examine the KeyType to determine the Subject Confirmation Method of the Assertion. If it is missing, it will use the Default Confirmation Method from the Issuance Template.
10. Security Token Service will create the Response that the client will process:
    a. Creates the WS-Trust RSTRC
    b. Includes the returned token
    c. Includes proof key if necessary

35.3.3 Configuration Requirements: Identity Propagation with the OAM Token

This topic walks through the configuration requirements for the identity propagation scenario. It includes:

- Configuration overview: Identity Propagation with the OAM Token
- WebLogic Server Identity Assertion Providers
- Access Manager Identity Asserter Details
- LDAP Authentication Provider Details
- Default Identity Store Configuration
- Token Issuance Policy
- Authentication Policy Response for Identity Assertion by Webgate
- Endpoint Configuration

- Issuance Template Configuration
- Partner Configuration: Requester
- Partner Profile: Relying Party
- Partner Profile: Requester
- Validation Template for WS-TRUST
- Cookies and Headers (Truncated)
- Request Security Token Sent By the Client (Truncated)
- Request Security Token Response sent by the Security Token Service (Truncated)

Configuration overview: Identity Propagation with the OAM Token

Following is an overview of the Identity Propagation environment and implementation tasks:

- A custom application module that will act as a client to:
  - Retrieve the OAM Session Propagation token from the HTTP request
  - Send a WS-Trust request to the Security Token Service server with Access Manager Session Propagation token as the OnBehalfOf element
- A web application that will be protected by Webgate and will invoke the client web application that will send a WS-Trust request to Security Token Service
- Security Token Service URL: http://*myhost.domain.com*:14100/sts/<*endpoint*>

  Note: Replace <*endpoint*> with the path configured in the STS Endpoints section.

- An OHS 11*g* with Webgate protecting the web application

  Provision (register) a Webgate (11g or 10g) to protect the application deployed in WebLogic Server. The `OAMSuite` Application Domain is pre-seeded and delivered with Access Manager 11g. When you provision an OAM Agent to use this (or another existing) Application Domain, decline the option of having policies automatically created.

  Reverse Proxy mapping for Webgate in the OHS Server mod_wl_ohs.conf, is shown here.

```
<IfModule weblogic_module>
      WebLogicHost yourhost.domain.com
      WebLogicPort 7001
      Debug ON
      WLLogFile /tmp/weblogic.log
      MatchExpression /stsclient/*.jsp
</IfModule>
```

The following Security Token Service configuration is required to implement token processing for identity propagation:

- One Requester Partner Profile
- One Relying Party Partner Profile
- One Issuance Template
- One WS-Trust Validation Template

- Security Token Service Endpoint
- An LDAP server is required for Security Token Service to map the Username token referencing the user to an LDAP User record, and thus use that record to populate the outgoing token.

  Ensure that the desired LDAP server is configured as the Default Identity Store.

WebLogic Server Identity Assertion Providers

Deploy the Identity Assertion Providers war. The Access Manager Identity Asserter is available in the following path with Oracle Fusion Middleware installed:

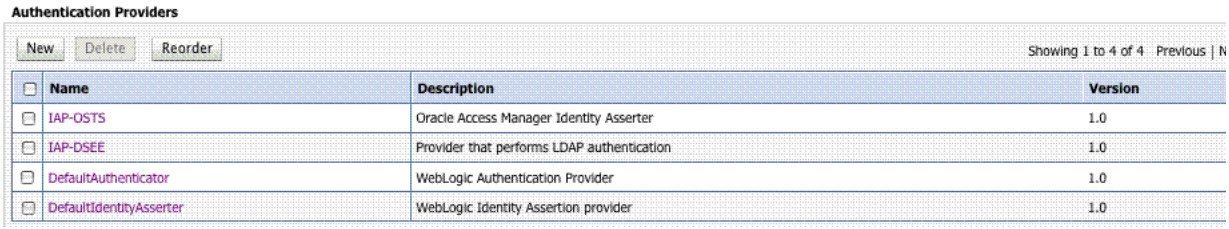
```
$ORACLE_HOME/modules/oracle.oamprovider_11.1.1/oamauthenticationprovider.war
```

Copy oamauthenticationprovider.war to the following location:

```
$BEA_HOME/wlserver_10.x/server/lib/console-ext/autodeploy/oamauthentication
provider.war
```

Figure 35–6 illustrates the required WebLogic Server Identity Assertion Providers configuration for this scenario.

Figure 35–6 Required v1.0 WebLogic Server Identity Assertion Providers

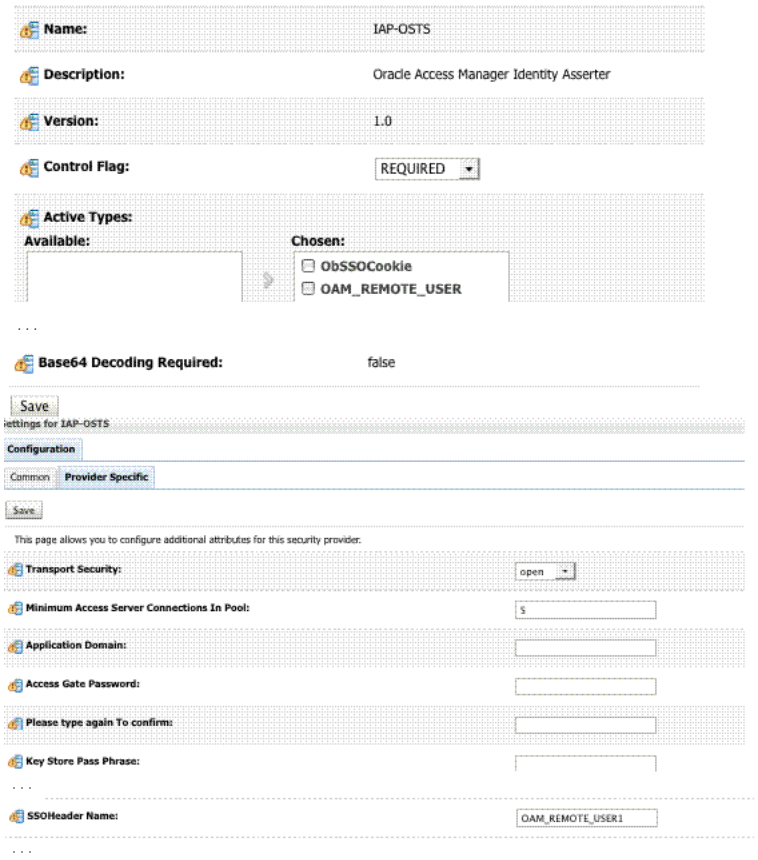


Access Manager Identity Asserter Details

The IAP-Security Token Service identity asserter must be the first, and set using the REQUIRED Control flag. The Active Types should be set as ObSSOCookie and OAM_REMOTE_USER, with an SSO Header name of OAM_REMOTE_USER1.

Figure 35–7 illustrates the configuration.

Figure 35–7 IAP-Security Token Service Details

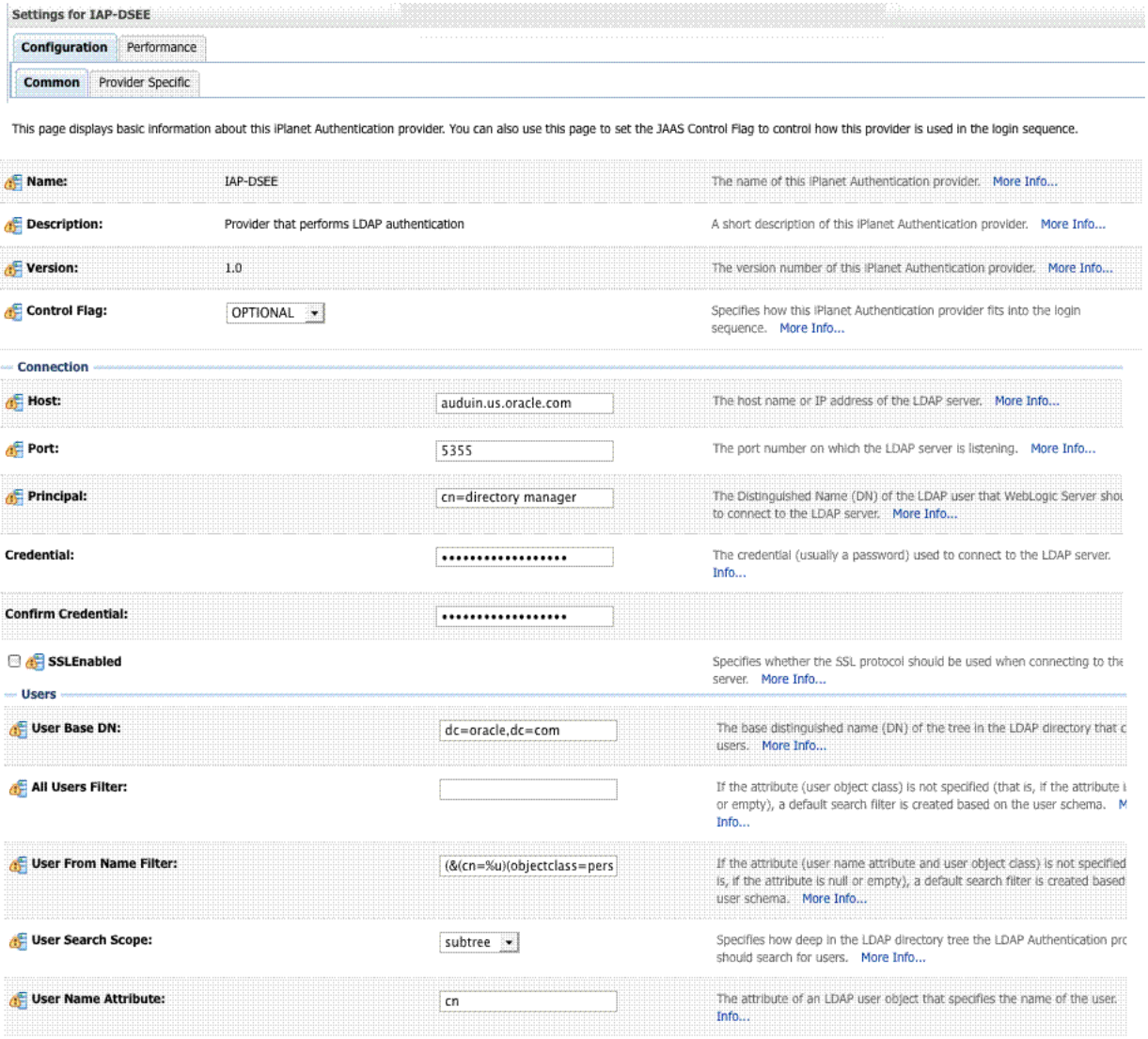


LDAP Authentication Provider Details

Create the Authenticator for the LDAP with the OPTIONAL JAAS flag. This will point to the Default System Store of Oracle Access Management, which provides the Access Manager token.

Figure 35–8 illustrates this.

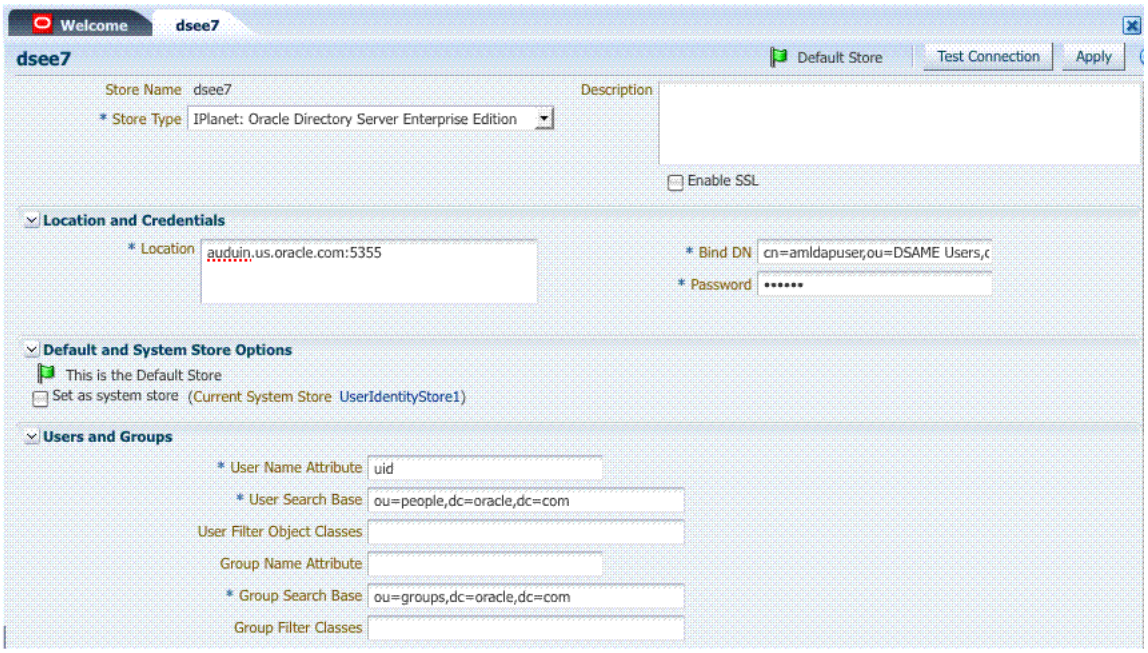
Figure 35–8 LDAP Provider: IAP-DSEE



Default Identity Store Configuration

Figure 35–9 illustrates the Default Identity Store configuration within Oracle Access Management Console.

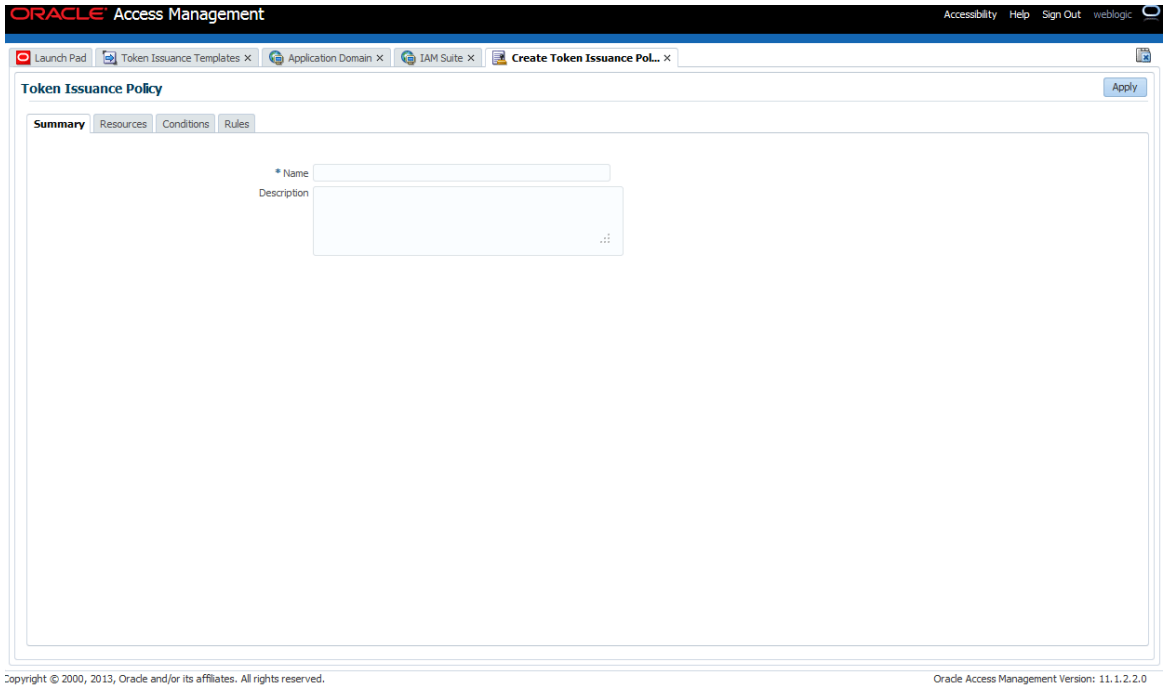
Figure 35–9 Default Identity Store Defined in Access Manager



Token Issuance Policy

Create the Token Issuance Policy for the resource URL within the IAM Suite Application Domain. Figure 35–10 is a screenshot of the Token Issuance Policy page.

Figure 35–10 Token Issuance Policy for Identity Propagation



Authentication Policy Response for Identity Assertion by Webgate

Identity Assertion is required for ID propagation for any issued token from Access Manager that represents an end user (and possibly its OAM session).

The Identity Assertion Token is generated and returned as a policy response (HTTP HEADER named "OAM_IDENTITY_ASSERTION" with a value as a SAML token) after a successful authentication.

Security Token Service clients that are Web applications protected by Access Manager requesting tokens to gain proxy access to a Relying Party (ID Propagation use case) are required to pass an OAM Identity Assertion token that represents the end user.

The ID Provider (Access Manager) processes the request and returns an Authentication Token and an ID Assertion Token. An ID Assertion Token, in itself, does not represent a user session and cannot be used independently to request direct access to a resource or service.

The ID Assertion Token Requestor uses this Token later, during the end user session, as part of a backend service processing request (on behalf of the end user).

The ID Assertion Token Consumer (Security Token Service), as part of request processing, first validates the ID Assertion Token and then (on validation success) processes the request in the context of the end user Identity.

See Also: "Introduction to Policy Responses for SSO" on page 20-41.

Confirm that the Identity Assertion box is checked as part of the Authentication Policy Response within the IAM Suite Application Domain. This enables Webgate to perform Identity Assertion for protected resources.

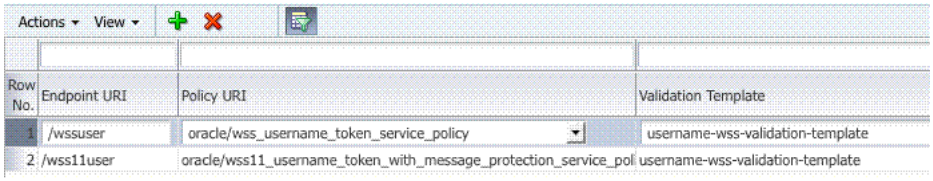
As you add each Response, you might be informed that `Identity Assertion has not been enabled for this policy. Enable Identity Assertion in order to collect Assertion Attribute type responses (when this policy is executed).`

See Also: "Adding and Managing Policy Responses for SSO" on page 20-47.

Endpoint Configuration

The /wss10user Endpoint is needed, as shown in Figure 35–11. This endpoint is protected by the default WS-Security Validation Template. This is the one that will be used in the Web application to post the RST.

Figure 35–11 /wssuser Endpoint for Identity Assertion



Issuance Template Configuration

The Issuance Template requires the following configuration for Identity Propagation:

- Name: iap-issuance-template
- Description: Custom issuance template

- Token Type: SAML 2.0
- Signing Key Id: osts_signing
- Description: Custom issuance template

Partner Configuration: Requester

Create a new Requester Partner configuration for Identity Propagation with the OAM token as follows:

- Partner Name: iap-request-partner
- Requester Type: STS_REQUESTER
- Partner Profile: iap-requestor-profile
- Description: Custom requester
- Trusted
- Username Token Authentication
  - *Username* <enter username used by the Web Service Client>
  - *Password* <enter password used by the Web Service Client>
  - Confirm *Password* <enter password used by the Web Service Client>
- Identity Attribute values for:
  - httpbasicusername
  - sslclientcertdn

Partner Profile: Relying Party

Create a new Relying Party Profile for Identity Propagation as follows:

- Profile ID: iap-relyingparty-profile
- Description: iap-issuance-template
- Default Token Type: SAML 2.0
- Default Template: iap-issuance-template

Partner Profile: Requester

Create a new Requester Profile for Identity Propagation as follows:

- Profile ID: iap-requestor-profile
- Description: iap-requestor-profile partner profile
- Default Relying Party Profile: iap-relyingparty-profile

Validation Template for WS-TRUST

The Validation Template requires the following configuration for Identity Propagation:

- Validation Template Name: iap_wstrust_validation_template
- Description: iap_wstrust_validation_template
- Token Protocol: WS-Trust
- Token Type: OAM
- Timestamp Lifespan:

This completes the configuration requirements for the Identity Propagation with OAM Token scenario.

35.3.4 Testing Your Implementation

Following configuration, you can try to access the resource to confirm your implementation is working properly.

Webgate should redirect to the OAM Server if there is no existing session for the user Upon successful authentication, you should be able to see the RST and RSTR sent by the STS server.

Cookies and Headers (Truncated)

```
Cookies:

cookiename=ORA_UCM_INFO val=3~7F340DD0DA4E672FE040548C28704777~Indirajith~Thangasamy~indira.thangasamy@oracle.com~USA~en~NOT_FOUND~
cookiename=ORA_UCM_SRVC val=3*OPN~1~0~//~SE1%3ASE1%3ASE1%3ASE1%3ASE1%3ASE1%3ASE1%3ASE1%3A~*EMP~1~0~//~null~*GMO~1~0~/34/~null
cookiename=ORA_UCM_VER val=%2FMP%2F8glbgp_%2Crf_le_q_kw%3Emp_ajc%2CamkMP%2F8ej%60en%5D*pd%5Djc%5Do%5Diu%3Ckn%5D_ha*_kiMP%2F8%2F26%2
cookiename=ORASSO_AUTH_HINT val=v1.0~20110211075045
cookiename=JSESSIONID val=Q8HvNm1DHwmJkqzpSd1hqZ5T9nTBWfLgnvBP9Mn51XTdp3mfXdP1!-44251663
cookiename=ObSSOCookie val=Y7nmRKV1o4qSnp09cInFX9UdzS%2F1Q6jtbrQ6HqoB%2BCx8bdbPUbLoK1Ok1C7IfVgncgo3WHEOPQ9nJmvf1%2BTj0yxEWkB%2F%2Fk

Headers:

name=Host val=adc2110788.us.oracle.com:7777
name=Origin val=http://adc6260019.us.oracle.com:14100
name=Accept-Encoding val=gzip, deflate
name=Accept-Language val=en-us
name=User-Agent val=Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_5_8; en-us) AppleWebKit/533.19.4 (KHTML, like Gecko) Version/5.0.3
name=Accept val=application/xml,application/xhtml+xml,text/html;q=0.9,text/plain;q=0.8,image/png,*/*;q=0.5
name=Referer val=http://adc6260019.us.oracle.com:14100/oam/server/obrareq.cgi?wh%3Dpayslip%20wu%3D%2Fstsclient%2Findex.jsp%20wo%3D1
name=Cookie val=ORA_UCM_INFO=3~7F340DD0DA4E672FE040548C28704777~Indirajith~Thangasamy~indira.thangasamy@oracle.com~USA~en~NOT_FOUND
name=OAM_REMOTE_USER val=weblogic
name=OAM_IDENTITY_ASSERTION val=8ace7bb9-b6d5-46bb-8972-7fb36111dd5e
name=OAM_IMPERSONATOR_USER val=
name=ECID-Context val=1.004bHwy6RfeDCgY5Hrp2if0000wx0000pE;kXjE1ZDLIPJIj3STnJORdLQRoV9QiKPPsUAQnGS
name=Connection val=Keep-Alive
name=Proxy-Client-IP val=10.159.221.76
name=X-Forwarded-For val=10.159.221.76
name=X-WebLogic-KeepAliveSecs val=30
name=X-WebLogic-Force-JVMID val=-44251663

subject using j2ee api Administrators weblogic authenticated-role anonymous-role

subject using weblogic api weblogic Administrators
private credentials
new item:{oamIdentityAssertion=8ace7bb9-b6d5-46bb-8972-7fb36111dd5e, obSSOCookie=weblogic}
private credential from map:
key=[oamIdentityAssertion], value=[8ace7bb9-b6d5-46bb-8972-7fb36111dd5e]
key=[obSSOCookie], value=[weblogic]
new item:weblogic
public credentials
```

Request Security Token Sent By the Client (Truncated)

Here is a (truncated) request for security token sent by the client.

```
REQUEST:
<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsi="http://www.w3.or
wss-wssecurity-secext-1.0.xsd"><wsse:Embedded><wsse:BinarySecurityToken ValueType="http://xmlns.oracle.com/am/2010/11/token/session-propagation"
```

Request Security Token Response sent by the Security Token Service (Truncated)

Here is a (truncated) response to the RST sent by the Security Token Service.

```
RESPONSE:
<?xml version="1.0" encoding="UTF-8" standalone="no"?><env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"><env:Header><Action x
02-25T18:10:28Z" Version="2.0"><saml:Issuer>adc6260019.us.oracle.com</saml:Issuer><dsig:Signature><dsig:SignedInfo><dsig:CanonicalizationMethod A
Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/><dsig:DigestValue>CNDUGbOwTywNPRvxMExbssT5s14=</dsig:DigestValue></dsig:Reference></ds
```

35.4 Scenario: Web Service Security With On Behalf Of Username Token

This section provides the following topics:

- Component interactions for Identity Propagation with Username Token
- RST Attributes and Processing for Identity Propagation with a Username Token
- Configuration Requirements: Identity Propagation with the Username Token

35.4.1 Component interactions for Identity Propagation with Username Token

Process overview: Component interactions for Identity Propagation

1. User attempts to access a protected resource.
2. User is authenticated.
3. The WebLogic container sets the user's identity into a Subject for this session.
4. When the resource is finally accessed, a Web Service Client can then obtain the user's identity from current user's Subject, generates a OnBehalfOf (OBO) token with it, then creates and sends Request Security Token (RST) to Security Token Service.
5. Security Token Service authenticates the Web Service Client as a Requester Partner.
6. Security Token Service sees the Username Token inside OBO token, it maps the maps the user's identity to a user record in LDAP.
7. Security Token Service then generates Request Security Token Response.
8. Security Token Service sends Request Security Token Response to the client, which can then use the token inside the Request Security Token Response (RSTR) to create a web service request to access a service hosted on a relying party.

35.4.2 RST Attributes and Processing for Identity Propagation with a Username Token

For an incoming Request Security Token (RST) with the following attributes, Oracle Security Token Service must be configured to process a request and issue a token.

RST Attributes for Identity Propagation with a Username Token

- The SOAP header contains a Username token referencing a WS Requester. The Username token contains at least a username and a password.
- The SOAP body contains a WS-Trust RST message.
- The RST contains a Username Token in the OnBehalfOf field referencing a user in LDAP.
- The RST can possibly contain an AppliesTo field holding a URL pointing to the endpoint of the Relying Party Web Service.
- The RST can possibly contain a TokenType field holding the type of token that needs to be returned.
- The RST can possibly contain an Entropy field holding random data that will be used when creating the SecretKey when a symmetric proof key is required in the SAML Assertion.
- The RST can possibly contain a UseKey field holding the certificate or public key to be used as an asymmetric proof key in the SAML Assertion, but this field will be ignored by Security Token Service.

Process overview: Identity Propagation with the OAM Token

1. Client prepares the request by:
   - Creating the SOAP message
   - Creating the Username token referencing the client and including it in the SOAP header.
   - Creating the WS-Trust RST message.
   - Creating the Username Token referencing the user and including it in the OnBehalfOf field of the RST.
   - Including the RST message in the SOAP body.
2. Client sends the message to the Security Token Service, to an endpoint protected by a WS-Security User Name Token (UNT) Policy, with that endpoint being mapped to an Security Token Service WSS Validation Template.
3. Security Token Service will process the incoming request.
4. Security Token Service validates the token included in the SOAP header by using the settings contained in the WS-Security Validation Template:
   - Validates the format of the Username token.
   - Validates the credentials contained in the Username token against the Security Token Service Partner store, thus mapping this token to a Requester Partner.
   - Knowing the Requester Partner, Security Token Service will retrieve the Requester Partner Profile associated with this Requester.
5. Security Token Service then validates the token present in the OnBehalfOf field:
   - Determines the type of token present in the OnBehalfOf field.
   - Retrieves the WS-Trust Validation Template to be used for Username Token Type, from the Requester Partner Profile.
   - Validates the Username Token, and maps the token to a user.
6. Security Token Service then examines the AppliesTo field:
   - If present, Security Token Service will attempt to map the AppliesTo URL to a Relying Party Partner, using the WS Endpoint Mapping of the Relying Party Partner. If the mapping is successful, then the AppliesTo field has been mapped to a Relying Party Partner, and Security Token Service will retrieve the Relying Party Partner Profile from this Partner. If mapping was not successful, then the AppliesTo field could not be mapped to a Relying Party Partner, and Security Token Service will retrieve the Default Relying Party Partner Profile from the Requester Partner Profile.
   - If absent, Security Token Service will retrieve the Default Relying Party Partner Profile from the Requester Partner Profile.
7. Security Token Service then examines the TokenType field:
   - If present, Security Token Service will map the TokenType string to a local token type value using the Requester Partner Profile, and it will then use the Relying Party Partner Profile to retrieve the Issuance Template to be used to create the outgoing token.
   - If absent, Security Token Service will retrieve the default token type from the Relying Party Partner Profile, and it will then use the Relying Party Partner Profile to retrieve the Issuance Template to be used to create the outgoing token.

8. Security Token Service will perform an Authorization evaluation to check that the Requester Partner is authorized to request a token for the Relying Party referenced in the flow (see Authorization Trust Policy for more information).
9. Security Token Service will then create the token:
   - If the token to be issued is of SAML type, then the Issuance Template will list how to populate the NameID, the Relying Party Partner Profile will list which attributes need to be sent in the token, the Issuance Template will indicate whether or not to translate the names and values of the attributes, the Issuance Template will indicate whether or not to sign/encrypt the token.
   - If the token to be issued if of SAML type, the Security Token Service server will examine the KeyType to determine the Subject Confirmation Method of the Assertion. If it is missing, it will use the Default Confirmation Method from the Issuance Template.
10. Security Token Service will create the Response that the client will process:
    - Creates the WS-Trust RSTRC
    - Includes the returned token
    - Includes proof key if necessary

35.4.3 Configuration Requirements: Identity Propagation with the Username Token

This topic walks through the configuration requirements for the identity propagation scenario. It includes:

- Configuration overview: Identity Propagation with the Username Token
- Default Identity Store Configuration
- Token Issuance Policy
- Endpoint Configuration
- Issuance Template Configuration
- Partner Configuration: Requester
- Partner Profile: Relying Party
- Partner Profile: Requester
- Validation Template for WS-TRUST
- Example 35–1, "Sample exchange: Request Security Token Sent By the Client"
- Example 35–2, "Request Security Token Response sent by the Security Token Service"

Configuration overview: Identity Propagation with the Username Token

Following is an overview of the Identity Propagation environment and implementation tasks:

- A web application where the user will request. This web application will authenticate the user, then attempt to send a SOAP message to a remote Web Service Provider. As part of that SOAP exchange, the WS-Security client will download the WS-Security policy of the Web Service Provider, connect to the Security Token Service to retrieve the token requested by the Web Service Provider, send the Security Token with the SOAP message to the Web Service Provider.
- Security Token Service URL: http://*myhost.domain.com*:14100/sts/<*endpoint*>

Note: Replace <*endpoint*> with the path configured in the STS Endpoints section.

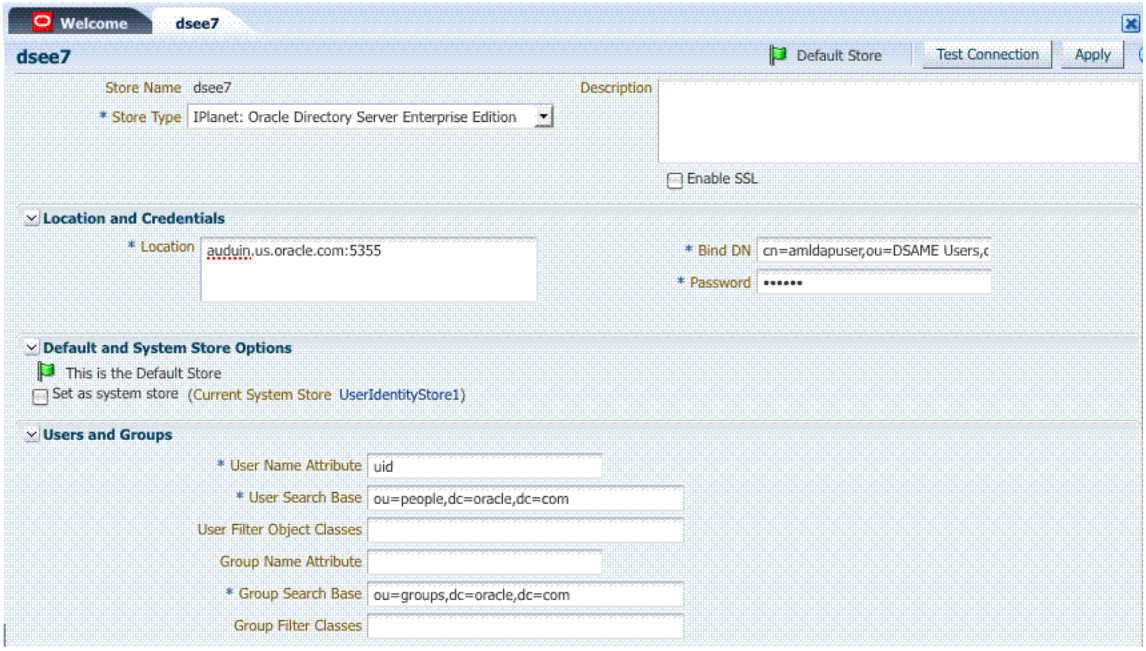
The following Security Token Service configuration is required to implement token processing for identity propagation:

- One Requester Partner Profile
- One Relying Party Partner Profile
- One Issuance Template
- One WS-Trust Validation Template
- Security Token Service Endpoint
- An LDAP server is required for Security Token Service to map the Username token referencing the user to an LDAP User record, and thus use that record to populate the outgoing token.
- Ensure that the desired LDAP server is configured as the Default Identity Store for Access Manager.

Default Identity Store Configuration

Figure 35–12 illustrates the Default Identity Store configuration within Oracle Access Management Console.

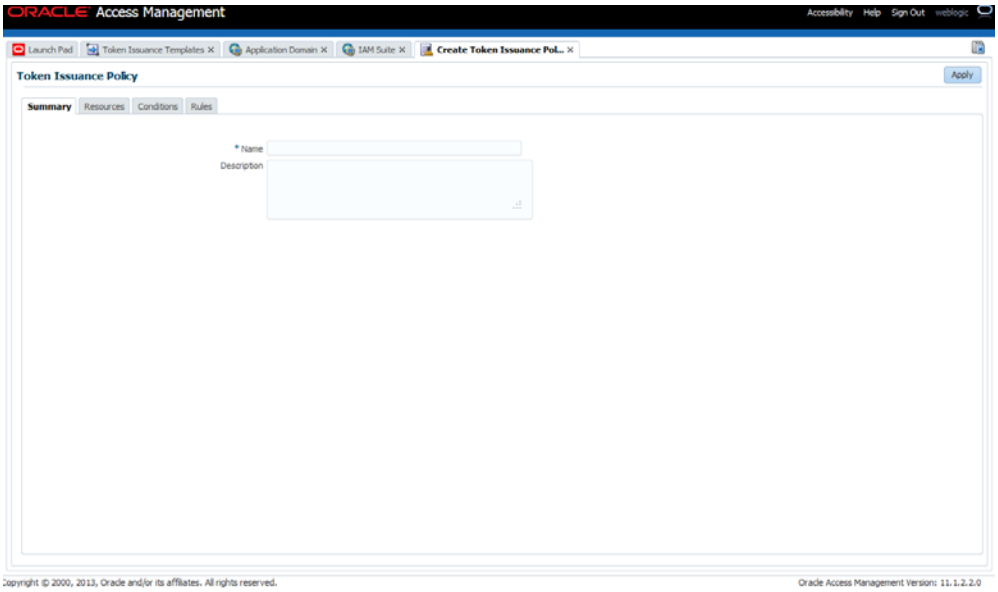
Figure 35–12 Default Identity Store Defined for Access Manager



Token Issuance Policy

Create the Token Issuance Policy for the resource URL within the IAMSuite Application Domain. Figure 35–13 is a screen shot of the Token Issuance Policy page.

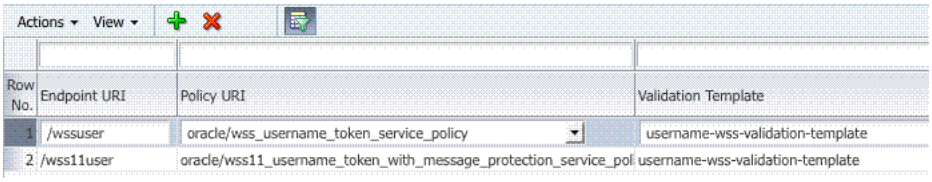
Figure 35–13 Token Issuance Policy for Identity Propagation



Endpoint Configuration

The /wss11user Endpoint is needed, as shown in Figure 35–14. This endpoint is protected by the default WS-Security Validation Template. This is the one that will be used in the Web application to post the RST.

Figure 35–14 /wss11user Endpoint for Identity Assertion



Issuance Template Configuration

The Issuance Template requires the following configuration for Identity Propagation:

- Name: saml-issuance-template
- Description: SAML issuance template
- Token Type: SAML 2.0
- Signing Key Id: osts_signing

Partner Configuration: Requester

Create a new Requester Partner configuration for Identity Propagation with the OAM token as follows:

- Partner Name: requester-partner
- Partner Type: Requester
- Partner Profile: requester-profile
- Description: Requester

- Trusted
- Username Token Authentication
  - *Username* <enter username used by the Web Service Client>
  - *Password* <enter password used by the Web Service Client>
  - Confirm *Password* <enter password used by the Web Service Client>
- Identity Attribute values for:
  - httpbasicusername
  - sslclientcertdn

Partner Profile: Relying Party

Create a new Relying Party Profile for Identity Propagation as follows:

- Profile ID: relying-party-profile
- Description: Relying Party Profile
- Default Token Type: SAML 2.0
- Issuance Template: iap-issuance-template for SAML 2.0

Partner Profile: Requester

Create a new Requester Profile for Identity Propagation as follows:

- Profile ID: requester-profile
- Description: Requester Partner Profile
- Default Relying Party Profile: relying-party-profile

Validation Template for WS-TRUST

The Validation Template requires the following configuration for Identity Propagation:

- Validation Template Name: username_wstrust_validation_template
- Description: Username WS-Trust Template
- Token Protocol: WS-Trust
- Token Type: Username
- Timestamp Lifespan: 600
- Enable Credential Validation: unchecked
- Token Mapping:
  - Map Token To User: checked
  - Enable Simple User Mapping: checked
  - Datastore Attribute: uid

This completes the configuration requirements for the Identity Propagation with Username Token scenario.

Example 35–1 Sample exchange: Request Security Token Sent By the Client

Here is a request for security token sent by the client.

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/1999/XMLSchema-instance">
```

```
<SOAP-ENV:Header><wsse:Security
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-sec
ext-1.0.xsd">
<wsse:UsernameToken><wsse:Username>requester-test</wsse:Username><wsse:Password
Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profi
le-1.0#PasswordText">welcome1</wsse:Password></wsse:UsernameToken></wsse:Security>
<wsa:Action
xmlns:wsa="http://www.w3.org/2005/08/addressing">http://docs.oasis-open.org/ws-sx/
ws-trust/200512/RST/Issue</wsa:Action></SOAP-ENV:Header>
<SOAP-ENV:Body><wst:RequestSecurityToken
xmlns:wst="http://docs.oasis-open.org/ws-sx/ws-trust/200512"><wst:RequestType>http
://docs.oasis-open.org/ws-sx/ws-trust/200512/Issue</wst:RequestType>
<wst:TokenType>http://docs.oasis-open.org/wss/oasis-wss-saml-token-profile-1.1#SAM
LV1.1</wst:TokenType><wst:OnBehalfOf>
<wsse:UsernameToken
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-sec
ext-1.0.xsd"><wsse:Username>user-alice</wsse:Username>
</wsse:UsernameToken></wst:OnBehalfOf></wst:RequestSecurityToken></SOAP-ENV:Body><
/SOAP-ENV:Envelope>
```

Example 35–2 Request Security Token Response sent by the Security Token Service

Here is a response to the RST sent by the Security Token Service.

```
<env:Envelope
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"><env:Header><Action
xmlns="http://www.w3.org/2005/08/addressing">http://docs.oasis-open.org/ws-sx/ws-t
rust/200512/RSTRC/IssueFinal</Action>
</env:Header><env:Body><wst:RequestSecurityTokenResponseCollection
xmlns:ns6="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsa="http://www.w3.org/2005/08/addressing"
xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-sec
ext-1.0.xsd" xmlns:wst="http://docs.oasis-open.org/ws-sx/ws-trust/200512"
xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-util
ity-1.0.xsd">
<wst:RequestSecurityTokenResponse><wst:TokenType>http://docs.oasis-open.org/wss/oa
sis-wss-saml-token-profile-1.1#SAMLV1.1</wst:TokenType><wst:RequestedSecurityToken
><saml:Assertion AssertionID="id-1LNkSUVcpbH7O0oQwbHJ5JOd5fs-"
IssueInstant="2011-04-22T18:48:05Z" Issuer="myhost.uk.example.com"
MajorVersion="1" MinorVersion="1" xmlns:dsig="http://www.w3.org/2000/09/xmldsig#"
xmlns:enc="http://www.w3.org/2001/04/xmlenc#"
xmlns:saml="urn:oasis:names:tc:SAML:1.0:assertion"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<saml:Conditions NotBefore="2011-04-22T18:48:05Z"
NotOnOrAfter="2011-04-22T19:48:05Z"/><saml:AttributeStatement><saml:Subject><saml:
NameIdentifier
Format="urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress">user-alice@example
.com</saml:NameIdentifier><saml:SubjectConfirmation>
<saml:ConfirmationMethod>urn:oasis:names:tc:SAML:1.0:cm:sender-vouches</saml:Confi
rmationMethod></saml:SubjectConfirmation>
</saml:Subject><saml:Attribute AttributeName="sn"
AttributeNamespace="urn:oracle:security:fed:attrnamespace"><saml:AttributeValue
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xsi:type="xs:string">user-alice-last</saml:AttributeValue></saml:Attribute>
</saml:AttributeStatement><dsig:Signature><dsig:SignedInfo><dsig:CanonicalizationM
ethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
<dsig:SignatureMethod
Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/><dsig:Reference
URI="#id-1LNkSUVcpbH7O0oQwbHJ5JOd5fs-"><dsig:Transforms><dsig:Transform
Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
```

<dsig:Transform
Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/></dsig:Transforms><dsig:Digest
tMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
<dsig:DigestValue>1GF2ZT9h+gs8sxyO+/yG/N6jxk8=</dsig:DigestValue></dsig:Reference>
</dsig:SignedInfo>
<dsig:SignatureValue>InZVb5aRM5+KKI1VqXg9HiIgLjKyGm0VkD6sMJ/8SIbFbbxuNm7Mnky5W35p2
P0c5bCPRx02uzLEE4KhLkyM2GsLsVaDNkRztGMphQW/Mcg7DprJIEyR2OYMYDOQSipa/k2K98C4zO/RNiv
o1KvyJsd6a3h6CBHwoO1RKip039w=</dsig:SignatureValue>
<dsig:KeyInfo><dsig:X509Data><dsig:X509Certificate>MIIB/DCCAWWgAwIBAgIBCjANBgkqhki
G9w0BAQQFADAjMSEwHwYDVQQDExhhZGMyMTEwNjE4LnVzLm9yYWNsZS5jb20wHhcNMTEwNDE5MTUxNTI2W
hcNMjEwNDE2MTUxNTI2WjAjMSEwHwYDVQQDExhhZGMyMTEwNjE4LnVzLm9yYWNsZS5jb20wgZ8wDQYJKoZ
IhvcNAQEBBQADgY0AMIGJAoGBAJnSxVc86TGcwewieaueIVG33C3Qouve6HuJxHsoM8cRRkJcmv+0auyvD
LJfYAEOfHo5OsF4+za11iNPln9ZFaOjUy/Y8JC0kSVxatgU36RveIrpOJvp978Oa6IlMNUtdFf8q3Trsiz
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</dsig:X509Data></dsig:KeyInfo></dsig:Signature></saml:Assertion></wst:RequestedSe
curityToken><wst:RequestedAttachedReference><wsse:SecurityTokenReference><wsse:Key
Identifier
ValueType="http://docs.oasis-open.org/wss/oasis-wss-saml-token-profile-1.0#SAMLAss
ertionID">id-1LNkSUVcpbH7O0oQwbHJ5JOd5fs-</wsse:KeyIdentifier></wsse:SecurityToken
Reference></wst:RequestedAttachedReference>
<wst:RequestedUnattachedReference><wsse:SecurityTokenReference><wsse:KeyIdentifier
ValueType="http://docs.oasis-open.org/wss/oasis-wss-saml-token-profile-1.0#SAMLAss
ertionID">id-1LNkSUVcpbH7O0oQwbHJ5JOd5fs-</wsse:KeyIdentifier></wsse:SecurityToken
Reference></wst:RequestedUnattachedReference>
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22T19:48:05Z</wsu:Expires></wst:Lifetime></wst:RequestSecurityTokenResponse></wst:
RequestSecurityTokenResponseCollection></env:Body></env:Envelope>

36

Configuring Security Token Service Settings

This chapter introduces how to manage components involved in the protection of Security Token Service endpoints. This chapter provides the following topics:

- Prerequisites
- Introduction to Security Token Service Configuration
- Enabling and Disabling Security Token Service
- Defining Security Token Service Settings
- Using and Managing WSS Policies for Oracle WSM Agents
- Configuring OWSM for WSS Protocol Communication
- Managing and Migrating Security Token Service Policies
- Logging Security Token Service Messages
- Auditing the Security Token Service

36.1 Prerequisites

Before beginning tasks in this chapter, be sure to review the following chapters.

- Chapter 34, "Introducing the Oracle Access Management Security Token Service"
- Chapter 2, "Getting Started with Oracle Access Management"
- Chapter 6, "Managing Server Registration"

36.2 Introduction to Security Token Service Configuration

Security Token Service a Web Service co-existing with Access Manager. Security Token Service invokes some Access Manager components to validate and issue security tokens. Typically, the Web client can use the Security Token Service to request an outbound token, such as SAML, by providing a security token, like a Username Token or an X.509 Token.

Security Token Service is integrated with the Oracle Access Management Console to provide a unified and consistent administration experience. All Security Token Service system configuration is done using the Oracle Access Management Console.

Security Token Service provides:

- Tokens:
  - Validation Tokens: Standard (Username, X.509, Kerberos, SAML 1.1/2.0) and custom tokens. OnBehalfOf use cases (OAM Session ID Propagation Token

and custom tokens through the integration engine) also supports the following standard tokens along with OAM sessionID propagation token and custom token (Username, X.509, SAML 1.1/2.0).

  - Issuance Tokens: Standard (Username, SAML 1.1/2.0) and custom tokens through the integration engine

- Configuration-driven token issuance and validation
- Enhanced auditing through identity propagation across multiple tiers and domains
- Consolidated shared-platform service interacts with internal (Access Manager SSO, Federation, Oracle Web Services Manager) and external services

This section provides the following topics:

- Post-Installation Configuration
- About OAM Servers and Security Token Service
- About Security Token Service Clients
- About Agents and Security Token Service

See Also: *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*

36.2.1 Post-Installation Configuration

After installation and server startup, you can access the Oracle Access Management Console on the OAM Server. For example, if the URL to the OAM Server is http://*machine:14100*/oam, you might access:

- Oracle Access Management Console at http://*machine:7001*/oamconsole
- Security Token Service: http://machine:14100/sts/wss11user?wsdl to view the WSDL of the /sts/wss11user endpoint that is available by default, to ensure that Security Token Service is available.

  By default, Security Token Service is disabled and as such all runtime functionality as well as Web Service endpoints are disabled. To access those endpoints, Security Token Service must first be enabled using the Oracle Access Management Console. Afterwards, the endpoints might be accessed

Post-installation configuration includes the tasks in the following outline, which point to other areas in this book for details.

Task overview: Security Token Service configuration requires

1. **Server Side Configuration**: Use the Oracle Access Management Console for the following tasks.
   a. Service enablement "Enabling and Disabling Services for Security Token Service" on page 36-9
   b. Settings configuration "Managing Security Token Service Settings" on page 36-12
   c. Endpoint registration "Managing EndPoints" on page 38-26
   d. Token Issuance Template configuration "Managing Token Issuance Templates" on page 38-6

e. Token Validation Template configuration "Managing Token Validation Templates" on page 38-14

f. Partner Profile creation "Managing Token Service Partner Profiles" on page 39-7

g. Partner configuration "Managing Token Service Partners" on page 39-3

h. Token Issuance Policies to define an authorization rule for issuing tokens with Security Token Service, for a specific Relying Party "Managing Token Issuance Policies, Conditions, and Rules" on page 38-27

2. Set up interactions with the Oracle WSM Agent as described in following topics:

   a. Using and Managing WSS Policies for Oracle WSM Agents

   b. Configuring OWSM for WSS Protocol Communication

3. Set up message logging, as described in "Logging Security Token Service Messages" on page 36-20.

4. Configure event auditing, as described in "Setting Up Auditing for Oracle Access Management" on page 9-20.

5. Configure lifecycle management

   a. Register the Security Token Service trust endpoint, as described in item 1c.

   b. Register the Requester or Relying Party Partner with Security Token Service, as described in "Managing Token Service Partners" on page 39-3.

   c. Monitor performance, as described in Chapter 13, "Monitoring Performance and Logs with Fusion Middleware Control".

36.2.2 About OAM Servers and Security Token Service

With Oracle Access Management, all Security Token Service instances are installed on OAM Servers (also known as Managed Servers). Each server must be registered with Access Manager.

Security Token Service leverages the common infrastructure for shared services and the Oracle Access Management administration model.

Security Token Service support Web Services Security protocol 1.0 and 1.1 and process the following tokens, if present in the Security SOAP headers:

- Username token (UNT)
- SAML 1.1 or SAML 2.0 Assertion
- Kerberos
- X.509

> **Note:** Managed servers hosting Security Token Service must be registered with Access Manager as described in Chapter 6, "Managing Server Registration".

Third-Party Servers: Security Token Service interoperates with third party security token servers. For instance, a third party Security Token Service can create a valid Security Assertion Markup Language (SAML) Assertion that can be consumed by Security Token Service.

36.2.3 About Security Token Service Clients

Security Token Service provides services to various Oracle clients (Oracle Web Services Manager client) or third party clients (Microsoft and IBM are two).

Oracle WSM Client: Oracle Web Services Manager client bindings are the responsibility of Oracle Web Services Manager (and out of scope for this book). For more information, see "Configuring Oracle WSM Agent for WSS Kerberos Policies" on page 36-18.

> **See Also:** "WS-Trust Policies and Configuration Steps" in Oracle Fusion Middleware Security and Administrator's Guide for Web Services

Third Party Clients: Require a secure key exchange between the Oracle WSM client and server. You simply import the Security Token Service certificate to the client.

During SOAP interactions, the WS-Security protocol might require the client to trust the signing/encryption certificate used for WSS operations by the OWSM Agent protecting the Security Token Service endpoint. In those cases, the Oracle Access Management Administrator should extract the Security Token Service OWSM signing/encryption certificate used for WSS operations and provide it to the WS Client. For more information, see "Extracting the Oracle STS/Oracle WSM Signing and Encryption Certificate" on page 36-16.

36.2.4 About Agents and Security Token Service

Oracle Web Services Manager communicates through agents. This topic introduces the agents that operate with Security Token Service.

Oracle WSM Agent: The Oracle Web Services Manager (Oracle WSM) Agent is integrated with Security Token Service. This agent provides the Web Services Security support for Security Token Service Web Services endpoints.

- Protects Web Services endpoints of Security Token Service
- Provides WS-Security support for sending SOAP messages to Relying Parties. As part of that process, the OWSM Client might interact with Security Token Service to get a security token that will be presented to the Relying Party
- Interacts with Security Token Service for token acquisition and token validation

Security Token Service supports token acquisition and token validation by Oracle Web Services Manager (Oracle WSM) agents. Oracle Web Services Manager Agents are not required to use Security Token Service as part of their inbound or outbound security policy enforcement. Oracle Web Services Manager client bindings are the responsibility of Oracle Web Services Manager Administrators.

The Oracle WSM Agent is used by Security Token Service to enforce message protection of the SOAP communication channel between Security Token Service and the client. The Oracle WSM Agent caches the OPSS Keystore (by default the default-keystore.jks keystore located in $DOMAIN_HOME/config/fmwconfig directory) which contains the trusted certificates involved when validating the WSS clients' certificates. Subsequent changes to the contents of the keystore or to its name, require a restart of the Managed Server using Oracle Enterprise Manager Fusion Middleware Control or WebLogic Server console, or NodeManager.

The Oracle WSM Agent available to Security Token Service must be configured to protect the Security Token Service endpoints, to perform the following tasks:

- Decrypt the request, if necessary

- Verify any digital signatures present in the request
- Validate any certificate used to create the request's digital signatures, if the signatures were created with a private key
- Validate any X.509 token, if present, in the SOAP headers
- Validate the Kerberos token, if present, in the SOAP headers
- Sign the outgoing response, if needed
- Encrypt the outgoing response, if required

Oracle WSM Agent Keystore: The Oracle WSM Agent uses a keystore for various cryptographic operations. For these operations, the Oracle WSM Agent uses the keystore configured for Oracle WSM tasks.

See Also:

- "Introduction to Oracle Access Management Keystores" on page 5-27
- Chapter 37, "Managing Security Token Service Certificates and Keys"

Webgate: Security Token Service uses Webgate for the Access Manager session propagation token. This, identity propagation, use case is more advanced. It requires the Identity Assertion Provider in WebLogic Server and some custom integration.

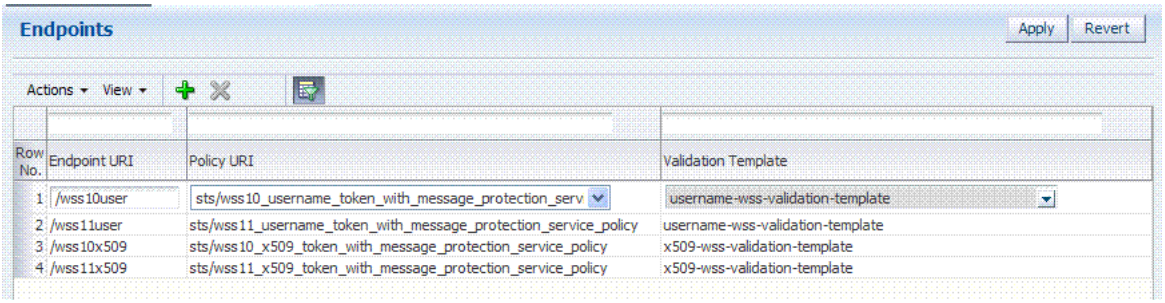
See Also:

- Chapter 35, "Security Token Service Implementation Scenarios"
- "About the Oracle Web Services Manager Keystore (default-keystore.jks)" on page 37-3

36.2.5 About Security Token Service End Points and Policies

When you add an endpoint, you can choose from a list of Policy URI's and validation templates with which to associate the Security Token Service endpoint. By default, Security Token Service is configured with the endpoints shown in Figure 36–1.

Figure 36–1 Default Endpoints, Policies, and Validation Templates



The ORAPROVIDER is integrated with the Oracle WSM Agent, which provides Web Services Security support on the SOAP messages being exchanged between the client and Security Token Service. Security Token Service leverages ORAPROVIDER for Web Services to:

- publish Web Services endpoints dynamically

- invoke Security Token Service to process SOAP messages
- publish a WSDL file for each WS endpoint

Oracle WSM Agent WSS Policy Stores: The Oracle WSM Agent requires a repository to retrieve the Web Services Security (WSS) policies it needs. Security Token Service supports two types of repositories:

- **JAR file with WSS Policies**: Used when the WLS Domain is configured for classpath.
- **Oracle WSM Policy Manager** available from the SOA deployment

See Also:

- "Configuring OWSM for WSS Protocol Communication" on page 36-15
- Managing Oracle Workspace Studio policies for Security Token Service
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for details about the policies for Security Token Service

Policy Assertions: Out of the box, Security Token Service provides a set of security policy assertions for use with the WS-Policy framework to describe how messages are to be secured in the context of Oracle Workspace Studio: SOAP Message Security and WS-Trust.

- Security Token Service makes its associated security policy files publicly available by attaching them to its deployed WSDL.
- Security Token Service runtime uses the private key and X.509 certificate pairs, stored in the keystores defined by the jps-config.xml file, for its WS-Security encryption and digital signature operations.

The following paragraphs and tables identify the policies that are available out of the box for Security Token Service and the Oracle WSM Agent.

Message-level Security Not Required: When message level-security is not required, use an Security Token Service policy that does not specify message_protection in its name. This authenticates users using credentials provided in tokens in the WS-Security SOAP header. The credentials in the Fusion Applications token are mapped based on the rules specified in the validation template. Both plain text and digest mechanisms are supported.

Transport Security when Message-level Security Not Required: You can configure two-way SSL where both the client applications and WebLogic server present certificates to each other. To configure two-way or one-way SSL for the core WebLogic Server security see "Configuring SSL" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* guide. Use the policies described in Table 36–1.

Interoperability WS-Security 1.0 and 1.1 Policies: Use policies in Figure 36–2 if you require interoperability with WS-Security 1.0 or 1.1 (depending on your authentication requirements and credential availability). Use WS-Security 1.1 policies if you have strong security requirements.

Figure 36–2 WS-Security 1.0 and 1.1 Policies

```
sts/wss10_username_id_propagation_with_msg_protection_service_policy
sts/wss10_username_token_with_message_protection_service_policy
sts/wss10_username_token_with_message_protection_ski_basic256_service_policy
sts/wss11_username_token_with_message_protection_service_policy
sts/wss_username_token_over_ssl_service_policy
sts/wss_username_token_service_policy

sts/wss10_x509_token_with_message_protection_service_policy
sts/wss11_x509_token_with_message_protection_service_policy

sts/wss10_saml_hok_token_with_message_protection_service_policy
sts/wss10_saml_token_service_policy
sts/wss10_saml_token_with_message_integrity_service_policy
sts/wss10_saml_token_with_message_protection_service_policy
sts/wss10_saml_token_with_message_protection_ski_basic256_service_policy
sts/wss11_saml_token_with_message_protection_service_policy
sts/wss_saml_token_bearer_over_ssl_service_policy
sts/wss_saml_token_over_ssl_service_policy

sts/wss10_saml20_token_service_policy
sts/wss10_saml20_token_with_message_protection_service_policy
sts/wss11_saml20_token_with_message_protection_service_policy
sts/wss_saml20_token_bearer_over_ssl_service_policy
sts/wss_saml20_token_over_ssl_service_policy

sts/wss11_kerberos_token_service_policy
sts/wss11_kerberos_token_with_message_protection_basic128_service_policy
sts/wss11_kerberos_token_with_message_protection_service_policy

sts/wss11_sts_issued_saml_hok_with_message_protection_service_policy
sts/wss_sts_issued_saml_bearer_token_over_ssl_service_policy

sts/wss10_message_protection_service_policy
sts/wss11_message_protection_service_policy

sts/wss_http_token_over_ssl_service_policy
sts/wss_http_token_service_policy
```

See Also: "Using and Managing WSS Policies for Oracle WSM Agents"

Task overview: Using and modifying WS-S policies

1. From the Oracle Access Management Console, System Configuration tab, open the Security Token Service section.
2. From the Endpoints node, proceed as described in "Managing Security Token Service Endpoints" on page 38-25 to locate or create the endpoint to be protected.
3. From the Policy URI list, choose a specific WS Security policy to protect the endpoint, as described in:
   - Managing WSS Policies for Security Token Service: Classpath
   - Managing WSS Policies for Security Token Service: Oracle WSM Policy Manager

36.3 Enabling and Disabling Security Token Service

This topic includes the following topics:

- About Security Token Service and the Oracle Access Management Console
- About Enabling Services for Security Token Service
- Enabling and Disabling Services for Security Token Service

36.3.1 About Security Token Service and the Oracle Access Management Console

Elements in the Oracle Access Management Console enable Administrators to easily configure the Token Service to exchange WS Trust tokens with partners. Token Service

elements provide for creation, viewing, modification, and removal of partners, endpoints, validation templates, issuance templates, and data store connections.

All Security Token Service system configuration is done using the Oracle Access Management Console. This includes the following common tasks covered in Part II of this book:

- Registering and managing common OAM Servers and proxy information
- Registering and managing the common Default User Identity Store
- Configuring the OAM Keystore, which differs from the OWSM Keystore used for WSS processing
- Certificate Validation and Revocation

The Oracle Access Management Console enables Administrators to perform the following Security Token Service-specific tasks:

- Manage validation token templates: The validation templates include configuration properties to validate a Web Services Security/WSTrust token, and map it to a Requester Partner or a User record in the Default User Identity Store.
- Manage issuance templates: The issuance templates contain rules on how a token will be created
- Manage Partner Data: A partner represents a partner trusted by Security Token Service. Security Token Service defines three types of partners: Requester, Relying Party and Issuing Authority. Each partner entry is associated to a partner profile. The partner entry contains signing and encryption certificates and identifiers used to uniquely identify a partner
- Manage Partner Profile: A partner profile contains configuration properties that are common to a set of partners:
  - Claim Mapping
  - Token Types definition
  - Issuance and Validation templates defined for the token Types
  - Override Validation Template rules for Issuing Authorities(Other STS)
- Manage Security Token Service Endpoints
- Manage Token Issuance Policies (authorization policies that will be evaluated to determine if a Requester Partner can request a token based on the Relying Party referenced in the request)
- Security Token Service Global Settings
- Custom tokens

36.3.1.1 About Security Token Service Administrators

Users with administrative access to the Oracle Access Management Console, have access to Security Token Services.

Initially, administrative users must log in to the Oracle Access Management Console using the WebLogic Administrator credentials set during initial configuration. However, your enterprise might require independent sets of Administrators: one set of users responsible for Access Manager and another for Security Token Service.

36.3.1.2 About Logging In To, and Signing Out Of, Security Token Service

When using Security Token Service with Access Manager, logging in to, and signing out of the Oracle Access Management Console is the same.

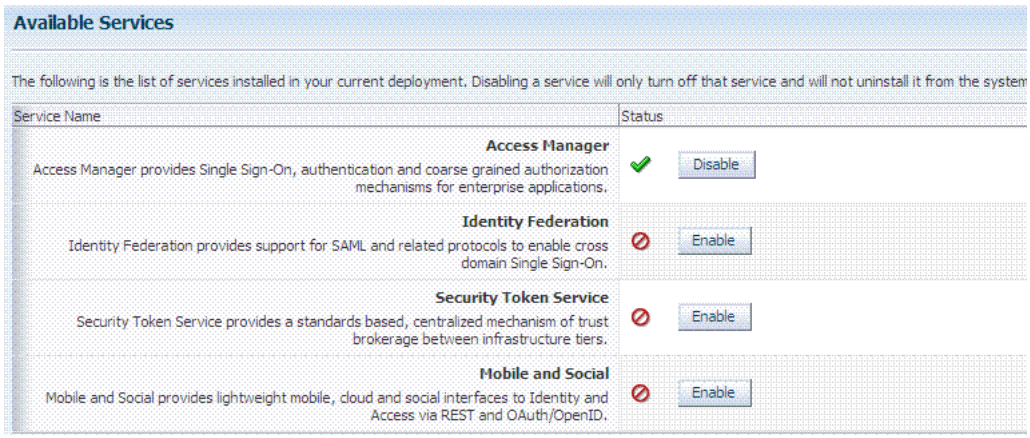
See Also: Chapter 2 for the following topics:

- Logging In
- Signing Out

36.3.2 About Enabling Services for Security Token Service

To use Security Token Service, both it and Access Manager must be enabled, as shown in Figure 36–3. By default Security Token Service is disabled and needs to be enabled.

Figure 36–3 Available Services Panel



A green check mark in the Status field beside the service name indicates the service is enabled. A red circle with a line through it indicates that the corresponding service is disabled.

36.3.3 Enabling and Disabling Services for Security Token Service

Prerequisites

Oracle Access Manager service must be enabled.

To enable or disable Security Token Service

1. Log in to the Oracle Access Management Console, as usual

   `https://hostname:port/oamconsole/`

2. From the System Configuration tab, Common Configuration section, click Available Services.
3. **Enable Security Token Service**: Beside Security Token Service, click Enable (or confirm that the Status check mark is green) and confirm that the Access Manager Service is also enabled.
4. **Disable Security Token Service**: Beside Security Token Service, click Disable (or confirm that the Status check mark is red).

36.4 Defining Security Token Service Settings

This section provides the following information:

- About Security Token Service Settings
- Managing Security Token Service Settings

36.4.1 About Security Token Service Settings

Security Token Service can be viewed or altered from the Security Token Service section of the System Configuration tab. These settings are show in Figure 36–4.

Figure 36–4 Security Token Service Page

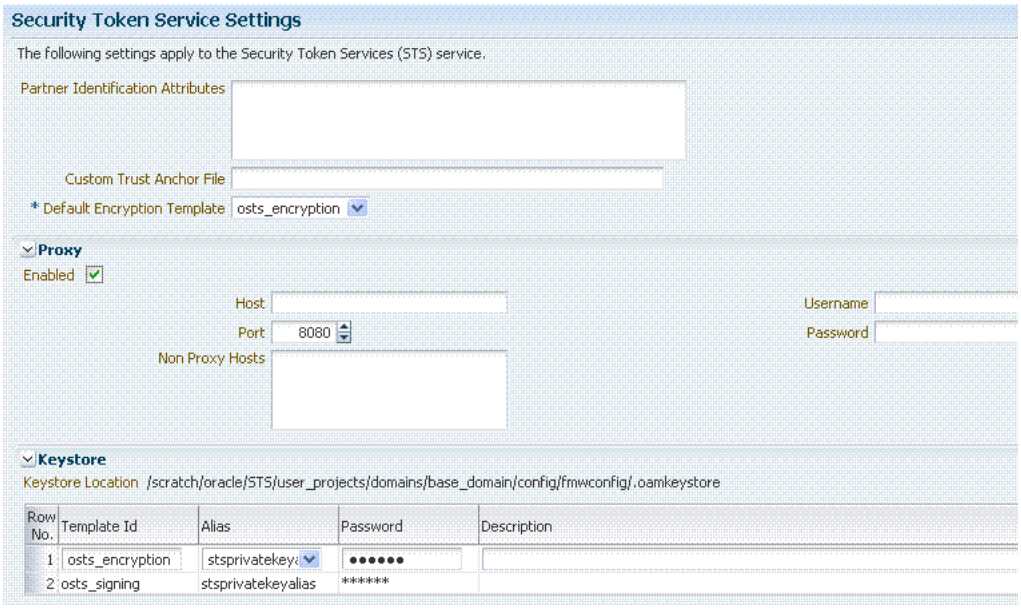


Table 36–1 describes the elements on the Security Token Service Settings page.

Table 36–1 Security Token Service Settings

Element	Description
Partner Identification Attributes	A field where you list attributes, other than the standard ones available by default, that should be available in "Identity Attributes" Table in the Partner page. These attributes can be used to identify a partner by matching their values against those in the incoming request. When a Requester sends a WS-Trust request to Security Token Service, the server might map the incoming token containing the requester's identity to a partner entry in the Security Token Service partner store. To do so, Security Token Service will use the mapping settings configured in a validation template and will attempt to map the token data to a partner entry by performing a lookup by matching the token data to a Partner Identification Attribute. By default, each requester partner contains three identification attributes that can be set: username, HTTP Basic Username, SSL Client Certificate DN. It is possible to define additional Identification Attributes that could be set for each requester partner entry. This section allows new attributes to be set. After defining a new attribute, it becomes available in the Requester Partner entry section, and it can be used in mapping rules in the WSS Validation Templates.
Custom Trust Anchor File	By default, Access Manager and Security Token Service use the default `$DOMAIN_HOME/config/fmwconfig/amtruststore` keystore containing the trust anchors used for certificate validation by Security Token Service, when verifying X.509 Tokens, or when verifying certificates used in SAML Assertion signatures. It is possible to configure Security Token Service to use a specific trust anchor file if necessary, that will contain trust anchors only used for Security Token Service operations and validations. In this case, this field should contain the location of the JKS keystore to use. Note the following: ■ When using a custom trust anchor keystore, it will not be replicated automatically across the cluster. You must manage replication. ■ In most cases, the default Access Manager and Security Token Service trust anchor should be enough. See Also: Chapter 37, "Managing Security Token Service Certificates and Keys"
Default Encryption Template	A list from which you choose the default template for Security Token Service encryption: ■ osts_encryption ■ osts_signing See Also: Setting the Default Encryption Key on page 37-6.

Table 36–1 (Cont.) Security Token Service Settings

Element	Description
Proxy	Outbound Connection Properties, HTTP Proxy Settings Use this section to configure Security Token Service to use a proxy for outgoing HTTP connections when optionally retrieving the WS-Sec Policy of Relying Parties at runtime: ■ Enabled: When this box is checked the Proxy function is enabled and will be used when retrieving the WS-Security Policy of Relying Parties. When the box is not checked, the Proxy function is disabled and related fields are inaccessible for editing. ■ Host: The proxy hostname ■ Port: The proxy port number. Default is 8080 ■ Non Proxy Hosts: A list of hosts for which the proxy should not be used. Use ';' to separate multiple hosts. ■ Username: The username to use when connecting to the proxy. ■ Password: The password to use when connecting to the proxy.
Keystore	Location: Path of the active keystore that was set up during Security Token Service installation. The Keystore table includes the following information for each of the templates in the table, which are available for use as the Default Encryption Template: ■ Template ID: The name of the template that can access the keystore. ■ Alias: Identifies the alias for the template. When adding a template, you can choose from the Aliases listed. For example:  ■ Password: The password for the selected Alias. ■ Description: Optional. The keystore section defines key entries that exist in the Security Token Service keystore: `$DOMAIN_HOME/config/fmwconfig/.oamkeystore` After an entry is defined an entry, it can be used in other Security Token Service templates (like SAML Issuance Templates).

36.4.2 Managing Security Token Service Settings

Users with valid Administrator credentials can use this procedure to confirm or alter Security Token Service Settings.

Prerequisites

Both the Access Manager Service and the Security Token Service must be enabled.

To view or edit Security Token Service Settings

1. Log in to the Oracle Access Management Console.

   ```
   https://hostname:port/oamconsole/
   ```

2. Click Security Token Service Settings.
3. On the Security Token Service Settings page view (or modify) the following information (see Table 36–1):
   - Partner Identification Attributes
   - Custom Trust Anchor File
   - Proxy details
4. Keystore Table: View, add, or remove new encryption templates
5. Click Apply to submit changes (or Revert to cancel changes).
6. Close the page when finished.

36.5 Using and Managing WSS Policies for Oracle WSM Agents

You can use existing Oracle Workspace Studio policies to protect Security Token Service Web Service endpoints. For instance:

- classpath mode: Existing Oracle Workspace Studio policies defined in `$ORACLE_IDM_HOME/oam/server/policy/sts-policies.jar` are used in this mode
- SOA deployment: Policies defined in the Oracle WSM Policy Manager available from a SOA deployment are used

This section describes how to manage Web Service Security Policies for Security Token Service in the following topics:

- Using and Modifying Oracle Workspace Studio Policies
- Managing WSS Policies for Security Token Service: Classpath
- Managing WSS Policies for Security Token Service: Oracle WSM Policy Manager

36.5.1 Using and Modifying Oracle Workspace Studio Policies

This section introduces WS-Security Policies used to protect Security Token Service WS Endpoint and how to modify these policies. TheWS-Security Policies that are provided by Oracle should cover most use cases.

See Also:

- "About Security Token Service End Points and Policies" on page 36-5
- Attaching Policies to Web Services in the *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*

36.5.2 Managing WSS Policies for Security Token Service: Classpath

Predefined Oracle Web Services Manager policies are constructed using assertions based on predefined assertion templates. For WSS Policy classpath mode, the OWSM Agent retrieves policies from sts-policies.jar located on the classpath.

If SOA is not deployed in the WebLogic Server domain, the Security Token Service installer configures the WebLogic Server domain for WSS Policy classpath mode. The

JAR file containing the WSS Policies used when the WLS Domain is configured for classpath is located at:

```
$ORACLE_IDM_HOME/oam/server/policy/sts-policies.jar
```

When your environment is in classpath mode, perform the following tasks to Administrators confirm sts-policies.jar is located on the classpath.

See Also:

- "About Security Token Service End Points and Policies" on page 36-5
- Oracle WSM Predefined Policies and Assertion Templates in the *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*

Task overview: Managing WSS Policies for Security Token Service: Classpath

1. Define an OWSM Assertion Template.
2. Proceed as follows, depending on your need:
   - Modify an OWSM Policy
   - Define a Policy using the OWSM Assertion Template
3. Bundle the Assertion Template and policy in the sts-policies.jar file:

   `META-INF/assertiontemplates/oracle of the $ORACLE_IDM_HOME/oam/server/policy/sts-policies.jar`

4. Confirm that `sts-policies.jar` is located in the following path to enable the policy URI to be available the Policy URI drop down list.

   `$ORACLE_IDM_HOME/oam/server/policy/sts-policies.jar`

5. Restart the Managed Servers running Security Token Service.
6. Proceed to the Oracle Access Management Console to configure the Security Token Service Endpoints.

36.5.3 Managing WSS Policies for Security Token Service: Oracle WSM Policy Manager

The Oracle WSM Policy Manager is the security linchpin for Oracle Fusion Middleware Web services and SOA applications. For more information about how the Oracle WSM Policy Manager manages the policy framework, see "Understanding Oracle WSM Policy Framework" in Oracle Fusion Middleware Security and Administrator's Guide for Web Services.

At design time, you attach Oracle WSM and WebLogic Web service policies to applications programmatically using your favorite IDE, such as Oracle JDeveloper. Alternatively, at deployment time you attach policies to SOA composites, ADF, and WebCenter applications using the Oracle Enterprise Manager Fusion Middleware Control, and to WebLogic Web services (Java EE) using the WebLogic Server Administration Console.

System Administrators can leverage the Oracle WSM through the Oracle Enterprise Manager Fusion Middleware Control to:

- Centrally define policies using the Oracle WSM Policy Manager.
- Enforce Oracle WSM security and management polices locally at run time.

When your environment is integrated with the OWSM Policy Manager, perform the following tasks to add or modify WSS policies for Security Token Service using Oracle Web Services Manager.

Note: All of Oracle WSM's functionality is accessible to Administrators from Oracle Enterprise Manager Fusion Middleware Control.

See Also: Oracle Fusion Middleware Security and Administrator's Guide for Web Services

- Part II, "Basic Administration"
- Part III, "Advanced Administration"

Task overview: Managing WSS Policies for Security Token Service: OWSM Policy Manager

1. From the OWSM Policy Manager, locate and open the desired policy.
2. Refer to the *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* and make any required changes to the policy.
3. Restart all Managed Servers running Security Token Service.
4. Proceed to "Configuring OWSM for WSS Protocol Communication".

36.6 Configuring OWSM for WSS Protocol Communication

This section describes how to configure communication between WS-Sec Clients and the Oracle WSM Agent embedded with Security Token Service.

The Oracle WSM Agent protects the Web Service endpoints of Security Token Service, and provides support for WSS protocol exchanges. To ensure a client is communicating successfully with the Oracle WSM Agent:

- The client might need to be aware of the signing and encryption certificates used by the Oracle WSM Agent (this will require extracting and distributing the signing and encryption certificates used by the OWSM Agent embedded with Security Token Service).
- The Oracle WSM Agent might need to be aware, depending on the policies, of the signing certificate used by the client (this will require adding the client's certificate as a trusted certificate for the Oracle WSM Agent)

Task overview: Configuring communication with Oracle WSM agents

1. See "About Oracle WSM Agent WS-Security Policies for Security Token Service"
2. Retrieving the Oracle WSM Keystore Password
3. Extracting the Oracle STS/Oracle WSM Signing and Encryption Certificate
4. Adding Trusted Certificates to the Oracle WSM Keystore
5. Validating Trusted Certificates in the Oracle WSM Keystore
6. Configuring Oracle WSM Agent for WSS Kerberos Policies

See Also: Chapter 37, "Managing Security Token Service Certificates and Keys"

36.6.1 About Oracle WSM Agent WS-Security Policies for Security Token Service

The Oracle WSM Agent requires a repository to retrieve the Web Services Security (WSS) policies it needs. Access Manager supports two types of repositories for Security Token Service:

- JAR file with WSS Policies: Used when the WLS Domain is configured for classpath. The required JAR file is located in $ORACLE_IDM_HOME/oam/server/policy/ sts-policies.jar.
- Oracle WSM Policy Manager available from the SOA deployment

During Security Token Service installation, the installer detects if the Oracle Web Services Manager Policy Manager is present and deployed in the WebLogic Security domain.

- If not deployed in the WebLogic Security domain, the installer configures the WebLogic Security domain for the Web Services Security Policy classpath mode, where the WSM Agent will retrieve the policies from a JAR file.
- If present, the installer connects to the Oracle Web Services Manager Policy Manager and uploads the policies that are used to protect Security Token Service endpoints.

> **See Also:** "About the Database Store for Policy, Password Management, and Sessions" on page 5-25 for details about the required database for Access Manager policy data and (optionally) Access Manager session data.

36.6.2 Retrieving the Oracle WSM Keystore Password

Administrators need to retrieve the keystore password and key entry password from CSF for certain activities. Otherwise, keystore or key entry cannot be changed. Having access to the keystore is sometimes required to:

- Extract the signing/encryption certificate to distribute to clients if necessary
- Update or replace the signing/encryption key entry
- Add trusted certificates

The following procedure displays the password used to protect the Oracle WSM keystore as well as the key entry.

To retrieve the Oracle WSM keystore password

1. Enter the WSLT scripting environment.
2. Connect to the WebLogic Server AdminServer, using the `connect()` command.
3. Execute the following command by providing the connection information to the AdminServer: `listCred(map="OAM_STORE", key="jks").`
4. Note the password.
5. Proceed to "Extracting the Oracle STS/Oracle WSM Signing and Encryption Certificate".

36.6.3 Extracting the Oracle STS/Oracle WSM Signing and Encryption Certificate

During SOAP interactions, the WS-Security protocol might require the client to trust the signing/encryption certificate used for WSS operations by the OWSM Agent protecting the Security Token Service endpoint. In those cases, the Oracle Access

Management Administrator should extract the Security Token Service OWSM signing/encryption certificate used for WSS operations and provide it to the WS Client.

The Administrator must export the signing and encryption certificate used by Security Token Service for WSS cryptographic operations. The following procedure guides as you do this by:

- Replacing $DOMAIN_HOME with the path to the Domain directory
- CERT_FILE with the location of the file where the certificate will be saved

If you are prompted to enter a password, simply press the Enter key.

Prerequisites

Retrieving the Oracle WSM Keystore Password

To export the signing and encryption certificate

1. Locate keytool.
2. Execute the following command.

```
keytool -exportcert -keystore $DOMAIN_HOME/config/fmwconfig/default-keystore.j
ks -storetype JKS -alias orakey -file $CERT_FILE
```

3. Enter the keystore password retrieved in the previous section if prompted.
4. Proceed to "Adding Trusted Certificates to the Oracle WSM Keystore".

36.6.4 Adding Trusted Certificates to the Oracle WSM Keystore

To add a trusted certificate to the OWSM keystore for WSS cryptographic operations:

- perform the command in the following procedure
- replace the $DOMAIN_HOME with the path to the Domain directory
- replace the TRUSTED_CERT_FILE with the location of the file containing the trusted certificate
- replace the TRUSTED_CERT_ALIAS with the alias under which the trusted certificate will be stored

When prompted to enter a password, enter the password of the OWSM keystore that you retrieved earlier.

Prerequisites

Retrieving the Oracle WSM Keystore Password

The Administrator must have the certificate to import.

To add trusted certificates to the Oracle WSM keystore

1. Locate keytool.
2. Execute the following command.

```
keytool -importcert -trustcacerts -keystore $DOMAIN_HOME/config/fmwconfig/de
fault-keystore.jks -storetype JKS -alias $TRUSTED_CERT_ALIAS -file $TRUSTED_
CERT_ALIAS
```

3. Observe messages on the screen, enter a password if requested.

4. Proceed to "Validating Trusted Certificates in the Oracle WSM Keystore".

36.6.5 Validating Trusted Certificates in the Oracle WSM Keystore

When the Oracle WSM Agent performs a certificate validation, it uses the keystore configured for Oracle WSM tasks, and will validate the certificate against the trusted certificate entries contained in the keystore. For those operations, it might be required to add trusted certificate entries (the certificate itself or the issuer's certificate) in the OWSM keystore.

When receiving a SOAP requester, the Oracle WSM Agent processes the request for message protection. Part of the steps might include a certificate validation operation if the incoming message:

- is of type WSS 1.0, and includes a digital signature created with a private key, without the certificate being present. In this case:

  Remedy: The Oracle WSM keystore must contain the signing certificate.

- is of type WSS 1.0, and includes a digital signature created with a private key, with the certificate being present.

  Remedy: The Oracle WSM keystore must contain either the signing certificate or the issuer's certificate of the signing certificate.

- is of type WSS 1.1, and includes a digital signature created with a private key, without the certificate being present.

  Remedy: The Oracle WSM keystore must contain the signing certificate.

- is of type WSS 1.1, and includes a digital signature created with a private key, with the certificate being present. In this case, the OWSM keystore will need to contain either the signing certificate or the issuer's certificate of the signing certificate

  Remedy: The Oracle WSM keystore must contain either the signing certificate or the issuer's certificate of the signing certificate

> **See Also:** Chapter 37, "Managing Security Token Service Certificates and Keys"

36.6.6 Configuring Oracle WSM Agent for WSS Kerberos Policies

Security Token Service provides services to various Oracle clients (Oracle Web Services Manager client) or third party clients (Microsoft and IBM are two). the Oracle WSM Agent performs only message protection (not authentication) on the incoming request. The Oracle WSM agent does not attempt to map the incoming Kerberos ticket to a user record in the OPSS Identity Store.

If Oracle WSM is the client that will interact with Security Token Service using WSS Kerberos policies, then the entire Oracle WSM Kerberos setup section in Oracle Fusion Middleware Security and Administrator's Guide for Web Services applies.

However, if the client is not Oracle WSM, see Table 36–2 and disregard sections on how to configure the client, sections related to authenticating the user referenced in the Kerberos ticket.

Table 36–2 Configuring a Non-Oracle WSM Client for WSS Kerberos Policies

Perform Tasks for Non-Oracle Client	Skip These Tasks for Non-Oracle Client
Configure the KDC	
Initialize and Start the MIT Kerberos KDC	

Table 36–2 (Cont.) Configuring a Non-Oracle WSM Client for WSS Kerberos Policies

Perform Tasks for Non-Oracle Client	Skip These Tasks for Non-Oracle Client
Create Principals	
Configure the Web Service Client to Use the Correct KDC	
	Set the Service Principal Name In the Web Service Client
	Set the Service Principal Name In the Web Service Client at Design Time
Configure the Web Service to Use the Right KDC	
Use the Correct Keytab File in Enterprise Manager	
Extract and Export the Keytab File	
Modify the krb5 Login Module to use the Keytab File	
Authenticate the User Corresponding to the Service Principal	
Create a Ticket Cache for the Web Service Client	
Use Active Directory with Kerberos and Message Protection	
	Set Up the Web Service Client
Create a User Account	
Create a Keytab File	
	Set the Service Principal Name
Set Up the Web Service	

36.7 Managing and Migrating Security Token Service Policies

This section provides the following topics:

- About Managing and Migrating Security Token Service Policies
- Managing Security Token Service Policies
- Migrating Security Token Service Policies

36.7.1 About Managing and Migrating Security Token Service Policies

Security Token Service policies for endpoints reside in sts-policies.jar. This jar is copied to following location under $WLS_HOME ($Oracle_IDM1, for example):

```
$WLS_HOME/oam/server/policy
```

The sts-policies.jar contains the stspolicies.prop file at the following location in the JAR:

```
META-INF/policies/sts/
```

This file lists all the policies packaged in the directory as file names to allow the server to read the JAR entries programmatically when migrating policies to destination repository.

Note: Be sure to update policies and stspolicies.prop as needed before migration.

36.7.2 Managing Security Token Service Policies

The following procedure outlines the various scenarios for policy updates.

Task overview: Updating policies and stspolicies.prop

1. Add a Policy to sts-policies jar: Before creating the new jar, you must also update the stspolicies.prop file at META-INF/policies/sts/ to include this new policy file name.
2. Delete a Policy from sts-policies jar: You must also delete the entry from file META-INF/policies/sts/stspolicies.prop.
3. Update Existing Policy File Name: When re-naming a policy file at META-INF/policies/sts/, you must also update the corresponding entry in the file META-INF/policies/sts/stspolicies.prop file.
4. Update Existing Policy Content: When updating the content of a policy file, without touching the file name, there is no need to do anything else.

36.7.3 Migrating Security Token Service Policies

During installation a check is performed to establish whether SOA is deployed within the domain where Security Token Service is being installed:

- If SOA is not installed, the Oracle WSM protocol is set to classpath and policies are read from the JAR on the class path.

  See Also: "Using and Managing WSS Policies for Oracle WSM Agents" on page 36-13.

- If SOA is present within the domain, Security Token Service reads the policies from sts-policies.jar and migrates them to the Oracle WSM PM repository by calling Oracle WSM Mbeans.
- If SOA is installed after Security Token Service within the same domain, ensure smooth operations between SOA and Security Token Service as follows:
  - The Oracle WSM protocol must be set to 'remote'.
  - Security Token Service policies from sts-policies jar must be migrated to Oracle WSM PM repository using Oracle WSM provided tools.

36.8 Logging Security Token Service Messages

Logging is the mechanism by which components write messages to a file. Administrators can use the logging mechanism to capture critical component events. Access Manager uses the same logging infrastructure and guidelines as any other component in Oracle Fusion Middleware 11g. This is accomplished by using the package `java.util.logging`, which is standard and available in all Java environments. The logging system writes output to flat files only. Logging to an Oracle Database instance is not supported.

Configuring logging and locating log files are the focus of this section. Diagnosing problems using the information in log files is outside the scope of this manual.

Log messages are used for problem diagnosis. The logging infrastructure records messages from Access Manager. The Administrator controls the amount of information that is logged in a message by specifying log levels for each component or service for which a logger is defined.

> **Note:** Generally, you enable logging to produce files that you send to Oracle Technical Support for problem diagnosis. Documentation for log messages is not available. In some cases, you might be able to diagnose problems on your own by reading log files.

By default, the log level for Access Manager is the Notification level. Logging at the Error level produces a small amount of output while other log levels can result in voluminous logging output, which can impact OAM performance. In production environments, logging is usually either disabled or the log level is set to a level that results in a small volume of logging output (the error level, for example).

Access Manager and Security Token Service uses the WebLogic container's logging defaults:

- **Logging File**: *$DOMAIN_HOME*/servers/*SERVER-NAME*/logs/*SERVER-NAME*-diagnostics.log
- **Logging Configuration File**: Provides logging level and other configuration information for logging. This file is stored in the following path: $*DOMAIN_HOME*/config/fmwconfig/servers/*SERVER-NAME*/logging.xml

36.9 Auditing the Security Token Service

Oracle Fusion Middleware auditing provides a measure of accountability and answers to the "who has done what and when" types of questions. Audit data can be used to create dashboards, compile historical data, and assess risks. Analyzing recorded audit data allows compliance officers to perform periodic reviews of compliance policies.

Configuring common auditing settings for Security Token Service and validating your auditing configuration is the subject of this section; analyzing and using audit data is outside it's scope.

The Oracle Fusion Middleware Common Audit Framework supports auditing for a number of run-time events, and administrative events (changes to the system). It also provides uniform logging, and exception handling and diagnostics for all audit events.

While auditing can be enabled or disabled, it is typically enabled in production environments. Auditing has minimal performance impact, and the information captured can be useful (even mission-critical). The Auditing Framework uses configuration parameters set in the Oracle Access Management Console that enable data capture for a user or set of users.

Audit data can be written to either a single, centralized Oracle Database instance or to flat files. Regardless of where the audit record is stored, it contains a sequence of items that can be configured to meet particular requirements. The audit log file helps the audit Administrator track errors and diagnose problems if the audit framework is not working properly. More information is in the following sections.

- About Security Token Service Audit Record Storage
- About Audit Reports and Oracle Business Intelligence Publisher
- About the Audit Log

- About Auditing Security Token Service Events

Note: Security Token Service integrates with Oracle Business Intelligence Publisher which provides a pre-defined set of compliance reports.

36.9.1 About Security Token Service Audit Record Storage

Security Token Service can be configured to write audit records to a variety of targets supported by the Common Audit Framework:

- Local flat files: By default, Security Token Service records audit data to a file.
- Central database: In production environments, Oracle recommends using a database audit store to provide scalability and high-availability for the Common Audit Framework. Audit data is cumulative and grows over time. Ideally this is a database for only audit data; not used by other applications.
- Platform-specific log (Linux Syslog and Windows Event Log)
- Audit Vault

To switch to a database as the permanent store for your audit records, you must first use the Repository Creation Utility (RCU) to create a database schema for audit data. The RCU seeds that database store with the schema required to store audit records in a database. After the schema is created, configuring a database audit store involves:

- Creating a data source that points to the audit schema you created
- Configuring the audit store to point to the data source

See Also:

- Oracle Fusion Middleware Application Security Guide
- "Setting Up the Audit Database Store" on page 9-21
- "Adding, Viewing, or Editing Audit Settings" on page 9-24

36.9.2 About Audit Reports and Oracle Business Intelligence Publisher

The data in the database audit store is exposed through pre-defined reports in Oracle Business Intelligence Publisher. These reports allow you to drill down the audit data based on various criteria, such as user name, time range, application type, and execution context identifier (ECID).

Out-of-the-box, there are several sample audit reports available with Security Token Service and accessible with Oracle Business Intelligence Publisher. You can also use Oracle Business Intelligence Publisher to create your own custom audit reports.

See Also: "About Audit Reports and Oracle Business Intelligence Publisher" on page 9-4

36.9.3 About the Audit Log

An audit log file helps the audit Administrator track errors and diagnose problems when the audit framework is not working properly. An audit log file records several fields including: Date, Time, Initiator, EventType, EventStatus, MessageText, ECID, RID ContextFields, SessionId, TargetComponentType, ApplicationName, and EventCategory to name a few.

See Also: The topic on audit logs in the chapter on configuring and managing auditing in the Oracle Fusion Middleware Security Guide

36.9.4 About Auditing Security Token Service Events

Specific administrative and run-time events that you can audit for Security Token Service are grouped together in Chapter 9, "Auditing Administrative and Run-time Events". Included with the events are the common instructions for setting up and validating auditing. For details, see:

- Security Token Service Events You Can Audit
- Setting Up Auditing for Oracle Access Management
- Validating Auditing and Reports

37

Managing Security Token Service Certificates and Keys

This chapter provides the following sections:

37.1 Prerequisites

Security Token Service services must be running, as described in "Enabling and Disabling Security Token Service" on page 36-7.

37.2 Introducing the Security Token Service Certificates and Keys

Depending on the public key infrastructure, the digital certificate establishes credentials for Web-based transactions, as described in "About Certificates, Authorities, and Encryption Keys" on page C-3.

Public Keys at Run Time: There are distinct cases where public key infrastructure materials are used at run time. For instance, during Web Services Security (WSS) protocol communication between Requesters and Security Token Service (with OWSM Agent). See also Table 37–1.

Table 37–1 Security Token Service Public Keys Used at Run Time

When Security Token Service ...	Description
Issues SAML Assertions	■ Security Token Service Signing Assertions using a key defined in the STS Global settings ■ Security Token Service using the Requester's signing certificate as a proof key for Holder-of-Key of type Public Key confirmation method ■ Security Token Service using the Relying Party's encryption certificate to encrypt the secret proof key for Holder-of-Key of type Secret Key confirmation method ■ Security Token Service using the Requester's encryption certificate to encrypt a secret proof/entry in the RSTR for Holder-of-Key of type Secret Key confirmation method
Issues tokens	■ Security Token Service uses the Relying Party's encryption certificate to encrypt the outgoing token
Validates SAML Assertions	■ Security Token Service uses the Issuing Authority's signing certificate to verify the signature of the incoming SAML Assertion
Uses Web Services Security (WSS) protocol communication	Between Requesters and Security Token Service (with OWSM Agent)

37.2.1 About Keystores and Security Token Service

Following is a brief summary of the keystore files distributed across all OAM Servers in the domain by the JMX framework and used for Security Token Service:

- .oamkeystore: For keys and certificates associated with OAM Server instances
- .oamkeystore: Partner Keystore for keys and certificates used to establish trust with partners, clients, and agents.
- amtruststore: Trust Keystore for keys and certificates that are used to establish trust in entities that are interacting with the OAM Server instances
- amcrl.jar: Certificate Revocation Lists (CRL) are used by the OAM Server instances when performing CRL-based certificate revocation checking

See Also: "Introduction to Oracle Access Management Keystores" on page 5-27

The files in Table 37–2, are distributed across all OAM Servers in the domain by the JMX framework. The $DOMAIN_HOME/config/fmwconfig /mbeans directory defines a registration mbeans.xml for each file that indicates the MBean to manage the file and also identify that the file should be propagated across the domain.

Table 37–2 Keystore Mbeans

Keystore	Mbean and Description
System/Partner Keystore: .oamkeystore	Configuration of the .oamkeystore is done using the JRE's keytool application.
Trust Keystore: .amtruststore	Configuration of the amtruststore is done using the JRE's keytool application.
CRL: amcrl.jar	CRL MBean: Can be used to manage CRLs.

The token security key pair is populated to the common keystore shared by Security Token Service. This eliminates the need for Oracle Web Services Manager agents to interact with the common keystore.

You can use a WLST command to retrieve the password for keystores and for the amtruststore, as described in "Resetting System Keystore (.oamkeystore) and Trust Keystore (amtruststore) Password" on page 37-4.

37.2.2 About the Oracle Web Services Manager Keystore (default-keystore.jks)

This topic describes the keystore of type JKS required by the Oracle WSM Agent to contain System and Partner keys and certificates.

Oracle WSM Agent functionality is available to Security Token Service to publish WS Policies and enforce message protection on inbound and outbound WS messages. Oracle WSM requires a separate keystore to contain System and Partner keys and certificates.

The Oracle WSM Agent uses a keystore for various cryptographic operations. For these tasks, the Oracle Web Services Manager Agent uses the keystore configured for Oracle Web Services Manager tasks (containing OWSM private keys and OWSM trusted certificates). The OPSS modules publish a keystore service used by Oracle Web Services Manager for certificate validation operations, and the $DOMAIN_HOME/config/fmwconfig/jps-config.xml will contain the settings for the keystore service. The default name is default-keystore.jks, which is specified in jps-config.xml.

Oracle strongly recommends that the Oracle WSM Agent keystore and the Security Token Service keystore always be different. Otherwise, keys could be available to any modules authorized by OPSS to access the keystore and Access Manager keys might be accessed.

Note: Oracle strongly recommends that the Oracle WSM Agent keystore and the Security Token Service keystore always be different.

During installation, if the Oracle WSM keystore service has not been configured, the installer:

- Creates a new keystore in the $DOMAIN_HOME/config/fmwconfig folder (default name is default-keystore.jks)
- Creates a key entry with the corresponding certificate that will be used by OWSM for signature and encryption operations. This key entry will be stored in the OWSM Keystore under the `orakey` alias
- Stores the passwords of the key entry and of the keystore in CSF

Having access to the keystore is sometimes required, to:

- Extract the signing/encryption certificate to distribute to clients if necessary
- Update or replace the signing/encryption key entry
- Add trusted certificates

See Also:

- "Configuring OWSM for WSS Protocol Communication" on page 36-15

37.2.3 About Using the OPSS Keystore for Requester Certificates

For the special cases where clients use referencing schemes such as SKI (as opposed to a certificate token being received as part of the web service request), the requester's

certificates need to be populated in the OPSS Keystore. This is an uncommon scenario that requires manually provisioning keys to the OPSS keystore.

For more information on this, see "About Agents and Security Token Service" on page 36-4.

37.3 Managing Security Token Service Encryption/Signing Keys

Security Token Service uses keys to:

- Sign outgoing Assertions
- Decrypt any incoming XML encrypted data contained inside the RST message (tokens, entropies...), which is not handled by the WSS Protocol

Security Token Service uses the following keystore for storing Encryption and Signing Certificates.

```
$DOMAIN_HOME/config/fmwconfig/.oamkeystore
```

Task overview: Managing Security Token Service Keys

1. Resetting System Keystore (.oamkeystore) and Trust Keystore (amtruststore) Password
2. Adding a New Key Entry to the System Keystore (.oamkeystore)
3. Extracting an Security Token Service Certificate

> **See Also:** "Configuring OWSM for WSS Protocol Communication" on page 36-15

37.3.1 Resetting System Keystore (.oamkeystore) and Trust Keystore (amtruststore) Password

Use the following procedure to reset the password that protects keystores, and the key entries that are using the same password as the keystore.

These keystores were created and configured during installation, as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management. The password and key entries password were randomly generated.

The WLST `resetKeystorePassword` method allows the Administrator to set the .oamkeystore password and any key entries with a password identical to the .oamkeystore password to a new value:

- Updates the .oamkeystore password
- Updates the key entries in .oamkeystore that had the same password as the keystore
- Updates Access Manager, Identity Federation, and Security Token Service configuration to reflect the changes
- Updates the amtruststore password (if the keystore is protected by the same password as the default .oamkeystore)

> **See Also:** Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

To reset system and trust keystore passwords

1. Enter the WSLT scripting environment, as usual.

2. Connect to the WebLogic Server AdminServer, using the `connect()` command.
3. Navigate to the domain runtime tree: `domainRuntime()`.
4. Execute the following: `resetKeystorePassword()`
5. Enter and confirm the password.

37.3.2 Adding a New Key Entry to the System Keystore (.oamkeystore)

An Administrator can use the following procedure to add a new key entry into the System keystore (.oamkeystore) using the keytool command to create and add the new key entry. Once the entry has been added, it must be defined in the Security Token Service configuration screen so that it can be used to sign assertions and decrypt incoming messages.

This topic provides the following procedures to add a new entry to sign SAML Assertions or decrypt XML-Encrypted data not covered by WSS:

- Adding a New Entry
- Configuring a SAML Issuance Template to use a Signing Key
- Setting the Default Encryption Key

37.3.2.1 Adding a New Entry

Prerequisites

Resetting System Keystore (.oamkeystore) and Trust Keystore (amtruststore) Password

To configure a new entry

1. Locate keytool.
2. Either generate a self signed certificate or generate a certificate request, export the request to a remote Certificate Authority, and import the certificate issued by the Certificate Authority.
3. Observe messages on the screen.
4. Proceed as needed:
   - "Configuring a SAML Issuance Template to use a Signing Key", if needed
   - "Setting the Default Encryption Key", if needed

37.3.2.2 Configuring a SAML Issuance Template to use a Signing Key

Users with valid Administrator credentials can use this procedure as a guide when editing an existing template to use a signing key.

See Also:

- About Managing Token Issuance Templates
- Searching for an Existing Template

To configure a SAML Issuance Template to use a signing key

1. Display the list of existing Token Issuance Templates.

   Oracle Access Management Console
   System Configuration
   Security Token Services

Token Issuance Templates

2. Find and open the SAML issuance template that will use the new key. For example: `saml11-issuance-template`.
3. On the SAML Issuance Template page, click the Security tab.
4. On the Security tab, Signing And Encryption section, click Sign Assertion.
5. From the Signing Keystore Access Template Id list, choose the KeyID as the Signing Keystore Entry.
6. Click Apply at the top of the page to save this information.
7. Proceed to "Setting the Default Encryption Key", if needed.

37.3.2.3 Setting the Default Encryption Key

Users with valid Administrator credentials can use this procedure as a guide when editing an existing template to use a signing key.

See Also: "About Security Token Service Settings" on page 36-10

To set the default encryption key

1. Go to the Security Token Service Settings page.

   Oracle Access Management Console
   System Configuration
   Security Token Service
   Security Token Service Settings

2. From the Default Encryption Template list, select the new key entry.
3. Click Apply at the top of the page to save this information.
4. Proceed to "Setting the Default Encryption Key".

37.3.3 Extracting an Security Token Service Certificate

In some cases, it is required to distribute the Security Token Service keys used for SAML Signature operations or XML encryption operations:

- When a Relying Party needs to have access to the Security Token Service signing key, in order to validate the SAML Assertion issued by Security Token Service
- When a token needs to be encrypted for Security Token Service Server

To distribute the certificate of a key entry used by Security Token Service for SAML Signature operations or XML encryption operations, use the Certificate Retrieval Service by specifying the KeyID (listed in System Configuration, Security Token Service, Security Token Service Settings and the preferred encoding (der vs pem). For more information, see "Using the Certificate Retrieval Service".

37.3.3.1 Using the Certificate Retrieval Service

To use the Certificate Retrieval service

1. Retrieve the KeyID of the entry for which the certificate should be retrieved (listed in Oracle Access Management Console System Configuration tab, Security Token Service section, Security Token Service Settings).

2. Create a URL. For example:
http(s)://*osts-hostname:osts-port*/sts/servlet/samlcert?id=<KEYID>&encoding=<ENCODING>, with:
   - id holding the KeyID of the entry
   - encoding representing the format with which the certificate will be returned. Possible values are pem (PEM format) or der (DER format). (optional, default value is pem)
3. Review the certificate returned in the browser.

37.4 Managing Partner Keys for WS-Trust Communications

This topic provides the following information:

- About Partner Certificates
- About Downloading the Relying Party's Certificate at Run Time
- Setting the Partner's Signing or Encryption Certificate

37.4.1 About Partner Certificates

During the processing of the WS-Trust messages, Security Token Service might need to use a partner's certificate. The certificate needed depends on the situation, as described in Table 37–3.

Table 37–3 Partner Keys for WS-Trust Communications

If Security Token Service Must ...	The OAM Server ...
Issue a SAML Assertion encrypted for the Relying Party	Uses the Relying Party's encryption certificate to encrypt the outgoing token
Issue a SAML Assertion with the Subject Confirmation being of type Holder of Key / Asymmetric	Uses the Requester Partner's signing certificate as the proof key to be included in the Assertion Note: if the WS-Trust RST contains a UseKey element referencing an X.509 Binary Security Token in the SOAP header that was used in a signature, then Security Token Service will be able to use this certificate as the proof key.
Issue a SAML Assertion with the Subject Confirmation being of type Holder of Key / Symmetric	Uses the Relying Party's encryption certificate to encrypt the secret proof key to be included in the Assertion.
Issue a SAML Assertion with the Subject Confirmation being of type Holder of Key / Symmetric	Can encrypt in the RSTR for the Requester, the secret or the server entropy. In this case, the server: - uses the Requester's encryption certificate to encrypt the secret (if the secret was generated using only server entropy) - or uses the server entropy to encrypt the secret in the RSTR (if the secret was derived from client and server entropy). Note: if the WS-Trust RST contains a ProofEncryption element referencing an X.509 Binary Security Token in the SOAP header that was used in a signature, then Security Token Service will be able to use this certificate to encrypt the secret or entropy returned to the client.
Validate an incoming SAML Assertion	Uses the Issuing Authority's signing certificate to verify the XML digital signature present on the Assertion.

37.4.2 About Downloading the Relying Party's Certificate at Run Time

At runtime, Security Token Service is capable of downloading the Relying Party WSS Policy of the service listed in the AppliesTo field of the RST. If Security Token Service is configured to download the Relying Party's WS-Sec policy, then ensure that the Proxy settings are correctly entered, if needed, so that Security Token Service can connect to the Relying Party.

If the Relying Party Partner Profile is configured to do so, it instructs Security Token Service to download the WS-Sec Policy from the service. Security Token Service then extracts the certificate located in the policy and uses it for cryptographic operations, if necessary. Also:

- If Security Token Service issues a SAML Assertion encrypted for the Relying Party, the server uses the certificate downloaded from the Relying Party's WS-Sec Policy to encrypt the outgoing token.
- If Security Token Service issues a SAML Assertion with the Subject Confirmation of type Holder of Key / Symmetric, Security Token Service uses the certificate downloaded from the Relying Party's WS-Sec Policy to encrypt the secret proof key to be included in the Assertion.

To configure the Relying Party Partner Profile to download the certificate at run time, see "Setting the Partner's Signing or Encryption Certificate".

37.4.3 Setting the Partner's Signing or Encryption Certificate

To set the signing or encryption certificate of a partner, perform the following operations.

Alternatively: Use the WLST Partner commands to set the signing or encryption certificate of a specific partner.

Prerequisites

Review Table 37–3, " Partner Keys for WS-Trust Communications"

To set the certificate of a partner

1. From the Oracle Access Management Console System Configuration, tab, Security Token Service section, and expand the Partners node.
2. Within the Partners node, expand Requester (or Relying Party or IssuingAuthority (see Table 37–3)).
3. Search for and open (or Create) the Partner for which the certificate must be set.
4. Edit Partner settings as needed (see "Managing Token Service Partners" on page 39-3) and click Save.
5. **Encryption Certificate**: Click the Browse button to locate and choose the Encryption certificate.
6. **Signing Certificate**: Click the Browse button to locate and choose the Signing certificate.
7. Save the information and close the page.
8. Proceed with "Managing Certificate Validation".

37.5 Managing Certificate Validation

This section describes managing certificate validation. Conditions for certificate validation are described in Table 37–4.

Table 37–4 Conditions for Security Token Service Certificate Validation

STS Validates a Certificate When ...
The security token to be validated is one of the following types: ■ X.509 ■ X.509v3 ■ PKCS#7
A SAML Assertion must be validated
Security Token Service is configured to validate the signing certificate of a SAML Issuing Authority

Successful validation requirements are listed in Table 37–5.

Table 37–5 Successful Certificate Validation Requirements

Certificates Must ...	How ...
Be linked to a trusted anchor:	■ by being a trusted anchor ■ or by having its issuer being a trusted anchor
Not be revoked: ■ by being a trusted anchor ■ or by having its issuer being a trusted anchor	The revocation status of a certificate can be decided by checking: ■ Against a list of CRLs that were uploaded by the Administrator ■ Against an OCSP server ■ CRL Distribution Points

Certificate validation requires the Trust Anchors Store (.amtruststore). Procedures for managing this store and validation are described in following topics:

- Managing the Trust Anchors Store (amtruststore)
- Managing Certificate Revocation Lists
- Using a Custom Trust Anchor Store for Security Token Service

37.5.1 Managing the Trust Anchors Store (amtruststore)

The Trust Anchors keystore is managed using the keytool command. Certificates added to the keystore are detected by the Certificate Validation module.

> **Note:** Notification is performed using the JMX Notification Framework and might take some time, depending on the notification refreshing time (60 seconds by default).

Prerequisites

Resetting System Keystore (.oamkeystore) and Trust Keystore (amtruststore) Password

To manage the Trust Anchors store (amtruststore)

1. Locate keytool.

2. Execute the following command.

```
keytool -keystore $DOMAIN_HOME/config/fmwconfig/amtruststore
-storetype JKS -alias orakey -file $CERT_FILE
```

3. Observe messages on the screen and enter a password if requested.
4. Proceed to "Managing Certificate Revocation Lists".

37.5.2 Managing Certificate Revocation Lists

Security Token Service uses the common infrastructure certification validation module. Trusted Certificates and Certificate Revocation Lists (CRLs) used during certificate validation are stored in Trust Keystore and CRL ZIP file. The Security Token Service configuration stores the OCSP/CDP settings.

This section outlines how to add or remove certificate revocation lists (CLRs) to check the revocation status of a certificate, perform the following operations.

> **See Also:** "Managing Certificate Validation and Revocation" on page 3-7

Prerequisites

Have your Certificate Revocation List ready to import.

Task overview: Manage Certificate Validation and Revocation Lists

1. From the Oracle Access Management Console System Configuration tab, Common Configuration section, select Certificate Validation.
2. See "Managing Certificate Revocation Lists" on page 3-7.
3. See "Enabling OCSP Certificate Validation" on page 3-8:
4. See "Enabling CRL Distribution Point Extensions" on page 3-8.

37.5.3 Using a Custom Trust Anchor Store for Security Token Service

Optionally, if a particular deployment requires a set of trust anchors separate from that of Access Manager, another keystore can be configured as the trusted certificate store for Security Token Service. This can be done by having the Administrator perform the following tasks.

> **Note:** Using a Custom Trust Anchor Store is an optional feature that most customers will not need.

Task overview: Deploying a custom keystore for trusted certificates

1. Create the JKS keystore in the $*DOMAIN_HOME*/config/fmwconfig directory.
2. In the Oracle Access Management Console, Security Token Service Settings page, enter the full path name of the new trust store and Apply your changes.
3. In the domain where Security Token Service is deployed, the Custom Trust Anchor Keystore must be propagated manually by the Administrator across all the servers.

38

Managing Templates, Endpoints, and Policies

The Security Token Service must be enabled as documented in Section 36.3, "Enabling and Disabling Security Token Service."

This chapter provides information about managing the templates, endpoints and policies for the Security Token Service.

38.1 Introduction

The Security Token Service controls who can access a Web Service Provider (WSP) by defining Application Domains that provide access to resources based on configured policies. Application Domains identify Web Services and the authorization rules that determine who can request a security token.

The following functionality is established by Trust Issuance Policies. A Trust Issuance Policy can be managed by clicking the Application Domains link from the Oracle Access Management Console Launch Pad.

- Resource of type TokenServiceRP representing Relying Parties or Web Service Providers.
- Token Issuance Policy defining a policy for a set of resources of type TokenServiceRP.
- Condition defining the identities of the clients that are allowed or denied issuance of tokens for the resources listed in the policy. The clients can either be Requester Partners or User from the Default Identity Store.

Security Token Service supports the creation of Relying Party Partner, representing a remote Web Service Provider that will be the consumer of a security token issued by Security Token Service.

For each Relying Party Partner, it is possible to define URLs that will be mapped to the partner, so that WS-Addressing endpoint specified in a WS-Trust Request can be mapped to an Security Token Service Relying Party Partner.

At runtime, when a client requests a token to be issued, Security Token Service will evaluate the Trust Issuance Policies to determine whether or not the token can be issued:

- The client will be identified either as a Requester Partner or as an end user
- If an AppliesTo element was present in the WS-Trust Request and was mapped to a Relying Party Partner, then the TokenServiceRP resource for the Trust Issuance Policy evaluation will be the Partner ID of that Security Token Service Relying Partner.
- If an AppliesTo element was present in the WS-Trust Request and could not be mapped to a Relying Party Partner, then the TokenServiceRP resource for the Trust Issuance Policy evaluation will be the UnknownRP defined in the Access Manager Application Domain.
- If an AppliesTo element was missing in the WS-Trust Request, then the TokenServiceRP resource for the Trust Issuance Policy evaluation will be the MissingRP defined in the Access Manager Application Domain.

Security Token Service requires the following items (at a minimum) to process a request and issue a token based on an incoming request (RST):

- EndPoints
- One Issuance Template
- One Validation Template
- One Requester Partner Profile that contains the token
- One Relying Party Partner Profile

Note: Partners might need to be provisioned.

An LDAP server is required for the Security Token Service to map the Username token that references the user to an LDAP User record, and then use that record to populate the outgoing token. Partners might need to be provisioned before they are available.

38.2 Searching for an Existing Template

All defined template names appear in the Search Results Table when you open either the Token Validation Template or Token Issuance Template node. To quickly find a specific template or set of templates, you can use the Search controls.

This section explains the controls you can use to refine your search, which are similar whether you are searching for a Token Validation Template or a Token Issuance Template. It includes the following topics:

- About Template Search Controls
- Searching For a Template

38.2.1 About Template Search Controls

The following figures show the search pages where you will see many similarities:

- Figure 38–1, "Validation Templates Search Controls"
- Figure 38–2, "Issuance Template Search Controls"

Figure 38–1 Validation Templates Search Controls

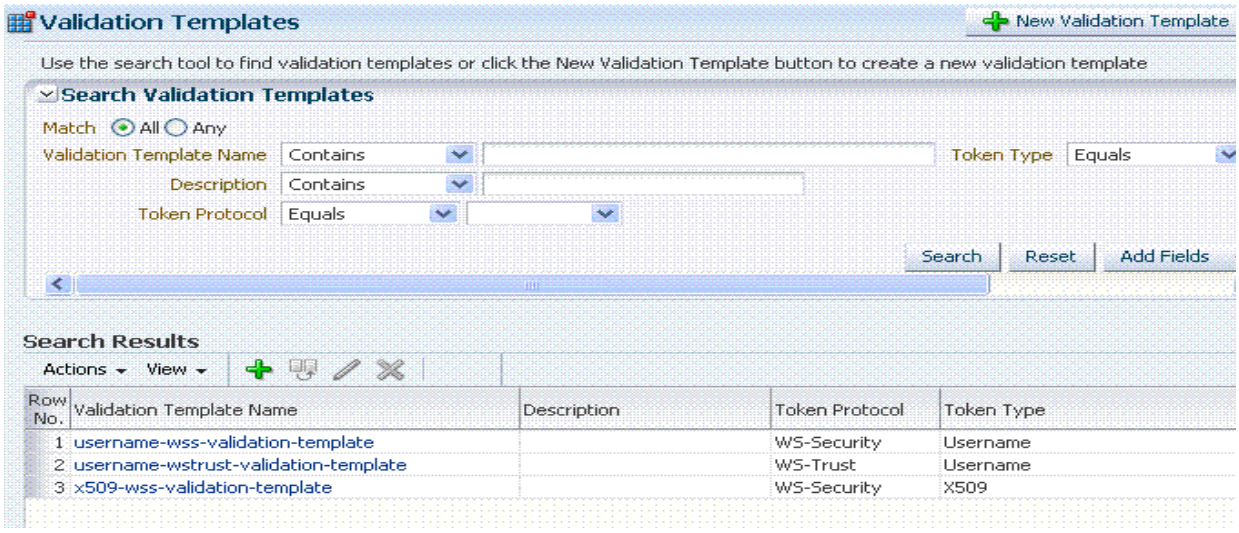


Figure 38–2 Issuance Template Search Controls

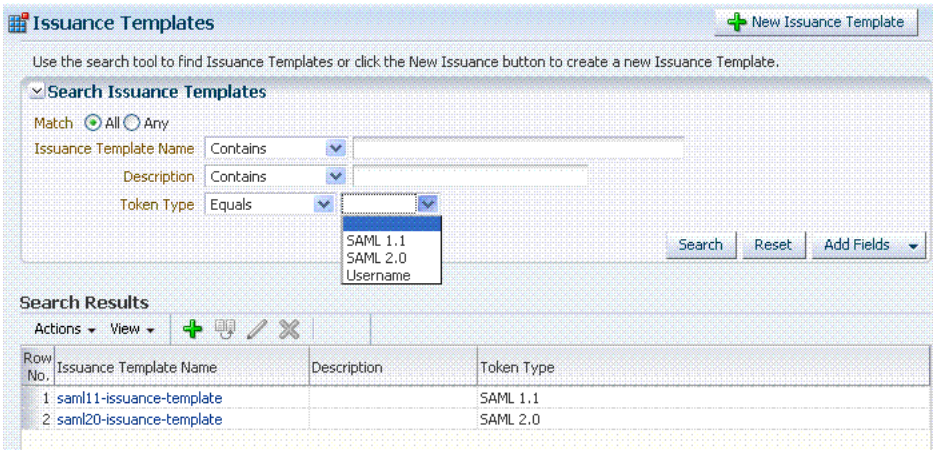


Table 38–1 describes the controls available to refine a template search. Unless explicitly stated, all elements are available for both Validation and Issuance Template searches.

Table 38–1 Search Validation Template

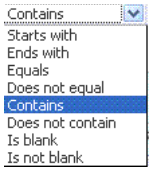
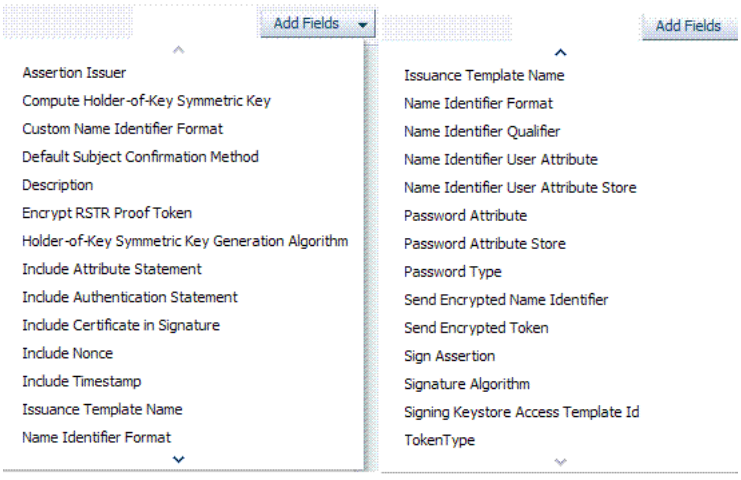
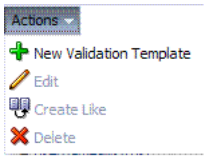
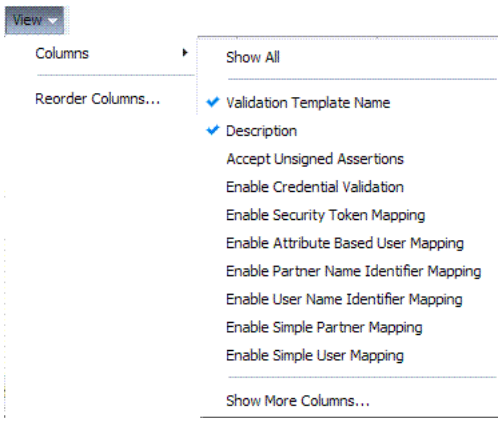
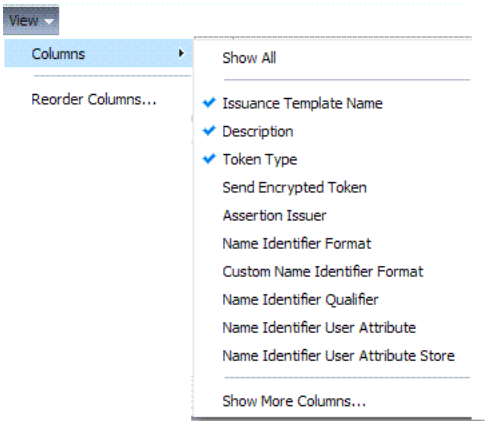
Element	Description
Match	Choose All to search for a template that matches all your specifications. Choose Any to search for a template that matches at least one of your specifications.
Search Operations List	A list of operations from which you choose one to help refine your search. 
... Template Name	Choose an operation from the list and enter information in the field to help refine your search.
Description	Refine your search using the optional description field.
Token Protocol Validation Template only	Choose the token protocol from those listed: ▪ WS-Trust ▪ WS-Security
Token type	Choose the token type. Both standard and custom token types are included. ▪ Username: Consumption and Creation ▪ X.509: Consumption ▪ SAML: Consumption & Creation ▪ OAM 11g: Consumption using the OBO (on behalf of) field ▪ Kerberos: Consumption ▪ Custom: Consumption the OBO (on behalf of) field and Creation
Search	Initiates the Search function using criteria in the form.
Reset	Resets the Search form with defaults only.
Add Fields	A list of additional items you can add as search criteria. 
Search Results Table	Itemizes the results of your search based on choices in the View menu, described later in this table.

Table 38–1 (Cont.) Search Validation Template

Element	Description
Actions menu *Shown: Actions for Validation Template*	Provides the following functions that can be performed on a selection in the results table:  Note: Actions menu functions mirror command buttons above the results table. For example: ▪ New ... Template: Click the New ... Template button at the top of the Search page, or select New ... Template from the menu, or click the + button above the table. ▪ Edit: Click a name in the Results Table, or select Edit from the Actions menu, or click the Edit (pencil) command button above the Results Table. ▪ Create Like: Select the desired row in the table and either select Create Like from the Actions menu, or click the Create Like command button above the table ▪ Remove: Select the desired row in the Results Table and either select Delete from the Actions menu, or click the Delete (**X**) command button above the table.
View menu Validation Template only	A list from which you can identify which information to display in the results table. 
View menu Issuance Template only	A list from which you can identify which information to display in the results table. 
	Controls you can choose to define the order of items listed in the results table: ▪ Ascending ▪ Descending

38.2.2 Searching For a Template

Users with valid Administrator credentials can use the following procedure to use search controls to locate a specific template or set of templates. For example, to locate all templates of a certain token type you can simply choose the type of token. To refine the search further to all templates of a specific token type and name.

When performing these steps, fill in as much or as little as you want. Skip any steps that do not apply to you.

See Also: "About Template Search Controls"

To search for a template

1. From the Oracle Access Management Console, click Token Validation Templates.
2. Edit Search Criteria (Table 38–1). For example:
   - Match: All
   - Name: contains em
   - Token Type: equals Username
3. Click Search, review results, and click the one you want to open.

38.3 Managing Token Issuance Templates

An issuance template contains rules on how a token will be created and is specific to a token type. Each issuance template indicates Signing and Encryption and also contains Attribute Name, Value Mapping, and Filtering settings to be sent as part of the token.

This section provides the following information:

- About Managing Token Issuance Templates
- Managing a Token Issuance Template

38.3.1 About Managing Token Issuance Templates

Each Token Issuance Template indicates how to construct a token. In other words, which signing or encryption to use when constructing a token. Each Token Issuance Template also defines the attributes mapping and filtering rules to be applied to the attributes that will be included in the outgoing token. However, Issuance Templates do not list the attributes that will be sent in the outgoing token: these are defined in the Relying Party Partner Profile.

Token Issuance Template details which will differ depending on your chosen token type. Table 38–2 describes where to find more information.

Table 38–2 Issuance Template Requirements

Topic	Figures and Tables
General Details	Figure 38–3, Table 38–3
Issuance Properties: Username Tokens	Figure 38–4, Table 38–4
Issuance Properties: SAML Tokens	Figure 38–5, Table 38–6
Security: SAML Tokens	Figure 38–6, Table 38–6
Attribute Mapping: SAML Tokens	Figure 38–9, Table 38–7

General Details

Figure 38–3 shows the New Issuance Template page with defaults showing. Unless explicitly stated, General information is the same regardless of the Token Type you choose. For more information, see Table 38–3. After you fill in General information and click Save, you cannot return and edit the template name or token type.

Figure 38–3 Issuance Template: General Details and Defaults

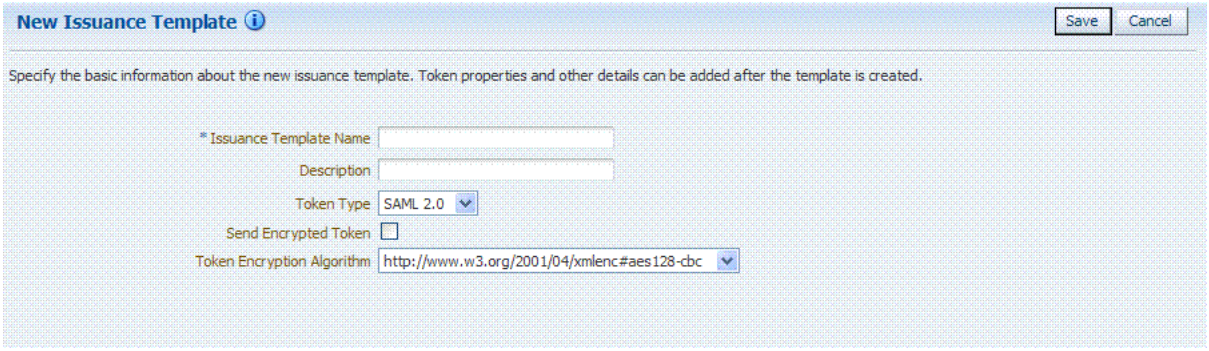


Table 38–3 Issuance Template: General Details

Elements	Description
Issuance Template Name	Enter a unique name for this template.
Description	Optional.
Token Type	Choose a standard (or custom, if any) token type from those listed.
SAML, Username, and Custom Token Types	
Send Encrypted Token	Click to enable token encryption.
Token Encryption Algorithm	When token encryption is enabled, choose a Token Encryption Algorithm from those listed.

Issuance Properties: Username Token Type

If the token type is Username, the Issuance Properties shown in Figure 38–4 are needed for a Username token type template.

Figure 38–4 Issuance Properties: Username Token Type

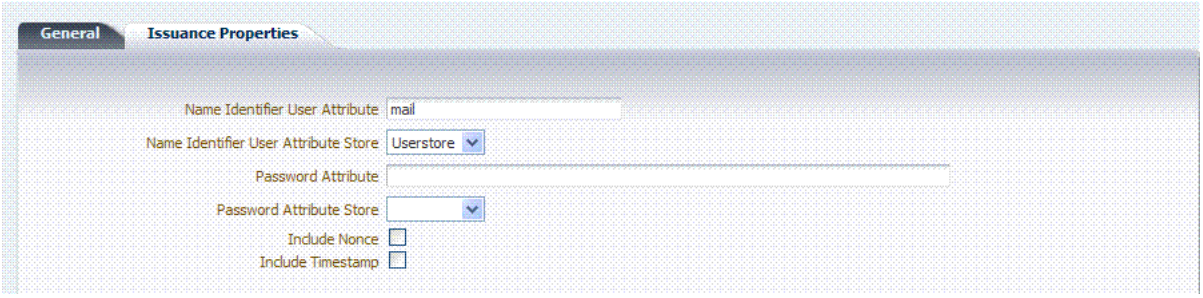


Table 38–4 describes the Issuance Properties for the Username token type.

Table 38–4 Issuance Properties: Username Token Type

Element	Description
Name Identifier User Attribute	Attribute to be used to populate the Username element in the Username Token.
Name Identifier User Attribute Store	Choose the user attribute store type: ■ Userstore ■ Context Note: If the Attribute Store is the Userstore, LDAP is used to retrieve the attribute from the user record. If the Attribute Store is context, data from the incoming token is used as the attribute source.
Password Attribute	Attribute to be used to populate the Password element in the Username Token.
Password Attribute Store	Choose the password attribute store type: ■ Userstore ■ Context Note: If the Attribute Store is the Userstore, LDAP is used to retrieve the attribute from the user record. If the Attribute Store is context, data from the incoming token is used as the attribute source.
Include Nonce	Indicates whether or not a Nonce made of random data should be included in the Username token. Default: Disabled
Include Timestamp	Indicates whether or not a the Created element should be included in the Username token. Default: Disabled

Issuance Properties: SAML Token Types

SAML 1.1 and 2.0 token types require the issuance properties illustrated in Figure 38–5.

> **Note:** These issuance properties differ from those for Username token type.

Figure 38–5 Issuance Properties: SAML Token Types

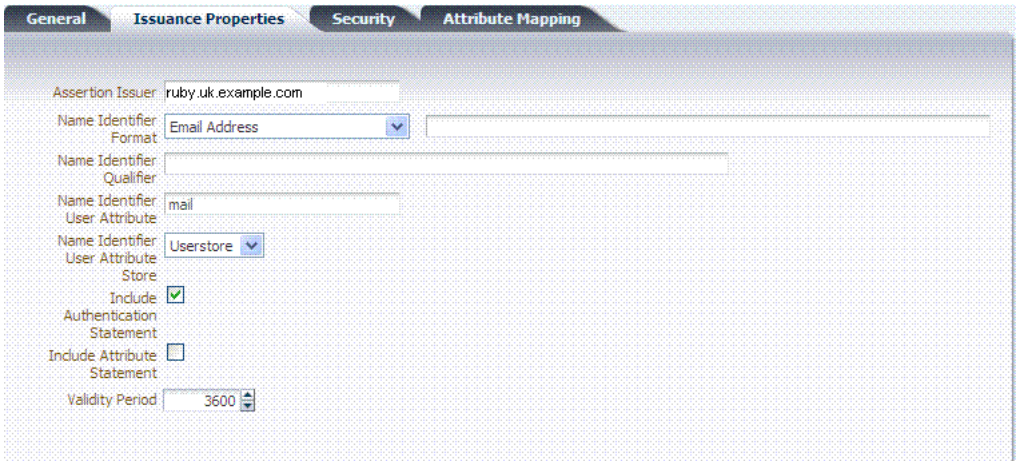
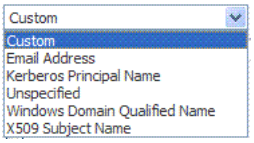


Table 38–5 describes all Issuance Properties by token type. Only SAML token types require issuance properties.

Table 38–5 Issuance Properties: SAML Token Types

Element	Description
Assertion Issuer	Specifies the identifier representing the issuer of the assertion. This string is used to represent this Security Token Service as the issuer of the assertion.
Name Identifier Format	Choose a format from the list and then enter the details in the text field. 
Name Identifier Qualifier	Contains the string that will be set as the Name Identifier Qualifier.
Name Identifier User Attribute	References the attribute that will be used to populate the value of the Name Identifier.
Name Identifier User Attribute Store	▪ Userstore ▪ Context Note: If the Attribute Store is the Userstore, LDAP is used to retrieve the attribute from the user record. If the Attribute Store is context, data from the incoming token is used as the attribute source.
Include Authentication Statement	Indicates whether or not a SAML Authentication Statement should be included in the Assertion. Default: Disabled Note: An authentication operation is required for a statement of this type to be included. An authentication statement will be included if the incoming token contained some authentication data and that those were validated (for example, the incoming SAML Assertion contains an authentication statement, or a Username Token contains credentials that were validated).
Include Attribute Statement	Indicates whether or not a SAML Attribute Statement will be included in the outgoing Assertion. A statement of this type will be included only if this flag is set to true and if at least one attribute is included in the outgoing Assertion. Default: Enabled Note: the RP PP will determine which attributes need to be included in an outgoing token.
Validity Period	Specify the length of time (in seconds) that the token will be valid. Default: 3600 (seconds)

Security Details: SAML Tokens

Only SAML token types require Security Details, as shown in Figure 38–6 and described in Table 38–6.

Figure 38–6 Security Details: SAML Tokens

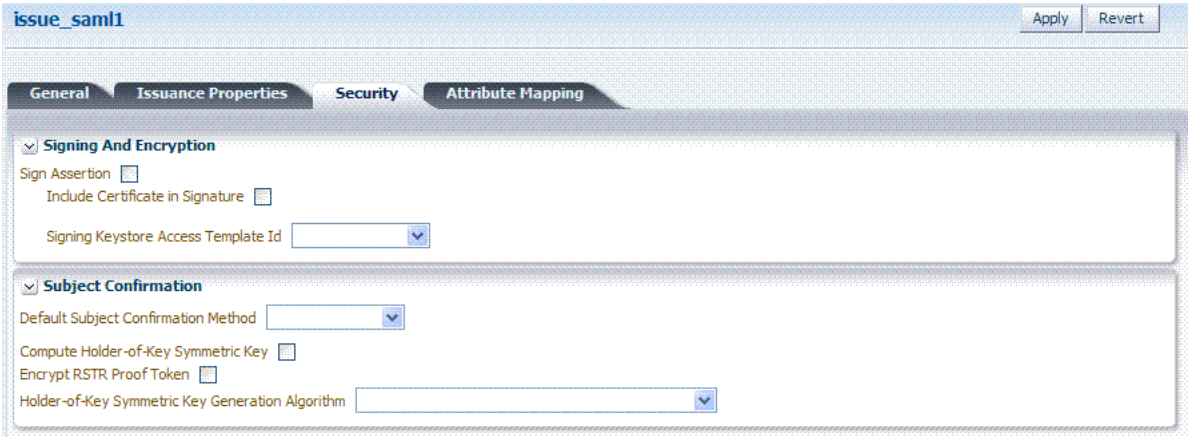
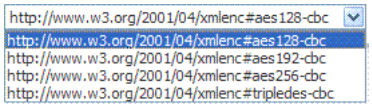


Table 38–6 Security Details: SAML Tokens

Elements	Description
Signing And Encryption	Indicates whether or not the Assertion will be signed using the Key referenced by the Signing Keystore Access Template ID field.
Sign Assertion	Indicates whether or not the signing certificate will be included in the Assertion. Default: Enabled
Include Certificate in Signature	Default: Enabled
Signing Keystore Access Template Id	References the key to be used to sign assertions created with this issuance template. The key templates are defined in the Security Token Service Settings section.
Subject Confirmation	
Default Subject Confirmation Method	Indicates which Subject Confirmation Method will be used by default, if the requester did not specify a method in the WS-Trust request. Possible values are: ▪ Bearer ▪ Holder of Key with Public Key ▪ Holder of Key with Symmetric Key ▪ Sender Vouches
Compute Holder-of-Key Symmetric Key	Default: Enabled Indicates whether or not Security Token Service will generate random data when creating the Secret Key for the Holder of Key Symmetric Key data. ▪ If true, the server will generate the secret key if the client did not specify entropy. Otherwise it will derive the key from the client and server entropy ▪ If false, the client entropy will be used as the secret key
Encrypt RSTR Proof Token	Indicates whether or not the Proof Token must be encrypted when returning the server entropy or secret key to the requester in the WS-Trust response, when the Subject Confirmation method is Holder of Key with Symmetric Key Default: Disabled

Table 38–6 (Cont.) Security Details: SAML Tokens

Elements	Description
Holder-of-Key Symmetric Key Generation Algorithm	Indicates the symmetric key generation algorithm to use to create the secret key when the Subject Confirmation method is Holder of Key with Symmetric Key: 

Attribute Mapping: SAML Tokens

When the token type is SAML 1.1 or 2.0, it is possible to define attribute mapping and filter rules that will be applied to the attributes included in the Assertion.

There are three different rules:

- Attribute name mapping where the local name of an attribute can be changed to another value. For example, givenname can be changed to firstname.
- Attribute value mapping where the local value of an attribute can be translated to another value. For example, President to CEO.
- Attribute value filtering where the local value of an attribute can be filtered so it is not included in the outgoing assertion. For example, some sensitive attribute values could be removed while others would be issued.

See Also: Token Mapping attributes in Figure 38–9 and Table 38–11.

Table 38–7 Issuance Template: Attribute Mapping, SAML Token

Element	Description
Attribute Name Mapping	Defines an optional mapping between the local name of an attribute, and the name used to reference this attribute in the assertion. The mapping is optional. If an attribute does not have a mapping defined, then its local name will be used, and the namespace will be set to `urn:oracle:security:fed:attrnamespace` for SAML 1.1 Assertions or the format will be set to `urn:oasis:names:tc:SAML:2.0:attrname-format:basic` for SAML 2.0 Assertions. ▪ External Attribute: Contains the externam name of the attribute as it will appear in the Assertion. ▪ Local Attribute: Contains the local name of the attribute. ▪ Format of Namespace: Contains an optional Format or Namespace. If missing, the namespace will be set to urn:oracle:security:fed:attrnamespace for SAML 1.1 Assertions or the format will be set to urn:oasis:names:tc:SAML:2.0:attrname-format:basic for SAML 2.0 Assertions.

Table 38–7 (Cont.) Issuance Template: Attribute Mapping, SAML Token

Element	Description
Attribute Value Mapping	Defines an optional value mapping for an attribute that will be included in the Assertion. Note: this attribute value mapping applies to an Attribute Name mapping. In order to define an attribute mapping for an attribute, it is required to first define an attribute name mapping for that attribute. ■ External Attribute: Contains the value that should be included in the Assertion, if the local attribute value matches the Local Attribute/Local Null fields. ■ Local Attribute: Contains the local value of the attribute. ■ External Null: Indicates if the value to be included in the Assertion should be null, if the local value of the attribute matches the Local Attribute/Local Null fields. ■ Local Null: Represents a null local value. ■ Ignore Case: Indicates whether or not Security Token Service should ignore case when comparing the attribute value to the Local Attribute field.
Attribute Value Filters	Defines an optional value filtering for an attribute that will be included in the Assertion. Note: This attribute value filtering applies to an Attribute Name mapping. In order to define an attribute filtering for an attribute, it is required to first define an attribute name mapping for that attribute. ■ Condition: Contains the condition associated with the expression to determine whether or not the attribute value should be filtered. The possible values are described in "Attribute Value Condition Filters". ■ Expression: Contains data that will be used to evaluate the filtering rule. ■ Ignore Case: Indicates whether or not Security Token Service should ignore case when comparing the attribute value to the expression field.

Attribute Value Condition Filters

This optional value filtering applies to an Attribute Name mapping and will be included in the Assertion. To define an attribute filtering for an attribute, you must first define an attribute name mapping for that attribute. The Condition is associated with the expression to determine whether or not the attribute value should be filtered. The possible Condition values are:

- regexp: the expression will contain a regular expression, and if it evaluates to true, the attribute value will be filtered.
- equals: if the attribute value matches the data contained in the expression field, then it will be filtered.
- not-equals: if the attribute value does not match the data contained in the expression field, then it will be filtered.
- not-equals: if the attribute value does not match the data contained in the expression field, then it will be filtered.
- endswith: if the attribute value ends with the data contained in the expression field, then it will be filtered.
- contains: if the attribute value contains an occurrence of the data contained in the expression field, then it will be filtered.
- not-contains: if the attribute value does not contains any occurrence of the data contained in the expression field, then it will be filtered.
- equals-null: if the attribute value is null, then it will be filtered.

- not-equals-null: if the attribute value is not null, then it will be filtered.

38.3.2 Managing a Token Issuance Template

Users with valid Oracle Access Management Administrator credentials can use this procedure as a guide when developing a new Token Issuance Template (or editing an existing template) Skip any steps that do not apply to you.

The following procedure describes how to create a new Token Issuance Template for a Security Assertion Markup Language (SAML) token.

Prerequisites

Confirm that the desired LDAP Identity Store is registered with and configured as the Default Store.

See Also:

- About Managing Token Issuance Templates
- Searching for an Existing Template

To create a new token Issuance template

1. Display the list of existing Token Issuance Templates.

   Oracle Access Management Console Launch Pad
   Security Token Service
   Token Issuance Templates

2. **New Token Issuance Template**:
   a. Click the **New Issuance Template** button in the upper-right corner (or click the Add (+) command button above the Search Results table).
   b. **General**: Define general information for this template and see:

      Table 38–3, " Issuance Template: General Details"

   c. Click Save and dismiss the confirmation window (or click Cancel without saving).
   d. **Username Token Type**: Define issuance parameters for this template and see:

      Table 38–4, " Issuance Properties: Username Token Type"

   e. **SAML Token Type**: Define parameters for this template and see:

      Table 38–5, " Issuance Properties: SAML Token Types"

      Table 38–6, " Security Details: SAML Tokens"

      Table 38–7, " Issuance Template: Attribute Mapping, SAML Token"

   f. Click Apply (or click Revert without saving it).
   g. Close the definition.
3. **Find an Existing Template**: From the Security Token Service section of the Oracle Access Management Launch Pad:
   a. **Find All**: Double-click the Token Issuance Templates node and review the results table.
   b. **Narrow the Search**: Specify your search criteria (Table 38–1), click the Search Button, and review the results table.

c. **Reset the Search Form**: Click the Reset button.

4. **Edit a Template**: Start with the saved page you just created.

   Alternatively: Use Step 3 to find the desired template and click the name in the Search Results table to display the definition.

   a. Edit details as needed.

   b. Click the Apply button at the top of the page to submit changes (or Revert to undo your changes).

5. **Remove a Template**:

   a. Click the desired name in the Search Results table to select the item to remove.

   b. From the Actions menu, click Delete (or click the Delete (X) command button above the table.

   c. Click the Delete button in the Confirmation window (or click No to cancel the operation).

38.4 Managing Token Validation Templates

A validation template is used to validate an incoming token and, optionally, map the incoming token to either a Requester Partner or a user record:

- For OnBehalfOf use cases, a WS-Trust Validation Template must be present.
- For validating an Assertion, one Issuing Authority Partner Profile must be present.

The Security Token Service Endpoint is linked to a WSS Validation Template that indicates how to validate the token in the WSS header and how to map the token and binding data to a Requester.

This section provides the following topics.

- About Managing Token Validation Templates
- Managing Token Validation Templates

38.4.1 About Managing Token Validation Templates

A Security Token Service Endpoint is always mapped with a WS-Security Validation Template that indicates how to map the request to a requester entry or to a user:

- If mapping is required and no match is found, processing will fail.
- If no mapping is required, a default requester partner profile will be used.
- In either case, a requester partner profile is retrieved.
- If a mapping is performed to a user record, a default requester partner profile will be used.
- If a mapping is performed to a requester partner entry, the requester partner profile for this partner will be used.

A validation template determines the token validation rules:

- Whether or not to validate and map the incoming token.
- The mapping rules to be used if mapping is enabled.

A validation template is specific to a token type and specific to a protocol as described in Table 38–8.

Table 38–8 Validation Template Protocols

Protocol	Description
WS-Security	Validates only WS-Security Tokens: ▪ Possible Mapping actions: no action, map binding data to partner, map incoming token to partner, map incoming token to user and binding data to partner, map incoming token to user ▪ Token Types supported: SAML 1.1, SAML 2.0, Username X.509, Kerberos, None. When you toggle the Token Protocol from WS-Trust to WS-Security, options in the Token Type list do not change. However, the required "Default Partner Profile" list appears from which you must choose one profile for WS-Security.
WS-Trust	Validates only Tokens included in OBO (on behalf of) field of the RST (request): ▪ Possible Mapping actions: none, map incoming token to user ▪ Token Types supported: SAML 1.1, SAML 2.0, Username, X.509, Kerberos, OAM, Custom.

A validation template mapping rules determines how the incoming data is mapped to a user or a partner, using data from the incoming token:

- Username for Username Token
- UserID for Kerberos Token
- NameID and attributes for SAML Token
- DN Components for X.509 Token
- Attributes from a Custom

Mapping is performed as follows:

- Simple mapping: one incoming attribute matched against one user record attributes
- Complex LDAP query: LDAP query with placeholders for incoming data (e.g.: (&(sn=%lastname%)(mail=%email%))
- NameID Mapping table for SAML Token

Figure 38–7 illustrates default General details on the New Validation Template page.

Figure 38–7 New Validation Template page: General Page Defaults

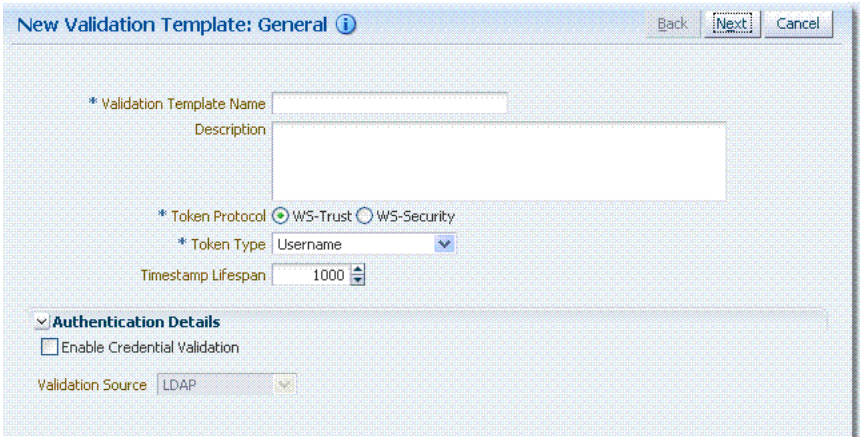


Table 38–9 describes the elements on the New Validation Template, General page.

Table 38–9 New Validation Template: General Details

Element	Description
Back	Click this button to return to the previous page.
Next	Click this button to proceed to the next page.
Cancel	Click this button to dismiss the page.
Validation Template Name	The name you choose for this template. For example: `email-wstrust-valid-temp`
Description	Optional.
Token Protocol	The type of Validation Template to be created. Type can be either: ■ WS-Trust: This template will be used to validate and map tokens included in the OnBehalfOf element of the WS-Trust request. ■ WS-Security: This template will be used to validate and map tokens located in the Security SOAP Header of the incoming message
Token Type	A list of in-bound token types from which you choose the one to use for this template. The token type options depends on the protocol type: ■ WS-Trust: SAML 1.1, SAML 2.0, Username, X.509, Kerberos, OAM, Custom ■ WS-Security: SAML 1.1, SAML 2.0, Username, X,509, Kerberos, None
Default Partner Profile	Only applies to WS-Security Validation Template References the default requester partner profile to use, in case the incoming request is not mapped to a requester partner. For example, if the request is mapped to a user instead. A requester partner profiles contains settings that are used during the request processing. If the incoming request was mapped to a requester partner, then the partner profile for that requester will be retrieved and used as the requester partner profile
Timestamp Lifespan	Applies only to Username and SAML Validation Templates. It determines the validity time of a Token (for Username Token, only if it contains a Created element indicating the instant it was created). Default: 1000 (seconds)
Authentication Details	Specific to username token validation template.
Enable Credential Validation	Check this box to enable validation using credentials contained in the username token. When enabled, Security Token Service will validate the username and the password elements contained in the username token, using the specified validation source. Note: password digest as defined in the Username Token WS-Security Profile is not supported in this release. See Also: Table 38–10, " New Validation Template: Authentication Details"

Figure 38–8 illustrates the General details page when Enable Credential Validation is checked and, as a result, the Authentication Details section of the page is visible with its default values. This is specific to username token validation.

Figure 38–8 New Validation Template: General Authentication Details

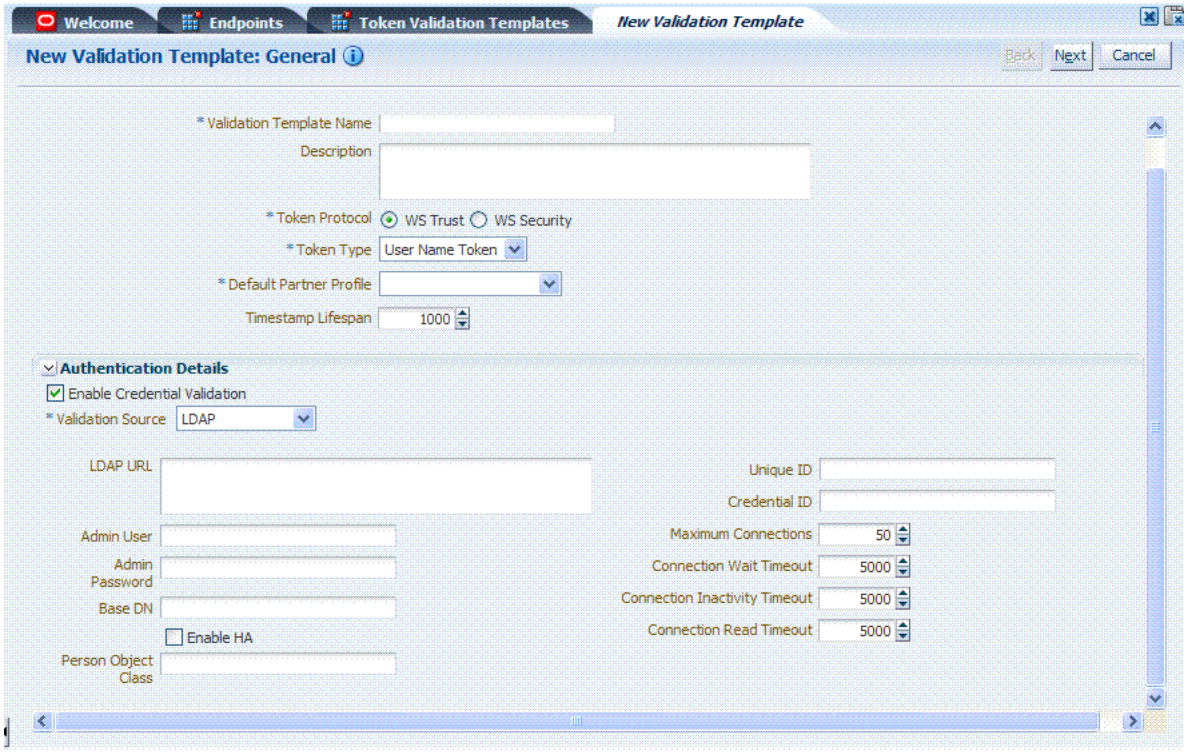


Table 38–10 describes Authentication related details that are available when you choose Enable Credential Validation.

Table 38–10 New Validation Template: Authentication Details

Element	Description
Validation Source	A list from which you can choose a credential validation sources There are four types of validation sources when validating the credentials contained in a username token: ▪ LDAP: a standalone LDAP server will be used to validate the credentials. The connection information will need to be entered ▪ Embedded LDAP: the LDAP server embedded in the WebLogic server will be used to validate the credentials. No information is required. ▪ Userstore: the default User Identity Store configured in the Common Configuration -> Data Sources will be used to validate the credentials. No information is required in this validation template screen ▪ Partner: the credentials will be verified against the username/password information entered in the Requester Partner entries. Note: When selected, the Token Mapping configuration section is disabled, because the token will have been mapped to a requester partner after the credentials validation operation.
LDAP URL	The URL of the LDAP server.
Admin User	The username of an account used to perform lookups in the LDAP server.
Admin Password	The password of an account used to perform lookups in the LDAP server.
Base DN	The Base search DN used when looking up user records.
Enable HA	Indicates whether or not the LDAP server is in HA mode, fronted by a load balancer.
Person Object Class	The person object class associated with the user records.

Table 38–10 (Cont.) New Validation Template: Authentication Details

Element	Description
Unique Id	The attribute of the user record containing the user unique identifier data. In most cases, is identical to the Credential ID field.
Credential Id	The attribute of the user record containing the username data. This field will be used to lookup user records, based on the username.
Maximum Connections	The maximum number of concurrent opened LDAP connections Default: 50
Connection Wait Timeout	Maximum amount of time to wait when opening a new connection. Default: 5000 (seconds)
Connection Inactivity Timeout	Maximum amount of inactivity time for an LDAP connection, before closing it. Default: 5000 (seconds)
Connection Read Timeout	Maximum number of concurrent opened LDAP connections. Default: 5000 (seconds)

Token Mapping

The Token Mapping section indicates the following:

- If an incoming token needs to be mapped.
- If the incoming token needs to be mapped, what kind of mapping is done. For example, mapping token to user, mapping token to partner, and so on.
- How the mapping is done. For example, by mapping a token attribute to a partner/user attribute, or by using an LDAP query involving several token attributes.

Mapping rules determine how the incoming data is mapped to a user or a partner. The following data of the incoming token is used:

- Username for UNT
- UserID for Kerberos
- NameID and attributes for SAML
- DN Components for X.509
- Attributes from custom

Mapping is performed using the following:

- Simple mapping: One incoming attribute matched against one user record attributes.
- Complex LDAP query: An LDAP query with placeholders for incoming data. For example, `(&(sn=%lastname%)(mail=%email%))`
- A NameID Mapping table for SAML

Following are several Token Mapping Examples for a new Validation Template:

- Figure 38–9, "Token Mapping: SAML2 WS-Security Validation Template"
- Figure 38–10, "Token Mapping, username-wstrust-validation-template"
- Figure 38–11, "Token Mapping: x509-wss-validation-template"

Figure 38–9 shows the mapping configuration settings required for Security Token Service to map the token to a user record, by matching the NameID value to user records that have a matching attribute, based on the NameID format:

- Enable Map Token to User
- Enable Simple User Mapping
- Disable Attribute Based User Mapping

Figure 38–9 Token Mapping: SAML2 WS-Security Validation Template

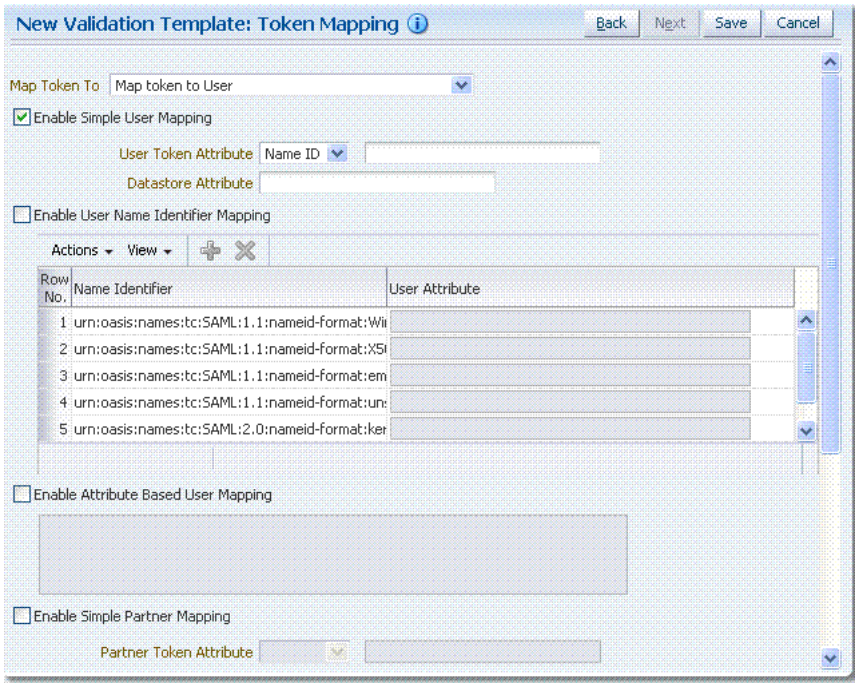


Figure 38–10 shows the mapping configuration settings required for Security Token Service to map the token to a user record by matching the username element of the Username token to a user record that has a matching uid. The required settings are:

- Enable Map Token to User
- Enable Simple User Mapping
- Datastore Attribute set to uid
- Disable Attribute Based User Mapping

Figure 38–10 Token Mapping, username-wstrust-validation-template

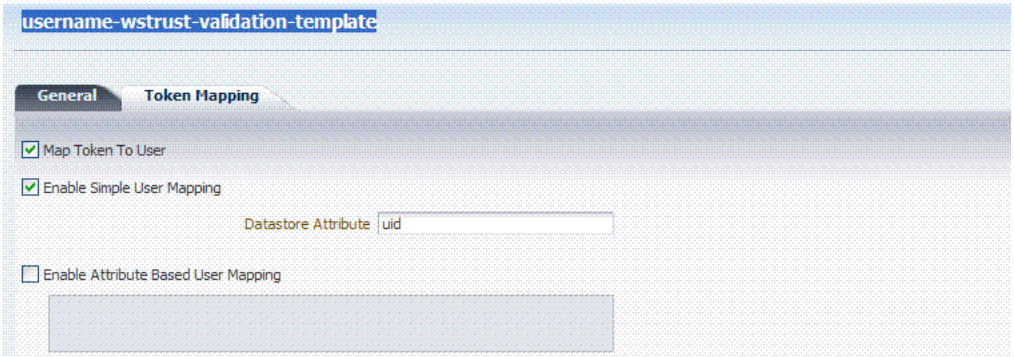
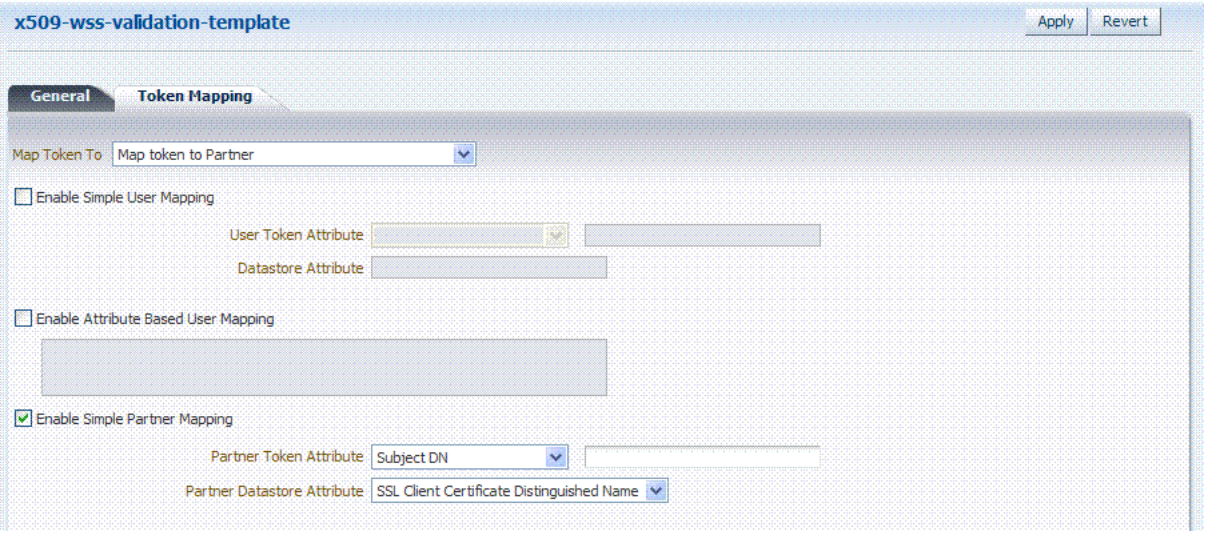


Figure 38–11 shows the mapping configuration settings required for Security Token Service to map the token to a requester partner entry by matching the Subject DN of

the certificate to a Requester Partner that has a match on SSL Client Cert DN Identification attribute. The required settings are:

- Map Token to Partner
- Disable Simple User Mapping
- Disable Attribute Based User Mapping
- Enable Simple Partner Mapping

Figure 38–11 Token Mapping: x509-wss-validation-template



Not all elements apply to all token types and token protocols. The elements that you must define will vary.

Table 38–11 describes the token mapping elements for validation templates.

Table 38–11 New Validation Template: Token Mapping

Element	Description
Map Token to	WS-Security Validation Template: Map Token to list ▪ <empty>: no token mapping operation will occur ▪ Map token to Partner: The token will be mapped to a requester partner ▪ Map Token to User and map binding data to Partner: The token will be mapped to a user, and binding data (such as SSL Client Cert DN or HTTP Basic Auth Username) will be used to map the HTTP request to a requester partner ▪ Map token to User: The token will be mapped to a user - - - - - - - - - - WS-Trust Validation Template: Map Token to User Check the box to enable (or clear the checkbox to disable).

Table 38–11 (Cont.) New Validation Template: Token Mapping

Element	Description
Enable Simple User Mapping	Simple user mapping consists of mapping the incoming token to a user record by using a single token attribute and matching it against a single user record attribute. WS-Security Validation Template: Only Username, SAML Assertion, Kerberos. and X.509. WS-Trust Validation Template: Username, SAML Assertion, Kerberos, X.509, OAM and custom token. The layout is different, depending on the token type of this validation template: Username Token: ■ Datastore attribute references the user record attribute that will be matched against the username element of the username token. SAML Assertion: ■ User Token attribute references an attribute from the incoming token that will be matched against the Datastore attribute (defined below) of a user record. The values can be STS_SUBJECT_ID for the NameID Value, or the name of an Attribute contained in the Assertion's AttributeStatement. In the Token Mapping section of a SAML Validation template, the User Token Attribute will either be the NameID selected from the drop down or a SAML Attribute name entered in the text field. ■ Datastore attribute references the user record attribute that will be matched against the User token attribute referenced above. In the Token Mapping section of a SAML Validation template, the Datastore Attribute is the name of the directory attribute that will be used for the LDAP matching query. Kerberos: ■ User Token attribute references an attribute from the incoming token that will be matched against the Datastore attribute (defined below) of a user record. The User Token Attribute can be specified by selecting one of the pre-populated attribute (Kerberos Principal, Kerberos Principal Primary or Kerberos Principal No Domain) or by entering a specific value. ■ Datastore attribute references the user record attribute that will be matched against the User token attribute referenced above. X.509: ■ User Token attribute references an attribute from the incoming token that will be matched against the Datastore attribute (defined below) of a user record. The User Token Attribute can be specified by selecting one of the pre-populated attribute (Subject DN, Common Name, Country Name, State or Province Name, Locality Name, Organizational Name, Organizational Unit Name or Domain Component) or by entering a specific value (which can be set to STS_X509_### by replacing ### with the upper case X.500 component name, for example STS_X509_CN to reference the common name component of the certificate subject). ■ Datastore attribute references the user record attribute that will be matched against the User token attribute referenced above. OAM: ■ Datastore attribute references the user record attribute that will be matched against the username element of the username token. Should be the user ID attribute defined in the Default User Identity Store. Custom: ■ User Token attribute references an attribute from the incoming token that will be matched against the Datastore attribute (defined below) of a user record. The possible values are the names of the attribute returned by the custom token validation module. ■ Datastore attribute references the user record attribute that will be matched against the User token attribute referenced above.

Table 38–11 (Cont.) New Validation Template: Token Mapping

Element	Description
Enable User Name Identifier Mapping	When enabled, define the following: WSS and WS-Trust Validation Templates will contain the same section for the Name Identifier mapping settings. A NameID user mapping operation consists of mapping the incoming SAML Assertion to a user record by mapping the NameID Value to a single user record attribute, based on the NameID format When enabled, Security Token Service evaluates the NameID format, and based on the Name Identifier mapping table which user record attribute should be matched against the Name ID value contained in the Assertion. The Name Identifier mapping table holds the user record attributes to be used for the mapping operation. It contains standard NameID formats, but it can be customized to define custom Name ID formats. To add custom NameID format, click the add button on the Name Identifier mapping table, and enter the custom URI. To set an attribute for a specific NameID format to be used for mapping operation, set the user record attribute on the line for that format.
Enable Attribute Based User Mapping	WSS Validation Template: only Username, SAML Assertion, Kerberos and X.509. WS-Trust Validation Template: only Username, SAML Assertion, Kerberos, X.509 and custom token An Attribute Based User Mapping operation consists of mapping the incoming token to a user record by using an LDAP query and token attributes. The format of the LDAP query defines the mapping rule and specifies the token attributes to be used by their names, surrounded by the percent (%) character. For example, an LDAP query that will map a token based on two token attributes (firstname and lastname) would be (&(sn=%lastname)(givenname=%firstname%)). The possible token attributes depend on the token type. Username Token ■ STS_SUBJECT_ID is the only available token attribute containing the username element of the Username token. SAML Assertion ■ STS_SUBJECT_ID contains the NameID Value. ■ STS_NAMEID_FORMAT contains the NameID Format ■ STS_NAMEID_QUALIFIER contains the NameID Qualifier ■ STS_SAML_ASSERTION_ISSUER contains the Issuer of the Assertion ■ Attributes present in the Assertion's AttributeStatement Kerberos ■ STS_KERBEROS_PRINCIPAL_SHORT contains the Kerberos Principal attribute. ■ STS_KERBEROS_PRINCIPAL_FULL contains the Kerberos Principal Primary attribute ■ STS_KERBEROS_PRINCIPAL_NODOMAIN contains the Kerberos Principal No Domain attribute X.509 ■ STS_SUBJECT_ID contains the Subject DN. ■ STS_X509_CN contains the Common Name ■ STS_X509_C contains the Country Name ■ STS_X509_ST contains the State or Province Name ■ STS_X509_L contains the Locality Name ■ STS_X509_O contains the Organizational Name ■ STS_X509_OU contains the Organizational Unit Name ■ STS_X509_DC contains the Domain Component Custom Token ■ The possible values are the names of the attribute returned by the custom token validation module.

Table 38–11 (Cont.) New Validation Template: Token Mapping

Element	Description
Enable Simple Partner Mapping	Only for WSS Validation Template and for the following token types: Username, SAML Assertion, Kerberos, and X.509. A simple partner mapping operation consists of mapping the incoming token to a partner requester by using a single token attribute and matching it against a partner identification attributes. The layout is different, depending on the token type of this validation template Username Token ■ Partner Datastore attribute references the partner identification attribute that will be matched against the username element of the username token. SAML Assertion ■ Partner Token attribute references an attribute from the incoming token that will be matched against the Partner Datastore attribute (defined below) of a Requester Partner. The values can be STS_SUBJECT_ID for the NameID Value, or the name of an Attribute contained in the Assertion's AttributeStatement. ■ Partner Datastore attribute references the partner identification attribute that will be matched against the Partner token attribute referenced above Kerberos ■ Partner Token attribute references an attribute from the incoming token that will be matched against the Partner Datastore attribute (defined below) of a requester partner. The Partner Token Attribute can be specified by selecting one of the pre-populated attribute (Kerberos Principal, Kerberos Principal Primary or Kerberos Principal No Domain) or by entering a specific value. ■ Partner Datastore attribute references the partner identification attribute that will be matched against the Partner token attribute referenced above X.509 ■ Partner Token attribute references an attribute from the incoming token that will be matched against the Partner Datastore attribute (defined below) of a requester partner. The Partner Token Attribute can be specified by selecting one of the pre-populated attribute (Subject DN, Common Name, Country Name, State or Province Name, Locality Name, Organizational Name, Organizational Unit Name or Domain Component) or by entering a specific value (which can be set to STS_X509_### by replacing ### with the upper case X.500 component name, for example STS_X509_CN to reference the common name component of the certificate subject). ■ Partner Datastore attribute references the partner identification attribute that will be matched against the Partner token attribute referenced above.
Enable Partner Name Identifier Mapping	When enabled, defines the following only for WSS Validation Template and for SAML token types: A NameID user mapping operation consists of mapping the incoming SAML Assertion to a user record by mapping the NameID Value to a single requester partner identification attribute, based on the NameID format. When enabled, Security Token Service will evaluate the NameID format, and based on the Name Identifier mapping table which partner identification attribute should be matched against the Name ID value contained in the Assertion. The Name Identifier mapping table holds the requester partner identification attributes to be used for the mapping operation. It contains standard NameID formats, but it can be customized to define custom Name ID formats. To add custom NameID format, click the Add button on the Name Identifier mapping table, and enter the custom URI. To set an attribute for a specific NameID format to be used for mapping operation, set the requester partner identification attribute on the line for that format.

38.4.2 Managing Token Validation Templates

This is a server side configuration. A default Token Validation Template exists. Users with valid Administrator credentials can use can use the procedure in this section to add, find, edit, or delete token validation templates. Skip any steps that you do not need.

The Security Token Service Endpoint must be linked to a WS Security Validation Template that indicates:

- how to validate the token in the Webservice Security header
- how to map the token and binding data to a Requester

The information here can be applied when you want to validate the following:

- WS-Security tokens present in the SOAP Header, of type: Username, SAML 1.1, SAML 2.0, X.509 and Kerberos.
- WS-Trust tokens present in the OnBehalfOf element or in the ValidateTarget element of the WS-Trust request, of type: Username, SAML 1.1, SAML 2.0, X.509, Kerberos, OAM Session Propagation Token and custom tokens.

The following procedure includes several examples of input following specific parameters. Also, a brief translation appears within parentheses (). For instance: Name (username-token): `email-wstrust-valid-temp`. Values in your environment will be different.

Prerequisites

See Also:

- "About Managing Token Validation Templates"
- "Searching for an Existing Template"

To manage token validation templates

1. Locate and open the desired Token Validation Template as described in "Searching For a Template" on page 38-6.
2. **New Token Validation Template**:
   a. Click the New Validation Template button in the upper-right corner (or click the Add (+) command button above the Search Results table).
   b. **General**: Define parameters for this template (Table 38–9). For example:

      Name (username-token): `email-wstrust-valid-temp`
      Token Protocol (WS-Security for token protocol): Webservice
      Token Type (username): `email`
      Default Partner Profile: `requester-profile`

   c. **Authentication**: Enable Credential Validation for this template, if needed, and provide details (Table 38–10). If the token type is username, enable credential validation if needed for this template and provide the details.
   d. **Token Mapping**: Specify preferences for this template based on your token type (Table 38–11).
   e. Click Save and dismiss the confirmation window (or click Cancel without saving it).
   f. Close the definition (or edit it as described in Step 4).
3. **Edit a Template**: Start with the saved page you just created.
   a. Edit the template definition as needed.
   b. Click the **Apply** button at the top of the page to submit changes (or click Revert to undo your changes).

4. **Remove a Token Validation Template**:
   a. Click the desired name in the Search Results table to select the item to remove.
   b. From the Actions menu, click Delete (or click the Delete (X) command button above the table.
   c. Click the **Delete** button in the Confirmation window (or click No to cancel the operation).

38.5 Managing Security Token Service Endpoints

An endpoint is a Web Service published by Security Token Service where clients can send WS-Trust requests over SOAP. An endpoint is:

- Protected by a WS Security Policy.
- Bound to WSS Validation Template that will indicate how to validate the security token and how to map it.
- Specific to a token type, namely, the one specified in the WSS Validation Template.

> **Note:** The WS-Security policy protecting the endpoint must be compatible with the WSS Validation Template bound to the endpoint.

An endpoint is a Web Service endpoint published by Security Token Service and protected by OWSM Agent. An endpoint is bound to:

- A WS-Security policy that will determine the WSS requirements in terms of message protection and security tokens
- A WSS Validation template that will indicate how the request will be processed, how the security token will be validated.

This section provides the following information:

- About Managing Endpoints
- Managing EndPoints

38.5.1 About Managing Endpoints

Security Token Service Endpoint definitions consist of three categories, as shown in Figure 38–12.

Figure 38–12 Endpoints Page

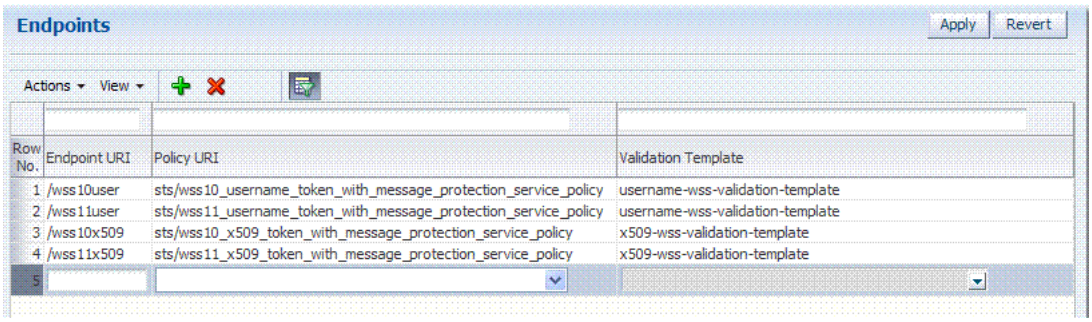


Table 38–12 describes the required Endpoints categories.

Table 38–12 Endpoints Page

Elements	Description
Endpoint URI	The path to the Endpoint, relative to the Security Token Service base URL The Security Token Service base URL is /sts.

Policy URI	Choose from a listing of Oracle WSM policies the one used to protect this Endpoint.
	Oracle Access Management Administrators can add a new custom policy to the available listing.To show this newly created Policy URI in the endpoints table list, use the following wlst command to update the owsmpolicies map:
	`putStringProperty("/stsglobal/owsmpolicies/<index>", "<newcustom_policypath>)`
	For example:
	`putStringProperty("/stsglobal/owsmpolicies/31", "sts/newcustom_policy")`

Validation Template ID	Choose from a listing of Validation Template names to identify one for use with this Endpoint.

Once an Endpoint is created, you can remove it but you cannot edit the definition.

38.5.2 Managing EndPoints

Users with valid Oracle Access Management Administrator credentials can perform the following task to add, edit, or remove an Endpoint.

Prerequisites

Creating a Token Validation Template to reference

To create or delete an endpoint

1. From the Oracle Access Management Console Launch Pad, open the Security Token Service section.
2. Open the Endpoints node to display a list of existing Endpoints.
3. **New Endpoint**: see Table 38–12 and
   a. Click the Add (+) button above the table (or choose New Endpoint from the Actions menu).
   b. Enter the new Endpoint URI.
   c. Choose one of the Oracle WSM policies to protect this Endpoint.
   d. Choose the Validation Template to use with this Endpoint.
   e. Click Apply to submit the definition and dismiss the confirmation window (or click Revert to dismiss the page without submitting it).
   f. Close the page.
4. **Remove Endpoint**:
   a. Highlight a row in the Endpoints table and click the Delete (X) button (or choose Delete Selected from the Actions menu).
   b. Confirm removal (or cancel the removal).

38.6 Managing Token Issuance Policies, Conditions, and Rules

This section provides the following topics:

- About Token Issuance Policies
- About Managing Token Issuance Conditions and Rules
- Managing Token Issuance Policies and Conditions

38.6.1 About Token Issuance Policies

A Token Issuance Policy defines the rules under which a token can be issued for a resource (Relying Party Partner) based on the client's identity, with the client either being a Requester Partner or an end user. If a Requester is NOT present, it is assumed that the User (represented by the on-behalf-of (OBO) token or WSS Token) is trying to access the RelyingParty.

When issuing a token, Security Token Service will determine for which Relying Party that token is created, and it will then evaluate if the client is authorized to request the token for that Relying Party. In order to issue a token, a Token Issuance Policy must be created with the resource involved in the operation, and with possibly a condition. At runtime if the policy evaluation is successful, the token will be issued.

You can add Conditions, Rules, and Responses to this Token Issuance Policy.

38.6.2 About Managing Token Issuance Conditions and Rules

The Token Issuance Policy allows the Administrator to define conditions along with "Allow" and "Deny" rules for the policy. Each Token Issuance Policy can contain one or more conditions, and rules that determine whether access to the requested resource should be granted or denied:

- An Allow type rule specifies who is authorized to access a protected resource.

  Only partners and users listed in the Condition are granted access; everyone else is denied access to the resource.

- A Deny type rule specifies explicitly who is denied access to the protected resource.

  Only partners and users listed in the Condition are denied access; everyone else is granted access to the resource.

> **Note:** When adding User conditions, the identity store from which the users are to be chosen can be selected from a list. Ensure that you choose the Default User Identity Store, which is the only one used by Security Token Service.

Managing Token Issuance Conditions is similar to managing Authorization Conditions and Rules. Figure 38–4 shows the Conditions tab of a Token Issuance Policy.

Figure 38–13 Token Issuance Policies and Conditions

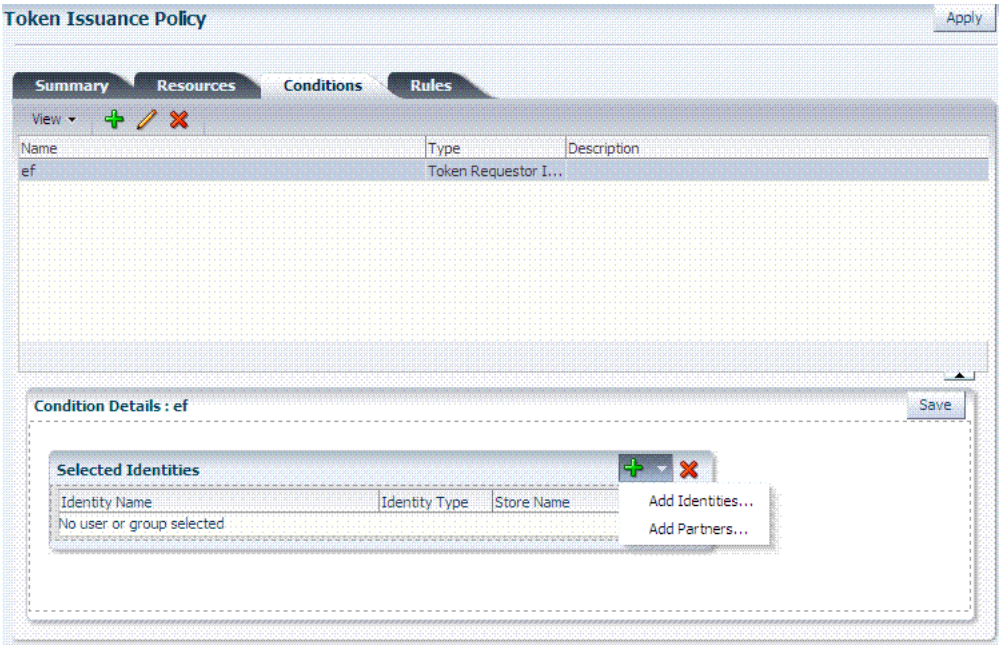


Table 38–13 describes the Token Issuance Condition requirements.

> **See Also:** Part IX, "Managing Oracle Access Management Mobile and Social" for details about Adding a Token Issuance Policy for Mobile and Social Authentication Service

Table 38–13 Conditions tab: Token Issuance Policy

Element	Description
Summary tab	
Name	A unique name for this Token Issuance Policy.
Description	Optional.
Conditions tab	Table 20–18 describes elements and controls on the Conditions tab.
Class	Only Token Requester Identity is allowed for Token Issuance Policy conditions. You choose this in the Add Condition dialog box.
Rules tab	Table 20–29 describes the elements and controls on the Rules tab for Simple Mode evaluations. Table 20–30 describes the elements on the Rule tab in Expression mode.
Condition Details	
Add	Choose from the following populations: ▪ Add Identities: This choice opens a Search window where you can set the Store Name, Choose an Entity Type (All, User, or Group), and Provide an Entity Name. You then choose one or more results from those listed and click Add Selected to populate the condition. ▪ Add Partners: This choice opens a Search window where you can locate specific partners to populate the condition. Enter your search criteria (or click the arrow key beside the field to find all partners), then choose one or more results and click Add Selected to populate the condition.
Entity Name	The name of the User or Group, as defined in the selected User Identity Store.

Table 38–13 (Cont.) Conditions tab: Token Issuance Policy

Element	Description
Entity Type	The type of entity you want to locate during a search to add identifies to the condition: User, or Group.
Store Name	Choose the name of the User Identity Store to search for users or groups to populate the condition. Remember, Security Token Service uses only the Default Identity Store.

38.6.3 Managing Token Issuance Policies and Conditions

Users with valid Administrator credentials can use the following procedure to add a Token Issuance Policy and Conditions to an Application Domain. When adding resources to this policy, you might want to add the UnknownRP and MissingRP resources.

Prerequisites

The Application Domain must already exist.

> **Note:** You can add Token Issuance Policies to the IAM Suite Application Domain.

To manage Token Issuance Policies and conditions

1. Locate the desired domain as described in "Searching for an Existing Application Domain" on page 20-12.
2. On the individual Application Domain page, click **Token Issuance Policies** tab.
3. **Create a Token Issuance Policy**:
   a. In the desired domain, click the Token Issuance Policies tab and then click the **Create Token Issuance Policy** button to open a fresh page.
   b. On the **Summary** page, enter a unique name and optional description.
4. **Add Resources**: This step presumes that the resource has been defined in the Application Domain and is ready to be added to policies.
   a. Click the Resources tab.
   b. Click the Add (+) button.
   c. Click the Search button to display a list of defined resources you can add.
   d. Click the desired resource in the results table, then click **Add** Selected.
   e. Repeat as needed to add any other resources to this policy.
5. **Add Conditions to a Policy**: The only types available are Token Requester Identity or True.
   a. Click the **Conditions** tab, then click the Add button on the Conditions tab to display the Add Condition window.
   b. Enter a unique name for this condition in the dialog box.
   c. Choose **Token Requester Identity** from the **Type** list.
   d. Click **Add Selected**.
   e. Proceed with Step 5 to add details for Token Requestor Identity. Otherwise, skip to Step 6.

6. **Add Conditions Details**:
   a. Click the Condition name to display Conditions: Details.
   b. From the **Selected Identities** table, click the **Add** button and choose either:

      Add Partners: In the Search field, enter criteria (or click the arrow key beside the field to find all partners); click one or more results then click **Add Selected** to populate the condition.

      Add Identities: Select the Store Name, select the desired Identity Type, enter search criteria and click the Search button; choose one or more results and click **Add Selected** to populate the condition.
   c. Click the **Save** button on the Condition Details panel.
7. **Add Rules**: Perform these steps to Allow or Deny access based on your Conditions.
   a. Click the **Rules** tab.
   b. Check the **Rule Mode**: Simple or Expression.
   c. **Expression Mode**: Build your expression by entering operators (Table 20–31) and choosing and inserting conditions (Table 20–30).
   d. **Simple Mode**: Click to **Match** either All or Any of the selected conditions, then using arrows for Allow (or Deny) Rule, move desired conditions from the Available Conditions column into the Selected Conditions column.
8. Click **Apply** and then close the Confirmation window.
9. **Find (or Add) TokenServiceRP Resources in the Application Domain**: See "Managing TokenServiceRP Type Resources".

38.7 Managing TokenServiceRP Type Resources

A Token Issuance Policy defines the rules under which a token can be issued for a resource (Relying Party Partner) based on the client's identity, with the client either being a Requester Partner or an end user.

When issuing a token, Security Token Service will determine for which Relying Party that token is created, and it will then evaluate if the client is authorized to request the token for that Relying Party.

Note: To issue a token, a Token Issuance Policy must be created with the resource involved in the operation and, possibly, with a condition. At run time if the policy evaluation is successful, the token will be issued.

The resource(s) in a policy can be:

- A TokenServiceRP type resource represents resources for, and is based on, the Token Service Relying Party (required for Mobile and Social REST clients).

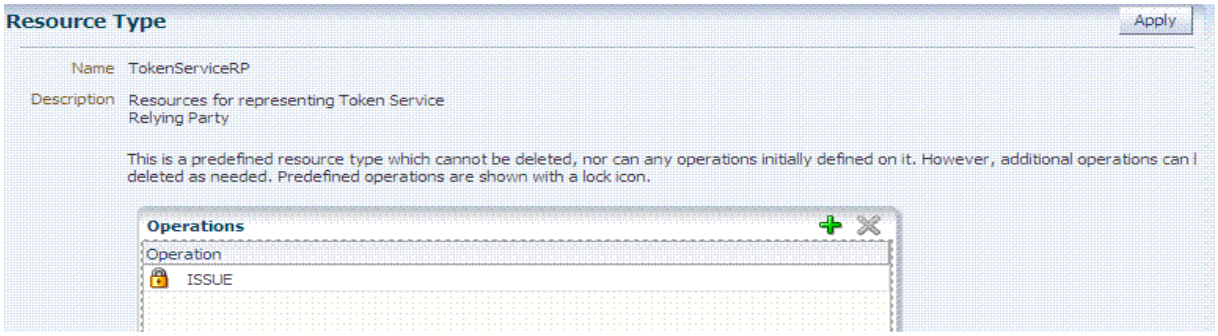
  See Also: Part IX, "Managing Oracle Access Management Mobile and Social" for details about Configuring Access Manager for Mobile and Social Authentication Service

- The pre-existing UnknownRP resource which is needed when Security Token Service is not able to map the Service URL referenced in the `AppliesTo` element of the WS-Trust request to an Security Token Service Relying Party Partner entry.
- The pre-existing MissingRP resource which is needed when the `AppliesTo` element of the WS-Trust request is missing.

> **Note:** Both the MissingRP and UnknownRP are defined in the IAM Suite Application Domain.

A resource of type TokenServiceRP, Figure 38–14, represents an Security Token Service Relying Party Partner defined in the Security Token Service Partner Store.

Figure 38–14 Pre-defined Resource Type: TokenServiceRP



Resources of type TokenServiceRP are used in Token Issuance Policies, which are evaluated when Security Token Service issues tokens at run time. This is a predefined resource type, which cannot be deleted. However, additional operations can be created, edited or deleted as needed. Predefined operations are shown with a lock icon.

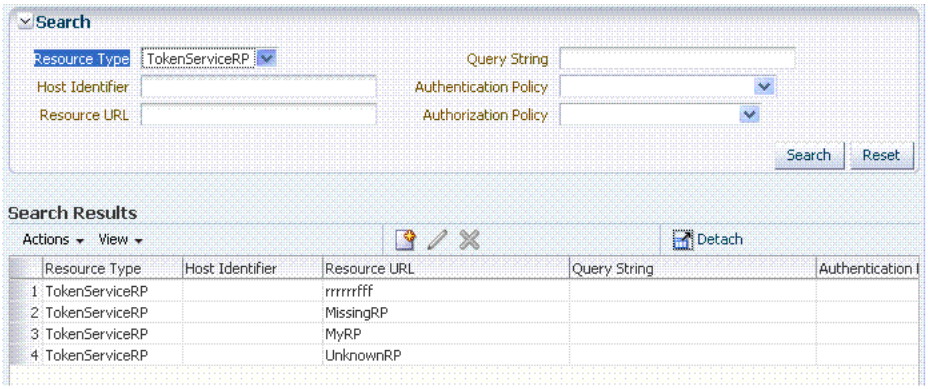
For more information, see:

- About Managing TokenServiceRP Type Resources in Access Manager
- Managing TokenServiceRP Type Resources in Application Domains

38.7.1 About Managing TokenServiceRP Type Resources in Access Manager

Use the Search controls for the Application Domain to locate resources of a specific type within the domain. Figure 38–15 shows the search controls for the IAM Suite resources. Resource Type TokenServiceRP is the search criteria. The Search Results table lists all resources of this type within the Application Domain.

Figure 38–15 Search: Resource Type TokenServiceRP in Application Domain



The TokenServiceRP resources in this domain include those provided out of the box, and described earlier:

- UnknownRP resource
- MissingRP resource

38.7.2 Managing TokenServiceRP Type Resources in Application Domains

Users with valid Administrator credentials can use the following procedure to add TokenServiceRP resources to an Application Domain.

Note:

- If `AppliesTo` is present in the RST but the requester could not be mapped, use the `TokenServiceRP:UnknownRP` resource.
- If `AppliesTo` is not present, use `TokenServiceRP:MissingRP`, otherwise select the appropriate resource.

See Also: "About Managing TokenServiceRP Type Resources in Access Manager"

To manage TokenServiceRP Resources

1. Locate the desired Application Domain as described in "Searching for an Existing Application Domain" on page 20-12.
2. **Add TokenServiceRP Resource to the Application Domain**:
   a. Click the **New Resource** button on the Application Domain Search page.
   b. Specify the **Resource Type** as **TokenServiceRP**.
   c. Enter a Resource URL that is the Relying Party ID for whom the token issuance policy will be defined.
   d. Click the **Apply** button at the top of the page to submit this and dismiss the confirmation window.
   e. See Also: "Defining Resources in an Application Domain" on page 20-28.
3. **Find TokenServiceRP Resources**:

a. In the desired Application Domain, open the Resources tab to display the Search controls.

b. From the **Resource Type**, choose **TokenServiceRP**, and click **Search**.

c. Review the Search Results table and click a name to open the Resource Definition.

38.8 Making Custom Classes Available

When Security Token Service does not support the token that you want to validate or issue out-of-the-box, a developer can write custom validation and issuance module classes. This section describes how to make custom classes available using the console.

The information here can be applied when you have:

- WS-Security User Name Token
- WS-Trust Custom Token
- Issuing Custom Token

> **Note:** You can also write a script that includes WebLogic Scripting Tool commands for any operation that you can accomplish through the console. For more information, see *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

This section provides the following topics:

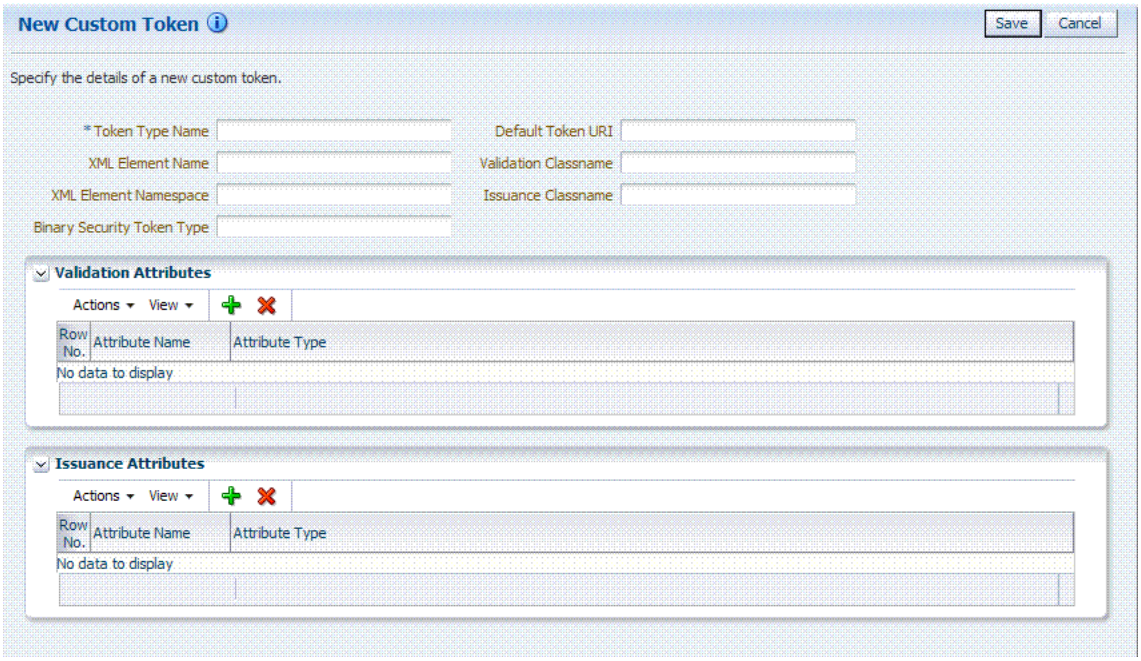
- About Making Classes Available
- About Narrowing a Search for Custom Tokens
- Managing Custom Tokens

38.8.1 About Making Classes Available

After writing the custom token validation and/or issuance classes, you must add Custom Token Configuration to Security Token Service to indicate when and how these classes should be used.

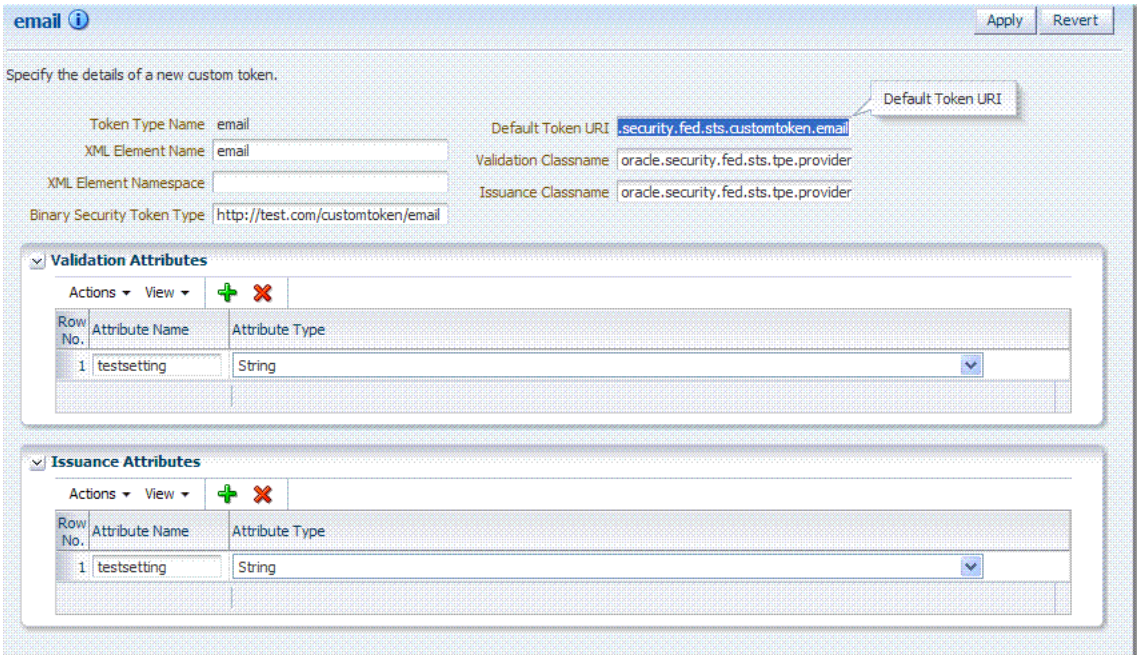
On the New Custom Token page only the Token Type Name is required (identified with an asterisk, *), as shown in Figure 38–16. Not all elements apply to all custom tokens. However, if you submit information that is incomplete, a dialog box appears to identify what is missing.

Figure 38–16 New Custom Token Page



After successful submission of new custom token details, the saved page is available for editing as shown in Figure 38–17.

Figure 38–17 Custom Token Definition: email



For the custom token, you must decide on the XML Element Name, XML Element Namespace, Binary Security Token Type, and so on. Table 38–14 describes the elements on a Custom Token page based on the examples in this chapter.

Table 38–14 New Custom Token Elements

Element	Description
Token Type Name	The unique name you choose for this custom token. For example: `email_token` Note: After you save a new custom token configuration, you cannot edit this name.
Default Token URI	The URI for this custom token. This URI can then be used in the RST to request that a custom token of this type should be issued. For the example in this chapter, the value would be: `oracle.security.fed.sts.customtoken.email`
XML Element Name	The name you decide on, which will be associated with the Token Type Name. For example: `email` If you specify `email` as the XML Element Name, each time the element name, `email`, appears in an incoming token it will be associated with the Token Type Name (in this case `email_token`). Note: Minimally, you need either an XML Element Name or Binary Security Token Type.
Validation Classname	The name of the custom token validation class that you made available to Security Token Service. For example: `oracle.security.fed.sts.tpe.providers.email.EmailTokenValidatorModuleImpl` Note: Minimally, you need either an issuance class name or validation class name, depending on whether you want to issue or validate a custom token.
XML Element Namespace	The namespace of the custom token element name. For example: `http://email.example.com`
Issuance Classname	The name of the custom token issuance class that you made available to Security Token Service. For example: `oracle.security.fed.sts.tpe.providers.email.EmailTokenIssuerModuleImpl` Note: Minimally, you need either an Issuance classname or Validation classname, depending on whether you want to issue or validate a custom token.
Binary Security Token Type	Enables the class to validate a custom token sent in as a BinarySecurityToken. The ValueType of the BinarySecurityToken for this custom token. If Security Token Service receives a Binary Security Token with this ValueType, it will be forwarded to this custom token's Validation class for validation.
Validation Attributes	This section enables you to add (or remove) validation attributes. The table displays existing validation attributes, if any. For this example: ■ Attribute Name: `testsetting` ■ Attribute Type: `String` Note: You will add a value to the attribute when creating a Token Validation Template.
Issuance Attributes	This section enables you to add (or remove) issuance attributes. The table displays the following information for existing issuance attributes. ■ Attribute Name: `testsetting` ■ Attribute Type: `String` Note: You will add a value to the attribute when creating a Token Issuance Template.
Save	Click this button on the New Custom Tokens page to save your configuration information.

Table 38–14 (Cont.) New Custom Token Elements

Element	Description
Cancel	Click this button to dismiss your configuration details.
Apply	Click this button to submit your changes.
Revert	Click this button to dismiss your changes.

Task overview: Adding custom tokens for custom classes

1. Create a JAR file containing only your custom `TokenIssuerModule` or `TokenValidatorModule` classes (or both). No XML metadata or manifest is needed.
2. Review information in Figure 38–17 and Table 38–14.
3. Add the JAR to the OAM Server hosting Security Token Service and create a new custom token, as described in Section 38.8.3, "Managing Custom Tokens".

38.8.2 About Narrowing a Search for Custom Tokens

Figure 38–18 illustrates the Custom Tokens Search controls and Results table. These appear when you double-click the Custom Tokens node in the navigation tree. By default, all currently defined custom tokens are listed when the Search Results table is displayed.

Figure 38–18 Custom Tokens Search Page and Controls

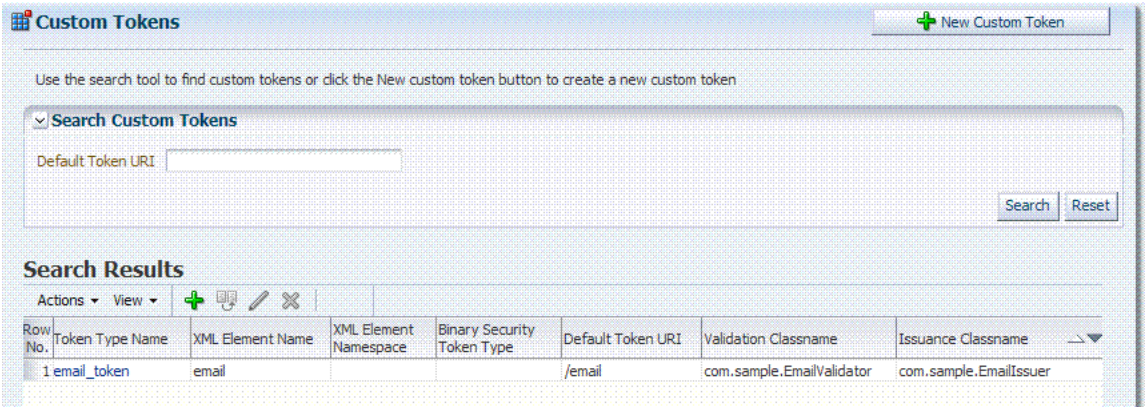
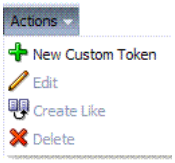
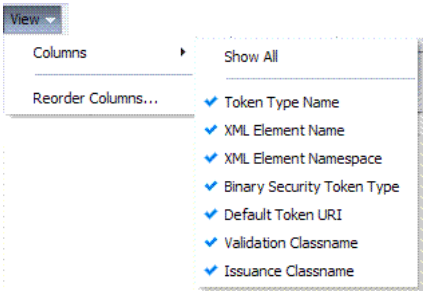


Table 38–15 describes the Custom Tokens Search elements and controls. No wild cards (*) are allowed in Custom Token searches.

Table 38–15 Custom Tokens Search Elements and Controls

Element	Description
Default Token URI	The URI that was defined for the custom token. You can enter the entire URI or only part of it. For instance, if you enter "ai" the Search Results table will display all custom tokens defined with a token URI that includes the letters "ai". Note: Wild cards are not allowed in Custom Token searches.
Search	Initiates the Search function using criteria provided in the form.
Reset	Resets the Search form with defaults only.
Search Results	Provides the results of your search based on your choices in the View menu.

Table 38–15 (Cont.) Custom Tokens Search Elements and Controls

Element	Description
Actions menu	Provides the following functions that can be performed on a selection in the results table:  Note: Actions menu functions mirror command buttons above the results table. For example: ■ New Custom Token: Click the New Custom Token button at the top of the Search page, or select New Custom Token from the menu, or click the + button above the table. ■ Edit: Double-click a name in the Token Type Name column of the Search Results table, or select Edit from the Actions menu, or click the Edit (pencil icon) command button above the Results Table. ■ Create Like: Select the desired row in the table and either select Create Like from the Actions menu, or click the Create Like command button above the table ■ Remove: Select the desired row in the table and either select Delete from the Actions menu, or click the Delete (**X**) command button above the table.
View menu	Provides functions you can use to display various information in the results table: 
	Controls affecting the ordering of items listed in the results table: ■ Ascending ■ Descending

38.8.3 Managing Custom Tokens

Users with valid Administrator credentials can use the procedure in this section to manage custom tokens for custom Token Module classes.

The following procedure includes steps to add, edit, and delete custom tokens or attributes of a custom token. Skip any steps that you do not need.

Prerequisites

Refer to the developer creating the custom tokens and the Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details about:

Writing a TokenValidatorModule Class

Writing a TokenIssuanceModule Class

See Also:

- "Making Custom Classes Available" on page 38-33
- "About Narrowing a Search for Custom Tokens" on page 38-36

To make custom classes available

1. Create and add the JAR containing your Issuance and Validation classes to the OAM Server hosting Security Token Service using one of these methods:
   - Add the custom token jar and the sts-common.jar that is available in *$DOMAIN_HOME*/config/fmwconfig/mbeans/oam to the Managed Server classpath by editing the startup script.
   - Add the custom token jar and the sts-common.jar that is available in $*DOMAIN_HOME*/config/fmwconfig/mbeans/oam to the *$DOMAIN_HOME*/lib directory to automatically add these jars to the Managed Server classpath.
   - Restart the OAM Server.
2. **New Custom Token**: From the Oracle Access Management Console Launch Pad, click the Security Token Service link.
   a. Open the Custom Tokens node to open the Search controls.
   b. Click the New Custom Token button.
   c. Fill in the New Custom Token page with details for your custom classes (Table 38–14).
   d. Click Save and dismiss the confirmation window (or click Cancel to dismiss the page without submitting it).
   e. Close the page (or edit as described in Step 4).
   f. Proceed to Step 4, if needed, or to "Managing a Custom Security Token Service Configuration" on page 38-39.
3. **Find Custom Tokens**: From the Oracle Access Management Console Launch Pad, click the Security Token Service link.
   a. **Find All**: Click the Search button and view the results table with all custom tokens listed.
   b. **Narrow the Search**: Enter some or all characters in the desired Default Token URI, click the **Search** Button, and review the results table.
   c. **Reset the Search Form**: Click the Reset button.
4. **Edit Custom Token Configuration**: Start with the saved page you just created.

   Alternatively: Use Step 3 to find the desired Custom Token, then double-click the name in the Search Results table to open the page.
   a. In the named Custom Token page, click the appropriate field and edit as needed.
   b. **Add Attributes**: Click the Add (+) icon for the Attributes table, enter the Attribute Name and an Attribute Type (Table 38–14).
   c. **Remove Attributes**: From the Attributes table, click the row containing the attribute to remove, click the Delete (X) icon for the table, and dismiss the Confirmation window.

d. **Apply Changes**: Click the Apply button at the top of the page to submit changes.

5. **Remove a Custom Token**:

   a. Click the desired name in the Search Results table to select the item to remove.

   b. From the Actions menu, click Delete (or click the Delete (X) command button above the table.

   c. Click the Delete button in the Confirmation window (or click No to cancel the operation).

38.9 Managing a Custom Security Token Service Configuration

This tasks consists of the following procedures:

- Creating the Validation Template
- Creating the Issuance Template for a Custom Token
- Adding the Custom Token to a Requester Profile
- Adding the Custom Token to the Relying Party Profile
- Mapping the Token to a Requestor
- Creating an /wssuser EndPoint

38.9.1 Creating the Validation Template

Users with valid Oracle Access Management Administrator credentials can perform the following task to create a Validation Template with a Token Protocol of Webservice Trust to map the token to the requester.

The template in this example can be used for the module classes described earlier in this chapter. Full implementation details are shown in the following figures. As you review these, notice how specifications for this template reference the module class code:

- Figure 38–19, "General Details: email-wstrust-valid-temp"
- Figure 38–20, "Token Mapping: email-wstrust-valid-temp"

Figure 38–19 General Details: email-wstrust-valid-temp

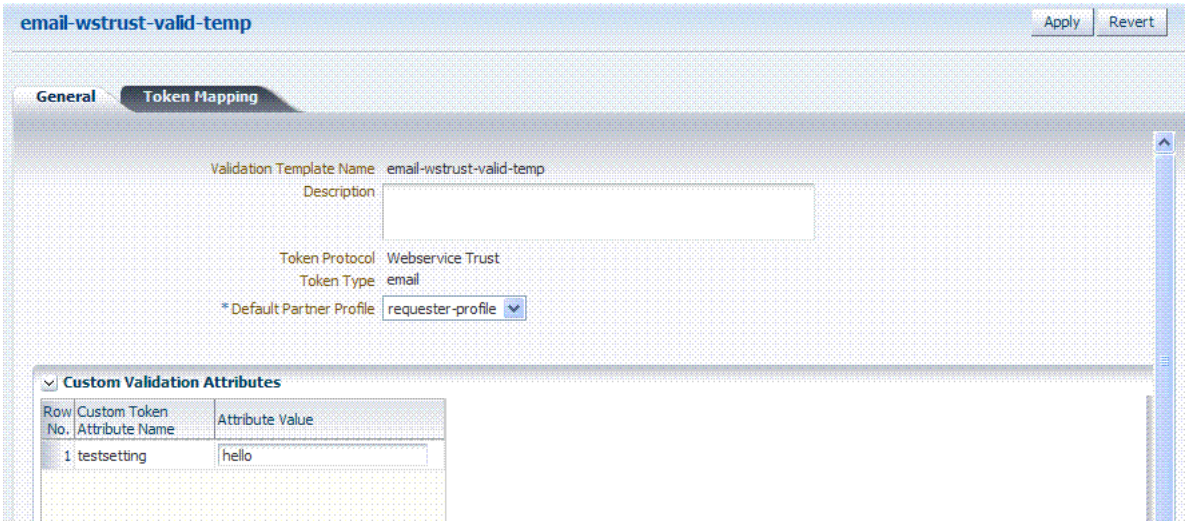
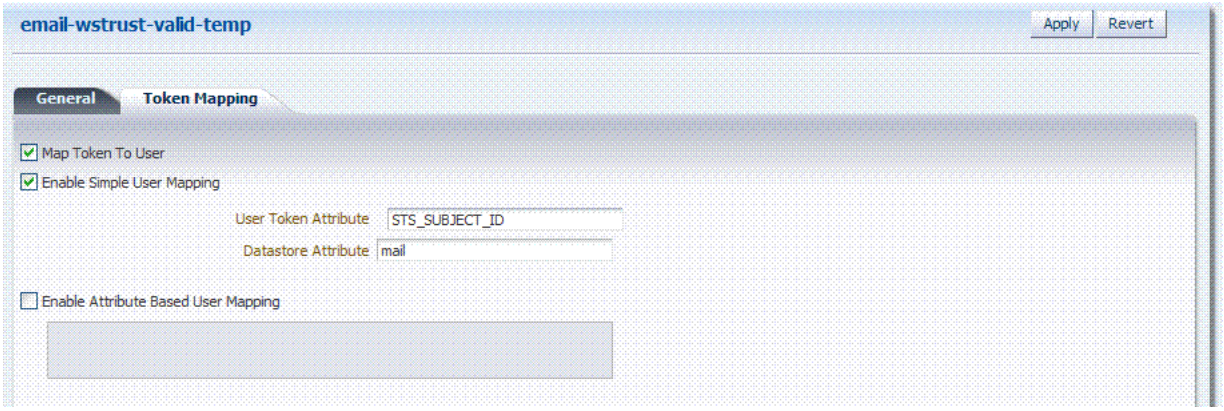


Figure 38–20 Token Mapping: email-wstrust-valid-temp



To create the validation template for the custom module classes

1. Display the list of existing Token Validation Templates.

   Oracle Access Management Console Launch Pad
   Security Token Service
   Token Validation Templates

2. Click the New Validation Template button in the upper-right corner (or click the Add (+) command button above the Search Results table).
3. General: Set the following for use with the custom token.

   Validation Template Name: email-wstrust-valid-temp

   Token Protocol: Webservice Trust

   Token Type: email

   Default Partner Profile: requester-profile

   Custom Validation Attributes: testsetting: hello

4. Token Mapping: Set the following for use with the custom token in this chapter.

   Check the box beside Map Token To User (to enable it).

   Check the box beside Enable Simple User Mapping and enter:

   User Token Attribute: STS_SUBJECT_ID
   Datastore Attribute: mail

5. Click Save and dismiss the confirmation window.
6. Proceed to "Creating the Issuance Template for a Custom Token".

38.9.2 Creating the Issuance Template for a Custom Token

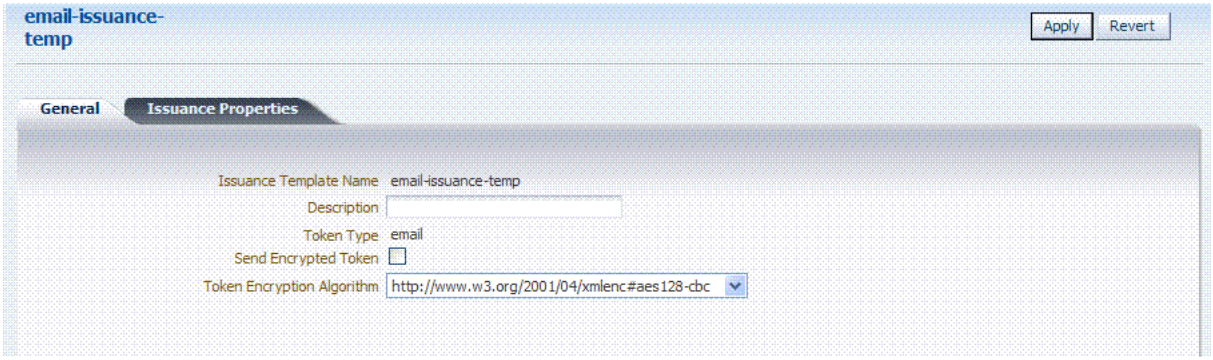
This is a server side configuration. Users with valid Oracle Access Management Administrator credentials can perform the following task to create a Token Issuance Template.

Each Token Issuance Template indicates how to construct a token, and which signing or encryption to use when constructing a token. Each Token Issuance Template also defines the attributes to be sent as part of the outbound token for mapping, and filtering data. However, Issuance Templates do not list mapping or filtering rules, which are defined in the Relying Party Partner Profile.

The template in this example can be used for the email custom token described earlier in this chapter. Implementation details are shown in the following figures, and described in the accompanying procedure. As you review these, notice how specifications for this template reference the module class code:

- Figure 38–21, "General Details: email-issuance-temp"
- Figure 38–22, "Issuance Properties: email-issuance-temp"

Figure 38–21 General Details: email-issuance-temp



When you have a custom token type deployed, the Issuance Properties are tailored to accommodate the custom token. For instance, the custom email token type was chosen for the issuance template show in Figure 38–22.

Figure 38–22 Issuance Properties: email-issuance-temp

This procedure produces a companion Issuance Template for the custom module classes in this chapter. For the example:

- Ignore the Token Encryption Algorithm, which is not used for the custom token type: email.
- Fill in a value for the Custom Token Attribute, which is populated from the custom token code.

See Also: *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*

To create the Issuance Template for the custom module classes

1. Find existing Token Issuance Templates.:

   Oracle Access Management Console Launch Pad
   Security Token Service
   Token Issuance Templates
   Search button (with or without filling in search criteria)

2. **New Token Issuance Template**:

   a. Click the New Issuance Template button in the upper-right corner (or click the Add (+) command button above the Search Results table).

   b. General: Set the following for use with the custom token in this chapter.

   Issuance Template Name: email-issuance-temp
   Token Type: email

   c. Click Save and dismiss the confirmation window (or click Cancel without saving).

   d. Issuance Properties: Set the following for use with the custom token in this chapter.

   Custom Token Attribute Value: world

   e. Click Apply and dismiss the confirmation window (or click Revert without saving it).

   f. Close the definition (or edit it as described in Step 4).

3. **Edit a Template**: Find the desired template, edit details, and click Apply.

Alternatively: Use Step 3 to find the desired template and click the name in the Search Results table to display the definition.

38.9.3 Adding the Custom Token to a Requester Profile

You can either edit an existing requester profile to add your custom token to the Token Type Configuration table, or create a new requester profile to use with the custom token. Either way, configure:

- Token Type: email (your custom token)
- Validation Template: email-wstrust-valid-temp

Prerequisites

Your Custom Token and Validation Template must be defined.

To create or edit a requester profile for the custom token

1. From the Oracle Access Management Console Launch Pad, click the Security Token Service link.
2. In the navigation tree, open the Partner Profiles node and double-click the Requestor Profiles node to display a list of existing profiles
3. **Existing Profile**:
   a. In the Search Results table of the Requester Profiles page, click the name of the desired profiles.
   b. Token and Attributes: Fill in the following details for the custom token in this chapter and then click the Save button at the top of the page.

      Token type: `email`
      Validation Template: `email-wstrust-valid-temp`

   c. Click Save, dismiss the confirmation window, and close the page (or click Cancel to dismiss the page without submitting it).
   d. Proceed to "Adding the Custom Token to a Requester Profile".
4. **New Profile**: Click the New Requester Profile button to display the New Partner Profile page where you enter details:
   a. **General**: Fill in the following details for the custom token in this chapter and then click the Next button at the top of the page.

      Profile ID: *`unique_requesterprofile_name`*
      Default Relying Party Profile: *`unique_relyingparty_name`*

   b. **Add Token Type Configuration**: Fill in the following details for the custom token in this chapter and then click the **Save** button at the top of the page.

      Token type: `email`
      Validation Template: `email-wstrust-valid-temp`

   c. Proceed to "Adding the Custom Token to a Requester Profile".

38.9.4 Adding the Custom Token to the Relying Party Profile

You can either edit an existing Relying Party profile, or create a new one to issue the custom token by default, and refer to the Issuance Template and related information. Either way, configure:

- Default token to issue: email (your custom token)
- Issuance Template: `email-issuance-temp`

Prerequisites

Your Custom Token and Issuance Template must be defined.

To edit the requester profile for the custom module classes

1. From the Oracle Access Management Console Launch Pad, click the Security Token Service link.
2. In the navigation tree, open the Partner Profiles node and double-click the Relying Party Profiles node to display a list of existing profiles.
3. **Existing Profile**:
   a. In the Search Results table of the Relying Party Profiles page, click the name of the desired profile.
   b. Click the Token and Attributes tab.
   c. **Token Type Configuration**: Click the Add (+) button above the Token Type Configuration table and enter the following details:

      Token type: `email`
      Issuance Template: `email-issuance-temp`

   d. **Attributes**: Click the Add (+) button above the Attributes table and define the following:

      Attribute name: mail
      Store Type: `Userstore`
      Include in Token: `(check to enable)`
      Encryption (leave blank)
      Value (leave blank)

   e. Click Apply, dismiss the confirmation window, and close the page (or click Cancel to dismiss the page without submitting it).
4. **New Profile**: Click the New Relying Party Profile button to display the New Partner Profile page where you enter details:
   a. **General**: Fill in the following details for the custom token in this chapter and then click the Next button at the top of the page.

      Profile ID: *`unique_relyingparty-name`*
      Default Token: `email`

   b. Click the Token and Attributes tab and perform Steps 2c and 2d, then click Apply.

38.9.5 Mapping the Token to a Requestor

If you don't have a Username Validation Template (username-wss-valid-template), use the Oracle Access Management Console to create one to map the token to the requester.

Validation Template Name: username-wss-valid-template

Token Type: Username

Proceed to "Creating an /wssuser EndPoint"

38.9.6 Creating an /wssuser EndPoint

Prerequisites

Mapping the Token to a Requestor

To create an endpoint

1. From the Oracle Access Management Console System Configuration tab, open the Security Token Service section.
2. Double-click the Endpoints node to display a list of existing Endpoints.
3. **New Endpoint**:
   a. Click the Add (+) button above the table (or choose New Endpoint from the Actions menu).
   b. Enter the new Endpoint URI: /wssuser
   c. Choose the Oracle WSM policy: sts/wss_username_service_policy
   d. Choose the Validation Template: username-wss-validation-template.
   e. Click Apply to submit the definition and dismiss the confirmation window (or click Revert to dismiss the page without submitting it).
   f. Close the page.

39

Managing Token Service Partners and Partner Profiles

This chapter provides the following topics describing management of Token Service Partners and Partner Profiles:

- Prerequisites
- Introduction Token Service Partners and Partner Profiles
- Managing Token Service Partners
- Managing Token Service Partner Profiles

39.1 Prerequisites

Chapter 34, "Introducing the Oracle Access Management Security Token Service"

Chapter 35, "Security Token Service Implementation Scenarios"

Any task you can perform using the Oracle Access Management Console can also be performed using the

> **See Also:** *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*

39.2 Introduction Token Service Partners and Partner Profiles

This section provides the following topics:

- About Token Service Partners
- About Partner Profiles
- About Partner Entries

39.2.1 About Token Service Partners

A Token Service partner represents a partner trusted by the Security Token Service. Table 39–1 describes the partner types.

Table 39–1 Security Token Service Partners

Partner Type	Description
Requester	Represents a Web Service Client interacting directly with Security Token Service in order to issue or validate tokens
Relying Party	References a Web Service Provider that will be the recipient of tokens issued by the Security Token Service server

Table 39–1 (Cont.) Security Token Service Partners

Partner Type	Description
Issuing Authority	Represents an Assertion issuer. When validating an Assertion, its issuer must be a known Issuing Authority Partner entry in Security Token Service

The Security Token Service is capable of interacting with client types described in Table 39–2.

Table 39–2 Security Token Service Clients

Client Type	Description
Web Service Client	Modules defined as requester partners in Security Token Service (typically SOAP clients).
End users	End users are not defined as requester partners, but possibly present in the User Identity Store.

39.2.2 About Partner Profiles

A Partner Profile contains configuration properties that are common to a set of partners, and each partner entry is associated to a Partner Profile. Similar to the partners, there are three types of partner profiles: Requester, and Issuing Authority Partner Profiles.

- Requester Profile
- Relying Party Profile
- Issuing Authority Partner Profile

39.2.2.1 About Partner Entries

A partner entry contains the information in Table 39–3:

Table 39–3 Security Token Service Partner Entry

Partner Entry	Description
Certificates	Signing and Encryption Certificates
Reference	Reference to a Partner Profile
Requester only	When the partner is a Requester, the partner entry also contains Username Token credentials, and Identification strings used to map incoming data to a requester.

39.2.2.2 About Partner Profile Data

A partner profile entry contains the information in Table 39–4, depending on the type of profile.

Table 39–4 Security Token Service Partner Profile Data

Client Type	Description
Requester	▪ Claims Mappings ▪ WS-Trust Validation Templates used to validate tokens present in the OnBehalfOf element
Relying Party	▪ Attributes to be sent to RP ▪ Issuance Templates to be used
Issuing Authority	▪ Attribute Name/Value Mapping settings ▪ Specific Mapping Actions Rules used to map an incoming token to a partner/user

39.3 Managing Token Service Partners

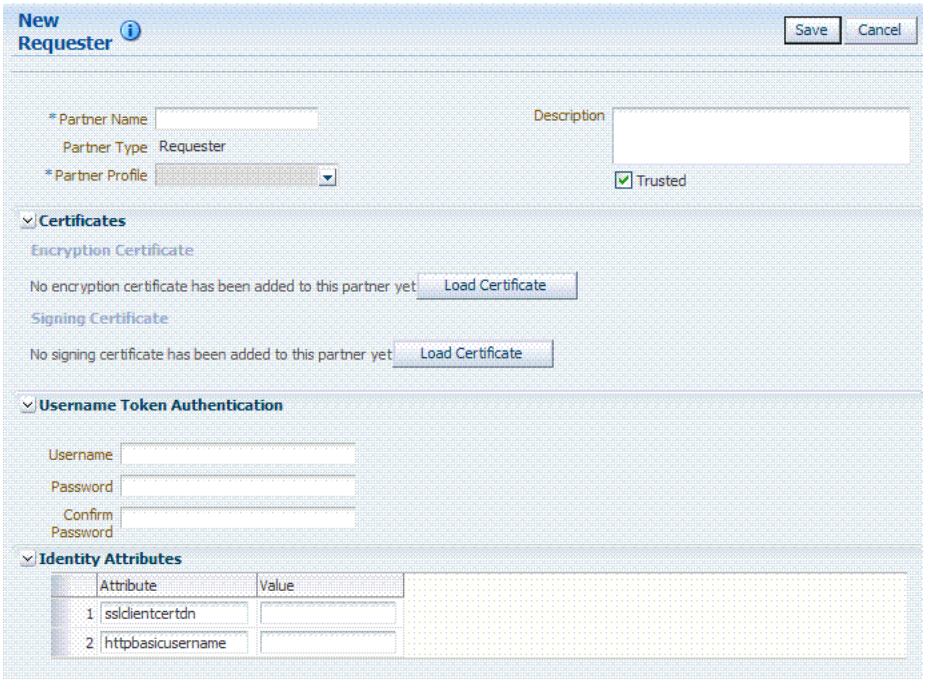
This section provides the following topics.

- About Managing Token Service Partners
- Managing a Token Service Partner
- Refining Partner Searches

39.3.1 About Managing Token Service Partners

When you choose to create a new partner, a fresh page appears for the specific Partner Type you selected. Figure 39–1 shows the New Requester partner page in the Oracle Access Management Console, which includes all Partner elements.

Figure 39–1 New Requester Partner Page



While most elements are common to all partners (name, description, and whether this partner is trusted), certain elements depend upon the specific partner type, as described in Table 39–5.

Table 39–5 Partner Elements for Partner Types

Partner Type	Description
Requester partners	Can specify an encryption certificate and a signing certificate, as well as Token Authentication and Identity Attributes.
Relying Party partners	Can specify only an encryption certificate and Resource URLs. See Figure 39–2
Issuing Authority partners	Can specify only a signing certificate.

Figure 39–2 New Relying Party Partners Page

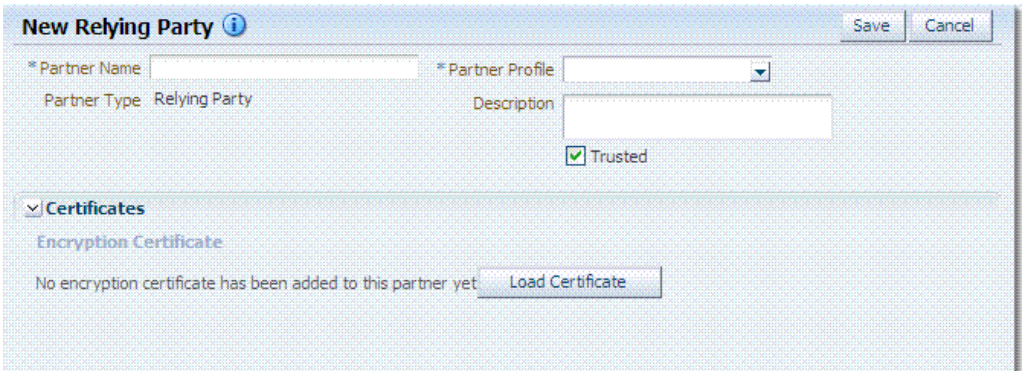


Table 39–6 describes elements for Security Token Service partners. Unless explicitly stated otherwise, all elements apply to every partner type.

Table 39–6 Elements for Security Token Service Partners

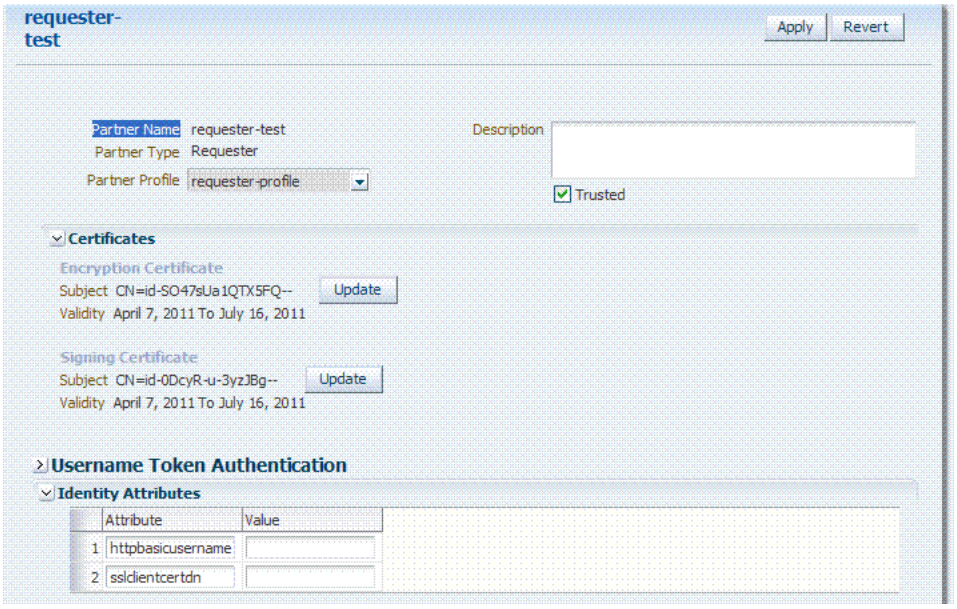
Element	Description
Partner Name	Enter a name for this partner.
Issuer ID Issuing Authority Only	Unique identifier used in SAML Assertion Issuer field referencing this Issuing Authority.
Partner Type	Uneditable description, depending upon the type of partner you are creating or editing: ▪ Requester ▪ Relying Party ▪ Issuing Authority
Partner Profile	Choose from the profiles listed to define your chosen partner.
Description	Optional.
Trusted	Check this box to indicate whether or not the partner is trusted. If not checked, the Security Token Service server will report an error when a request involves such an entry.
Load Certificate	Browse for and upload the requested certificates, which depend on partner type: ▪ Encryption and signing certificates ▪ Encryption certificate ▪ Signing certificate
Username Token Authentication *Requester only*	Values can be entered for the following for Username Token Authentication: ▪ Username ▪ Password ▪ Confirm Password New Requester Partner Identification Attributes can be defined in the STS Settings section and will appear in the requester partner Identity Attributes table. Note: the username and password data will be used to validate the credentials of a username token. It is also possible to only enter a username and no password, when the data will be used only to map an incoming token to this requester partner using the username.

Table 39–6 (Cont.) Elements for Security Token Service Partners

Element	Description
Identity Attributes *Requester only*	At runtime, Security Token Service will use the data defined in the section to map an incoming request to a requester partner entry, using: ▪ The token data or binding data such as the SSL Client Certificate's Subject DN if present, or HTTP Basic Authentication username. ▪ The identity attributes present in each requester partner entry. New mappings can be added in the Relying Party Partner section as follows: http://*relying.party.test.com/testing.service*. At runtime, the Security Token Service server will use those URLs to map the AppliesTo service location contained in a WS-Trust request to a Relying Party Partner.
Resource URL *Relying Party only*	Enter the resource URL in the resource pattern column of the table, and enter a description beside it. For instance: Pattern: http://*relying.party.test.com/testing/service* The resource URL listed in the table will be used when mapping the AppliesTo location element from the WS-Trust request to this Relying Party Partner. The AppliesTo location value will be mapped to this Relying Party Partner: ▪ A Resource URL matches exactly the AppliesTo location value. For example, the AppliesTo location is http://*relying.party.test.com/testing/service* and the Resource URL is also http://*relying.party.test.com/testing/service*). ▪ Or, a Resource URL is the parent of the AppliesTo location value. For example, the AppliesTo location is http://*relying.party.test.com/testing/service* and the Resource URL is http://*relying.party.test.com/testing*, or Resource URL is http://*relying.party.test.com/*

Figure 39–3 shows a Requester Partner page that is filled in.

Figure 39–3 Defined Requester Partner



39.3.2 Managing a Token Service Partner

Users with valid Administrator credentials can use the following procedure to create, find, edit, or delete a token service partner using Oracle Access Management Console.

Prerequisites

A partner profile must be defined for the type of partner you will create.

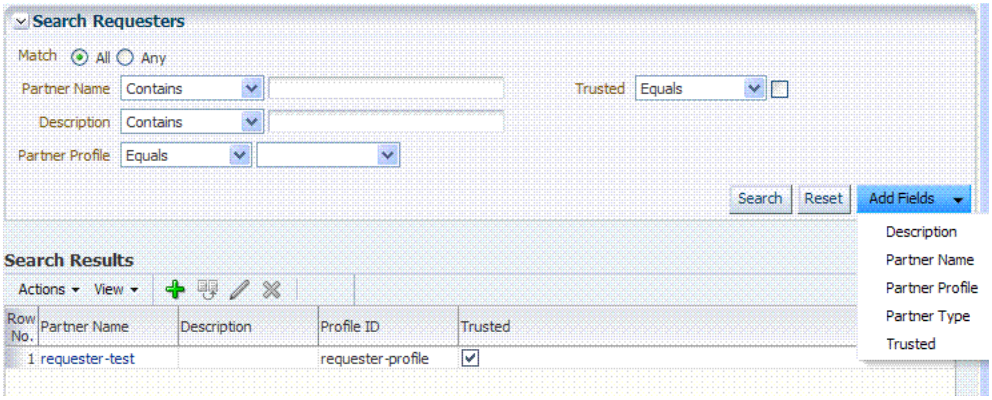
To manage a token service partner

1. From the Oracle Access Management Console, click Partners.
2. Under the Partners node, double-click the desired partner type and proceed with following steps as needed.
   - Requesters
   - Relying Parties
   - Issuing Authorities
3. **New Partner**:
   a. Click the New *PartnerType* button to display a fresh page for your definition.
   b. Enter general information for the chosen partner type (Table 39–6).
   c. **Trusted**: Click to select (or leave blank if this is not a trusted partner).
   d. **Certificates**: Load any necessary certificates.
   e. **Relying Party**: Enter Resource URLs, if needed.
   f. **Issuing Authority**: Enter the Issuer ID of this Authority.
   g. **Requester**: Enter Username Token credentials, if needed.
   h. Click Save to submit (or click Cancel to dismiss the page) and then dismiss the confirmation window.
4. **Refine a Partner Search**: "Refining Partner Searches"
   a. Perform Steps 1 and 2.
   b. Define your query and click the Search button.
   c. In the Search Results table, click the name of partner to view, edit, or remove.
5. **Edit a Partner**:
   a. In the Search Results table, click the name of partner to edit and click the Edit button (or choose Edit from the Actions menu).
   b. Make desired changes to partner information (Table 39–6).
   c. Click Apply to submit the changes (or Revert to cancel changes) and then dismiss the confirmation window.
6. **Remove a Partner**: Use the Search controls to refine and submit your query, as needed.
   a. In the Search Results table, highlight the row containing the partner to remove.
   b. Click the Delete (X) button (or choose Delete Selected from the Actions menu), then dismiss the confirmation window.

39.3.3 Refining Partner Searches

From the console Launch Pad, when you click Partners, all Partner types can be viewed from tabs. When you choose a specific Partner, relevant Search controls, and the Search Results table, become available. Figure 39–4 illustrates a Requester Partner, where only the results differ from that of other Partner Types.

Figure 39–4 Partner Search Controls



From the Search page you can simply select a name in the Search Results table, or use the controls to refine your search to locate a specific Partner or Partners with specific characteristics.

39.4 Managing Token Service Partner Profiles

This section provides information about Token Service Partner Profiles.

- About Managing Partner Profiles
- Managing a Token Service Partner Profile
- Refining a Profile Search

39.4.1 About Managing Partner Profiles

Figure 39–5 shows a completed Requester Profile page, with both a General tab and Token and Attributes tab.

Figure 39–5 Requester Profile: General

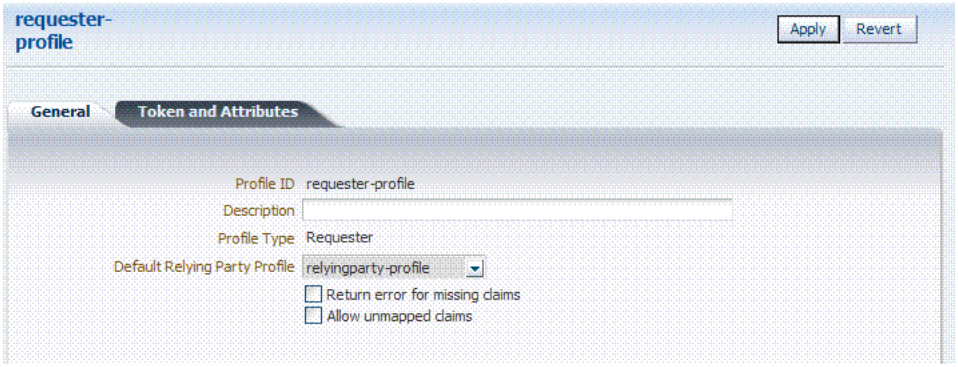


Table 39–7 describes the General elements for all profile types.

Table 39–7 Profile: General

Element	Description
Profile ID	A unique identifier for this profile
Description	Optional.
Profile Type	Type of profile, which cannot be edited: Requester, Relying Party or Issuing Authority.
Default Relying Party Profile *Requester Partner Profile Only*	References the Relying Partner Profile to use, if the WS-Trust request does not reference the Relying Party (for example, the AppliesTo element is missing), or if the AppliesTo element could not be mapped to a known Relying Party Partner Profile. Choose a Relying Party profile to use as the default and enable or disable the following characteristics as needed: ■ Return error for missing claims. Indicates whether or not Security Token Service will return an error if the issued token does not contain claims that were requested by the client. Since the Relying Party Partner Profile defines the list of attributes/claims that can be included in the issued token, it is possible that some claims requested by the client cannot be returned. ■ Allow unmapped claims. Claims listed in a WS-Trust request are specified in a dialect that will be translated to map to local attributes using the Token and Attributes section. This flag indicates whether or not claims that cannot be translated should be referenced as is. This allows to control which claims can be requested by the client.
Default Token to Issue *Relying Party Only*	This table indicates which Issuance Template to use to issue a token for Relying Parties linked to this profile. Choose a token type as the default for this profile: ■ SAML 1.1 ■ SAML 2.0 ■ Username ■ Custom Check the box beside Download Policy to associate a policy with the token. When checked, Security Token Service will download at runtime the WS-Security policy of the Relying Party referenced by the AppliesTo element in the RST. If present, Security Token Service will use that URL to download the policy, and then determine the type of token to return based on the information located in the policy.

Requester Profile: Token and Attributes

Figure 39–6 illustrates the Token and Attributes tab and accompanying tables for the Requester profile. The Token Type Configuration section indicates which WS-Trust Validation Template to use to validate tokens contained in the OnBelhalfOf element of the WS-Trust request, based on the token type. This section defines mappings between WS-Trust claims requested by the client and local attribute names

Figure 39–6 Requester Profile: Token and Attributes

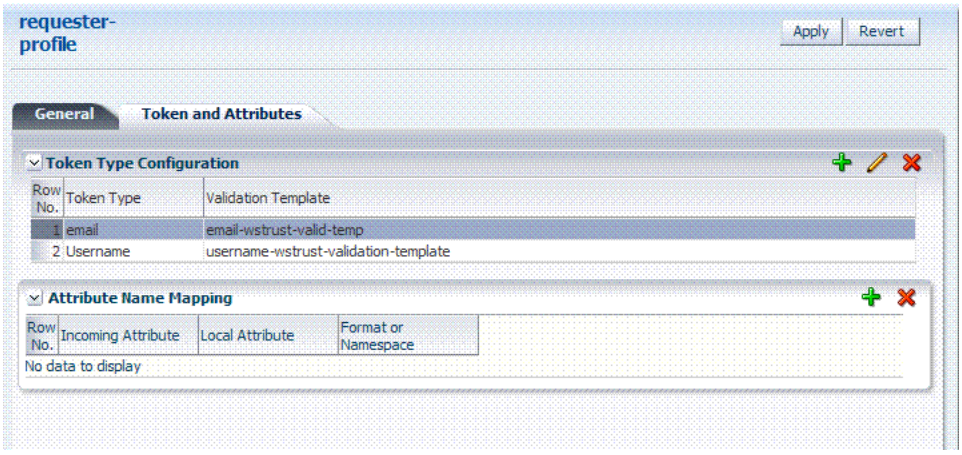
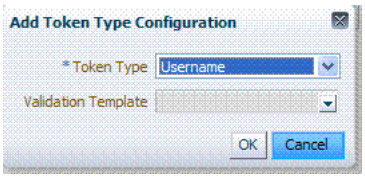


Table 39–8 describes Requester Profile Token and Attributes elements and controls.

Table 39–8 Requester Profile: Token and Attributes

Element	Description
Token Type Configuration	Click the + above the table to display the following dialog box and then make one selection from each list:  Token Type list provides all supported (and custom) token types deployed. Validation Template list contains all currently defined WS-Trust validation templates.
Attribute Name Mapping	This table defines how Security Token Service maps a claim, represented by its name and optional Format/Namespace, to a local attribute. Security Token Service supports the Infocard Claims dialect. To translate Infocard claims to local attributes, a mapping will need to be defined where the Incoming Attribute will contain the claim name and the Local Attribute will contain the local name (The Format/Namespace column will be empty). For example, one mapping could be: ▪ Incoming Attribute: surname ▪ Local Attribute: sn Another mapping could be: ▪ Incoming Attribute: givenname ▪ Local Attribute: givenname Another mapping could be: ▪ Incoming Attribute: emailaddress ▪ Local Attribute: mail

Relying Party Profile: Token and Attributes

Figure 39–7 illustrates the Token and Attributes defined for a Relying Party Profile. This section allows the Administrator to define which Issuance Template should be used to issue a token for a Relying Party associated with this profile.

Also, it lists the attributes that might be included in an issued token, by their names, the source of those attributes, and whether or not the attributes should be included in the issued token only if requested by the client or always.

On this page, Relying Party Profiles require an Issuance Template in addition to the token type. Also, the attribute types differ from other profiles.

Figure 39–7 Relying Party Profile Token and Attributes

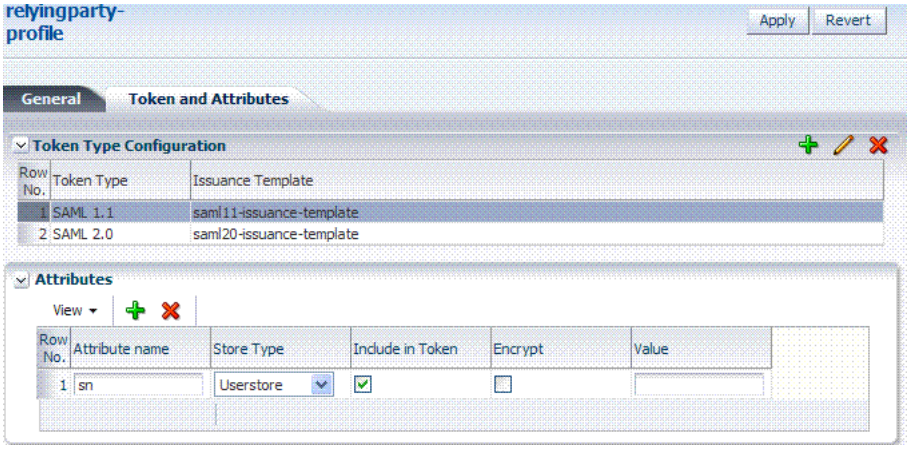


Table 39–9 describes the elements needed for the Relying Party Profile.

Table 39–9 Relying Party Profile Requirements

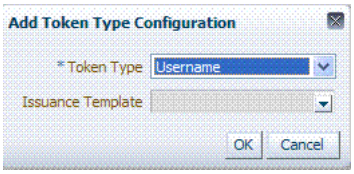
Element	Descrip[tion
Token Type Configuration	Click the + above the table to display the following dialog box and then make one selection from each list:  Token Type list provides all supported (and custom) token types deployed. Issuance Template list contains all currently defined Issuance Templates.

Table 39–9 (Cont.) Relying Party Profile Requirements

Element	Descrip[tion
Attributes	The attributes that might be included in an issued token: ■ Attribute Name: Indicates the name of the attribute. ■ Store Type: Indicates the source of the attribute: Userstore: the default User Identity Store where the LDAP user record will be used to retrieve the attribute value. Incoming Token: the attribute will reference an element of the incoming token. Static: the value will be specified in the Value field. ■ Include in Token: Indicates whether or not the attribute should always be included in the issued token. If unchecked, the attribute will only be included if the client requested this attribute. ■ Encrypt: Indicates whether or not the attribute should be encrypted. Note: only supported for SAML 2.0. Also, the Encryption Certificate must be set in the Relying Party Partner entry, or it must be present in the WS-Trust request. ■ Value: Contains the value to be used if the Store Type is static value. See Also: "Relying Party Profile Attributes".

Relying Party Profile Attributes

When defining an attribute, you can indicate:

- The attribute source: User Store (LDAP), Incoming Token Data or static value.
- Whether or not to include the attribute in the token only if requested by the client or in all tokens.
- Whether or not to encrypt the attribute (only SAML 2.0; requires the Relying Party Encryption Certificate).
- The value of the attribute if this is a static attribute.

Example: To include the mail attribute retrieved from LDAP in all outgoing tokens:

- Attribute Name: mail
- Store Type: User Store
- Include in Token: checked
- Encrypt: unchecked
- Value: empty

Example: To include the username element of an incoming Username Token in all outgoing tokens

- Attribute Name: STS_SUBJECT_ID
- Store Type: Incoming Token
- Include in Token: checked
- Encrypt: unchecked
- Value: empty

Example: To include a static attribute in all outgoing tokens:

- Attribute Name: rp-version
- Store Type: Static
- Include in Token: checked
- Encrypt: unchecked
- Value: 2.0

The following attributes are available from the incoming token data. The SAML attributes referenced by their names are also available as incoming token data:

STS_SUBJECT_ID
Contains the subject identifier (username for Username token, NameID Value for SAML assertions, Subject DN for X.509 certificates)

STS_NAMEID_FORMAT
Contains the SAML NameID Format.

STS_NAMEID_QUALIFIER
Contains the SAML NameID Format.

STS_SPNAME_QUALIFIER
Contains the SAML NameID Qualifier.

STS_SP_PROVIDED_ID
Contains the SAML NameID SP Qualifier

STS_SESSION_INDEX
Contains the session index.

STS_AUTHENTICATION_INSTANT
Contains the authentication instant (current after Username token credentials validation, from the authentication statement for SAML Assertions, current for X.509 validation, current for Kerberos Validation, authentication instant for OAM Session Propagation tokens).

STS_AUTHENTICATION_TIMEOUT
Contains the session expiration time if set (applies to SAML assertions and OAM Session Propagation tokens if present).

STS_X509_CN
Contains the CN component of the X.509 Certificate's Subject DN

STS_X509_OU
Contains the OU component of the X.509 Certificate's Subject DN.

STS_X509_O
Contains the O component of the X.509 Certificate's Subject DN.

STS_X509_L
Contains the L component of the X.509 Certificate's Subject DN.

STS_X509_ST
Contains the ST component of the X.509 Certificate's Subject DN.

STS_X509_C
Contains the C component of the X.509 Certificate's Subject DN.

STS_X509_DC
Contains the DC component of the X.509 Certificate's Subject DN.

STS_X509_*
Contains the component identified by * of the X.509 Certificate's Subject DN.

STS_X509_VERSION
Contains the version attribute of the X.509 Certificate.

STS_X509_ISSUER_X500_PRINCIPAL_NAME
Contains the issuer DN of the X.509 Certificate.

STS_X509_NOT_AFTER
Contains the not after attribute of the X.509 Certificate.

STS_X509_NOT_BEFORE
Contains the not before attribute of the X.509 Certificate.

STS_X509_SUBJECT_X500_PRINCIPAL_NAME
Contains the subject DN of the X.509 Certificate.

STS_X509_SUBJECT_ALTERNATIVE_NAMES
Contains the subject alternative name extension value of the X.509 Certificate.

STS_X509_SERIAL_NUMBER
Contains the serial number of the X.509 Certificate.

STS_OAM_LAST_ACCESS_TIME
Contains the last access time of the OAM Session Propagation Token.

STS_OAM_LAST_UPDATE_TIME
Contains the last update time of the OAM Session Propagation Token.

STS_OAM_CREATION_TIME
Contains the creation time of the OAM Session Propagation Token.

STS_KERBEROS_PRINCIPAL_SHORT
Contains the Principal Short value of the Kerberos Token.

STS_KERBEROS_PRINCIPAL_FULL
Contains the Principal Full value of the Kerberos Token.

STS_KERBEROS_PRINCIPAL_NODOMAIN
Contains the Principal No Domain value of the Kerberos Token.

STS_SAML_ASSERTION_ID
Contains the AssertionID of the SAML Assertion.

STS_SAML_SUBJECT_DNS
Contains the Subject DNS attribute of the SAML Assertion.

STS_SAML_SUBJECT_IP_ADDRESS
Contains the Subject IP Address attribute of the SAML Assertion.

STS_SAML_ASSERTION_ISSUER
Contains the Issuer of the SAML Assertion.

STS_SAML_AUTHN_INSTANT
Contains the authentication instance of the SAML Assertion.

STS_SAML_AUTHN_METHOD
Contains the authentication method of the SAML Assertion.

Issuing Authority Profile: Token and Attributes

The Issuing Authority Partner Profile defines settings that can be common to different Issuing Authority Partners.

The Token and Attributes section, as shown in Figure 39–8, allows the Administrator to define mapping rules that will be used to translate the name and value of attributes to local names and values.

Figure 39–8 Token and Attributes: Issuing Authority

Table 39–10 describes the Token and Attributes elements for Issuing Authority. It is possible to define attribute mapping rules that will be applied to the attributes included in the Assertion, when extracting them from the token. There are two different sets of rules:

- Attribute name mapping where the name of a SAML Attribute can be translated to a local name (for example, firstname could be translated to givenname).
- Attribute value mapping where the value of a SAML Attribute can be translated to a local value (for example, President to CEO).

Table 39–10 Token and Attributes Elements: Issuing Authority

Element	Description
Attribute Name Mapping	Define an optional mapping between the name of a SAML Attribute and the local name of an attribute. The mapping is optional. If an attribute does not have a mapping defined, then its SAML attribute name will be used. ■ Incoming Attribute: Contains the external name of the attribute as it will appear in the Assertion. ■ Local Attribute: Contains the local name of the attribute. ■ Format or Namespace: Contains an optional Format or Namespace. If missing, the namespace value for mapping purposes will be assumed to be `urn:oracle:security:fed:attrnamespace` for SAML 1.1 Assertions or the format value for mapping purposes will be assumed to be `urn:oasis:names:tc:SAML:2.0:attrname-format:basic` for SAML 2.0 Assertions
Value Mapping	Define an optional value mapping for a SAML attribute. This will indicate how to translate an attribute value to a local value, if needed. Note: This attribute value mapping applies to an Attribute Name mapping. In order to define an attribute mapping for an attribute, it is required to first define an attribute name mapping for that attribute. ■ External Value: Contains the value of the SAML Attribute. ■ Local Value: Contains the local value that will be set, if the SAML attribute value matches the External Attribute/Local Null fields. ■ External Null: Represents a null SAML attribute value. ■ Local Null: Indicates if the local value should be null, if the SAML attribute value matches the External Attribute/Local Null fields. ■ Ignore Case: Indicates whether or not Security Token Service should ignore case when comparing the attribute value to the Local Attribute field.

Issuing Authority Profile: Token Mapping

Using the Token Mapping tab, shown in Figure 39–9, Administrators can override the Mapping Rules defined in a SAML Validation Template with the ones defined in an Issuing Authority Partner Profile. This way, Security Token Service can map SAML Assertions based on rules specific to a set of Assertion Issuers.Table 39–10 describes the Token Mapping elements for the Issuing Authority.

Figure 39–9 Issuing Authority Profile: Token Mapping Tab

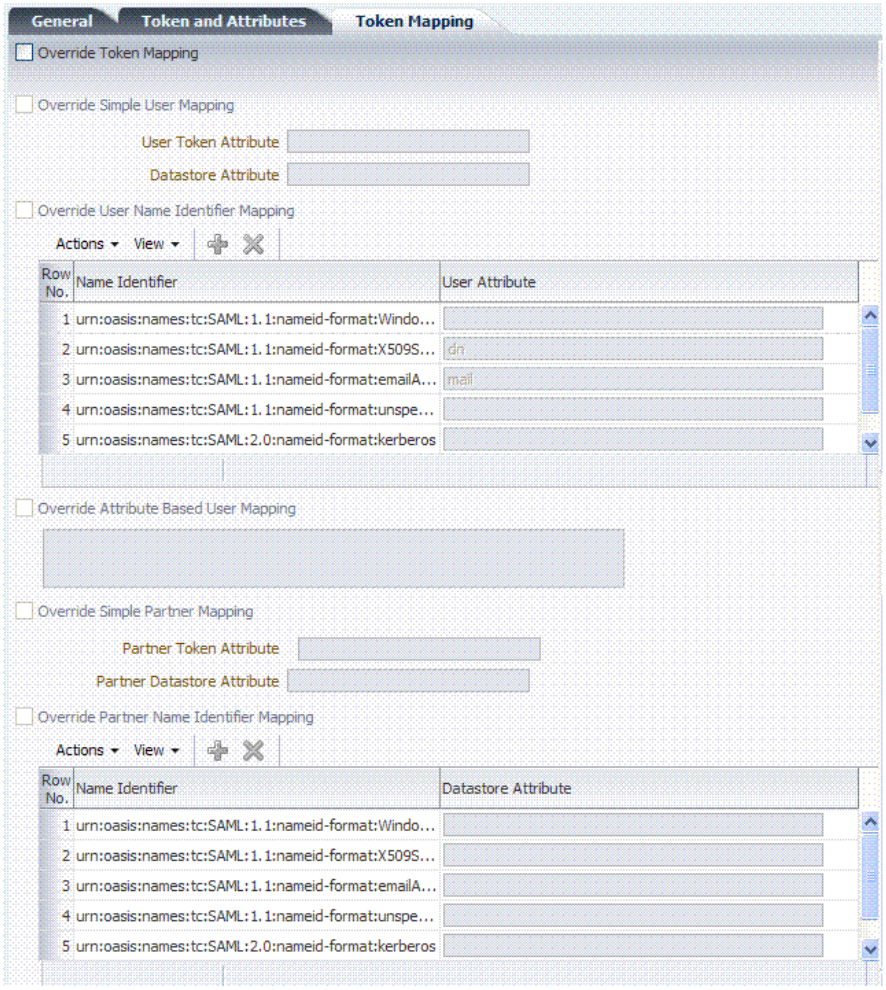


Table 39–11 Issuing Authority Token Mapping Elements

Element	Description
Override Token Mapping	Indicates whether or not the Mapping Rules defined in this section should override the ones listed in the SAML Validation Template used to process the assertion. This allows Security Token Service to use Mapping Rules that are specific to the Assertion Issuer. If true, all the Mapping Rules will be overridden by the settings listed in this section.
Override Simple User Mapping	Simple user mapping consists of mapping the incoming token to a user record by using a single token attribute and matching it against a single user record attribute. ▪ User Token attribute references an attribute from the incoming token that will be matched against the Datastore attribute (defined below) of a user record. The values can be STS_ SUBJECT_ID for the NameID Value, or the name of an Attribute contained in the Assertion's AttributeStatement ▪ Datastore attribute references the user record attribute that will be matched against the User token attribute referenced above

Table 39–11 (Cont.) Issuing Authority Token Mapping Elements

Element	Description
Override User Name Identifier Mapping	When enabled, define a NameID user mapping operation, which consists of mapping the incoming SAML Assertion to a user record by mapping the NameID Value to a single user record attribute, based on the NameID format. When enabled, Security Token Service will evaluate the NameID format, and based on the Name Identifier mapping table which user record attribute should be matched against the Name ID value contained in the Assertion. The Name Identifier mapping table holds the user record attributes to be used for the mapping operation. It contains standard NameID formats, but it can be customized to define custom Name ID formats. ■ To add custom NameID format, click the add button on the Name Identifier mapping table, and enter the custom URI. ■ To set an attribute for a specific NameID format to be used for mapping operation, set the user record attribute on the line for that format.
Override Attribute Based User Mapping	An Attribute Based User Mapping operation consists of mapping the incoming token to a user record by using an LDAP query and token attributes. The format of the LDAP query defines the mapping rule and specifies the token attributes to be used by their names, surrounded by % character. For example, an LDAP query that will map a token based on two token attributes (firstname and lastname) would be: `(&(sn=%lastname)(givenname=%firstname%))` STS_SUBJECT_ID contains the NameID Value. STS_NAMEID_FORMAT contains the NameID Format STS_NAMEID_QUALIFIER contains the NameID Qualifier STS_SAML_ASSERTION_ISSUER contains the Issuer of the Assertion Attributes present in the Assertion's AttributeStatement
Override Simple Partner Mapping	A simple partner mapping operation consists of mapping the incoming token to a partner requester by using a single token attribute and matching it against a partner identification attributes. ■ Partner Token attribute references an attribute from the incoming token that will be matched against the Partner Datastore attribute (defined below) of a Requester Partner. The values can be STS_SUBJECT_ID for the NameID Value, or the name of an Attribute contained in the Assertion's AttributeStatement. ■ Partner Datastore attribute references the partner identification attribute that will be matched against the Partner token attribute referenced above.
Override Partner Name Identifier Mapping	When enabled, define the following: A NameID user mapping operation consists of mapping the incoming SAML Assertion to a user record by mapping the NameID Value to a single requester partner identification attribute, based on the NameID format. When enabled, Security Token Service will evaluate the NameID format, and based on the Name Identifier mapping table which partner identification attribute should be matched against the Name ID value contained in the Assertion. The Name Identifier mapping table holds the requester partner identification attributes to be used for the mapping operation. It contains standard NameID formats, but it can be customized to define custom Name ID formats. ■ To add custom NameID format, click the add button on the Name Identifier mapping table, and enter the custom URI. ■ To set an attribute for a specific NameID format to be used for mapping operation, set the requester partner identification attribute on the line for that format.

39.4.2 Managing a Token Service Partner Profile

Users with valid Administrator credentials can use this procedure to create, locate, view, edit, or remove a token service partner profile.

Prerequisites

The prerequisites for Requester Partner Profiles are:

- A Relying Party Partner Profile must exist, in order to be able to set the default Relying Partner Profile.
- WS-Trust Validation Templates must exist in order to set the templates that will be used to validate tokens located in the OnBehalfOf element.

The prerequisites for Relying Partner Profiles are:

- Issuance Template must exist in order to configure which templates to use for token issuance operations.

There are no prerequisites for Issuing Authority Partner Profiles.

To create, find, edit, or remove a partner profile

1. From the Oracle Access Management Console, click Partner Profiles.
2. Under the Partner Profiles node, double-click the desired profile type and proceed with following steps as needed.
   - Requester Profiles
   - Relying Party Profiles
   - Issuing Authority Profiles
3. **New Profile**:
   a. Click the New *ProfileType* button to display a fresh page for your definition.
   b. Enter general information for the chosen profile type (Table 39–7) and click the Next Button.
   c. **Token and Attributes**: Use the appropriate table to provide details for the chosen profile type:

      Requester Profile Table 39–8

      Relying Party Profile Table 39–9

      Issuing Authority Profile Table 39–10

   d. Click Save to submit (or click Cancel to dismiss the page) and then dismiss the confirmation window.
4. **Refine a Profile Search**: "Refining a Profile Search"
   a. Perform Steps 1 and 2.
   b. Define your query and click the Search button.
   c. In the Search Results table, click the name of partner to view, edit, or remove.
5. **Edit a Profile**:
   a. In the Search Results table, click the name of profile to edit and click the Edit button (or choose Edit from the Actions menu).
   b. Make desired changes to partner information.

Requester Profile Table 39–8

Relying Party Profile Table 39–9

Issuing Authority Profile Table 39–10

c. Click Apply to submit the changes (or Revert to cancel changes) and then dismiss the confirmation window.

6. **Remove a Profile**: To remove a profile, it is required not to be referenced anywhere else.

   To remove a Requester Partner Profile, it is required that:

   - No Requester Partner references the profile.
   - No WS-Security Validation Template references the profile

   To remove a Relying Party Partner Profile, it is required that:

   - No Relying Party Partner references the profile.
   - No Requester Partner Profile references the profile.

   To remove an Issuing Authority Partner Profile, it is required that:

   - No Issuing Authority Partner references the profile

   If these prerequisites are met, proceed as follows:

   a. In the Search Results table, highlight the row containing the profile to remove.

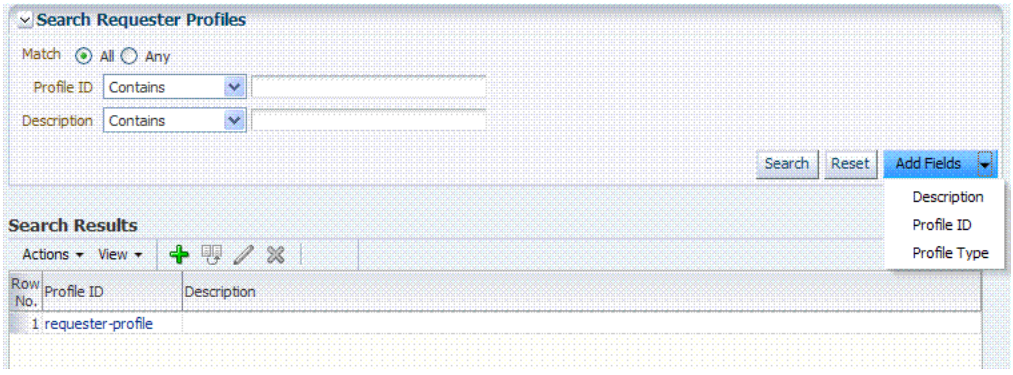
   b. Click the Delete (X) button (or choose Delete Selected from the Actions menu), then dismiss the confirmation window.

39.4.3 Refining a Profile Search

As with Partner definitions, when you open the Partner Profiles node, all Partner Profiles nodes become available. When you choose a specific type of Partner Profile node, relevant Search controls, and the Search Results table, become available.

Figure 39–4 illustrates a typical Search Profiles page. This one is for a Requester Profile. However, all controls are the same; only the results differ for different profile types.

Figure 39–10 Search Profiles Page: Requester



From the Search page you can simply select a name in the Search Results table to view or edit the Profile, or use the controls to refine your search to locate a specific Profile or a Profile with specific characteristics.

40

Troubleshooting Security Token Service

This chapter provides troubleshooting tips for Security Token Service:

40.1 Authorization Issues

Problem: Authorization Failure during Token Issuance operation

During a WS-Trust request issuance operation, the Security Token Service returns an error.

Error Message

The following are sample error messages that can be seen in the logs:

```
<Error> <oracle.security.fed.controller.ApplicationController> <STS-12064>
<Exception: {0}
oracle.security.fed.event.EventException:
oracle.security.fed.event.EventException: Authorization Failure for Relying
Party=%RELYING_PARTY_ID%, Requester=%REQUESTER_ID% and User=%USER_ID%
```

When:

- `%RELYING_PARTY_ID%` indicates the Relying Party Partner ID.
  - If the WS-Trust request did not contain an AppliesTo element, then the `%RELYING_PARTY_ID%` is set to MissingRP
  - if the WS-Trust request contained an AppliesTo element but it could not be mapped to a Relying Party Partner, then the `%RELYING_PARTY_ID%` is set to UnknownRP
  - if the WS-Trust request contained an AppliesTo element and it was mapped to a Relying Party Partner, then the `%RELYING_PARTY_ID%` is set to Relying Party Partner ID.
- `%REQUESTER_ID%` is set to the Requester Partner ID, if the incoming request was mapped to a Requester Partner. If `%REQUESTER_ID%` is not null, it will be used when evaluating the Token Issuance Policy, against any present Identity Condition.
- `%USER_ID%` is set to the User ID, if the incoming request was mapped to a user record. If `%USER_ID%` is not null and if `%REQUESTER_ID%` is null, it will be used when evaluating the Token Issuance Policy, against any present Identity Condition.

Issue

The Token Issuance Policy evaluation failed due to one of the following reasons:

- No TokenServiceRP resource referencing the `%RELYING_PARTY_ID%` is defined and assigned to a Token Issuance Policy. In this case, create TokenServiceRP resource referencing the `%RELYING_PARTY_ID%` and assign it to a Token Issuance Policy.
- A TokenServiceRP resource referencing the `%RELYING_PARTY_ID%` exists and is assigned to a Token Issuance Policy, but the policy contains conditions that are not met. In this case, review the policy rules: if the policies are correct, then the client is not allowed to request a token; otherwise, update the policies/conditions to include the client's identity.

40.2 Endpoint Issues

Problem: Endpoint not found

When accessing an Security Token Service endpoint that has been added via the Oracle Access Management Console, the server returns an error indicating that the page does not exist when retrieving the WSDL policy or that the endpoint does not exist.

Error Message

The following are possible error messages:

- When retrieving the WSDL policy, a 404 HTTP error code is returned.
- When sending a WS-Trust request, an error is reported:

```
<Error> <oracle.webservices.service> <OWS-04115> <An error occurred for port:
PortableProvider: oracle.j2ee.ws.server.EndpointNotFoundException: /PATH.>
```

Solution

Security Token Service is deployed but not enabled. To enable Security Token Service, perform the following operations:

1. Go to the Oracle Access Management Console.
2. Navigate to **System Configuration**, select **Common Configuration**, then select **Available Services**.
3. Enable Security Token Service.

Security Token Service detects the change and publishes the endpoints. No restart is required.

40.3 Mapping Operation Issues

Problem: Failure to map the AppliesTo element to a Relying Party Partner

When Security Token Service processes a WS-Trust request with an AppliesTo element referencing the Web Service Provider, the server will attempt to map the location contained in the AppliesTo element to an Security Token Service Relying Party Partner using the Resource URL defined in the Partner entry. If such a mapping fails, the server will log an Info message in the logs indicating that the operation failed and indicating what was the AppliesTo address used.

Error Message

The following is a sample of an error message:

```
[2011-04-22T15:08:12.632-07:00] [oam_server1] [NOTIFICATION] [STS-15542]
[oracle.security.fed.eventhandler.sts.creation.v13.CreateV13TokenEventHandler]
[tid: [ACTIVE].ExecuteThread: '0' for
queue: 'weblogic.kernel.Default (self-tuning)'] [userId: <anonymous>] [ecid:
f00aacae2d3f3ded:125005ed:12f7f412274:-8000-0000000000000016,0] [WEBSERVICE_
PORT.name: wssuser-port] [APP:
oam_server] [J2EE_MODULE.name: sts] [WEBSERVICE.name: wssuser-serviceSoap12]
[J2EE_APP.name: oam_server] The mapping
of the AppliesTo element from the WS-Trust Request to a Relying Party Partner
failed: could not map
http://relying.party.test.com/testing/service
```

Solution

If the AppliesTo location should have been mapped to a Relying Party Partner, then the Partner settings should be verified to ensure that the Resource URLs are correctly defined to:

- be the exact match of the AppliesTo address
- be a parent of the AppliesTo address.

  For example, if the AppliesTo address is http://*relying.party.test.com/testing/service*, a parent could be http://*relying.party.test.com/testing/* or http://*relying.party.test.com/*. In both cases, the AppliesTo location would be mapped to a Relying Party Partner with any of those Resource URLs defined.

> **Note:** this message is recorded at Notification level, thus in order for Security Token Service to record it, the appropriate logging level must be set to include the Notification:1 level.

In certain cases, failure to correctly map the AppliesTo address to a Relying Party Partner will result in errors due to:

- Authorization evaluation failures
- Security Token Service not being able to retrieve certificate belonging to the Relying Party Partner.

Part IX

Managing Oracle Access Management Mobile and Social

This part documents Oracle Access Management Mobile and Social.

Mobile and Social serves as an intermediary between a user or client seeking to access protected resources, and the back-end Oracle Access Management and Oracle Identity Management services that protect the resources. Mobile and Social provides simplified client libraries that allow developers to quickly add feature-rich authentication, authorization, and Identity capabilities to registered applications. On the back-end, the Mobile and Social service's pluggable architecture lets system Administrators customize the access management services without having to update the installed software.

Part IX contains the following chapters:

41

Understanding Mobile and Social

This chapter describes the purpose and capabilities of Oracle Access Management Mobile and Social. It includes the following topics.

41.1 Introducing Mobile and Social

The Oracle Access Management Mobile and Social service acts as an intermediary between a user or client seeking to access protected resources, and the back-end Access Management and Identity Management services that protect the resources. Mobile and Social provides simplified client libraries that allow developers to quickly add feature-rich authentication, authorization, and identity capabilities to registered applications. On the back-end, the Mobile and Social server's pluggable architecture lets system administrators customize identity and access management services without updating the user's client software or mobile applications. Mobile and Social provides two complimentary feature sets:

- *Mobile Services* connects applications and devices to the enterprise Access Management and Identity Management services available in the Oracle Identity Access Management product suite. This makes it easy to utilize sophisticated authentication and authorization services functionality (such as mobile device and application registration, and device fingerprinting) to restrict access to authorized devices only. Client applications can also implement knowledge-based authentication, a powerful feature that goes beyond basic password-based authentication.

  Note: Device fingerprinting and knowledge-based authentication both require Oracle Adaptive Access Manager.

  Mobile Services can be configured to require a valid device and client credential and a User Token with each application token request. This ensures that only an authorized user can access a protected resource, and then only if the user is

running an authorized application on an authorized device. Mobile Services also provides easy access to User Profile Services if Mobile and Social is integrated with an LDAP compliant directory server.

- *Social Identity* allows Mobile and Social to serve as the relying party when interacting with popular cloud-based identity authentication and authorization services, such as Google, Yahoo, Facebook, Foursquare, Windows Live, Twitter, and/or LinkedIn. After deploying Mobile and Social, a user is provided with multiple log-in options without the need to implement each provider individually. This allows users to access protected resources using their credentials from a trusted Identity Provider.

> **Note:** Prior to version 11.1.2.2, Social Identity was named Internet Identity Services.

In addition to tight integration with Access Manager, Mobile and Social is "pre-wired" to work with other back-end Identity and Access Management Service offerings, including Oracle Adaptive Access Manager and a variety of LDAP compliant directory servers. On the front-end, Mobile and Social provides easy to use SDKs for integration of client applications on the Java, Android, and iOS platforms. The client applications then use simple REST calls to communicate with the Mobile and Social server.

> **Note:** REST (REpresentational State Transfer) is the software architectural style with which the World Wide Web has been developed. It is lightweight and especially well-suited to building web-based applications and services.

You can configure Mobile Services and Social Identity to work together. For example, use Social Identity to let users authenticate with Google, Facebook, Twitter, and so on, and use Mobile Services to (a) provide local authentication functionality, or (b) generate a User Token by accepting a User Identity assertion from a social Identity Provider. Mobile Services can also enhance device registration security when used in conjunction with Social Identity.

> **Note:** Mobile and Social provides security layer functionality to registered applications that run on either Android or iOS devices, or in a Java SE JVM, or that communicate with the service using REST calls. If you require additional mobile functionality, ADF Mobile, a complimentary Oracle product offering, provides an application development framework for creating full-featured applications for iOS-powered devices. For more information, see the *Oracle Fusion Middleware Mobile Developer's Guide for Oracle Application Development Framework*.

The following sections contain additional information and documentation links regarding the installation and deployment of Mobile and Social.

- Installing Mobile and Social
- Deploying Mobile and Social
- Enabling Mobile and Social

41.1.1 Installing Mobile and Social

You install Mobile and Social together with Access Manager. You can configure Mobile and Social to run by itself, or in combination with either Access Manager or Oracle Adaptive Access Manager (OAAM), or you can deploy all three together. Depending on the software deployed alongside Mobile and Social, the available features may vary. Table 41–1 provides the details.

Table 41–1 Features in Mobile and Social Based on the Companion Services Installed

Feature	Mobile and Social Only	Mobile and Social + Access Manager	Mobile and Social + OAAM	Mobile and Social + Access Manager + OAAM
Access Manager token support using native Access Manager authentication dialogs		✔		✔
JWT token support for authentication and authorization	✔	✔	✔	✔
Ability to uniquely identify connecting mobile devices (Device fingerprinting)			✔	✔
Basic (limited) device security checks during device registration, access requests	✔	✔		
Advanced device security checks during device registration and access requests, including risk-based access controls (for example, allow or deny access based on geolocation and other device attributes)			✔	✔
Multi-step authentication support (knowledge-based authentication and one time password support)			✔	✔
Interact with a Directory server and support User Profile services	✔	✔	✔	✔
Relying party support for Internet-based Identity Providers (Facebook, Google, Twitter, LinkedIn, Yahoo)	✔	✔	✔	✔

For installation details, see the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.

41.1.2 Deploying Mobile and Social

The following list contains information and links regarding several Mobile and Social deployments.

- If deploying Mobile and Social together with Access Manager, both can be deployed together on the same server, either in the same domain or in separate

domains. For details, see the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.

- If deploying Mobile and Social alongside Oracle Access Manager 10g or 11gR1 PS1, Mobile and Social and Oracle Access Manager need to be installed on different servers in different domains. For details, see Section 44.3, "Deploying Mobile and Social With Oracle Access Manager."

  Note: If Access Manager is already installed, you cannot add Mobile and Social to an Oracle Access Management installation by extending the OAM domain. Attempting to do so will result in an error similar to the following:

  ```
  CFGFWK-64071- the selection conflicted with templates
  already installed in the domain OAM with database policy
  store 11.1.1.3.0
  ```

- If deploying Mobile and Social with a WebGate, Mobile and Social can generate the Oracle Access Management token that clients need to access the WebGate-protected resources. The following restrictions apply:
  - If you deployed Oracle Access Management 11gR2 (11.1.2), Mobile and Social can generate a token that can access either an 11g WebGate or a 10g WebGate.
  - If you deployed either Access Manager 11gR1 (11.1.1) or 10g, Mobile and Social can generate an Oracle Access Management token that can access a 10g WebGate only.
- When moving Mobile and Social from a test environment to a production environment, see Section 44.4, "Configuring Mobile and Social After Running Test-to-Production Scripts."

41.1.3 Enabling Mobile and Social

To leverage the Mobile and Social functionality, the service should be explicitly enabled. Follow these steps to enable the Mobile and Social service.

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click **Available Services** in the **Configuration** pane.

   The **Available Services** page opens.

3. Click **Enable** next to **Mobile and Social**.

41.2 Understanding Mobile Services

Mobile Services connect applications running on client devices to the security services and products available in the Oracle Identity Access Management product suite. In addition, User Profile Services is a Mobile Services feature that connects client applications to many popular LDAP compliant directory servers. Mobile Services consists of the following components:

- A server component that interfaces with your backend Identity Services infrastructure. The server acts as an intermediary between supported client applications (and the users using those applications) and your backend Identity services. This arrangement decouples the client applications from the backend

infrastructure so that you can modify your backend infrastructure without having to update your client programs. You can enable the Mobile and Social service to run by itself or in combination with the Access Manager service and/or the OAAM product as discussed in Section 41.1, "Introducing Mobile and Social."

- A server-side device store that can store security material, such as security tokens and security information required by the OAAM Security Handler Plug-in. The server-side device store provides several benefits: It improves security because tokens managed by the server-side device store are not sent to the client application where they can be copied if the device or client app is compromised; it eliminates the need for mobile client applications to manage and synchronize security material; and finally it allows security material to be shared and synchronized among multiple client apps.
- A Mobile and Social Mobile Services Client Software Development Kit (Client SDK) is available for Android and iOS devices and Java. It is used to build authentication, authorization, and directory-access functionality into applications that run on mobile and desktop devices. The Mobile Services Client SDK can also be used to build a mobile single sign-on (SSO) agent application (for Android and iOS devices only). Mobile SSO is described in Section 41.2.3, "Understanding Single Sign-on (SSO) for Mobile Services." The Mobile and Social Mobile Services Client SDK is described in Section 41.2.4, "Introducing the Mobile and Social Mobile Services Client SDK."

The following sections contain more detailed information regarding the Mobile Services portion of Mobile and Social.

- Introducing Authentication Services and Authorization Services
- Understanding the Mobile Services Authorization Flow
- Understanding Single Sign-on (SSO) for Mobile Services
- Introducing the Mobile and Social Mobile Services Client SDK
- Introducing User Profile Services

41.2.1 Introducing Authentication Services and Authorization Services

Authentication and Authorization Services lets you extend an existing authentication and authorization infrastructure to include mobile and non-mobile applications. Mobile Services supports the following common token types:

- A User Token grants the token bearer with the permissions associated with the person who has been authenticated.
- An Access Token grants access to a specific protected resource, such as a web resource or a URL.
- A Client Token grants access to a non-mobile hardware device, such as a web application or server application.
- A Client Registration Handle (similar to a Client Token) is also used by Mobile Services. It represents a mobile client application running on a mobile device. Mobile and Social uses the Client Registration Handle to register mobile devices, whereas non-mobile Service Providers use Client Tokens to authenticate non-mobile devices.

A mobile device is a device that runs a mobile operating system, such as the Android mobile operating system from Google or the iOS mobile operating system from Apple, while a non-mobile device is a device that runs a non-mobile operating system, such as Mac OS X, Windows 7, and Lynx desktop. Because mobile devices and non-mobile

devices present different security challenges, mobile authentication and non-mobile authentication are managed separately in Mobile and Social. New mobile devices come online much more frequently and therefore require greater scrutiny, including heightened fraud detection measures.

Note: A non-mobile device can use either mobile services or non-mobile services as long as the correct input is provided.

Mobile and Social supports Oracle Access Manager tokens (if Access Manager is installed with Mobile and Social) and JWT (JSON Web Token) tokens. Each token type has a corresponding mobile and a non-mobile Service Provider. Mobile and Social provides four pre-configured Authentication Service Providers:

- OAM Authentication
- Mobile OAM Authentication
- JWT Authentication
- Mobile JWT Authentication

Two additional Authentication Service Providers can also be created:

- JWT-OAM Authentication
- Mobile JWT-OAM Authentication

Table 41–2 describes the Authentication Service Providers.

Table 41–2 Mobile and Non-Mobile Authentication Service Providers in Mobile Services

Authentication Service Provider	Description
OAMAuthentication	Lets users running a web application from a desktop device authenticate using Access Manager.
MobileOAMAuthentication	Lets users using mobile devices authenticate using Access Manager
JWTAuthentication	Lets users running a web application from a desktop device authenticate using the JSON Web Token format. JSON Web Token is a compact token format that is suitable for space-constrained environments such as HTTP Authorization headers.
MobileJWTAuthentication	Lets users using mobile devices authenticate using the JSON Web Token format.
JWTOAMAuthentication	Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using non-mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.
MobileJWTOAMAuthentication	Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.

41.2.2 Understanding the Mobile Services Authorization Flow

The Mobile Services authorization flow is used if the client application implements mobile security using the Mobile and Social Client SDKs for Android, iOS, or Java, or if the client app goes through a Mobile SSO Agent app (covered later) to establish mobile security. In this flow the client app (or the Mobile SSO Agent) collects user inputs and maintains the user session on the mobile device.

The diagrams in the following sections depict the Mobile Services authorization flow:

- Section 41.3.1, "Registering a Mobile Device With User Authentication"
- Section 41.3.2, "Authenticating a User With a Registered Device"
- Section 41.3.3, "Using REST Calls for User Authentication"
- Section 41.3.4, "Authenticating the User With a Mobile Browser-Based Web App"

41.2.3 Understanding Single Sign-on (SSO) for Mobile Services

Mobile Single Sign-on (Mobile SSO) lets a user run multiple mobile applications on the same device without having to provide credentials for each one. Both native and browser-based applications can participate in Mobile SSO.

> **Note:** Mobile Services apps and Mobile OAuth apps require separate SSO implementations. For information about single sign-on for Mobile OAuth applications, see Section 45.2.8, "Understanding Mobile OAuth Single Sign-on (SSO)."

Understanding the Mobile SSO Agent App

A special application installed on a mobile device can be designated as a Mobile SSO Agent. This application serves as a proxy between the remote Mobile and Social server and the other applications on the device that need to authenticate with the back-end Identity services. The Agent can either be a dedicated agent (that is, an application that serves no other purpose), or a business (client) application that also provides agent functionality.

> **Note:** Before an application can use the Mobile SSO agent app to authenticate with the Mobile and Social server, you must configure the application as either a Mobile SSO Agent or Client on the server. For more information about configuring Mobile Services security for Mobile SSO, see Section 42.7, "Defining Service Domains."

The Mobile SSO Agent handles device registration and advanced authentication schemes (including multi-factor authentication and one time password authentication), so this functionality does not have to be built into each mobile application. When the Mobile SSO Agent is present, user credentials are never exposed to the mobile business applications. The Mobile SSO Agent and SSO Client interact as follows:

- The SSO Client application sends the device registration request, the application registration request, and the User Token request to the SSO Agent.
- The SSO Agent makes the necessary acquisitions on behalf of the SSO Client.
- The SSO Client application then requests any Access Tokens it needs using the registration handle and User Token.

- The SSO Agent app stores tokens and security material on behalf of the mobile SSO Client, similar to the server-side device store.

A browser-based business application can also be configured to use a Mobile SSO Agent for authentication. If that is the case, launching a browser-based business application invokes the Mobile SSO Agent and causes the agent to collect a user name and password, and send them to the Mobile and Social server. If the business application and the agent are authorized for SSO, the Mobile and Social server authorizes access. The agent then requests an Access Token for the resource (on behalf of the business application) and redirects the browser to the URL of the business application with the Access Token included in the headers.

From the user's perspective, native and browser-based application open on the device without asking the user to provide credentials. If the agent is not installed on the mobile device, or if the business application is not approved for Mobile SSO, the user will have to directly and independently send his or her credentials to the Mobile and Social server with each and every application that is launched.

The Mobile SSO Agent can time-out idle sessions, manage global logout for all applications, and assist in device selective wipe outs. Furthermore, it supports basic offline authentication. The agent one-way encrypts user passwords for local storage. During offline authentication, the agent validates the user name and password with the locally stored version. The agent then enforces all session idle time-outs and local password expiration policies.

When using a mobile SSO agent, applications open on the device without asking the user to provide credentials. If the agent is not installed on the mobile device, or if the business application is not approved for Mobile SSO, the user will have to directly and independently send his or her credentials to the Mobile and Social server with each and every application that is launched.

Oracle does not provide a pre-built Mobile SSO Agent, however, documentation is provided so that you can build a Mobile SSO Agent application using the Mobile and Social Mobile Services Client SDK for Android or iOS. For more information about creating a Mobile SSO Agent application, refer to either the Android or the iOS Mobile Services SDK documentation in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

Note: The Mobile SSO Agent is only supported on Android and iOS devices.

41.2.4 Introducing the Mobile and Social Mobile Services Client SDK

The Mobile and Social Mobile Services Client SDK contains individual SDKs for Android and iOS devices, and for Java Virtual Machines (JVMs). Table 41–3 documents each Mobile Services Client SDK feature and the software on which it works.

Table 41–3 Android, iOS, and Java Features of Mobile and Social Mobile Services Client SDK

Feature	Android	iOS	Java
Build a mobile application that can acquire Client Registration Handle, User, and Access Tokens through a Mobile and Social Server	✔	✔	
Build a desktop application that can acquire Client, User, and Access Tokens through a Mobile and Social Server			✔

Table 41–3 (Cont.) Android, iOS, and Java Features of Mobile and Social Mobile Services Client SDK

Feature	Android	iOS	Java
Interact with a Directory server and implement User Profile Services	✔	✔	✔
Create a mobile single sign-on (SSO) application	✔	✔	

41.2.5 Introducing User Profile Services

User Profile Services makes it possible to build an application that lets a user in your organization access the User Profile Services from mobile devices. User Profile Services allows Web, mobile, and desktop applications to perform a variety of LDAP compliant directory server tasks including:

- Create, read, update, and delete functionality for users and groups
- Search functionality
- Org (organization) chart reporting functionality

Towards this end, the Mobile and Social server can interface with many popular LDAP compliant directory servers including:

- Microsoft Active Directory
- Novell eDirectory
- Oracle Directory Server Enterprise Edition
- Oracle Internet Directory
- Oracle Unified Directory
- Oracle Virtual Directory
- Open LDAP
- WebLogic Server Embedded LDAP

Refer to the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management* for sample code that demonstrates how to use the SDK for User Profile Services.

Note: Any device capable of HTTP communication can use User Profile Services by sending REST calls to the Mobile and Social server. See "Sending Mobile and Social REST Calls With cURL" in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

41.3 Understanding the Mobile Services Processes

When a user tries to access a protected resource, Mobile and Social requires either a Client Token (if the user is connecting through a server or a computer which securely stores client credentials) or a Client Registration Handle (if the user is using a mobile device). Thus, client devices (including mobile devices) and client applications must register with Mobile and Social before access to protected resources can be granted.

Note: Applications are also typically configured to require a User Token and an Access Token.

Client applications running on mobile devices follow this high-level authentication process before the mobile application can access a protected resource.

1. The user enters a user name and password at the application login screen and authenticates with the Mobile and Social server.
2. If a mobile device has not previously registered with the Mobile and Social server, the server sends the mobile device a Client Registration Handle after authenticating the user.
3. The Client Registration Handle is submitted back to the Mobile and Social server to get a User Token.
4. The Client Registration Handle and User Token are submitted back to the Mobile and Social server to get an Access Token.

A non-mobile application can also make use of Authentication Services provided by Mobile Services. In such cases, a Client Token takes the place of the Client Registration Handle. After the Client Token is obtained, a User Token and Access Token can be requested as documented above. Additional scenarios are documented in these sections.

- Registering a Mobile Device With User Authentication
- Authenticating a User With a Registered Device
- Using REST Calls for User Authentication
- Authenticating the User With a Mobile Browser-Based Web App
- Authorization Using the Mobile OAuth Authorization Flow

41.3.1 Registering a Mobile Device With User Authentication

When the mobile device attempting to access a protected resource has not previously registered with Mobile and Social, a Mobile SSO Agent must be installed. The registration authentication process is documented in the following flow. Figure 41–1 and Figure 41–2 follow the text and illustrate the process.

1. The user launches an application on a mobile device.
2. The application redirects the user to the Mobile SSO Agent.
3. The Mobile SSO Agent displays a login page.
4. The user enters a user name and password.
5. The Mobile SSO Agent sends the user name and password to the Mobile and Social server along with the device attributes and application ID.
6. The Mobile and Social server forwards the user name and password to Access Manager which authenticates the user.
7. The Mobile and Social server sends device attributes and other authentication results to the OAAM Mobile Security Handler Plug-in which executes the policy stored on the OAAM server.

Note: OAAM has two registration flows—active and passive. The active flow prompts the user with a challenge before allowing the device registration process to proceed. The passive flow continues without challenging the user.

The OAAM Security Handler Plug-in creates two security handles (snippets of data that Mobile and Social stores with either the Mobile SSO Agent or the business application itself). Each handle stores a name, value, and expiration timestamp.

- The `oaam.device` handle represents the mobile device. (Different client applications on the same device all have the same device handle value.) OAAM uses this handle as a key to retrieve the full device profile stored in the OAAM database. This handle has a relatively long life span.
- The `oaam.session` handle represents an OAAM login session for a client application. (Each client application on a device has a unique session handle value.) OAAM uses this handle as a key to retrieve details about the OAAM session stored in the OAAM database. When the user logs out from the client application, the `oaam.session` handle is removed.

8. The Mobile and Social server returns the Mobile Client Registration Handle and OAAM device and session handles to the Mobile SSO Agent.
9. The Mobile SSO Agent gets a User Token by passing the Client Registration Handle and OAAM device handles that it previously received to the server.
10. The Mobile SSO Agent requests an Access Token from Access Manager. The request contains the Client Registration Handle and OAAM device handles. See Figure 41–2.

Figure 41–1 First Time Device/Application Registration and Authentication Process

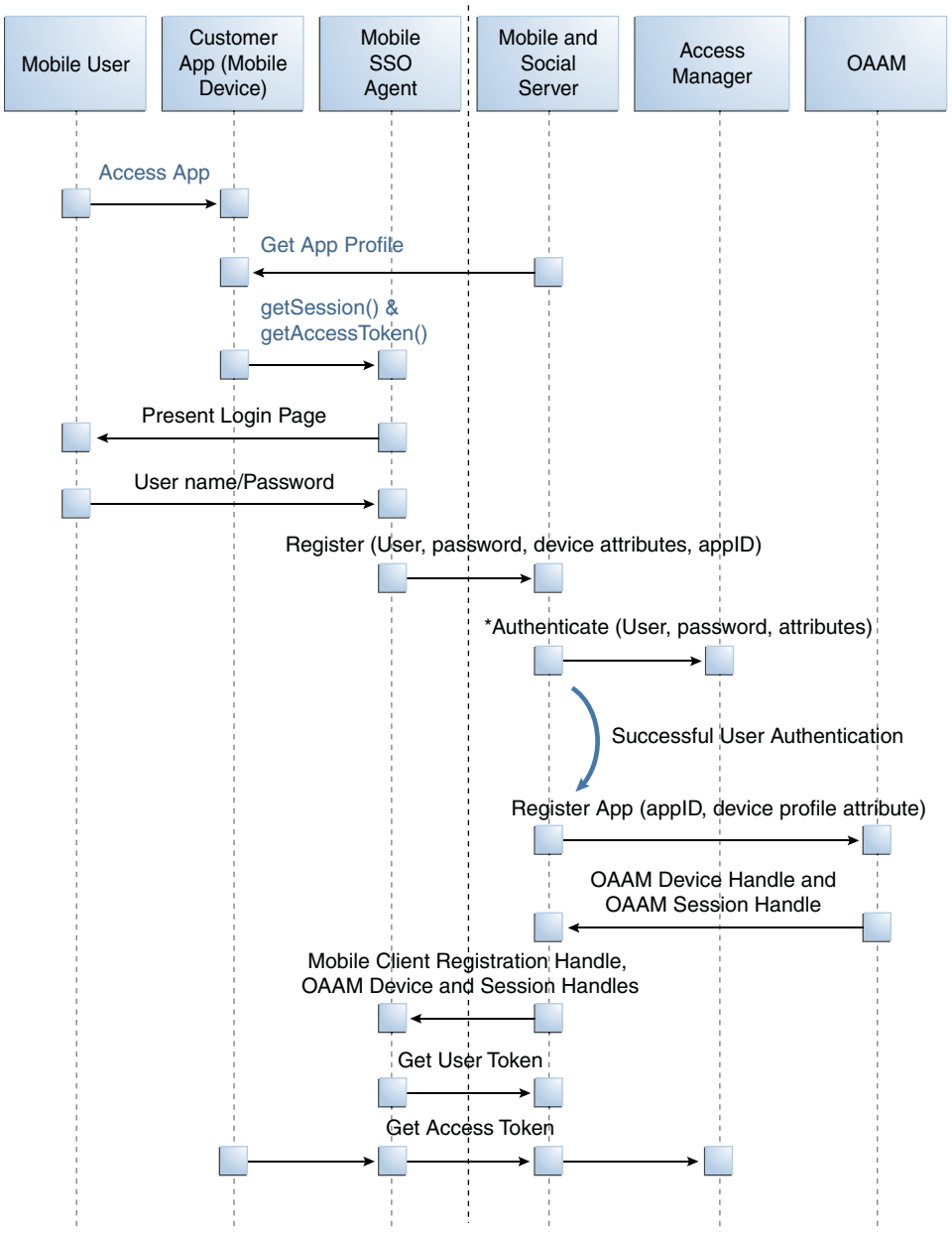
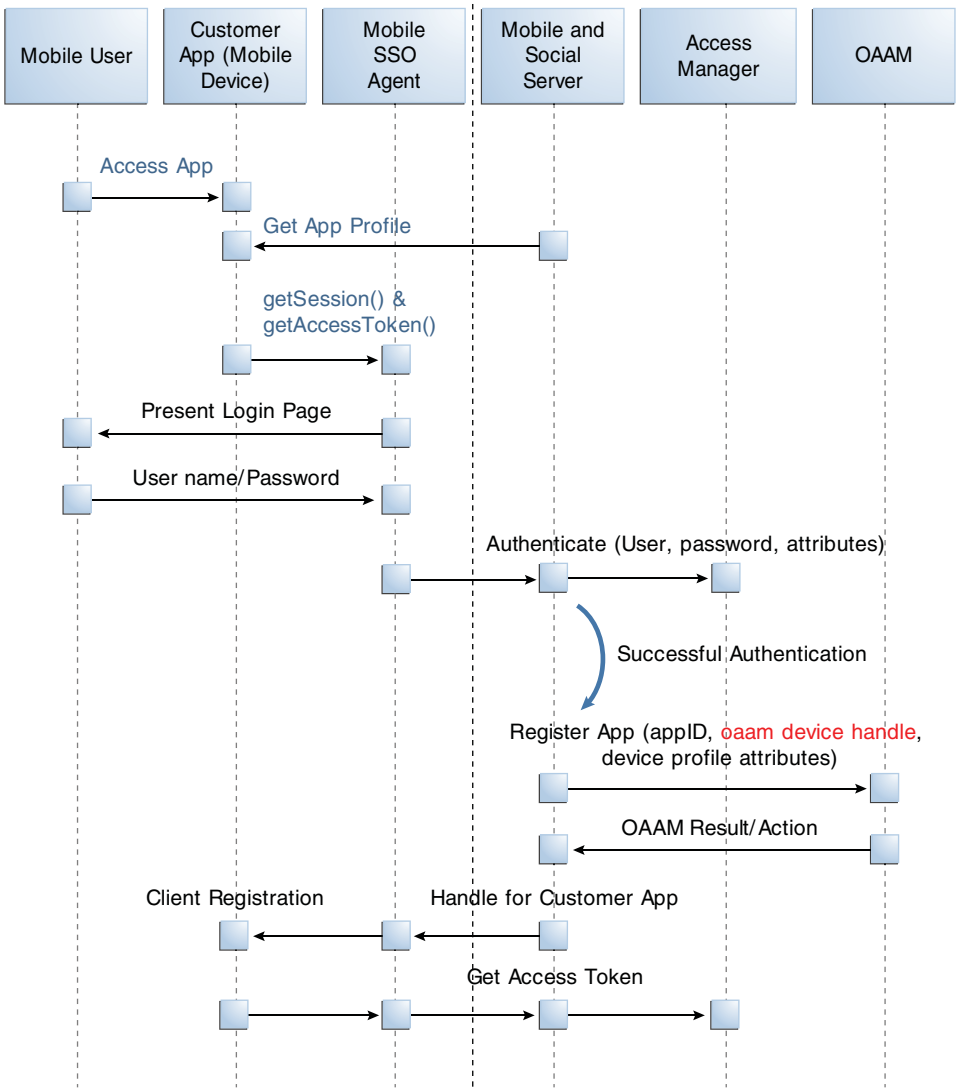


Figure 41–2 Mobile SSO Agent Requests Access Token from Access Manager



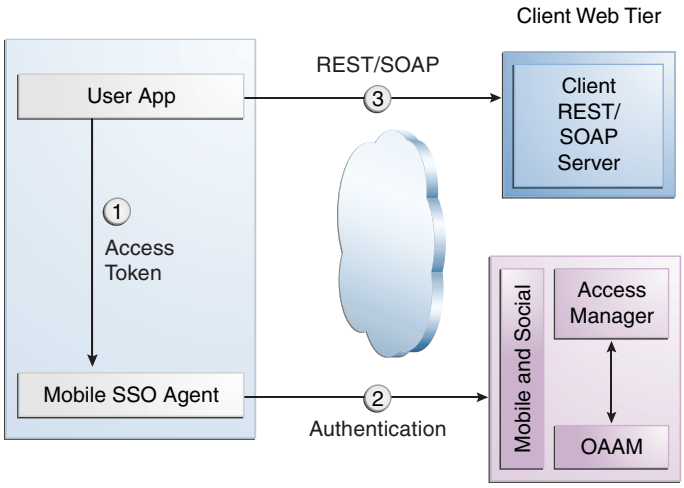
41.3.2 Authenticating a User With a Registered Device

This scenario describes a user with a mobile device (already registered with Mobile and Social) launching a Mobile and Social compatible business application. In this scenario the Mobile SSO Agent is already installed and the user needs to access a protected resource that requires an Access Token. The business application must first acquire the User Token before it can request the Access Token. The accompanying figures (Figure 41–3 and Figure 41–4) illustrate the process.

1. The user launches the business application on a mobile device.
2. The business application asks the Mobile SSO Agent for a User Token and one of the following occurs.
    a. If a valid User Token exists in the local credential store, the Mobile SSO Agent returns it to the business application. The business application inserts the User

Token into a direct request to the Mobile and Social server for the Access Token. The flow completes when the business application uses the Access Token returned by the server to access the protected resource (as in Figure 41–3).

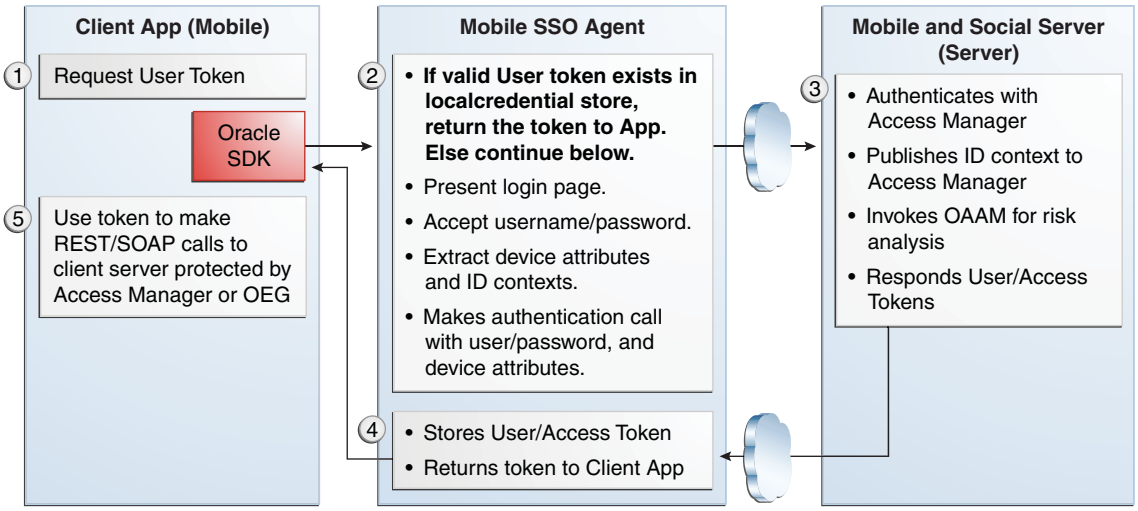
Figure 41–3 Mobile SSO Agent Has Valid Access Token in Credential Store



b. If a valid User Token does not exist in the local credential store, the login flow continues (as in Figure 41–4).

3. The Mobile SSO Agent presents a login page and the user enters a user name and password.
4. The Mobile SSO Agent sends the user name, password, and Client Registration Handle to the Mobile and Social server. (Step 2 in Figure 41–4).
5. The Mobile and Social server validates the Client Registration Handle, authenticates the user credentials (with either the JWT token service or the Access Manager token service), invokes OAAM for risk analysis and then returns the User Token to the Mobile SSO Agent. (Step 3 in Figure 41–4).
6. The Mobile SSO Agent stores a copy of the user token in its local credential store and returns the User Token to the business application. (Step 4 in Figure 41–4).
7. The business application uses the User Token to make a direct request to the Mobile and Social server for the Access Token. (This step is not shown in the diagram.)
8. The Mobile and Social server returns the Access Token to the Mobile SSO Agent.
9. The business application uses the Access Token to make calls to the resource protected by Access Manager or Oracle Enterprise Gateway (OEG). (Step 5 in Figure 41–4).

Figure 41–4 Mobile SSO Agent Does Not Have Valid Access Token in Credential Store

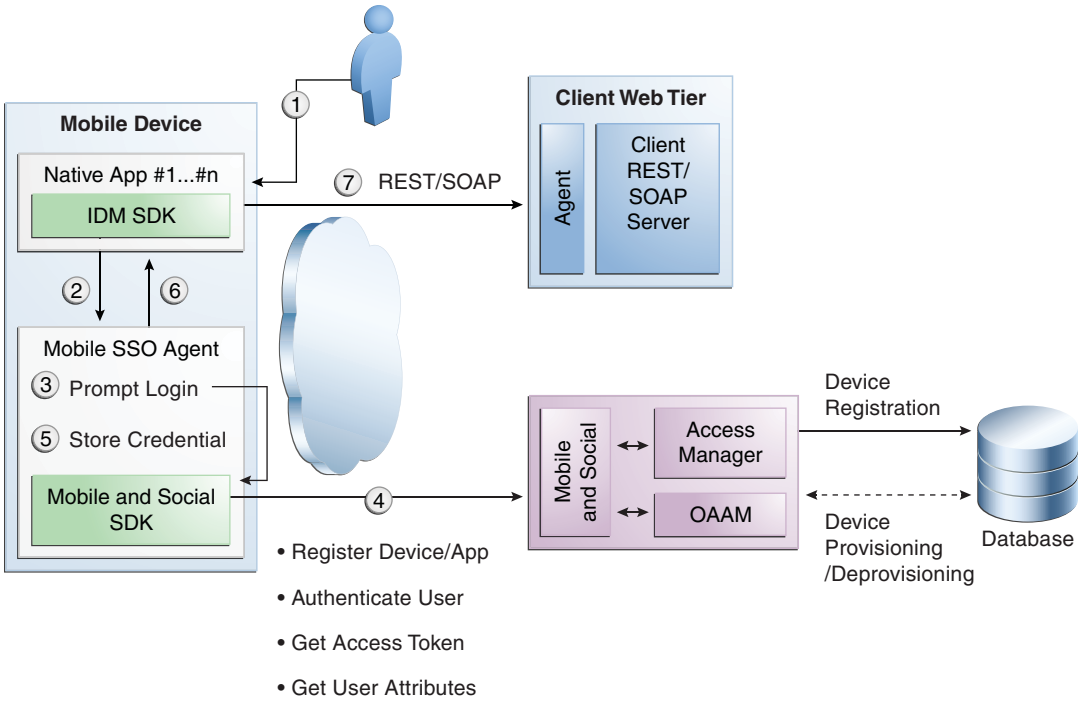


41.3.3 Using REST Calls for User Authentication

In this scenario an application running on a mobile device interfaces with the Mobile SSO Agent, which communicates with the Mobile and Social server using REST calls. The server interfaces with Access Manager and OAAM as needed and returns the necessary tokens to the Mobile SSO Agent (again using REST calls). The agent forwards the tokens back to the application, which can now access the protected resource using either REST or SOAP calls. The process is documented in the following flow. Figure 41–5 follows the text and illustrates the process.

1. The user launches an application on a mobile device.
2. Because the client application needs to access a resource protected by Access Manager, the client application asks the Mobile SSO Agent for an Access Token.
3. The Mobile SSO Agent gets the Application Profile from the Mobile and Social server.
4. The Mobile SSO Agent prompts for a user name and password.
5. The Mobile SSO Agent sends the user name and password to the Mobile and Social server along with the device attributes and application ID.
6. The Mobile and Social server registers the device and authenticates the user.
7. The server returns an Access Token to the Mobile SSO Agent.
8. The Mobile SSO Agent saves the hashed password in its local credential store.
9. The Mobile SSO Agent passes the Access Token to the client application.
10. The client application accesses the protected resource by presenting the Access Token.

Figure 41–5 User Authentication Using REST



41.3.4 Authenticating the User With a Mobile Browser-Based Web App

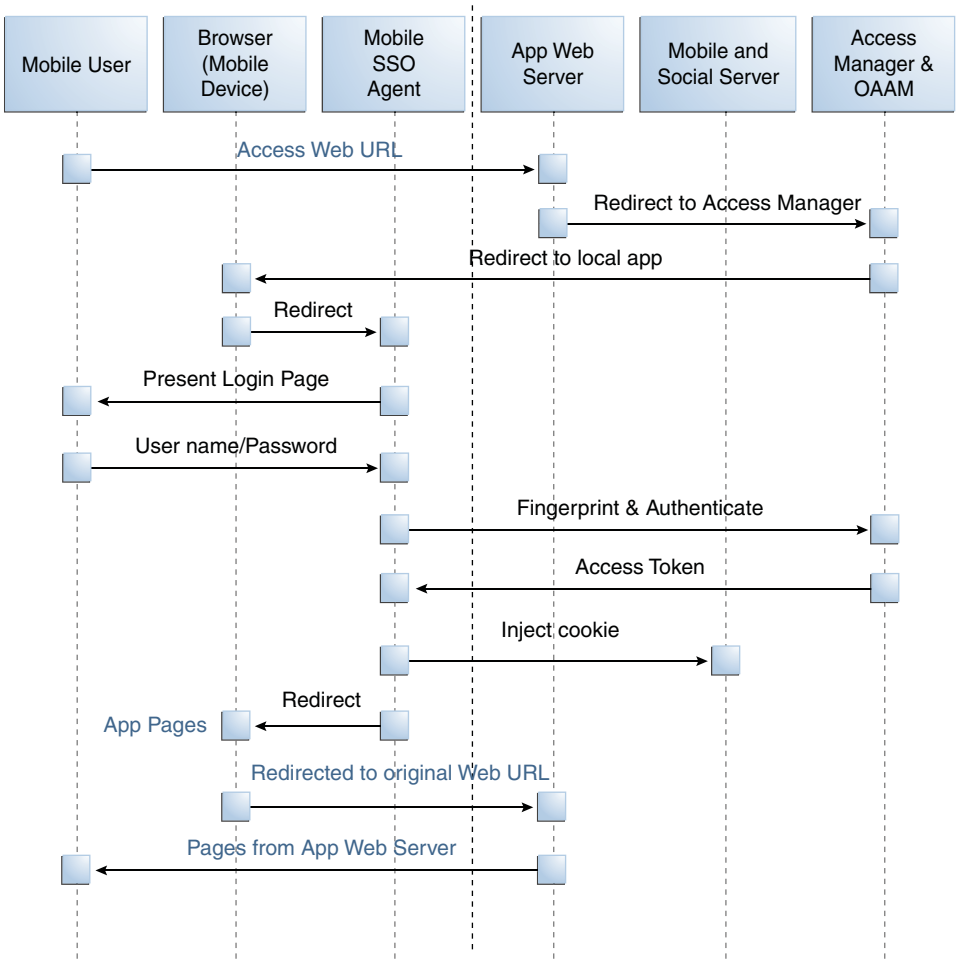
This scenario describes a user with a Mobile and Social registered mobile device launching a Mobile and Social compatible browser-based web application. In this scenario the Mobile SSO Agent is installed. The legacy authentication process is documented in the following flow. Figure 41–6 follows the text and illustrates the process.

1. The user opens a URL in a web browser on a mobile device.
2. The application web server redirects the browser to Access Manager.
3. Access Manager sends the web browser a URL redirect.
4. The web browser responds to the redirect by launching the Mobile SSO Agent.

   If the agent is not installed, a link with instructions to install the Mobile SSO Agent application is displayed.
5. The Mobile SSO Agent displays the User login page.
6. The user enters a user name and password.
7. The Mobile SSO Agent sends the user name, password, and Client Registration Handle to the Mobile and Social server. (This step is not shown in the diagram.)
8. The Mobile and Social server validates the Client Registration Handle, authenticates the credentials with Access Manager, publishes the ID context to the Access Manager server, and invokes OAAM for risk analysis.
9. Access Manager returns a User Token or an Access Token to the Mobile and Social server which, in turn, returns the User Token or the Access Token to the Mobile SSO Agent. (This step is not shown in the diagram.)

10. The Mobile SSO Agent directs the browser to the Mobile and Social server where it injects a cookie.
11. The Mobile SSO Agent sends the web browser a URL redirect and an Access Token.
12. The mobile web browser responds to the redirect and opens the original web URL because the access request now includes an Access Token.
13. The application web server sends the requested pages to the mobile web browser.

Figure 41–6 Authenticating User From Browser-based Web App on Registered Mobile Device



41.3.5 Authorization Using the Mobile OAuth Authorization Flow

The following diagram shows at a high level the interactions between a mobile app and the Oracle Access Management OAuth service in the context of Mobile Services. To understand the difference between the legacy authorization flow and the Mobile OAuth authorization flow, see Section 41.2.2, "Understanding the Mobile Services Authorization Flow."

For a detailed look at the OAuth authorization flow in the context of the OAuth Service, see Section 45.3.3, "Understanding Mobile OAuth Authorization."

1. The mobile app requests a client verification code by sending a device token.

The OAuth service returns the client verification code. If the APNS/GCM option is enabled, the OAuth service returns half of the code using push notification, and the other half over HTTPS. Push notification provides an extra level of assurance for confirming the identity of the application and device.

2. The mobile app requests an authorization code by sending device claims and the client verification code.

   The OAuth service:

   - Authenticates the user
   - Requests the user's consent to register the app (optional)
   - Invokes OAAM for risk analysis
   - Returns the authorization code using push notification (optional) and HTTPS

3. The mobile app requests a Client Token by sending the authorization code and device claims.

   The OAuth service returns the Client Token using push notification (optional) and HTTPS.

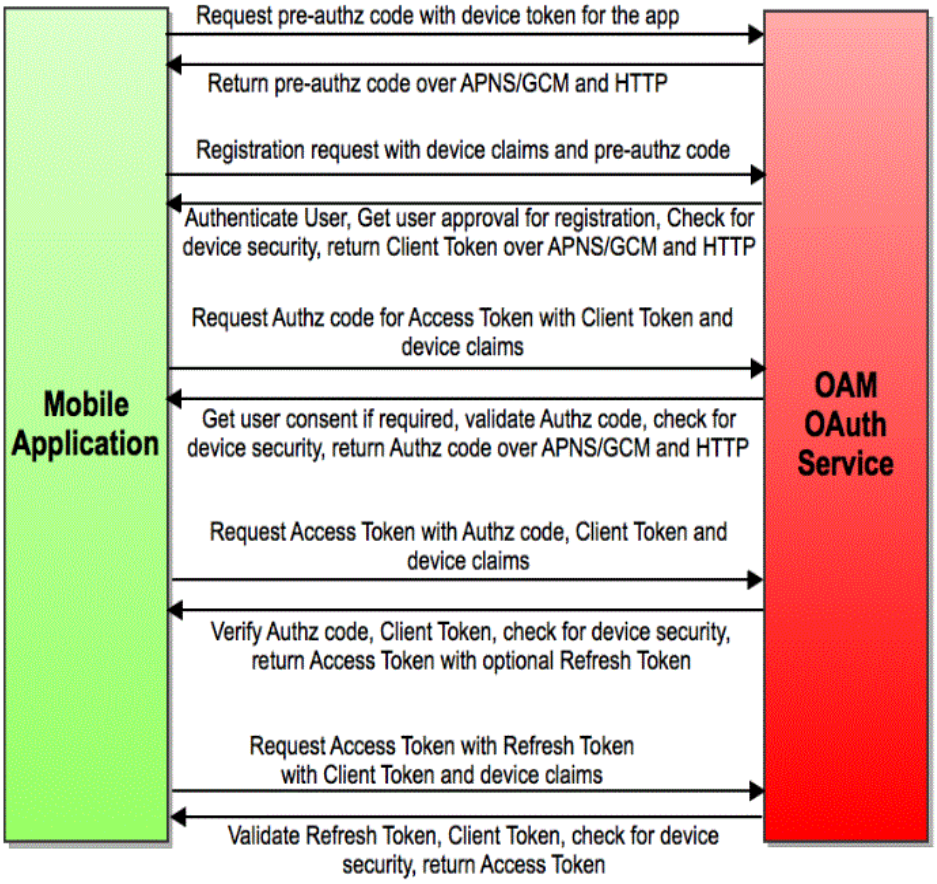
4. The mobile app requests an Access Token by sending the Client Token, the authorization code, and the device claims.

   The OAuth service returns the Access Token.

5. The mobile app requests access to the protected resources using the Access Token. (Not shown in the diagram.)

   The resource server returns the protected resources to the client application. (Not shown in the diagram.)

Figure 41–7



41.4 Using Mobile Services

The following sections describe how you might use the Mobile Services.

- Protecting the Mobile Client Registration Endpoint
- Exchanging Credentials
- Protecting User Profile Services And Authorization Services
- Using Mobile Services with Oracle Access Manager
- Using Mobile Services with Oracle Adaptive Access Manager Services

41.4.1 Protecting the Mobile Client Registration Endpoint

A mobile device attempting to access a protected resource must register with the Mobile and Social server as the server rejects anonymous requests sent to its registration endpoint. Additionally, each Service Domain should be configured to require either a User password or a User Token to register an application. The following is a sample registration endpoint for mobile clients and mobile applications:

```
https:// host : port /idaas_rest/rest/mobileservice1/register
```

When registering with the Mobile and Social server, client applications using either the Java Client SDK or the REST API must present valid credentials to the server using one or more of the following schemes:

- HTTP Basic Authentication
- User ID and Password (UIDPASSWORD)
- OAM Token Authentication

Client applications using the Android or iOS SDK will acquire a Client Registration Handle which uses the UIDPASSWORD authentication scheme to secure registration.

41.4.2 Exchanging Credentials

The Android, iOS, and Java SDKs will send the tokens, credentials, and other data required by the Mobile and Social server. Table 41–4 describes the tokens required and returned based on the client device or application.

Note: For a detailed look at the credentials, see "Mobile Services REST Reference: Authentication and Authorization" in the "Sending Mobile and Social REST Calls With cURL" chapter of the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

Table 41–4 Token Requirements for the Mobile and Social Server

Device or App Type Seeking to Register	Token(s), Credentials, and/or Data Required by the Mobile and Social Server	Type of Token Returned
Non-Mobile Device (Unregistered)	An ID and password associated with a client application sent over HTTPS.	Client Token
Mobile SSO *Agent* App	■ A user ID and password sent over HTTPS. ■ Device profile data for the Mobile Device. ■ The name of the application (that is, the Client ID). **Note** - An Administrator must also add the name of the mobile SSO Agent to a Service Domain.	Client Registration Handle

Table 41–4 (Cont.) Token Requirements for the Mobile and Social Server

Device or App Type Seeking to Register	Token(s), Credentials, and/or Data Required by the Mobile and Social Server	Type of Token Returned
Mobile SSO *Client* App (For example, a business application that uses the Mobile SSO Agent App to register with Mobile and Social.)	▪ One of the following: A user ID and password sent to the Mobile and Social server over HTTPS. *- or -* A User Token. ▪ Device profile data for the Mobile Device. ▪ The name of the application (that is, the Client ID). **Note** - An Administrator must also add the name of the mobile SSO Client application to a Service Domain. ▪ The `oaam.device` handle (if Mobile and Social is integrated with OAAM). ▪ Mobile SSO Client Registration Handle (previously obtained for the SSO agent), if the SSO Client application tries to register through the SSO agent application.	Client Registration Handle

41.4.3 Protecting User Profile Services And Authorization Services

You can choose to protect User Profile Services and Authorization Services as follows when configuring a Mobile Services Service Domain.

User Profile Services - Configure User Profile Services security by making the following selections for the Service Profile:

- Choose the Authentication Service Provider (OAMAuthentication, MobileOAMAuthentication, JWTAuthentication, Mobile JWT Authentication, Social Identity Authentication, and so on)
- Protect the service by requiring a "Secured Application" security token and a "Secured User" security token
- Set the "Allow Read" and "Allow Write" options

Authorization Services - Configure Authorization Services security by making the following selections for the Service Profile:

- Choose the Authentication Service Provider (OAMAuthentication, MobileOAMAuthentication, JWTAuthentication, Mobile JWT Authentication, Social Identity Authentication, and so on)
- Protect the service by requiring a "Secured Application" security token and a "Secured User" security token.

41.4.4 Using Mobile Services with Oracle Access Manager

Developers can quickly create applications that access resources protected by either Oracle Access Management Access Manager, or the 10g or 11gR1 PS1 (11.1.1.5)

versions of Oracle Access Manager. The Mobile and Social SDK handles authentication programatically after it collects user credentials using the credential collection interface. The SDK then uses the Mobile and Social REST interfaces to authenticate the user with the token service configured for the application. For more information about the Mobile Services' authentication flow with Access Manager, see Section 41.3.1, "Registering a Mobile Device With User Authentication."

41.4.5 Using Mobile Services with Oracle Adaptive Access Manager Services

Oracle Adaptive Access Manager (OAAM) can be used to make runtime authentication decisions, such as blocking authentication if the user is authenticating from an unauthorized country or location. The following functionality is also supported.

- Multi-part login flows - for example, OAAM can challenge the user with knowledge-based authentication questions, or require the user to authenticate using one-time password (OTP) functionality if OAAM detects a risky or unusual usage pattern (using the device at unusual hours or if the user is geographically distant from the place where authentication last took place).
- Check device attributes (such as the MAC Address assigned to a device) and verify that the device is not jail broken. Based on device attributes, OAAM can allow or deny access.
- Device-selective wipeouts are also an option when using OAAM together with Mobile and Social.
- Based on registered device info, OAAM can white-list or black-list specific devices.

For more information about using Mobile and Social with OAAM, see Section 42.9.2, "Configuring Mobile Services for Oracle Adaptive Access Manager."

41.5 Understanding Social Identity

Social Identity lets Mobile and Social serve as the relying party (RP) when interacting with cloud-based Identity Authentication and Authorization Services, such as Google, Yahoo, Facebook, Twitter, Windows Live, Foursquare and/or LinkedIn. Allowing users to log in to a protected resource using their credentials from a trusted Identity Provider is a convenience for the user. By deploying Mobile and Social, you can provide users with a convenient multiple log-in option without the need to implement each Provider individually. Users can use their credentials from cloud-based identity services to log in to any of the following application types.

- *Web applications that run on Java-compliant application servers.* To add Social Identity functionality to a Web application, a developer connects the Web application to the Mobile and Social server using the Social Identity Client SDK. For details, see the "Developing Applications Using the Social Identity Client SDK" chapter in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.
- *Applications protected by either Access Manager, or the 10g or 11.1.1.5 versions of Oracle Access Manager.* Applications protected by either the Access Manager service in the Oracle Access Management product, or the 10g or 11gR1 PS1 versions of Oracle Access Manager can be configured to work with Social Identity without using an SDK. For details about the authentication flow, see Section 41.6.4, "Authenticating a User With Access Manager and Social Identity."
- *Mobile applications running Android or iOS.* Mobile applications running Android or iOS can be configured to authenticate with an Social Identity Provider. To connect

to the Mobile and Social server, Android and iOS applications use the Mobile Services SDKs for those platforms. A separate SDK is not required.

Social Identity provides services for Identity Providers that support the following standards:

- OpenID version 2.0
- OpenID Simple Registration Extension 1.0
- Open ID Attribute Exchange Extension 1.0
- OpenID Provider Authentication Policy Extension 1.0
- OAuth 1.0 and 2.0

Native support for the Identity Providers listed in Table 41–5 is provided by Mobile and Social after installation.

Table 41–5 Identity Providers That Mobile and Social Natively Supports

Identity Provider	Supported Protocol
Facebook	OAuth 2.0
Google	OAuth 2.0
LinkedIn	OAuth 2.0
Twitter	OAuth 2.0
Yahoo	OpenID 2.0
Foursquare	OAuth 2.0
Windows Live	OAuth 2.0

Java programmers can add relying party support for additional OpenID and OAuth Identity Providers by implementing a Java interface and using the Mobile and Social console to add the Java class to the Mobile and Social deployment. For more information, see the "Extending the Capabilities of the Mobile and Social Server" chapter in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

41.6 Understanding Social Identity Processes

The following scenario documents the basic authentication process when using Social Identity.

1. A user requests access to a protected resource and is redirected to Mobile and Social.
2. Mobile and Social (RP) asks the user if they would like to log in using their credentials from, for example, Google (the Identity Provider).
3. Mobile and Social redirects the user to a Google login page where a user name and password is entered.
4. Google verifies the credentials and redirects the user back to Mobile and Social. At the same time the Identity Provider returns identity attributes to Mobile and Social based on its configuration.

   If the user does not have an account with your organization, the user can be prompted to register for one; the registration form will be prepopulated with the information that the Identity Provider returns.

Note: In the case of Access Manager, a user MUST register locally, otherwise access is not given. If not using Access Manager, the user is redirected to the protected resource and allowed access even if they don't register. For details, see Section 41.7.1, "Using Social Identity With Oracle Access Manager."

Additional scenarios are documented in these sections.

- Authenticating a Returning User With a Local Account
- Authenticating a New User With No Local Account
- Using OAuth For Access Token Retrieval
- Authenticating a User With Access Manager and Social Identity
- Authenticating a User Locally

41.6.1 Authenticating a Returning User With a Local Account

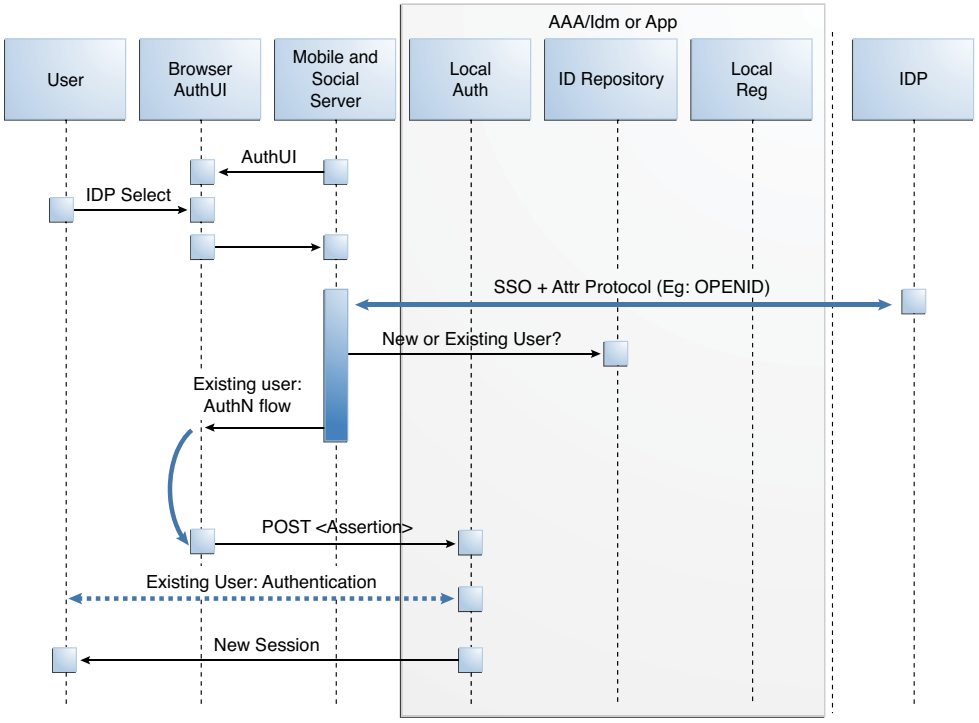
This scenario describes the authentication flow between the User, the Mobile and Social server (the relying party), the Identity Provider, and the local user authentication service (represented by Local Auth and ID Repository in the diagram). In this scenario, the local Identity repository determines that the user already has a local account. Consequently Mobile and Social does not prompt to create one. Figure 41–8, following the text, illustrates the process.

1. The user opens a URL for a protected resource in a web browser and the Mobile and Social server presents the user with a login page and a menu of Identity Providers (Google, Yahoo, Facebook, Windows Live, Foursquare, Twitter, or LinkedIn) from which to choose.
2. The user chooses an Identity Provider.
3. The Mobile and Social server redirects the user to the selected Identity Provider and a login page is displayed.
4. The user enters a user name and password and, upon authentication, the Identity Provider sends the Mobile and Social server an authentication assertion.
5. The Mobile and Social server checks with the Identity repository to see if the user has a local account.

   The Identity repository could be a directory server, a database, Oracle Identity Manager, or similar. The user is determined to be a User with a local account:

   - If a mobile application or a directly-integrated Web application is authenticating with Mobile and Social, the Mobile and Social server sends an authentication assertion to the user's browser.
   - If an application protected by Access Manger is authenticating, Access Manager creates the session for the user only if the user has a local account. (Newly registered users count as local account holders.)
6. The user's browser sends the authentication assertion sent by Mobile and Social to the protected resource's Access Management Service.
7. The Access Management Service carries out additional authentication steps as needed.
8. The Access Management Service allows the user access to the protected resource.

Figure 41–8 Authenticating a Returning User with a Local Account



41.6.2 Authenticating a New User With No Local Account

This scenario describes the authentication flow between the User, the Mobile and Social server (the relying party), the Identity Provider, and the local User authentication service (represented by Local Auth and ID Repository in the diagram). In this scenario, the User does not have a local account so Mobile and Social prompts to create one. Figure 41–9, following the text, illustrates the process.

1. The user opens a URL for a protected resource in a web browser and the Mobile and Social server (RP in the diagram) presents the user with a login page and a menu of Identity Providers (Google, Yahoo, Facebook, Twitter, or LinkedIn) from which to choose.
2. The user chooses an Identity Provider.
3. The Mobile and Social server redirects the user to the selected Identity Provider which displays a login page.
4. The user enters a user name and password and, upon user authentication, the Identity Provider sends the Mobile and Social server an authentication assertion.
5. The Mobile and Social server checks with the Identity repository to see if the User has a local account.

   The Identity repository could be a directory server, a database, Oracle Identity Manager or similar. The user is determined to be a user who does not have a local account. Mobile and Social proceeds as follows:

- If the Identity Provider uses the Open ID protocol, the Mobile and Social server retrieves the user's profile attributes by processing data in the previously obtained authentication assertion.
- If the Identity Provider uses the OAuth protocol, the Mobile and Social server makes a separate HTTP call to the Identity Provider with the previously obtained Access Token to retrieve the user's profile attributes.

6. The Mobile and Social server sends a new user registration form to the user's browser.

   The registration form is pre-populated with the user profile attributes sent by the Identity Provider in the previous step.

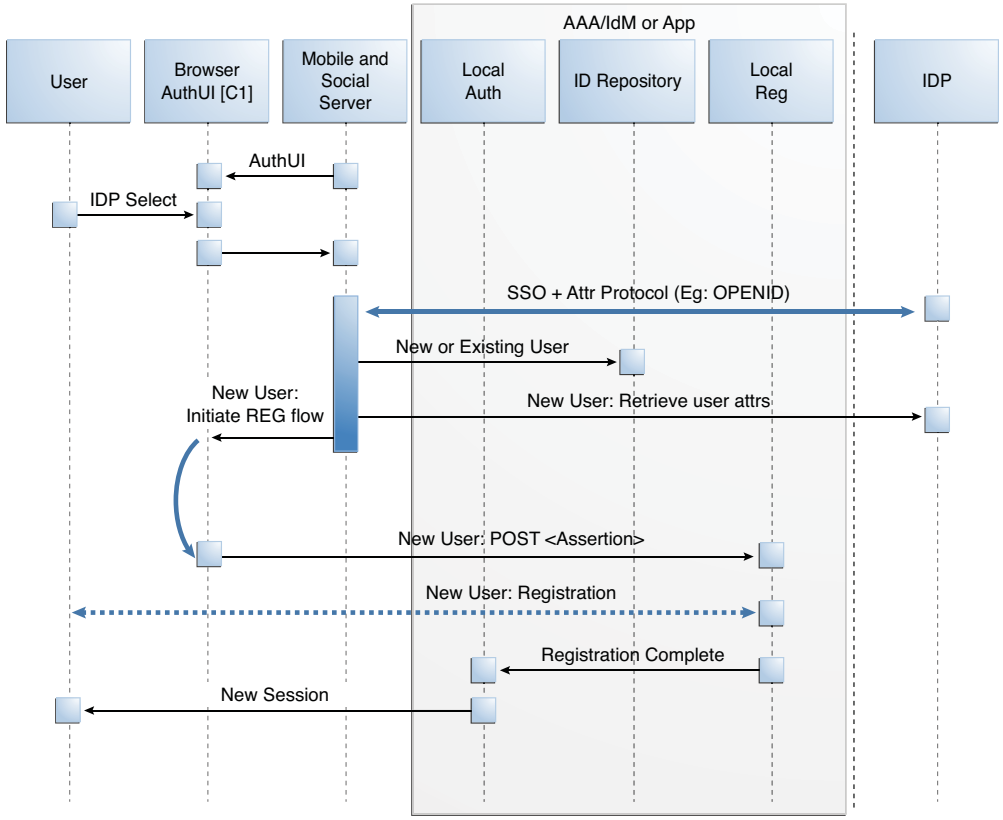
7. The user completes the registration form and sends it to which interfaces with the user registry (either a directory server or Oracle Identity Manager) to create the account.

   In cases where an Access Token is retrieved from the Identity Provider, the Access Token is also returned to the client application by way of Mobile and Social.

8. The Access Management Service for the client application carries out additional authentication steps as needed.

9. The Access Management Service allows the user access to the protected resource.

Figure 41–9 Authenticating a New User with No Local Account



41.6.3 Using OAuth For Access Token Retrieval

This section provides supplemental detail about the OAuth authentication and Access Token retrieval flow between the User, the Mobile and Social server (the relying party), and an OAuth Identity Provider. (Facebook, Foursquare, and Windows Live use the OAuth 2.0 protocol, and LinkedIn and Twitter use the OAuth 1.0 protocol.) In this scenario, the server interfaces with the OAuth Identity Provider to get an authorization code and Access Token to access a resource protected by the OAuth Identity Provider. The Client application in this scenario could be either a Web application running on a Java-compliant application server, or a mobile application. Figure 41–10, following the text, illustrates the process.

1. The user opens the client application which returns a protected web page to the user's browser.
2. The user attempts to open the protected resource on the client application.
3. The client application asks the Mobile and Social server for an Access Token so that the user can access the protected resource.

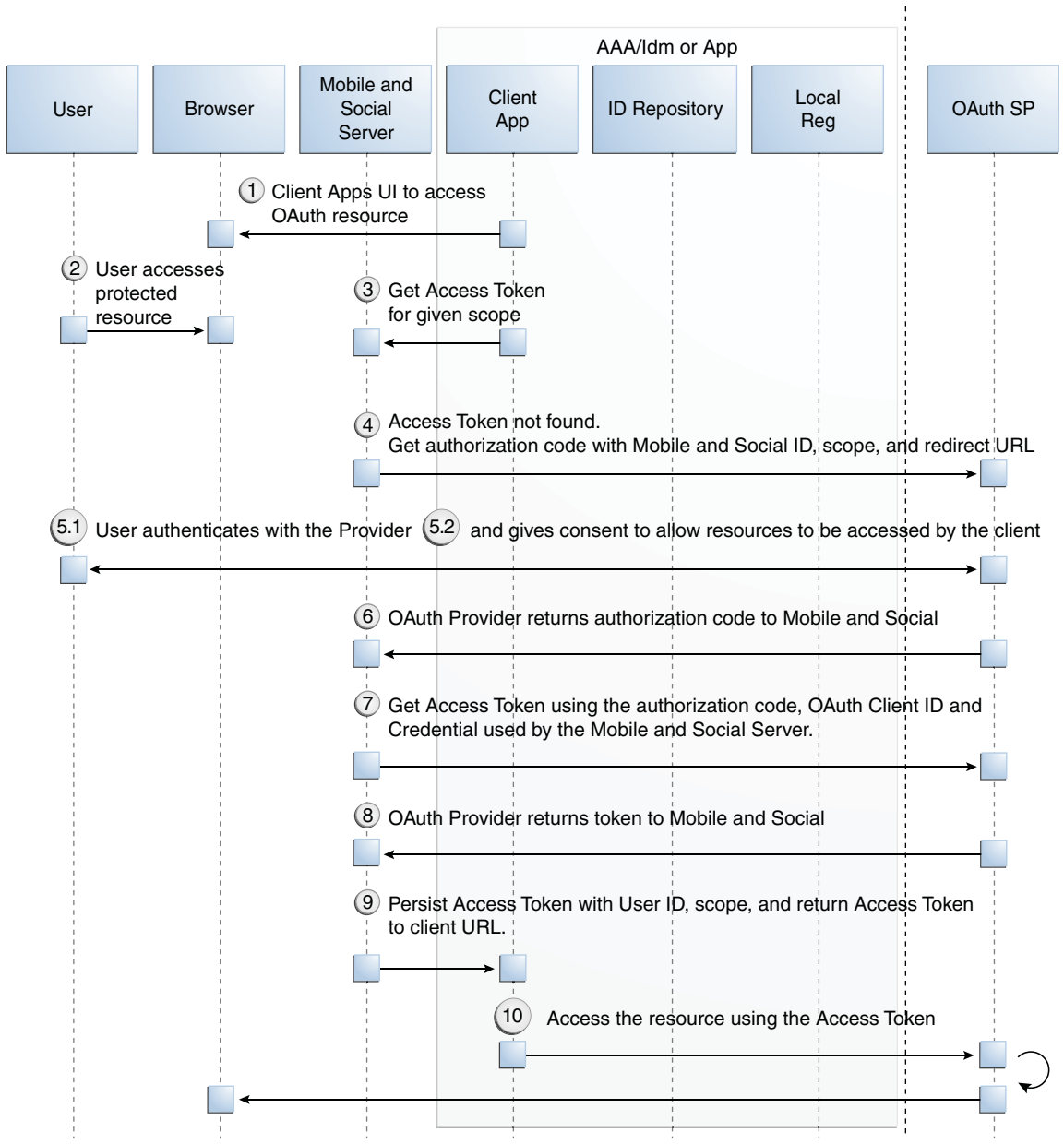
   If Mobile and Social has the valid Access Token in its cache, it will forward the Access Token to the client application and the authentication scenario would skip

to step 10. This flow assumes Mobile and Social does not have the Access Token in its local cache.

4. Because the Access Token is not in its local cache, on behalf of the user, Mobile and Social initiates an authorization request (utilizing HTTP headers to embed an OAuth Client ID, scope information, and a redirect URL) with the OAuth Identity Provider.
5. The OAuth Identity Provider displays a login page.
6. The user enters a user name and password into the OAuth Identity Provider login page and gives consent to the Identity Provider to provide the user's profile attributes to the Mobile and Social server (and, by extension, the client application).
7. The OAuth Identity Provider sends an authorization code to the Mobile and Social server.
8. The Mobile and Social server sends an Access Token request to the OAuth Identity Provider.

   Included in the request is the authorization code received in the previous step and the OAuth Client ID and client credential.
9. The OAuth Identity Provider returns an Access Token to the Mobile and Social server.
10. The Mobile and Social server caches the Access Token (with the User ID and the OAuth Client ID) and forwards the Access Token to the client application.
11. The client application uses the Access Token to access the protected resource and returns the protected page to the user's browser.

Figure 41–10 Authenticating a User With an OAuth Identity Provider



41.6.4 Authenticating a User With Access Manager and Social Identity

This scenario describes the authentication process between the User, Access Manager, the Mobile and Social server (the relying party), and the Identity Provider. Note that the user must either have a local account or must register for a local account when prompted; otherwise Access Manager will not let the user access the protected resource and the User will be redirected to the login page. Figure 41–11, following the text, illustrates the process.

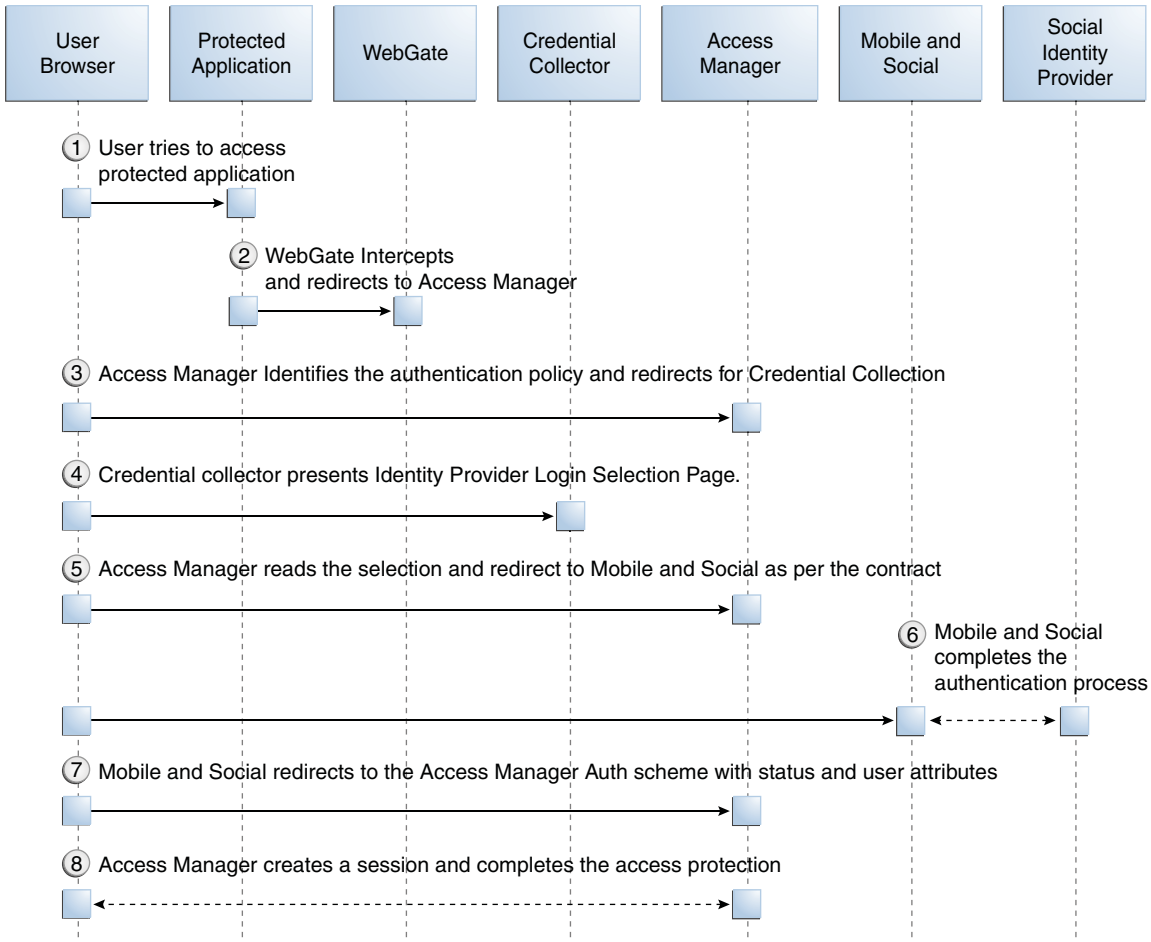
1. The user attempts to open a protected resource on the client application.
2. The WebGate protecting the resource intercepts the access request.

3. Access Manager identifies the authentication policy protecting the resource and redirects the user to a login page provided by the Mobile and Social server.
4. The login page presents a menu of Social Identity Providers.
5. The user chooses an OpenID Identity Provider and Access Manager redirects the user's browser to the Mobile and Social server, which redirects the user's browser to the login page for the selected Social Identity Provider (Google, Facebook, Twitter, and so on).
6. The user types a user name and password into the Social Identity Provider's login page.

   The Identity Provider completes the authentication process and requests the User's consent to share Identity information (if applicable).
7. When authentication is complete, the Social Identity Provider redirects the browser back to the Mobile and Social server.

   After further processing of Identity assertions supplied by the Identity Provider and after retrieving user identity information, the Mobile and Social server redirects the user's browser to Access Manager. This time HTTP headers in the page request provide Access Manager with the user's authentication status and attributes.
8. Access Manager creates a user session and redirects the user to the protected resource.

Figure 41–11 Authenticating a User with Access Manager

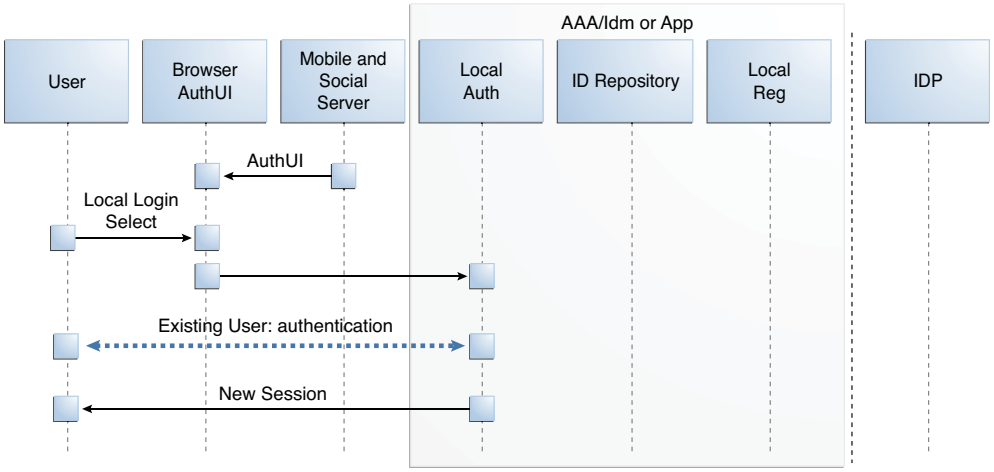


41.6.5 Authenticating a User Locally

This scenario describes the authentication process if the user chooses not to authenticate through a Social Identity Provider but instead authenticates using a local account. Figure 41–12, following the text, illustrates the process.

1. The user opens a URL for a protected resource in a web browser and the Mobile and Social server presents the user with a login page and a menu of Identity Providers from which to choose.
2. The user chooses to use local authentication and types a user name and password at the login page.
3. The client application's Access Management Service carries out additional authentication steps as needed.
   - If using the JWT Token Service, a User Token may be created.
   - The OAM Token Service does not return tokens during the local authentication flow.
4. The Access Management Service creates a session for the user and the user accesses the protected resource.

Figure 41–12 Authenticating a User Locally



41.7 Using Social Identity

The following sections contain details about how you might use the Social Identity. For examples of ways to integrate Social Identity, see Section 41.6, "Understanding Social Identity Processes."

- Using Social Identity With Oracle Access Manager
- Using Social Identity With Mobile Services
- Using the Social Identity SDK

41.7.1 Using Social Identity With Oracle Access Manager

Users can choose to log in to Access Manager protected resources using credentials from a Social Identity Provider if you integrate Social Identity with Access Manager. In this arrangement, users enter their Identity Provider credentials. Access Manager forwards the User's login request to Mobile and Social, which completes the authentication process with the Identity Provider in the background. Mobile and Social (the relying party) redirects the User to Access Manager. At the same time, Mobile and Social provides Access Manager with the User's authentication status and User attributes, which were sent by the Identity Provider. For more information about how Access Manager uses Social Identity for authentication, see Section 41.6.4, "Authenticating a User With Access Manager and Social Identity."

41.7.2 Using Social Identity With Mobile Services

You can configure Mobile Services to allow mobile devices to authenticate using Social Identity. After an Identity Provider verifies a user's credentials, Social Identity can prompt the user to create an account with your organization. To pre-populate the new user registration form with data returned from the Identity Provider, refer to the "Developing Applications Using the Social Identity Client SDK" chapter in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

41.7.3 Using the Social Identity SDK

Developers who maintain Java-compliant Web applications can add Social Identity functionality to their Web offering using the Mobile and Social Social Identity SDK. This SDK is available for Java-powered Web applications only. For information about the SDK, see the "Developing Applications Using the Social Identity Client SDK" chapter in the *Oracle Fusion Middleware Developer's Guide for Oracle Access Management*.

42

Configuring Mobile Services

Mobile and Social provides a graphical user interface for configuring Mobile Services. This chapter describes how to use the Oracle Access Management Console to configure Mobile Services and contains the following topics.

> **Note:** Mobile Services can be configured from the command line using WLST. For more information about the Mobile and Social WLST commands, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

42.1 Opening the Mobile Services Configuration Page

Follow these steps to open the Mobile Services configuration page in the Oracle Access Management Console.

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click **Mobile Services** in the **Mobile and Social** pane.

   The **Welcome to Mobile and Social - Mobile Services** page opens.

42.2 Understanding Mobile Services Configuration

The *Welcome to Mobile and Social - Mobile Services* configuration page is divided into separate panels that can be expanded and collapsed by clicking the arrow button in the top left corner of the panel. The following sections contain more information about the Mobile Services panels.

- Understanding Service Providers
- Understanding Service Profiles
- Understanding Security Handler Plug-ins
- Understanding Application Profiles
- Understanding Service Domains

Note: Mobile and Social includes pre-configured objects to support typical deployment scenarios. These objects are designed to help you get Mobile and Social up and running with only minor modifications required. Each section lists the pre-configured objects available after installation.

42.2.1 Understanding Service Providers

A Service Provider is defined for each back-end service that you are making available to client applications. By configuring the back-end service as a Service Provider, the Mobile and Social server knows how to communicate with it. You can configure a back-end service as one of the following Service Provider types.

- **Authentication Service Provider** - Interfaces with an Identity Provider so that the back-end service can authenticate users, mobile devices, client applications, access permissions, and issue authentication tokens accordingly. Mobile and Social supports Access Manager and JSON Web Tokens (JWT) with their own Service Provider and Service Profile configuration objects. Further, mobile client authentication and non-mobile client authentication is managed separately so each token type has a separate mobile and non-mobile Service Provider and Service Profile. The following pre-configured Authentication Service Providers are available for typical deployments.
  - OAMAuthentication - Oracle Access Manager Authentication Token Service Provider
  - MobileOAMAuthentication - Mobile Oracle Access Manager Authentication Token Service Provider
  - JWTAuthentication - JSON Web Token Authentication Service Provider
  - MobileJWTAuthentication - Mobile JSON Web Token Authentication Service Provider
  - JWTOAMAuthentication - Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using non-mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.
  - MobileJWTOAMAuthentication - Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.
  - InternetIdentityAuthentication -The Social Identity JSON Web Token Authentication Service Provider provides pre-configured support for apps using Mobile Services to accept an authentication result from the Mobile and

Social Social Identity (as described in Section 41.5, "Understanding Social Identity").

Also see Section 42.3.1, "Defining, Modifying or Deleting an Authentication Service Provider" for instructions on how to create a custom Authentication Service Provider.

- **Authorization Service Provider** - Interfaces with a back-end Identity Provider that makes authorization (access) decisions. The pre-configured OAMAuthorization Authorization Service Provider is provided for typical deployments. See Section 42.3.2, "Defining, Modifying or Deleting an Authorization Service Provider" for instructions on how to create a custom Authorization Service Provider.
- **User Profile Service Provider** - Interfaces with a directory server to lookup and update User Profile records. The pre-configured User Profile Service Provider is provided for typical deployments. See Section 42.3.3, "Defining, Modifying or Deleting a User Profile Service Provider" for instructions on how to create a custom User Profile Service Provider.

42.2.2 Understanding Service Profiles

After defining a Service Provider, you configure one or more *Service Profiles* for it. A Service Profile is a logical envelope that defines a Service Endpoint URL for a Service Provider on the Mobile and Social server. You can create multiple Service Profiles for a Service Provider to define different token capabilities and service endpoints. Each Service Provider instance requires at least one corresponding Service Profile. Mobile and Social includes a pre-configured Service Profile for each pre-configured Service Provider configuration object documented in Section 42.2.1, "Understanding Service Providers."

42.2.3 Understanding Security Handler Plug-ins

A *Security Handler Plug-in* enhances security by consulting additional logic for trust and risk analysis. (Such additional logic may deny certain risky operations.) The Security Handler Plug-in applies the logic during Authentication Service operations, including client application registration. Using a Security Handler Plug-in is optional. The Security Handler Plug-ins provided with this version of the software are optimized for mobile applications. If used, only apply it to mobile-related Service Domains, its authentication services and client applications. Do not use a Security Handler Plug-in with a non-mobile application.

Mobile and Social invokes the Security Handler Plug-in during sensitive security operations (such as authentication) as well as during operations that involve token acquisition. Mobile and Social includes the following preconfigured Security Handler Plug-ins:

- The `OAAMSecurityHandlerPlugin` enables the sophisticated device registration and risk-based strong authentication logic available in Oracle Adaptive Access Manager.
- The `Default` Security Handler Plug-in offers more limited device registration logic.

42.2.4 Understanding Application Profiles

An *Application Profile* describes the configuration and security properties of the client application that will consume services provided by the Service Provider. An

Application Profile is required either when mobile applications are used, or when a non-mobile application is used with a service that does not have secured application protection. Attributes defined include an Application Profile name, a short description of the application, a list of name-value attribute pairs, and its mobile configuration settings. (Mobile configuration settings include options such as the maximum duration in minutes that the Profile can be cached, the number of allowable authentication retries, and whether offline authentication is allowed.) You can also choose which mobile device attributes (such as `phonecarriername`, `phonenumber`, `osversion`, and so on) are required for the application. A single Application Profile can be assigned to multiple Service Domains.

42.2.5 Understanding Service Domains

A *Service Domain* is a logical grouping that serves to associate a Service Profile with an Application Profile and (optionally) a Security Handler Plug-in. A Service Domain specifies how applications are allowed to access services in Mobile and Social. Typically an organization should have one Service Domain for managing mobile apps, and a separate Service Domain for managing non-mobile apps. When creating a Service Domain you:

- Decide whether the Service Domain is for managing mobile applications or desktop applications.
- Choose an authentication scheme and, optionally, a Security Handler Plug-in for the Service Domain.
- Add one or more Mobile SSO Agents and configure which agents have priority over the others.
- Add one or more applications to the Service Domain and configure which can use a Mobile SSO Agent.
- Choose at least one Service Profile for the Service Domain.
- Configure security settings to protect the Service Domain services.

Mobile and Social includes the following pre-configured Service Domains:

- The Default (Service Domain) is pre-configured for non-mobile applications.
- The Mobile Service Domain is pre-configured for mobile applications.

Use one of these Service Domains as a template to create your own, or modify them to suit the needs of your organization. Only mobile authentication Service Profiles can be added to a mobile Service Domain.

42.3 Defining Service Providers

A Service Provider is defined for each back-end service that is available to client applications. This configures how the Mobile and Social server will interface with the defined back-end Service Provider. Depending on the services that you are providing, you may only need to configure one or two of the available Service Provider options. For example, if you are only providing authentication services, you do not need to define the User Profile Service Provider or Authorization Service Provider. This section includes the following procedures:

- Defining, Modifying or Deleting an Authentication Service Provider
- Defining, Modifying or Deleting an Authorization Service Provider
- Defining, Modifying or Deleting a User Profile Service Provider

42.3.1 Defining, Modifying or Deleting an Authentication Service Provider

An *Authentication Service Provider* allows Mobile and Social to authenticate users, client applications, and access permissions using a back-end Authentication Service by way of a token exchange. Upon successful authentication and verification, a token may be returned to the client application. The following authentication types are supported.

- When installed with Access Manager, Mobile and Social supports JSON Web Tokens (JWT) and Access Manager (OAM) tokens.
- When installed without Access Manager, only the JSON Web Token (JWT) type is supported.

> **Note:** See Section 41.1.2, "Deploying Mobile and Social" for information about deploying Mobile and Social with a WebGate.

The following sections contain more information regarding Authentication Service Providers.

- Understanding the Pre-Configured Authentication Service Providers
- Understanding the JWT-OAM Token Authentication Service Provider
- Creating an Authentication Service Provider
- Editing or Deleting an Authentication Service Provider
- Requiring User Credentials to Exchange a JWT Token for an OAM Token
- Configuring OAM to use the JWT-OAM + PIN Token Service Provider

42.3.1.1 Understanding the Pre-Configured Authentication Service Providers

Mobile and Social provides pre-configured Authentication Service Providers for the Authentication Services listed in Table 42–1.

For each token type (Access Manager and JWT), Mobile and Social provides separate "out-of-the-box" mobile and non-mobile (or *desktop*) Service Provider configurations. Separate configurations are provided so that you can optimize each to best meet the needs of each access mode. Mobile devices must use a mobile Service Provider, however, non-mobile devices can use either a mobile service provider or a non-mobile service provider if correct input is provided.

Mobile Service Providers use Client Registration Handles to register mobile devices, whereas non-mobile Service Providers use Client Tokens to authenticate non-mobile devices. The Client Token capability in Mobile and Social can be disabled, but the Client Registration Handle capability cannot.

Table 42–1 Pre-configured Authentication Service Providers

Authentication Service	Mobile and Social Service Provider Name	Description
Access Manager	OAMAuthentication	Provides pre-configured support for users using desktop devices to authenticate using Access Manager. This Service Provider can issue a Client Token, but it cannot register mobile devices. The following Java class implements this Service Provider: `oracle.security.idaas.rest.provider.token.OAMSDKTokenServiceProvider`
Mobile Access Manager	MobileOAMAuthentication	Provides pre-configured support for users using mobile devices to authenticate using Access Manager. This Service Provider supports registering new devices using a Client Registration Handle when the User authenticates. The following Java class implements this Service Provider: `oracle.security.idaas.rest.provider.token.MobileOAMTokenServiceProvider`
JSON Web Token	JWTAuthentication	Provides pre-configured support for users using non-mobile applications to authenticate using the JSON Web Token format. JSON Web Token is a compact token format that is suitable for space-constrained environments such as HTTP Authorization headers. This Service Provider can issue a Client Token, but it cannot register new devices using a Client Registration Handle. The following Java class implements this Service Provider: `oracle.security.idaas.rest.provider.token.JWTTokenServiceProvider`
Mobile JSON Web Token	MobileJWTAuthentication	Provides pre-configured support for users using mobile devices to authenticate using the Mobile JSON Web Token format. This Service Provider supports registering new devices using a Client Registration Handle. The following Java class implements this Service Provider: `oracle.security.idaas.rest.provider.token.MobileJWTTokenServiceProvider`

Table 42–1 (Cont.) Pre-configured Authentication Service Providers

Authentication Service	Mobile and Social Service Provider Name	Description
JWT-OAM Token Provider	JWTOAMAuthentication	Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using non-mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.
Mobile JWT-OAM Token Provider	MobileJWTOAMAuthentication	Allows lightweight, long-duration JWT tokens to be exchanged for OAM tokens. OAM tokens provide SSO and OAM resource access to clients. This provider allows users using mobile applications to get a new OAM token without having to provide credentials if they have a valid, long-duration JWT token.
Social Identity Web Token	InternetIdentityAuthentication	Provides pre-configured support for apps using Mobile Services to accept an authentication result from Social Identity (for example, Google, Facebook, Twitter, and so on). This Service Provider supports registering new devices using a Client Registration Handle. After the User authenticates with the Identity Provider, this Service Provider issues a User Token to the requesting client application. The User Token allows the User to obtain a Client Registration Handle for the device. This service uses the same Java class as the JSON Web Token service, but it is configured with two additional name-value attribute pairs. The following Java class implements this Service Provider: `oracle.security.idaas.rest.provider.token.JWTTokenServiceProvider`

42.3.1.2 Understanding the JWT-OAM Token Authentication Service Provider

The JWTOAMAuthentication and the MobileJWTOAMAuthentication Service Provider types require further explanation. The JWT-OAM token provider lets mobile and non-mobile clients use a JSON Web Token (JWT) to retrieve an OAM User token and an OAM Master token. Depending on your deployment, you may want to have a long-duration JWT token instead of one or more long-duration OAM tokens. A JWT token is lightweight and makes an ideal token to hold for a long duration.

Using the JWT-OAM token exchange feature, your application authenticates the user with a user name and password, then obtains a JWT token, an OAM user token, and an OAM master token. You can configure the JWT token to have a very long duration compared to the duration of OAM tokens. Once the OAM tokens expire, clients use the still-valid long-duration JWT token to get OAM tokens again.

The presence of OAM tokens can provide mobile and non-mobile clients with access to resources protected by Access Manager. Exchanging a JWT token for OAM tokens benefits the user, who does not need to provide credentials to get new OAM tokens to replace the expired tokens.

As an added security measure, Mobile and Social can require users to enter an additional credential, such as a PIN, when using a JWT user token to get an OAM token. For details, see Section 42.3.1.5, "Requiring User Credentials to Exchange a JWT Token for an OAM Token."

42.3.1.3 Creating an Authentication Service Provider

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click **Create** in the **Service Providers** panel in the home area and choose **Create Authentication Service Provider**.

   The Authentication Service Provider Configuration page displays.
3. Enter values for the Authentication Service Provider properties.
   - **Name** - Type a unique name for this Authentication Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
   - **Service Provider Java Class** - Type the name of the Java class that implements this Authentication Service Provider.
4. Add or delete Authentication Service Provider Attributes and their values based on either Table 42–2 (OAMAuthentication and the MobileOAMAuthentication Service Provider types), Table 42–4 (JWTAuthentication and the MobileJWTAuthentication Service Provider types), or Table 42–5 (JWT-OAM Authentication Service Provider Default Attributes).

   Note: If you created a custom Authentication Service Provider, use the Attributes panel to further configure it. For the JWTAuthentication and MobileJWTAuthentication Service Providers, custom attributes are not used.

   - Table 42–2 and Table 42–3 are specific to a Mobile and Social integration with Access Manager. The values in Table 42–2 apply to both the OAMAuthentication and the MobileOAMAuthentication Service Provider types. The values in Table 42–3 configure the WebGate agent.

Table 42–2 Access Manager Authentication Service Provider Default Attributes

Name	Default Value	Notes
OAM_VERSION	OAM_11G	Either **OAM_11G** or **OAM_10G**, depending on the Oracle Access Manager version in use.
DEBUG_VALUE	0	
TRANSPORT_SECURITY	OPEN	Specify the method for encrypting messages between this AccessGate and the Access Servers. The encryption methods need to match. Valid values include: ■ **OPEN** ■ **SIMPLE** ■ **CERT** To update these settings, see Section 42.9.1.1, "Configuring Mobile Services to Work With Access Manager in Simple and Certificate Mode."
OAM_SERVER_1	localhost:5575	Specify the host name and port number of the primary Oracle Access Management server.

Table 42–2 (Cont.) Access Manager Authentication Service Provider Default Attributes

Name	Default Value	Notes
OAM_SERVER_1_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_1. The default value is 4.
OAM_SERVER_2	oam_server_2:5575	Specify the host name and port number of the secondary Oracle Access Management server.
OAM_SERVER_2_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_2. The default value is 4.
IDContextEnabled	true	Add this attribute with a value of true to enable Identity Context, as described in Section 48.5.7, "Configuring Oracle Access Management Mobile and Social."

Table 42–3 WebGate Agent for Authentication Service Provider Default Attributes

Name	Default Value	Notes
WebGate ID		Type the WebGate agent name that identifies the WebGate instance to which you are connecting.
Encrypted Password	Copy and paste the encrypted password for the WebGate ID	Locate the *OAM-Domain-Directory*/output/*Profile-Name*/ObAccessClient.xml file and copy the encrypted password value located in the element ParamName=accessClientPasswd.

- Table 42–4 is specific to connecting a Mobile and Social server to JWT Authentication Service Providers. The configuration values in this section apply to both the JWTAuthentication and the MobileJWTAuthentication Service Provider types.

Table 42–4 JWT Authentication Service Provider Default Attributes

Name	Default Value	Notes
Identity Directory Service Name	Select from the menu the Directory Service that should be used to verify the User.	The JWT token service verifies the user with a directory server.
Crypto Scheme	RS512	The cryptographic algorithm used to sign the contents of the JWT token. The default value is RS512. (RSA encryption using SHA-512 hash algorithm.)
Validity Period	3600	The length of time in seconds that the token is considered to be valid. The default value is 3600.
Relying Party Token	Enabled	Select Enabled if the Service Provider should accept security tokens from an external issuer.

Table 42–4 (Cont.) JWT Authentication Service Provider Default Attributes

Name	Default Value	Notes
Issuer		If *Relying Party Token* is enabled, specify the Security Token Service issuer

Table 42–5 is specific to the JWTOAMAuthentication and the MobileJWTOAMAuthentication Service Provider types.

Table 42–5 JWT-OAM Authentication Service Provider Default Attributes

Name	Default Value	Notes
OAM_VERSION	OAM_11G	Either **OAM_11G** or **OAM_10G**, depending on the Oracle Access Manager version in use.
DEBUG_VALUE	0	
TRANSPORT_SECURITY	OPEN	Specify the method for encrypting messages between this AccessGate and the Access Servers. The encryption methods need to match. Valid values include: ■ **OPEN** ■ **SIMPLE** ■ **CERT**
OAM_SERVER_1	localhost:5575	Specify the host name and port number of the primary Oracle Access Management server.
OAM_SERVER_1_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_1. The default value is 4.
OAM_SERVER_2	oam_server_2:5575	Specify the host name and port number of the secondary Oracle Access Management server.
OAM_SERVER_2_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_2. The default value is 4.
user.Authenticator	■ Default value for JWTOAMAuthentication provider: oracle.security.idaas.rest.provider.token.OAMSDKTokenServiceProvider ■ Default value for MobileJWTOAMAuthentication provider: oracle.security.idaas.rest.provider.token.JWTTokenServiceProvider	Optional. Specify which of two available authenticators to use for user authentication. ■ For OAM Authentication: oracle.security.idaas.rest.provider.token.OAMSDKTokenServiceProvider ■ For IDS Authentication: oracle.security.idaas.rest.provider.token.JWTTokenServiceProvider

Table 42–5 (Cont.) JWT-OAM Authentication Service Provider Default Attributes

Name	Default Value	Notes
UserAuthenticationInput	UIDPASSWORD	Specify how the client application should authenticate the user. The only supported value is UIDPASSWORD.
UserAuthenticationOutput	USERTOKEN	Specify all possible token types that the client application will receive if user authentication is successful. Configure this parameter with any combination of the following: ■ USERTOKEN::JWTUT ■ USERTOKEN::OAMUT ■ USERTOKEN::OAMMT JWTUT specifies the JWT-type user token. OAMUT specifies the OAM-type user token. OAMMT specifies the OAM-type master token. If no value is supplied, all three token types are assumed.
TokenExchangeInput	JWT_UT+CRED	Specifies what is required to exchange a JWT type user token for an OAM token. Configure this parameter with one of the following: ■ JWT_UT ■ JWT_UT+CRED JWT_UT specifies that a JWT type user token is required to get OAM tokens. JWT_UT+CRED specifies that, in addition to a JWT user token, an additional credential such as a personal identification number is required to get OAM tokens. If no value is supplied, the token exchange feature is disabled.
TokenExchangeOutput	USERTOKEN::OAMUT,USERTOKEN::OAMMT	Configure this parameter with any combination of the following: ■ USERTOKEN::OAMUT ■ USERTOKEN::OAMMT OAMUT specifies the OAM type user token. OAMMT specifies the OAM type master token.

5. Click Create to create the Service Provider configuration object.

42.3.1.4 Editing or Deleting an Authentication Service Provider

To edit or delete an Authentication Service Provider, select the Service Provider in the panel and click Edit or Delete on the panel's tool bar.

42.3.1.5 Requiring User Credentials to Exchange a JWT Token for an OAM Token

As an added security measure, Mobile and Social can require users to enter an additional credential, such as a PIN, when using a JWT user token to get an OAM token. To enable the user PIN requirement, specify the `JWT_UT+CRED` parameter as described in Table 42–5 when configuring the `TokenExchangeInput` attribute.

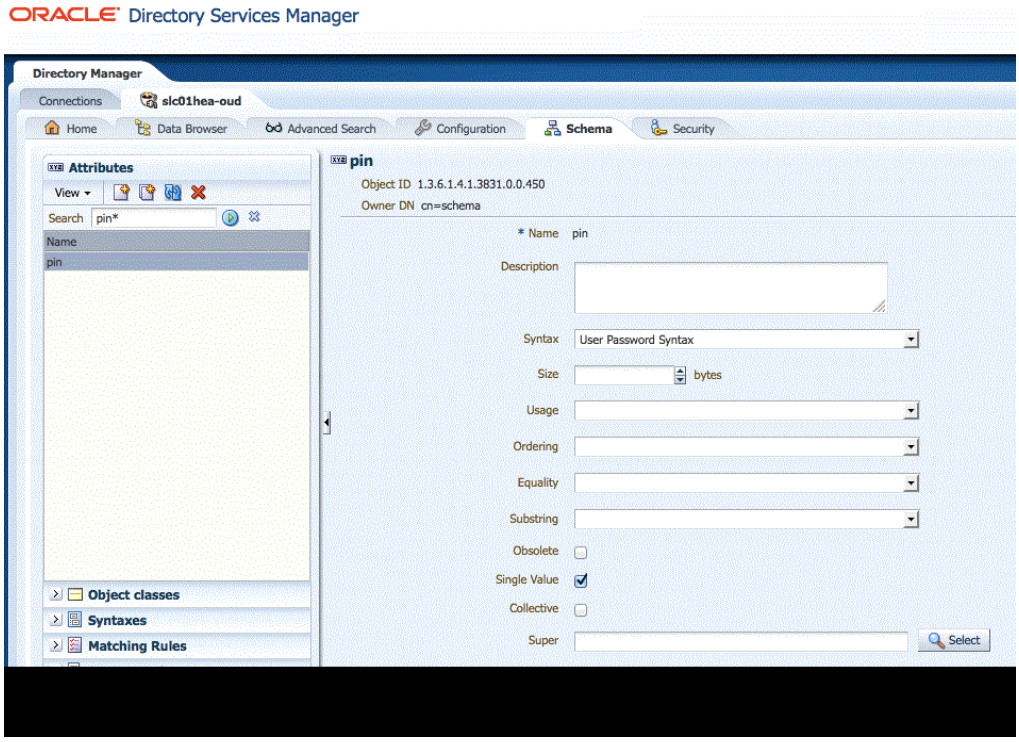
To use this feature, the user PIN or other credential must be present in the user entry in the directory server. Mobile and Social does not put restrictions on credential values; it simply validates the credential value submitted by the user with the value present in the user entry. For security reasons, user credentials should be saved as hashed attributes. See Section 42.3.1.6, "Configuring OAM to use the JWT-OAM + PIN Token Service Provider" for the steps required to get this configuration to work.

42.3.1.6 Configuring OAM to use the JWT-OAM + PIN Token Service Provider

1. Open your directory server and extend the LDAP Schema for the PIN Attribute. After the LDAP schema change, you can add new users and modify existing users to have a PIN value.

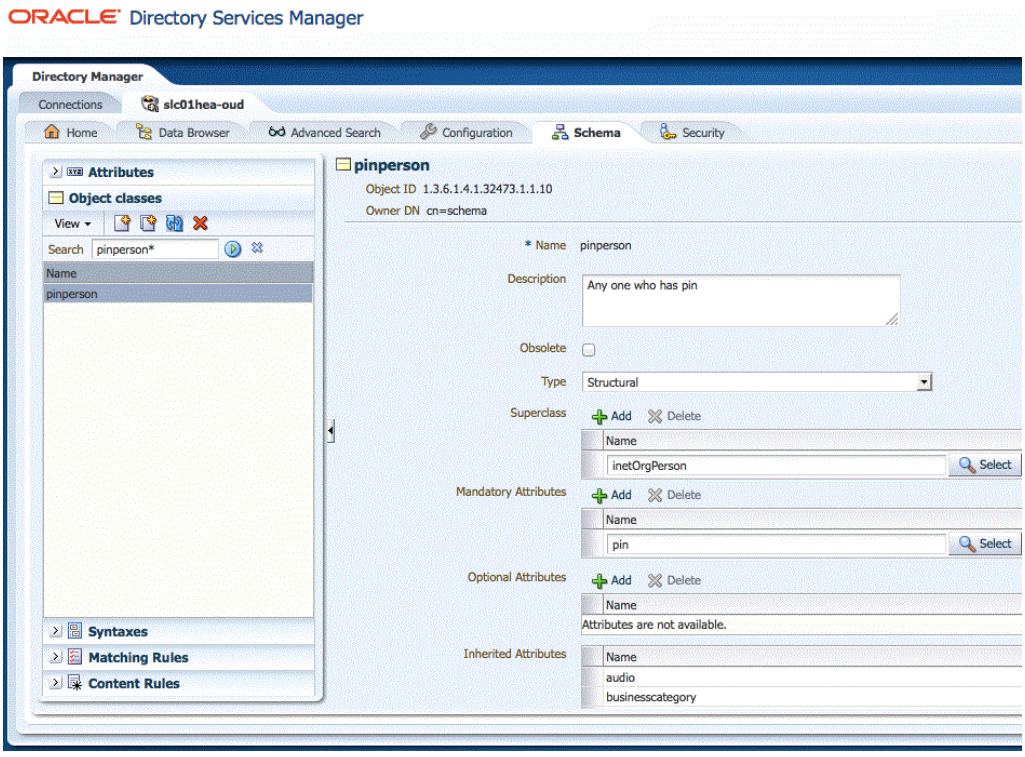
   a. Create the PIN attribute. See Figure 42–1 for an example using Oracle Directory Services Manager (ODSM) and Oracle Unified Directory (OUD).

Figure 42–1 Using ODSM to create the PIN attribute in OUD



   b. Create a PINPERSON object class. See Figure 42–2 for an example using Oracle Directory Services Manager (ODSM).

Figure 42–2 Using ODSM to create the pinperson object class

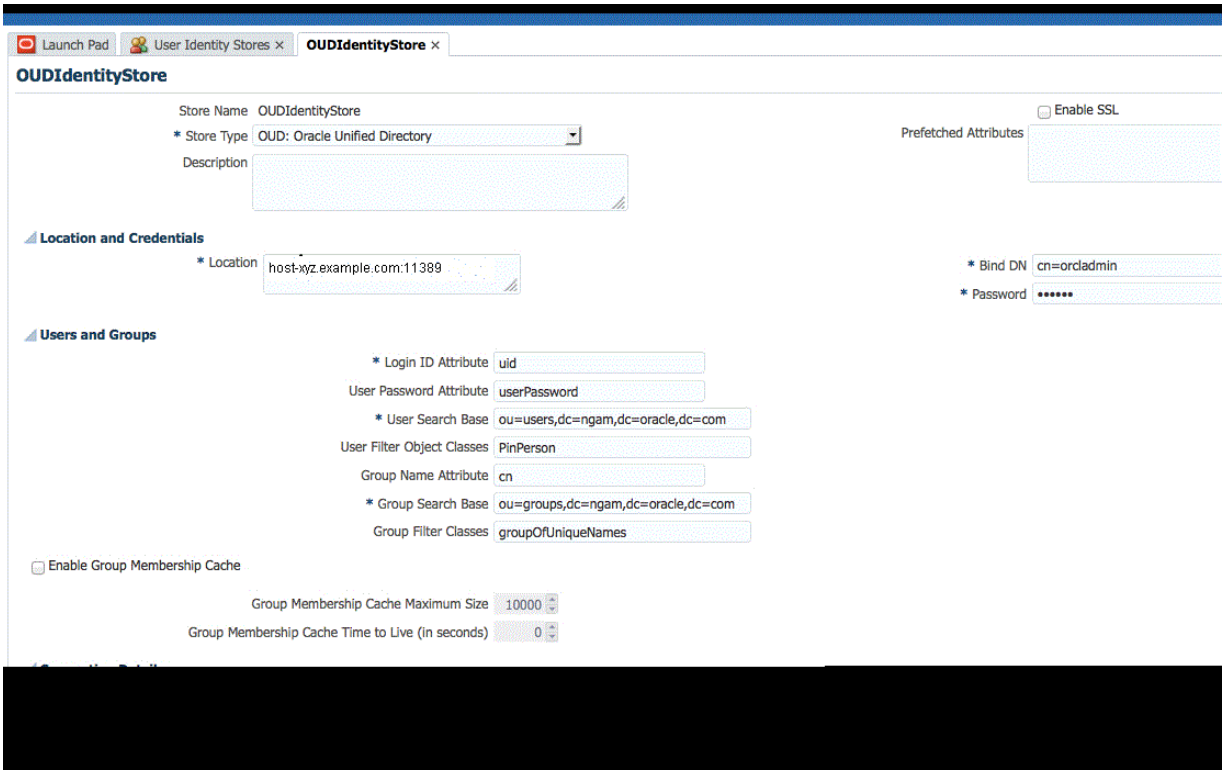


2. Using the OAM Console, create a new IdentityStore for the external LDAP server that you extended to use the PIN attribute.

   a. Log in to the OAM Console and choose **Launch Pad** > **User Identity Stores**.

   b. Click the **Create** button to create a new IdentityStore in OAM ID Stores. See Figure 42–3 for details.

Figure 42–3 Using the OAM Console to create an IdentityStore



3. Add a new OAM authentication module for the new Identity Store.
   a. Open the OAM console and choose **Launch Pad** > **Authentication Modules**.
   b. Create a new authentication module by clicking the Create New button and selecting **Create Custom Authentication Module**.
   c. On the **General** tab, type a **Name**--for example, `PINBasedUserPlugin`.
   d. On the **Steps** tab, type the following values:

      Step Name: `UI`

      Plug-in Name: `UserIdentificationPlugIn`

      Plug-in Parameters:

      - **KEY_LDAP_FILTER:** `(&(uid={KEY_USERNAME})(pin={cred}))`

      - **KEY_IDENTITY_STORE_REF:** `OUDIdentityStore` (This data store has to be added first to do this step.)

      - **KEY_SEARCH_BASE_URL:** `ou=users,dc=ngam,dc=oracle,dc=com`

   e. On the **Steps Orchestration** tab, choose **UI** from the **Initial Step** menu.
4. Add a new authentication scheme.
   a. Open the OAM Console and choose **Launch Pad** > **Authentication Schemes**.
   b. Click the **Create** button to create a new authentication scheme.
   c. Complete the form:

      Name: `PINBasedUserAuthNScheme`

Authentication Level: `3`

Challenge Method: `FORM`

Authentication Module: Choose the authentication module you created in the previous step--for example, `PINBasedUserPlugin`.

5. Change the authentication policy to use the new authentication scheme.
   a. Open the OAM Console and choose **Launch Pad** > **Application Domain** > **IAM Suite** > **OICTokenExchangePolicy**.
   b. From the **Authentication Scheme** drop-down menu, choose **PINBasedUserAuthNScheme**.
6. Configure the (Mobile) JWTOAMAuthenticationProvider.
   a. Open the OAM Console and choose **Launch Pad** > **Mobile Service** > **MobileJWTOAMAuthenticationProvider**.
   b. From the **Identity Directory Service Name** drop-down menu, choose the directory service that points to the IdentityStore you created in step 2.
   c. If a desktop (or non-mobile) service is required, repeat steps a and b to configure the JWTOAMAuthenticationProvider.
7. Create an application profile.
   a. Open the OAM Console and choose **Launch Pad** > **Application Profiles**.
   b. Click the Create button and create a new application profile--for example, `mobileapp1`.
8. Update the MobileServiceDomain.
   a. Open the OAM Console and choose **Launch Pad** > **Mobile Services** > **MobileServiceDomain**.

      The Service Domain Configuration page opens.
   b. In the **Application Profiles** section (subtab), add the application profile you created in the previous step (`mobileapp1`).
   c. Click the **Service Profiles** subtab to open it and change the **Authentication Service** to `MobileJWTOAMAuthentication`.

42.3.2 Defining, Modifying or Deleting an Authorization Service Provider

An *Authorization Service Provider* allows a back-end Identity service to make authorization decisions on behalf of a connected application. This section contains the following topics about Authorization Service Providers.

- Creating an Authorization Service Provider
- Editing or Deleting an Authorization Service Provider
- Understanding the Pre-Configured Authorization Service Provider

42.3.2.1 Creating an Authorization Service Provider

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Service Providers** panel in the home area and choose Create Authorization Service Provider.

The Authorization Service Provider Configuration page displays.

3. Enter values for the Authorization Service Provider properties.
   - **Name** - Type a unique name for this Authorization Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
   - **Service Provider Java Class** - Type the name of the Java class that implements this Authorization Service Provider.
4. Add or delete Authorization Service Provider Attributes and their values based on Table 42–6.

Table 42–6 Access Manager Authorization Service Provider Default Attributes

Name	Value	Notes
OAM_VERSION	OAM_11G	Either **OAM_11G** or **OAM_10G**, depending on the Oracle Access Manager version in use.
DEBUG_VALUE	0	
TRANSPORT_SECURITY	OPEN	Specify the method for encrypting messages between this AccessGate and the Access Servers. The encryption methods need to match. Valid values include: ■ **OPEN** ■ **SIMPLE** ■ **CERT**
OAM_SERVER_1	localhost:5575	Specify the host name and port number of the primary Oracle Access Management server.
OAM_SERVER_1_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_1. The default value is 4.
OAM_SERVER_2	oam_server_2:5575	Specify the host name and port number of the secondary Oracle Access Management server.
OAM_SERVER_2_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_2. The default value is 4.

5. Configure the WebGate agent by creating a new agent or entering values for an existing agent as per Table 42–7. The WebGate agent configuration values are specific to the integration between Mobile Services and Access Manager.

Table 42–7 WebGate Agent for Authorization Service Provider Default Attributes

Name	Value	Notes
WebGate ID		Type the WebGate agent name that identifies the WebGate instance to which you are connecting.

Table 42–7 (Cont.) WebGate Agent for Authorization Service Provider Default Attributes

Name	Value	Notes
`Encrypted Password`	`Copy and paste the encrypted password for the WebGate ID`	Locate the *OAM-Domain-Directory*`/output/`*Profile-Name*`/ObAccessClient.xml` file and copy the encrypted password value located in the element `ParamName=accessClientPasswd`.

6. Click Create to create the Service Provider configuration object.

42.3.2.2 Editing or Deleting an Authorization Service Provider

To edit or delete an Authorization Service Provider, select the Service Provider in the panel and click Edit or Delete on the panel's tool bar.

42.3.2.3 Understanding the Pre-Configured Authorization Service Provider

Mobile and Social provides a pre-configured Authorization Service Provider for Access Manager named the OAMAuthorization Authorization Service Provider. The `oracle.security.idaas.rest.provider.authorization.OAMSDKAuthZServiceProvider` Java class implements the pre-configured Authorization Service Provider.

42.3.3 Defining, Modifying or Deleting a User Profile Service Provider

A *User Profile Service Provider* allows an application to query and update a directory server. Many LDAP compliant directory servers are supported including:

- Microsoft Active Directory
- Novell eDirectory
- Oracle Directory Server Enterprise Edition
- Oracle Internet Directory
- Oracle Unified Directory
- Oracle Virtual Directory (using the Oracle Internet Directory template)
- OpenLDAP
- IBM Tivoli Directory Server (using the OpenLDAP template)
- WebLogic Server Embedded LDAP

Mobile and Social includes a pre-configured User Profile Service Provider that your organization can use, or you can create your own. Before you can create a User Profile Service Provider you must first create an *Identity Directory Service* profile. The Identity Directory Service (IDS) is a flexible service used by Access Manager as the means for accessing multiple identity data stores. For more information about the Identity Directory Service, see Section 5.3, "Managing the Identity Directory Service User Identity Stores."

The following sections contain more information about User Profile Service Providers.

- Creating a User Profile Service Provider
- Editing or Deleting a User Profile Service Provider
- Understanding the Pre-Configured User Profile Service Provider

42.3.3.1 Creating a User Profile Service Provider

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Service Providers** panel in the home area and choose **Create User Profile Service Provider**.

   The Service Provider Configuration page displays.
3. Enter values for the User Profile Service Provider properties.
   - **Name** - Type a unique name for this User Profile Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
4. Add or delete User Profile Service Provider Attributes and their values based on Table 42–8.

> **Note:** LDAP attribute names are generally not case sensitive but when communicating with the Oracle Identity Governance Framework (IGF), LDAP attribute names *are* case sensitive.

Table 42–8 User Profile Service Provider Default Attribute Names and Values

Name	Value	Notes
`accessControl`	false	Supported values include **`true`** or **`false`** (enable/disable, respectively) depending on whether the accessControl feature is to be disabled or enabled.
`adminGroup`	cn=Administrators,ou=groups, ou=myrealm,dc=base_domain	If accessControl is enabled, specify the distinguished name (DN) of the adminGroup to see if the User is in it.
`selfEdit`	`true`	Supported values include **`true`** or **`false`** depending on if the User can edit his or her profile for the accessControl feature. This is also one of the accessControl feature's configuration properties.
`proxyAuth`	-	Supported values include **`true`** or **`false`** depending on if the proxyAuth feature is enabled or disabled, respectively. This attribute is required only if proxyAuth is supported and the Administrator does not want to use the proxyAuth feature. This attribute is not included in a new installation of Mobile and Social. An Administrator can add this property.

5. In the **Identity Directory Service** section, choose from the **Name** menu the Identity Directory Service profile to use with this User Profile Service Provider.
   - To create an Identity Directory Service profile, see Section 5.3.2, "Creating an Identity Directory Service Profile."
   - If you choose either of the default Identity Directory Services (`userrole` or `idxuserrole`) you can't view or edit the configuration values in this section.
   - If you choose an Identity Directory Service connection that you or another administrator created, select the **View** option to view and edit additional

properties as documented in Section 42.3.3.2, "Editing or Deleting a User Profile Service Provider."

6. Click Create to create the Service Provider configuration object.

42.3.3.2 Editing or Deleting a User Profile Service Provider

To edit or delete a User Profile Service Provider, select the Service Provider in the panel and click Edit or Delete on the panel's tool bar. This section describes the additional User Profile Service Provider Configuration properties for the Identity Directory Service connection as they appear when editing a User Profile Service Provider that you or another Administrator created.

Name - The name of this User Profile Service Provider.

Description - (Optional) Type a short description that will help you or another Administrator identify this service in the future.

Attributes

Add or delete User Profile Service Provider Attributes and their values based on Table 42–8.

> **Note:** LDAP attribute names are generally not case sensitive but when communicating with the Oracle Identity Governance Framework (IGF), LDAP attribute names *are* case sensitive.

Table 42–9 User Profile Service Provider Default Attribute Names and Values

Name	Default Value	Notes
`accessControl`	false	Supported values include **`true`** or **`false`** (enable/disable, respectively) depending on whether the accessControl feature is to be disabled or enabled.
`adminGroup`	`cn=Administrators,ou=groups, ou=myrealm,dc=base_domain`	If accessControl is enabled, specify the distinguished name (DN) of the adminGroup to see if the User is in it.
`selfEdit`	`true`	Supported values include **`true`** or **`false`** depending on if the User can edit his or her profile for the accessControl feature. This is also one of the accessControl feature's configuration properties.
`proxyAuth`	true	Supported values include **`true`** or **`false`** depending on if the proxyAuth feature is enabled or disabled, respectively. This attribute is required only if proxyAuth is supported and the Administrator does not want to use the proxyAuth feature. This attribute is not included in a new installation of Mobile and Social. An Administrator can add this property.

Identity Directory Service

Name - The Identity Directory Service profile that connects the User Profile Service Provider to one or more directory servers. For more information about the Identity Directory Service, see Section 5.3, "Managing the Identity Directory Service User Identity Stores."

- If either of the default Identity Directory Services are selected (either `userrole` or `idxuserrole`) you cannot view or edit the configuration values.
- If an Identity Directory Service connection that you or another Administrator created is selected, you can view and edit the configuration values as needed.

Relationship Configuration

Type the URI segment used to access the corresponding column in the Identity Directory Service. Use **Add** to add a new relationship or **Remove** to remove a configured relationship.

- **Access URI** - Type a URI segment that will be used to access a corresponding data column in the Identity Directory service. For example, if `memberOf` is the Access URI, then:

  ```
  http://host:port/.../idX/memberOf
  ```

  would be the URI to access related entities of an entity with ID `idX`.

- **Identity Directory Service Relation** - Choose the Directory Service relationship that is to be accessed by the **Access URI** segment. You can configure relationships on the **Relationships** tab in the **Identity Directory Service** configuration section provided that the Identity Directory Service *is not* the pre-configured UserProfile Identity Provider. (You cannot configure Identity Directory Service relationships for the *UserProfile* Service Provider.)
- **Entity URI Attribute** - Type the JSON attribute name to be used in the URI response sent from the Mobile and Social server. For example, if *person-uri* is the specified entity URI attribute, the URI response would be as follows:

  ```
  { {"person-uri":uriY1, ...}, {"person-uri":uriY2, ...}, ... }
  ```

  where `uriY1` and `uriY2` are the direct URIs to access each of the related entities.

- **Scope for Requesting Recursion** - Use Scope attribute values with the scope query parameter to retrieve a nested level of attributes in a relationship search. To access related entities recursively, type the value to be used. The Mobile and Social default configuration uses two scope attribute values: `toTop` and `all`. If the **Scope for Requesting Recursion** value is the attribute value `all`, then the following REST URI example is used to make the request:

  ```
  http://host:port/.../idX/reports?scope=all
  ```

  In this example, the URI returns the entities related to the entity with ID `idX`, as well as all further related entities.

42.3.3.3 Understanding the Pre-Configured User Profile Service Provider

Mobile and Social provides a pre-configured User Profile Service Provider for LDAP-compliant directory servers named UserProfile. This Service Provider allows lookup and update tasks to be performed on directory objects using Mobile and Social.

42.4 Defining Service Profiles

A *Service Profile* defines a Service Endpoint URL for a Service Provider on the Mobile and Social server. Each Service Provider instance requires at least one corresponding Service Profile instance. You can create multiple Service Profiles for a single Service Provider; each Service Profile will define different token capabilities and service endpoints for the Service Provider.

Note: One Service Profile can be assigned to multiple Service Domains. In general, mobile Service Profiles should be assigned to mobile Service Domains, and non-mobile Service Profiles should be assigned to non-mobile Service Domains. See Section 42.7, "Defining Service Domains."

Create one or more Service Profiles after creating the required Service Provider(s). This section covers the following topics:

- Defining, Modifying and Deleting an Authentication Service Profile
- Defining, Modifying and Deleting an Authorization Service Profile
- Defining, Modifying and Deleting a User Profile Service Profile

42.4.1 Defining, Modifying and Deleting an Authentication Service Profile

The following sections contain information regarding Authentication Service Profiles.

- Creating an Authentication Service Profile
- Editing or Deleting an Authentication Service Profile

42.4.1.1 Creating an Authentication Service Profile

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click **Create** in the **Service Profiles** panel in the home area and choose **Create Authentication Service Profile**.

   The Authentication Service Profile Configuration page displays.
3. Enter values for the Authentication Service Profile general properties.

Table 42–10 Authentication Service Profile Default General Properties

Name	Notes
Name	Type a unique name for this Authentication Service Profile.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.
Service Type	Shows the type of Service Profile that you are creating (either a **User Profile Service**, an **Authentication Service**, or an **Authorization Service)**.The value is read-only.
Service Endpoint	Create a unique uniform resource identifier (URI) address for this service by typing a string in the box; for example, `localhost:5575`. ■ If creating an *Authentication Service* Profile, the **URI Category Information** section shows the URIs that will be created to create, validate, manage, and delete the Profile's client, user, and Access Tokens, as well as the "Client Registration Handle" URI that is used to register devices. ■ If creating an *Authorization Service* Profile, the **URI Category Information** section shows the authorization URI category that will be created on the Service. ■ If creating a *User Profile Service* Profile, the **URI Category Information** section shows the URI categories that will be created on the Service (one URI to manage Users, and another to manage Groups).

Table 42–10 (Cont.) Authentication Service Profile Default General Properties

Name	Notes
Service Provider	Choose the Service Provider on which this Service Profile should be based. The contents of this list are determined by the Service Type. A Service Provider must be defined before you can create a corresponding Service Profile.
Service Enabled	Select the box to enable the service; clear the box to disable.

4. Select an option under Token Support and URI Category Information to enable support for the token type on the service, or clear the option box to disable support for the token type on the service.

   Token Support applies to Authentication Service Profiles only. The corresponding uniform resource identifier (URI) is listed alongside each token type.

Table 42–11 Token Support and URI Category Information Default Properties

Name	Notes
Client Registration Handle	Required for mobile token services so that the client device can register with the Mobile and Social server. The server issues a Client Registration Handle after authenticating the user. When OAAM and its Security Handler Plug-in is used in conjunction with a mobile Authentication Service, the Plug-in can run fraud detection and risk analysis policy checks, enhancing authenticity and the trust level of a client. To add an Authentication Service Profile to a mobile Service Domain, Client Registration Handle must be enabled. Client Registration Handles are not used in non-mobile Service Domains.
Client Token	Select to enable Client Tokens on the Service. A Client Token is a security grant issued by the Mobile and Social server to prove that a non-mobile device or client is authenticated. The server issues a Client Token after authenticating the client based on a name and password or other credentials. Client Tokens are optional in non-mobile Service Domains. They are not used in mobile Service Domains.
User Token	Select to enable User Tokens on the Service. A User Token is a security grant issued by the Mobile and Social server to prove that a user is authenticated. A User Token can be used to request an Access Token.
Access Token	Select to enable Access Tokens on the Service. An Access Token is a security grant issued by the Mobile and Social server so that a client application can access a specific protected resource. A client application can get an Access Token by presenting a User Token, provided that the user is authorized to access the resource.

5. Click Create to create the Service Profile configuration object.

42.4.1.2 Editing or Deleting an Authentication Service Profile

To edit or delete an Authentication Service Profile, select the Service Profile in the panel and click Edit or Delete on the panel's tool bar.

42.4.2 Defining, Modifying and Deleting an Authorization Service Profile

The following sections contain information regarding Authentication Service Profiles.

- Creating an Authorization Service Profile
- Editing or Deleting an Authorization Service Profile

42.4.2.1 Creating an Authorization Service Profile

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Service Profiles** panel in the home area and choose Create Authorization Service Profile.

   The Authorization Service Profile Configuration page displays.
3. Enter values for the Authorization Service Profile general properties.

Table 42–12 Authorization Service Profile Default General Properties

Name	Notes
Name	Type a unique name for this Authorization Service Profile.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.
Service Type	Shows the type of Service Profile that you are creating (either a **User Profile Service**, an **Authentication Service**, or an **Authorization Service)**.The value is read-only.
Service Endpoint	Create a unique uniform resource identifier (URI) address for this service by typing a string in the box; for example, `localhost:5575`. ■ If creating an *Authentication Service* Profile, the **URI Category Information** section shows the URIs that will be created to create, validate, manage, and delete the Profile's client, user, and Access Tokens, as well as the "Client Registration Handle" URI that is used to register devices. ■ If creating an *Authorization Service* Profile, the **URI Category Information** section shows the authorization URI category that will be created on the Service. ■ If creating a *User Profile Service* Profile, the **URI Category Information** section shows the URI categories that will be created on the Service (one URI to manage Users, and another to manage Groups).
Service Provider	Choose the Service Provider on which this Service Profile should be based. The contents of this list are determined by the Service Type. A Service Provider must be defined before you can create a corresponding Service Profile.
Service Enabled	Select the box to enable the service; clear the box to disable.

4. Click Create to create the Service Profile configuration object.

42.4.2.2 Editing or Deleting an Authorization Service Profile

To edit or delete an Authorization Service Profile, select the Service Profile in the panel and click Edit or Delete on the panel's tool bar.

42.4.3 Defining, Modifying and Deleting a User Profile Service Profile

The following sections contain information regarding Authentication Service Profiles.

- Creating a User Profile Service Profile
- Editing or Deleting a User Profile Service Profile

42.4.3.1 Creating a User Profile Service Profile

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Service Profiles** panel in the home area and choose Create User Profile Service Profile.

   The User Profile Service Profile Configuration page displays.
3. Enter values for the User Profile Service Profile general properties.

Table 42–13 User Profile Service Profile Default General Properties

Name	Notes
Name	Type a unique name for this Authorization Service Profile.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.
Service Type	Shows the type of Service Profile that you are creating (either a **User Profile Service**, an **Authentication Service**, or an **Authorization Service)**.The value is read-only.
Service Endpoint	Create a unique uniform resource identifier (URI) address for this service by typing a string in the box; for example, `localhost:5575`. ■ If creating an *Authentication Service* Profile, the **URI Category Information** section shows the URIs that will be created to create, validate, manage, and delete the Profile's client, user, and Access Tokens, as well as the "Client Registration Handle" URI that is used to register devices. ■ If creating an *Authorization Service* Profile, the **URI Category Information** section shows the authorization URI category that will be created on the Service. ■ If creating a *User Profile Service* Profile, the **URI Category Information** section shows the URI categories that will be created on the Service (one URI to manage Users, and another to manage Groups).
Service Provider	Choose the Service Provider on which this Service Profile should be based. The contents of this list are determined by the Service Type. A Service Provider must be defined before you can create a corresponding Service Profile.
Service Enabled	Select the box to enable the service; clear the box to disable.

4. Click Create to create the Service Profile configuration object.

42.4.3.2 Editing or Deleting a User Profile Service Profile

To edit or delete a User Profile Service Profile, select the Service Profile in the panel and click Edit or Delete on the panel's tool bar.

42.5 Defining Security Handler Plug-ins

A *Security Handler Plug-in* enhances security by consulting additional logic for trust and risk analysis. Such additional logic may deny access based on certain risky operations. Mobile authentication invokes the Security Handler Plug-in during sensitive security operations; for example, during virtually all token acquisition operations including client application registration.

Note: Security Plug-in usage is optional. If used, it should only be applied to mobile-related Service Domains and its authentication services and client applications.

Mobile and Social includes the following pre-configured Security Handler Plug-ins.

- `OAAMSecurityHandlerPlugin` enables sophisticated device and client application registration logic as well as the advanced risk and fraud analysis logic found in OAAM.
- `Default` offers very limited risk analysis logic.

The following sections contain information regarding defining Security Handler Plug-ins.

- Creating a Security Handler Plug-in
- Editing or Deleting a Security Handler Plug-in
- Device Fingerprinting and Device Profile Attributes

42.5.1 Creating a Security Handler Plug-in

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Security Handler Plug-ins** panel in the home area.

   The Security Handler Plug-in Configuration page displays.
3. Enter values for the Security Handler Plug-in general properties.

Table 42–14 Security Handler Plug-in General Properties

Name	Notes
Name	Type a unique name for this Authorization Service Profile.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.
Security Handler Class	Choose the Java class that defines the Security Handler Plug-in that you want to use. This release of Mobile and Social supports two Security Handler Plug-ins, the DefaultSecurityHandlerPlugin and the OAAMSecurityHandlerPlugin.

4. Enter name-value pairs for the Security Handler Plug-in Attributes.
   - For descriptions of the `OaamSecurityHandlerPlugin` attributes, see Section 42.9.2.7.3, "Setting Up OTP E-Mail Integration."
   - The `DefaultSecurityHandlerPlugin` has a single attribute setting, `allowJailBrokenDevices`. This specifies if jail-broken client devices should be allowed or denied access to protected resources. Set the attribute's value to `false` to deny access (default setting) or set it to `true` to allow access. The OAAMSecurityHandlerPlugin does not need to be configured for jail break enforcement. See Section 42.8.1, "Adding a New Jail Breaking Detection Policy," for more information.
5. Click Create to create the Security Handler Plug-in configuration object.

42.5.2 Editing or Deleting a Security Handler Plug-in

To edit or delete a Security Handler Plug-in, select the definition in the panel and click Edit or Delete on the panel's tool bar.

42.5.3 Device Fingerprinting and Device Profile Attributes

When a mobile application is started, Mobile Client SDK logic in the application will attempt to detect a number of Device Profile attributes. Some Device Profile attributes are general attributes that cannot uniquely identify a device, such as OS Type, OS Version, language locale setting, network setting, and geographic location. Some attributes are hardware identifiers that can uniquely identify a device. An example of a hardware identifier is a MAC Address on a mobile device. The mobile OS type and version will dictate the kinds of Device Profile attributes that can be detected.

When a mobile application requests a token through the Mobile Client SDK, the SDK logic will send the Device Profile attributes as a part of an HTTP request. This set of Device Profile attributes enhances security by creating an audit trail for devices that assists device identification.

When the OAAM Security Plug-in is used, a particular combination of Device Profile attribute values is treated as a device finger print, known as the *Digital Finger Print* in the OAAM Administration Console. Each finger print is assigned a unique fingerprint number. Each OAAM session is associated with a finger print and the finger print makes it possible to log (and audit) the devices that are performing authentication and token acquisition.

42.6 Defining Application Profiles

An *Application Profile* defines the client application that will consume services provided by the Service Providers. A single Application Profile can be assigned to multiple Service Domains. More information can be found in the following sections.

- Creating an Application Profile
- Editing or Deleting an Application Profile

42.6.1 Creating an Application Profile

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Application Profiles** panel in the home area.

   The Application Profiles Configuration page displays.
3. Enter values for the Application Profile general properties.

Table 42–15 Application Profile General Properties

Name	Notes
Name	The value must be a unique one that distinguishes the application from all other applications on the server. This value and the application name value embedded in the client application must match.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.

4. Enter name-value pairs for the attributes used by the Mobile and Social server to perform server functions for this application; for example, creating a Client Registration Handle.
   - **`Mobile.clientRegHandle.baseSecret`** is a mandatory attribute used by the server as a private secret to sign each Client Registration Handle for this application.
   - **`userId4BasicAuth`** is the user ID attribute used by the server and the application to perform HTTP Basic authentication. For more information see Section 41.4.1, "Protecting the Mobile Client Registration Endpoint."
   - **`sharedSecret4BasicAuth`** is the shared secret attribute used by the server and application to perform HTTP Basic authentication.
5. Define the Mobile Application Profile properties.
   - **Jail Breaking Detection** - Select the **Enabled** box to activate Jail Breaking Detection for this application, or clear the box to disable it. If Jail Breaking Detection is grayed out, the Jail Breaking Detection Policy is disabled in Mobile and Social. For more information, see Section 42.8, "Using the Jail Breaking Detection Policy."
   - **Mobile Configuration** - Select this option to expose additional mobile configuration settings on the Application Profile Configuration page.
6. Click Create to create the Application Profile configuration object.

   See Section 42.6.2, "Editing or Deleting an Application Profile" for information on properties that can be configured only after the Application Profile is created.

42.6.2 Editing or Deleting an Application Profile

To edit or delete an Application Profile, select the definition in the panel and click Edit or Delete on the panel's tool bar. This section describes additional Application Profile properties as they appear when editing a User Profile Service Provider that you or another Administrator previously created.

- **Configuration Settings**
  - **Profile Cache Duration** - The maximum amount of time that the Application Profile details cached on the mobile device will remain valid. If the time is elapsed when the mobile client application requests the Application Profile, the cached Profile is replaced with a freshly downloaded version. If the time is not elapsed, the cached Profile is used.
  - **Authentication Retry Count** - The maximum number of retries that a User is allowed if invalid credentials are provided during registration/authentication. This setting is not honored in the iOS Mobile SDK.
  - **Offline Authentication** - Select the **Allowed** box to allow users to log in and authenticate to the application locally. Clear the box to block users from authenticating locally.
  - **Claim Attributes** - The set of attributes that will be fetched from the device and passed to the server during registration/authentication.
  - **Social Identity WebView** - Choose **Embedded** if users should be presented with the Mobile and Social login page inside the application using the embedded WebView class, or choose **External** if the login page should be presented in an external browser.
- **Platform Specific Settings**

- **URL Scheme** - Type the URL scheme that is used to invoke this mobile client application, as configured in the application itself.
- **Apple iOS Bundle ID** - Type the unique Bundle ID that is configured in the mobile client application. Each iOS mobile application has a unique Bundle ID.
- **Android Package** - Type the fully qualified name of an activity in the Android application. This activity should have `<data android:scheme="xyz" />` in its `<intent-filter>`.

  Note: The `scheme (xyz)` should be the same as the URL scheme.

  For details regarding the `<data>` element, please see the following web page:

  http://developer.android.com/guide/topics/manifest/data-element.html
- **Android Application Signature** - Enter the signature of the Android application. You can obtain the signature from the certificate with which the application is signed. On Linux, you can obtain the signature using the following command:

  ```
  keytool -exportcert -alias <alias_name> -keystore <keystore_name>
  -storepass <keystore_password> | xxd -c 256 -ps
  ```

  Note: The signature obtained using the above command will have a carriage return after 256 characters. Remove it before entering the signature in this field.

  You can also retrieve the signature programmatically. For details, see "Invoking the Mobile Single Sign-on Agent App" in the *Developer's Guide for Oracle Access Management*.

- **Custom Settings / Mobile Custom Attributes** - Configure attributes or properties specific to the mobile client application. Mobile Custom Attributes are returned by the server to the mobile application as part of the Application Profile

42.7 Defining Service Domains

Create a *Service Domain* to associate Service Profiles with Application Profiles and the corresponding configuration settings. When the Create Service Domain page is displayed, you can:

- Choose if the Service Domain is for managing mobile applications or desktop applications.
- Choose an authentication scheme and, optionally, a Security Handler Plug-in for the Service Domain.
- Add one or more Mobile SSO Agents to the Service Domain and configure which agents have priority over others.
- Add one or more applications to the Service Domain and configure which applications can use a Mobile SSO Agent.
- Choose at least one Service Profile for the Service Domain.

- Configure security settings to protect the Service Domain's selected services.

More information can be found in the following sections.

- Creating a Service Domain
- Editing or Deleting a Service Domain

42.7.1 Creating a Service Domain

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click Create in the **Service Domains** panel in the home area.

   The Create Service Domain Configuration page displays.
3. Enter values for the Service Domain general properties.

Table 42–16 Service Domain General Properties

Name	Notes
Name	Type a unique name for this Service Domain.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.
Type	Choose **Mobile Application** or **Desktop Application**. A *mobile application* is an application that runs on a mobile operating system, such as the Android or iOS operating systems. A *desktop application* is an application that runs on a non-mobile operating system.
Credential for Registering an Application	If configuring a mobile Service Domain, choose the minimum credential level required to register an application. If you choose **User Password**, the server will prompt the User for a user name and password every time an application is registered, even if a mobile single sign-on agent is installed on the device. If you choose **User Token**, the server asks the mobile SSO agent to provide the User name and password. Subsequent application registrations on that device then will use the User Token issued to the mobile SSO agent for that purpose. User Password provides added security around the application registration process. User Token makes the application registration process more convenient for the User.
Authentication Scheme	If configuring a mobile Service Domain, choose **Mobile Service Authentication** or **Social Identity Authentication**. If you choose *Mobile Service Authentication*, the client will prompt the User for a User name and password. If you choose, *Social Identity Authentication*, the client will redirect to the Mobile and Social server and the User will use Social Identity to authenticate with an Identity Provider, for example Google or Facebook. This selection determines which Authentication Service Profiles you can choose on the **Service Profile Selection** configuration screen.
Security Handler Plug-in Name	**Security Handler Plug-in Name** - If configuring a mobile Service Domain, choose the Security Handler Plug-in to use. For information about the available Security Handler Plug-ins, see Section 42.2.3, "Understanding Security Handler Plug-ins."

4. Use one or all of the following options to add or select Application Profiles.

   If configuring a mobile domain, only mobile apps can be selected. Similarly, if configuring a non-mobile domain, only desktop apps can be selected

   a. Click **Browse Application Profiles** (under Application Profile Selection) to open a Search window from which you can search for one or more previously

configured Application Profiles to add to the Service Domain. Select the Profiles to add and click **Select**.

b. Alternately, if you know the exact name of the Application Profile, click **Add** and type the name directly into the table.

Table 42–17 Application Profile Selection Properties

Name	Notes
Application Profile Name	The name that uniquely identifies the client application to Mobile and Social.
Mobile Single Sign-on (SSO) Configuration	If configuring a mobile Service Domain, choose if each application should participate in mobile single sign-on as an SSO Agent, as an SSO Client, or not at all (None). ■ Choose **None** if this application does not want to participate in mobile SSO and instead wants to perform User authentication with the Mobile and Social server directly. ■ Choose **As an SSO Agent** if the application is a mobile single sign-on agent that can accept authentication requests from other apps. For details about creating a custom mobile SSO agent, refer to the Android or iOS SDK information in the *Developer's Guide for Oracle Access Management*. ■ Choose **As an SSO Client** if the application is configured to work with mobile single sign-on and it delegates user authentication and user session management responsibilities to a mobile SSO agent.
Agent Priority	Displays the numerical ranking for applications that are configured as mobile SSO Agents. When multiple agent apps are installed on the device, the Agent application with highest priority (smallest numerical rank) acts as the Agent application for all other Agent apps. If that Agent is deleted from the device, the Agent with the next highest ranking becomes the active Agent. Click **Move Up** and **Move Down** to reorder the agents by priority.
Description	(Optional) Type a short description that will help you or another Administrator identify this service in the future.

5. Click Next to select a Service Profile.

The Service Profile page displays.

6. Use one or both of the following options to add at least one Service Profile to the Service Domain.

For a mobile Service Domain, you can add one Service Profile for each authentication, authorization, and User Profile Services Service Provider. For a non-mobile Service Domain, you can add multiple Service Profiles for each authentication, authorization, and User Profile Services Service Provider.

a. Click **Select** to open a Search window from which you can search for a previously configured Service Profile. If configuring a mobile Domain, you can only select a mobile-compatible Authentication Service Profile. Similarly, if configuring a non-mobile domain, you can only select a desktop-compatible Authentication Service Profile. Select the Profile to assign and click **Select**. If you know the exact name of the Service Profile, click **Add** and type the name directly into the table.

b. Click **Create** to create a new Service Profile.

Table 42–18 Service Profile Selection Properties

Name	Notes
Authentication Service	(Optional) Displays the name of the Authentication Service Profile configured for this Service Domain and the corresponding Service Endpoint. If creating a new Service Profile, see Section 42.4.1, "Defining, Modifying and Deleting an Authentication Service Profile."
Authorization Service	(Optional) Displays the name of the Authorization Service Profile configured for this Service Domain and the corresponding Service Endpoint. If creating a new Service Profile, see Section 42.4.2, "Defining, Modifying and Deleting an Authorization Service Profile."
User Profile Service	(Optional) Displays the name of the User Profile Service Profile configured for this Service Domain and the corresponding Service Endpoint. If creating a new Service Profile, see Section 42.4.3, "Defining, Modifying and Deleting a User Profile Service Profile."

7. Click Next to configure Service Protection (authentication).

   The Service Protection page displays.

8. Configure authentication for the Service Profile using one of the following options.

   a. If you previously selected a User Profile Service for this Service Domain, configure the security settings to protect it.

Table 42–19 User Profile Service Protection Properties

Name	Notes
Authentication	Choose from the menu the Authentication Service Profile configured for this Service Domain, with which you would like to protect this User Profile service.
Secured Application	Select to require the client application to authenticate, either by presenting a Client Resource Handle or a Client Token.
Secured User	Select to require a User to authenticate, either by presenting a User Token or an Access Token, where the access token is previously acquired with a User Token.
Allow Read	Select to allow users to view User Profile data.
Allow Write	Select to allow users to update User Profile data.

   b. If you previously selected an Authorization Service for this Service Domain, configure the security settings to protect it.

Table 42–20 Authorization Service Protection Properties

Name	Notes
Authentication	Choose the Authentication Service Profile configured for this Service Domain, with which you would like to protect this Authorization service.
Secured Application	Select to require the client application to authenticate, either by presenting a Client Resource Handle or a Client Token.
Secured User	Select to require a User to authenticate, either by presenting a User Token or an Access Token, where the access token is previously acquired with a User Token.

9. Click Next to verify your selections.
10. Click Finish to create the Service Domain.

42.7.2 Editing or Deleting a Service Domain

To edit or delete an Service Domain, select the definition in the panel and click Edit or Delete on the panel's tool bar.

42.8 Using the Jail Breaking Detection Policy

Jail breaking is the process of removing or circumventing the limitations that manufacturers impose on their mobile devices. While legal, jail breaking can present a heightened security risk to protected resources. To counter this risk, Mobile and Social provides a preconfigured Jail Breaking Detection Policy for iOS devices.

The Jail Breaking Detection Policy consists of one or more statements that instruct a client application (built using the Mobile and Social SDK for iOS) to search for files that may indicate the device is jail broken. The Mobile and Social server sends the Policy statements to the iOS client application. The client device then returns a *true* (jail breaking is detected) or *false* value back to the Mobile and Social server. This value is forwarded to the Security Handler Plug-in and, depending on the security policies of the Security Handler Plug-in in use, Mobile and Social can allow access, deny access, or wipeout any Mobile and Social specific data from the application.

- If the *Default* Security Handler Plug-in is active and the policy logic says the device is jail broken, the Plug-in can ALLOW or DENY access to the client device depending on how the `allowJailBrokenDevices` Plug-in attribute is set.
- If the *Oaam* Security Handler Plug-in is active and the policy logic says the device is jail broken, the Plug-in can ALLOW or BLOCK access to the client device depending on how the OAAM policy rules are configured. (Refer to the *Administrator's Guide for Oracle Adaptive Access Manager* for information on the policy rules as in, for example, the Jail broken Mobile Device rule under the "OAAM Post-Authentication Security" policy.)

  Additionally, if a device is blacklisted, lost or stolen, this Plug-in can send a WIPEOUT command that will delete any Mobile and Social specific data from the device and block the device from future requests. If the user recovers the missing device, the device can be reset in OAAM.

See Section 42.5, "Defining Security Handler Plug-ins" for more information.

Note: OAAM's BLOCK and Mobile and Social's DENY mean the same thing.

The following sections contain more information.

- Adding a New Jail Breaking Detection Policy
- Editing the Jail Breaking Detection Policy

42.8.1 Adding a New Jail Breaking Detection Policy

If you choose to create a new Jail Breaking Detection Policy using XML, click the **Load** button to overwrite the default Policy completely. A schema file is available from customer support.

Use the following procedure to create a new Jail Breaking Detection Policy with the Oracle Access Management Console.

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click **JailBreaking Detection Policy** in the navigation pane.

   The **JailBreaking Detection Policy** page displays.
3. Click Add to configure the Conditions and Detection Logic properties for a new **JailBreaking Detection Policy**.
   - **Jail Breaking Detection** - Select **Enabled** to turn the Jail Breaking Detection policy on, or clear this option to turn it off for all client Application instances. If you enable the Jail Breaking Detection Policy here, you can disable it on an application by application basis. If you disable the Policy here, you cannot enable or disable the feature on an application by application basis.
   - **Min OS Version** - The minimum iOS version to which the policy applies. If the value is 1.0, the policy will apply to iOS devices running at least version 1.0 of iOS.
   - **Max OS Version** - The maximum iOS version to which the policy applies. If the value is empty, a maximum iOS version number is not checked so the policy applies to any iOS version higher than the value specified for Min OS Version.
   - **Min Client SDK Version** - The minimum Mobile and Social Client SDK version number. For example, 11.1.2.0.0.
   - **Max Client SDK Version** - The maximum Mobile and Social Client SDK version number. For example, 11.1.2.2.0.
   - **Policy Expiration Duration** - Type the length of time in seconds that the SDK on the iOS client device should wait before expiring the local copy of the policy and retrieving a newer version.
   - **Auto Check Period** - Type the interval of time in minutes that the iOS client device should wait before executing the Jail Breaking Detection Policy statements again.
   - **Detection Location** - The iOS client device uses a logical-OR operator to evaluate Policy statements. Add a Detection Location as follows:
     - **File Path** - Type the absolute path to the file or directory on the device for which the Detection Policy should search.
     - **Action** - Select **Exists** which instructs the Detection Policy to evaluate whether it can access a file path.
     - **Success** - Select if the Policy should flag the device as jail broken if the specified files or directories are found on the device. Use this option if the policy is checking for unauthorized files or directories. Clear this option if the Policy should flag the device as jail broken if the specified files or directories are *not* found. (Use this option if checking for *required* files or directories.)

42.8.2 Editing the Jail Breaking Detection Policy

In most cases you can use the **Policy Statements** editor on the Jail Breaking Detection Policy Configuration page to change a Jail Breaking Detection Policy.

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. Click **JailBreaking Detection Policy** in the navigation pane and choose one of the following options:
   - To append changes to the Jail Breaking Detection Policy, click **Load** in the tool bar, browse to the XML file that contains the Jail Breaking Detection Policy statements that you want to append, choose **Append after existing policy statements**, and click OK. A schema file is available from customer support.
   - To overwrite the Jail Breaking Detection Policy, click **Load** in the tool bar, browse to the XML file that contains the Jail-Breaking Detection Policy statements that you want to load, choose **Overwrite existing policy statements**, and click OK. A schema file is available from customer support.
   - To edit the Jail Breaking Detection Policy, select it in the Policy Statements table to display its properties, make changes (as per Section 42.8.1, "Adding a New Jail Breaking Detection Policy") and click **Apply**.

42.9 Configuring Mobile Services with Other Oracle Products

The following sections contain information on configuring Mobile and Social with other Oracle products.

- Configuring Mobile Services for Access Manager
- Configuring Mobile Services for Oracle Adaptive Access Manager

42.9.1 Configuring Mobile Services for Access Manager

The following sections describe how to configure Mobile and Social to work with different versions of Access Manager.

- Configuring Mobile Services to Work With Access Manager in Simple and Certificate Mode
- Configuring an Authentication Service Provider for Remote Oracle Access Manager Server 10g
- Configuring an Authentication Service Provider for Remote Access Manager 11gR2 or Oracle Access Manager 11gR1 PS1

> **Note:** During installation, the Oracle Fusion Middleware Configuration Wizard generates a domain that supports both Mobile and Social and Access Manager. For more information, see the "Configuring Mobile and Social" chapter in the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.

42.9.1.1 Configuring Mobile Services to Work With Access Manager in Simple and Certificate Mode

Use the following procedure to configure Mobile Services to work with Access Manager if Access Manager is configured in Simple Mode.

Change the Server Mode to Simple

1. Open the Oracle Access Management Administration Console.

   The Launch Pad opens.

2. Scroll down to the **Configuration** panel and click **Server Instances**.
3. Click **Search** and click *oam_server1* in the Search Results.

   Click the Open button.
4. In the **OAM Proxy** section, choose **Simple** from the **Mode** menu and click **Apply**.

Change the WebGate Communication Mode to Simple

1. Open the Oracle Access Management Administration Console for the WebGate.

   The Launch Pad opens.
2. In the **Access Manager** panel, click **SSO Agents** > **OAM Agents** and click **Search**.
3. Select the WebGate and open it for editing.
4. Change the security mode for the WebGate to **Simple**, then click **Apply**.

   The system creates a new directory for the WebGate under `~/oam-domain/output/accessgate-oic` with the following files:

   - `aaa_cert.pem`
   - `aaa_key.pem`
   - `cwallet.sso`
   - `ObAccessClient.xml`
   - `password.xml`

Change the OIC OAMASDKAuthNProvider Security Mode to Simple

1. Copy the `.jks` files from the `~/oam-domain/output/webgate-ssl` directory to the `~/oam-domain/config/fmwconfig` directory.
2. Go to the `~/oam-domain/output/accessgate-oic` directory and open `password.xml`.

   Copy the `passwd` value from the file.
3. Open the Oracle Access Management Administration Console.

   The Launch Pad opens.

   Go to the **Mobile and Social** panel and click **Mobile Services** > **Service Providers** > **Authentication Service Providers** > **OAMAuthentication**.
4. Add the following name-value pairs to the Attributes table.

Name	Value
`PASSPHRASE`	The `passwd` value from step 2.
`KEYSTORE`	*<fully qualified path>*`/oam-domain/config/fmwconfig/oamclient-keystore.jks`
`TRUSTSTORE`	*<fully qualified path>*`/oam-domain/config/fmwconfig/oamclient-truststore.jks`

5. In the **Attributes** table, locate `TRANSPORT_SECURITY` and change the value from `OPEN` to `SIMPLE` or `CERT` and click **Save**.
6. Restart the Oracle Access Management server.

42.9.1.2 Configuring an Authentication Service Provider for Remote Oracle Access Manager Server 10g

The following procedure documents how to configure an Authentication Service Provider to work with a remote instance of the Oracle Access Manager 10g server.

1. Log in to the 10g Console and create the WG Profile.

   The OAM 10g Access Management Service must be turned on.

2. Navigate through the Mobile and Social Console to Mobile Services > Service Providers > Authentication Service Providers.

3. Click New to create a new Authentication Service Provider configuration.

4. Enter the appropriate values for the parameters.

   a. Change OAM_VERSION to OAM_10G from OAM_11G.

   b. Change WEBGATE_ID to the name you previously used to create the WG profile.

   c. Change OAM_SERVER_1 to the *hostname:port#* of the machine hosting the OAM 10G server.

   d. Add a new parameter named and populate it with the URL for any protected resource; for example, `http://server1.example.com/index.html`.

5. Save the Authentication Service Provider configuration.

6. Navigate through the Mobile and Social console to Mobile Services > Service Profiles > Authentication Services > OAMAuthentication.

7. From the Service Provider drop down menu, select the Authentication Service Provider just created; for example, `10GOAMAuthentication`.

8. Check the Client Token checkbox.

9. Clear the Access Token checkbox.

10. Save the OAMAuthentication configuration.

If Mobile and Social is configured to work with a remote instance of the Oracle Access Manager 10g server, you must also do either of the following:

- Define a `uid` attribute in the directory `DN` entry for user records in the Oracle Access Manager `UserStore`.
- Define a unique directory user entry attribute that can be used to identify the directory user entry in Mobile and Social.

> **Note:** Mobile and Social can dynamically obtain the unique directory user attribute name from Oracle Access Manager version 11g but the earlier 10g release requires that you specify the attribute to use when configuring Mobile and Social. If this attribute is not set, Client Token validation will fail in Mobile and Social.

The following procedure demonstrates setting the value to `CN`. Set the value to a unique user entry as configured on your directory server; `uid` or `loginid` may also be possible choices. Before beginning, confirm that the Oracle Access Manager DN for `UserStore` does not include a `uid` attribute for the Application Profile `profileid1`, and that the DN is as follows:

```
"CN=profileid1 profileid1, OU=Test, ..."
```

Complete the next steps upon confirming that both are true.

1. Open the Application Profile Configuration page for `profileid1` in Mobile and Social as documented in Section 42.6, "Defining Application Profiles."
2. In the Attributes section, add the following name-value pair and click Apply.

   Name: `userPrincipalAttrValue`

   Value: `CN`
3. Open the Service Provider Configuration page for your Oracle Access Manager 10g Authentication Service Provider as documented in Section 42.3.1, "Defining, Modifying or Deleting an Authentication Service Provider."
4. In the Attributes section, add the following name-value pair and click Apply.

   Name: `userPrincipalAttrName`

   Value: `CN`

42.9.1.3 Configuring an Authentication Service Provider for Remote Access Manager 11gR2 or Oracle Access Manager 11gR1 PS1

The following procedure documents how to configure an Authentication Service Provider to work with releases 11gR2 and 11gR1 PS1. The differences for the 11gR1 PS1 release console are documented in notes within each 11gR2 step.

> **Note:** See Section 41.1.2, "Deploying Mobile and Social" for information about deploying Mobile and Social with a WebGate.

1. Log in to the Oracle Access Management Console and register a WebGate (OAM Agent) for Mobile and Social.

   Be sure to enable the following options.

   - Allow Management Operations
   - Allow Token Scope Operations
   - Allow Master Token Retrieval
   - Allow Credential Collector Operations

   > **Note:** If using an OAM 11.1.1.*n* release console, enable Allow Management Operations.

2. Navigate through the Mobile and Social Console to **Mobile Services > Service Providers > Authentication Service Providers**.
3. Click **New** to create a new Authentication Service Provider configuration.
4. When using an OAM 11.1.2 release console, enter the following values:
   a. Keep the default value of `OAM_VERSION` as `OAM_11G`.
   b. Change `WEBGATE_ID` to the name you previously used to create the WG profile.
   c. Change `OAM_SERVER_1` to the *hostname:port#* of the machine hosting the OAM 11G server.

Note: If using an OAM 11.1.1.*n* release console:

1. Change the default value of `OAM_VERSION` to `OAM_10G`.
2. Change `WEBGATE_ID` to the name you previously used to create the WG profile.
3. Change `OAM_SERVER_1` to the *hostname:port#* of the machine hosting the OAM 11.1.1.5 server.
4. Add a new parameter named and populate it with the URL for any protected resource; for example, `http://server1.example.com/index.html`.

5. Save the Authentication Service Provider configuration.
6. Navigate through the Mobile and Social Console to **Mobile Services > Service Profiles > Authentication Services > OAMAuthentication**.
7. From the Service Provider drop-down menu, select the Authentication Service Provider just created; for example, `10GOAMAuthentication`.
8. Select the **Client Token** checkbox.
9. Clear the **Access Token** checkbox only if using OAM 11g R1 PS1.
10. Save the OAMAuthentication configuration.
11. Merge the CSF wallet files.

    OAM 11G generates the `cwallet.sso` file when the administrator creates the WG profile for Mobile and Social. To communicate with this WG profile, the administrator must merge the secret value in `cwallet.sso` into the Mobile and Social wallet.

    Note: Use the following command to display the wallet before and after the merge for verification that the merge has been successful.

    ```
    orapki wallet display -wallet wallet_location
    ```

    a. Copy `cwallet.sso` from OAM (~/domain-home/output) to the Mobile and Social host machine directory, `/tmp/oam`.

    b. Copy `cwallet.sso` from the Mobile and Social host machine directory (`~/config/fmwconfig`) to the Mobile and Social host machine directory, `/tmp/oic`.

    c. Download `merge-creds.xml` to the Mobile and Social host machine directory, `/tmp`.

    Example 42–1 is a sample `merge-creds.xml` file.

Example 42–1 Sample merge-creds.xml

```
<?xml version="1.0" encoding="UTF-8" standalone='yes'?>
<jpsConfig xmlns="http://xmlns.oracle.com/oracleas/schema/11/jps-config-11_1.xsd"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation=
  "http://xmlns.oracle.com/oracleas/schema/11/jps-config-11_1.xsd"
 schema-major-version="11" schema-minor-version="1">

<serviceProviders>
```

```
<serviceProvider
 class="oracle.security.jps.internal.credstore.ssp.SspCredentialStoreProvider"
 name="credstoressp" type="CREDENTIAL_STORE">
<description>File-based credential provider</description>
</serviceProvider>
</serviceProviders>

<serviceInstances>
<!-- Source file-based credential store instance -->
<serviceInstance location="/tmp/oam" provider="credstoressp"
 name="credential.file.source">
</serviceInstance>

<!-- Destination file-based credential store instance -->
<serviceInstance location="/tmp/oic" provider="credstoressp"
 name="credential.file.destination">
</serviceInstance>
</serviceInstances>

<jpsContexts>
<jpsContext name="FileSourceContext">
<serviceInstanceRef ref="credential.file.source"/>
</jpsContext>

<jpsContext name="FileDestinationContext">
<serviceInstanceRef ref="credential.file.destination"/>
</jpsContext>
</jpsContexts>
</jpsConfig>
```

d. Set the PATH variable to include ~/oracle_common/bin:~/oracle_common/common/bin:~

e. Initialize the WebLogic Scripting Tool by running `wlst.sh` on the command line.

f. Run the `migrateSecurityStore` WLST command.

Following is sample syntax for the WLST command.

```
$ wlst.sh

wls:/offline> connect("weblogic", "weblogic-passwd", "localhost:<port>")
wls:/WLS_IDM/serverConfig>
migrateSecurityStore(type="credStore",configFile="/tmp/merge-creds.xml",
 src="FileSourceContext",dst="FileDestinationContext")
```

12. Restart the Mobile and Social server.

42.9.2 Configuring Mobile Services for Oracle Adaptive Access Manager

To configure a Service Domain to use the Oracle Adaptive Access Manager (OAAM) device registration functionality, open the Service Domain Configuration page and choose the **OAAMSecurityHandlerPlugin** option from the **Security Handler Plugin Name** list. See Section 42.7.1, "Creating a Service Domain."

Note: During installation, the Oracle Fusion Middleware Configuration Wizard can generate a domain that supports both Mobile and Social and Oracle Adaptive Access Manager. Mobile and Social requires at least Oracle Adaptive Access Manager version 11g Release 2. For more information, see the "Configuring Mobile and Social" chapter in the *Fusion Middleware Installation Guide for Oracle Identity and Access Management*.

The following sections describe how to configure the required policies, conditions, rules, and actions to complete integration between Mobile and Social and OAAM.

- Understanding OAAM Support in Mobile and Social
- Configuring the WebLogic Administration Domain
- Configuring OAAM if Social Identity Authentication is Enabled in Mobile Services
- Setting up a Lost or Stolen Device Rule
- Configuring Blacklisted Devices and Applications
- Understanding the OAAM Sessions for Mobile Applications
- Registering Users for OAAM Authentication
- Setting up OAAM Knowledge-Based Authentication
- Setting up OAAM One Time Password

Note: See the *Administrator's Guide for Oracle Adaptive Access Manager* for information on how to set up OAAM rule and policy ordering.

42.9.2.1 Understanding OAAM Support in Mobile and Social

Mobile and Social supports the OAAM policies listed (by OAAM checkpoint) in Table 42–21.

Table 42–21 OAAM Policies Supported By Mobile and Social

Checkpoint	Supported Policies
Post-Authentication	OAAM Post-Authentication Security OAAM User vs Themselves OAAM User vs. All Users OAAM Does User Have Profile OAAM Predictive Analysis Policy
Challenge	OAAM Challenge Policy
Device Identification	OAAM Device ID Policy OAAM System Deep Analysis Flash Policy OAAM System Deep Analysis No Flash Policy

Mobile and Social and OAAM also use similar terminology to describe the security actions that can be taken to respond to authentication and authorization events. Table 42–22 maps the the Mobile and Social term to the OAAM term.

Table 42–22 Mapping Terms Between OAAM and Mobile and Social

OAAM Action Groups	Mobile and Social Actions
OAAM Allow	ALLOW

Table 42–22 (Cont.) Mapping Terms Between OAAM and Mobile and Social

OAAM Action Groups	Mobile and Social Actions
OAAM Block	DENIED
OAAM Challenge	CHALLENGE
OAAM Black-Listed Mobile Device	WIPE_OUT
OAAM Lost Device	WIPE_OUT

- For information about the OAAM policies, rules and checkpoints, see the *Oracle Fusion Middleware Administrator's Guide for Oracle Adaptive Access Manager*.
- To customize OAAM policies and rules, use the Oracle Adaptive Access Manager Administrator's Console.

42.9.2.2 Configuring the WebLogic Administration Domain

Before configuring OAAM policies, complete the steps in this section.

- Creating an Administrator for OAAM Administration
- Adding Oracle Access Management Server as Target of OAAM Data Source

42.9.2.2.1 Creating an Administrator for OAAM Administration

1. Log in to the Oracle WebLogic Administration Console for your WebLogic administration domain.
2. In the **Domain Structure** tab on the left side of the page, select **Security Realms**.
3. On the **Summary of Security Realms** page, select the realm that you are configuring; for example, *myrealm*.
4. Click **New** and provide the required information to create a User in the security realm: Name (for example, *user1*), Description (optional), Provider (enter DefaultAuthenticator), Password, and Confirm Password.
5. Click to select the new created User.
6. Click the **Groups** tab.
7. Assign to the User all groups with an OAAM prefix.
8. Click **Save**.

42.9.2.2.2 Adding Oracle Access Management Server as Target of OAAM Data Source

1. Log in to the Oracle WebLogic Administration Console for your WebLogic administration domain.
2. In the **Domain Structure** tab on the left side of the page, select **Services**.
3. On the **Summary of Services** page, select Data Sources.
4. Open `OAAM_SERVER_DS` in the Data Sources table.
5. Click the **Targets** tab.
6. Select `oam_server1`.
7. Click **Save**.

42.9.2.3 Configuring OAAM if Social Identity Authentication is Enabled in Mobile Services

If Mobile Services is configured to accept an authentication result from Social Identity, complete the following steps to configure OAAM to work with Mobile and Social when users authenticate.

1. Log in to the OAAM Administration Console.
2. Click Policies and search for the OAAM Mobile and Social Integration Post-Authentication Security policy.
3. In the policy find the following rule: **Mobile device is not registered**.
4. Add a condition:
   a. Search on "Session: Check value in comma separated values."
   b. Add the following:

      Parameter Key : oic.userIdType

      Value to Check : URI

      Return if in list : false

42.9.2.4 Setting up a Lost or Stolen Device Rule

Users should report lost or stolen devices to the support department so that the missing device can be added to the OAAM Lost or Stolen Device group. Then if an authentication attempt comes from the missing device, OAAM can send Mobile and Social a DENY or WIPE_OUT action to wipe out the application's data associated with the Mobile and Social server. If a User recovers a missing device, the device status can be reset in OAAM. The following procedure documents how to create a Lost or Stolen Device Rule for each device reported as missing by adding the Device ID to the *OAAM Lost or Stolen Devices* device group.

1. Log in to the OAAM Administration Console.
2. Double-click **Sessions** in the Navigation pane.

   The Sessions Search page displays.
3. Search by **User Name**, **Client Application** name, **Device ID** or similar to find the lost or stolen device.
4. Click the Session ID in the **Search Results** table.

   The Session Details page opens.
5. Click **Add to Group**.

   The Add to Group pop-up window opens.
6. In the **Choose Data Type to Add** section, choose **Device** and click **Next**.
7. Select the **OAAM Lost or Stolen Devices** Group and click **Next**.
8. Verify your selection and click **Finish**.
9. Click **OK**.

   For information about managing the Lost Devices policy and group, see the *Oracle Fusion Middleware Administrator's Guide for Oracle Adaptive Access Manager*.

42.9.2.5 Configuring Blacklisted Devices and Applications

Rules can be configured to block access to specific devices or applications. The following sections contain more information.

- Setting up a Blacklisted Device Rule
- Setting up a Blacklisted Application Rule

42.9.2.5.1 Setting up a Blacklisted Device Rule Create a Blacklisted Device Rule for each device to which you want to block access. The following procedure documents how to create a Blacklisted Device Rule by adding the Device ID to the *OAAM Black-listed Mobile Devices* group.

1. Log in to the OAAM Administration Console.
2. Double-click **Sessions** in the Navigation pane.

   The Sessions Search page displays.
3. Use the Search page to find the device to block. For example, search by a **User Name**, a **Client Application** name, a **Device ID**, and so on.
4. Click the Session ID in the **Search Results** table.

   The Session Details page opens.
5. Click **Add to Group**.

   The Add to Group pop-up window opens.
6. In the **Choose Data Type to Add** section, choose **Device** and click **Next**.
7. Select the **OAAM Black-listed mobile devices** Group and click **Next**.
8. Verify your selection and click **Finish**.
9. Click **OK**.

42.9.2.5.2 Setting up a Blacklisted Application Rule The task of adding a Blacklisted Application Rule is broken into the following procedures. Follow them (in order) to add the application to the *OAAM Blacklisted Mobile Devices* group.

- Creating a New Alert Group
- Creating a Generic Strings Group to Store Blacklisted Application Names
- Creating a New Blacklisted Application Rule

42.9.2.5.3 Creating a New Alert Group

1. Log in to the OAAM Administration Console.
2. Double-click **Groups** in the Navigation pane.

   The Groups Search page displays.
3. Click **New Group**.

   The Create Group pop-up window opens.
4. Complete the form as follows and click **Create**:
   - **Group Name** - Type `OAAM Blacklisted mobile application used`. (This is the name of the mobile application to be blacklisted.)
   - **Group Type** - Choose **Alerts** from the menu.
   - **Cache Policy** - Choose **Full Cache** from the menu.

- **Description** - Type `Session coming from a blacklisted mobile application`.

5. Click the **Alerts** tab.
6. Click the **Add member to this group** button.

   The Add Alerts pop-up window opens.
7. In the **Options to add a new element** section, choose **Create new Alerts**.

   Complete the form as follows and click **Add**:

   - **Alert Type** - Choose **Fraud** from the menu.
   - **Alert Level** - Choose **Medium** from the menu.
   - **Alert Message** - Type `Session coming from a blacklisted mobile application`.

   The **Add Alerts** window displays a message confirming that the new element was created successfully.

42.9.2.5.4 Creating a Generic Strings Group to Store Blacklisted Application Names

1. Double-click **Groups** in the Navigation pane.

   The Groups Search page displays.
2. Click **New Group**.

   The Create Group pop-up window opens.
3. Complete the form as follows and click **Create**:

   - **Group Name** - Type `OAAM blacklisted mobile application`.
   - **Group Type** - Choose **Generic Strings** from the menu.
   - **Cache Policy** - Choose **Full Cache** from the menu.
   - **Description** - Type `OAAM blacklisted mobile application`.
4. Click the **Generic Strings** tab, then click the **Add member to this group** button.
5. Type the name of the app.

   The **Add Generic Strings** window displays a message confirming that the new element was created successfully.

   Click OK.

42.9.2.5.5 Creating a New Blacklisted Application Rule

1. Double-click **Policies** in the Navigation pane.

   The Policies Search page displays.
2. Choose **Post authentication** from the **Checkpoint** menu, then click **Search**.
3. Click **OAAM Post-Authentication Security**.

   The OAAM Post-Authentication Security page opens.
4. Click the **Rules** tab.
5. Click the Add Rule button.

   Complete the form as follows and click **Add**:

   - **Rule Name** - Type `Check for blacklisted mobile applications`.

- **Rule Status** - Choose **Active** from the menu.
- **Rule Notes** - Type `Check if application is in the Oaam blacklisted mobile application group`.

6. Click the **Conditions** tab.
7. Click **Add Conditions**.

   The Add Condition pop-up window opens.
8. Complete the form as follows and click **Search**:
   - **Condition Name** - Type `Check Current Session`
   - **Type** - Choose **In Session** from the menu.
9. In the table of results, click **Session: Check Current Session using the filter conditions**.

   The filter condition details display.
10. Do the following and click **Save**:
    a. Under **Check if** select **Client Application**.
    b. Select **in** as the operator.
    c. Select **Group** as the Target Type.
    d. Select **Generic Strings** as the Group Type.
    e. Select **OAAM blacklisted mobile application** as the Group Name.

    In English the condition reads as "Check if the Client Application is in the "OAAM blacklisted mobile application" group."
11. Click the **Results** tab.
12. Choose **OAAM Block** from the **Action Group** menu.
13. Choose **OAAM Blacklisted application used** from the **Alert Group** menu.
14. Click **Apply**.

42.9.2.6 Understanding the OAAM Sessions for Mobile Applications

The OAAM Session is a commonly used conceptual entity in OAAM rule execution. A rule can use a session attribute as input (for example, Client App Name and OAAM Device ID) and affect the status of the session at the output (that is, changing the status to "Blocked").

When OAAM is used in a non-mobile environment such as a web browser, there is a one-to-one relationship between a user authentication session (an OAM session, for example) and the OAAM session. For example, each OAAM session contains data associated with the following fields:

- User ID
- Client IP Address
- OAAM Device ID and Fingerprint
- (Auth) Status: Success, Pending, Blocked, and so on
- Client Application Name

In a mobile application environment, different apps running on the same device used by the same user are expected to have different OAAM sessions, even in a mobile SSO scenario. For example, assume the following apps are installed on a mobile device:

- SSO Security Agent App
- White Pages App
- Expense Report App

These apps are listed together as participants of the same Service Domain and they all participate in single sign-on. A user just needs to log in once using the mobile SSO agent app. This means that there will only be a single User Authentication session (that is, a single Access Manager session) shared by multiple apps on the same device. On the other hand, if the user uses all three apps simultaneously within the same Access Manager session, each mobile application will have its own OAAM session entry and three OAAM sessions will be seen in the OAAM Admin Console.

The reason to have separate OAAM sessions for each mobile application is to allow rules to take the mobile client application into account. The same rule can block sessions from some apps, while letting sessions from other apps succeed. (The Blacklisted Application Rule in Section 42.9.2.5.2 is an example of this.) A more sophisticated rule can consider multiple factors from a session; for example an Expense Report application might rate as security sensitive while a "White Pages" (directory look-up) application might rate as less sensitive. The same Risky-IP rule may block sessions from the Expense Report application but not the White Pages app, even if the sessions come from the same medium-risky IP address.

42.9.2.7 Registering Users for OAAM Authentication

OAAM provides strong authentication features, such as Knowledge-Based Authentication and One-Time Password. One-Time Password delivers a password using e-mail or a mobile text message. These features require end users to register a security profile that may contain security questions, mobile phone numbers, and e-mail addresses.

> **Note:** For more information about the OAAM user registration flow, see the Authentication Flow section in the *Administrator's Guide for Oracle Adaptive Access Manager*.

The following sections contain information on setting up these authentication processes.

- Setting up OAAM Knowledge-Based Authentication
- Setting up OAAM One Time Password

42.9.2.7.1 Setting up OAAM Knowledge-Based Authentication Mobile and Social provides support for Knowledge-Based Authentication (KBA) if OAAM is installed. KBA is the default option for Strong Authentication in OAAM. Administrators do not need to perform extra configuration for KBA to work. Users should use the OAAM Managed Server Console to record their KBA questions in their User Profile registration. For more information about KBA, see the *Administrator's Guide for Oracle Adaptive Access Manager*.

42.9.2.7.2 Setting up OAAM One Time Password Mobile and Social provides One Time Password (OTP) support if OAAM is installed. OTP allows end users to authenticate themselves by entering a server generated one-time-password that might be received

by either SMS or e-mail. Because the one-time-password is sent out-of-band, the risk is reduced that someone other than the valid user could obtain access to it. The following sections contain more information.

- Setting Up OTP E-Mail Integration
- Setting Up OTP Integration for SMS Messages
- Changing the OAAM Challenge Policy Trigger Combination

42.9.2.7.3 Setting Up OTP E-Mail Integration

Mobile and Social can send e-mail in either of the following ways.

- Using the included SMTP client.
- Using the Oracle User Messaging Service (UMS).

This section contains a procedure for each of these integrations. Choose either Setting Up SMTP for E-mail or Setting Up UMS for E-mail to begin.

> **Note:** *Configure either SMTP or UMS. Do not configure both.*

After configuring the SMTP or UMS attribute values, enable the Challenge Types on the OAAM server as documented in this section's third procedure, Enable "Challenge Types" on the OAAM Server for E-mail.

Setting Up SMTP for E-mail

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. In the **Security Handler Plugins** section on the right side of the screen, click **OaamSecurityHandlerPlugin** and click **Edit** in the tool bar.
3. In the **Attributes** section provide values for the following attribute names and click **Apply**.

   mail.smtp.host - The SMTP server host.

   mail.smtp.port - The SMTP server port.

   mail.smtp.security.type - The SMTP security type. Either `SSL` or `TLS`.

   mail.smtp.user - The user name to log on to the SMTP server.

   mail.smtp.fromadd - The Mobile and Social "From" address, for example: *mobileadmin@example.com*

   mail.smtp.password - The password for the `mail.smtp.user` account.

   mail.smtp.truststore.location - The file name with the location of the trust store to be used to validate the server identity.

   mail.smtp.keystore.location - The file name of the key store containing the client certificate.

   mail.smtp.keystore.password - The key store password.

   mail.smtp.truststore.password - The trust store password.
4. Complete the steps in Enable "Challenge Types" on the OAAM Server for E-mail.

Setting Up UMS for E-mail

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."
2. In the **Security Handler Plugins** section on the right side of the screen, click **OaamSecurityHandlerPlugin** and click **Edit** in the tool bar.
3. In the **Attributes** section provide values for the following attribute names and click **Apply**.

   ums.service.uri - The UMS server Web service URL, for example:

   `http://<UMS Server URL>:<UMS Port>/ucs/messaging/webservice`

   ums.username - The user name for the UMS server.

   ums.password - The password for the UMS server.

   ums.from.address - The Mobile and Social "From" address, for example: *mobileadmin@example.com*

   ums.from.name - The Mobile and Social "From" name.

   ums.email.enabled - Set to `true`.
4. Complete the steps in Enable "Challenge Types" on the OAAM Server for E-mail.

Enable "Challenge Types" on the OAAM Server for E-mail

1. Log in to the OAAM Administration Console.
2. Choose **Environment > Properties** in the Navigation pane and double-click **Properties**.

   The Properties Search page displays.
3. In the **Search** box, type `bharosa.uio.default.register.userinfo.enabled` in the **Name** field and click **Search**.

   Click to select the record in the **Search Results** section, change the value to `true`, and click **Save**.
4. In the **Search** box, type `bharosa.uio.default.userinfo.inputs.enum.email.enabled` in the **Name** field and click **Search**.

   Click to select the record in the **Search Results** section, change the value to `true`, and click **Save**.
5. In the **Search** box, type `bharosa.uio.default.challenge.type.enum.ChallengeEmail.available` in the **Name** field and click **Search**.

   Click to select the record in the **Search Results** section, change the value to `true`, and click **Save**.

42.9.2.7.4 Setting Up OTP Integration for SMS Messages

Mobile and Social sends SMS messages using the Oracle UMS. Complete Setting Up SMS Using UMS and then Enable "Challenge Types" on the OAAM Server for SMS.

Setting Up SMS Using UMS

1. Open the Mobile Services Home Page in the Oracle Access Management Console as described in Section 42.1, "Opening the Mobile Services Configuration Page."

2. In the **Security Handler Plugins** section on the right side of the screen, click **OaamSecurityHandlerPlugin** and click **Edit** in the tool bar.
3. In the **Attributes** section provide values for the following attribute names and click **Apply**.

   ums.service.uri - The UMS server Web service URL, for example:

   `http://<UMS Server URL>:<UMS Port>/ucs/messaging/webservice`

   ums.username - The user name for the UMS server.

   ums.password - The password for the UMS server.

   ums.from.address - The Mobile and Social "From" address, for example: *mobileadmin@example.com*

   ums.from.name - The Mobile and Social "From" name.

   ums.email.enabled - Set to `true`.
4. Complete the steps in the Enable "Challenge Types" on the OAAM Server for SMS.

Enable "Challenge Types" on the OAAM Server for SMS

1. Log in to the OAAM Administration Console.
2. Choose **Environment > Properties** in the Navigation pane and double-click **Properties**.

   The Properties Search page displays.
3. In the **Search** box, type `bharosa.uio.default.register.userinfo.enabled` in the **Name** field and click **Search**.

   Click to select the record in the **Search Results** section, change the value to `true`, and click **Save**.
4. In the **Search** box, type `bharosa.uio.default.challenge.type.enum.ChallengeSMS.available` in the **Name** field and click **Search**.

   Click to select the record in the **Search Results** section, change the value to `true`, and click **Save**.

42.9.2.7.5 Changing the OAAM Challenge Policy Trigger Combination

OAAM evaluates the Challenge policy when an event triggers the Challenge action. If KBA is active for a User, the system challenges the User with questions from the OAAM Challenge Question Action Group. If the User fails the OAAM challenge questions three times, the system starts the OAAM SMS Challenge Action group.

You can reorder the Action Group using OAAM Challenge Policy trigger combinations. So other Challenge Action Groups, such as the OAAM Challenge E-Mail group or the OAAM Challenge SMS group, will take precedence over the OAAM Challenge question. The following procedure documents how to change the OAAM Challenge Policy Trigger Combination.

1. Log in to the OAAM Administration Console.
2. Double-click **Policies** in the Navigation pane.

   The Policies Search page displays.
3. Choose **Challenge** from the **Checkpoint** menu, then click **Search**.
4. Click to select **OAAM Challenge Policy** in the **Search Results** table.

5. Click the **Trigger Combinations** tab.
6. Click **Reorder**.

   The **Reorder Trigger Combinations** pop-up window opens.
7. Use the controls to move trigger combinations to higher or lower positions.

43

Configuring Social Identity

Mobile and Social provides a graphical user interface for configuring Social Identity. (Note that prior to version 11.1.2.2, Social Identity was named Internet Identity Services.) This chapter describes how to use the Oracle Access Management Console to configure Mobile Services and contains the following topics.

> **Note:** Social Identity can also be configured from the command line using WLST. For more information about the Mobile and Social WLST commands, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference.*

43.1 Opening the Social Identity Configuration Page

Follow these steps to open the Social Identity configuration page in the Oracle Access Management Console.

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click **Social Identity** in the **Mobile Security and Social Identity** pane.

   The **Social Identity** tab opens.

3. Click an OAuth Identity Domain to configure it.

   The **Welcome to Mobile and Social - Social Identity** page opens.

43.2 Understanding Social Identity Configuration

The *Welcome to Mobile and Social - Social Identity* configuration page is divided into separate panels that can be expanded and collapsed by clicking the arrow button in

the top left corner of the panel. The following sections contain more information about the Social Identity panels.

- Understanding Social Identity Providers
- Understanding Service Provider Interfaces
- Understanding Application Profiles

43.2.1 Understanding Social Identity Providers

The Social Identity Providers panel is used to edit the (preconfigured) configuration details for Identity Providers such as Google, Facebook, Twitter, and the like. Once established, you should not need to modify these settings very often.

You can also define configuration details for Social Identity Providers that you add yourself by implementing the `oracle.security.idaas.rp.spi.IdentityProvider` Java interface. For information about adding additional Social Identity Providers, see "Extending the Capabilities of the Mobile and Social Server" in the *Developer's Guide for Oracle Access Management*.

More information on Social Identity Providers is in Section 43.3, "Defining Social Identity Providers."

43.2.2 Understanding Service Provider Interfaces

The Service Provider Interface refers to the set of rules that govern the authentication flow for the specified Application Profile. Mobile and Social provides the following Service Provider Interfaces.

- **DefaultServiceProviderInterface** - provides support for web applications that run on Java-compliant application servers.
- **OAMServiceProviderInterface** - provides support for web applications that run on the Access Manager service.

More information on Service Provider Interfaces is in Section 43.4, "Defining Service Provider Interfaces."

Note: A Java developer can write custom implementations of one or more of the Identity Provider interface contracts. Use the **Service Provider Interfaces** section only if you need to add a custom Service Provider created by a developer.

43.2.3 Understanding Application Profiles

An Application Profile defines an application that uses Social Identity Provider services on the Mobile and Social server. Use this panel to configure mobile applications, web applications that run on Java-compliant application servers, and web applications that are integrated with Access Manager to use Social Identity.

- If a web application is not integrated with Access Manager, integrate the Social Identity login page with the web application. See the "Developing Applications Using the Social Identity Client SDK" chapter in the *Developer's Guide for Oracle Access Management* for details.
- If the web application is integrated with Access Manager, edit the preconfigured Application Profile named OAMApplication. When Access Manager and Mobile and Social are installed together during Oracle Access Management installation,

both products are registered as trusted partners and the preconfigured Application Profile is included. As a result, you do not need to write code to integrate web applications that are integrated with Access Manager and Social Identity. The *OAMApplication* Application Profile that is included with Mobile and Social is preconfigured to work with Access Manager and requires only minor configuration changes to get working in your environment.

More information on Application Profiles is in Section 43.5, "Defining Application Profiles."

43.3 Defining Social Identity Providers

The Social Identity Provider collects configuration details for Identity Providers such as Google, Facebook, Twitter, and the like. Once created, you should not need to modify Social Identity Provider settings very often. The following sections provide information regarding creating, modifying and deleting Social Identity Providers.

- Creating a Social Identity Provider
- Editing or Deleting a Social Identity Provider
- Generating the Consumer Key and Consumer Secret for OAuth Providers
- Troubleshooting Facebook Social Identity Providers

43.3.1 Creating a Social Identity Provider

Social Identity Providers can also be created using the WebLogic Scripting Tool. See the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* for details.

1. Open the Social Identity Home Page in the Oracle Access Management Console as described in Section 43.1, "Opening the Social Identity Configuration Page."
2. Click Create in the **Social Identity Provider** panel in the home area.

   The Create New Social Identity Provider configuration page displays.
3. Enter values for the Social Identity Provider properties.
   - **Name** - Type a unique name for this Authentication Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
   - **Social Identity Provider Protocol** - Select the Identity Provider Protocol from the drop down menu.
     - OpenID
     - OAuth
     - Custom

     Select **Custom** to configure a custom Identity Provider. Your choice here will change the displayed Protocol Attributes and User Attributes Returned panels to reflect properties more specific to the authentication protocol being used by the Social Identity Provider - either OpenID or OAuth.
   - **Implementation Class** - Based on the Social Identity Provider Protocol selection, the appropriate provider-specific implementation of the `oracle.security.idaas.rp.spi.IdentityProvider` Java interface will be populated in this field. (If Custom, enter the corresponding implementation class that should interact with the Identity Provider.) The Mobile and Social

server will use this information to communicate with this Social Identity Provider.

4. Enter values for the Protocol Attributes properties based on the protocol being used by the Social Identity Provider previously selected: OpenID (Table 43–1) or OAuth (Table 43–2). (If Custom, add all values required by the custom Provider and related to the authentication protocol used.)

   - Provide values required by the Identity Provider implementing the OpenID protocol as specified in Table 43–1.

Table 43–1 OpenID Protocol Attributes

Name	Values	Notes
Yadis Endpoint	Must be an absolute HTTP or HTTPS URL	Type the published URL that accepts OpenID authentication protocol messages for this Identity Provider. Mobile and Social uses this URL to make user authentication requests.
Hashing Algorithm	▪ SHA256 is a 256-bit key length algorithm ▪ SHA1 is a 160-bit key length algorithm ▪ None	Choose a signature algorithm. Mobile and Social uses this value internally to configure the Session Type and Association Type properties for communicating with the Identity Provider.
`Authentication Policy`	Choose Yes to request that an authentication policy be applied by the OpenID Provider when authenticating a user. Otherwise, choose No.	Usage of PAPE (Provider Authentication Policy Extension) allows web developers to request other modifications to the flow, such as asking that the Identity Provider re-prompt the User for their password.
`Authentication Policy Maximum Age`	Provide a value greater than or equal to zero seconds. Specify `0` to force a password re-prompt.	Type the maximum length of time in seconds that a User who has not *actively* authenticated can use a login session before being required to authenticate using the requested authentication policy. Use this parameter to ensure that the login session of the user at the Identity Provider is recent.

`Preferred Authentication Policies`		Type zero or more URIs separated by a space that represent authentication policies that the Identity Provider must satisfy when authenticating the user. For example:
		`http://schemas.openid.net/pape/policies/2007/06/phishing-resistant`
		`http://schemas.openid.net/pape/policies/2007/06/multi-factor`

   - Provide values required by the Identity Provider implementing the OAuth protocol as specified in Table 43–2.

Table 43–2 OAuth Protocol Attributes

Name	Value	Notes
`Authorization URL`	The Identity Provider's published OAuth authorization URL. If an Identity Provider changes a published OAuth URL, update this value to match.	Mobile and Social directs the User to this URL after the Identity Provider returns the request token (see *Request Token URL*). The Identity Provider verifies the User's identity, and the User grants the Identity Provider permission to release the User's protected information to the Mobile and Social server.
`Access Token URL`	Type the Identity Provider's published access token URL.	Mobile and Social uses this URL to request an access token from the Identity Provider after the User authorizes the request token (using the *Authorization URL*).
`Request Token URL`	Type the Identity Provider's published Request Token URL. (Not applicable to Facebook.)	Mobile and Social uses this URL to obtain a request token from the Identity Provider. After the Identity Provider grants the request token, the Mobile and Social server directs the User to the Identity Provider's *Authorization URL*. (The term *temporary credentials* supplants the terms *request token* and *request secret* in RFC 5849, *The OAuth 1.0 Protocol*.)
`Profile URL`	Type the Identity Provider's published Profile URL.	Mobile and Social uses this URL to request User attributes based on a OAuth access token.
`Consumer Key`	Type the value that the Mobile and Social server should use to identify itself to the Identity Provider.	See Section 43.3.3, "Generating the Consumer Key and Consumer Secret for OAuth Providers" for information about requesting a Consumer Key from the Identity Provider.
`Consumer Secret`	Type the secret that the Mobile and Social server should use to establish ownership of the Consumer Key.	See Section 43.3.3, "Generating the Consumer Key and Consumer Secret for OAuth Providers" for information about requesting a Consumer Secret from the Identity Provider.
`Server Time Sync`	If the Mobile and Social server and a remote Identity Provider are not time synchronized, type the number of minutes of skew to add to the current server time when sending requests to the remote Provider. This field accepts both positive and negative integers.	Typically LinkedIn requires synchronized server time values. Not applicable for Facebook or Twitter. In the **Attribute Name** column type the local application attribute name that should be assigned to the attribute name returned by the OpenID Identity Provider. In the **Attribute Schema Name** column, type the URL where the Mobile and Social server can request user data from the Identity Provider. If you add attributes in the Attribute Name column that the Identity Provider does not support, those attributes will not be available in Mobile and Social.

5. Add values to the User Attributes Returned panel based on the Social Identity Provider Protocol previously selected: OpenID, OAuth or Custom.

   - OpenID: In the **Attribute Name** column type the local application attribute name that should be assigned to the attribute name returned by the Identity Provider. In the **Attribute Schema Name** column, type the URL where the Mobile and Social server can request user data from the Identity Provider. If you add attributes in the Attribute Name column that the Identity Provider does not support, those attributes will not be available in Mobile and Social. Table 43–3, " User Attributes Returned By Google" and Table 43–4, " User Attributes Returned By Yahoo" lists the user attributes supported by Google and Yahoo.

Table 43–3 User Attributes Returned By Google

Attribute	Description
country	Requests the user's home country. Must be set to: `http://axschema.org/contact/country/home`
email	Requests the user's Gmail address. Must be set to: `http://axschema.org/contact/email`
firstname	Requests the user's first name. Must be set to: `http://axschema.org/namePerson/first`
language	Requests the user's preferred language. Must be set to: `http://axschema.org/pref/language`
lastname	Requests the user's last name. Must be set to: `http://axschema.org/namePerson/last`

Table 43–4 User Attributes Returned By Yahoo

Attribute	Description
gender	Requests the user's gender. Must be set to: `http://axschema.org/person/gender`
email	Requests the user's e-mail address. Must be set to: `http://axschema.org/contact/email`
fullname	Requests the user's full name. Must be set to: `http://axschema.org/namePerson`
language	Requests the user's preferred language. Must be set to: `http://axschema.org/pref/language`
nickname	Requests the user's preferred name. Must be set to: `http://axschema.org/namePerson/friendly`
Timezone	Requests the user's preferred time zone. Must be set to: `http://axschema.org/pref/timezone`

   - OAuth: Specify the User Attributes that the OAuth Identity Provider should return. In the **Attribute Name** column type the local application attribute name that corresponds to the attribute name returned by the Identity Provider. In the **Attribute Schema Name** column, type the Identity Provider attribute name. For OAuth Providers, **Attribute Name** values and **Attribute Schema Name** values are usually the same.

Note: LinkedIn does not return an e-mail address or an unencrypted login ID when it returns User Identity attributes to Mobile and Social. Please note this limitation when using Identity attributes from LinkedIn to pre-populate the registration form for Users.

Table 43–5, " User Profile Attributes Returned By Foursquare" and Table 43–6, " User Profile Attributes Returned By Windows Live" lists the user attributes supported by Foursquare and Windows Live.

Table 43–5 User Profile Attributes Returned By Foursquare

Attribute	Description
id	Requests the user's ID.
firstname	Requests the user's first name.
lastname	Requests the user's last name.
contact.email	Requests the user's email address.
homecity	Requests the user's home city.
gender	Requests the user's gender.
photo	Requests the user's photo.

Table 43–6 User Profile Attributes Returned By Windows Live

Attribute	Description
id	Requests the user's ID.
first_name	Requests the user's first name.
last_name	Requests the user's last name.
name	Requests the user's name.
link	Requests the user's link.
email.preferred	Requests the user's preferred email address.
gender	Requests the user's gender.
locale	Requests the user's local.
updated_time	Requests the updated time.

- Custom: In the **Attribute Name** column type the local application attribute name that should be assigned to the attribute name returned by the Custom Identity Provider. In the **Attribute Schema Name** column, type the URL where the Mobile and Social server can request user data from the Identity Provider.

6. Click Create to create the Social Identity Provider configuration object.

43.3.2 Editing or Deleting a Social Identity Provider

To edit or delete a Social Identity Provider, select the Provider in the panel and click Edit or Delete on the panel's tool bar. See Section 43.3.1, "Creating a Social Identity Provider" for attribute descriptions.

43.3.3 Generating the Consumer Key and Consumer Secret for OAuth Providers

The following sections describe how to generate the Consumer Key and Consumer Secret for the Social Identity Providers that support the OAuth protocol.

- Generating a Consumer Key and Consumer Secret for Facebook
- Generating a Consumer Key and Consumer Secret for Twitter
- Generating a Consumer Key and Consumer Secret for LinkedIn
- Generating a Consumer Key and Consumer Secret for Foursquare
- Generating a Consumer Key and Consumer Secret for Windows Live
- Generating a Consumer Key and Consumer Secret for Google

> **Note:** The steps in this section are accurate as of the date that this documentation was published. The steps required to create a Consumer Key and Consumer Secret using the Facebook, Twitter, and LinkedIn web sites are subject to change at any time.

43.3.3.1 Generating a Consumer Key and Consumer Secret for Facebook

This section describes how to generate a Consumer Key and Consumer Secret for Facebook.

1. Open the following URL in a web browser:

   `https://developers.facebook.com/apps`

2. Click **Create New App**.
3. Complete the Create New App form.

   Facebook creates the application and assigns it a unique App ID and App Secret.

4. Complete the information in the **Basic Info** section.

   In the **Select how your application integrates with Facebook** section, select **Website with Facebook Login**.

5. In the **Site URL** field, provide the URL where the Mobile and Social Server can be reached. For example:

   `http://`*OAM-Hosted-Machine*`:`*Port*`/`

6. Click **Save Changes**.
7. From the Mobile and Social Console, open the "Social Identity Providers" > "Facebook" configuration page as described in section Section 43.3.2.
8. Paste the App ID in the **Consumer Key** field and paste the App Secret in the **Consumer Secret** field.

   Click **Apply** to save your changes.

43.3.3.2 Generating a Consumer Key and Consumer Secret for Twitter

This section describes how to generate a Consumer Key and Consumer Secret for Twitter.

1. Open the following URL in a web browser:

   `https://dev.twitter.com/apps/new`

2. Complete the Create an application form.

In the **Callback URL** field provide the URL where the Mobile and Social Server can be reached. For example:

`http://`*OAM-Hosted-Machine*`:` *Port*`/oic_rp/return`

Twitter creates the application and assigns it a unique Consumer key and Consumer secret.

3. (Optional) Configure your Twitter application as needed and save your changes.
4. From the Mobile and Social Console, open the "Social Identity Providers" > "Twitter" configuration page as described in section Section 43.3.2.
5. Paste the Consumer Key in the **Consumer Key** field and paste the Consumer Secret in the **Consumer Secret** field.

   Click **Apply** to save your changes.

43.3.3.3 Generating a Consumer Key and Consumer Secret for LinkedIn

This section describes how to generate a Consumer Key and Consumer Secret for LinkedIn.

1. Open the following URL in a web browser:

   `https://www.linkedin.com/secure/developer?newapp=`
2. Complete the Add New Application form.

   In the **OAuth User Agreement** section, add the URL in the **OAuth Redirect URL** field where the Mobile and Social Server can be reached. For example:

   `http://`*OAM-Hosted-Machine*`:`*Managed Server Port*`/`
3. Click **Add Application**.

   LinkedIn creates the application and assigns it a unique API Key and Secret Key.
4. From the Mobile and Social Console, open the "Social Identity Providers" > "LinkedIn" configuration page as described in section Section 43.3.2.
5. Paste the API Key in the **Consumer Key** field and paste the Secret Key in the **Consumer Secret** field.

   Click **Apply** to save your changes.

43.3.3.4 Generating a Consumer Key and Consumer Secret for Foursquare

This section describes how to generate a Consumer Key and Consumer Secret for Foursquare.

1. Open the following URL in a web browser:

   `https://foursquare.com/developers/register`
2. Fill in the application name and website URL.
3. Enter the URL where the Mobile and Social Server can be reached in the Callback URL field.

   For example:

   `http://`*OAM-Hosted-Machine*`:`*Port*`/`
4. Save your changes.

   From the screen that is displayed, copy the 'Client ID' and 'Client secret' codes.

5. From the Mobile and Social Console, open the "Social Identity Providers" > "Foursquare" configuration page as described in section Section 43.3.2.
6. Paste the Client ID in the **Consumer Key** field and the Client Secret in the **Consumer Secret** field and click **Apply** to save your changes.

43.3.3.5 Generating a Consumer Key and Consumer Secret for Windows Live

This section describes how to generate a Consumer Key and Consumer Secret for Windows Live.

1. Open the following URL in a web browser:

   `https://manage.dev.live.com/`
2. Sign in with your Windows Live ID and password.
3. Click Create Application.
4. Fill in the application name.
5. Read and accept the terms of use.

   From the screen that is displayed, copy the 'Client ID' and 'Client secret' codes.
6. From the Mobile and Social Console, open the "Social Identity Providers" > "Windows Live" configuration page as described in section Section 43.3.2.
7. Paste the Client ID in the **Consumer Key** field and the Client Secret in the **Consumer Secret** field and click **Apply** to save your changes.

43.3.3.6 Generating a Consumer Key and Consumer Secret for Google

This section describes how to generate a Consumer Key and Consumer Secret for Google.

1. Open the following URL in a web browser:

   `https://code.google.com/apis/console`
2. Under APIs & auth (on the left side) click **Credentials**.
3. Under OAuth click **Create new Client ID**.

   The Create Client ID form opens.
4. Complete and submit the form.

   The new Client ID and secret are added.
5. From the Mobile and Social Console, open the "Social Identity Providers" > "Google" configuration page as described in section Section 43.3.2.
6. Paste the Client ID in the **Consumer Key** field and the Client Secret in the **Consumer Secret** field.

   Click **Apply** to save your changes.

43.3.4 Troubleshooting Facebook Social Identity Providers

This section documents known configuration issues that affect the Facebook Social Identity Provider.

- Configuring WebLogic Server for Facebook Compatibility
- Configuring WebLogic Server 10.3.5 and Older for Facebook Compatibility

43.3.4.1 Configuring WebLogic Server for Facebook Compatibility

Follow these steps to configure WebLogic Server to support Facebook.

1. Open the WebLogic Console.

   `http://`*host*`:`*port*`/console`

2. Choose *Domain* **> Environment > Servers >** *Managed Server*.
3. Click the **SSL** tab, then click **Advanced**.
4. Click **Lock and Edit** configuration.
5. Change the **Host Name Verifier** to None.
6. Restart the Managed Server.

If **Host Name Verifier** is not set to **None**, the following error may display when trying to access a protected resource if Facebook is the Identity Provider:

```
Exception in processRequest method: oracle.security.idaas.rp.RPException:
oracle.security.idaas.rp.RPException: Request failed:
```

43.3.4.2 Configuring WebLogic Server 10.3.5 and Older for Facebook Compatibility

Facebook's SSL certificate contains `*.facebook.com` as a wildcard host identifier. WebLogic Server versions 10.3.5 and older have a problem verifying host names that contain wildcards that can lead to communication failures between Facebook and installations of Oracle Access Management Mobile and Social deployed on WebLogic Server. The following workarounds are available.

- If using WebLogic Server versions 10.3.5 or older, follow these steps:
  1. In the administration console, choose **servers >** *oam_server_where_Mobile_and_Social_is_deployed* **> SSL > Advanced**.
  2. Change **Hostname Verifier** to NONE.
- This WebLogic Server bug has been fixed in version 10.3.6 as follows: A new custom hostname verifier `SSLWLSWildcardHostnameVerifier` was implemented, derived from the default hostname verifier, so that it supports everything the default hostname verifier does, including SANs. You must configure your WebLogic server to use this custom hostname verifier if support for wildcard certificates is required during the SSL handshake. One option is to use the following WebLogic property:

  ```
  -Dweblogic.security.SSL.hostnameVerifier=weblogic.security.utils.SSLWLSWildca
  rdHostnameVerifier
  ```

43.4 Defining Service Provider Interfaces

The Service Provider Interface refers to the set of rules that govern the authentication flow for the specified Application Profile. Mobile and Social provides the following Service Provider Interfaces.

- **DefaultServiceProviderInterface** - provides support for web applications that run on Java-compliant application servers.
- **OAMServiceProviderInterface** - provides support for web applications that run on the Access Manager service.

If necessary, a Java developer can write custom implementations of one or more of the Identity Provider interface contracts. This section includes the following topics:

- Creating a Service Provider Interface
- Editing or Deleting an Service Provider Interface
- Adding a Custom Service Provider Interface Implementation

43.4.1 Creating a Service Provider Interface

1. Open the Social Identity Home Page in the Oracle Access Management Console as described in Section 43.1, "Opening the Social Identity Configuration Page."
2. Click Create in the **Service Provider Interface** panel in the home area.

   The Create New Service Provider Interface configuration page displays.
3. Enter values for the Service Provider Interface properties.
   - **Name** - Type a unique name for this Authentication Service Provider.
   - **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
4. Enter values for the Interface Information properties as specified in Table 43–7.

Table 43–7 Service Provider Interface Information Properties

Name	Notes
`IDP Selector`	Choose the IDP Selector implementation class for the custom Provider. NOTE: The console will not check the validity of the provided class.
`Post IDP Selector`	Choose the Post IDP Selector implementation class for the custom Provider.
`IDP Interaction Provider`	Choose the IDP Interaction Provider implementation class for the custom Provider.
`Registration Status Check`	Choose the Registration Status Check implementation class for the custom Provider.
`Session Creation Provider`	Choose the Session Creation Provider implementation class for the custom Provider.

5. Click Create to create the Service Provider Interface configuration object.

43.4.2 Editing or Deleting an Service Provider Interface

To edit or delete a Service Provider Interface, select the Provider in the panel and click Edit or Delete on the panel's tool bar. See Section 43.4.1, "Creating a Service Provider Interface" for attribute descriptions.

43.4.3 Adding a Custom Service Provider Interface Implementation

To add a custom interface implementation, create a new Social Identity Provider and choose a mix of custom and/or default implementation classes as needed to meet your business objectives. See "Developing Applications Using the Social Identity Client SDK" in the *Developer's Guide For Oracle Access Management* for information.

43.5 Defining Application Profiles

An Application Profile defines an application that uses Social Identity Provider services on the Mobile and Social server. Use this panel to configure mobile applications, web applications that run on Java-compliant application servers, and web applications that are integrated with Access Manager to use Social Identity.

- If a web application is not integrated with Access Manager, integrate the Social Identity login page with the web application. See the "Developing Applications Using the Social Identity Client SDK" chapter in the *Developer's Guide for Oracle Access Management* for details.
- If the web application is integrated with Access Manager, edit the preconfigured Application Profile named OAMApplication. When Access Manager and Mobile and Social are installed together during Oracle Access Management installation, both products are registered as trusted partners and the preconfigured Application Profile is included. As a result, you do not need to write code to integrate web applications that are integrated with Access Manager and Social Identity. The *OAMApplication* Application Profile that is included with Mobile and Social is preconfigured to work with Access Manager and requires only minor configuration changes to get working in your environment.

Typically, when a WebGate is configured in Access Manager, an Application Domain is created involving resources and policies. In Mobile and Social, OAMApplication is the Application Profile that corresponds to the Access Manager Application Domain. So, if you define 10 WebGates in Access Manager, and each represents an application that needs to use Mobile and Social for user authentication, use OAMApplication as a template to create 10 corresponding Application Profiles with names that match the 10 Application Domains.

Note: When you install a WebGate to protect an application in Access Manager, the WebGate setup automatically creates an Application Domain that has LDAP as the authentication mechanism. To use Mobile and Social authentication, change the Authentication Scheme to OICScheme.

This section provides help for the Create Application Profile wizard and the Edit Application Profiles page.

The following sections contain more information.

- Creating an Application Profile
- Editing or Deleting an Application Profile

43.5.1 Creating an Application Profile

1. Open the Social Identity Home Page in the Oracle Access Management Console as described in Section 43.1, "Opening the Social Identity Configuration Page."
2. Click Create in the **Application Profiles** panel in the home area.

   The Create New Application Profile configuration page displays.
3. Enter values for the general Application Profile properties.
   - **Name** - Displays the context name of the web application or mobile application. This name should match the name registered with the agent protecting the resource. If the application is integrated with Access Manager,

the Application Domain name as defined in Access Manager is displayed. This should be the same value as that of the Name defined in the Mobile Services Application Profile, if applicable.

- **Description** - (Optional) Type a short description that will help you or another Administrator identify this service in the future.
- **Shared Secret** - For mobile or web applications, provide the security secret that the application and the Mobile and Social server share to facilitate secure communication. This is needed to use the Mobile and Social user registration functionality. It can be any string.
- **Return URL** - This value is not used if the application is a mobile application but it is a mandatory attribute. So for mobile applications, use the Mobile Application Return URL. For web applications, provide the URL that Mobile and Social should use to send back authentication responses. If the application is integrated with Access Manager, provide the following URL which Mobile and Social uses to send back authentication responses:

  `http://oam-host:port/oam/server/dap/cred_submit`
- **Mobile Application Return URL** - For mobile applications, provide the URL that Mobile and Social should use to send back authentication responses. This value should match the mobile application's return URL.

4. Enter values for the following Application Profile configuration properties.
   - **Login Type** - If configuring a non-mobile application, choose **Local Authentication and Social Identity Provider Authentication** if the User login page should let users choose between authenticating locally and authenticating using an Identity Provider. If configuring either a mobile application or a non-mobile application, choose **Social Identity Provider Authentication only** if the User login page should not give the users the option of authenticating locally.

     The Mobile and Social login page supports Social Identity Provider Authentication only. Local login is not supported.

     Note: If configuring a mobile application, choose **Social Identity Provider Authentication only** from the **Login Type** menu. The **Local Authentication and Social Identity Provider Authentication** option is not valid for mobile applications.

   - **Enable Browser Popup** - Choose **Yes** if the login page should open in a pop-up window. This value should be false if this is a mobile application.
   - **User Registration** - Choose **Enabled** to allow users to register with the application after authenticating against a Social Identity Provider. The login page for the application will show a User Registration form and prompt the User to register. The User can complete the form and register, or click the Skip Registration button. Choose **Disabled** if the login page should not show a User Registration form and should not prompt the User to register.
   - **Registration URL** - Type the URL that the system should forward the User to so that the User can register for a local account. Typically the User is directed to a form with fields that correspond to the registration service attributes defined in the Application Profile. An encrypted token with attribute objects in a map are also passed to the client application as a parameter. These

attributes are used to pre-populate the registration page with the User's profile data.

- **UserID Attribute** - Type the attribute name that is used to uniquely identify the User. This attribute name should also appear in the **Application User Attribute** section of the Application Profile Configuration page.
- **User Profile Service Endpoint** - Choose the User Profile Service endpoint that the application should use. The User Profile Service directs the application to the LDAP Directory service where the User will be created upon registration. User Profile Service endpoints are configured in Mobile Services.
- **Authentication Service Endpoint** - The Authentication Service endpoint determines how the user should be authenticated when local login is requested. If a mobile application, choose InternetIdentityAuthentication or any custom authentication of the type InternetIdentityAuthentication.
  - Choose **/oamauthentication** to forward the authentication request to Access Manager. The authentication scheme associated with the Mobile and Social Authentication Policy inside the IAMSuite Application domain determines how the user will be authenticated.
  - Choose **/internetidentityauthentication** to use the Identity Store specified in the corresponding endpoint.
- **Application Profile Properties** - Click **Add** to add Application Profile attributes to the table. The following are supported.
  - `app.passwd.field` - Encrypts the password on the registration page. Add `password` as the value. To mask the password with asterisks (*) on the registration page, add the `app.passwd.field` property and add `password` as the value.
  - `oic.app.idp.oauth.token` - Instructs Mobile and Social to include the OAuth Access Token as part of the final redirect to the application. Add `true` as the value. Only applies if the User selected an OAuth provider (Facebook, Twitter, LinkedIn).
  - `oic.app.user.token` - Creates a JWT User Token when a User authenticates with an Identity Provider and gets redirected back to the application. Add `true` as the value. This token contains the Identity Provider related URI and the User identifier value on record with the Identity Provider. Use this token to access other protected Mobile and Social REST services, for example the User Profile REST Service.

5. Click **Add** to add the Application User Attributes that the Social Identity Provider should return to the application after authentication.

   Configure more details for these attributes in the following Registration Service Details with Application User Attribute Mapping step.

6. Add rows to the Registration Service Details with Application User Attribute Mapping table to map local (User) registration attributes to the application attributes provided by the Social Identity Provider.

   Add any additional Application User Attributes in the previous step first. The following definitions apply to the Registration Service Details with Application User Attribute Mapping table properties.

   - **Registration Service Attribute** - Choose from the menu the registration service attribute to configure.

- **User Attribute Display Name** - For the attribute in the **Registration Service Attribute** column, type the name that should appear on the User registration form. This is the attribute name that the user sees.
- **Read-only** - Select to prevent the user from updating the attribute value. The attribute value will display grayed-out on the form and the user will be blocked from making updates.

Note: Do not select the **Read-only** option for *First Name* and *Last Name* if Yahoo is the Social Identity Provider. Yahoo does not return values for these attributes. Selecting the Read-only option will cause user registration to fail and an exception error to display.

- **Mandatory** - Select to make the attribute a required item on the user registration form.
- **Application User Attribute** - Choose the attribute that corresponds to the attribute in the Registration Service Attribute column.

7. Click Next to configure the Service Provider Interface.

   The Service Provider Interface page displays.

8. Choose the DefaultServiceProviderInterface from the drop down menu.

   For information about the Service Provider Interface, see Section 43.4, "Defining Service Provider Interfaces."

9. Click Next to configure the Social Identity Provider.

   The Social Identity Provider page displays. Use this section to select one or more Social Identity Providers, and to map local application user attributes to Social Identity Provider attributes. For example, to use an e-mail address as the unique local user identifier when Google is the Social Identity Provider:

   a. Select **Google** in the **Social Identity Provider** column.

      A two-column table opens.

   b. Create the mapping as follows:

      a. Choose **uid** in the first row of the **Application User Attribute** column.

      b. Choose **e-mail** in the **Social Identity Provider User Attributes** column.

10. Click Finish to create the **Application Profile.**

43.5.2 Editing or Deleting an Application Profile

To edit or delete an Application Profile, select the Profile in the panel and click Edit or Delete on the panel's tool bar. See Section 43.5.1, "Creating an Application Profile" for attribute descriptions.

43.6 Integrating Social Identity With Mobile Applications

You can configure Mobile Services to allow applications on mobile devices to authenticate using Social Identity. Any application that needs to use Social Identity must have a corresponding Application Profile in Social Identity. If you want a mobile application to use Social Identity, the application needs to have a profile under Social Identity and under Mobile Services.

1. Under Social Identity, open the Create Application Profile wizard.
2. Populate the Application Profile attributes with values applicable to the mobile application being protected and click Next.

   See Section 43.5.1, "Creating an Application Profile" for attribute definitions.
3. Select the Service Provider Interface and click Next.

   See Section 43.4, "Defining Service Provider Interfaces."
4. Select the Social Identity Provider and click Next.

   See Section 43.2, "Understanding Social Identity Configuration."
5. View the Application Profile summary and click Finish to create the Application Profile.
6. Under Mobile Services, open the Create Service Domain wizard.

   If modifying an existing Service Domain, open it for editing. See Section 42.4, "Defining Service Profiles" for information.
7. Complete the form as follows.
   - For **Type**, select **Mobile Application**.
   - For **Authentication Scheme**, select **Social Identity Authentication**.

   See Section 42.7, "Defining Service Domains" for information.
8. In the **Application Profile Selection** section, add the Mobile Services Application Profile that represents the mobile application being protected and choose if it will participate in mobile SSO as an agent, a client or not at all.

   Select the appropriate Application Profile by browsing existing Profiles or entering a name. The Application Profile must already be created. (To create Mobile Services Application Profiles, see Section 42.6, "Defining Application Profiles"; for Social Identity Application Profiles, see Section 43.5, "Defining Application Profiles.")
9. Click **Next** to select (or create) a Service Profile.

   See Section 42.4, "Defining Service Profiles."
10. Click **Next** to select the Service Protection.

    For example, use InternetIdentityAuthentication as the authentication service to protect the User Profile Services.
11. Click **Next** to view the Create Service Domain summary.
12. Click **Finish** to create the Service Domain.

> **Note:** See "Integrating Social Identity With a Mobile Application" in the "Developing Applications Using the Social Identity Client SDK" chapter of the *Developer's Guide for Oracle Access Management* for more information.

43.7 Linking Social Identity Provider Accounts

Social Identity Account Linking allows users to link several Internet identities together with an existing or new local user account. The following sections contain information about how to enable and use this feature.

43.7.1 Using Social Identity Provider Account Linking

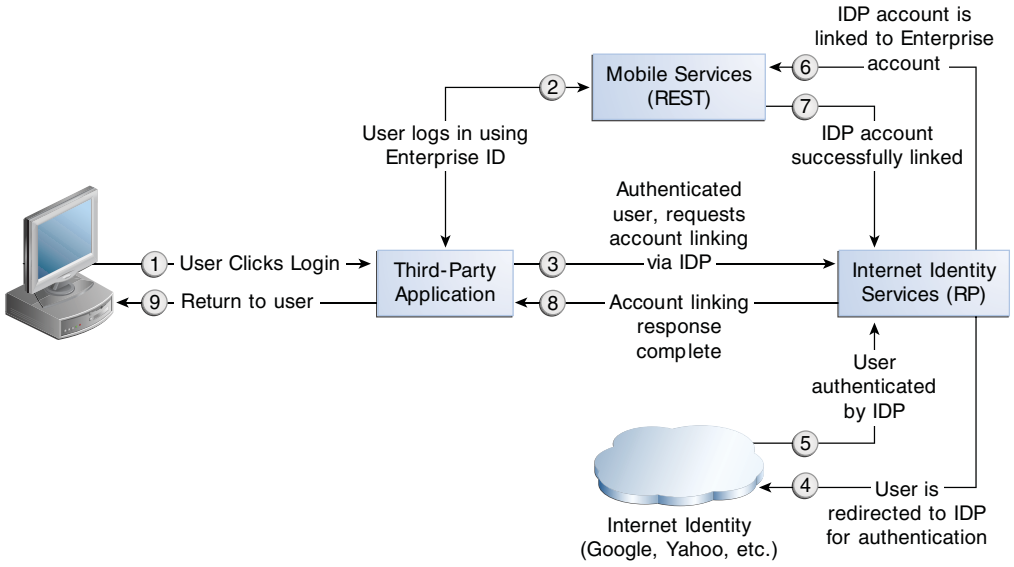
The following sequence documents the steps in the Account Linking Flow.

1. The user lands at the Mobile and Social Login Page.
2. The user is prompted to log in locally or with an Identity Provider.
3. The user selects Identity Provider Login (for example, Google) and enters password credentials.

   Once authenticated (and if determined that the user is already registered with a local account), the user is automatically logged in as the local user and then presented with a Linked Accounts page that has the option to link the Identity Provider to this local account.

   By clicking the link next to Google, the user will link the local account to the Google Identity Provider account. The user may choose to link and unlink additional Identity Providers from this page. Figure 43–1 illustrates this scenario.

Figure 43–1 Social Identity Account Linking



Additional scenarios include:

- If the user logs into an Identity Provider account without having a local account and selects the Register option after Identity Provider authentication, an enterprise ID will be created and the Identity Provider account will be automatically associated with this enterprise ID. In other words, the user logs in with the Identity Provider Login ID and Mobile and Social creates a local account with the same user name as the Identity Provider Login ID. The user is then redirected to the linked accounts page associated with the newly created local account. From this page, the user may choose to link or unlink Identity Provider accounts or return back to the application.

- If the user logs in using the local account only, in the app the user has to choose the linked accounts page displaying Identity Providers. From this page, the user may choose to link (or unlink) Identity Provider accounts or return back to the app. When the accounts are linked, Social Identity will detect that the user is linked to a local account even when the user logs in using Identity Provider credentials.

Note: The linked accounts page can be provided by the relying party (by way of Social Identity) or a third-party application that hosts the options for linking accounts. In either case, the following items will need to be provided:

- An API call (for example, `AccountLinkingHelper.getProviders()`) listing the various Identity Providers that can be linked. This will include linkage status and IDs.
- An RP-specific account linking page (for example, `linkedAccounts.jsp`) that will display the various Identity Providers that can be linked. This will include linkage status and IDs.

43.7.2 Configuring Social Identity Provider Account Linking

The properties documented in Table 43–8 need to be configured to use Account Linking. They are set in the Application Profile Properties table.

Table 43–8 Account Linking Properties

Property	Details
`app.acct.link.enabled`	This configuration property is set to true to enable Account Linking.
`app.acct.link.attr`	Specify the OAM entity attribute name that corresponds to the LDAP attribute where the multi-valued account linking information is to be stored. Use the OAM entity attribute name defined in the IDS Profile. To look up this name in the OAM console, choose **Configuration** > **User Identity Stores** > **IDS Profiles**. Select the identity profile and click edit, then click **Entity Attributes**. The Entity Attributes page lists both the entity attribute names defined by OAM, and the corresponding LDAP physical attributes. Use the OAM name listed in the first column. Note: This value is case-sensitive.

The following should also be taken into account when enabling Account Linking.

- Ensure the proxy setting is correct. This setting can be found by navigating the Oracle Access Management Console: **System Configuration > Mobile & Social > Mobile & Social Settings**.
- Images for Identity Provider icons or logos can only be specified using WLST. If the image path starts with `http`, the image is retrieved from the location using the `img` tag. Otherwise, it uses the internal references that come with Social Identity.
- Ensure that the `username` attribute and the account linking attribute are different. If they are the same then it can cause inconsistent behavior. For example, you can set the `username` attribute to `uid` and the linking attribute to `mail`.
- Set the Shared Secret for the application. Set the Auth Scheme on the authentication policy to point to OICScheme and ensure that the settings are

correct. For example, the `MatchLDAPAttribute` should match the `username` attribute set in the relying party Application Profile, typically `uid`.

44

Configuring Mobile and Social System Settings

This chapter discusses system configuration tasks for Oracle Access Management Mobile and Social. It contains the following sections.

44.1 Accessing the Mobile and Social Settings Interface

Use the Mobile and Social Settings page in the Oracle Access Management Console to configure system level settings.

> **Note:** You can perform many Mobile and Social configuration tasks from the command line using the WebLogic Scripting Tool (WLST). For more information, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

Follow this procedure to access the Mobile and Social Settings page.

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click **Mobile and Social Settings** in the **Configuration** panel.

   The Mobile and Social Settings page opens in a separate tab.

44.1.1 Understanding the Mobile and Social Settings Page

This section describes the form fields on the Mobile and Social Settings page.

Configuration Settings for Social Identity

Configure the following Social Identity settings if a proxy server is in place between the Mobile and Social server and an Identity Provider.

- **Proxy URL** - Choose the protocol to use to connect to the proxy server (HTTP or HTTPS), then type the proxy server host name and port number.

- **Proxy Authentication** - Type the user name and password required to authenticate with the proxy server.
- **SAE Token Validity Period** - Type the number of seconds that the system should wait before expiring the Secured Attribute Exchange token. SAE is the default scheme used to secure communication between the Mobile and Social server and any application integrating directly with Social Identity.

44.2 Logging and Auditing

For information about Fusion Middleware logging, see the "Monitoring Oracle Fusion Middleware" chapter in the *Oracle Fusion Middleware Administrator's Guide*.

For information about Fusion Middleware auditing, see the "Configuring and Managing Auditing" chapter in the *Oracle Fusion Middleware Application Security Guide*.

44.3 Deploying Mobile and Social With Oracle Access Manager

Mobile and Social can be configured for use with either Oracle Access Manager 10g or 11gR1 PS1. For this to work, however, Oracle Access Manager and Mobile and Social need to be installed on different servers in different domains. Mobile and Social and Oracle Access Manager then need to be configured to work together. The following procedure documents how to do this using Oracle Access Manager 11gR1 PS1. **Before you Begin** - Install Mobile and Social on Host 1 and Oracle Access Manager 11gR1 PS1 on Host 2.

1. Log on to the Oracle Access Management Console on Host 2 and create a WebGate profile for Mobile and Social using the default settings.
2. In Mobile and Social, create an Authentication Service Provider for Oracle Access Manager 11.1.1.5.

   See Section 42.3.1.3, "Creating an Authentication Service Provider," for instructions.

   Set the Attributes as described in the following table.

Table 44–1 Attribute Settings for an Oracle Access Manager 11gR1 PS1 Authentication Service Provider

Name	Value
OAM_VERSION	OAM_10G
DEBUG_VALUE	0
TRANSPORT_SECURITY	OPEN
OAM_SERVER_1	*host*:*port*
OAM_SERVER_1_MAX_CONN	4
OAM_SERVER_2	*host*:*port*
OAM_SERVER_2_MAX_CONN	4
AuthNURL	wl_authen://Authen/Basic

3. In Mobile and Social, create a Service Profile for the Authentication Service Provider that you created in the previous step.

   See Section 42.4, "Defining Service Profiles," for instructions.
4. In Mobile and Social, create a Service Domain.

See Section 42.7.1, "Creating a Service Domain," for instructions.

5. Merge the `cwallet.sso` file on Host 2 with the `cwallet.sso` file on Host 1 as follows:

   a. Copy `cwallet.sso` from Host 2 to Host 1.

   b. On Host 1 type

```
# mkdir /tmp/oam  /tmp/oic
# cp <host>/cwallet.sso /tmp/oam
# cp config/fmwconfig/cwallet.sso /tmp/oic
```

   c. Create file `merge-creds.xml`:

```
<?xml version="1.0" encoding="UTF-8" standalone='yes'?>
<jpsConfig xmlns="http://xmlns.oracle.com/oracleas/schema/11/jps-config-11_
1.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://xmlns.oracle.com/oracleas/schema/11/jps-config-1
1_1.xsd"
schema-major-version="11" schema-minor-version="1">
  <serviceProviders>
    <serviceProvider
class="oracle.security.jps.internal.credstore.ssp.SspCredentialStoreProvide
r"
name="credstoressp" type="CREDENTIAL_STORE">
      <description>File-based credential provider</description>
    </serviceProvider>
  </serviceProviders>
  <serviceInstances>
    <!-- Source file-based credential store instance -->
    <serviceInstance location="/tmp/oam" provider="credstoressp"
name="credential.file.source">
    </serviceInstance>
    <!-- Destination file-based credential store instance -->
    <serviceInstance location="/tmp/oic" provider="credstoressp"
name="credential.file.destination">
    </serviceInstance>
  </serviceInstances>
  <jpsContexts>
    <jpsContext name="FileSourceContext">
      <serviceInstanceRef ref="credential.file.source"/>
    </jpsContext>
    <jpsContext name="FileDestinationContext">
      <serviceInstanceRef ref="credential.file.destination"/>
    </jpsContext>
  </jpsContexts>
</jpsConfig>
```

   d. Set the path variable to include `$MW_HOME/oracle_common/bin:$MW_HOME/oracle_common/common/bin`

   e. Execute the command to merge the `cwallet.sso` files:

```
# wlst.sh
wlst:/> migrateSecurityStore(type="credStore",
configFile="/tmp/mergecreds.xml",src="FileSourceContext",dst="FileDestinati
onContext")
```

   f. Copy the merged file to `config/fmwconfig`:

```
# cp /tmp/oic/cwallet.sso /scratch/kerwin/wls10/user_projects/domain/base_
```

domain/cfnfig/fmwconfig

g. Restart the OAM Server on Host 1.

44.4 Configuring Mobile and Social After Running Test-to-Production Scripts

When moving Mobile and Social from a test environment to a production environment, complete the following configuration steps on each production machine after running the Test-to-Production scripts.

1. Launch the Oracle Access Management Console.
2. On the **Policy Configuration** tab, choose **Shared Components** > **Authentication Schemes** > **OIC Scheme** and click **Open**.

   The Authentication Schemes configuration page opens.
3. Update the **Challenge Redirect URL** value to point to the production machine (not the test machine) and click **Apply**.

   For example: `https://`*production_machine*`:`*port*`/oic_rp/login.jsp`
4. Run the following WLST command to update the Mobile and Social credential store framework (CSF) entry to point from the test machine to the production machine.

   ```
   createCred(map="OIC_MAP", key=" https://<production machine host>:<production
   machine port>/oam/server/dap/cred_submit ", user="="<description>", password="
   DCC5332B4069BAB4E016C390432627ED", desc="<description>");
   ```

   For `password`, use the value from the `RPPartner` entry, `TapCipherKey` attribute in `oam-config.xml`, located in the *domain home*`/config/fmwconfig` directory on the production machine.
5. In the Oracle Access Management Console, do the following:
   a. Select the **System Configuration** tab.
   b. Choose **Mobile and Social** > **Social Identity**.
   c. In the **Application Profiles** section, select **OAMApplicaton** and click **Edit**. (If using an application profile name other than OAMApplication, edit that instead.)
   d. Update the **Registration URL** field host name and port to point to the production machine.

      Click **Apply**.

44.5 Configuring Mobile and Social for High Availability (HA)

For information about configuring Mobile and Social High Availability, see "Configuring High Availability for Mobile and Social" in the *Fusion Middleware High Availability Guide for Oracle Identity and Access Management*.

44.6 Enabling the REST Client to Specify the Tenant Name

Follow these steps to enable the REST client to specify the tenant name. Refer to "Specifying the Tenant Name in the Header" in the *Developer's Guide for Oracle Access Management* for more information.

1. Navigate to the following directory:

   ```
   ~/OAM-Domain-dir/bin
   ```

2. In a text editor, add the following line to the `./startManagedWebLogic.sh` file:

   ```
   MT_OPTION="-Doracle.multitenant.headername=MY-MT-NAME"
   JAVA_OPTIONS="${MY_OPTIONS} ${JAVA_OPTIONS}" export JAVA_OPTIONS
   ```

   Note: If you do not specify the JVM option, the server will expect the client to use the default header name, `X-ID-TENANT-NAME`.

3. Save the file.

Part X

Managing the Oracle Access Management OAuth Service

The Oracle Access Management OAuth Service allows organizations to implement the open standard OAuth 2.0 Web authorization protocol in an Access Manager environment. OAuth enables a client to access Access Manager protected resources that belong to another user (that is, the resource owner).

Part IX contains the following chapters:

45

Understanding the OAuth Service

This chapter describes the purpose and capabilities of the OAuth Service. It includes the following topics.

45.1 Introducing the OAuth Service

The OAuth Service allows organizations to implement the open standard OAuth 2.0 Web authorization protocol in an Access Manager environment. OAuth enables a client to access Access Manager protected resources that belong to another user (that is, the resource owner).

45.2 Understanding the OAuth Service

The OAuth Service allows organizations to implement OAuth 2.0 in a new or existing Access Manager environment so that OAuth clients can use OAuth 2.0 flows to access resources protected by Access Manager. An OAuth client can be an application or service created and controlled by your organization, or it can be an application or service created and controlled by another organization that requires access to resources protected by Access Manager.

> **Note:** For information about using OAuth flows to allow users to log in to a protected resource using their credentials from cloud-based identity services, see Section 41.6.3, "Using OAuth For Access Token Retrieval."

The following sections contain more detailed information regarding the OAuth Service:

- Understanding the Mobile OAuth Client UI Form Factor Options
- Understanding Mobile OAuth Single Sign-on (SSO)

45.2.1 Understanding OAuth 2.0 Roles

OAuth is an open standard Web authorization protocol that has become the preferred method of providing tokenized authentication and access control between any type of client (including mobile apps and other services) and another service on the Web. The Oracle Access Management OAuth Service implements the OAuth 2.0 specification developed by the IETF OAuth Working Group.

OAuth enables a client to access resources on a remote server that belong to another user (the resource owner). In the most common OAuth authorization flow, the client is issued a different set of credentials than those of the user. An intermediary authorization service interacts directly with the client and the service hosting the user's resources so the user does not disclose their credentials to the client.

The OAuth specification defines four roles:

- *resource owner* – A person or entity capable of granting access to a protected resource.
- *resource server* – The server hosting the protected resources. The resource server must be capable of accepting and responding to protected resource requests using access tokens.
- *client* - An application making protected resource requests on behalf of the resource owner and with the resource owner's authorization.
- *authorization server* – The server issuing access tokens to the client after successfully authenticating the resource owner and obtaining authorization. A single authorization server instance can issue access tokens accepted by multiple resource servers.

The OAuth specification does not impose any special requirements on the interaction between the resource server and the authorization server. The resource server only needs to be capable of accepting and responding to protected resource requests using access tokens.

45.2.2 Understanding the OAuth Service Components

The OAuth Service consists of the following components:

- A *server component* that you administer as part of Oracle Access Management. The server component, together with Access Manager, provides authorization services and the OAuth token service. The server interacts with the client, the resource owner, and the resource server. The server component is where you register clients and resource servers and manage token life-cycle management.
- A *User Profile Service* that supports OAuth 2.0 authorization and allows clients to interact with a back-end directory server and perform User Profile REST operations on Person, Group, and Relationship entities.
- A *Consent Management Service* that stores and tracks OAuth user consent responses.

45.2.3 Understanding the OAuth Service Supported Features

The OAuth Service supports 3-legged OAuth, 2-legged OAuth, and enhanced security support if the OAuth client resides on a mobile device.

3-Legged OAuth Authorization

In OAuth 3-legged authorization, the resource owner grants access to the OAuth-enabled client (the requesting site) to access resources stored on an OAuth resource server. The Oracle Access Management authorization server validates the resource owner's identity and presents the owner a consent form when approval is required. The third leg in this authentication scheme is the step in which the user grants or denies the client access.

2-Legged OAuth Authorization

In OAuth 2-legged authorization, the OAuth client is pre-approved to access resources. This arrangement fits a service-to-service model, especially when the requesting service and the resource service are in a close partnership and the resource owner approval is either assumed or not required.

Mobile OAuth

The Oracle Access Management OAuth Service provides enhanced security support if the OAuth client resides on a mobile device. This enhanced security support is in addition to the baseline security measures defined in the OAuth 2.0 specification. On a mobile device, the OAuth client must obtain a client verification code before the authorization endpoint on the OAM server will interact with the mobile app. Further, the OAM server component can restrict token delivery to a specific app installed on a specific device by sending part of a token through HTTPS, and sending the other part through push notification using either the Apple Push Notification Service (APNS) or Google Cloud Messaging (GCM). Mobile OAuth single sign-on allows multiple mobile apps on a device to share the same user session, which resides on the server, not the client.

SDK Support

SDKs for OAuth Service application development are not available in this release. This includes SDKs for Android and iOS devices, and for Java Virtual Machines (JVMs).

45.2.4 The Mobile OAuth Authorization Flow

Apps that go through a browser for mobile security use the Mobile OAuth authorization flow. In this flow the user session is created on the server and maintained in the browser with cookies. Except for access tokens, the server does not send security material, such as OAAM device and session handles and user tokens to the mobile device, but stores it in the Server-Side Device Store. Access tokens *are* both sent to the client and stored in the Server-Side Device Store to provide for validation and life cycle management.

Client apps that use the mobile OAuth authorization flow must be registered with the OAuth service in the OAuth identity domain that your organization uses to manage mobile OAuth clients. This flow also requires the client to obtain a pre-authorization client verification code before the server's authorization endpoint will interact with the mobile app. If enabled, the server can further ensure that it is communicating with a specific app installed on a specific device by sending part of an additional client verification code through HTTPS, and sending the other part through push notification using either the Apple Push Notification Service (APNS) or Google Cloud Messaging (GCM).

This flow supports user consent management. If consent management is enabled, the client app prompts the user to accept or decline the app's request to register with Access Manager.

Note: Register browser-based apps that use the Mobile OAuth authorization flow under OAuth Services in the OAM console.

For a diagram that describes the Mobile OAuth authorization flow in detail, see Section 45.3.3, "Understanding Mobile OAuth Authorization."

45.2.5 Understanding the OAuth Service Authorization and Authentication Endpoints

The OAuth Service has three authentication endpoints that receive and respond to HTTPS requests: *the authorization endpoint*, *the token endpoint*, and *the push endpoint*. Each endpoint is an URL that clients use to make OAuth authentication requests.

- **Authorization Endpoint** – The client uses the authorization endpoint to get authorization from the resource owner to access the requested resources. The endpoint redirects the user agent and prompts the resource owner to log in and consent to the access request. The client application initiates the authorization endpoint request. This endpoint accepts the HTTPS request, validates the input parameters and headers (if any), appends the authorization code to the redirect URI, and finally redirects the client to the URL. The URI for this endpoint always ends in *authorize*. For example:

  `http(s)://<host>:<port>/ms_oauth/oauth2/endpoints/<yourOauthServiceName>/authorize`

- **Token Endpoint** – The client application interacts with the token endpoint to exchange an authorization grant or refresh token for an access token. The client uses a Refresh token to obtain a new access token. The URI for this endpoint always ends in *token*. For example:

  `http(s)://<host>:<port>/ms_oauth/oauth2/endpoints/<yourOauthServiceName>/token`

- **Push Endpoint** – Mobile OAuth client apps interact with the push endpoint to obtain (depending on configuration) part of the authorization codes, and/or part of the client tokens, access tokens, and refresh tokens that are sent through either the Apple Push Notification Service (APNS) or the Google Cloud Messaging (GCM) service.

- **User Consent Revocation Endpoint** - Resource owners (end-users), who authenticate and authorize client applications using the browser-based authorization endpoint flow, use this endpoint to revoke their consent to client applications. For example:

  `http(s)://<host>:<port>/ms_oauth/oauth2/ui/<yourOauthServiceName>/showrevokeconsent`

When configuring the OAuth server, you also need to provide at least one client redirect URI where the server can return authorization credentials to the client.

- **Client Redirect URIs** – The OAuth server returns authorization credentials to the client using the URI specified in the request provided that it exactly matches a URI configured in the client profile.

45.2.6 Understanding Refresh Tokens

The OAuth Service can be configured to allow the client to use a refresh token to obtain additional access tokens with identical or narrower scope. The offline scope is

the scope that issues an access token for a refresh token if the client is offline. The server issues a refresh token if the client requests the offline scope defined in the resource server configuration. See Section 46.4.5.3, "Understanding the OAuth Resource Servers Configuration Page" for details.

The client must also be configured to use refresh token. See Section 46.4.2.3, "Understanding the OAuth Service Profile Configuration Page" and Section 46.4.3.3, "Understanding the OAuth Web Clients Configuration Page" for information about refresh token settings.

45.2.7 Understanding the Mobile OAuth Client UI Form Factor Options

Developers in your organization can implement mobile security in a client app using an external browser or an embedded browser. This section briefly discusses the different approaches.

The External Browser Approach

In this approach the client app switches to an external browser, which executes the logic for user authentication and user consent management. A shared browser cookie maintains the user session and can be used to provide single sign-on across multiple apps. The external browser uses a typical Web single sign-on mechanism, including OAM SSO user authentication and third-party SSO user authentication. One drawback of using an external browser is the screen "flickering" that occurs when the application context switches between the browser and the application.

The Embedded Browser Approach

This approach uses an embedded browser, which eliminates the screen flickering that occurs when the application context switches between the application and the external browser. The browser cookie, however, cannot be shared across multiple apps so the typical Web single sign-on mechanism cannot be used. Instead, OAM uses its own Web user authentication for single sign-on.

45.2.8 Understanding Mobile OAuth Single Sign-on (SSO)

Understanding OAM and Third-Party SSO User Authentication

Mobile OAuth client apps can use either OAM SSO user authentication or third-party SSO user authentication provided that the participating client apps are implemented using an external browser. Because the external browser can share its security cookie, this allows multiple mobile and Web clients to use either OAM or third-party SSO at the same time.

Understanding JWT SSO User Authentication

Embedded browsers cannot use OAM or third-party SSO user authentication if the user needs to log in to multiple apps on the same mobile device. Instead, a JWT user session token is used and single sign-on is established using device identification together with the user session. (If the ability to use multiple apps on the same mobile device is not a requirement, then either OAM SSO or third-party SSO is sufficient.)

Oracle Access Management generates a JWT user session token upon user authentication, and this token forms the basis of the single sign-on user session. The JWT user session is stored and maintained in the server-side device store, so multiple mobile client apps running on the same device can share the JWT user session token.

45.3 Understanding the OAuth Service Processes

This section details the OAuth Service concepts and transaction flows.

- Understanding OAuth 3-Legged Authorization
- Understanding OAuth 2-Legged Authorization
- Understanding Mobile OAuth Authorization

45.3.1 Understanding OAuth 3-Legged Authorization

In OAuth 3-legged authorization, the resource owner grants the client permission to access resources stored on a resource server. The authorization server validates the resource owner's identity and presents a consent form when approval is required. Figure 45–1 following the text illustrates the process.

1. The resource owner (user) undertakes an action in the user-agent (a browser, for example) that requires the client app to access protected resources on a different site that belong to the resource owner.
2. The client app initiates the OAuth flow by invoking the authorization server's authorization endpoint. The client app sends its client identifier, the requested scope, and the redirection URI to which the authorization server will direct the user-agent once access is granted or denied (see step 10).
3. Because the OAuth authorization service requires the resource owners credentials, the authorization service redirects the user-agent to request the resource owner's password credentials.
4. Access Manager displays the user login UI and asks the resource owner for a user name and password. The authorization server supports all authentication schemes provided by Access Manager.
5. The resource owner enters a user name and password.
6. Access Manager validates the login and redirects the user-agent to the authorization service.
7. The authorization service determines that the resource server requires the user's consent before the authorization code can be sent to the client.
8. The authorization service displays the user consent form.
9. The user approves the request.
10. The authorization service returns an authorization code to the client using the redirection URI from step 2.
11. The client sends the authorization code in a POST request to the token endpoint and requests an OAuth access token. When making the request, the client authenticates with the authorization server. The client includes the redirection URI used to obtain the authorization code for verification.
12. If the client type requires client credentials, the OAuth Service authenticates the client credentials, validates the authorization code, and ensures that the redirection URI received matches the URI used to redirect the client in step 10.

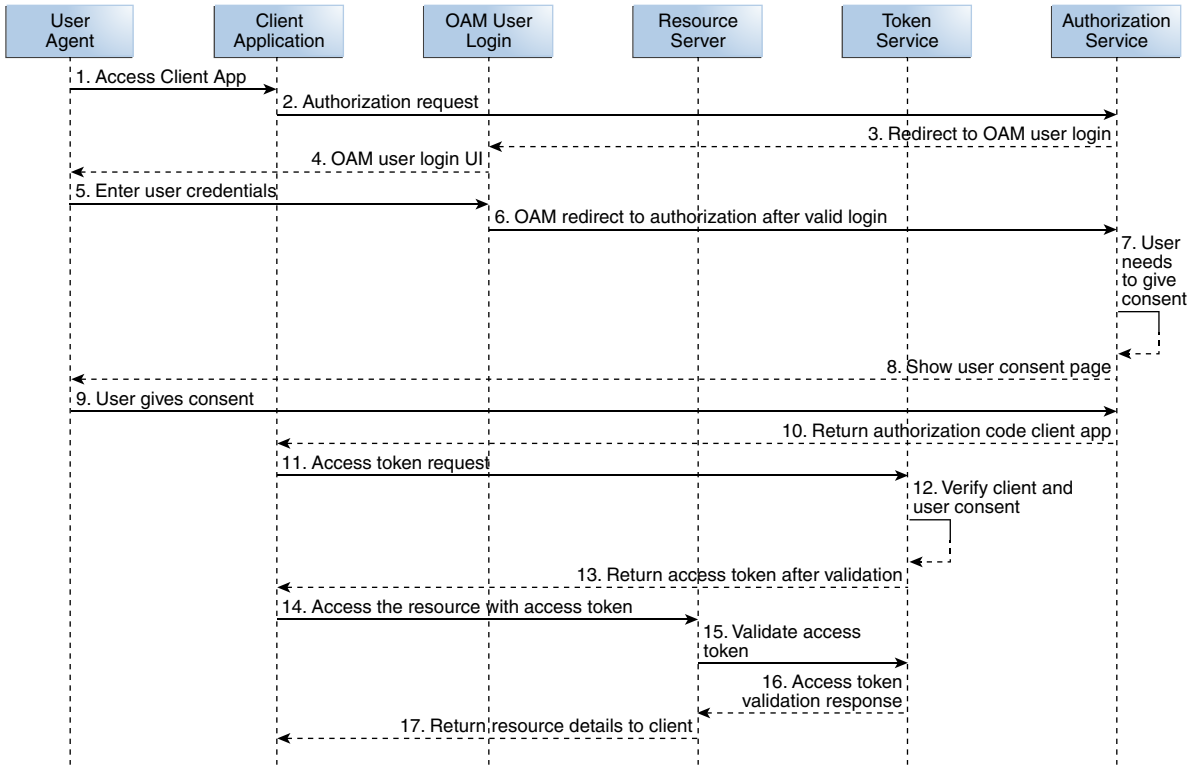
    The OAuth Service then validates the requested scope based on the resource server's configuration and the user's consent details.
13. The OAuth Service returns an access token to the client for the following grant types:

- Authorization code
- Resource owner credentials
- Client credentials
- Extension Grant type to support JWT tokens

A *refresh token* may also be returned with the access token if the client sends a refresh token request. For more information, see Section 45.2.6, "Understanding Refresh Tokens."

14. The client presents the access token to the resource server.
15. The resource server validates the access token by sending a request to the authorization server's token endpoint. The resource can also validate the token itself because the access token is a standard JWT token.
16. The access service sends the token validation response back to the resource server.
17. The resource server returns the requested resources to the client.

Figure 45–1 OAuth 3-Legged Flow Diagram



45.3.2 Understanding OAuth 2-Legged Authorization

In OAuth 2-legged authorization, the user consent step is not required. The authorization server returns a request token to the client, which the client then uses to request an access token. Because the request token is pre-authorized, the authorization server's token service returns an access token to the client.

45.3.3 Understanding Mobile OAuth Authorization

The Oracle Access Management OAuth Service provides enhanced security support if the OAuth client resides on a mobile device. Mobile applications need to register with OAM prior to using the OAuth Service and each registration is specific to one app on the device. Following registration, an OAuth client on a mobile device must obtain a client verification code before the OAM authorization endpoint will interact with the mobile app. As an added precaution, the OAM server component can restrict token delivery to one specific app installed on one specific device by sending part of a token through HTTPS or HTTP, and sending the other part through push notification using either the Apple Push Notification Service (APNS) or Google Cloud Messaging (GCM).

The user flow detailed in this section describes the additional interactions that Oracle Access Management undertakes when authenticating with a mobile client. The process is shown in the following diagrams.

1. The resource owner opens the mobile OAuth client app.

   An OAM administrator has already registered this client app as a mobile OAuth client.

2. The mobile OAuth client sends the client ID and the device token to the OAuth server and requests a client verification code.

3. The OAuth server returns half of the client verification code over HTTPS or HTTP.

   This behavior can be configured in the Mobile Service Settings section of the OAuth Service Profile configuration page.

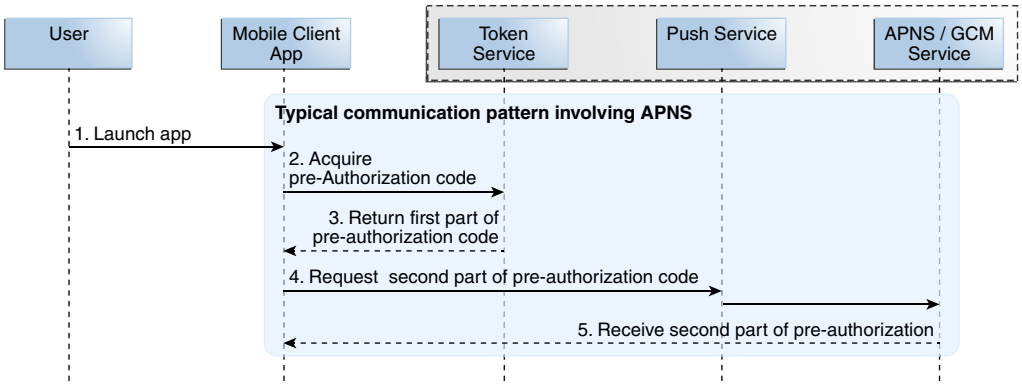
   - If the security level is set to **Advanced**, all codes and tokens are returned using both HTTP and push notification.
   - If the security level is set to **Hybrid**, registration related codes and tokens are are returned using both HTTP and push notification, whereas access tokens are sent over HTTP only.
   - If the security level is set to **Standard** mode, all codes and tokens are sent over HTTP only.

4. The mobile OAuth client requests the second half of the client verification code from the OAuth server's push endpoint.

   The push endpoint forwards the request to the Apple Push Notification Service (APNS) or the Google Cloud Messaging (GCM) service depending on if the mobile device is an iOS or Android device.

5. The APNS or GCM service sends the second half of the client verification code to the mobile client app.

Figure 45–2 Using a Split Request to get a Client Verification Code



6. The mobile OAuth client requests an authorization code from the OAuth server by sending the client verification code and the device token.
7. The OAuth server redirects to Access Manager.
8. Access Manager sends a login page to the user-agent so that the user can log in.
9. The resource owner enters a user ID and password.
10. Access Manager validates the login and redirects to the OAuth authorization service.
11. The OAuth server is configured to obtain the user's approval to register the device. (The server will not ask for the user's consent prior to registration if the **Require User Consent for Client Registration** option is disabled on the OAuth Service Profile Configuration page.)
12. The consent page is sent to the resource owner.
13. The resource owner provides (or denies) consent.
14. The OAuth server checks the Oracle Adaptive Access Manager (OAAM) plug-in to determine if additional authentication steps are required.
15. The plug-in determines that an additional challenge question is required.
16. The OAAM challenge question is sent to the resource owner.
17. The resource owner provides the challenge answer, which is forwarded to the OAAM plug-in.
18. The OAAM plug-in validates the challenge answer.
19. The OAuth server uses the mobile redirect URI to return half of the authorization code that the mobile app will need to request a client token.
20. The mobile OAuth client requests the second half of the authorization code from the OAuth server's push endpoint.

    The push endpoint forwards the request to the APNS or GCM service.
21. The mobile client app receives the second half of the authorization code from the APNS or GCM service.

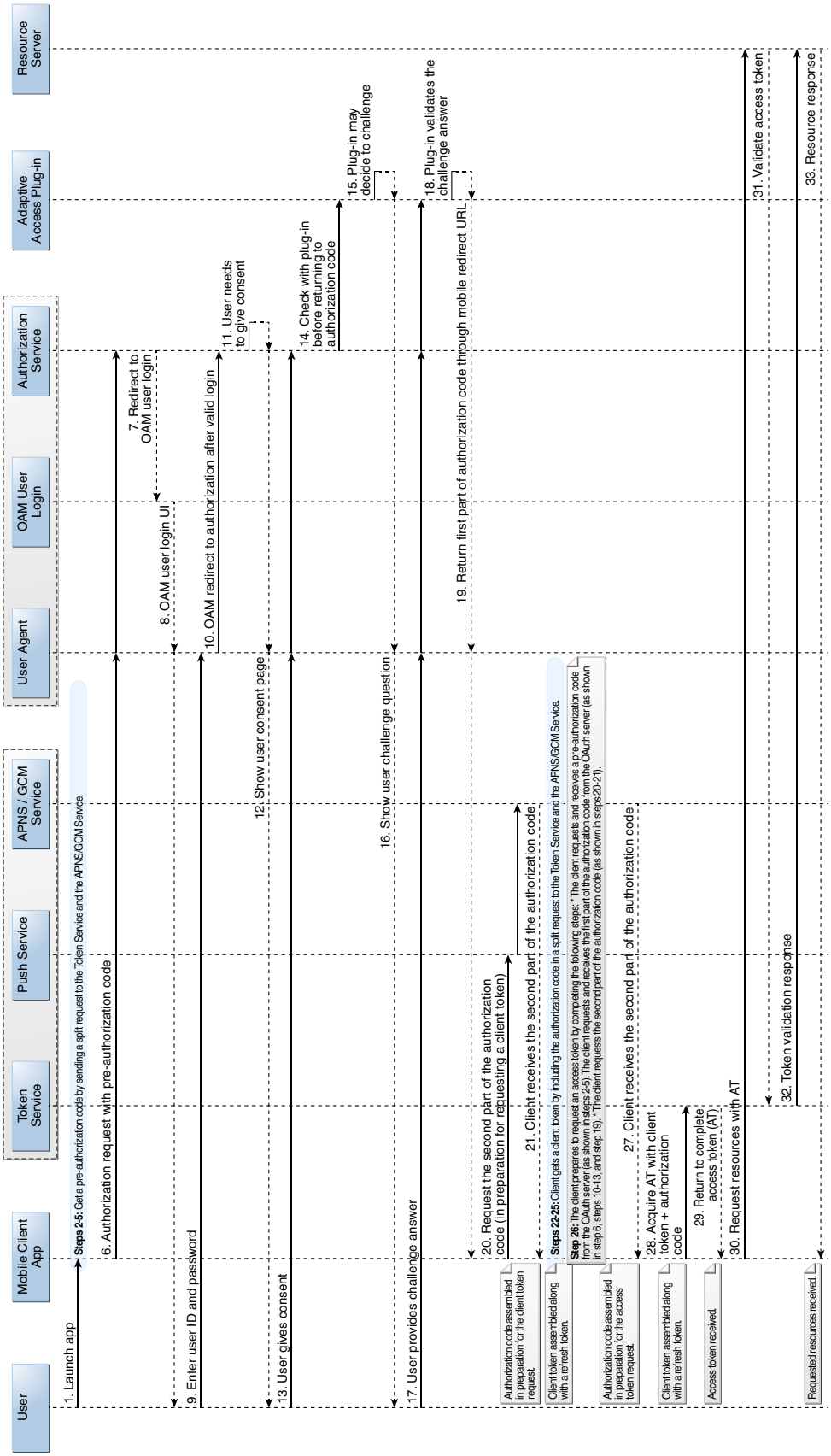
    The mobile client app assembles the authorization code in preparation for requesting a client token.

22. After validating the authorization code, the mobile OAuth client uses the code to request the first half of the client token from the OAuth server's token endpoint.
23. The token endpoint returns the first half of the client token to the mobile client.
24. The mobile client requests the second half of the client token from the OAuth server's push endpoint.
25. The APNS or GCM service sends the second half of the client token to the mobile client app.

    The mobile client assembles the client token as well as a refresh token. The client can use the refresh token to request a new client token.
26. The mobile client prepares to request an access token by completing the following steps:
    - The client requests and receives a client verification code from the OAuth server (as shown in steps 2-5).
    - The client requests and receives the first part of the authorization code from the OAuth server (as shown in step 6, steps 10-13, and step 19).
    - The resource owner does not need to log in (steps 7-9) if the user session is still valid.
    - User consent may be required based on the resource server scope that the client is requesting access to.
    - The OAAM plug-in does not repeat its challenge (steps 14-18).
    - The client requests the second part of the authorization code (as shown in steps 20-21).
27. The APNS or GCM service returns the second half of the authorization code for the access token.

    The client assembles the authorization code in preparation for the access token request.
28. The mobile client requests an access token by sending the client token and the access token authorization code.
29. The token endpoint sends the access token to the client. This behavior depends on whether the Security Level setting in the Mobile Service Settings section of the OAuth Service Profile configuration page is set to Advanced, Hybrid, or Standard.
30. The mobile OAuth client requests access to the protected resources by sending the access token to the resource server.
31. The resource server validates the access token with the OAuth token service. The resource server can also validate the token locally. If the certificates are configured correctly, JWT token signing is verified at the resource server.
32. The OAuth token service sends a response to the resource server.
33. The resource server sends the requested resources to the mobile client.

Figure 45–3 The Complete Mobile App Authorization Request Flow



46

Configuring OAuth Services

Oracle Access Management provides a graphical user interface for configuring OAuth Services. This chapter describes how to use the Oracle Access Management Console to configure OAuth Services and contains the following topics.

- Enabling OAuth Services
- Opening the OAuth Services Configuration Page
- Understanding OAuth Services Configuration
- Configuring OAuth Services Settings
- Configuring OAuth to Accept Third-Party JWT Bearer Assertions
- Configuring a WebGate to Support the OAuth Service

> **Note:** OAuth Services can be configured from the command line using WLST. For more information about the Mobile and Social WLST commands, see the *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

46.1 Enabling OAuth Services

The standard OAuth Service is enabled if the Oracle Access Management Identity Federation service is enabled in **Available Services**. To also enable Mobile OAuth, enable the Mobile and Social service in addition to the Identity Federation service.

- To learn about enabling the Identity Federation service, see "Enabling Identity Federation" in the "Introducing Identity Federation in Oracle Access Management" chapter.
- To learn about enabling the Mobile and Social service, see "Enabling Mobile and Social" in the "Understanding Mobile and Social" chapter.

46.2 Opening the OAuth Services Configuration Page

Follow these steps to open OAuth Services configuration page in the Oracle Access Management Console.

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click **OAuth Service** in the **Mobile and Social** pane.

   The **OAuth Identity Domains** page opens in its own tab.

46.3 Understanding OAuth Services Configuration

The *OAuth Identity Domains* page lists all of the OAuth Identity Domains on the OAM Server. Click a domain to configure it. The following sections contain information about the tabs used to configure OAuth Services.

- Understanding OAuth Identity Domains Configuration
- Understanding OAuth Service Provider Configuration
- Understanding OAuth Service Profiles Configuration
- Understanding OAuth Resource Servers Configuration
- Understanding OAuth Client Profiles Configuration
- Understanding OAuth Consent Management Service Configuration
- Understanding OAuth Access Token Custom Attributes
- Understanding OAuth Services Security

46.3.1 Understanding OAuth Identity Domains Configuration

OAuth Services ship with one OAuth identity domain named **DefaultDomain**. You can create additional domains as needed. Each OAuth identity domain has a universally unique identifier (UUID) that uniquely identifies it on the Internet.

Define the following configuration objects to configure an OAuth identity domain:

- An OAuth Service Provider
- One or more OAuth Service Profiles
- One or more OAuth Clients
- One or more OAuth Resource Servers

You can also configure the following settings at the identity domain level:

- OAuth Server settings
- OAuth plug-ins
- The OAuth Jailbreak detection policy
- User profile service settings (available on the **Resource Servers** configuration tab)
- Consent management service settings (available on the **Resource Servers** configuration tab)

The following screen is available to help you search for and revoke tokens across an identity domain:

- Token life cycle management

46.3.2 Understanding OAuth Service Provider Configuration

The OAuth Service Provider settings page is used to manage the connection between OAuth Services and Access Manager, which is the back-end authorization service provider that supports OAuth Services.

46.3.3 Understanding OAuth Service Profiles Configuration

A Service Profile defines the following configuration settings categories for the OAuth service:

- The clients that can interact with the service
- The custom resource servers that the service protects and can provide access to
- Token settings for the service, including refresh token settings, expiration settings, and the option to enable token life-cycle management
- The User Profile Service profile and Consent Management Service profile that are enabled on the service
- The security profile plug-ins that are enabled on the service
- The mobile service settings for the service, including security settings for the supported mobile platform(s)
- The root URL for the OAuth Services endpoints

If necessary, you can create multiple Service Profiles to define different service endpoints with different configuration settings.

46.3.4 Understanding OAuth Resource Servers Configuration

Use the Resource Servers tab to define settings for each resource server independently. Define a custom resource server for your applications or services. OAuth Services also includes two built-in resource servers, the *User Profile Service* and the *Consent Management Service*.

Scope and User Consent

The Resource Server Configuration page is where you define access request scope, which determines the range of access the client will have to the requested resources. Based on this setting, the authorization server restricts access and informs the client of the scope of the access token issued.

The access service enforces scope checking when handling both authorization requests and token requests. The client sends the scope parameter as part of an authorization request. If any part of the scope parameter value is invalid, the OAuth Server sends the client application a "Bad request" (code 400) error response with the error text `invalid_scope`.

The Resource Server Configuration page is also where you select the **Require User Consent** option, which requires the authorization server to display a user consent form so that the user can approve (or deny) access to the requested resources. The Require User Consent option can be enabled on a scope by scope basis. For example, you can require user consent for a scope request that allows "write" access, but not "read" access.

> **Note:** The OAuth Client Configuration page has a **Bypass User Consent** option. If this option is selected, the client setting overrides the resource server setting.

The User Profile Resource Service

The Oracle User Profile Resource Service is a native resource server included with the Oracle Access Management OAuth Server. This service allows your organization to use OAuth 2.0 to interact with User Profile Services, which is described in Section 41.2.5, "Introducing User Profile Services." This service makes it possible to use OAuth 2.0 to interact with a back-end directory server and performs the following User Profile REST operations on Person, Group, and Relationship entities:

- Create
- Update
- Delete
- Read
- Search

The User Profile service receives and responds to HTTPS requests using service-specific endpoints for Person, Group, and Relationship entities. Each service endpoint can be individually disabled if it is not needed.

The following tables summarize the HTTP(S) methods and user profile attributes that an OAuth client can use to interact with the User Profile resource server.

Table 46–1 User Profile Resource Server - Resource Categories

Resource Category	HTTP(S) Methods	Resource Endpoint	Use Details
`/me`	GET PUT	`http://host:port/ms_oauth/resources/userprofile/me`	The OAuth client can request *read* and *update* privileges for the specified user profile.
`/users`	GET POST PUT DELETE	`http://host:port/ms_oauth/resources/userprofile/users`	The OAuth client can request *create*, *read*, *search*, *update*, and *delete* privileges for any user profile.
`/groups`	GET POST PUT DELETE	`http://host:port/ms_oauth/resources/userprofile/groups`	The OAuth client can request *create*, *read*, *search*, *update*, and *delete* privileges for any group profile.
`/secretkey`	POST	`http://host:port/ms_oauth/resources/userprofile/secretkey`	

Table 46–2 User Profile Resource Server - Scope Settings

Scope	HTTP(S) Method	Resource Category	Attributes
`UserProfile.me`	GET PUT	`/me`	`uid, mail,description, commonname, firstname, lastname`
`UserProfile.users`	GET POST PUT DELETE	`/users`	`uid, mail,description, commonname, firstname, lastname`
`UserProfile.groups`	GET POST PUT DELETE	`/groups`	`name, description`
`UserProfile.secretkey.management`	POST	`/secretkey`	

46.3.5 Understanding OAuth Client Profiles Configuration

Use the Client Profile page to register clients with OAuth Services. OAuth clients need to register with the OAuth server before initiating the protocol. Provide the application name, a client secret, and one or more redirect URIs that the OAuth server will use to redirect the user-agent to the client once access is granted or denied.

The OAuth Service or a system administrator issues each client a client identifier. This ID is a unique string that represents registration information provided for the OAuth client.

Two types of OAuth client can be defined:

- Web - Requires a client ID, a secret, and one or more HTTP redirect URIs.
- Mobile - Requires a client ID, one or more mobile redirect URIs, and mobile OAuth implementation-specific attributes.

Privileges

You can configure allowed scopes and bypass the need for user consent on a client by client basis. Before obtaining an access token, the client must obtain an authorization grant that it can exchange with the OAuth service for an access token. Client privileges determine which clients are allowed which grant types. The OAuth 2.0 specification provides several authorization grant types for different security use-cases.

Note: For detailed information about the OAuth grant types, see IETF RFC 6749, which defines the OAuth 2.0 standard: http://tools.ietf.org/html/rfc6749#section-1.3

The following grant types are supported in OAM OAuth Services:

- Authorization Code - The resource owner logs in using the authorization server. The token endpoint exchanges the authorization code along with client credentials for an access token.
- Resource Owner Credentials - The resource owner provides the client with his or her user name and password. This is only suitable for highly trusted client applications because the client could abuse the password, or the password could unintentionally be disclosed to an attacker. Per the OAuth 2.0 specification, the authorization server and client should minimize use of this grant type and utilize other grant types whenever possible.
- Client Credentials – The client requests an access token using only its client credentials (or another supported means of authentication). This is suitable if the client is requesting access to protected resources under its control, or those of another resource owner when previously arranged with the authorization server.

In addition to the OAuth grant types defined in the OAuth 2.0 standard, the following options are also available:

- Refresh Token - Select this option to return a refresh token together with an access token in the token response. See Section 45.2.6, "Understanding Refresh Tokens" for more information.
- JWT Bearer - Allows a JWT assertion to be used to request an OAuth access token.
- SAML 2 Bearer - Allows a SAML2 assertion to be used to request an OAuth access token.

- OAM Credentials - Used to request OAM tokens, such as a master token, an access token, or an OAuth access token.
- Client Verification Code - Used by mobile clients to request a pre-verification code from OAuth server, which subsequently gets used mobile client flows.

46.3.6 Understanding OAuth Consent Management Service Configuration

The Consent Management Services configuration page is opened from the **Resource Servers** tab. The default Consent Management service handles consent storage, retrieval, revocation, and consent validation operations. Consent data is stored in the Oracle Access Management database.

46.3.7 Understanding OAuth Access Token Custom Attributes

The OAuth authorization server can embed custom attributes in access tokens. You can define two attribute types, *static attributes* and *dynamic attributes*:

- **Static Attributes** - Attribute name and value pairs where the value is fixed at the time that you define the attribute. For example, `name1=value1`.
- **Dynamic Attributes** - User-profile specific attributes. You must also configure the **User Store** setting on the OAuth Service Profile Configuration page. This setting defines the source of the User Profile attributes. The User Profile Service (and/or the underlying IDS interface) may be used to retrieve attribute names and values. Because dynamic attributes are user related, the user consent page (if configured) shows that the configured attributes are being shared with clients and resources.

You can define static and dynamic attributes using the following OAuth Services configuration objects:

- OAuth service profile
- Resource server

Keep the following guidelines in mind when configuring custom attributes:

- Do not use the same name for a static and dynamic attribute.
- Avoid using the same name when adding custom attributes to the service profile configuration and the scope configuration. If you define the same attribute name in both locations, the scope-based attribute value takes precedence.

Custom attributes appear as claims in access tokens. JWT-based access tokens contain standard JWT claims along with OAuth server specific ones. For example:

- Standard

```
"exp":1357596398000,
"iat":1357589198000,
"aud":"oam_server1",
"iss":"OAuthServiceProfile",
"prn":null,
"jti":"340c8324-e49f-43cb-ba95-837eb419e068",
```

- OAuth Server Specific

```
"oracle.oauth.user_origin_id":"john101",
"oracle.oauth.user_origin_id_type":"LDAP_UID",
"oracle:idm:claims:client:macaddress":"1C:AB:A7:A5:F0:DC",
"oracle.oauth.scope":"brokerage",
"oracle.oauth.client_origin_id":"oauthssoapp1id",
"oracle.oauth.grant_
```

```
type":"oracle-idm:/oauth/grant-type/resource-access-token/jwt"
```

These claims are available as part of the access token generated by the OAuth server. Because the custom attributes appear as claims in a JWT-based access token, the following naming restrictions apply:

- Avoid JWT standard claim names.
- Avoid names with an "Oracle" prefix (as shown above)

46.3.8 Understanding OAuth Services Security

This section briefly discusses features and options that help protect OAuth Services transactions.

IDs and Secrets

OAuth Services requires a client secret when you register the client. Upon registration create a unique client ID for each client. (If you prefer, the system can create one for you.) The OAuth Service compares its stored values with the values the client sends when it interacts with the OAuth Service's endpoints over HTTPS or HTTP. If the values do not match, the request is rejected. Client secrets are Base64 values that are sent as authorization headers.

- The client sends the OAuth server its client ID as part of an authorization request, and it sends the client ID and client secret in token endpoint requests.

OAuth Plug-ins

Optional plug-ins can be configured to provide additional security.

- The *adaptive-access plug-in* runs fraud detection and risk analysis policy checks, enhancing authenticity and the trust level of a user.
- The *token attributes plug-in* defines security policy around the token service provider.
- The *authorization and consent service plug-in* defines security policy around interactions where authorization and user consent are granted. This plug-in can influence claims in a generated token as well.
- Within an OAuth identity domain, the *client plug-in* defines a security policy for OAuth clients, and the *resource server profile plug-in* defines a security policy for resource servers.

Jail Breaking Detection Policy

A preconfigured Jail Breaking Detection Policy for iOS devices can search for files that indicate a device is jail broken and, if found, deny that device access to the OAuth flow.

Mobile Security

For information about mobile security, see the Mobile OAuth Authorization flow diagrams in Chapter 45.3.3, "Understanding Mobile OAuth Authorization."

Standard OAuth Security

Security measures provided for in the OAuth 2.0 specification also apply.

For a discussion of OAuth security considerations, see section 10 in IETF RFC 6749: http://tools.ietf.org/html/rfc6749#section-10

46.4 Configuring OAuth Services Settings

This section describes how to use the user interface to configure OAuth Services. It includes the following topics:

- Configuring OAuth Identity Domains
- Configuring OAuth Service Profiles
- Configuring OAuth Clients
- Configuring the OAuth Service Provider
- Configuring OAuth Resource Servers
- Configuring User Profile Services
- Configuring OAuth Consent Management Services
- Configuring OAuth Plug-Ins
- Configuring OAuth Server Settings
- Configuring the OAuth Services Jail Breaking Detection Policy
- Configuring Token Life Cycle Management

46.4.1 Configuring OAuth Identity Domains

See Section 46.3.1, "Understanding OAuth Identity Domains Configuration" for introductory information about OAuth Identity Domains. The following section describes how to use the user interface to configure an OAuth Identity Domain. It includes the following topics:

- Creating an OAuth Identity Domain
- Editing or Deleting an OAuth Identity Domain
- Understanding the Identity Domain Configuration Page - Summary Tab
- Understanding the Create OAuth Identity Domain Wizard Page

46.4.1.1 Creating an OAuth Identity Domain

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page."
2. Choose one of the following:
   - To quickly create an Identity Domain with only basic information, click **Create**.

     The Identity Domain Configuration page opens.

     Complete the form and click **Create** to save your changes. You will need to provide additional configuration detail later.
   - To create an Identity Domain *and* configure essential Service Profile settings, click the wizard flow button.

     The Create OAuth Identity Domain wizard flow page opens.

     Click **Back** and **Next** to move backwards and forward through the wizard flow. Click **Finish** to save your changes.

46.4.1.2 Editing or Deleting an OAuth Identity Domain

1. Open the OAuth Identity Domains page as described in Section 46.2, "Opening the OAuth Services Configuration Page."
   - To view or edit an Identity Domain, click its name in the table.
   - To delete an Identity Domain, select it by clicking the column to the left of the domain name and then click the delete button in the command bar.

46.4.1.3 Understanding the Identity Domain Configuration Page - Summary Tab

This section describes the form fields on the Identity Domain Configuration **Summary** tab when viewing an existing identity domain or creating a new one.

Identity Domain - The name of the identity domain. If creating or editing an identity domain, type a unique name without spaces.

Description - (Optional) A short description to help you or another administrator identify this identity domain in the future.

Identity Domain UUID - The identification code that uniquely identifies this identity domain on the Internet. Click **Generate** to populate this field with a universal unique identifier code.

Allow Multiple Resource Servers - Select this option if the identity domain supports more than one resource server.

Enable Mobile - Select this option if the identity domain will support mobile clients. If this option is cleared, mobile services configuration settings will not be available in the user interface for this identity domain.

Service Configuration

These fields appear on the Create Identity Domain page.

Service Profile Name - The name of the identity domain's service profile. Each identity domain requires at least one service profile. See Section 46.3.3, "Understanding OAuth Service Profiles Configuration," for more information.

User Profile Service Name - The name of the identity domain's user profile service. A user profile service is created automatically for each identity domain. See Section 46.3.4, "Understanding OAuth Resource Servers Configuration," for more information.

Consent Management Service Name - The name of the identity domain's consent management service. Each identity domain must have a consent management service, which stores and retrieves consent records, and performs consent validation and consent revocation operations. See Section 46.3.6, "Understanding OAuth Consent Management Service Configuration," for more information.

Service Profile Endpoint - The URL where the OAuth authorization service for this identity domain responds to authorization requests.

User Profile Service Endpoint - The URL where the User Profile Service receives and responds to create, read, update, and delete requests.

Consent Management Service Endpoint - The URL where the Consent Management Service receives and responds to client and resource owner service requests.

46.4.1.4 Understanding the Create OAuth Identity Domain Wizard Page

For help understanding the form fields on the Create OAuth Identity Domain wizard pages, refer to the following sections.

- **Information** - For help, see Section 46.4.1.3, "Understanding the Identity Domain Configuration Page - Summary Tab."
- **Service Profile** - For help, see Section 46.4.2.3, "Understanding the OAuth Service Profile Configuration Page."
- **Mobile Service** - For help, see "Mobile Service Settings" in Section 46.4.2.3.
- **Tokens** - For help, see "Token Settings" in Section 46.4.2.3.
- **Summary** - Review your settings and click **Finish** to create the identity domain.

46.4.2 Configuring OAuth Service Profiles

See Section 46.3.3, "Understanding OAuth Service Profiles Configuration" for introductory information about OAuth Service Profiles. The following section describes how to use the user interface to configure an OAuth Service Profile. It includes the following topics:

- Creating an OAuth Service Profile
- Editing or Deleting an OAuth Service Profile
- Understanding the OAuth Service Profile Configuration Page

46.4.2.1 Creating an OAuth Service Profile

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.
2. Click the **OAuth Service Profiles** tab.
3. Click the Create button and complete the wizard.

46.4.2.2 Editing or Deleting an OAuth Service Profile

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click an identity domain to open it for editing.
2. Click the **OAuth Service Profiles** tab.
3. Do the following:
   - To edit a service profile, click its name in the table.
   - To delete a service profile, select it by clicking the box to the left of the name and then click the delete button in the command bar.

46.4.2.3 Understanding the OAuth Service Profile Configuration Page

Identity Domain - The name of the identity domain to which this service profile applies. (Read-only)

Name - The name of this service profile.

Description - (Optional) A short description to help you or another administrator identify this service profile in the future.

Service Enabled - Select to activate the service profile, or clear the option box to inactivate it.

Service Provider - The name of the OAuth Service Provider that corresponds with this OAuth Service Profile.

Service Endpoint - The URL where the OAuth authorization service responds to authorization requests.

User Store

User Authenticator - For user authentication, choose **OAM** to use the Oracle Access Management token provider, or choose **IDS** to use the Identity Directory Service token provider. Only choose IDS authentication if the OAM token is not used at all (for example, if only the JWT token is used). If both OAM and JWT tokens are used, choose OAM authentication to avoid duplicated authentication attempts sent by both IDS and OAM.

Identity Store Name - The name of the identity store when IDS is configured as the user authenticator.

Plug-Ins

Choose available plug-ins from the menus in the following categories.

Adaptive Access - Runs Oracle Adaptive Access Manager (OAAM) fraud detection and risk analysis policy checks, enhancing authenticity and the trust level of a user

Token Attributes - Defines security policy around the token service provider.

Client - Delegates the following to an external security module: confidential client authentication, client authorization, and client profile reading.

Resource Server Profile - Delegates the following to an external security module: confidential resource server authentication, resource server authorization, and resource server profile reading.

Consent Management Service - Defines security policy around interactions where authorization and user consent are granted. This plug-in can influence claims in a generated token as well.

Attributes

Add or delete service profile attributes and their values to further configure the OAuth service profile.

For JWT token generation and validation, configure the following parameters:

- `jwt.cert.alias`
- `jwt.trusted.issuer.size`
- `jwt.trusted.issuer.1`
- `jwt.trusted.issuer.2`

> **Note:** For details, see Section 46.5, "Configuring OAuth to Accept Third-Party JWT Bearer Assertions."

Table 46–3 OAuth Service Profile Configuration Attributes

Name	Value	Notes
jwt.cert.alias		Private key alias name for the signing certificate in the keystore. The default alias will be used if this attribute is not specified.
jwt.CryptoScheme	RS512	The cryptographic algorithm used to sign the contents of the JWT token. The default value is RS512. (RSA encryption using SHA-512 hash algorithm.)
jwt.issuer	www.oracle.example.com	This issuer of the tokens (that is, the iss claim value in the JWT token generated by the OAuth server). The default value, www.example.oracle.com,needs to be changed in the deployment.
jwt.trusted.issuer.size	2	The number of trusted issuers. The value can be any number of trusted issuers. For example, if the number is 2, the following matching params need to be specified.
jwt.trusted.issuer.1		The alias name for the public key of the first trusted issuer in the key store. See jwt.trusted.issuer.size for details.
jwt.trusted.issuer.2		The alias name for the public key of the second trusted issuer in the key store. See jwt.trusted.issuer.size for details.
createdByDefault	true	If set to true, the current OAuth service profile is created automatically as part of domain creation. Otherwise, it's created manually.
clientPWDValidation	false	If set to true, a client ID and secret, can be used as credentials to interact with the OAuth server.
tokenTenantClaimName	user.tenant.name	The tenant claim name in the tokens issued by the OAuth server. By default this is set using the identity domain name.
oauthServerSelfClientId	Value to be specified	By default this is set with the value of the jwt.issuer attribute. This attribute gets used when the OAuth server generates a client assertion for itself when interacting with other services such as service-to-service interactions.
oauthServerSelfCTValidityInSec	Value in seconds to be specified	The default value is 300sec. This attribute is related to oauthServerSelfClientId (that is, the OAuth server's own client assertion validity period).

Table 46–3 (Cont.) OAuth Service Profile Configuration Attributes

Name	Value	Notes
msAlwaysShowLogin	true/false	This attribute is used with 3-legged mobile clients using the JWT SSO authentication mechanism. (Not applicable to 2-legged mobile clients in this release.) **true** - Mobile applications are not registered using the server-side JWT user token. The OAuth server shows a login page for the user to submit credentials. **false** - Mobile Applications are registered using the server side JWT user token. By default true. If this attribute is not defined in the service profile, the server does not allow mobile applications to use the server-side JWT user token to register without a user name and password.

Mobile Service Settings

Supported Platforms - Choose iOS, Android, and/or Others:

- **iOS** - The authorization server accepts requests from iOS clients if selected.
- **Android** - The authorization server accepts requests from Android clients if selected.
- **Others** - The authorization server accepts requests from clients other than iOS or Android if selected.

iOS Security Level - Choose High, Medium, or Low:

- **Advanced** - All client registrations and token acquisitions are done using both push notification and HTTP(S).
- **Hybrid** - All client registrations are done using both push notification and HTTP(S), and access token acquisitions are done using HTTP(S) only.
- **Standard** - All client registrations and token acquisitions are done using HTTP(S)

Android Security Level - Choose High, Medium, or Low:

- **Advanced** - All client registrations and token acquisitions are done using both push notification and HTTP(S).
- **Hybrid** - All client registrations are done using push notification and HTTP(S), and access token acquisitions are done using HTTP(S) only.
- **Standard** - All client registrations and token acquisitions are done using HTTP(S)

Android Sender ID - Enter the GCM sender ID that is required for Android push notification.

Android API Key - Enter the API key required for Android push notification.

Consent Service Protection - Authorization requests are routed to the consent service, which requires the user to log in and give consent. Select **OAM or Third-Party Access Management** to use either Oracle Access Management or a third-party option for consent page protection. Clear this option to use the OAuth server itself for consent

page protection. If using the OAuth server for consent page protection, the authentication flow is determined by the **User Store** setting.

Require User Consent for Client Registration - Select this option to require the user to give authorization before registering each mobile OAuth application installation instance on a mobile device.

Preferred Hardware IDs - Use the list to prioritize the hardware ID attributes that should be used to uniquely identify mobile devices. The first available hardware ID from the list will be used.

Mobile Client Attributes - Add or delete mobile client attributes and their values based on the following table.

Table 46–4 Mobile Client Attributes Names and Values

Name	Value	Notes
`oracle.oauth.debug.override.preAuthz CodeRequired`	`true`	Supported values include **`true`** or **`false`** (enable/disable, respectively).

Clients

Allow access to all clients - Select if all clients in the identity domain should use this service profile. Clear this option to select which clients will be able to access the service profile.

Clients - Add to the table the clients that should be able to access the service profile. Click **Browse Clients**, then select the clients to add to the Clients table. To assign a client to a different service profile, click the box to the left of the client name and click **Remove**.

Token Settings

Use this tab to configure token settings, as well as settings for custom attribute that the OAuth service should embed in access tokens.

Tokens

- **Token Name** - The name of the token.
- **Expires** - The length of time in minutes after which the token is no longer valid.
- **Refresh Token Enabled** - Select this option to allow a refresh token to be used. A refresh token cannot be used with a client verification code or an authorization code. See Section 45.2.6, "Understanding Refresh Tokens" for more information.
- **Refresh Token Expires** - The length of time in minutes after which the refresh token is no longer valid.
- **Life Cycle Enabled** - Select this option if the OAuth server should cache a token and save it in the database until the token expires.

Custom Attributes

Use this section to define custom attributes that the OAuth service embeds in the access tokens. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

- **Static Attributes** - Attribute name and value pairs where the value is fixed at the time that you define the attribute. For example, `name1=value1`.

- **Dynamic Attributes** - User-profile specific attributes.

Custom Resource Servers

Use this tab to choose which custom resource servers clients should have access to. A custom resource server is any resource server that is not the User Profile and Consent Management resource servers that are included with OAuth Services.

Allow clients access to all resource servers - Select to allow clients to access all resource servers configured in the identity domain. Clear this option to select which resource servers clients will be able to access.

Custom Resource Servers - Use the arrows to move the resource servers that clients should be able to access from the **Available Servers** box to the **Selected Servers** box. (This option is only available if the **Allow clients access to all resource servers** option is not selected.)

System Resource Servers

Use this tab to configure if clients should have access to the user profile service and/or consent management service.

User Profile Services -Use the arrows to move the user profile server that clients should be able to access from the **Available Servers** box to the **Selected Servers** box. Services listed in the **Selected Servers** box are active services.

Consent Management Services - Use the arrows to move the consent management server that clients should be able to access from the **Available Servers** box to the **Selected Servers** box. Services listed in the **Selected Servers** box are active services.

46.4.3 Configuring OAuth Clients

See Section 46.3.5, "Understanding OAuth Client Profiles Configuration" for introductory information about OAuth clients. The following section describes how to use the user interface to configure an OAuth Web client and an OAuth mobile client. It includes the following topics:

- Creating an OAuth Client
- Editing or Deleting a Client
- Understanding the OAuth Web Clients Configuration Page
- Understanding the OAuth Mobile Clients Configuration Page

46.4.3.1 Creating an OAuth Client

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.
2. Click the **OAuth Clients** tab.
3. To create an OAuth Web (non-mobile) client, click the Create button located directly under the **OAuth Web Clients** heading and complete the form.

   To create an OAuth mobile client, click the Create button located directly under the **OAuth Mobile Clients** heading and complete the form.

46.4.3.2 Editing or Deleting a Client

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click an identity domain to open it for editing.
2. Click the **OAuth Clients** tab.
3. Do the following:
   - To edit a client configuration, click its name on the page.

     The client configuration page opens in a new tab.
   - To delete a client, select it by clicking the box to the left of the name and then click the delete button in the command bar.

46.4.3.3 Understanding the OAuth Web Clients Configuration Page

This section describes the form fields on the OAuth Web Client Configuration page when viewing an existing OAuth Web client or creating a new one.

Identity Domain - The name of the identity domain in which this OAuth Web client is registered. (Read-only)

Name - The name of this OAuth client.

Description - (Optional) A short description to help you or another administrator identify this OAuth Web client in the future.

HTTP Redirect URIs - The client URIs that the OAuth server is allowed to redirect the user-agent to once access is granted or denied.

Client ID - The unique ID that the authorization server created for this client during registration. (Read-only).

Allow Token Attributes Retrieval - Select this option to allow custom attributes (both attribute names and values) to be shared with resource servers and the resource owner. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

Client Secret - A secret value known to the OAuth authorization service and the client. The authorization service checks the client secret and the client ID when it receives token endpoint requests from the client.

Privileges

Bypass User Consent - If selected, the client will not ask for the user's explicit authorization to access the user's protected resources. If this option is selected, this setting overrides the resource server setting. Clear this option if the client should be subject to the resource server setting.

Allow Access to all Scopes - If selected, the client can obtain an access token regardless of scope limitations for any resource server in the identity domain. Clear this option if the client should be subject to scope limitations.

Allowed Scopes - Lists the range of access the client has to the requested resources. To grant additional access, click **Add** to add a row to the table, then choose from the drop-down menu the scope to be added. To restrict access, select the scope that you want to remove by clicking the table row, then click **Delete** to remove the highlighted row. Click **OK** at the prompt to confirm that you want to remove the selected scope.

Grant Types - The OAuth 2.0 specification provides several authorization grant types for different security use-cases. Before obtaining an access token, the client must obtain an authorization grant that it can exchange with the OAuth service for an access token. Client privileges determine which clients are allowed which grant types. The following grant types are supported in OAM OAuth Services:

- **Authorization Code** - The resource owner logs in using the authorization server. The token endpoint exchanges the authorization code along with client credentials for an access token.
- **Resource Owner Credentials** - The resource owner provides the client with his or her user name and password. This is only suitable for highly trusted client applications because the client could abuse the password, or the password could unintentionally be disclosed to an attacker. Per the OAuth 2.0 specification, the authorization server and client should minimize use of this grant type and utilize other grant types whenever possible.
- **Client Credentials** - The client requests an access token using only its client credentials (or another supported means of authentication). This is suitable if the client is requesting access to protected resources under its control, or those of another resource owner when previously arranged with the authorization server.

In addition to the OAuth grant types defined in the OAuth 2.0 standard, the following options are also available:

- **Refresh Token** - Select this option to return a refresh token together with an access token in the token response. See Section 45.2.6, "Understanding Refresh Tokens" for more information.
- **JWT Bearer** - Allows a JWT assertion to be used to request an OAuth access token.
- **SAML 2 Bearer** - Allows a SAML2 assertion to be used to request an OAuth access token.
- **OAM Credentials** - Used to request OAM tokens, such as a master token, an access token, or an OAuth access token.
- **Client Verification Code** - Used by mobile clients to request a pre-verification code from OAuth server, which subsequently gets used mobile client flows.

Attributes

Add or delete custom attributes that the authorization server returns to the client along with the the scope settings.

Avoid using the same name when adding custom attributes to the service profile configuration and the scope configuration. If you define the same attribute name in both locations, the scope-based attribute value takes precedence.

Table 46–5 Web Client Attributes Names and Values

Name	Value	Notes
`jwt.audience`	Space separated values.	Used when the OAuth server generates a client assertion and a user assertion. The `aud` claim for those JWT tokens contain the defined values in this token.

46.4.3.4 Understanding the OAuth Mobile Clients Configuration Page

This section describes the form fields on the OAuth Web Client Configuration page when viewing an existing OAuth Web client or creating a new one.

Identity Domain - The name of the identity domain in which this OAuth mobile client is registered. (Read-only)

Name - The name of this OAuth client.

Description - (Optional) A short description to help you or another administrator identify this OAuth mobile client in the future.

Client ID - The unique ID that the authorization server created for this client during registration. (Read-only).

Allow Token Attributes Retrieval - Select this option to allow custom attributes (both attribute names and values) to be shared with resource servers and the resource owner. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

Jail Breaking Detection - Select to enable jail breaking detection for mobile devices. See "Jail Breaking Detection Policy" for more information.

Mobile Redirect URIs - The client URIs that the OAuth server is allowed to redirect the user-agent to once access is granted or denied.

Privileges

Bypass User Consent - If selected, the client will not ask for the user's explicit authorization to access the user's protected resources. If this option is selected, this setting overrides the resource server setting. Clear this option if the client should be subject to the resource server setting.

Allow Access to all Scopes - If selected, the client can obtain an access token regardless of scope limitations for any resource server in the identity domain. Clear this option if the client should be subject to scope limitations.

Allowed Scopes - Lists the range of access the client has to the requested resources. To grant additional access, click **Add** to add a row to the table, then choose from the drop-down menu the scope to be added. To restrict access, select the scope that you want to remove by clicking the table row, then click **Delete** to remove the highlighted row. Click **OK** at the prompt to confirm that you want to remove the selected scope.

Grant Types - The OAuth 2.0 specification provides several authorization grant types for different security use-cases. Before obtaining an access token, the client must obtain an authorization grant that it can exchange with the OAuth service for an access token. Client privileges determine which clients are allowed which grant types. The following grant types are supported in OAM OAuth Services:

- **Authorization Code** - The resource owner logs in using the authorization server. The token endpoint exchanges the authorization code along with client credentials for an access token.
- **Resource Owner Credentials** - The resource owner provides the client with his or her user name and password. This is only suitable for highly trusted client applications because the client could abuse the password, or the password could unintentionally be disclosed to an attacker. Per the OAuth 2.0 specification, the authorization server and client should minimize use of this grant type and utilize other grant types whenever possible.
- **Client Credentials** - The client requests an access token using only its client credentials (or another supported means of authentication). This is suitable if the client is requesting access to protected resources under its control, or those of another resource owner when previously arranged with the authorization server.

- **Refresh Token** - Select this option to return a refresh token together with an access token in the token response. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Apple Push Notification

Applies to iOS devices only. The OAuth authorization server can restrict token delivery to a specific app installed on a specific mobile device by sending part of the client registration handle through HTTPS, and sending the other part through push notification using the Apple Push Notification Service (APNS). Use the following fields to configure how the OAuth server connects to APNS for this specific client app.

Connection Settings - Select **Enabled** to send a portion of security codes and tokens to the mobile client app using APNS. (The portions not sent using APNS are sent using HTTPS.) Clear this option if you do not want to use APNS for this mobile client app.

Minimum Connection Pool Size - Specifies the minimum number of connections in the connection pool.

Maximum Connection Pool Size - Specifies the maximum number of connections in the connection pool.

Keep Alive - The Apple Push Notification keep alive value in seconds.

Communication Mode - Choose **Development** to use the Apple development environment for initial development and testing of the application; choose **Production** to use Apple's production environment.

SSL/TLS Certificate for Development - Click **Browse** to navigate to the development SSL/TLS certificate issued by Apple for the Apple Push Notification Service.

Development Certificate Password - Type the development password for the Apple Push Notification certificate.

SSL/TLS Certificate for Production - Click **Browse** to navigate to the production SSL/TLS certificate issued by Apple for the Apple Push Notification Service.

Production Certificate Password - Type the production password for the Apple Push Notification certificate.

Google Application Settings

Applies to Android devices only. The OAuth authorization server can restrict token delivery to a specific app installed on a specific mobile device by sending part of the client registration handle through HTTPS, and sending the other part through push notification using Google Cloud Messaging (GCM) for Android. Use the following fields to configure how the OAuth server connects to the GCM service for this specific client app.

Restricted Package Name - The Google restricted package name.

Configuration Settings

Device Claim Attributes - Specifies the device attributes that the system should collect for device fingerprinting. If empty, the system collects every attribute in the SDK.

Mobile Custom Attributes - Specifies key-value pairs that should be sent to mobile applications using app profiles. (Mobile applications request app profiles that contain server-side settings, including endpoints, jail break detection policies, and security level details.

Attributes

Add or delete custom attributes that the authorization server returns to the client along with the scope settings.

Avoid using the same name when adding custom attributes to the service profile configuration and the scope configuration. If you define the same attribute name in both locations, the scope-based attribute value takes precedence.

46.4.4 Configuring the OAuth Service Provider

See Section 46.3.2, "Understanding OAuth Service Provider Configuration" for introductory information about OAuth Service Providers. The following section describes how to use the user interface to configure an OAuth Service Provider. It includes the following topics:

- Editing or Deleting the OAuth Service Provider
- Understanding the OAuth Service Provider Configuration Page

46.4.4.1 Editing or Deleting the OAuth Service Provider

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it for editing.
2. Click the **OAuth Service Providers** tab.
3. Do the following:
   - To edit a service provider, click its name in the table.
   - To delete a service provider, select it by clicking the box to the left of the name and then click the delete button in the command bar.

46.4.4.2 Understanding the OAuth Service Provider Configuration Page

This section describes the form fields on the OAuth Service Provider Configuration page.

Identity Domain - The name of the identity domain with which this OAuth service provider is registered. (Read-only)

Name - The name of this service provider.

Description - (Optional) A short description to help you or another administrator identify this service provider.

Service Provider Java Class - The Java class that implements this service provider.

Attributes

Use the attribute settings in Table 46–6 to configure the OAuth service provider connection with Access Manager.

Table 46–6 OAuth Service Provider Attributes for Access Manager

Name	Value	Notes
oam.OAM_VERSION	OAM_11G	Either **OAM_11G** or **OAM_10G**, depending on the Oracle Access Manager version in use.
oam.WEBGATE_ID	accessgate-oic	
oam.ENCRYPTED_PASSWORD		

Table 46–6 (Cont.) OAuth Service Provider Attributes for Access Manager

Name	Value	Notes
oam.DEBUG_VALUE	0	
oam.TRANSPORT_SECURITY	OPEN	Specify the method for encrypting messages between this AccessGate and the Access Servers. The encryption methods need to match. Valid values include: ■ **OPEN** ■ **SIMPLE** ■ **CERT** To update these settings, see Section 42.9.1.1, "Configuring Mobile Services to Work With Access Manager in Simple and Certificate Mode."
oam.OAM_SERVER_1	localhost:5575	Specify the host name and port number of the primary Oracle Access Management server.
oam.OAM_SERVER_1_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_1. The default value is 4.
oam.OAM_SERVER_2	oam_server_2:5575	Specify the host name and port number of the secondary Oracle Access Management server.
oam.OAM_SERVER_2_MAX_CONN	4	Specify the maximum number of connections that this Mobile and Social instance can establish with OAM_SERVER_2. The default value is 4.
oam.AuthNURLForUID	wl_authen://sample_ldap_no_pwd_protected_res	

46.4.5 Configuring OAuth Resource Servers

See Section 46.3.4, "Understanding OAuth Resource Servers Configuration" for introductory information about OAuth Resource Servers. The following section describes how to use the user interface to configure an OAuth resource server. It includes the following topics:

- Creating an OAuth Resource Server
- Editing or Deleting an OAuth Resource Server
- Understanding the OAuth Resource Servers Configuration Page

46.4.5.1 Creating an OAuth Resource Server

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.
2. Click the **Resource Servers** tab.
3. Choose from the following:

- To define a new resource server for use with OAuth Services, click the Create button in the **Custom Resource Servers** section.

  The Custom Resource Server Configuration page opens.

- To define a new User Profile Services instance, click the Create button in the **User Profile Services** section.

  The OAuth User Profile Service Configuration page opens.

- To define a new Consent Management Services instance, see Section 46.4.7, "Configuring OAuth Consent Management Services."

46.4.5.2 Editing or Deleting an OAuth Resource Server

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it for editing.
2. Click the **Resource Servers** tab.
3. Choose from the following:
   - To open a resource server for editing, click it. The Custom Resource Server Configuration page opens.
   - To open an OAuth User Profile Service configuration for editing, click it in the User Profile Services section. The User Profile Service Configuration page opens.
   - See Section 46.4.7, "Configuring OAuth Consent Management Services" for help configuring consent management services.

46.4.5.3 Understanding the OAuth Resource Servers Configuration Page

Identity Domain - The name of the identity domain to which this resource server applies. (Read-only)

Name - The name of this resource server (or *resource service*).

Description - (Optional) A short description to help you or another administrator identify this resource server in the future.

Allow Token Attributes Retrieval - Select this option to allow custom attributes (both attribute names and values) to be shared with clients and the resource owner. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

Authorization & Consent Service Plug-in - From the menu, choose an authorization plug-in for the resource server. This plug-in type defines security policy around interactions where authorization and user consent are granted. It can influence claims in a generated token as well.

Audience Claim - Identifies the audiences that the OAuth token is intended for. Each principal intended to process the OAuth token must identify itself with a value in **Audience Claim**.

Resource Server ID - The unique ID created for this resource server during registration. (Read-only)

Scopes

Click **Add** to add a new row to the scopes table. Click to select a row, then click **Delete** to remove it.

Name - Type a scope definition. Use dot notation, for example: `photo.read`

Description - Type a short note that describes the scope.

Require User Consent - Select to require the authorization server to display a user consent form so that the user can approve (or deny) the access request.

Offline Scope - Allows client applications to request a refresh token that can be used to obtain an access token even when the user is offline or not present. Client applications use the refresh token to get a new access token to access resources. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Token Settings

Override the default settings - Select this option if the token settings defined on the resource server configuration page should override the default token settings defined on the OAuth service profile page.

Token Name - The name of the token.

Expires - The length of time in minutes after which the token is no longer valid.

Refresh Token Enabled - Select this option to allow a refresh token to be used. A refresh token cannot be used with a client verification code or an authorization code. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Refresh Token Expires - The length of time in minutes after which the refresh token is no longer valid.

Life Cycle Enabled - Select this option if the OAuth server should cache the token and save it in the database until the token expires.

Custom Attributes

Use this section to define custom attributes that the OAuth service embeds in the access tokens. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

- **Static Attributes** - Attribute name and value pairs where the value is fixed at the time that you define the attribute. For example, `name1=value1`.
- **Dynamic Attributes** - User-profile specific attributes.

46.4.6 Configuring User Profile Services

The following section describes how to use the console to configure the OAuth User Profile Service.

- Creating a New User Profile Service
- Editing the User Profile Service
- Understanding the OAuth User Profile Services Configuration Page

46.4.6.1 Creating a New User Profile Service

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.

2. Click the **Resource Servers** tab.
3. Click the Create button in the **User Profile Services** section.

46.4.6.2 Editing the User Profile Service

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it for editing.
2. Click the **Resource Servers** tab.
3. In the **User Profile Services** section, click the service name to edit it. The OAuth User Profile Service Configuration page opens.

46.4.6.3 Understanding the OAuth User Profile Services Configuration Page

Use this page to configure the User Profile Service. This service supports OAuth 2.0 authorization and allows clients to interact with a back-end directory server and perform User Profile REST operations on Person, Group, and Relationship entities.

Identity Domain - The name of the identity domain to which this service profile applies. (Read-only)

Name - The name of this service profile.

Description - (Optional) A short description to help you or another administrator identify this service profile in the future.

Resource Server ID - The unique ID that OAuth Services created for this User Profile resource server. (Read-only)

Service Endpoint - The URI where the service receives and responds to create, read, update, and delete user profile service requests. Create a unique uniform resource identifier (URI) address for this service; for example, `localhost:5575`

Service Enabled - Select to enable the service, or clear the option box to disable it.

Allow Token Attributes Retrieval - Select this option to allow custom attributes (both attribute names and values) to be shared with clients. If enabled, the user consent form notifies the user that user-profile-specific details will be shared with the client. See Section 46.3.7, "Understanding OAuth Access Token Custom Attributes" for more information about custom attributes.

Authorization & Consent Service Plug-in - From the menu, choose an authorization plug-in for the service. This plug-in type defines security policy around interactions where authorization and user consent are granted. It can influence claims in a generated token as well.

Identity Store Name - The name of the identity store that contains the user records.

Protected by OAuth Service Profile - From the menu, choose the OAuth service profile that protects the user profile service.

Scopes

Configure individual permission settings for person, relationship, and group entities. The service uses the following default entity names:

- **/me** - Designates operations that apply to the user logged in to the client
- **/users** - Designates operations that apply to other users
- **/groups** - Designates operations that apply to groups

URI - The URI segment for which the scope is defined.

Allow Read - Select to allow read operations for this scope.

Allow Write - Select to allow write operations for this scope.

Allow Anonymous Access - Select this option if you do not want to limit access, or clear this option to limit access by scope.

OAuth Scope - Type a scope definition. Use dot notation, for example: `UserProfile.me.write`

Description - Type a short note that describes the scope.

Require User Consent - Select to require the authorization server to display a user consent form so that the user can approve (or deny) the access request.

Offline Scope - Allows client applications to request a refresh token that can be used to obtain an access token even when the user is offline or not present. Client applications use the refresh token to get a new access token to access resources. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Token Settings

Override the default settings - Select this option if the token settings defined on the resource server configuration page should override the default token settings defined on the OAuth service profile page.

Token Name - The name of the token.

Expires - The length of time in minutes after which the token is no longer valid.

Refresh Token Enabled - Select this option to allow a refresh token to be used. A refresh token cannot be used with a client verification code or an authorization code. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Refresh Token Expires - The length of time in minutes after which the refresh token is no longer valid.

Life Cycle Enabled - Select this option if the OAuth server should cache the token and save it in the database until the token expires.

Attributes

Use this section to define user-profile specific (dynamic) attributes.

Table 46–7 User Profile Service Attributes

Name	Value	Notes
`accessControl`	`false`	
`adminGroup`	`cn=Administrators,ou=groups, ou=myrealm,dc=base_domain`	
`selfEdit`	`true`	

Resource URIs

Use this section to enable or disable the **/me**, **/users**, and **/groups** services, and define the service endpoint URIs and provider implementation class paths for these services.

Service Endpoint - The URI where the service receives and responds to service requests. Create a unique uniform resource identifier (URI) address for this service; for example, `localhost:5575`

Service Enabled - Select to enable the service, or clear the option box to disable it.

Provider Implementation Class - The name of the Java class that implements the user profile service provider.

Entities - Use the fields in this section to configure entity relationships.

- **Name** - The name of the defined entity.
- **Identity Directory Service Relation** - Choose the directory service relationship that is to be accessed by the **End Point** segment.
- **End Point** - Type a URI segment that will be used to access a corresponding data column in the Identity Directory service. For example, if `memberOf` is the End Point URI, then:

  ```
  http://host:port/.../idX/memberOf
  ```

  would be the URI to access related entities of an entity with ID `idX`.
- **Source Entity URI** - The URI (or URL) of the source entity.
- **Destination Entity URI** - The URI (or URL) of the destination entity.
- **Scope for Requesting Recursion** - Use Scope attribute values with the scope query parameter to retrieve a nested level of attributes in a relationship search. To access related entities recursively, type the value to be used. The default configuration uses two scope attribute values: `toTop` and `all`. If the **Scope for Requesting Recursion** value is the attribute value `all`, then the following REST URI example is used to make the request:

  ```
  http://host:port/.../idX/reports?scope=all
  ```

  In this example, the URI returns the entities related to the entity with ID `idX`, as well as all further related entities.

Attributes - Use this section to define user-profile entity specific (dynamic) attributes.

46.4.7 Configuring OAuth Consent Management Services

See Section 46.3.6, "Understanding OAuth Consent Management Service Configuration" for introductory information about the OAuth consent management service. The following section describes how to use the user interface to configure the consent management service.

- Creating a New Consent Management Service
- Editing the Consent Management Service
- Understanding the OAuth Consent Management Service Configuration

46.4.7.1 Creating a New Consent Management Service

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.

2. Click the **Resource Servers** tab.
3. Click the Create button in the **Consent Management Services** section.

46.4.7.2 Editing the Consent Management Service

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it for editing.
2. Click the **Resource Servers** tab.
3. In the **Consent Management Services** section, click the service name to edit it. The OAuth Consent Management Service Configuration page opens.

46.4.7.3 Understanding the OAuth Consent Management Service Configuration

The Consent Management service handles consent storage, retrieval, revocation, and consent validation operations.

Identity Domain - The name of the identity domain to which this consent management service applies. (Read-only)

Name - The name of this consent management service.

Description - (Optional) A short description to help you or another administrator identify this service in the future.

Resource Server ID- The unique ID that the authorization server created for this resource server during registration. (Read-only)

Service Endpoint - The URL where the Consent Management Service receives and responds to client and resource owner service requests.

Service Enabled - Select to enable the service, or clear the option box to disable it.

Allow Token Attributes Retrieval - Select this option to allow custom attributes (both attribute names and values) to be shared with clients, resource servers, and the resource owner.

Authorization & Consent Service Plug-in - From the menu, choose an authorization plug-in for the service. This plug-in type defines security policy around interactions where authorization and user consent are granted. It can influence claims in a generated token as well.

Protected by OAuth Service Profile - From the menu, choose the OAuth service profile that protects the consent management service.

Scopes

URI - The URI segment for which the scope is defined.

Allow Read - Select to allow read operations for this scope.

Allow Write - Select to allow write operations for this scope.

Allow Anonymous Access - Select this option if you do not want to limit access, or clear this option to limit access by scope.

OAuth Scope - Type a scope definition. Use dot notation, for example:
`UserProfile.me.write`

Description - Type a short note that describes the scope.

Require User Consent - Select to require the authorization server to display a user consent form so that the user can approve (or deny) the access request.

Offline Scope - Allows client applications to request a refresh token that can be used to obtain an access token even when the user is offline or not present. Client applications use the refresh token to get a new access token to access resources. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Token Settings

Override the default settings - Select this option if the token settings defined on the resource server configuration page should override the default token settings defined on the OAuth service profile page.

Token Name - The name of the token.

Expires - The length of time in minutes after which the token is no longer valid.

Refresh Token Enabled - Select this option to allow a refresh token to be used. A refresh token cannot be used with a client verification code or an authorization code. See Section 45.2.6, "Understanding Refresh Tokens" for more information.

Refresh Token Expires - The length of time in minutes after which the refresh token is no longer valid.

Life Cycle Enabled - Select this option if the OAuth server should cache the token and save it in the database until the token expires.

Attributes

Use this section to define custom attributes

Resources URIs

Use this section to enable or disable the **retrieve**, **grant**, and **revoke** services. You can also define the service endpoint URIs and provider implementation class paths for these services.

Service Endpoint - The URI where the service receives and responds to requests. Create a unique URI address for this service.

Service Enabled - Select to enable the service, or clear the option box to disable it.

Provider Implementation Class - The name of the Java class that implements this consent management service provider.

46.4.8 Configuring OAuth Plug-Ins

Use this page to configure OAuth security plug-ins.

- The **Adaptive Access Plug-ins** run fraud detection and risk analysis policy checks, enhancing authenticity and the trust level of a user.
- The **Custom Token Attributes Plug-ins** define security policy around the token service provider.
- The **Authorization and Consent Service Plug-ins** define security policy around interactions where authorization and user consent are granted. This plug-in can influence claims in a generated token as well.
- Within an OAuth identity domain, the **Client Plug-ins** define a security policy for OAuth clients, and the **Resource Server Profile Plug-ins** defines a security policy for resource servers.

46.4.8.1 Creating a new OAuth Plug-in

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it.
2. Click the **OAuth Plug-ins** tab.
3. Click the **Create** button in one of the plug-in category sections.

   The Plug-in Configuration page opens.

46.4.8.2 Understanding the Plug-in Configuration Page

Use this page to add an OAuth plug-in to an identity domain or edit an existing plug-ins configuration information.

Identity Domain - The name of the identity domain where the plug-in is located.

Name - The name of the plug-in.

Description - (Optional) A short description to help you or another administrator identify this plug-in in the future.

Security Handler Class - Choose the Java class that defines the Security Handler Plug-in.

Attributes - Use this section to define custom plug-in attributes.

46.4.9 Configuring OAuth Server Settings

Use the OAuth Server Settings Configuration page to configure general server settings for the identity domain named.

> **Note:** See Section 41.1.2, "Deploying Mobile and Social" for information about deploying Mobile and Social with a WebGate.

Identity Domain - The name of the identity domain to which the settings on this configuration page apply. (Read-only)

HTTP Proxy Settings

Configure the following settings if a proxy server is in place between the OAuth Token Service (the Push Service) and the Apple Push Notification Service (APNS) or Google Cloud Messaging (GCM) service.

Proxy URL - Choose the protocol to use to connect to the proxy server (HTTP or HTTPS), then type the proxy server host name and port number.

Proxy Authentication - Type the user name and password required to authenticate with the proxy server.

Apple Push Notification

Configure the default values that should be used for this identity domain. Use the OAuth Mobile Client Configuration page to customize these settings on an app by app basis.

Minimum Connection Pool Size - Specifies the minimum number of connections in the connection pool.

Maximum Connection Pool Size - Specifies the maximum number of connections in the connection pool.

Keep Alive - The Apple Push Notification keep alive value in seconds.

Token Life Cycle Management

Maximum Search Results - Specify the maximum number of token entry search results that should be returned on the Token Life Cycle Management page.

Attributes

Attributes - Use this section to define custom attributes.

Table 46–8 OAuth Server Settings Attributes

Name	Value	Notes
wgAuthnUserHeader	OAM_REMOTE_USER	This attribute usage is optional. If an OAM WebGate is front ending/proxying requests to an OAuth server, set this attribute. The OAM WebGate sets the OAM_REMOTE_USER header to identify the authenticated user. If a deployment uses another header name instead of OAM_REMOTE_USER, then this attribute needs to be set with that header name.

46.4.10 Configuring the OAuth Services Jail Breaking Detection Policy

See Section 46.4.10, "Configuring the OAuth Services Jail Breaking Detection Policy" for introductory information about the jail breaking detection policy. The following section describes how to use the user interface to configure the policy.

Jailbreak Detection - Select **Enabled** to turn the Jail Breaking Detection policy on, or clear this option to turn it off for all client application instances. If you enable the Jail Breaking Detection Policy here, you can disable it on an application by application basis. If you disable the Policy here, you cannot enable or disable the feature on an application by application basis.

Policy Statements

Policy Statements - Use the buttons in the menu to add, delete, and re-order policy statements.

Policy Statement Conditions

Enabled - Select this option to activate the policy statement condition.

Minimum OS Version - The minimum iOS version to which the policy applies. If the value is 1.0, the policy will apply to iOS devices running at least version 1.0 of iOS.

Maximum OS Version - The maximum iOS version to which the policy applies. If the value is empty, a maximum iOS version number is not checked so the policy applies to any iOS version higher than the value specified for Min OS Version.

Minimum Client SDK Version - The minimum Mobile and Social Client SDK version number. For example, 11.1.2.0.0.

Maximum Client SDK Version - The maximum Mobile and Social Client SDK version number. For example, 11.1.2.2.0.

Policy Statement Detection Logic

Policy Expiration Duration - Type the length of time in seconds that the SDK on the mobile client device should wait before expiring the local copy of the policy and retrieving a newer version.

Auto Check Period - Type the interval of time in minutes that the client device should wait before executing the Jail Breaking Detection Policy statements again.

Detection Location - The iOS client device uses a logical-OR operator to evaluate Policy statements. Add a Detection Location as follows:

- **File Path** - Type the absolute path to the file or directory on the device for which the Detection Policy should search.
- **Action** - Select **Exists** which instructs the Detection Policy to evaluate whether it can access a file path.
- **Success** - Select if the Policy should flag the device as jail broken if the specified files or directories are found on the device. Use this option if the policy is checking for unauthorized files or directories. Clear this option if the Policy should flag the device as jail broken if the specified files or directories are *not* found. (Use this option if checking for *required* files or directories.)

46.4.11 Configuring Token Life Cycle Management

Use this screen to search for and revoke tokens that have been issued. You can search for tokens using criteria such as user ID, client ID/name, client IP address, service profile, assertion token category, and token creation/expiration time. Enter your criteria and click **Search**. The maximum number of token entry search results returned is determined by the **Maximum Search Results** setting on the OAuth Server Settings page.

Search Criteria

Identity Domain - The name of the identity domain that you are searching for tokens. (Read only)

User - Specify an LDAP UID (`john.smith`) or an LDAP Fully Qualified DN (`cn=jane.smith,dc=example,dc=com`) to search by.

Client - Specify a client ID to search for tokens by.

Client IP Address - Specify a client IP address (for example, `192.168.100.1`) to search for tokens by

Service Profile - Choose a profile from the menu, or leave this selection empty.

Assertion Token Category - Choose a category from the menu, or leave this selection empty.

Token Issued - Search for tokens by the date and time that they were issued.

Token Expiring at - Search for tokens by the date and time that they expire.

Mobile Device Claim Attributes

IMEI - Specify the unique 15-digit IMEI (International Mobile Equipment Identity) code to search by. The IMEI can be displayed on most mobile handsets by dialing ***#06#**.

MAC Address - Specify the unique MAC (Media Access Control) address to search by.

Phone Number - Specify a phone number to search by.

46.5 Configuring OAuth to Accept Third-Party JWT Bearer Assertions

The Oracle Access Management OAuth Service accepts third-party (non-Oracle) JWT assertions. You must, however, configure a trust relationship by adding the third-party's certificate into the OAuth Service Profile keystore. The service uses the keystore to verify the JWT assertion's digital signature. Create a separate keystore for each OAuth Service Profile that needs its own signing certificate. This section covers the following topics:

- Understanding the default OAuth Service Profile Keystore
- Creating a Non-Default Keystore for an OAuth Service Profile
- Configuring an OAuth Service Profile for Third-Party JWT Assertion Validation

46.5.1 Understanding the default OAuth Service Profile Keystore

The role of the OAuth Service Profile is described in Section 46.3.3, "Understanding OAuth Service Profiles Configuration." The default OAuth Service Profile (OAuthServiceProfile) included in the DefaultDomain uses the Java Keystore (JKS) included with Oracle Access Management. The default service consists of the following files.

Table 46–9 Default OAuth JKS Keystore File and Settings File

File	Path
JKS keystore file	*$DOMAIN_HOME*/config/fmwconfig/default-keystore.jks
Keystore settings file	*$DOMAIN_HOME*/config/fmwconfig/jps-config.xml

> **Note:** Oracle Web Services Manager also uses the `default-keystore.jks` service. For details see Section 37.2.2, "About the Oracle Web Services Manager Keystore (default-keystore.jks)."

You can use the following Java `keytool` command to list all of the private key and certificate information in the default keystore (`default-keystore.jks`).

```
keytool -list -keystore default-keystore.jks
```

46.5.2 Creating a Non-Default Keystore for an OAuth Service Profile

The steps in this section describe how to do the following:

- Create a separate keystore to store the third-party's certificates
- Import the certificates into the keystore
- Configure the keystore
- Add the keystore service to the appropriate OAuth Service Profile

Create the Keystore

Create a new Java Keystore (JKS) using the `keytool` utility that is distributed with the Java JDK.

1. Go to *$JDK_HOME*/jdk/bin and open a prompt.
2. Using `keytool`, generate a key pair:

```
keytool -genkeypair -keyalg RSA -dname dname
-alias aliasname -keypass key_password -keystore keystore
-storepass keystore_password -validity days_valid
```

Where:

- *dname* is the X.500 Distinguished Name to be associated with `alias`, and is used as the issuer and subject fields in the self-signed certificate. This can be any string as long as it's in the correct format (for example, `cn=spaces,dc=example,dc=com`).
- *aliasname* is a short name that identifies the new keystore entry
- *key_password* is the password for the new public key
- *keystore* is the keystore name, (for example, `oauth-xyz-keystore.jks`)
- *keystore_password* is the keystore password
- *days_valid* is the number of days for which the certificate should be considered valid (for example, 1064).

Example 46–1 Creating the Keystore

```
keytool -genkeypair -keyalg RSA -dname "cn=spaces,dc=example,dc=com"
-alias oauthkey -keypass password123 -keystore oauth-xyz-keystore.jks
-storepass passwordxyz -validity 1064
```

Load the Certificates Into the Keystore

Use the `keytool` utility to import the certificates into the keystore.

1. Using `keytool`, type the following command:

   ```
   keytool -importcert -alias aliasname -file certfile
    -keystore keystore -storepass keystore_password
   ```

   Where:

   - *aliasname* is a short name that identifies the keystore
   - *certfile* is the file containing the certificates to load
   - *keystore* is the keystore name, (for example, `oauth-xyz-keystore.jks`)
   - *keystore_password* is the keystore password

Example 46–2 Loading the Certificates

```
keytool -importcert -alias oauthkey_123 -file samplekey.cer -keystore
oauth-xyz-keystore.jks -storepass passwordxyz
```

Add the Keystore Instance to jps-config.xml

Configure the keystore service and update the credential store so that OAM can read the keystore and keys correctly. In the `jps-config.xml` keystore settings file, add the following new keystore service instance in the `<serviceInstances>` element.

1. In a text editor, open the keystore settings file:

   $DOMAIN_HOME`/config/fmwconfig/jps-config.xml`

2. Find the <serviceInstances> node for the keystore.provider Provider, and add the following:

```
<serviceInstance name="<service-instance-name>" provider="keystore.provider"
location="<keystore-location>">
  <property name="keystore.provider.type" value="db"/>
  <property name="keystore.sig.csf.key" value="sign-csf-key"/>
  <property name="keystore.enc.csf.key" value="enc-csf-key"/>
  <property name="keystore.csf.map" value="oracle.oauth.security"/>
  <property name="keystore.pass.csf.key" value="keystore-csf-key"/>
  <property name="keystore.type" value="JKS"/>
  <propertySetRef ref="props.db.1"/>
</serviceInstance>
```

   Where:

   - *service-instance-name* = Any service-instance-name
   - *keystore-location* = Path to the keystore file

Example 46–3 Update jps-config.xml

```
<serviceInstance name="oauth-xyz-keystore.db" provider="keystore.provider"
location="./oauth-xyz-keystore.jks">
  <property name="keystore.provider.type" value="db"/>
  <property name="keystore.sig.csf.key" value="sign-csf-key"/>
  <property name="keystore.enc.csf.key" value="enc-csf-key"/>
  <property name="keystore.csf.map" value="oracle.oauth.security"/>
  <property name="keystore.pass.csf.key" value="keystore-csf-key"/>
  <property name="keystore.type" value="JKS"/>
  <propertySetRef ref="props.db.1"/>
</serviceInstance>
```

3. Find the <jpsContexts> node and add the new service instance into the default context section. The following example shows the addition of a <serviceInstanceRef> element with a ref to the oauth-xyz-keystore.db service instance (defined in the previous step).

Example 46–4 Adding the new Service Instance

```
<jpsContexts default="default">
  <jpsContext name="default">
     <serviceInstanceRef ref="oauth-xyz-keystore.db"/>
     ... other serviceInstanceRef elements ...
  </jpsContext>
```

Create a CSF Entry for the Keystore Service Instance

Use the following WLST commands to create the necessary Credential Store Framework (CSF) entries. Restart the server when you are done.

```
createCred(map="oracle.wsm.security", key="sign_csf_key", user="alias_
name", password=keystore_password, desc="Description of the signing key
credential")
```

```
createCred(map="oracle.wsm.security", key="enc_csf_key", user="alias_
name", password=keystore_password, desc="Description of the encryption key
credential")
```

```
createCred(map="oracle.wsm.security", key="keystore_csf_key",
user="oauth", password=keystore_password,desc="Description of the keystore
credential")
```

Where:

- *sign_csf_key* = the password for the signing key
- *alias_name* = the alias name for the key
- *keystore_password* = the keystore password
- *enc_csf_key* = the password for the encryption key
- *keystore_csf_key* = the password for the keystore

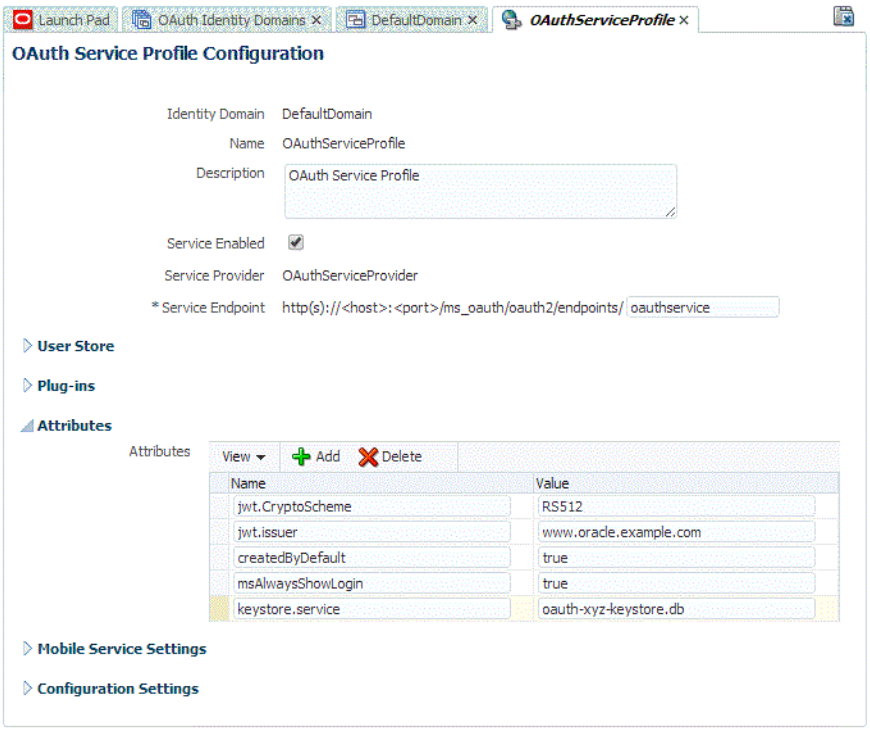
Example 46–5 Creating Credential Store Entries

```
createCred(map="oracle.wsm.security", key="oauth-sign-csf-key",
user="ms-oauth-key", password=passwordxyz, desc="Signing key credential")

createCred(map="oracle.wsm.security", key="oauth-enc-csf-key",
user="ms-oauth-key", password=passwordxyz, desc="Encryption key credential")

createCred(map="oracle.wsm.security", key="keystore_csf_key", user="oauth",
password=passwordxyz, desc="Keystore credential")
```

Add the Provider Service Name to the OAuth Service Profile

Apply the updated configuration to the OAuth Service Profile. See Section 46.4.2.1, "Creating an OAuth Service Profile" if you have not yet created an OAuth Service Profile for the third-party service.

1. Open the OAuth Services Configuration page as described in Section 46.2, "Opening the OAuth Services Configuration Page," then click the identity domain to open it for editing.
2. Click the **OAuth Service Profiles** tab.
3. Click the Service Profile name in the table.
4. Expand the **Attributes** section.
5. Add the keystore service information you configured in Example 46–4, "Adding the new Service Instance" to the **Attributes** table using the `keystore.service` name. Refer to the following screen capture.



46.5.3 Configuring an OAuth Service Profile for Third-Party JWT Assertion Validation

This section describes how to configure OAuth services to support JWT bearer assertion validation. For each token provider, configure the following:

- The JWT bearer assertion issuer name(s). This is a required attribute.
- The key ID (KID) for the certificate alias. This is an optional attribute.

Configure the JWT bearer assertion issuer name(s) as follows:

Attribute Name	Attribute Value
`jwt.trusted.issuer.1`	alias-1 *<cert-alias-name in keystore>*
`jwt.trusted.issuer.2`	alias-2 *<cert-alias-name in keystore>*
...	...
`jwt.trusted.issuer.`*n*	alias-*n* *<cert-alias-name in keystore>*

Configure the key ID as follows:

Attribute Name	Attribute Value
`jwt.trusted.issuer.size`	*n* Where *n* is the number of configured issuer alias names

The OAuth server has to Base64 decode the JWT assertion to validate it. The server looks for the issuer name, and the signing method and key ID values.

If the signing method and the key ID value are not included, the system uses the issuer name to get the necessary configuration information. It then invokes the OPSS

validation method. If the signing method and the key ID value *are* included, the system verifies that the information matches the configured values, and then invokes the OPSS validation method.

46.6 Configuring a WebGate to Support the OAuth Service

This section describes how to configure a WebGate for use with the OAuth Service. The WebGate serves as a proxy so that client authorization and token endpoint requests access the WebGate instead of accessing the Oracle Access Management server directly. These steps are for WebLogic environments only.

1. Install the Oracle HTTP Server 11g WebGate for OAM using the instructions in *Installing WebGates for Oracle Access Manager*.
2. Configure the WebGate by defining the following resource and creating an authentication policy and authorization policy.
   a. Open the Oracle Access Management console.
   b. Under **Access Manager**, click **Application Domains**. and click **Search** to view the Application Domains on the Search Application Domains page.
   c. Click to edit the Application Domain.
   d. On the Application Domains page, click the **Resources** tab.
   e. Create the following resource. If you are using the existing IAMSuiteAgent Host Identifier, the resource is already present and can be searched on using the **Resource URL** field.

      ```
      /ms_oauth/oauth2/ui/**
      ```

      Click to select the resource, then click the Edit button.
   f. Under the Protection heading, choose the following options from the menus and click **Apply**:

      Protection Level - Protected

      Authentication Policy - Protected HigherLevel Policy

      Authorization Policy - Protected Resource Policy

      These settings allow the WebGate to perform user authentication and user authorization.
   g. Add the following resources and set the **Protection Level** to **Excluded**:

      ```
      /ms_oauth/oauth2/endpoints/**
      /ms_oauth/oauth2/oammsui/**
      /ms_oauth/style/**
      /ms_oauth/img/**
      /oam/**
      ```

      The WebGate does not protect Excluded resources and allows them to be accessed.
3. Add the following lines to the `mod_wl_ohs.conf` file and restart the WebGate. For `WebLogicPort`, be sure to add the managed port details for your environment.

   ```
   # the following directive proxies all the OAuth requests
   <IfModule weblogic_module>
         WebLogicHost host123.us.example.com
         WebLogicPort 17100
   ```

```
      Debug ON
      WLLogFile /tmp/weblogic.log
      MatchExpression /ms_oauth/*
</IfModule>
# the following directive proxies all the OAM managed server requests.

<IfModule weblogic_module>
      WebLogicHost host123.us.example.com
      WebLogicPort 17100
      Debug ON
      WLLogFile /tmp/weblogic.log
      MatchExpression /oam/*
</IfModule>
```

4. Update the Access Manager Load Balancing settings as follows:
   a. Open the Oracle Access Management console.
   b. Under **Configuration**, click **Access Manager Settings**.
   c. In the **Load Balancing** section, change the **OAM Server Host** and the **OAM Server Port** settings to the WebGate's host and port settings.
   d. Click **Apply**.
5. Complete the following steps.
   a. Open *$ORACLE_HOME*/ORACLE_IDM1/oam/server/apps/ and locate the oam-server.ear file. For example:

      ```
      cd /scratch/test/Oracle/Middleware/Oracle_IDM1/oam/server/apps
      ```

   b. Back up the .ear file:

      ```
      cp oam-server.ear oam-server.ear.original
      ```

   c. Create a temporary directory and go to that directory:

      ```
      mkdir tmp-ear
      cd tmp-ear/
      ```

   d. Extract the oam-server.ear file into the tmp-ear directory:

      ```
      jar -xvf ../oam-server.ear
      ```

   e. Create another temporary directory inside tmp-ear and go to that directory:

      ```
      mkdir tmp-ms-war
      cd tmp-ms-war
      ```

      You should be in this directory:

      ```
      /scratch/test/Oracle/Middleware/Oracle_
      IDM1/oam/server/apps/tmp-ear/tmp-ms-war
      ```

   f. Extract the ms_oauth.war into the tmp-ms-war directory:

      ```
      jar -xvf ../ms_oauth.war
      ```

   g. Open the WEB-INF/web.xml file for editing and update it by adding comment tags around the security-constraint as follows:

      ```
      <!-- BEGIN: Comment the following security constraint if either the OAM
      WebGate is front-ending OAM in a WebSphere setup or if the WebLogic server
      Domain Agent is not used.
      ```

```
    <security-constraint>
        <web-resource-collection>
            <web-resource-name>OAuthSecuredResources</web-resource-name>
            <url-pattern>/oauth2/ui/*</url-pattern>
        </web-resource-collection>
        <auth-constraint>
            <role-name>valid-users</role-name>
        </auth-constraint>
    </security-constraint>
 END of security constraint needing to be commented -->
```

h. Recreate the `.war` file in the `tmp-ms-war` directory:

```
jar cvf ms_oauth.war
```

i. Copy the updated `.war` file to the parent directory, then remove the `tmp-ms-war` directory located in `tmp-ear/`:

```
cp /scratch/test/Oracle/Middleware/Oracle_
IDM1/oam/server/apps/tmp-ear/tmp-ms-war/ms_oauth.war
/scratch/test/Oracle/Middleware/Oracle_IDM1/oam/server/apps/tmp-ear

rm -rf /scratch/test/Oracle/Middleware/Oracle_
IDM1/oam/server/apps/tmp-ear/tmp-ms-war
```

j. Create the `oam-server.ear` archive in the `tmp-ear` directory:

```
 jar cvf oam-server.ear .
```

k. Copy the `tmp-ear/oam_server.ear` archive file to the parent directory:

```
cp /scratch/test/Oracle/Middleware/Oracle_
IDM1/oam/server/apps/tmp-ear/oam-server.ear
/scratch/test/Oracle/Middleware/Oracle_IDM1/oam/server/apps/oam-server.ear
```

l. Restart the WebSphere server.

The WebGate will now reverse-proxy OAuth URLs as well as OAM managed server URLs. All authorization and token endpoint requests are now accessed using the WebGate host and port values instead of the actual OAM host and port values.

Part XI

Managing Oracle Access Management Oracle Access Portal

This part documents Oracle Access Portal. It contains the following chapters.

47

Configuring the Access Portal Service

The Access Portal Service is a hosted single sign-on proxy service that enables intranet and extranet applications with Oracle's form-fill single sign-on technology. It also provides the REST interfaces that implement the Web Logon Manager end-user web application. Web Logon Manager, available as a standalone download from Oracle Support, provides end-users with the ability to create, modify, and delete application credentials as well as log on to provisioned applications through both desktop and mobile browsers.

This chapter contains the following sections.

47.1 Prerequisites for Deploying the Access Portal Service

Before completing the steps in this section, you must have completed the following prerequisites. Refer to the documentation for the respective supporting software for instructions on configuring that software. The documentation is available on the Oracle Support web site.

- Install and configure an Oracle database instance
- Install and configure a supported repository (refer to the Certification Matrix for a list of supported repositories)
- Install and configure an instance of the WebLogic Administration server
- Install and configure an instance of Oracle Access Manager managed server
- Install the Oracle Enterprise Single Sign-On Administrative Console

- (Optional) If you're planning to use the Detached Credential Collector, install and configure an instance of Oracle HTTP Server

47.2 Overview of the Access Portal Service Deployment Process

The Access Portal Service provides form-fill single sign-on functionality to intranet and extranet Web applications by acting as a proxy between the target application and the user's browser.

Through the Oracle Traffic Director proxy, the Access Portal Service intercepts user connections to the target application, fetches the application's logon or password change page, and injects JavaScript code necessary to perform form-fill single sign-on tasks (such as credential capture or injection), then delivers the modified page to the user's browser.

The Access Portal Service utilizes the following components:

- **Oracle Traffic Director** - intercepts user connections to the target application and provides path-proxy and DNS-proxy functionality, allowing for path and DNS rewriting. Also hosts the Webgate and Access Proxy plugins.
- **Webgate plugin** - a plugin that monitors whether the intercepted user connections require authentication via Oracle Access Manager (based on the assigned authentication policy) and redirects the user to the authentication page as necessary.
- **Access Proxy plugin** - a plugin that enables single sign-on functionality (logon, password change, and credential capture) in internal and external Web applications.
- **Oracle Access Manager** - provides the authentication service to users as defined in the authentication policy.
- **An LDAP Directory** - serves as a data repository for the Access Proxy plugin and as the authentication back-end mechanism for Oracle Access Manager. For a list of supported directories, see the Certification Matrix accessible via the Oracle Support site.
- **(Optional) Web Logon Manager** - a reference client application that acts as a launchpad for applications enabled with Oracle's single sign-on technologies. Web Logon Manager supports Web applications enabled with the Access Portal Service's form-fill single sign-on technology and is available for download on the Oracle Technology Network web site. For more information, please contact Oracle Support.
- **Oracle Enterprise Single Sign-On Administrative Console** - provides the means to create and edit form-fill application policies (templates), password generation policies, delegate credentials, and configure other Access Proxy features not accessible via the Oracle Access Manager Console.
- **(Optional) Oracle HTTP Server** - hosts the Detached Credential Collector Web pages.

The following is a high-level overview of the deployment process:

1. **Deploy the Java Cryptography Extension files on your Oracle Access Manager server.** These files enable unlimited strength jurisdiction policy encryption on Oracle Access Manager.
2. **Create the identity store configuration file.** This file contains the connection specifics for the directory that will host the Access Portal Service data repository.

3. **Prepare and enable the Access Portal Service.** You must use the IDM Configuration Tool to extend the directory schema, create the necessary users and groups, create the Webgate profile, create and assign an authentication scheme, and create a data repository; then, you must enable the Access Portal Service.
4. **Set the Oracle Access Manager policy cache refresh interval.** If you plan to use the Enterprise Single Sign-On Administrative Console to create and modify Access Portal Service application policies (templates), you must configure the Oracle Access Manager policy cache refresh interval to ensure that Oracle Access Manager periodically checks for updated policies in the Access Portal Service repository.
5. **(Optional) Install the Oracle Protected Account Manager certificates.** If you plan to enable Oracle Privileged Account Manager-protected applications with the Access Portal Service, you must install the Oracle Protected Account Manager certificates into the instance of Oracle Access Manager running the Access Portal Service. (Only supported on WebLogic.)
6. **Deploy the Oracle Traffic Director Administration Server instance.** This instance will provide the means to administrate Oracle Traffic Director proxy instance(s) (such as configuring listeners, origin servers, and server pools).
7. **Deploy the Webgate binaries and Oracle Access Manager secure trust artifacts.** You will run the Webgate installer to deploy the required plugin binaries into Oracle Traffic Director and copy the Oracle Access Manager secure trust artifacts into the deployed Webgate instance.
8. **(Optional) Deploy the ESSOProvisioning plugin.** This plugin enables provisioning of LDAP credentials as application credentials for single sign-on and the automatic updating of stored application credentials when the directory-provided credentials change. This plugin is optional and is not required by the Access Portal Service.
9. **Create an Oracle Traffic Director configuration.** An Oracle Traffic Director configuration is a collection of elements that define the run-time behavior of an Oracle Traffic Director instance. A configuration contains information about various elements of an Oracle Traffic Director instance such as listeners, origin servers, failover groups, and logs.
10. **Protect the Oracle Traffic Directory instance with the Webgate and Access Proxy plugins.** To allow the Webgate and Access Proxy plugins to process user traffic and provide authentication and single sign-on services, you must place them "in front of" your Oracle Traffic Director instance. This is called "protecting" the instance with the selected plugins.
11. **(Optional) Enable the Detached Credential Collector for the Webgate.** The Detached Credential Collector adds a layer of security by intercepting user authentication requests normally sent directly to Oracle Access Manager, collecting the user's credentials, and passing them to Oracle Access Manager. This avoids the need for users to connect directly to your Oracle Access Manager instance. The Detached Credential Collector pages run on an instance of Oracle HTTP Server.
12. **Enable target applications for form-fill single sign-on.** Once the Access Portal Service has been successfully deployed, you can begin enabling your target applications with form-fill single sign-on functionality. This includes configuring the necessary proxy rules in Oracle Traffic Director, and creating and publishing a form-fill application policy in Oracle Access Manager.

47.3 Deploying the Access Portal Service

This section describes the steps necessary to configure the environment and deploy Access Portal. It covers the following tasks.

- Deploying the Java Cryptography Extension Policy Files
- Creating the Identity Store Configuration File
- Creating the Oracle Access Manager Configuration File
- Understanding the Access Portal Service Repository Objects
- Integrating with Oracle Privilege Account Manager
- Preparing and Enabling the Access Portal Service on an Oracle Repository
- Preparing and Enabling the Access Portal Service on Microsoft Active Directory
- (Active Directory Only) Deploying the OAMAgent Web Application
- Integrating with Oracle Privilege Account Manager
- Deploying the Oracle Traffic Director Administration Server
- Deploying the Webgate Binaries and Secure Trust Artifacts
- (Optional) Configuring the ESSOProvisioning Plugin
- Creating an Oracle Traffic Director Configuration
- Protecting the Oracle Traffic Director Instance with the Webgate and Access Proxy Plugins
- (Optional) Enabling the Detached Credential Collector for the Target Webgate

47.3.1 Deploying the Java Cryptography Extension Policy Files

In order to enable unlimited strength jurisdiction policy encryption on your Oracle Access Manager server, you must download the appropriate policy files and place them into your server's Java Runtime Environment.

1. Download the latest policy files from one of the following locations, depending on your Java Runtime Environment version:
   - **For Java 7:** `http://www.oracle.com/technetwork/java/javase/downloads/jce-7-download-432124.html`
   - **For Java 6:** `http://www.oracle.com/technetwork/java/javase/downloads/jce-6-download-429243.html`
   - **For IBM JDK on WebSphere:** `http://www.ibm.com/developerworks/java/jdk/security/60/`
2. Decompress the downloaded archive and place the `US_export_policy.jar` and `local_policy.jar` in `$JDK_Home/jre/lib/security/` within the target Java Runtime Environment (replace any existing files when prompted).
3. Reboot the Weblogic Administration Server and the Oracle Access Manager Managed Server.

47.3.2 Creating the Identity Store Configuration File

Use the guidelines below to create the `idstore.props` file that will configure the identity keystore for the Access Portal Service. You will pass this file to the IDM Configuration Tool in Preparing and Enabling the Access Portal Service on an Oracle

Repository.

Oracle Unified Directory Example

```
# Common
IDSTORE_HOST: IDMHOST1.mycompany.com
IDSTORE_PORT: 1389
IDSTORE_ADMIN_PORT: 4444
IDSTORE_KEYSTORE_FILE: OUD_ORACLE_INSTANCE/OUD/config/admin-keystore
IDSTORE_KEYSTORE_PASSWORD: Password key
IDSTORE_BINDDN: cn=oudadmin
IDSTORE_GROUPSEARCHBASE: cn=Groups,dc=mycompany,dc=com
IDSTORE_SEARCHBASE: dc=mycompany,dc=com
IDSTORE_USERNAMEATTRIBUTE: cn
IDSTORE_LOGINATTRIBUTE: uid
IDSTORE_USERSEARCHBASE: cn=Users,dc=mycompany,dc=com
IDSTORE_NEW_SETUP: true
POLICYSTORE_SHARES_IDSTORE: true
# OAM
IDSTORE_OAMADMINUSER:oamadmin
IDSTORE_OAMSOFTWAREUSER:oamLDAP
OAM11G_IDSTORE_ROLE_SECURITY_ADMIN:OAMAdministrators
# OAM and OIM
IDSTORE_SYSTEMIDBASE: cn=systemids,dc=mycompany,dc=com
# OIM
IDSTORE_OIMADMINGROUP: OIMAdministrators
IDSTORE_OIMADMINUSER: oimLDAP
# WebLogic
IDSTORE_WLSADMINUSER : weblogic_idm
IDSTORE_WLSADMINGROUP : WLSAdmins
```

Oracle Internet Directory Example

```
# Common
IDSTORE_HOST: OIDHOST1.mycompany.com
IDSTORE_PORT: 3060
IDSTORE_BINDDN: cn=orcladmin
IDSTORE_GROUPSEARCHBASE: cn=Groups,dc=mycompany,dc=com
IDSTORE_SEARCHBASE: dc=mycompany,dc=com
IDSTORE_USERNAMEATTRIBUTE: cn
IDSTORE_LOGINATTRIBUTE: uid
IDSTORE_USERSEARCHBASE: cn=Users,dc=mycompany,dc=com
POLICYSTORE_SHARES_IDSTORE: true
IDSTORE_NEW_SETUP: true
# OAM
IDSTORE_OAMADMINUSER:oamadmin
IDSTORE_OAMSOFTWAREUSER:oamLDAP
OAM11G_IDSTORE_ROLE_SECURITY_ADMIN:OAMAdministrators
# OAM and OIM
IDSTORE_SYSTEMIDBASE: cn=systemids,dc=mycompany,dc=com
# OIM
IDSTORE_OIMADMINGROUP: OIMAdministrators
IDSTORE_OIMADMINUSER: oimLDAP
# WebLogic
IDSTORE_WLSADMINUSER : weblogic_idm
IDSTORE_WLSADMINGROUP : WLSAdmins
```

Microsoft Active Directory Example

```
# Common
```

```
IDSTORE_HOST: <AD-server-hostname>
IDSTORE_PORT: <AD-server-port>
IDSTORE_DIRECTORYTYPE: ad
IDSTORE_BINDDN: <domain>\Administrator
IDSTORE_PASSWD: <password>
IDSTORE_USERNAMEATTRIBUTE: cn
IDSTORE_LOGINATTRIBUTE: cn (or another login attribute)>
IDSTORE_USERSEARCHBASE: CN=Users,DC=essodev,DC=idc,DC=local
IDSTORE_SEARCHBASE: DC=essodev,DC=idc,DC=local
IDSTORE_GROUPSEARCHBASE: CN=Users,DC=essodev,DC=idc,DC=local
IDSTORE_SYSTEMIDBASE: CN=Users,DC=essodev,DC=idc,DC=local
IDSTORE_OAMSOFTWAREUSER: oamSoftwareUser
IDSTORE_OAMADMINUSER: oamAdminUser
OAM11G_CREATE_IDSTORE: true
ESSO_IDSTORE_HOST : <AD-server-hostame>
ESSO_IDSTORE_PORT : <AD-server-port>
ESSO_IDSTORE_BINDDN : <domain>\Administrator
ESSO_IDSTORE_TYPE : ad
IS_ESSO_PRESENT : true
ESSO_IDSTORE_PASSWD : <password>
```

Where:

- `IDSTORE_HOST` and `IDSTORE_PORT` are, respectively, the host and port of your Identity Store directory. Specify the back end directory here, rather than OVD. In the case of OID and OUD, specify, respectively, one of the Oracle Internet Directory or Oracle Unified Directory instances, for example:

  OID: `OIDHOST1` and `3060`

  OUD: `IDMHOST1` and `1389`

- `IDSTORE_ADMIN_PORT` (*`LDAP_DIR_ADMIN_PORT`*) is the administration port of your Oracle Unified Directory instance. If you are not using Oracle Unified Directory, you can leave out this parameter.

- `IDSTORE_KEYSTORE_FILE` is the location of the Oracle Unified Directory Keystore file. It is used to enable communication with Oracle Unified Directory using the Oracle Unified Directory administration port. It is called `admin-keystore` and is located in *`OUD_ORACLE_INSTANCE/OUD/config`*. If you are not using Oracle Unified Directory, you can leave out this parameter. This file must be located on the same host that the `idmConfigTool` command is running on. The command uses this file to authenticate itself with OUD.

- `IDSTORE_KEYSTORE_PASSWORD` is the encrypted password of the Oracle Unified Directory keystore. This value can be found in the file *`OUD_ORACLE_INSTANCE`*`/OUD/config/admin-keystore.pin`. If you are not using Oracle Unified Directory, you can leave out this parameter.

- `IDSTORE_BINDDN` is an administrative user in the Identity Store Directory

- `IDSTORE_GROUPSEARCHBASE` is the location in the directory where Groups are Stored.

- `IDSTORE_SEARCHBASE` is the location in the directory where Users and Groups are stored.

- `IDSTORE_USERNAMEATTRIBUTE` is the name of the directory attribute containing the user's name. Note that this is different from the login name.

- `IDSTORE_LOGINATTRIBUTE` is the LDAP attribute which contains the users Login name.

- IDSTORE_USERSEARCHBASE is the location in the directory where Users are Stored.
- IDSTORE_NEW_SETUP is always set to true for Oracle Unified Directory. If you are not using OUD, you do not need to specify this attribute.
- POLICYSTORE_SHARES_IDSTORE is set to true for IDM 11*g*.
- IDSTORE_OAMADMINUSER is the name of the user you want to create as your Access Manager Administrator.
- IDSTORE_OAMSOFTWAREUSER is a user that gets created in LDAP that is used when Access Manager is running to connect to the LDAP server.
- OAM11G_IDSTORE_ROLE_SECURITY_ADMIN is the name of the group which is used to allow access to the OAM console.
- IDSTORE_SYSTEMIDBASE is the location of a container in the directory where users can be placed when you do not want them in the main user container. This happens rarely but one example is the Oracle Identity Manager reconciliation user which is also used for the bind DN user in Oracle Virtual Directory adapters.
- IDSTORE_OIMADMINGROUP Is the name of the group you want to create to hold your Oracle Identity Manager administrative users.
- IDSTORE_OIMADMINUSER is the user that Oracle Identity Manager uses to connect to the Identity store.
- IDSTORE_WLSADMINUSER: The username to be used for logging in to the web logic domain once it is enabled by SSO.
- IDSTORE_WLSADMINGROUP: is the name of the group to which users who are allowed to log in to the WebLogic system components, such as the WLS Console and EM, belong.

Use OIM entries only if your topology includes Oracle Identity Manager. Use OAM entries only if your topology includes Access Manager.

47.3.3 Creating the Oracle Access Manager Configuration File

Use the guidelines below to create the config-oam.props file that will configure your Oracle Access Manager instance. You will pass this file to the IDM Configuration Tool in Preparing and Enabling the Access Portal Service on an Oracle Repository.

Note that the Access Portal Service requires the Simple mode security posture. To enable this posture, set the parameters below as follows:

```
OAM11G_OAM_SERVER_TRANSFER_MODE: simple

OAM_TRANSFER_MODE: simple
```

The file will have the following structure:

Create a properties file called config_oam.props with the following contents:

```
WLSHOST: ADMINVHN.mycompany.com
WLSPORT: 7001
WLSADMIN: weblogic
WLSPASSWD: Admin Password
IDSTORE_DIRECTORYTYPE: OUD
IDSTORE_HOST: IDSTORE.mycompany.com
IDSTORE_PORT: 389
IDSTORE_BINDDN: cn=oudadmin
IDSTORE_USERNAMEATTRIBUTE: cn
IDSTORE_LOGINATTRIBUTE: uid
OAM11G_SERVER_LOGIN_ATTRIBUTE: uid
```

```
IDSTORE_USERSEARCHBASE: cn=Users,dc=mycompany,dc=com
IDSTORE_SEARCHBASE: dc=mycompany,dc=com
IDSTORE_GROUPSEARCHBASE: cn=Groups,dc=mycompany,dc=com
IDSTORE_SYSTEMIDBASE: cn=systemids,dc=mycompany,dc=com
IDSTORE_OAMSOFTWAREUSER: oamLDAP
IDSTORE_OAMADMINUSER: oamadmin
PRIMARY_OAM_SERVERS: IDMHOST1.mycompany.com:5575,IDMHOST2.mycompany.com:5575
WEBGATE_TYPE: ohsWebgate11g
ACCESS_GATE_ID: Webgate_IDM
OAM11G_OIM_WEBGATE_PASSWD: password to be assigned to WebGate
COOKIE_DOMAIN: .mycompany.com
OAM11G_WG_DENY_ON_NOT_PROTECTED: true
OAM11G_IDM_DOMAIN_OHS_HOST: SSO.mycompany.com
OAM11G_IDM_DOMAIN_OHS_PORT: 443
OAM11G_IDM_DOMAIN_OHS_PROTOCOL: https
OAM11G_SERVER_LBR_HOST: SSO.mycompany.com
OAM11G_SERVER_LBR_PORT: 443
OAM11G_SERVER_LBR_PROTOCOL: https
OAM11G_OAM_SERVER_TRANSFER_MODE: simple
OAM_TRANSFER_MODE: simple
OAM11G_IDM_DOMAIN_LOGOUT_URLS:
/console/jsp/common/logout.jsp,/em/targetauth/emaslogout.jsp
OAM11G_IDSTORE_ROLE_SECURITY_ADMIN: OAMAdministrators
OAM11G_SSO_ONLY_FLAG: false
COOKIE_EXPIRY_INTERVAL: 120
OAM11G_IMPERSONATION_FLAG: false
OAM11G_OIM_INTEGRATION_REQ: false
OAM11G_OIM_OHS_URL:https://SSO.mycompany.com:443
SPLIT_DOMAIN:true
```

Where:

- `WLSHOST` (*`ADMINVHN`*) is the host of your administration server. This is the virtual name.
- `WLSPORT` is the port of your administration server.
- `WLSADMIN` is the WebLogic administrative user you use to log in to the WebLogic console.
- `WLSPASSWD` is the WebLogic administrator password.
- `IDSTORE_DIRECTORYTYPE` is `OUD`, `OID` or `OVD`.
- `IDSTORE_HOST` and `IDSTORE_PORT` are the host and port of the Identity Store directory when accessed through the load balancer.
- `IDSTORE_BINDDN` is an administrative user in the Identity Store directory.
- `IDSTORE_USERSEARCHBASE` is the location in the directory where Users are stored.
- `IDSTORE_GROUPSEARCHBASE` is the location in the directory where Groups are stored.
- `IDSTORE_SEARCHBASE` is the location in the directory where Users and Groups are stored.
- `IDSTORE_SYSTEMIDBASE` is the location of a container in the directory where the user oamLDAP is stored.
- `IDSTORE_OAMSOFTWAREUSER` is the name of the user account to be used to interact with LDAP.

- IDSTORE_OAMADMINUSER is the name of the user account that can access your OAM Console.
- PRIMARY_OAM_SERVERS is a comma separated list of your OAM Servers and the proxy ports they use, for example: IDMHOST1:*OAM_PROXY_PORT*

> **Note:** To determine the proxy ports your OAM Servers use:
>
> 1. Log in to the OAM console.
> 2. Click the **System Configuration** tab.
> 3. Expand **Server Instances** under the Common Configuration section
> 4. Click an OAM Server, such as **WLS_OAM1**, and select **Open** from the **Actions** menu.
> 5. Proxy port is the one shown as **Port**.

- ACCESS_GATE_ID is the name you want to assign to the WebGate.
- OAM11G_OIM_WEBGATE_PASSWD is the password to be assign to the WebGate.
- OAM11G_IDM_DOMAIN_OHS_HOST is the name of the load balancer which is in front of the OHS's.
- OAM11G_IDM_DOMAIN_OHS_PORT is the port that the load balancer listens on (*HTTP_SSL_PORT*).
- OAM11G_IDM_DOMAIN_OHS_PROTOCOL is the protocol to use when directing requests at the load balancer.
- OAM11G_WG_DENY_ON_NOT_PROTECTED, when set to false, allows login pages to be displayed. It should be set to true when using webgate11g.
- OAM_TRANSFER_MODE is the security model that the Oracle Access Manager Servers function in. Valid values are simple and open. If you use the simple mode, you must define a global passphrase.
- OAM11G_OAM_SERVER_TRANSFER_MODE is the security model that the OAM Servers function in.
- OAM11G_IDM_DOMAIN_LOGOUT_URLS is set to the various logout URLs.
- OAM11G_SSO_ONLY_FLAG confgures Access Manager as authentication only mode or normal mode, which supports authentication and authorization.

  If OAM11G_SSO_ONLY_FLAG is true, the OAM Server operates in authentication only mode, where all authorizations return true by default without any policy validations. In this mode, the server does not have the overhead of authorization handling. This is recommended for applications which do not depend on authorization policies and need only the authentication feature of the OAM Server.

  If the value is false, the server runs in default mode, where each authentication is followed by one or more authorization requests to the OAM Server. WebGate allows the access to the requested resources or not, based on the responses from the OAM Server.
- OAM11G_IMPERSONATION_FLAG is set to true if you are configuring OAM Impersonation.
- OAM11G_SERVER_LBR_HOST is the name of the load balancer fronting your site. This and the following two parameters are used to construct your login URL.

- OAM11G_SERVER_LBR_PORT is the port that the load balancer is listening on (*HTTP_SSL_PORT*).
- OAM11G_SERVER_LBR_PROTOCOL is the URL prefix to use.
- OAM11G_OIM_INTEGRATION_REQ should be set to true if you are building a topology which contains both OAM and OIM. Otherwise set to false at this point. This value is only set to true when performing Access Manager/Oracle Identity Manager integration and is set during the integration phase.
- OAM11G_OIM_OHS_URL should be set to the URL of your load balancer. This parameter is only required if your topology contains OAM and OIM.
- COOKIE_DOMAIN is the domain in which the WebGate functions.
- WEBGATE_TYPE is the type of WebGate agent you want to create.
- OAM11G_IDSTORE_NAME is the Identity Store name. If you already have an Identity Store in place which you wish to reuse (rather than allowing the tool to create a new one for you), then set the value of this parameter to the name of the Identity Store you wish to reuse.
- OAM11G_SERVER_LOGIN_ATTRIBUTE when set to uid, ensures that when users log in, their username is validated against the uid attribute in LDAP.
- SPLIT_DOMAIN should be set to true If you are creating a domain with just OAM or OAM located in a different domain from OIM (Split Domain). Otherwise, it is not necessary to specify this parameter.

47.3.4 Understanding the Access Portal Service Repository Objects

The vGoLocator object is required for all repositories and the value of its vGOLocatorAttribute attribute specifies the path to the People container in which the Access Portal Service stores application credentials for each user. The vGOLocator object must point to the same data store instance as the Oracle Access Manager instance on which the Access Portal Service is deployed.

For Oracle LDAP directories, the following applies:

- If there is a single object under the vGOLocator container, the vGoLocatorAttribute value is parsed regardless of the object's name.
- If there are multiple objects under the vGOLocator container, the object named default is parsed. If no object named default exists, the request will fail.
- If thevGOLocatorAttribute attribute has no value or does not exist, or if the vGOLocator container does not exist, the request will fail.

When using Microsoft Active Directory, the Access Portal Service stores application credentials under the USERS container as described below:

- If there is a single object under the vGOLocator container, the vGoLocatorAttribute value is parsed regardless of the object's name.
- If there are multiple objects under the vGOLocator container, the object named default is parsed. If no object named default exists, the data will be within the USERS container.
- If thevGOLocatorAttribute attribute has no value or does not exist, or if the vGOLocator container does not exist, the data will be stored within the USERS container.

You must explicitly enable the storage of user credentials under respective user objects using the Oracle Enterprise Single Sign-On Suite Administrative Console. This makes the following changes to the repository:

- The User class is added as a possible superior to the vGOUserData class.
- All users are granted the right to create vGOUserData objects. These rights are granted at the directory root and are recursively inherited down to the user objects.

47.3.5 Preparing and Enabling the Access Portal Service on an Oracle Repository

Before completing this procedure, make sure you have created the required configuration files as described in Creating the Identity Store Configuration File and Creating the Oracle Access Manager Configuration File.

The `idmConfigTool` is located at:

IAM_ORACLE_HOME`/idmtools/bin`

> **Note:** When you run the `idmConfigTool`, it creates or appends to the file `idmDomainConfig.param`. This file is generated in the same directory that the `idmConfigTool` is run from. To ensure that each time the tool is run, the same file is appended to, always run the `idmConfigTool` from the directory:
>
> *IAM_ORACLE_HOME*`/idmtools/bin`

The syntax of the command on Linux is:

```
idmConfigTool.sh -configOAM input_file=configfile
```

For example:

```
idmConfigTool.sh -configOAM input_file=config_oam1.props
```

When the command runs you are prompted to enter the password of the account you are connecting to the Identity Store with. You are also asked to specify the passwords you want to assign to these accounts:

- `IDSTORE_PWD_OAMSOFTWAREUSER`
- `IDSTORE_PWD_OAMADMINUSER`

1. On the machine running your target Oracle Access Manager instance, change into the following directory:

   `/Oracle/Middleware/Oracle_IDM1/idmtools/bin`

2. Set the following environment variables:

   `setenv ORACLE_HOME /Oracle/Middleware/Oracle_IDM1`

   `setenv MW_HOME /Oracle/Middleware`

   `setenv JAVA_HOME` *JDKPath*

   (where *JDKPath* is the full path to the Java Development Kit used by the Oracle Access Manager instance)

3. Pre-configure the identity store to extend the directory schema with the required object classes by running the following command:

```
./idmConfigTool.sh -preConfigIDStore input_file=idstore.props
```

where `idstore.props` is a property file containing configuration parameters specific to your environment. For information on assembling this file, see Creating the Identity Store Configuration File.

4. Create the required users and groups by running the following command:

   ```
   ./idmConfigTool.sh -prepareIDStore mode=all input_file=idstore.props
   ```

   where `idstore.props` is a property file containing configuration parameters specific to your environment. For information on assembling this file, see Creating the Identity Store Configuration File.

   This command does the following:

   - Adds the Access Portal Service object classes and attributes to the schema
   - Creates the `CO`, `People`, and `vGoLocator` containers (with create permissions only, including children). For more information on these containers, see Understanding the Access Portal Service Repository Objects.

5. Create and configure the required Webgate profile by running the following command:

   ```
   ./idmConfigTool.sh -configOAM input_file=config_oam.props
   ```

   where `config_oam.props` is a property file containing configuration parameters specific to your environment. For information on assembling this file, see Creating the Oracle Access Manager Configuration File.

6. Add conditions to the Admin role in the Security Realm as follows:

   a. Log in to the WebLogic Administration Server Console.

   b. In the left pane of the console, click **Security Realms**.

   c. On the "Summary of Security Realms" page, click **myrealm** under the Realms table.

   d. On the "Settings" page for myrealm, click the **Roles & Policies** tab.

   e. On the "Realm Roles" page, expand the **Global Roles** entry under the Roles table. This brings up the entry for Roles.

   f. Click the **Roles** link to go to the Global Roles page.

   g. On the "Global Roles" page, click the **Admin** role to go to the Edit Global Role page:

   h. On the "Edit Global Roles" page, under Role Conditions, click **Add Conditions**.

   i. On the "Choose a Predicate" page, select **Group** from the predicates list and click **Next**.

   j. On the Edit Arguments Page, specify `OAMAdministrators` in the **Group Argument** field and click **Add**.

   k. Click **Finish** to return to the "Edit Global Rule" page.

      The Role Conditions now show the `OAMAdministrators` Group as an entry.

   l. Click **Save** to finish adding the Admin role to the `OAMAdministrators` Group.

7. Check the log file for any errors or warnings and correct them. A file named `automation.log` is created in the directory where you run the tool.

8. Restart the WebLogic Administration Server.
9. Enable the Access Portal Service:
   a. Log on to the Oracle Access Manager Console.
   b. Select the **Launch Pad** tab.
   c. In the **Configuration** section, click **Available Services**.
   d. In the screen that appears, click **Enable** next to **Access Portal Service**.

Note: After you run `idmConfigTool`, several files are created that you need for subsequent tasks. Keep these in a safe location.

Two 11*g* WebGate profiles are created: `Webgate_IDM`, which is used for intercomponent communication and `Webgate_IDM_11g`, which is used by 11*g* Webgates.

The following files exist in the directory *`ASERVER_HOME`*`/output/Webgate_IDM_11g`. You need these when you install the WebGate software.

- `cwallet.sso`
- `ObAccessClient.xml`
- `password.xml`

Additionally, you need the files `aaa_cert.pem` and `aaa_key.pem`, which are located in the directory *`ASERVER_HOME`*`/output/Webgate_IDM`.

47.3.6 Preparing and Enabling the Access Portal Service on Microsoft Active Directory

The following LDIF file is required for extending the Active Directory schema with Access Portal Service classes and attributes:

```
<ORACLE_HOME>/idmtools/templates/ad/esso_schema_extn.ldif
```

The file is a template file; before proceeding, modify the values such as domain names and paths to match the target environment.

Complete the following steps to prepare and enable the Access Portal Service with Microsoft Active Directory:

1. Extend the Active Directory schema by running the following command on the server machine hosting the repository:

   ```
   ldifde -i -f esso_schema_extn.ldif
   ```

   Upon completion, a message will confirm that importing data was successful:
2. Use the `ADSIEdit` tool to create containers named `CO`, `People`, and `vGoLocator` under the repository root.
3. Under the `vGoLocator` container, create an object named `default` of class `vGoLocatorClass` and set its attribute value to the DN of the container that holds the `People` container. For more information, see Understanding the Access Portal Service Repository Objects.
4. Enable the storage of user credentials under user objects:
   a. Launch the Oracle Enterprise Single Sign-On Suite Administrative Console and connect to the target repository.

b. In the Console, select **Enable Storing Credentials Under User Object (AD Only)** from the **Repository** menu.

c. The Console displays a dialog informing you of the changes about to be made to your Active Directory schema. Click **OK**.

d. Wait for a dialog confirming the changes to appear, then click **OK** to dismiss it.

Note: Members of protected groups (i.e., users whose ACLs are governed by the AdminSDHolder object) will not be able to store credentials under their user objects until the AdminSDHolder ACL is updated with permissions required by this feature. See the guide *Deploying Logon Manager with a Directory-Based Repository* for instructions on how to remedy this issue.

---

5. Create the target users with object class `InetOrgPerson`.
6. Create a user data store:
   a. Log on to the Oracle Access Manager console and select the **Launch Pad** tab.
   b. In the **Configuration** section, click **User Identity Stores**.
   c. In the screen that appears, click **Create** under **OAM ID Stores**.
   d. In the dialog that appears, fill in the following required values, leaving the rest at their defaults:

Field	Value
Store Name	`ESSOAuthnStore`
Store Type	Microsoft Active Directory
Location	*ad-server-hostname*:*port*
Bind DN	*domain**username*
Password	*password*
Login ID Attribute	`cn`
User Search Base	Fully qualified DN of the Users container
Object Search Base	Fully qualified DN of the Groups container

7. Test the connection and correct any errors if necessary, then click **Apply**.
8. Update the LDAP plugin:
   a. Log on to the Oracle Access Manager console.
   b. Select the **Launch Pad** tab.
   c. In the **Access Manager** section, click **Authentication Modules**.
   d. In the screen that appears, click **Search**.
   e. In the list of search results, select the **LDAPPlugin** module.
   f. In the **Steps** tab, select the **stepUI** step.
   g. In the **KEY_IDENTITY_STORE_REF** drop-down list, select the user data store you created in step 5 of this procedure.
   h. Repeat the above for the **stepUA** step.

i. Click **Save** to save your changes.

9. Create the identity data store (IDS) profile in Oracle Access Manager:
   a. Log on to the Oracle Access Manager console.
   b. Select the **Launch Pad** tab.
   c. In the **Configuration** section, click **User Identity Stores**.
   d. In the **IDS Profile** section, click **Create Form Fill Application IDS Profile**.
   e. In the form that appears, fill in the fields as follows:

Field	Value
Name	*meaningful profile name*
Description	*meaningful profile description*
Repository Options	**Create New**
Repository Name	meaningful repository name
Directory Type	**Microsoft Active Directory**
Host name	*Active Directory server host name*
Port	*Active Directory server port*
Bind DN	*domain/user name of repository account*
Bind password	*password of repository account*
Base DN	*fully qualified DN of the repository root*
User search base	*fully qualified DN of the Users container*
App template search base	*fully qualified DN of the CO (ESSO policy data) container*
Top search base	*fully qualified DN of the repository root*

   f. Test the connection, then click **Apply**.

10. Configure the relational mapping of users and groups:
    a. Edit the IDS profile you just created.
    b. Select the **Entity Attributes** tab.
    c. Add the following new attributes, one at a time (adding multiple attributes at once is not supported):

       `member`, `memberOf`, `distinguishedName`

    d. Select the **Entities** tab.
    e. Under **Users and Groups**, enable the `member`, `memberOf`, and `distinguishedName` entity attributes.
    f. Set the **User Base**, **Group Base**, **Search Base**, and **Create Base** entities to the fully qualified DNs of the respective containers in the repository.
    g. Select the **Relationships** tab.
    h. Configure the entity relationships as shown in the following illustration:

Name	From		Relation	To		Recursive
	Entity	Attribute		Entity	Attribute	
user_memberOfGr	Users	memberOf	Many -> Many	Groups	distinguishedNan	☐
group_memberOfG	Groups	memberOf	Many -> Many	Groups	distinguishedNan	☑
groupMember_use	Groups	member	Many -> Many	Users	distinguishedNan	☑

This makes the following changes in the file *DOMAIN_HOME*`/config/fmwconfig/ids-config.xml`:

```
<Entity create="true" delete="true" idAttr="CN" modify="true" name="Users" search="true" type="user
    <AttrRef defaultFetch="false" filter="none" name="CN"/>
    <AttrRef defaultFetch="false" filter="none" name="memberOf"/>
    <AttrRef defaultFetch="false" filter="none" name="description"/>
    <AttrRef defaultFetch="false" filter="none" name="displayname"/>
    <AttrRef defaultFetch="false" filter="none" name="distinguishedName"/>
</Entity>
<Entity create="true" delete="true" idAttr="CN" modify="true" name="Groups" search="true" type="gro
    <AttrRef defaultFetch="false" filter="none" name="CN"/>
    <AttrRef defaultFetch="false" filter="none" name="member"/>
    <AttrRef defaultFetch="false" filter="none" name="name"/>
    <AttrRef defaultFetch="false" filter="none" name="description"/>
    <AttrRef defaultFetch="false" filter="none" name="distinguishedName"/>
</Entity>
```

```
EntityConfig name="ADProfile">
  <Attributes>
     <Attribute dataType="string" description="" name="OU" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="CN" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="vGOConfigData" pwdAttr="false" readOnly="false"
     <Attribute dataType="string" description="" name="vGoConfigType" pwdAttr="false" readOnly="false"
     <Attribute dataType="string" description="" name="vGOSecretData" pwdAttr="false" readOnly="false"
     <Attribute dataType="string" description="" name="ygolocatorattribute" pwdAttr="false" readOnly="
     <Attribute dataType="string" description="" name="orclaci" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="uniquemember" pwdAttr="false" readOnly="false"/
     <Attribute dataType="string" description="" name="name" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="displayname" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="description" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" description="" name="sAMAccountName" pwdAttr="false" readOnly="false
     <Attribute dataType="string" name="member" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" name="memberOf" pwdAttr="false" readOnly="false"/>
     <Attribute dataType="string" name="distinguishedName" pwdAttr="false" readOnly="false"/>
  </Attributes>
```

```
<EntityRelations>
    <EntityRelation fromAttr="memberOf" fromEntity="Users" name="user_memberOfGroup" recursive="false" toAttr="dist
    <EntityRelation fromAttr="memberOf" fromEntity="Groups" name="group_memberOfGroup" recursive="true" toAttr="dis
    <EntityRelation fromAttr="member" fromEntity="Groups" name="groupMember_user" recursive="true" toAttr="distingu
</EntityRelations>
      </EntityConfig>
    </EntitiesConfig>
</IdentityDirectoryConfig>
```

11. Enable the IDS profile:
    a. Select the **Launch Pad** tab in the main console window.

b. In the **Configuration** section, click **Access Portal Service Settings**.

c. In the screen that appears, select the IDS profile you created earlier from the **IDS Profile** drop-down list.

d. Click **Apply**.

12. Add the Active Directory schema XML definition file to the IDS server configuration file:

a. Open the following file in a text editor:

```
DOMAIN_HOME/config/fmwconfig/ovd/ids/server.os_xml
```

b. Locate the `<schema check="true">` section and add the following line inside it:

```
<location>schema.ms.xml</location>
```

c. Save and close the file.

d. Restart the managed server instance to apply your changes.

47.3.7 (Active Directory Only) Deploying the OAMAgent Web Application

The `OAMAgent` web application provides the means to configure Access Control Lists within an Active Directory-based Access Portal Service repository via a web interface running on Microsoft Internet Information Server.

To deploy th `OAMAgent` web application, do the following:

1. Extract the `OAMAgent.zip` file (available in the Logon Manager folder of the Enterprise Single Sign-On Suite ZIP archive) into a directory.

2. Using the IIS Manager application, create a new IIS web site; when prompted, in the **Physical Path** field, enter the full path to the directory into which you extracted the `OAMAgent.zip` archive.

3. Edit the newly created web application's `Web.config` file as follows:

a. Add the following to the `system.webServer` section:

```
<configuration>
<system.webServer>
<httpHandlers>
<add type="ColumbiaWindowsAgent.Rest.AgentAcl, OAMAgent"
path="ColumbiaWindowsAgent/V1/AgentAcl" verb="POST"/>
</httpHandlers>
</system.webServer>
</configuration>
```

b. Add the following to the `system.web` section:

```
<compilation targetFramework="4.0">
<assemblies>
<add assembly="Interop.ActiveDs, Version=1.0.0.0, Culture=neutral"/>
</assemblies>
</compilation>
```

c. Save and close the file.

4. In the IIS Manager application, navigate to **IIS Manager > Target Site > .NET Compilation > Assemblies** and ensure that the new assembly appears in the list of assemblies (i.e., that the `Interop.ActiveDs.dll` file appears in the web root directory).

5. Create a new handler mapping:
   a. In the IIS Manager application, navigate to **IIS Manager > Target Site > Handler Mappings** and click **Add Managed Handler** in the right-hand pane.
   b. In the dialog that appears, fill in the fields as follows and save your changes:

Field	Value
Path	`ColumbiaWindowsAgent/V1/AgentAcl`
Type	`ColumbiaWindowsAgent.Rest.AgentAcl, OAMAgent`
Name	`OAMAgent`

6. Enable 32-bit application support:
   a. In the IIS Manager application, navigate to **IIS Manager > Application Pools.**
   b. Right-click the target site and select **Advanced Settings** from the context menu.
   c. Set the **Enable 32-bit Applications** option to **True** and save your changes.
7. Make the following site configuration changes:
   a. In the IIS Manager application, navigate to **IIS Manager > Application Pools.**
   b. Select the target site.
   c. Set the **.NET Version** to **4.0**.
   d. Set the **Identity** option to **LocalSystem**.
   e. Save your changes.
8. In the IIS Manager application, select the host machine, click **Server Certificates**, and click **Import a Certificate**, and provide the path to a root CA certificate trusted by both the IIS server running the `OAMAgent` web application as well as the server running the target Access Portal Service instance.

   Additionally, the Access Portal Service server must have a certificate signed by that CA in its keystore. That CA must also be present in the server's `cacert` file (trust store).
9. Create a https binding using the newly installed certificate:
   a. In the IIS Manager application, right-click the target site and select Edit Bindings from the context menu.
   b. Click **Add New Site Binding**.
   c. Select **https** from the **Type** drop-down list.
   d. Select the certificate you imported in step 8.
   e. Click **Close**.
10. Enable SSL for the target site:
    a. In the IIS Manager application, select the target site.
    b. Click **SSL Settings**.
    c. Select the **Require SSL** check box.
    d. Select the **Require client certificates** check box.
    e. Click **Apply** in the right-hand pane.

11. Add the following to the `oam-config.xml` file on the Access Portal Service server instance, then restart the instance to apply your changes:

```
 <Setting Name="RestServicePath"
Type="xsd:string">ColumbiaWindowsAgent/V1/AgentAcl</Setting>
<Setting Name="IPAddress" Type="xsd:string">iis-server-hostname</Setting>
<Setting Name="Protocol" Type="xsd:string">https</Setting>
<Setting Name="Port" Type="xsd:string">iis-server-port</Setting>
<Setting Name="Version" Type="xsd:string">1</Setting>
<Setting Name="ADPath" Type="xsd:string">AD-server-hostname:port</Setting>
```

12. Add the following keystore parameters to the managed server's startup script `JAVA_OPTIONS` line:

    `-Djavax.net.ssl.keyStore=`*keystore-location*

    `-Djavax.net.ssl.keyStorePassword=`*keystore-password*

47.3.8 Setting the Policy Cache Refresh Interval

When using the Oracle Enterprise Single Sign-On Administrative Console to create and modify Access Portal Service application policies, the Access Portal Service must periodically fetch the modified policies from the repository to keep the policy cache up to date. By default, the cache refresh interval is set to `-1` (never refresh).

To set a custom policy cache refresh interval, complete the steps below. A value of 0 disables the policy cache and causes every request to fetch the corresponding policy from the repository.

1. Open the following file in a text editor:

   OAMDomainHome`/config/fmwconfig/oam-config.xml`

2. Locate the following setting string (or add it if it does not already exist):

   ```
   <Setting Name="TimeToLive" Type="xsd:long">-1</Setting>
   ```

3. Change the default value (`-1`) to the desired number of minutes.
4. Save and close the file.
5. Increment the file's version and restart both the administration server and the managed server to apply the new refresh interval.

47.3.9 Integrating with Oracle Privilege Account Manager

When integrating with Oracle Privileged Account Manager, keep the following in mind:

- Only Oracle Privileged Account Manager templates of type "Privileged" are supported. Templates of type "Delegated" are not supported when created on the server side; creating such a template will result in unpredictable behavior.
- You must specify the Oracle Privileged Account Manager server URL in the Access Portal Service settings in the target Oracle Access Manager server instance.

47.3.9.1 Installing the Oracle Privileged Account Manager Certificates

You must import the certificates into the identity keystore of the application server running the Oracle Access Manager instance. This procedure is currently only available for WebLogic; do not perform it on other application servers.

Note: Keystore passwords can be obtained by running the following command from the WebLogic Console:

```
listCred(map='oracle.wsm.security',key='keystore-csf-key');
```

1. Obtain the location and name of the identity keystore by examining the value of the following environment variables in the WebLogic console (where *OAMServerName* is the name of the target Oracle Access Manager instance):

   `environment-servers-`*OAMServerName*`-keystores`

   `environment-servers-`*OAMServerName*`-ssl`

2. Import the certificate into the identity keystore using the following command:

   `keytool -importcert -alias` *CertificateAlias* `-file` *CertificateName*.crt `-keystore` ./*IdentityStoreName*.jks `-storepass` *IdentityStorePassword*

   where *CertificateAlias* is a meaningful alias you want to assign to the certificate for identification, *CertificateName* is the name of the certificate file, *IdentityStoreName* is the name of the target identity store and *IdentityStorePassword* is the password for that identity store.

3. Obtain the location and name of the CA certificate by examining the value of the following environment variable via the WebLogic console:

   `environment-servers-oam_server1-keystores`

4. Import the CA certificate into the identity keystore using the following command:

   `keytool -importcert -alias` *CertificateAlias* `-file` *CertificateName*.der `-keystore ./cacerts -storepass` *IdentityStorePassword*

   where *CertificateAlias* is a meaningful alias you want to assign to the certificate for identification, *CertificateName* is the name of the certificate file, *IdentityStoreName* is the name of the target identity store and *IdentityStorePassword* is the password for the `cacerts` identity keystore.

5. Export the target Oracle Access Manager domain's private key certificate (used for generating the SAML assertion) using the following command:

   Note: If a keystore type is not explicitly specified in the embedded trust provider configuration section of the following file:

   OAMDomainHome`/config/fmwconfig/jps-config.xml`

   then the Oracle Key Store Service keystore type is assumed.

   If no application stripe name is specified for that KSS keystore, the service defaults to the following location:

   OAMDomainHome`/config/fmwconfig/default-keystore.jks`

   ```
   keytool -export -alias orakey -file orakey.der -keystore
   ./IdentityStoreName.jks -storepass IdentityStorePassword
   ```

   where *IdentityStoreName* is the name of the target identity store and *IdentityStorePassword* is the password for that identity keystore.

6. Change to the following directory:

   OPAMDomainHome`/config/fmwconfig`

7. Import the target Oracle Access Manager domain's private key into the target Oracle Privileged Account Manager domain using the following command:

   ```
   keytool -importcert -alias orakey -file orakey.der -keystore
   ./IdentityStoreName.jks -storepass IdentityStorePassword
   ```

   where *IdentityStoreName* is the name of the target identity store and *IdentityStorePassword* is the password for that identity keystore.

8. Restart the affected Oracle Access Manager instance and the affected Oracle Privileged Account Manager instance.

47.3.9.2 Configuring the Oracle Privileged Account Manager Server

Before completing the steps below, make sure you have created a provider on the target Oracle Access Manager instance for the desired Oracle Privileged Account Manager instance and placed it as the first provider in the provider list.

On the Oracle Privileged Account Manager instance, do the following:

1. Create a target with the following parameter values:

Field	Value
Storage Type	*Deployed repository type*
Server	*Hostname:port of the repository server*
Root DN	*Fully qualified DN of the repository root*
User Path	*Fully qualified DN of the Users container*
Connect as User	*CN of the repository connection account*
Password	*Password of the repository connection accoun*t
Use secure connection (SSL)	Disabled
Use configuration objects instead of application list	Enabled
Role/Group support	Enabled
Configuration and role/group objects root DN	*Fully qualified DN of the CO container*
Admin Group DN	(not applicable; leave blank)
User Name Prepend	`UID`

2. Search for targets and click the target you created in step 1.
3. Click the **Privileged Accounts** tab.
4. In the **Privileged Accounts** tab, add the desired privileged account (stored on the target you created in step 1).
5. Add the desired grantees to the privileged account.
6. Restart both the admin and the privileged Oracle Privileged Account Manager server instances to apply your changes.

47.3.9.3 Configuring the Provisioning Gateway Server

To create the required template mapping on the Provisioning Gateway server, do the following:

1. Run the following command on the Provisioning Gateway server machine:

```
certutil -setreg chain\minRSAPubKeyBitLength 512
```

2. Restart the Provisioning Gateway server machine.
3. Log on to the Provisioning Gateway Administrative Console.
4. Select the **Settings** tab, then the **Template Mapping** section.
5. Click **Edit** and select the privileged template associated with your Oracle Privileged Account Manager target, then save your changes. This will create the required `cn=OpamTemplateMap` mapping in the repository.
6. Test the configuration:
   a. Log on to Web Logon Manager as one of the grantees assigned to the target privileged account.
   b. Click **Add** next to the target privileged template. The privileged account details will appear in a separate tab.

47.3.10 Deploying the Oracle Traffic Director Administration Server

The Oracle Traffic Director Administration Server provides the means to deploy and manage Oracle Traffic Director proxy instance(s).

Before beginning this procedure, delete all previous Oracle Traffic Director 11g installations; the installer will fail if it encounters a non-empty installation directory.

Linux security restricts the opening of ports under 1024 to the `root` user. If you wish to run Oracle Traffic Director proxies on ports 80 or 443, follow the configuration gudielines for running as the `root` user described in the "Creating an Administration Server and Administration Node" chapter of the *Oracle Traffic Director Installation Guide*.

WARNING: Oracle highly recommends against running Oracle Traffic Director as the `root` user due to increased security risk; you should limit the use of the `root` user to development environments only.

1. Launch the installer:

   ```
   ./OTD11.1.1.1.7/Disk1/runinstaller
   ```

2. In the screen that appears, click **Next**.
3. In the screen that appears, select **Skip Updates** and click **Next**.
4. In the screen that appears, set the Oracle Traffic Director home directory to the following and click **Next**:

   ```
   /OTD11g/trafficdirector_Home_1
   ```

5. Wait for the installation to complete, then change into the following directory:

   ```
   /OTD11g/trafficdirector_Home_1/bin
   ```

6. Create an Oracle Traffic Director administration server instance using the following command (only include `--server-user=root` if you want to run the server as the `root` user):

   ```
   ./tadm configure-server --user=admin --host=otd.hostname
   --server-user=root --instance-home=/OTD11g/trafficdirector_Home_
   1/instances
   ```

Oracle recommends using the default port (`8989`) for the Oracle Traffic Director administration server.

7. Start the Oracle Traffic Director administration server with the following command:

   ```
   ./OTD11g/trafficdirector_Home_1/instances/admin-server/bin/startserv
   ```

8. Log on to the Oracle Traffic Director Admin Console at the following URL:

   `https://`*`otd.hostname`*`:8989`

For detailed information on installing Oracle Traffic Director, see the *Oracle Traffic Director Installation Guide*.

47.3.10.1 Applying the Required Oracle Traffic Director Patch

You must apply patch ID 17025628 (available from Oracle Support) which addresses the following issues that are required by the Access Portal Service to function:

- Forward proxy functionality. Required if your organization utilizes an enterprise-wide Web proxy that filters all Internet traffic.
- Rewriting of HTTP page content using `sed`. Required for rewriting HTML, CSS, and JavaScript code referencing relative paths to objects and hosts.

47.3.11 Deploying the Webgate Binaries and Secure Trust Artifacts

Before completing this procedure, make sure you have created a Webgate profile in your Oracle Access Manager server as described in Preparing and Enabling the Access Portal Service on an Oracle Repository; the secure trust artifacts generated during that procedure are required to complete the steps below.

1. Decompress the Webgate binaries installer into a local directory on the Oracle Traffic Director host and launch the installer with the following command:

   ```
   ./runInstaller
   ```

2. When prompted, specify the full path to your Java runtime environment. For example: `/usr/local/packages/jdk16`
3. In the installer's "Prerequisite Checks" screen, click **Next**.
4. Specify the installation path and click **Next**:

   ```
   /MW_HOME/OAM_OTD_WebGate_HOME
   ```

5. Click **Install** and wait for the installation to complete.
6. Change into the following directory:

   ```
   /MW_HOME/OAM_OTD_WebGate_HOME/webgate/iplanet/tools/deployWebGate
   ```

7. Deploy the Webgate binaries using the following command:

   ```
   ./deployWebGateInstance.sh -w /MW_HOME/wginst1 -oh /MW_HOME/OAM_OTD_
   WebGate_HOME -ws otd
   ```

8. Copy the Oracle Access Manager artifact files (generated while completing the steps in Preparing and Enabling the Access Portal Service on an Oracle Repository as follows:

   - Copy the `ObAccessClient.xml`, `cwallet.sso`, and `password.xml` artifact files to:

     ```
     /MW_HOME/wginst1/webgate/config
     ```

- Copy the `aaa_key.pem` and `aaa_cert.pem` artifact files to:

  `/MW_HOME/wginst1/webgate/config/simple`

9. (Optional) If you deployed your Oracle Traffic Director administration server instance as the root user, grant that instance permissions to the Webgate (otherwise, skip this step).

   WARNING: Oracle highly recommends against running Oracle Traffic Director instances as the `root` user due to increased security risk; you should limit the use of the `root` user to development environments only.

   a. Change into `/MW_HOME/wginst1`

   b. Execute `chmod -R 777 .`

47.3.12 (Optional) Configuring the ESSOProvisioning Plugin

When you successfully log on to Oracle Access Manager, the `ESSOProvisioning` plugin will provision your directory credentials to a specific application in your Access Proxy (ESSO) wallet. It will also update the target application credentials if your directory credentials change.

To enable the plugin, you must assign the **ESSOProvAuthnScheme** to the **ESSOAuthnPolicy** authentication policy in the **IAMSuiteAgent** application domain profile.

1. Log on to the Oracle Access Manager Console.
2. Select the **Launch Pad** tab.
3. In the **Access Manager** section, click **Authentication Modules**.
4. In the screen that appears, click **Search**.
5. From the list of search results, locate and double-click the **ESSOProvisioningModule** module.
6. In the screen that appears, select the **Steps** tab.
7. Edit the `ESSO_PROV_Step` step and enter the name of the target application for which you want to provision directory credentials.
8. Edit the `ESSO_UI_Step` and `ESSO_UA_Step` steps and add a **User Identity Store** value of `KEY_IDENTITY_STORE_REF` to each.
9. Click **Save** to save the steps, then click **Apply** to apply your changes to the module.
10. In the **Access Manager** section, click **Application Domains**.
11. In the screen that appears, click **Search**.
12. From the list of search results, locate and double-click the **IAMSuiteAgent** profile.
13. Select the **Authentication Policies** tab.
14. In the list of policies, select **ESSOAuthnPolicy**.
15. From the **Authentication Scheme** drop-down menu, select the **ESSOProvAuthnScheme** authentication scheme.
16. Click **Apply** to save your changes.

47.3.13 Creating an Oracle Traffic Director Configuration

1. Log on to the Oracle Traffic Director Admin Console at the following URL:

   `https://`*otd.hostname*`:8989`

2. Create a new Oracle Traffic Director configuration with the following parameters:
   - **Name:** *a descriptive name for the configuration*
   - **Server User:** *leave at the default value, unless you deployed the Oracle Traffic Director administration server as root*
   - **Select Origin Server Type:** `HTTP`
3. Create a listener (your Oracle Traffic Director instance will listen for requests from the user's browser on this port) with the following parameters:
   - **Port:** `8282`
   - **ServerName:** *otd.hostname*
4. Create an origin server pool with the following parameters:
   - Add your target application host as *applicationHostname:port*
   - Select the target node as *applicationHostname*
5. Click the **Instance** node in the tree on the left and start the instance.
6. Test the page by accessing the following URL and logging on with your administrator credentials:

   `http://`*otd.hostname*`:8282/`*target_webgate_profile*

47.3.14 Protecting the Oracle Traffic Director Instance with the Webgate and Access Proxy Plugins

To protect your Oracle Traffic Director instance with the Webgate and Access Proxy plugins, complete the steps below.

47.3.14.1 Generating the Secure Trust Artifacts

1. Change into the following directory:

   `/MW_HOME/OAM_OTD_WebGate_HOME/webgate/iplanet/tools/setup/InstallTools`

2. Set the `LD_LIBRARY_PATH` variable:

   ```
   bash export LD_LIBRARY_PATH=/MW_HOME/OAM_OTD_WebGate_HOME/lib

   csh setenv LD_LIBRARY_PATH /MW_HOME/OAM_OTD_WebGate_HOME/lib
   ```

3. Run the following command to modify the `magnus.conf` file to include the directives to load the `webgate` and `esso_webProxy` libraries into the Oracle Traffic Director instance as well as modify the associated Oracle Traffic Director configuration file to include the directives to activate the two plugins.

   ```
   ./EditObjConf -f /OTD11g/trafficdirector_Home_
   1/instances/targetInstance/config/targetOTDconfiguration.conf -oh /MW_
   HOME/OAM_OTD_WebGate_HOME -w /MW_HOME/wginst1 -ws otd -enableESSO
   -enableWLM
   ```

Note: Only include the `-enableWLM` flag if you have deployed the Access Portal reference application. Otherwise, the flag is not necessary.

If you do not include the `-enableWLM` flag and wish to deploy the Access Portal reference application later, you must manually modify the appropriate Oracle Traffic Director configuration file as described in the Access Portal reference application deployment instructions.

47.3.14.2 Loading the Required WebGate Libraries into the OTD Instance

1. Change into the following directory:

   `/OTD11g/trafficdirector_Home_1/instances/`*targetOTDConfiguration*`/bin`

2. Edit the `startsrv` script in a text editor and add the Webgate library path to the `LD_LIBRARY_PATH` variable as follows:

   ```
   LD_LIBRARY_PATH="${SERVER_LIB_PATH}:/MW_HOME/OAM_OTD_WebGate_
   HOME/lib:${SERVER_JVM_LIBPATH}:${LD_LIBRARY_PATH}";
   ```

47.3.14.3 Deploying the Configuration Changes

1. Log into the Oracle Traffic Director Admin Console.
2. Select your configuration and click the **Instance Modified** notification at the top of the page.
3. Pull and deploy the changes.
4. When prompted to restart the instance, click **OK**, then click **Finish**.

47.3.14.4 Testing the WebGate

1. Navigate to `http://`*otd.hostname*`:8282/`*target_webgate*
2. Log on to the Webgate using your repository credentials.

   If the target application does not appear, check your configuration for errors.

47.3.15 (Optional) Enabling the Detached Credential Collector for the Target Webgate

This section describes how to enable the Detached Credential Collector for the target Webgate and how to deploy the Detached Credential Collector pages on Oracle HTTP Server.

47.3.15.1 Creating and Applying the Detached Credential Collector Authentication Scheme

1. Select the **Launch Pad** tab.
2. In the **Access Manager** section, click **Authentication Schemes**.
3. In the screen that appears, click **Search.**
4. From the list of search results, locate and click the **ESSOAuthnScheme** authentication scheme.
5. In the screen that appears, click **Duplicate**.
6. Give the new scheme a descriptive name - for example `DCC-ESSOAuthnScheme`.
7. In the **Challenge Method** drop-down list, select **FORM**.

8. In the **Challenge Redirect URL** field, enter the Oracle Traffic Director host name and port in the format `http://`*otd.hostname:port*`/` (including the trailing slash).
9. In the **Challenge URL** field, enter `/oamsso-bin/login.pl`
10. In the **Context Type** drop-down list, select **external**.
11. Click **Apply** to save your changes.
12. Select the **Launch Pad** tab.
13. In the **Access Manager** section, click **Application Domains**.
14. In the screen that appears, click **Search**.
15. From the list of search results, locate and click the **IAMSuiteAgent** profile.
16. Select the **Authentication Policies** tab.
17. In the **Authentication Scheme** drop-down list, select the DCC authentication scheme you just created.
18. Click **Apply** to save your changes.

47.3.15.2 Deploying Detached Credential Collector Pages on Oracle HTTP Server

1. Enable CGI on the target instance of Oracle HTTP Server if you have not already done so.
2. Copy the files from the following location:

   `$WG_ORACLE_HOME/webgate/iplanet/oamsso`

   To the folowing location:

   `$OHS_INSTANCE_DIR/config/OHS/ohs1/htdocs`
3. Copy the files from the following location:

   `$WG_ORACLE_HOME/webgate/iplanet/oamsso-bin`

   To the following location:

   `$OHS_INSTANCE_DIR/config/OHS/ohs1/`
4. Enable CGI for the following directory:

   `$OHS_INSTANCE_DIR/config/OHS/ohs1/oamsso-bin`
5. Test your configuration by accessing the following URL:

   `http://`*ohs.host:port*`/oamsso-bin/login.pl`

47.3.15.3 Routing Oracle Traffic Director Authentication Requests via the Detached Credential Collector

1. Under your target Oracle Traffic Director configuration, create a new origin server pool that points to the Oracle HTTP Server hostname and port.
2. Create a new route that points to the origin server pool created in step 1.
3. Add the following URI condition to the route:

   `/oamsso-bin` **OR** `/oamsso`
4. Save your changes and restart the Oracle Traffic Director instance.
5. Test your configuration by accessing the target application's proxy URL.

47.3.16 Configuring Logon Manager for Compatibility with the Access Portal Service

Complete the steps below to enable interoperability between Logon Manager and the Access Portal Service.

If you have not already done so, install the Authentication Manager component of Logon Manager on each target end-user machine; this enables the MultiAuth authenticator within Logon Manager.

For more information on configuring Logon Manager repository settings, see the guide *Deploying Logon Manager with a Directory-Based Repository*.

47.3.16.1 Modifying the Access Portal Service Configuration

1. In the IDS profile you have configured for the Access Portal Service, ensure that you are connecting with a user who possesses root privileges (e.g., `orcladmin`).
2. If you are using Oracle Internet Directory as your repository, set the following permissions to permit Logon Manager to its First Time Use wizard:
   a. For the `vGoLocator` object and its `default` child object:

      ```
      orclaci = access to attr=(*) by * BindMode="Simple"
      (read,search,compare)

      orclaci = access to entry by * BindMode="Simple" (browse)
      ```

   b. For t he `People` container:

      ```
      orclaci = access to attr=(*) by * BindMode="Simple"
      (read,write,search,compare)

      orclaci: access to entry by * BindMode="Simple" (browse,add,delete)
      ```

47.3.16.2 Modifying the Logon Manager Configuration

1. Launch the Enterprise Single Sign-On Suite Administrative Console and connect to the Access Portal Service repository.
2. If you are using Active Directory as your repository, do the following (otherwise, skip this step):
   a. Navigate to **Global Agent Settings > Live > Synchronization > ADEXT**.
   b. Select the check box next to the **Use secure location for storing user settings** option and select **Yes** from the drop-down menu.
3. Navigate to **Global Agent Settings > Live > Authentication > Authentication Manager** and configure the graded authenticators as required by your environment. For more information, refer to the *Enterprise Single Sign-On Suite Administrator's Guide*.
4. Navigate to Global Agent Settings > Live > Authentication and configure each authenticator as required by your environment, noting the following:
   - If using Oracle Internet Directory as your repository, set the **Recovery Method** option to **Passphrase suppression using entryUUID**.
   - If using Active Directory as your repository, set the **Recovery Method** option to **Passphrase suppression using user's SID**.

   For more information, see the guide *Deploying Logon Manager with a Directory-Based Repository*.
5. Navigate to Global Agent Settings > Live > Synchronization and configure the appropriate synchronizer as required by your environment, noting the following:

- Enable the **Use aggressive synchronization** option.
- Enable the **Resynchronize when network or connection status changes** option.
- Set the **Interval for automatic resynchronization** option to `1`.

6. Publish your settings to the repository:
   a. In the tree on the left-hand side right-click **Live** and select **Publish** from the context menu.
   b. Click **Browse** and select the target path within the repository. (If prompted, enter the appropriate connection parameters and click **OK** to connect.)
   c. In the **Available configuration objects** list, double-click Live to move it to the list of objects selected for publishing.
   d. Click **Publish** and wait for the operation to complete.

47.4 Enabling Form-Fill Single Sign-On for an Application

This section describes the steps necessary to enable form-fill single sign-on functionality for an application with the Access Portal Service.

- Configuring a Form-Fill Application Policy
- Guidelines for Configuring Proxy Rules in Oracle Traffic Director

47.4.1 Configuring a Form-Fill Application Policy

This section describes how to configure a form-fill application policy. After you create the policy, you must add a proxy-enabled application URL to the policy to enable form-fill functionality. Once configured, you must you must publish the policy to the repository and test it to ensure that form-fill single-sign on is functioning as expected.

47.4.1.1 Creating a Form-Fill Application Policy

1. Launch the Oracle Enterprise Single Sign-On Administrative Console.
2. In the left-hand tree right-click the **Applications** node and select **New Web Application** from the context menu.
3. In the dialog that appears, enter a descriptive name and click **Next**. This will appear as the application policy name in Oracle Access Manager Console.
4. In the screen that appears, select the desired form type and click **OK**.
5. In the screen that appears, enter the URL of the target application.
6. Click **Detect Fields**. The application's logon form appears in the window and the appropriate fields are automatically detected and configured. Double-check the field list to ensure the fields have been detected and configured correctly.

   For more information on creating application policies (also known as templates), see the guide *Creating and Configuring Logon Manager Application Templates*.
7. Click **OK** to save the application policy.
8. In the **General** tab, provide optional metadata describing the application (this metadata will appear in the Access Portal reference application or another user interface of your choice, if parsed):
   - **Description** – a meaningful description of the application for the user.

- **Reference** – internal reference describing the version/variant of the application template.
- **Category** – the category under which the application will appear in the Access Portal reference application; for example, "Finance," "Development," and so on.
- **Icon Image URL** – URL to the icon image that will appear next to the application entry in the Access Portal reference application.
- **Logo Image URL** – URL to the full-size application logo image that will appear in the Access Portal reference application.
- **Vendor** – the vendor of the application.
- **Administrator** – contact information for the application's administrator within your organization.

9. Select the desired users and/or user groups to whom this template will be available:
   a. Select the **Security** tab.
   b. Select the Access Portal Service repository from the **Directory** drop-down menu.
   c. Click **Add**.
   d. In the dialog that appears, enter the name of the target user or group.
   e. Click **Check Names** to verify the user or group exists in the directory; if you receive an error, re-enter the name and try again.
   f. Click **OK** to save your changes.

47.4.1.2 Adding a Proxy-Enabled URL to a Form Fill Application Policy

1. In the policy's **General** tab, double-click the target form.
2. In the dialog that appears, select the **Identification** tab and click **Add**.
3. In the dialog that appears, select the Regular Expression radio button and enter a launch URL in regular expression format for the target application.

   You must trim any session IDs or other session-sensitive parameters from the URL, as they will become invalid as soon as the session expires. For example:

   `.*?https://`*`otd_proxy_host`*`\\.oracle\\.com:8282/`*`target_webgate`*`/login\\.jsp.*`
4. Click **OK**; then click **OK** in the parent dialog to save your changes.

47.4.1.3 Publishing the Policy to the Repository

1. In the left-hand tree, right-click the target application policy and select **Publish** from the context menu.
2. If prompted to connect to the repository, fill in the fields in the "Connect to Repository" dialog as required.
3. In the "Browse" dialog, navigate to the policies and credentials container you created in Preparing and Enabling the Access Portal Service on an Oracle Repository.

   For example: `ou=CO,dc=us,dc=oracle,dc=com`
4. Click **Publish**.

47.4.1.4 (Optional) Importing the Policy into the Oracle Access Manager Console

Instead of publishing the policy to the repository, you can import it into the Oracle Access Manager Console to further edit its basic settings there. If you have already published it to the repository, you can skip this step, as the Oracle Access Manager console will retrieve it from the repository and display it in its policies list.

If you modify the policy in the Oracle Access Manager console and then decide to edit it in the Enterprise Single Sign-On Administrative Console, you will need to manually pull down the updated version from the Access Portal Service repository.

> **Note:** Oracle recommends creating and configuring the policy in the Enterprise Single Sign-On Administrative Console as not all Access Proxy features can be configured in the Oracle Access Manager Console.

1. Launch the Enterprise Single Sign-On Administrative Console and load the desired policy (template) from the repository.
2. Export the policy to a file:
   a. From the **File** menu, select **Export**.
   b. In the "Export to .INI File" dialog that appears, select the policy from the list and click **OK**.
   c. In the dialog that appears, provide the desired path and name for the exported file, then click **Save**.
3. Import the template file into Oracle Access Manager:
   a. Log on to the Oracle Access Manager console.
   b. In the "Access Manager" section of the page that appears, click **Applications**.
   c. In the toolbar above the application list, click **Import** (blue down-arrow).
   d. In the "Import Applications" pop-up that appears, click **Browse**.
   e. In the dialog that appears, navigate to the policy file, and click **Open**.
   f. Click **OK** in the "Import Applications" pop-up.
   g. In the list of applications to import displayed by the pop-up, select the desired application and click **Import**.
   h. In the application configuration page that appears, verify that the configuration settings in each tab have been properly carried over and make any changes if necessary. When you have finished, click **Save**.

      The imported application policy appears in the application list.

47.4.1.5 Testing the Policy

Test the configuration of your policy as follows:

1. In a Web browser, navigate to `http://`*otd.hostname*`:8282/`*target_webgate* and log on with your repository credentials.

   The logon form's fields will highlight indicating Access Proxy is ready to capture application credentials.
2. Enter your application credentials into the logon form and submit them.

3. Close the browser and access the application URL again. You will be automatically logged on to the application.

If either the credential capture or automatic logon (after credentials have been captured) do not occur, check your configuration for errors.

47.4.2 Guidelines for Configuring Proxy Rules in Oracle Traffic Director

This section provides the basic guidelines for creating the proxy rules necessary to intercept the user connections to the target application and redirect them to pass through the Webgate and Access Proxy plugins. For in-depth information on configuring Oracle Traffic Director, please see the *Oracle Traffic Director Administrator's Guide*.

Since the user connection requested is intercepted by Oracle Traffic Director and redirected to the origin server, all resources referenced within the page's code must have their path rewritten to point to the Oracle Traffic Director origin server instead of the original host; otherwise, those elements will not be loaded and the page will display improperly and likely not function as intended.

This section contains guidelines for the following types of resources that must be rewritten for the page to function properly after proxy redirection:

- Path Rewriting Guidelines for HTTP Request/Response Headers
- Path Rewriting Guidelines for Browser Cookies
- Path Rewriting Guidelines for Page Content

47.4.2.1 Path Rewriting Guidelines for HTTP Request/Response Headers

HTTP request and response headers contain parameters that must be rewritten to point to the Oracle Traffic Director origin server. Oracle Traffic Directory can rewrite basic location headers that contain the origin server host name and exact protocol, or a relative path.

A typical HTTP request header looks as follows:

```
GET /web/en-US/default.aspx HTTP/1.1

Host: www.oracle.com

User-Agent: Mozilla/5.0 (Windows NT 6.1; WOW64; rv:23.0) Gecko/20100101
Firefox/23.0

Accept: text/html, application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Referer: http://www.oracle.com/web/en-US/default.aspx ?root=1

Connection: keep-alive
```

This example header contains the following parameters that require path rewriting:

- `GET` - contains the path of the requested page relative to the Web root, plus HTTP protocol version.

  For example: `GET /web/en-US/default.aspx HTTP/1.1`

  An example proxy rule for rewriting the `GET` parameter:

  ```
  NameTrans fn="map" to="/" from="/myLocalPath"
  ```

- `Host` - contains the URL of the page host.

  For example: `www.oracle.com`

  An example proxy rule for rewriting the `Host` parameter:

  ```
  Route fn="set-origin-server" origin-server-pool="myoriginserverpool"
  rewrite-host="true"
  ```

- `Referer` - contains the URL of the page that referred the request. For example: `http://www.oracle.com/web/en-US/default.aspx ?root=1`

  An example rule for rewriting the `Referer` parameter:

  ```
  <If defined $referer and $referer =~
  "https://myoriginserver.oracle.com/myLocalPath/(.*)$">

   AuthTrans fn="set-variable"
  set-headers="referer=https://www.oracle.com/$1"

   </If>
  ```

  Note: Since Web applications vary widely, in addition to the above examples, you must examine your HTTP headers to account for any other parameters referencing a URL or a relative path.

A rewritten version of our example header would then look as follows:

```
GET /myLocalPath/web/en-US/default.aspx HTTP/1.1

Host: myoriginserver.oracle.com:8484

User-Agent: Mozilla/5.0 (Windows NT 6.1; WOW64; rv:23.0) Gecko/20100101
Firefox/23.0

Accept: text/html, application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Referer: https://myoriginserver.oracle.com:8484/myLocalPath/
web/en-US/default.aspx?root=1

Connection: keep-alive
```

Oracle Traffic Director can **not** handle location redirects to another origin server. For example, if a logon page hosted on one host redirects the user to a page on another host upon successful logon, you must configure the rewriting rules for this remapping manually. For example:

```
<Object name="route-oracle-travel-sso">

<If defined $srvhdrs{'location'}  and  $srvhdrs{'location'} =~
"(http|https)://portal.myapplication.com(.*)$">

Output fn="set-variable"
$srvhdrs{'location'}="https://myoriginserver.oracle.com:8484/travel-portal
$2"

</If>

Output fn="sed-response-header" name="set-cookie"
sed="s|path=/travel-sso/|path=/|g"
```

```
</Object>

<Object name="route-travel-portal">

Route fn="set-origin-server"
origin-server-pool="origin-server-portal-oracle-travle"
rewrite-host="true"

</Object>
```

47.4.2.2 Path Rewriting Guidelines for Browser Cookies

The path and domain parameters in cookies need to be rewritten to point to the Oracle Traffic Director origin server instead of the target application host. For example:

```
Set-cookie: v1st=1666B5EACC906D6; path=/; expires=Wed, 19 Feb 2020
14:28:00 GMT; domain=.www.oracle.com
```

Must become:

```
Set-cookie: v1st=1666B5EACC906D6; path=/myLocalPath/; expires=Wed, 19 Feb
2020 14:28:00 GMT; domain=.myoriginserver.oracle.com
```

When configuring cookie rewriting rules, note the following:

- Oracle Traffic Director cannot rewrite wildcarded domains, such as `.oracle.com`. A target host name must be specified, for example: `.www.oracle.com`.
- If your application shares cookies across multiple domains, you must create separate cookie rewriting rules for each domain.
- You must strip out the Oracle Authentication Manager cookie from the cookie set request, as it interferes with certain Web applications, such as Dropbox.

  Example rule for stripping out the Oracle Authentication Manager cookie:

  ```
  AuthTrans fn="sed-request-header" name="cookie"
  sed="s|OAMAuthnCookie[^;]*;| |g" sed="s|OAMRequestContext[^;]*;| |g"
  ```

- You must strip out Oracle Authentication Manager headers before sending them to the application host.

47.4.2.3 Path Rewriting Guidelines for Page Content

Oracle Traffic Director does not directly provide the means to rewrite host names and resource paths within the HTML code of the target page. You must use sed expressions to rewrite those values. Common HTML elements whose values will require rewriting include `src`, `href`, and `action`.

Example sed rule set for rewriting the `src`, `href`, and `action` elements:

```
Output fn="insert-filter" filter="sed-response"
sed="s|\\(src\\)=\"/\\([^\"|^/]\\)|\\1=\"/myLocalPath/\\2|g"
sed="s|\\(src\\)='/\\([^'|^/]\\)|\\1='/myLocalPath/\\2|g"
sed="s|\\(href\\)=\"/\\([^\"|^/]\\)|\\1=\"/myLocalPath/\\2|g"
sed="s|\\(href\\)='/\\([^'|^/]\\)|\\1='/myLocalPath/\\2|g"
sed="s|\\(action\\)=\"/\\([^\"|^/]\\)|\\1=\"/myLocalPath/\\2|g"
sed="s|\\(action\\)='/\\([^'|^/]\\)|\\1='/myLocalPath/\\2|g"
type="text/html*"
```

Example rule for rewriting hardcoded host names:

```
Output fn="insert-filter" filter="sed-response"
sed="s|https://www.oracle.com|https://myoriginserver.oracle.com:8484/myLoc
alPath|g" type="(text*|application*)"
```

Example rule for rewriting path references within CSS elements:

```
Output fn="insert-filter" filter="sed-response"
sed="s|url(\"/\\([^\"|^/]\\)|url(\"/myLocalPath/\\1|g"
sed="s|url('/\\([^'|^/]\\)|url('/myLocalPath/\\1|g"
sed="s|url(/\\([^) |^/]\\)|url(/myLocalPath/\\1|g" type="text/css*"
```

Note the following when creating host name and path rewriting rules:

- You must include the `"Content-Type"` attribute values for content types used by the target page in your Oracle Traffic Director configuration file to provide maximum content compatibility when rewriting.
- Compressed content is not directly supported by sed; you must configure Oracle Traffic Director to decompress compressed HTML content before applying sed rewriting rules to the content, and recompress it afterwards.

  Example rules for decompressing and recompressing HTML content:

  ```
  Output fn="insert-filter" type="(text*|application*)"
  filter="http-decompression"
  ```

  ```
  Output fn="insert-filter" type="(text*|application*)"
  filter="http-compression"
  ```

- In some cases, you may be able to strip out the `"Accept Encoding"` parameter in the request header to prevent the application host from sending compressed data in the first place.

  Example rule for stripping out the `"Accept Encoding"` header:

  ```
  AuthTrans fn="set-variable" remove-headers="accept-encoding"
  ```

- JavaScript code varies widely in complexity and must be examined on a case-by-case basis in order to create clean, compatible rewriting rules.

47.4.3 Configuring the Access Proxy Request Filtering

The Access Proxy plugin provides the following HTTP request filtering mechanisms:

- JavaScript tag injection into incoming (to the user browser) HTML pages
- Mock credential substitution in outgoing POST requests
- HTTP Basic Authentication credential injection and credential capture
- Sanitization of outgoing HTTP requests to remove OAM/ESSO cookies and headers before the request is forwarded to the origin server

The proxy plugin uses the following `Init` directives in `magnus.conf`:

- Loads NSAPI filters:

  ```
  Init fn="load-modules" shlib="esso_webproxy.so" NativeThread="no"
  obinstalldir="WebGate_Home_Oracle" obinstancedir="WebGate_Instance_Dir"
  ```

- Loads NSAPI SAFs:

  ```
  Init fn="load-modules"
  funcs="EssoBasicAuthInit,EssoBasicAuth,EssoClean" shlib="esso_
  webproxy.so"
  ```

- Enables HTTP Basic Authentication:

  ```
  Init fn="EssoBasicAuthInit" obinstalldir="WebGate_Home_Oracle"
  obinstancedir="WebGate_Instance_Dir" Mode="PEER"
  ```

where:

Parameter	Description
shlib	="*esso_proxy.so*" Full path to the esso_proxy.so module.
obinstalldir	="*WebGate_Oracle_Home*" full path to the target WebGate installation directory.
obinstancedir	="*WebGate_Instance_Dir*" full path to the WebGate instances directory.
ESSOEnable	="On|Off" , default "On" Enable or disable all plugins.

47.4.3.1 Configuring the JavaScript Injection Filter

The JavaScript injection filter provides tag injection into pages incoming into the target user's Web browser. The following table describes the supported parameters.

Parameter	Description
ESSOEnable	="on|off", default "on" Add to either magnus.conf or obj.conf Enable or disable the JavaScript injection filter. Specifying this directive in magnus.conf disables all ESSO plugin features.
ESSOSearchTag	="str", default "</head>" Add to obj.conf HTML tag to match on for JavaScript injection.
ESSOInjectTag	="before|after", default "before" Add to obj.conf Determines whether to inject the JavaScript tag before or after the ESSOSearchTag parameter.
ESSOSearchCaseSensitive	="yes|no", default "no" Add to obj.conf Determines whether the match is case sensitive.
ESSOProxyType	="str", default "DNS" Add to obj.conf Passed through to JavaScript as "essoProxyType", e.g. "DNS"
ESSOScriptPath	="path", default "/oamsso/columbiaWeb.js" Add to obj.conf Passed through to JavaScript as "src"
ESSOConsoleLoggingLevel	="n", default "0", "5" is trace. Add to obj.conf Passed through to JavaScript as "essoConsoleLoggingLevel"

Parameter	Description
ESSOPartnerId	="str" Add to magnus.conf Partner ID value. Passed through to JavaScript as "oam_partner". If present, takes precedence over the "id" value in .../webgate/config/ObAccessClient.xml

For example:

```
Output fn="insert-filter" type="text/*" filter="esso_webproxy"
ESSOSearchTag="</title>"
```

47.4.3.2 Configuring the Mock Credentials Filter

The Mock Credentials filter provides substitution of ESSO mock credentials in the outgoing POST request. By default, OAM headers are stripped before the request is passed on to the origin server, but they can be forwarded with the pass-oam-headers parameter.

To enable, add a directive with the parameter to your directive in obj.conf as follows:

pass-oam-headers="true|false", default "false"

This includes the following headers (by default, they are omitted):

- OAM_IMPERSONATOR_USER
- OAM_REMOTE_USER
- OAM_LAST_REAUTHENTICATION_TIME
- OAM_IDENTITY_DOMAIN

For example:

```
Input fn="insert-filter" type="application/x-www-form-urlencoded"
filter="esso_webproxy_input" pass-oam-headers="true"
```

47.4.3.3 Configuring HTTP Basic Authentication

HTTP Basic Authentication provides the ability to capture and inject credentials from and into Web browser basic authentication (modal) dialogs, using a SAF for header injection and a filter for credential capture.

For example, to configure all filters with the same directive:

```
Init fn="load-modules" shlib="/scratch/OTDWGHome/Oracle_
OAMWebGate2/webgate/iplanet/lib/esso_webproxy.so" NativeThread="no"
obinstalldir="/scratch/OTDWGHome/Oracle_OAMWebGate2/webgate/iplanet"
obinstancedir="/scratch/OTDWGHome/wginst2
```

And, to configure the header injection SAF:

```
Init fn="load-modules" funcs="EssoBasicAuthInit,EssoBasicAuth"
shlib="/scratch/OTDWGHome/Oracle_OAMWebGate2/webgate/iplanet/lib/esso_
webproxy.so"

Init fn="EssoBasicAuthInit" obinstalldir="/scratch/OTDWGHome/Oracle_
OAMWebGate2/webgate/iplanet" obinstancedir="/scratch/OTDWGHome/wginst2"
Mode="PEER"
```

Then add one or more of the following parameters to obj.conf for the header injection SAF and the credential capture filter:

Parameter	Description
policy	="*policy name*" Required. Name of the ESSO policy (application template) to use for authentication.
realm	="*realm name*" Optional. The desired authentication realm of the target website, if more than one realm is in use.

For example:

```
NameTrans fn="EssoBasicAuth" policy="BasicAuth1" realm="realm1"
```

```
Output fn="insert-filter" filter="esso_output_capture" policy="BasicAuth1"
realm="realm1"
```

47.4.3.4 Configuring the HTTP Request Sanitizer Directive

The HTTP request sanitizer directive sanitizes the proxied HTTP request of any cookies and headers added by Oracle Access Manager and the ESSO proxy plugin before the request is forwarded to the origin server.

The directive removes cookies with the following names:

- `OAM_Partner`
- `OAMAuthnCookie_*`
- `OAMRequestContext*`
- `OAMAuthnHintCookie`
- `OAM_*`
- `ESSO_BAH*` (Basic Authentication Hint, caches policy, realm, and credential GUID)

Request-specific cookie names (for example, containing the server name) are matched using a wildcard, indicated above by the trailing asterisk.

The directive removes the following headers:

- `OAM_IMPERSONATOR_USER`
- `OAM_REMOTE_USER`
- `OAM_LAST_REAUTHENTICATION_TIME`
- `OAM_IDENTITY_DOMAIN`

> **Note:** The Mock Credentials filter also provides this sanitization, but only while processing HTTP POST requests that contain mock credentials. The Access Proxy HTTP request sanitizer directive performs this function unconditionally on all requests.

The directive definition in the `magnus.conf` file is as follows:

```
Init fn="load-modules" funcs="EssoClean"
```

shlib="*esso_webproxy.so*"

obinstalldir="*WebGate_Oracle_Home*"

obinstancedir="*WebGate_Instance_Dir*"

where:

- *esso_webproxy.so* - full path to the `esso_webproxy.so` module
- *WebGate_Oracle_Home* - full path to the target WebGate installation directory
- *WebGate_Instance_Dir* - full path to the WebGate instances directory

If `EssoBasicAuth` is also required, include both `EssoBasicAuth` and `EssoClean` in a single `Init` directive as follows:

```
Init fn="load-modules" funcs="EssoBasicAuthInit,EssoBasicAuth,EssoClean"
shlib= [...]"
```

The directive is enabled automatically during the installation of the Access Portal Service. The following is added to the `obj.conf` file:

```
<If not $uri =~ "/oamsso">

NameTrans fn="EssoClean"

</If>
```

The ESSO proxy plugin passes the target credential's GUID value in the proxied URL to the origin server. If the target application does not function properly due to this value being passed, add the following rewrite rule to the Oracle Traffic Director configuration to strip out the GUID value:

```
<If defined $query and $query =~ "(.*?)(ESSOCredGuid={.*?})(.*)$">

AuthTrans fn="set-variable" set-reqpb="query=$1$3"

</If>
```

47.5 Adding a Federated Partner Provider Application

To add a federated partner provider application to the Access Portal Service application catalog, do the following:

1. Log on to the Oracle Access Manager console.
2. In the **Quick Start Wizards** section of the **Launch Pad** tab, click **Application Registration**.
3. In the page that appears, fill in the fields as follows:
   a. **Vendor** - the vendor of the application.
   b. **Name** - a descriptive name for the application.
   c. **Type** - select **Federated Server Partner Provider Application** from this drop-down menu, as desired.The application will be available to all Access Portal users.
   d. **Description** - a meaningful description of the application for the user.
   e. Reference - internal reference describing the version/variant of the application template.
   f. **Category** - the category under which the application will appear; for example, "Finance," "Development," and so on.
   g. **Reference** - an internal reference for the application template, such as a version number or features that are enabled.

h. **Icon Image URL** - URL to the icon image that will appear next to the application entry. A preview of the image is displayed below the field to confirm the URL is valid.

i. **Logo Image URL** - URL to the full-size application logo image. A preview of the image is displayed below the field to confirm the URL is valid.

j. When you have finished, click **Next**.

4. In the "Configuration" page that appears, do the following:

   a. In the **Partner** field, enter the desired federated partner name. If you don't know the exact name, click the **Search** (magnifier) icon, enter the desired search term in the pop-up that appears, select the desired partner from the list of results, and click **OK** to add that partner to the template.

      If you want to create a new partner, click **Create** and refer to the "Identity Federation" chapter for more information on creating a new federation partner.

   b. In the **Application URL** field, enter the URL to the target application; obtain this URL from your application administrator.

   c. Click **Next**.

5. In the summary page that appears, review your configuration choices. To make changes, click Back; otherwise, click **Finish**.

47.6 Adding an Oracle SSO Agent Application

To add an Oracle SSO Agent application to the Access Portal Service application catalog, do the following:

1. Log on to the Oracle Access Manager console.
2. In the **Quick Start Wizards** section of the **Launch Pad** tab, click **Application Registration**.
3. In the page that appears, fill in the fields as follows:

   a. **Vendor** - the vendor of the application.

   b. **Name** - a descriptive name for the application.

   c. **Type** - select **SSO Agent Application** from this drop-down menu, as desired.The application will be available to all Access Portal users.

   d. **Launch URL** - enter the URL of the target application; obtain this URL from your application administrator.

   e. **Description** - a meaningful description of the application for the user.

   f. Reference - internal reference describing the version/variant of the application template.

   g. **Category** - the category under which the application will appear; for example, "Finance," "Development," and so on.

   h. **Reference** - an internal reference for the application template, such as a version number or features that are enabled.

   i. **Icon Image URL** - URL to the icon image that will appear next to the application entry. A preview of the image is displayed below the field to confirm the URL is valid.

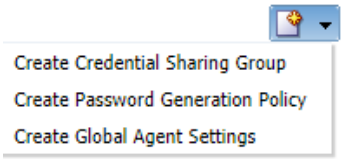
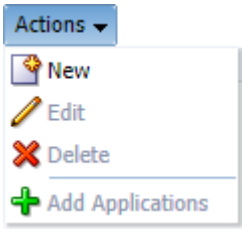
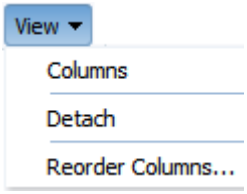
j. **Logo Image URL** - URL to the full-size application logo image. A preview of the image is displayed below the field to confirm the URL is valid.

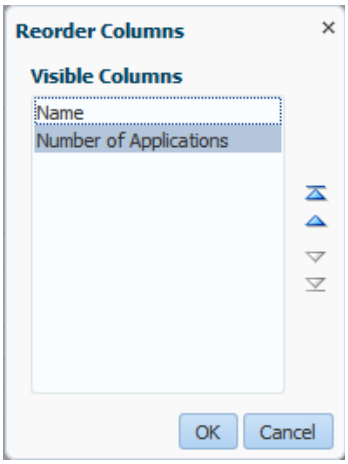
k. When you have finished, click **Next**.

4. In the summary page that appears, review your configuration choices. To make changes, click Back; otherwise, click **Finish**.

47.7 Common Interface Controls

The interface pages of the three features in the **Access Portal Service** group contain several common interface elements and controls. This section reviews these elements.

Icon/Button	Name	Function
	New Element dropdown	Available from the **Access Portal Service** section of the **Oracle Access Management Launch Pad**, this dropdown lets you quickly select which element you want to create from the main screen.
	Credential Sharing Group icon	Indicates this is a Credential Sharing Group page.
	Password Generation Policies icon	Indicates this is a Password Generation Policy page.
	Global Agent Settings icon	Indicates this is a Global Agent Settings page.
	Create button	Available on each element's **Search** page; click to create a new element.
	Actions menu	Offers options to perform the following functions: ▪ Create a new element (Credential Sharing Group, Password Generation Policy, set of Global Agent Settings) ▪ Edit the selected element ▪ Delete the selected element ▪ Add applications to the selected element
	View menu	Allows you to select which columns to view, and in what order. Also offers the option to detach the current tab and open it in a new browser window.

Icon/Button	Name	Function
	Reorder Columns dialog	Select a column from the list and click the up or down arrow to change its position in the **Search Results** list.
	Add icon	Click to add applications to the current element.
	New icon	Click to create a new element of the same type as the page you are currently on.
	Edit icon	Select a line item in the list and click to edit it. Alternatively, you can click directly on the name of the list item to open its configuration page.
	Remove icon	Select a line item in the current list and click to remove that line item from the list.
	Import icon	Available only for Global Agent Settings. Select to locate an INI file with a settings configuration.
	Export icon	Available only for Global Agent Settings. Select to export an INI file with settings you have configured.
	Detach icon	Click to detach the current tab and open it in a new browser window.
	Close icon	Click to close multiple tabs simultaneously.

47.8 Managing Password Generation Policies

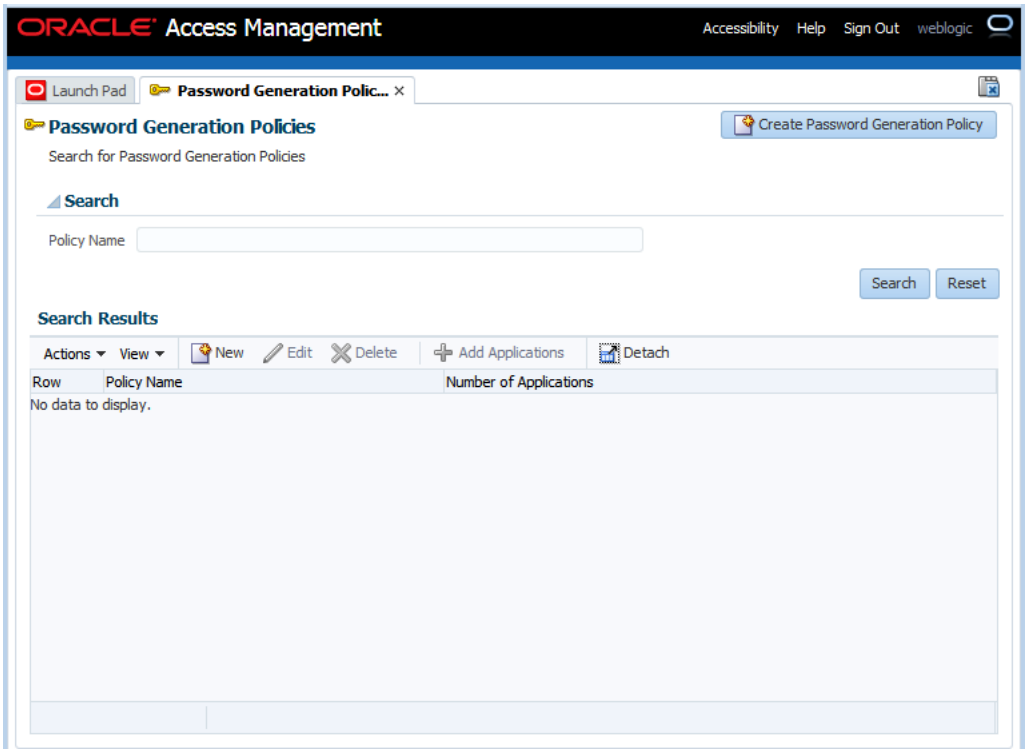
Password policies facilitate user logons while ensuring the organization's security. the Access Portal Service lets administrators set policies that control automatic password generation.

Most applications have constraints for passwords: how long they can or must be, whether they must or must not include numbers or symbols, and so on. the Access Portal Service's password generation feature improves application logon security by automatically creating passwords made up of random characters according to predefined sets of constraints, stored as password policies. Each policy can apply to multiple applications or subscribers.

Using predefined password policies, you can completely automate password changes and implement sophisticated security schemes, including complex passwords and application-specific passwords unknown to users.

From the Launch Pad's **Access Portal Service** group, click **Password Generation Policies**. A new tab containing options to search and create opens.

Figure 47–1 Password Generation Policies Search/Create Tab

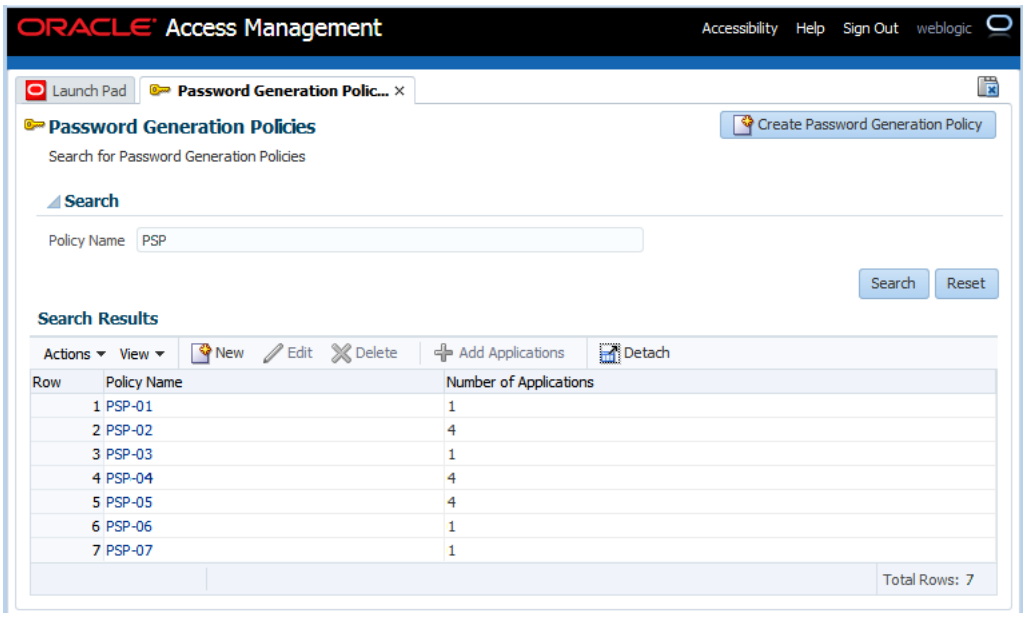


47.8.1 Searching for Password Generation Policies

To search for an existing policy:

1. Enter a name or partial string in the **Name** field, and click the **Search** button. The results appear in the **Search Results** table.
2. Click on any policy in the **Search Results** list to edit the policy configuration. Continue to 3.in the next section to learn more about configuring these settings.

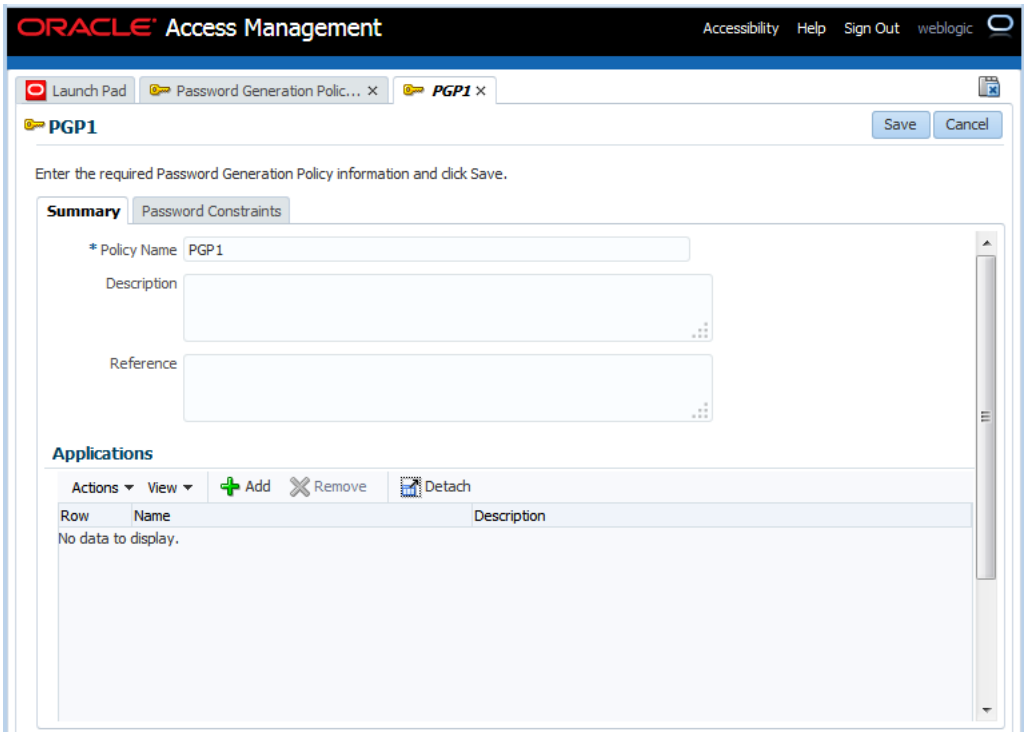
Figure 47–2 Password Generation Policies Search Results



47.8.2 Creating Password Generation Policies

To create a new policy:

Figure 47–3 New Password Generation Policy Summary Tab



1. Click the **Create Password Generation Policy** button to launch the **New Password Policy** page, which contains two tabs:
   - **Summary**

- **Password Constraints**

2. On the **Summary** tab, enter the following information:
   - A distinct name for the policy.
   - (Optional) A meaningful description to identify the policy.
   - (Optional) Internal reference information describing the version/variant of the policy.
3. Click the **Password Constraints** tab.
4. On the **Password Constraints** tab, specify the following:
   - **Length Constraints**
     - The minimum password length. Options are 1-128. Default is 8 characters.
     - The maximum password length. Options are 1-128. Default is 8 characters.
   - **Alphabetic Characters**
     - Check the box to allow uppercase characters. If you check the box, you must specify the minimum number required. Default is 0.
     - Check the box to allow lowercase characters. If you check the box, you must specify the minimum number required. Default is 0.
   - **Special Characters**
     - Check the box to allow non-alphabetical and/or non-numeric characters. If you check the box, you must specify the minimum and maximum number permitted. Default minimum is 0. Default maximum is 8.
     - Check the box(es) to allow a special character to start and/or end a password.
   - **Excluded Characters**
     - Enter a list of specific characters to exclude from a password. Do not use any delimiters.
   - **Repeat Constraints**
     - Enter the maximum number of times a given character can be repeated in a password (in any position). Options are 0-127. Default is 7.
     - Enter the number of times a given character can be repeated consecutively (adjacent to itself). Options are 0-127. Default is 7.
   - **Numeric Characters**
     - Check the box to allow numeric characters. If you check the box, you must specify the minimum and maximum number permitted. Default minimum and maximum is 0.
     - Check the box(es) to allow a numeric character to start and/or end a password.
   - **Other Characters**
     - Check to allow other characters to be included in a password.
   - **Previous Password Constraints**
     - **Disallow use of previous password.** Check the box to prohibit reusing the previous password entirely.

- **Limit use of previous password characters.** Select to limit repetition of characters from the previous password.
- **Maximum previous password characters.** If you checked the previous box to permit usage of some previous password characters, select the maximum number of characters to allow.

Note: The Access Portal Service recognizes multiple occurrences of a character as the same character and will therefore permit more than one occurrence of that character in the new password.

So, if the previous password contained three "A"s, and you specify that one character from the previous password can repeat, the Access Portal Service will allow more than one instance of "A" in the new password.

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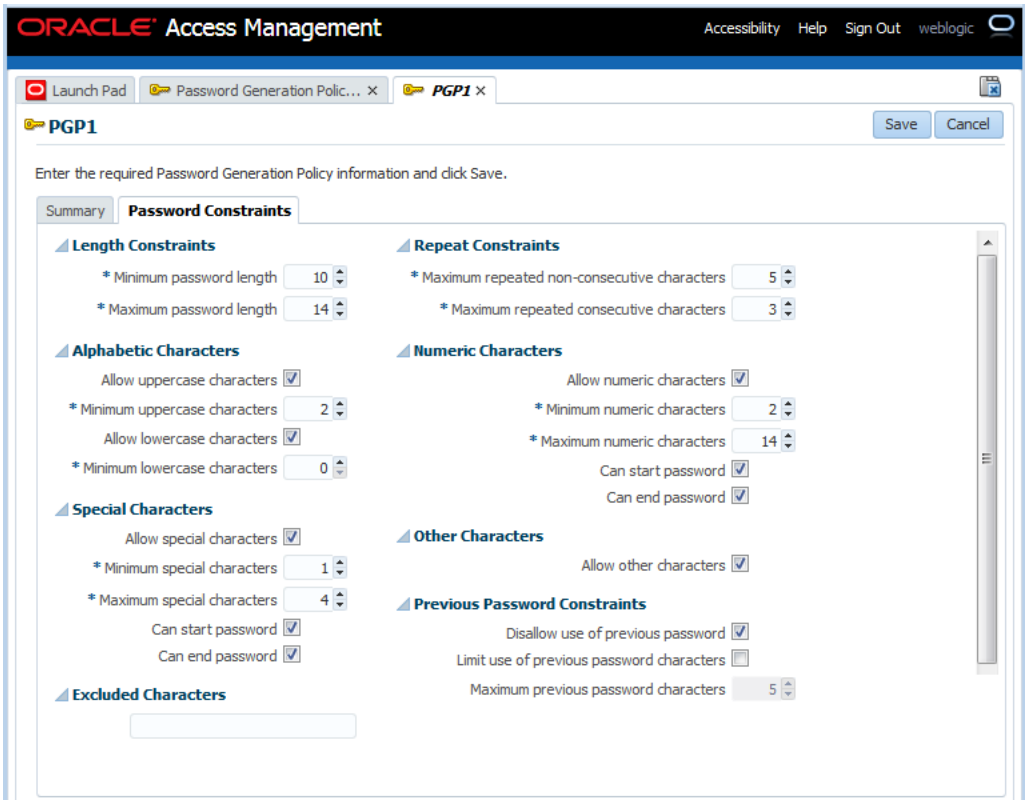
5. Click **Save** to complete policy configuration, or **Cancel** to close the tab without saving the policy.

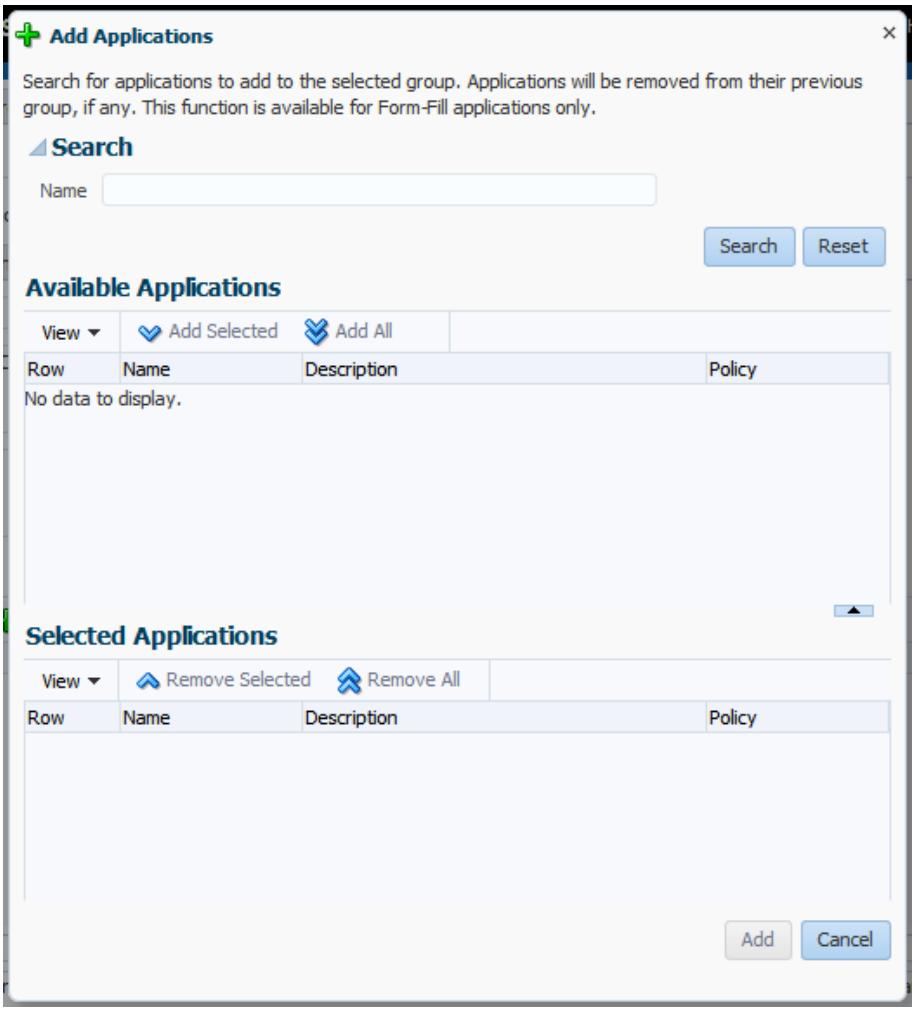
Figure 47–4 Password Constraints Tab of a Password Generation Policy



47.8.3 Managing Policy Subscribers

Applications that use a password generation policy are called subscribers. You can add subscribers during creation of the policy or at any time thereafter. Following is the procedure to add subscribers to a policy.

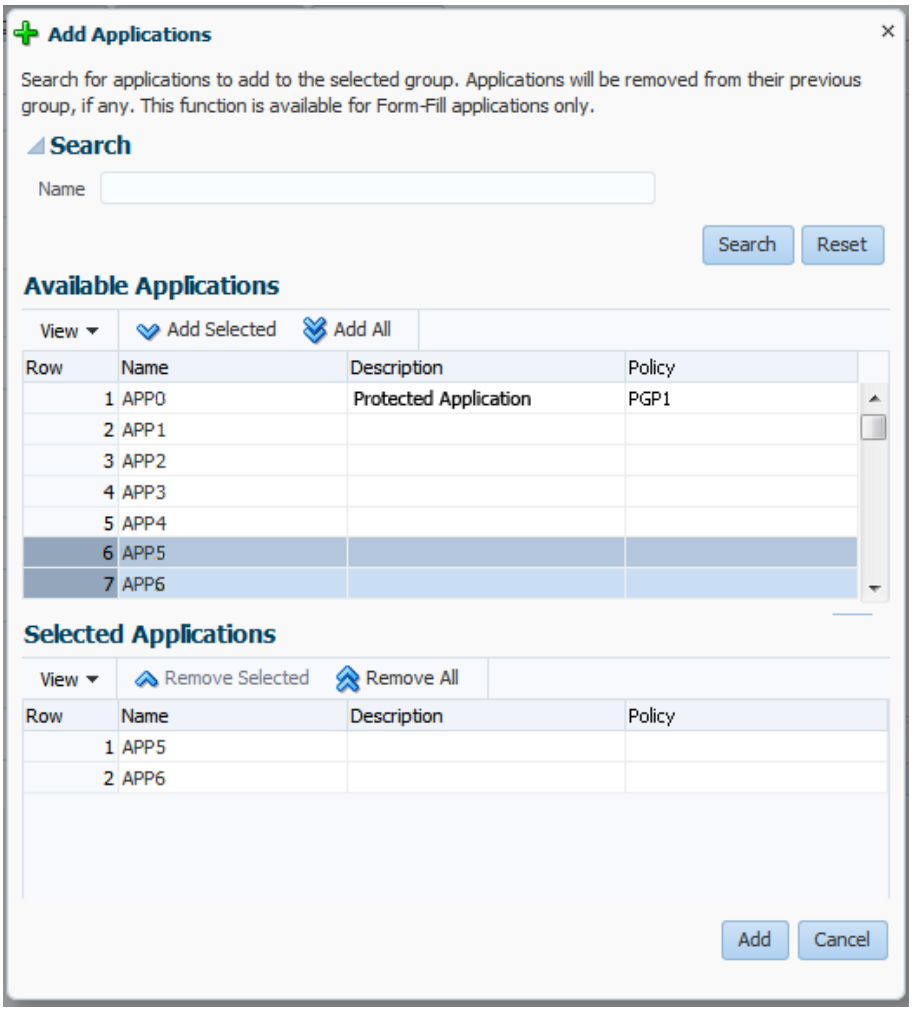
Figure 47–5 Add Applications Dialog



1. On the Password Generation Policy **Summary** page, click the **Add** icon. The **Add Applications** dialog appears.
2. In the **Name** field, enter a name or text string and click **Search**. You can also leave this field blank to return every available application.
3. After a search, all applications that fit your search criteria appear in the **Available Applications** list. For each application, the list includes any policy to which it subscribes.
4. Select one or more applications from the **Available Applications** list, and click **Add Selected**. Or simply click **Add All** to add every application returned by the search.

   If you select an application that is already a subscriber to another policy, it will no longer be subcribed to the other policy.
5. Click **Add** when you are finished, or **Cancel** to dismiss the dialog without making changes.

Figure 47–6 Add Applications Dialog Search Results



47.9 Managing Credential Sharing Groups

Credential sharing groups are sets of applications that share the information of one or more fields to facilitate account management, allowing users to apply a credential change made in one application to other specified applications automatically. For each group that you create, you can include any number of applications and designate which credentials they have in common.

When the Access Portal Service handles a credential change for any application that is a member of the sharing group, it automatically applies the credential change to all other group members. Any number or combination of applications can share a single credential. You can also designate a key field; that is, a field that the Access Portal Service uses when updating shared credentials, changing credentials only for accounts with the same key value.

Note: Applications will share credentials only for their initial deployment unless you enable credential sharing groups.

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the Access Portal Service provides flexibility and granularity for you to control how credential sharing groups work. You can configure the following options:

- Sharing any or all fields for a group of applications:
- Pre-filling all shared fields when a user first encounters an application in a sharing group, thus requiring the user to enter information only for fields that are not shared by the group.
- Automatically creating an account when a user encounters an application for which all credentials are pre-determined.
- Designating a key field; that is, a field that the Administrative Console uses when updating shared credentials, changing credentials only for accounts with the same key value.

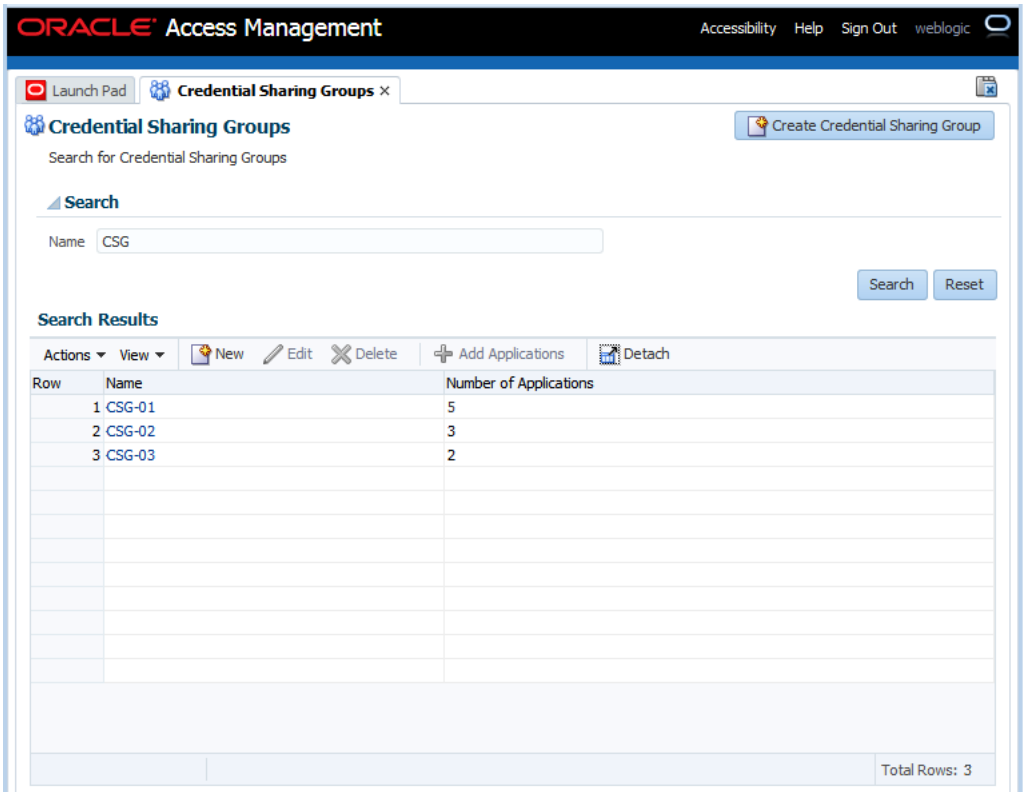
The next sections describe how to create new groups or edit existing ones. After you create a group, the process for configuring it is the same as editing an existing one.

47.9.1 Searching for Credential Sharing Groups

To search for an existing group:

1. Enter a name or partial string in the **Name** field, and click the **Search** button. The results appear in the **Search Results** table.
2. Click on any group in the **Search Results** list to edit its configuration. Continue to 3.in the next section to learn more about configuring these settings.

Figure 47–7 Credential Sharing Groups Search Results



47.9.2 Creating Credential Sharing Groups

To create a new group:

1. Click the **Create Credential Sharing Group** button to launch the **New Credential Sharing Group** page.
2. In the **Name** field, enter a name for the group. Optionally, you can add a description and reference information in the fields at the bottom of this section.
3. In the **Shared credentials** settings, select which credentials the group will share. You can include any or all fields:
   - Username
   - Password
   - Third Field
   - Fourth Field
4. From the **Key Credential within group** dropdown, select a field. The key credential field provides more granular criteria for updating shared credentials within a group. When a credential changes, updates will only occur for members that share the key field. to update shared credentials only for accounts that share this field value.s only for accounts that share this field value.:

   If the user wants to create an account that is not constrained by the key field, that account must have a new key field to avoid updating all existing accounts.

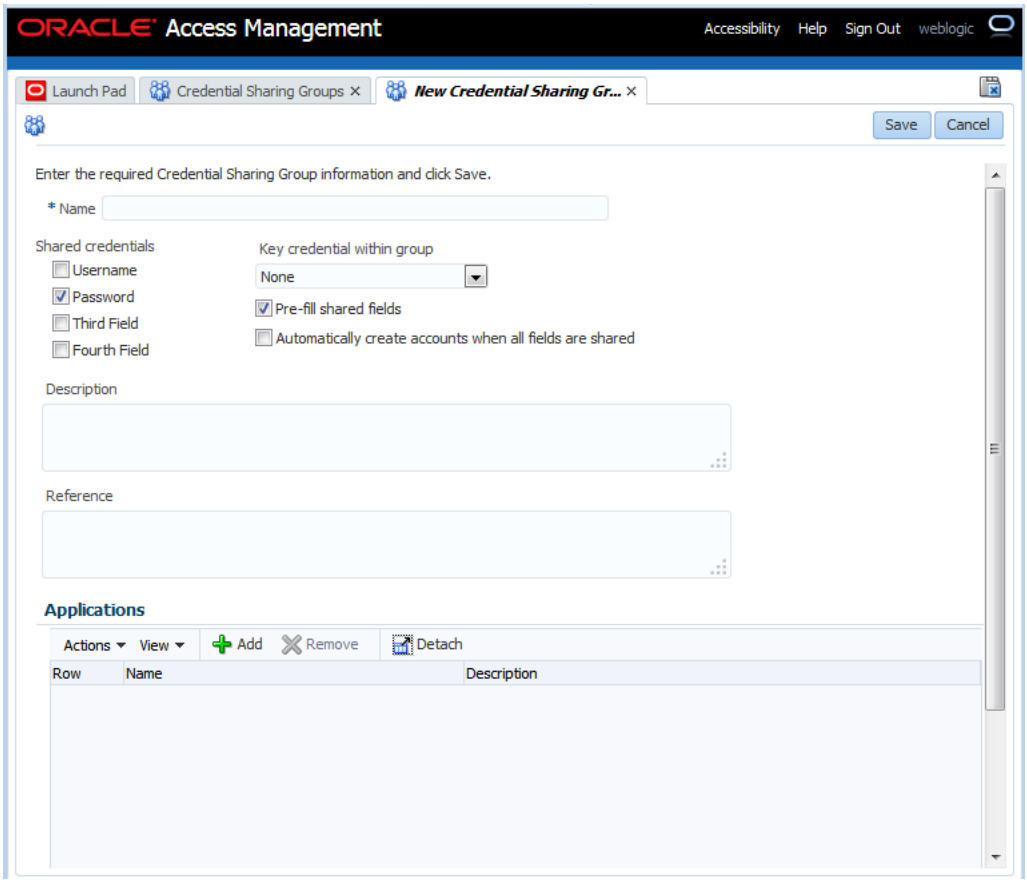
   Choose one of the following from the dropdown:

   - None (Default)
   - Username
   - Third Field
   - Fourth Field
5. If desired, select to pre-fill shared fields. This specifies that shared fields will be pre-populated with the shared credentials when the user creates a new account for an application. By default, this option is enabled.
6. If desired, select to automatically create accounts when all credentials are known. This means that the Access Portal Service will create an account automatically when the user encounters an application that has all fields pre-determined.

   Note: This field is available only if **Key credential within group** is set to **None**.

7. Click **Save** to complete policy configuration, or **Cancel** to close the tab without saving the group.

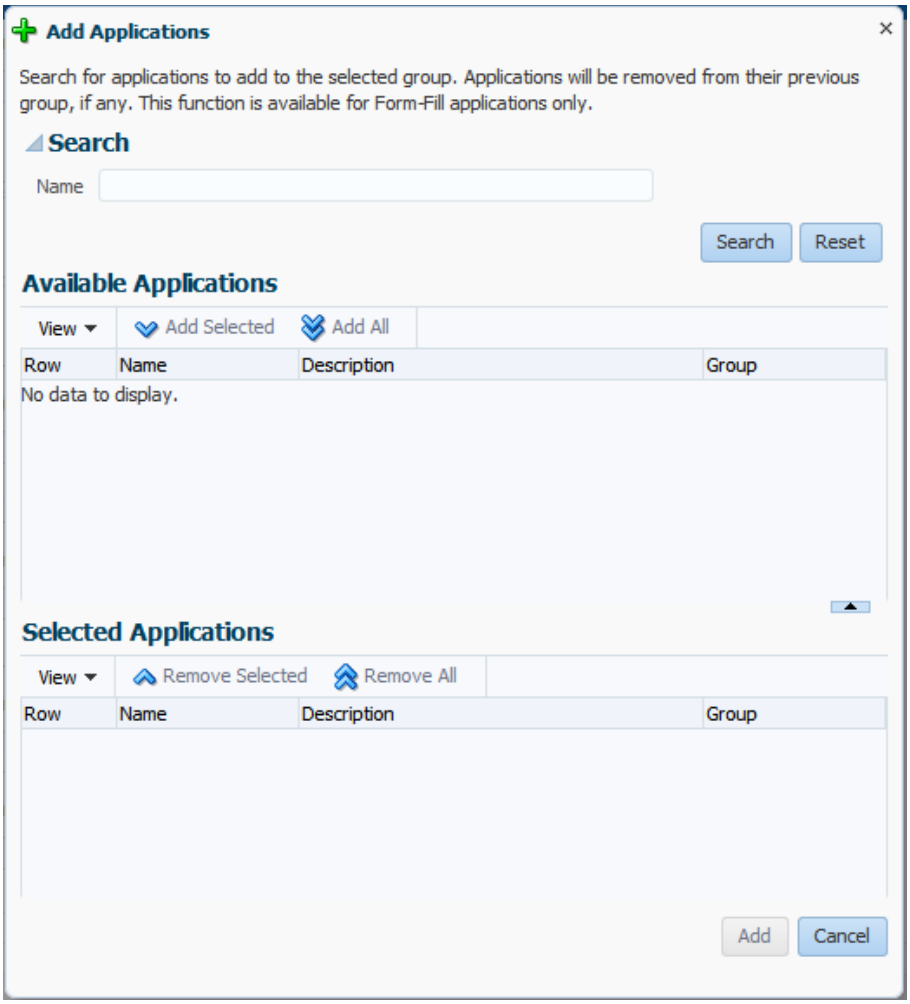
Figure 47–8 New Credential Sharing Group Page



47.9.3 Managing Applications in Credential Sharing Groups

You can add applications to a group during creation of the group or at any time thereafter. Following is the procedure to add applications to a group.

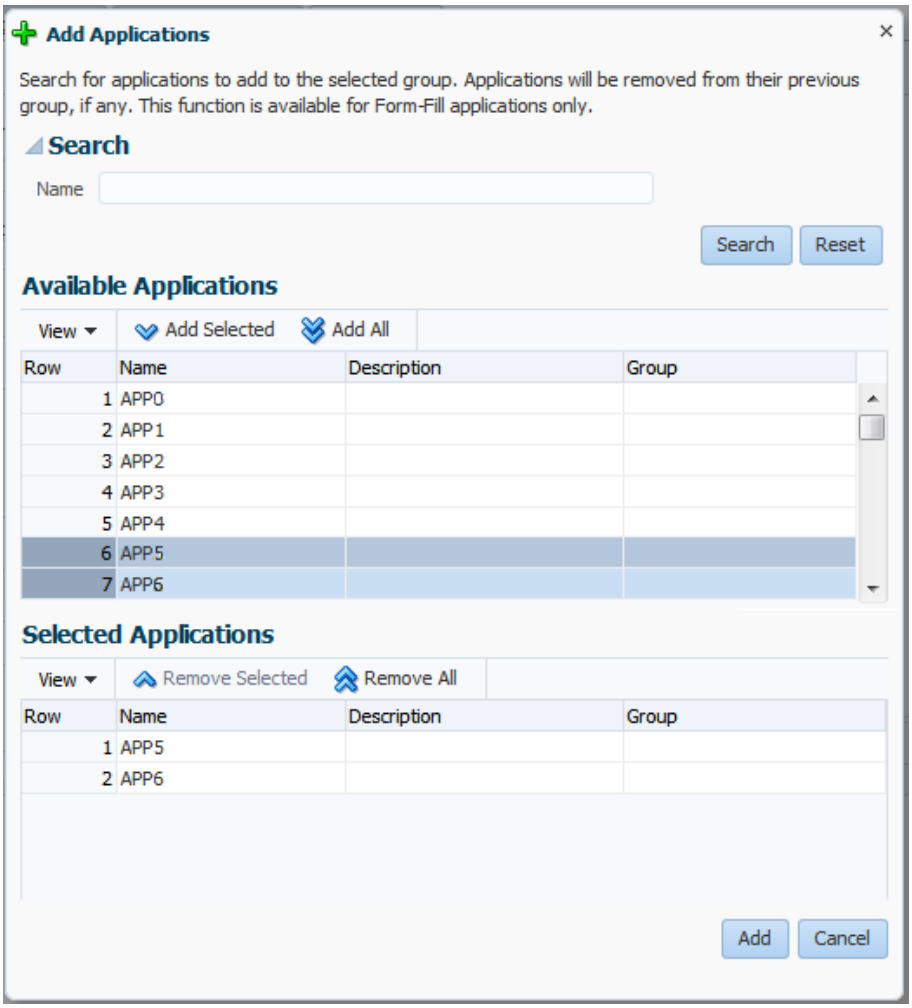
Figure 47–9 Add Applications Dialog



1. In the Applications section of the group page, click the **Add** icon. The **Add Applications** dialog appears.
2. In the **Name** field, enter a name or text string and click **Search**. You can also leave this field blank to return every available application.
3. After a search, all applications that fit your search criteria appear in the **Available Applications** list. For each application, the list includes any credential sharing group to which it belongs.
4. Select one or more applications from the **Available Applications** list, and click **Add Selected**. Or simply click **Add All** to add every application returned by the search.

   If you select an application that is already a member of another group, it will no longer be part of that group.
5. Click **Add** when you are finished, or **Cancel** to dismiss the dialog without making changes.

Figure 47–10 Add Applications Dialog Search Results



47.10 Managing Global Agent Settings

Global Agent Settings determine single sign-on behavior when users encounter password-protected applications. With these settings you specify what the user sees and is allowed to do when navigating to an application.

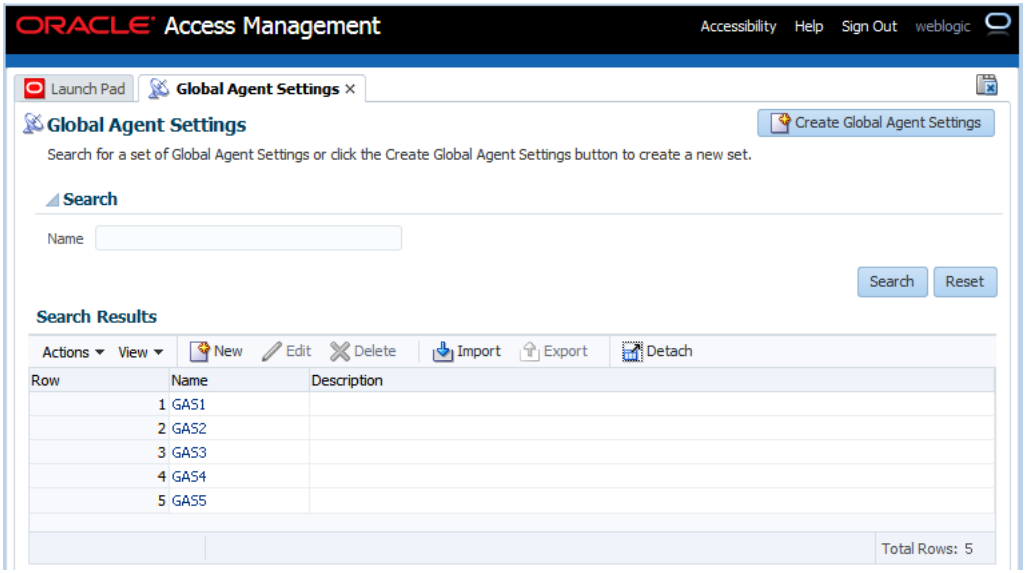
The next sections describe how to create new sets of Global Agent Settings or edit existing sets. You can use existing sets created in the the Access Portal Service, or import preconfigured settings in the format of INI files. After you create a set, the process for configuring it is the same as that for editing an existing one.

47.10.1 Searching for Sets of Global Agent Settings

To search for an existing set:

1. Enter a name or partial string in the **Name** field, and click the **Search** button. The results appear in the **Search Results** table.
2. Click on any group in the **Search Results** list to edit its configuration. Continue to 3.in Creating a Set of Global Agent Settings to learn more about configuring these settings.

Figure 47–11 Global Agent Settings Search Results

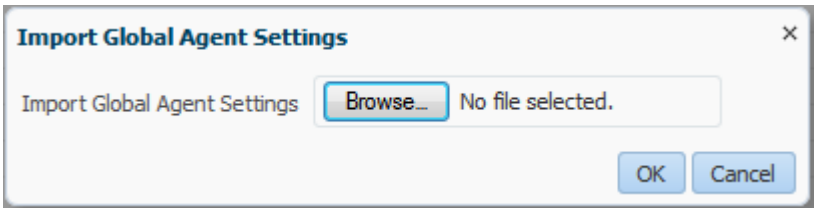


47.10.2 Importing an INI File with a Global Agent Settings Configuration

To import an INI file:

1. Click the **Import** icon to launch the **Import Global Agent Settings** dialog, and click the **Browse** button.
2. Navigate to an existing INI file, select it and click **Open**. Then click the **Update** button. The Global Agent Settings' configuration page opens. Continue to 3.in Creating a Set of Global Agent Settings to learn more about configuring these settings

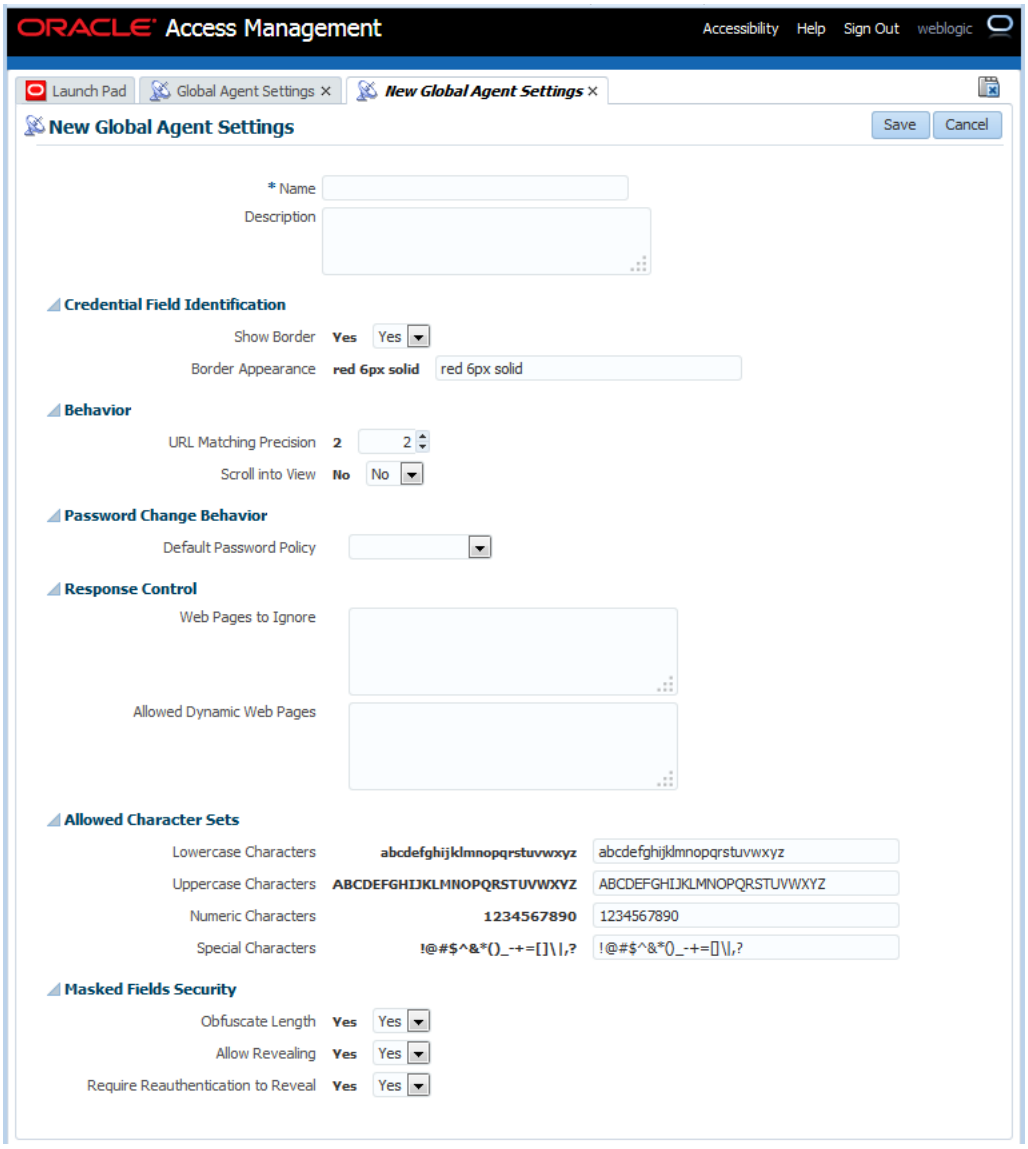
Figure 47–12 Import Global Agent Settings Dialog



47.10.3 Creating a Set of Global Agent Settings

To create a new set:

Figure 47–13 New Global Agent Settings Page



1. Click the **Create Global Agent Settings** button to launch the Create Global Agent Settings page.
2. In the **Name** field, enter a name for the group. Optionally, you can add a description of this set.
3. In the **Credential Field Identification** settings, specify the following:
   - Whether to display a highlighted border around the credential fields of an application during logon. The default is to show the border.
   - The default border color/size/style for highlighting detected web page fields. The default is a solid red border, six pixels in width.

     Following is an example of the results of using the default settings for this group.

4. In the **Behavior** settings, specify the following:
   - **URL Matching Precision.** The number of levels of the host portion of the URL used for application detection and response. Default is 2.

     For example, for the URL `http://mail.company.co.uk`:

     2=match to `*.co.uk`

     3=match to `*.company.co.uk`

     4=match to `*.mail.company.co.uk`

     Note: Values less than 2 are treated as 2.

   - **Scroll into View.** Enables or disables scrolling the browser window to bring the logon fields into view. Default is No.

     This setting disables scrolling when the user has not yet stored credentials for a Web application. Scrolling always occurs when injecting credentials into the logon fields for an account that already exists.
5. In the **Password Change Behavior** settings, select a **Default Password Policy** from the dropdown list, if desired. Default is None.
6. In the **Response Control** settings:
   - Enter the list of **Web pages to Ignore**. This is typically used when the BHO causes conflicts with specific Web applications or sites. Click the ellipsis ("**…**") button to enter the regular expressions that match the URLs to be ignored (one per line).

     Examples:

     – `.*http://login\.company\.com/.*`

     – `.*http://.*\.company\.com/.*`
   - Enter the list of **Allowed Dynamic Web Pages.** Use this setting to list the permissible dynamic (DHTML) Web pages. By default, the BHO does not detect changes made to a dynamic page after the initial presentation of the page.

     Examples:

     – `.*http://login\.company\.com/.*`

     – `.*http://.*\.company\.com/.*`
7. In the **Allowed Character Sets** settings, enter the permissible characters for each of the four types of fields. The fields are pre-populated with the defaults for each character set.
8. In the **Masked Fields Security** settings, specify the following.
   - **Obfuscate Length.** Specifies whether to display encrypted fields with a string of blank characters different from the length of the obfuscated data. Default is Yes.

- **Allow Revealing.** Specifies whether the user is permitted to reveal masked fields. Default is Yes.
- **Require Reauthentication to Reveal.** Specifies whether the user must enter the Access Portal Service credentials in order to reveal masked fields, assuming that you have set **Allow revealing** to **Yes**. Default is Yes.

9. Click **Save** to complete global agent setting configuration, or **Cancel** to close the tab without saving the set.

Part XII

Using Identity Context

This part introduces Oracle Identity Context.

Part X contains the following chapters:

48

Using Identity Context

Identity Context allows organizations to meet growing security threats by leveraging the context-aware policy management and authorization capabilities built into the Oracle Access Management platform. Identity Context secures access to resources using traditional security controls (such as roles and groups) as well as dynamic data established during authentication and authorization (such as authentication strength, risk levels, device trust and the like). The following sections contain additional information on Identity Context and how to use it.

48.1 Introducing Identity Context

Over the last decade, changes have been made to enterprise application infrastructures in order to web-enable the business applications that these infrastructures support. The changes allow for access by a greater number of users using different types of devices. To compensate for the additional risk associated with the greater number of users, the underlying security models used for access management have evolved from a silo-based implementation to a more dynamic one in which identity and risk data is shared across components of the entire application delivery process. This dynamic implementation relies on systems that offer Web single sign-on (SSO), fine-grained authorization, Web Services Security, Identity Federation and the like to aggregate security controls within a particular run-time deployment environment (web server or application server container) and provide policy-based security controls to manage access to application resources. Additionally, the identity and risk data provides a context for the user who is requesting access.

Initially, application security controls focused on unifying silos within a specific enterprise application deployment paradigm (for example, all web server applications, all web services applications, or all application server applications) but a growing presence of external and internal security threats now requires the unification of disparate security models in order to properly manage the greater amount of risk.

This requirement is further magnified by the advent of the cloud and mobile computing paradigm in which applications are no longer made up of components running neatly in the protected confines of a secure enterprise.

The ability of applications to leverage cloud services comes at the cost of having to account for the greater amount of risk stemming from those services being silos in their own way. With the number of threats to cloud deployments and mobile delivery channels growing steadily, it is required for the end-to-end application delivery process to implement the necessary policy controls for dealing with the greater range of threats. These policy controls require access to information about the requesting user on the basis of which security decisions must be made. Thus, a security policy management infrastructure must be context-aware to allow for an Administrator to create policy that controls the level of security imposed on a user who is requesting access to a protected application environment.

Previously, Identity Context was defined by the presence of an identity record in one or more identity stores (such as an LDAP directory or a SQL database). The identity record includes profile attributes, groups of which the user is a member, and enterprise roles. However, the constantly expanding reach of web, cloud, and mobile application delivery channels requires authorization policy controls that are aware of more dynamic information regarding the identity. This information is associated with the identity attempting to access the protected resource and may include some or all of the following:

- Presence (location, historical patterns)
- Authentication strength (weak, strong)
- Level of Assurance (NIST levels, X509 certificates)
- Risk Assessment (pattern analysis)
- Federation (partner attributes)
- Device characteristics (fingerprint, device health, device protection, trusted data)
- Assertions from trusted partners (SAML tokens, etc.)
- Single Sign On sessions (session time outs)

The following examples illustrate how Identity Context data might be used by an application. The application might:

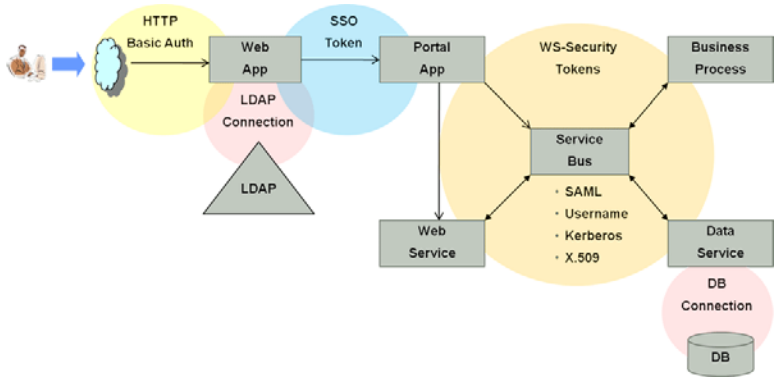
- Disable a particular business function if the user is not authenticated using a strong credential such as smart card.
- Secure access to a transaction based on the identity data supplied by a business partner (via Identity Federation) with whom the organization does business.
- Request additional authentication credentials if it detects that access is originating from a location known for fraudulent activities.
- Limit the scope of administrative authority if the Administrator's industry certification (as maintained by a third party) has expired.
- Disable certain business functions if it detects that access is originating from an unknown device.

By incorporating the concept of Identity Context into access management, control can now be determined using dynamic data that is not necessarily contained in an identity profile (referred to as Identity Context attributes). In short, Identity Context is considered the environment and circumstances surrounding a user's request to access a particular protected resource. It can be a sphere of activity, a geographical region, a communication platform, an application, or a logical or physical domain.

48.2 Understanding Identity Context

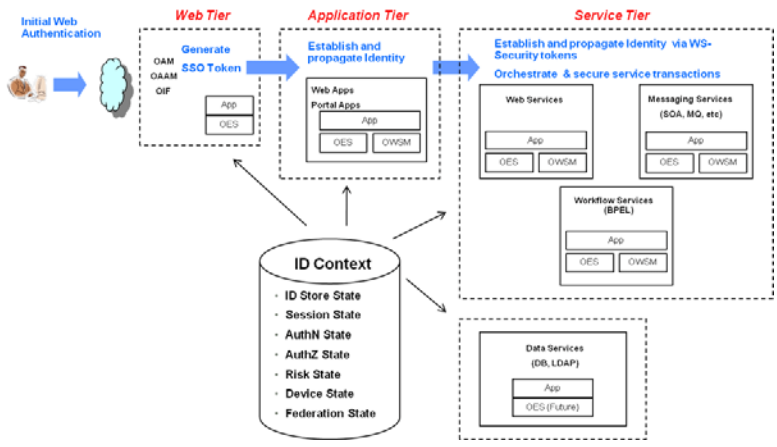
With this release, Access Manager enables context-aware access management by incorporating Identity Context as a built-in service of the Oracle Access Management platform. Figure 48–1 illustrates the flow of the Identity Context process, implemented by multiple system components. Each application delivery component has its own security policy infrastructure responsible for protecting its individual slice of the application. This specific use case involves the end user device, a Web Server running static GUI pages, an Application Server running the Portal Server rendering dynamic content, a Service Bus Server exposing the Web service endpoint, a database server containing transactional data, and an LDAP server containing identity profile data.

Figure 48–1 End to End Identity Context Process



Each component of the process has its own security infrastructure where the authorization policies governing access to protected resources are defined administratively and enforced at runtime. Additionally, some or all of the components may have externalized policy management to an external authorization server such as Oracle Entitlements Server - which is the case if the applications were built leveraging Oracle Platform Security Services. Figure 48–2 illustrates the functional architecture of Identity Context based on the Oracle applications of which it is comprised.

Figure 48–2 End To End Identity Context Process Components



As seen in the illustrations, context-aware security policy management is achieved by leveraging the Oracle Access Management platform. This platform contains native

support for working with and enforcing Identity Context attributes (including risk score, trusted device data, authentication data, and the like) without changing end-user applications.

48.3 Working With the Identity Context Service

The Oracle Access Management platform enables Identity Context data to be collected, propagated across the involved components (as defined in Figure 48–2), and made available for granting or denying authorization to access protected resources. The Identity Context Service allows access to the Identity Context Runtime through the Identity Context API. The Identity Context Dictionary schema specifies the Identity Context attributes. The following sections contain more information on these components.

- Using the Identity Context Dictionary
- Understanding Identity Context Runtime

48.3.1 Using the Identity Context Dictionary

At the core of the Identity Context architecture is the Identity Context Dictionary. The dictionary defines the Identity Context schema by specifying the identity context attributes as defined by the Oracle Access Management platform. The Schema describes each attribute with a unique name that equals *namespace* : *attribute*. Table 48–1 documents the Schema attributes.

Note: Virtual attributes (as documented in Table 48–1) represent an abstract class of identity information from which specific attributes are created. When publishing virtual attributes, the Identity Context API expects the attribute value to contain *attr-name=attr-value*. The actual attribute will be created using the name *namespace* : *attribute* : attr-name and a value of *attr-value*. This approach allows the publication of attributes whose value comes from a source not directly managed by the Oracle Access Management components.

Table 48–1 Identity Context Schema Attributes

Namespace	Attribute	Type	Virtual	Primary Publisher	Description
oracle:idm:claims:nameid	value	string	no	OAM	Indicates a unique user identifier. Access Manager currently publishes User DN
oracle:idm:claims:nameid	format	string	no	OAM	Indicates the type of user identifier. Access Manager currently publishes "urn:oasis:names:tc:SAML:1.1:nameid-format:x509SubjectName"
oracle:idm:claims:nameid	qualifier	string	no	OAM	Indicates a logical Identity Domain to whom the user belongs. Access Manager currently publishes a logical name of the identity store, such as UserIdentityStore1.

Table 48–1 (Cont.) Identity Context Schema Attributes

Namespace	Attribute	Type	Virtual	Primary Publisher	Description
oracle:idm:claims:nameid	spprovidedid	string	no	OAM	Indicates unique identifier that can be used by any SP to locate the user in SP's own identity store(s). Access Manager currently publishes the value of the unique id attribute as configured in a registered identity store.
oracle:idm:claims:client	firewallenabled	boolean	no	OESSO	Indicates client device has firewall enabled.
oracle:idm:claims:client	antivirusenabled	boolean	no	OESSO	Indicates client device has antivirus enabled.
oracle:idm:claims:client	fingerprint	string	no	OESSO, Oracle Access Management Mobile and Social (OMS)	Indicates fingerprint of the client device.
oracle:idm:claims:client	ostype	string	no	OMS	Indicates client device's Operating System type.
oracle:idm:claims:client	osversion	string	no	OMS	Indicates client device's operating system version.
oracle:idm:claims:client	jailbroken	boolean	no	OMS	Indicates if client device is Jailbroken (iOS) or Rooted (Android).
oracle:idm:claims:client	macaddress	string	no	OMS	Indicates client device's Ethernet (MAC) Address.
oracle:idm:claims:client	ipaddress	string	no	OMS	Indicates client device's Client IP Address.
oracle:idm:claims:client	vpnenabled	boolean	no	OMS	Indicates if client's device has VPN enabled.
oracle:idm:claims:client	geolocation	string	no	OMS	Indicates client device location's geographical coordinates in the form of *"latitude,longitude*.
oracle:idm:claims:risk	newdevice	boolean	no	OAAM	Indicates if the client device has been seen before. True when logging in from a device never seen before; otherwise, false.
oracle:idm:claims:risk	level	integer	no	OAAM	Indicates risk level. Level increases after unsuccessful logins.
oracle:idm:claims:risk	safeforuser	boolean	no	OAAM	Indicates if the user answered a secondary challenge question. True after the user successfully answers it; otherwise false.
oracle:idm:claims:risk	fingerprint	string	no	OAAM	Indicates device fingerprint as measured by OAAM. Different devices will leave different fingerprints; can be switched between device (obtained via Flash) fingerprint and browser (http-only) fingerprint
oracle:idm:claims:session	authnlevel	integer	no	OAM	Indicates authentication level for Access Manager
oracle:idm:claims:session	usercount	integer	no	OAM	Indicates number of sessions held by the users

Table 48–1 (Cont.) Identity Context Schema Attributes

Namespace	Attribute	Type	Virtual	Primary Publisher	Description
oracle:idm:claims:session	appdomain	string	no	OAM	Indicates name of the Access Manager Application Domain containing policies
oracle:idm:claims:session	apppolicy	string	no	OAM	Indicates name of the Access Manager policy that allowed access
oracle:idm:claims:session	appagent	string	no	OAM	Indicates the name of the agent from which the request came to Access Manager
oracle:idm:claims:session	appclientip	string	no	OAM	Indicates the IP address of the client sending the request to Access Manager
oracle:idm:claims:session	sessionid	string	no	OAM	Indicates the Access Manager session ID
oracle:idm:claims:session	attributes	string	yes	OAM	Indicates session attributes as retrieved from the session store. For example, in Access Manager, select "oracle:idm:claims:session:attributes" as the claim name and then specify the session attribute using the following notation: "*attr-name*=$session.attr.*name* where *name* is the name of the attribute stored in the session. The claim will be created with the name of "oracle:idm:claims:session:attributes:*attr-name*" and value equal to session's *name* attribute.
oracle:idm:claims:fed	partner	string	no	OAM--or IF?	Indicates partner ID as determined by Identity Federation
oracle:idm:claims:fed	nameidvalue	string	no	OAM--or IF?	Indicates user ID from a federation partner as determined by Identity Federation
oracle:idm:claims:fed	nameidformat	string	no	OAM--or IF?	Indicates format of the user ID from a federation partner as determined by Identity Federation
oracle:idm:claims:fed	attributes	string	yes	OAM	Indicates federation attribute as supplied by the partner and determined by Identity Federation. For example, in Access Manager, select "oracle:idm:claims:fed:attributes" as the claim name and then specify the federation attribute using the following notation: "*attr-name*=$session.attr.fed.attr.*name*, where *name* is the name of the SAML attribute in the partner's SAML assertion. The claim will be created with the name of "oracle:idm:claims:fed:attributes:*attr-name*" and value equal to the partner's assertion provided in the SAML's *name* attribute.

Table 48–1 (Cont.) Identity Context Schema Attributes

Namespace	Attribute	Type	Virtual	Primary Publisher	Description
oracle:idm:claims:ids	attributes	string	yes	OAM	For example, in Access Manager, select "oracle:idm:claims:ids:attributes" as the claim name, and then specify the ID Store attribute using the following notation: "*attr-name*=$user.attr.*name* where *name* is the name of the attribute on the user profile. The claim will be created with the name of "oracle:idm:claims:ids:attributes:*attr-name*" and value equal to user profile's *name* attribute.
oracle:idm:claims:tenantid	tenantid	string	no	OAM	Currently reserved for future use. (Indicates tenant id.)
oracle:idm:claims:tenant	attributes	string	yes	OAM	Currently reserved for future use. (Indicates tenant attributes as supplied by the Publisher. The claim value is meant to contain "*attr-name=attr-value*". The claim will be created with the name of "oracle.idm:claims:tenant:*attr-name*" and value of *attr-value*.)

48.3.2 Understanding Identity Context Runtime

Identity Context Runtime refers to a collection of Identity Context attributes (as defined in the Identity Context Dictionary) that is asserted by various trusted application components and/or security frameworks known to be authoritative for the attributes; this is the Oracle Access Management platform. Runtime context represents current surroundings, circumstances, environment, background, or settings which determine, specify, or clarify the meaning of an event for an identity in the runtime application environment.

The Oracle Access Management platform leverages a common infrastructure component called the Context Management Engine (CME). CME ensures that an Identity Context is generated for every transaction that is processed through the Oracle Access Management platform. The context data gathered by CME applies to transactions a user performs over the web channel or web service channel and using many of the software products available in the Oracle Access Management platform. Some transactions that are initiated on the back end may also require access to Identity Context, and may require Identity Context to be persisted for some duration of time.

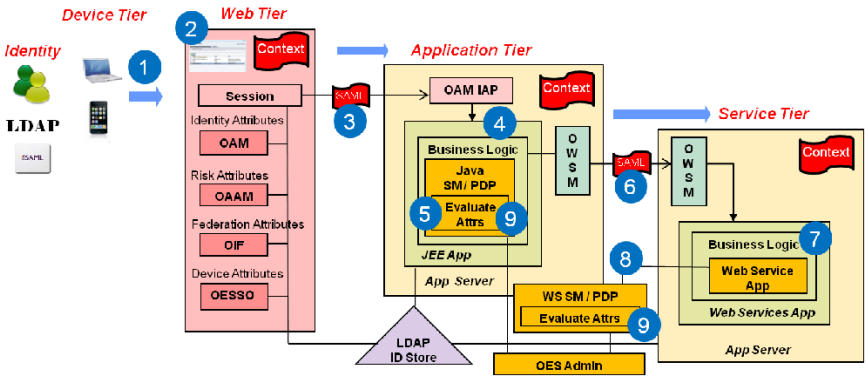
In a typical Oracle middleware deployment the Identity Context Runtime will be utilized primarily by the Oracle Access Management platform to perform policy-based decisions on behalf of protected applications. However, it is also possible for any applications running in the container to directly integrate with, and consume, the Identity Context Runtime by leveraging the Identity Context API. The amount of available Identity Context data will vary depending on what products have been deployed. There will be a default set of Identity Attributes that will be available out-of the box, which are mainly configured in the Access Manager by leveraging the Identity Assertion. Table 48–1, " Identity Context Schema Attributes" documents these default attributes. The following list provides details on the end-to-end flow of the Identity Context Runtime. Figure 48–3 below the list illustrates the flow.

Process overview: End-to-end flow of the Identity Context Runtime

1. User accesses a protected application from a device.

2. Access Manager asserts the identity, collects Identity Attributes from the participating Access Management publishing components and creates an Identity Context.
3. Access Manager generates an Identity Assertion (a SAML Session token) and incorporates the Identity Context attributes. The Access Manager Identity Asserter processes the Identity Assertion and publishes the Identity Context to the WebLogic Server container using the OPSS Attribute Service.
4. The protected application calls the OES PEP API to make an authorization decision. OES automatically propagates the Identity Context to the local OES PDP.
5. OES finds the appropriate Authorization Policy and evaluates it's Conditions (based on the Identity Context attributes). Evaluation can be done using a built-in Identity Context function or a custom function.
6. The protected application makes a JRF web service call in which the Oracle Web Service Manager (OWSM) client uses the SAML token to propagate Identity Context into the Web Service application environment.
7. OWSM (on the web service side) processes the SAML assertion with the Identity Context and publishes the Identity Context to the WebLogic Server container by using the OPSS Attribute Service.
8. Web Service application calls OES PEP API to make an authorization decision.
9. OES automatically propagates Identity Context to the remote OES PDP where conditions based on Identity Context attributes are evaluated using a built-in Identity Context function or a custom function.

Figure 48–3 Identity Context Process Flow



Once CME propagates Identity Context into the application tier and underlying Application Server container, the Identity Context is then made available to the container and applications running in it. Table 48–2 documents which Access Management platform products do what when working with Identity Context.

Table 48–2 Mapping Identity Context Operations

Role and Context Operation	Description	Components
Publisher - publishes Identity Context	Trusted security framework protecting an application component obtains from another trusted security framework, or derives from the information available to it, suitable facts about the identity and/or identity's access request. The information collected by the authoritative component is based on the environmental context available to component's runtime framework. For example, Access Manager determines the user's level of authentication strength, OAAM computes the risk score associated with a specific online session, and OESSO determines whether or not the client device has a firewall enabled.	▪ OAM – Session, Federation, and identity store attributes ▪ OAAM – Risk attributes ▪ OESSO – Device attributes ▪ OMS Mobile SDK - Device attributes
Propagator - propagates Identity Context	Trusted security framework propagates Identity Context attributes for use by another application security framework or directly by the application. For example, OAAM propagates user's risk score into the Access Manager session for the user, Access Manager propagates Identity Assertion (SAML token) for with the authenticated user's unique id and authentication level, and OWSM client propagates the current Identity Context over to the web service where OWSM agent will rebuild Identity Context in the web service application.	▪ OAM is between Web tier and container tier ▪ OWSM is between web service client tier and web service tier ▪ OPSS is between Access Manager Identity Asserter or OWSM agent and WebLogic Server container ▪ OMS is between the OMS Mobile SDK and Access Manager
Evaluators - evaluate Identity Context	Trusted security framework or end-user application using Identity Context attributes to perform policy decisions or personalize application business logic. For example, when OAAM is present and configured to compute the risk score, the application's authorization policy in OES allows access only when the risk score is under a certain threshold. Also, when Identity Federation in Access Manager is configured, the application uses a partner-supplied assertion (available in the Identity Context) to authorize access to a transaction using OES.	▪ OAM – Web Perimeter Policy ▪ OWSM – Web Service policy ▪ OES – App-specific or WLS-specific policy for all PEP API calls made from the container where Identity Context exists. This includes all ADF apps, IAM apps, custom apps, etc.

48.4 Using the Identity Context API

The Identity Context API is a set of Java classes designed to work with the Identity Context Dictionary and Identity Context Runtime. The API is delivered as `IdentityContext.jar`, a part of Oracle Java Required Files (JRF). Example 48–1 illustrates an application working with Identity Context Dictionary.

Example 48–1 Working with Identity Context Dictionary

```
// Display Identity Context Dictionary
try {
  ClaimDictionary idCtxDict = new ClaimDictionary();
  System.out.println
    ("IDC Dictionary :" + idCtxDict.getClaimCount() + "attributes");
  Iterator<String> iterNamespace = idCtxDict.getAllNamespaces();
  while (iterNamespace != null && iterNamespace.hasNext()) {
    String namespace = iterNamespace.next();
    System.out.println("Namespace : " + namespace);
    Iterator<ClaimSchema>
```

```
iterClaimSchema=idCtxDict.getClaimsForNamespace(namespace);
    while (iterClaimSchema != null && iterClaimSchema.hasNext()) {
      out.println(iterClaimSchema.next().getUniqueName());
    }
  }
} catch (Exception e) {
  System.out.println("Unable to acquire IDC Dictionary. " + toString());
}
```

Applications work with the Identity Context Runtime to obtain the runtime state of the Identity Context as it currently exists in the application infrastructure. In order to work with the Identity Context Runtime, the protected application must be deployed to either a WebLogic Server domain built on Oracle Fusion Middleware PS5 with the OPSS Opatch for PS5, or Oracle Fusion Middleware PS6 or later.

Additionally, working with the Identity Context Runtime is a privileged operation that requires applications running in the WebLogic Server (with the required Identity Context support) to have proper source code grants. The privileged application, running in the WebLogic Server container, can then access the Identity Context Runtime by requesting it from the OPSS Attribute Service. Example 48–2 demonstrates how to use WLST to grant the OPSS Attribute Service permission to access an application (in this case, `ssofilter.jar`).

Example 48–2 Using WLST To Grant Attribute Service Access To Application

```
# sh ../oracle_common/common/bin/wlst.sh
connect ('<username>', '<password>','t3://localhost:7001')
grantPermission(codeBaseURL="file:${common.components.home}/
   modules/oracle.ssofilter_11.1.1/ssofilter.jar",
permClass="oracle.security.jps.service.attribute.AttributeAccessPermission",
   permTarget="*", permActions="get, set, remove")
exit()
```

Example 48–3 illustrates an application working with Identity Context Runtime.

Example 48–3 Working with Identity Context Runtime

```
import java.security.AccessController;
import java.security.PrivilegedAction;
import oracle.security.jps.internal.api.runtime.AppSecurityContext;
import oracle.security.idm.IdentityContext;

…

// get runtime ID Context from OPSS
private static Object getIDContext() {
  Object idc = AccessController.doPrivileged(new PrivilegedAction<Object>() {
                   public Object run() {return
AppSecurityContext.getSecurityContext().getAttribute
  (oracle.security.idm.IdentityContext.Constants.IDC_API_ID); }});
  return idc;
}

…

// Display runtime ID Context
try {
  Context idCtx = (Context)getIDContext();
  if (idCtx != null) {
    System.out.println("IDC Runtime :" + idCtx.getSize() + "attributes");
```

```
    Iterator<Claim> i = idCtx.getClaims();
    while (i != null && i.hasNext()) {
      Claim c = i.next();
      System.out.println(c.getName() + " : " + c.getValue());
    }
  } else {
    System.out.println("Identity Context Runtime is not available");
  }
} catch (Exception e) {
  System.out.println("Unable to acquire Identity Context Runtime. " +
e.toString());
}

…

// Obtain few attributes from Identity Context Runtime
Attr authnLevel = ctx.getAttr (Constants.ATTR_SESSION_AUTHN_LEVEL);
Attr isFirewallEnabled = ctx.getAttr(Constants.ATTR_CLIENT_FIREWALL_ENABLED);
Attr isTrustedDevice = ctx.getAttr(Constants.ATTR_RISK_TRUSTED_DEVICE);

// Use user's authentication strength established at login by OAM
int authLevel = new Integer(authnLevel.getValue()).intValue();
if (authLevel < 20) {
    // do something
}
```

More information can be found in the *Oracle Fusion Middleware Java API Reference for Oracle Platform Security Services*.

48.5 Configuring the Identity Context Service Components

Support for Identity Context is pre-integrated into each participating Oracle Access Management component listed in Table 48–2, " Mapping Identity Context Operations". Because of this, each component must be configured to accommodate business requirements.

The following sections provide a high level overview of the necessary Identity Context configurations. However, detailed information can be found in documentation accompanying individual products.

- Configuring Oracle Fusion Middleware
- Configuring Access Manager
- Configuring Oracle Adaptive Access Manager
- Configuring Web Service Security Manager
- Configuring Oracle Entitlements Server
- Configuring Oracle Enterprise Single Sign On
- Configuring Oracle Access Management Mobile and Social

48.5.1 Configuring Oracle Fusion Middleware

The application to be protected must be deployed in a WebLogic Server domain built on Oracle Fusion Middleware 11.1.1 patch set 5 (PS5) with the Oracle Platform Security Services (OPSS) Opatch for PS5 or, Oracle Fusion Middleware PS6 or later. The WebLogic Server domain in which the application is running must be protected by the Access Manager Identity Asserter component that will validate the Identity

Assertion received from Access Manager and start the process of creating the Identity Context Runtime. The Access Manager Identity Asserter must be configured to detect the token type, OAM_IDENTITY_ASSERTION. Also, the protected application working with the Identity Context Runtime directly must be granted source code grants to work with the OPSS Attribute Service (as in Example 48–2).

> **See Also:** *Oracle Fusion Middleware Application Security Guide* for more information on configuring Access Manager Identity Asserter, as well a source code grants.

48.5.2 Configuring Access Manager

As the main publisher and propagator of Identity Context, OAM serves as the central configuration point for collecting Identity Context data from its participating components. The following sections describe key elements of the architecture behind Identity Context management.

- Configuring Identity Assertion
- Configuring Federation Attributes
- Configuring Session Attributes
- Configuring Identity Store Attributes

48.5.2.1 Configuring Identity Assertion

Oracle recommends that you define Asserted Attributes in Access Manager Authorization policies for proper enforcement of end-to-end security between the Web and application tiers.

In addition to ensuring trust between the WebGate protecting a Web resource and the Application Server container, Identity Assertion (a SAML Session token) is used to publish the Identity Context data as SAML attributes.

Identity Assertion must be enabled and populated with Asserted Attributes as required by the business logic expecting specific attributes in the Identity Context. It is configured within the OAM Policy Responses tab and can be defined for both Authentication and Authorization policies.

> **See Also:** Access Manager Identity Assertion and Asserted Attributes (Table 20–11).

48.5.2.2 Configuring Federation Attributes

Once a resource is protected by the Access Manager authentication scheme FederationScheme, Access Manager will act as the service provider and receive the SAML assertion as provided by the federation partner. After the federation single sign on (SSO) operation, the following attributes will be present in the authenticated identity's Access Manager session:

- `$session.attr.fed.partner` (contains the partner name)
- `$session.attr.fed.nameidvalue` (contains the SAML NameID Value)
- `$session.attr.fed.nameidformat` (contains the SAML NameID Format)
- one `$session.attr.fed.attr.`*name* entry per SAML Attribute (contained in the SAML Assertion received from the partner)

  These federation attributes can be used in configuring an Identity Assertion by selecting `oracle:idm:claims:fed:attributes` as the Asserted Attribute, and

setting the value to "*attr-name*=`$session.attr.fed.attr.`*name*" where *attr-name* is the name given to the Identity Context attribute and *name* is the name of the SAML attribute in the partner's SAML assertion.

For example, defining `oracle:idm:claims:fed:attributes` with the value of `partner-role=$session.attr.fed.attr.role` will result in the creation of the Identity Context attribute `oracle:idm:claims:fed:attributes:partner-role` having a value of "manager" (assuming `$session.attr.fed.attr.role` contains "manager" as specified in the partner's SAML assertion for the SAML attribute "role").

48.5.2.3 Configuring Session Attributes

Access Manager session attributes can be used in configuring Identity Assertion by selecting `oracle:idm:claims:session:attributes` as the Asserted Attribute and setting the value to "*attr-name*=$session.attr.*name*" where *attr-name* is the name given to Identity Context attribute and *name* is the name of the Access Manager session attribute.

For example, defining `oracle:idm:claims:session:attributes` with the value of `authn-strength=$session.attr.authnlevel` will result in the creation of the Identity Context attribute `oracle:idm:claims:session:attributes:authn-strength` having a value as defined by the authentication scheme used during the login process.

48.5.2.4 Configuring Identity Store Attributes

Identity Store attributes can be used to configure an Access Manager Identity Assertion by selecting `oracle:idm:claims:ids:attributes` as the Asserted Attribute and setting the value to "*attr-name*=`$user.attr.`*name*" where *attr-name* is the name given to the Identity Context attribute and *name* is the name of the Identity Store attribute.

For example, defining `oracle:idm:claims:ids:attributes` with the value of `first-name=$user.attr.fname` will result in the creation of the Identity Context attribute `oracle:idm:claims:ids:attributes:first-name` having a value from the user's `fname` attribute as maintained in the identity store.

48.5.3 Configuring Oracle Adaptive Access Manager

As part of the integration between Oracle Access Manager and Oracle Adaptive Access Manager (OAAM), OAAM publishes and propagates risk-based Identity Context attributes. In this case, OAAM attributes are passed to OAM at the end of user authentication flow (on the OAAM side) in a DAP Token. The DAP Token will carry attributes as defined by the oracle:idm:claims:risk namespace in Table 48–1, " Identity Context Schema Attributes". OAM then pushes these attributes into the $session.risk.attr namespace. The following sections contain information regarding configuration of OAAM and OAM.

- Setting Up Oracle Adaptive Access Manager
- Configuring Access Manager for OAAM Integration
- Validating Identity Context Data Published by OAAM

48.5.3.1 Setting Up Oracle Adaptive Access Manager

This section contains information on installing and setting up OAAM.

To setup Oracle Adaptive Access Manager

1. Set up OAAM by importing snapshots.

   See *Oracle Fusion Middleware Administrator's Guide for Oracle Adaptive Access Manager* for details.

2. Integrate OAAM and Access Manager as documented in the *Oracle Fusion Middleware Integration Guide for Oracle Access Manager*.

   The TAP token version must be v2.1 and not v2.0.

3. Ensure that the following properties are set to true.

   - `oracle.oaam.idcontext.enabled` is true by default; use the OAAM Administration Console to change the value.
   - `bharosa.uio.default.registerdevice.enabled` must be true for proper operation of the 'safeforuser' claim.

4. From the OAAM Administration Console, go to Properties, Create New Property.

5. Enter the property name `oaam.uio.oam.dap_token.version` with a value equal to `v2.1`.

6. Restart oaam_server_server1.

48.5.3.2 Configuring Access Manager for OAAM Integration

Perform the following steps. Using the TAPScheme forces the user to authenticate using the OAAM authentication schemes.

> **Note:** Do not use OAAM Advanced or OAAM Basic.

To configure Access Manager for Integration with OAAM Integration

1. Protect a resource (Defining Authentication Policies for Specific Resources on page 20-32) using the TAPScheme for authentication (Table 19–21).

2. Add the following challenge parameter to the TAPScheme (Table 19–22):

   ```
   TAPOverrideResource=http://IAMSuiteAgent:80/oamTAPAuthenticate
   ```

48.5.3.3 Validating Identity Context Data Published by OAAM

The following information describes how you might validate Identity Context data published by OAAM.

- `oracle:idm:claims:risk:newdevice` will be *true* after a login from a new device; *false* otherwise.
- `oracle:idm:claims:risk:level` will have a high value after a couple of unsuccessful logins followed by a successful login. To test for this, try a few unsuccessful logins and then a successful one.
- `oracle:idm:claims:risk:safeforuser` will have *true* after a user successfully answers the challenge question.
- `oracle:idm:claims:risk:fingerprint` contains the user's device's fingerprint. By default, the fingerprint built out of HTTP header data is used; if that is not available, fingerprint data built out of Flash will be used. To test for different fingerprints, try different devices.

48.5.4 Configuring Web Service Security Manager

Do the following to enable Oracle Web Service Security Manager (OWSSM) to propagate Identity Context.

To configure Web Service Security Manager for Identity Context

1. Configure Security Policy by modifying the Identity Context supported OWSSM security policies to contain the `propagate.identity.context` element with a value of *true*.

   Note: propagate.identity.context (by default, *false*) is a configuration override property on SAML related policies. To enable it globally, configure a global policy with the property set to *true*.

2. Configure the Keystore and Credential Store to sign the SAML assertion and messages: copy the updated Keystore and Credential Store to your *$DOMAIN_HOME*`/config/fmwconfig/` directory.

48.5.5 Configuring Oracle Entitlements Server

Runtime integration with Oracle Entitlements Server (OES) is fully automated. When an application invokes the PEP API to make an authorization call, the PEP API automatically propagates the entire Identity Context Runtime to the OES PDP where Conditions (the policy objects that define the Identity Context) are evaluated.

Note: When making authorization calls, ensure that the last argument passed into the `newPepRequest()` method is not null, and is at least an empty hashmap as shown in this example:

```
PepRequestFactory requestFactory =
   PepRequestFactoryImpl.getPepRequestFactory();
PepRequest request = requestFactory.newPepRequest (subject,
   action, resource, new HashMap<String, Object>());
PepResponse response = request.decide();
boolean isAuthorized = response.allowed();
```

Conditions are built, based on the Identity Context schema, by a security Administrator using the OES Administration Console. The following built-in functions are used to specify Conditions using Identity Context attributes:

- ASSERT_IDENTITY_CONTEXT
- GET_STRING_IDENTITY_CONTEXT
- GET_INTEGER_IDENTITY_CONTEXT
- GET_BOOLEAN_IDENTITY_CONTEXT

Custom OES functions receive the full Identity Context Runtime information as a well-known request attribute. This data structure can be converted into Identity Context Runtime using the Identity Context API. Example 48–4 shows a custom OES function creating a context from the received parameter.

Example 48–4 Custom Function Creating Identity Context

```
public OpssString GET_STRING_IDENTITY_CONTEXT_V2 (
```

```
 RequestHandle requestHandle,
 Object[] args,
 Subject subject,
 Map roles,
 Resource resource,
 ContextHandler contextHandler) throws RuntimeException {

// Obtain string representation of the runtime ID Context from the request handle.
Context runtimeCtx = null;
 try {
 AttributeElement ctxAttr = requestHandle.getAttribute
  (Constants.IDM_IDC_API_ID, false);
    if (ctxAttr != null) {
      String ctxStr = (String) ctxAttr.getValue();
      runtimeCtx = new Context(ctxStr);
    } else {
      throw new RuntimeException ("Unable to acquire ID Context from request
handle");
    }
  } catch (Exception e) {
    throw new RuntimeException (e.toString());
  }

…

// start using Context which now contains the same exact Identity Context Runtime
as was present in the application that made the PEP API call
…
}
```

48.5.6 Configuring Oracle Enterprise Single Sign On

As part of the Identity Context Service, Oracle Enterprise Single Sign-on (OESSO) can publish and propagate client-based Identity Context attributes. Once full integration has been configured, client-specific Identity Context attributes (as documented in Section 48.3.1, "Using the Identity Context Dictionary") will be sent by OESSO to OAM in the session initiation request together with the user credentials submitted in the access request.

After the request has been received, OESSO makes a call to an SSL-protected OAM REST API (previously configured by the OESSO Administrator and included as part of the OESSO client distribution). This API returns the OAM_ID cookie to OESSO. OESSO then propagates the valid OAM_ID cookie to the client browsers (Internet Explorer and Firefox) which enables OESSO resources to be protected and enables single sign-on (SSO) with those resources that are protected by the OAM Embedded Credential Collector. (This does not include resources that are protected by the Distributed Credential Collector.) OESSO then provides OAM credentials that are acceptable to the OAM Embedded Credential Collector as well as client context information in the payload.

Note: The payload is secured by:

- Generating a 16 byte Random Salt
- Generating a SHA-256 Hash using the 16 Byte Random Salt
- Encrypting the claims using the OAM password protected by OESSO

To configure OESSO to get attributes for Identity Context

1. Refer to "Installing Logon Manager Client-Side Software" in the Oracle Enterprise Single Sign-On Suite Plus Installation Guide for details on integrating OAM and OESSO.
2. See additional details in the Oracle Enterprise Single Sign-On Suite Plus Administrator's Guide section "Oracle Access Management Support in Logon Manager".

48.5.7 Configuring Oracle Access Management Mobile and Social

Oracle Access Management Mobile and Social (Mobile and Social) provides REST-based authentication services, in addition to a user profile service and an authorization service, for mobile and desktop devices. When Mobile and Social is configured to provide authentication using Access Manager, it can publish Identity Context attributes provided by the mobile client to Access Manager. The Identity Context attributes are published by the Mobile and Social SDK for iOS and Java platforms.

Mobile applications use the Mobile and Social SDK to access and use services provided by the Mobile and Social server. When a mobile application uses the iOS or Android API to perform authentication, it captures the Identity Context attributes and publishes the data to the Mobile and Social server which, in turn, publishes the attributes to the Access Manager server. The Administrator can configure the Mobile and Social server to get all the attributes or only the required ones.

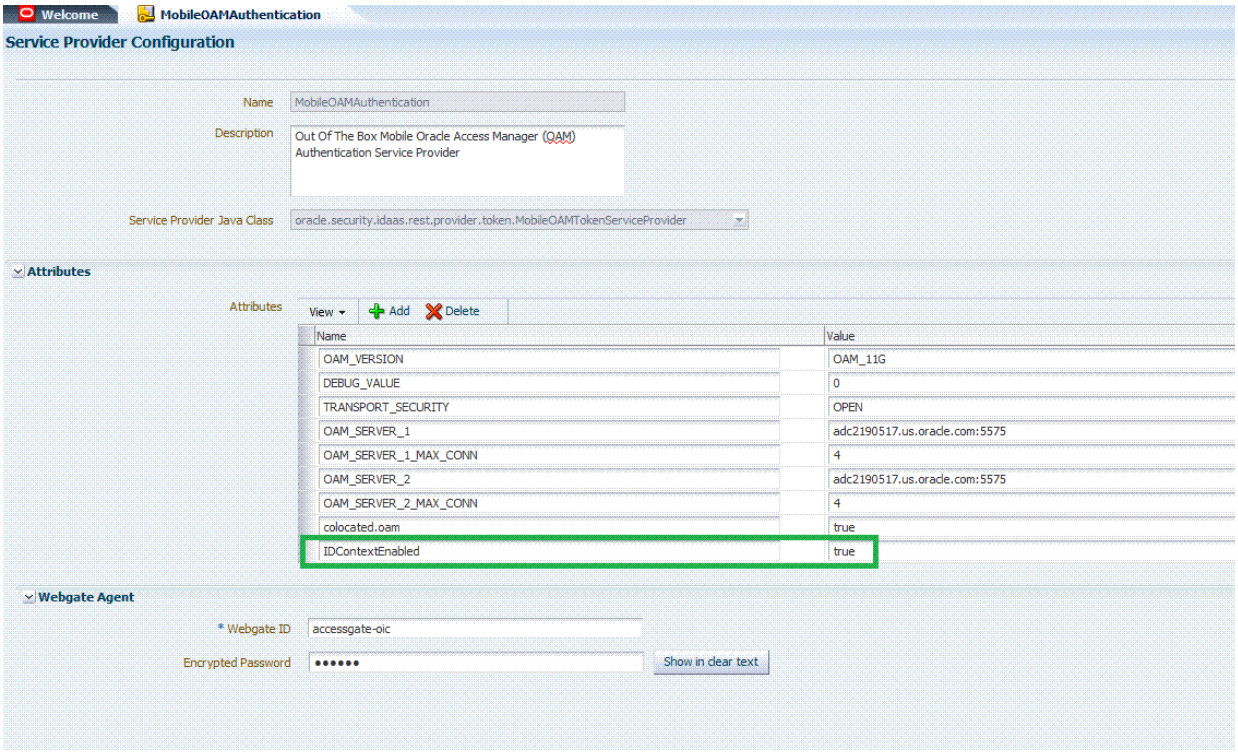
The Administrator configures the Identity Context attributes to be sent by the application in the Application Profile configuration page of the Mobile and Social accordion under the System Configuration tab in the Access Manager Administration Console.

The Mobile and Social server passes the required Identity Context attributes to the Mobile and Social SDK when it contacts the server for the application profile. (An application profile has information regarding the type of authentication to be performed as well as the Identity Context attributes to be collected.) The SDK collects the attributes, if allowed by the user or the platform, and publishes them to the Mobile and Social server as part of the authentication request.

> **Note:** Some mobile platforms (iOS, for example) forbid applications from collecting certain device attributes (for example, the UDID or IMEI device number). The user can also deny an application from getting a location update. Thus, even if the server requests attributes, it is not guaranteed that all of them can be collected by the SDK.

To configure the Mobile and Social server to publish the attributes collected from the Mobile and Social SDK to the user session created on and maintained by the OAM Server, the administrator must configure Mobile and Social server to enable ID Context, as illustrated in Figure 48–4.

Figure 48–4 OAM Authentication Provider Configuration



To configure Mobile and Social to get attributes for Identity Context

1. Confirm that the Mobile and Social Service is enabled as described in "Enabling or Disabling Available Services" on page 3-2.
2. On the `MobileOAMAuthentication` Service Provider page, add the `IDContextEnabled` Attribute with the value of `true`.

See Also:

- Chapter 42, "Configuring Mobile Services" for full configuration details
- Oracle Fusion Middleware Developer's Guide for Oracle Access Management for details on how to develop applications using the iOS SDK

48.6 Validating Identity Context

Use the following procedure to ensure correct operation of the Identity Context with Access Manager.

To validate your Identity Context operations

1. Perform the following to validate the Identity Assertion response that Access Manager is constructing.
   a. Configure Access Manager to protect the `/testidc` resource with a WebGate agent and return the Identity Assertion with the desired Asserted Attributes as part of the Authorization response.

b. Use the OAM Tester to validate that the Identity Assertion is returned as an OAM_IDENTITY_ASSERTION attribute in response to the authorization request for /testidc.

2. Perform the following to validate that WebGate is creating an HTTP header that contains the Identity Assertion.

a. Ensure the `/cgi-bin/printenv.pl` script is protected by the same policy that protects the /testidc resource.

Note: `printenv.pl` ships as part of OHS and must have permission to execute. Any script to display header information can be used instead.

---

b. Access the `printenv.pl` to trigger a login and display the HTTP headers.

c. Ensure that the HTTP_OAM_IDENTITY_ASSERTION header contains a SAML token with Asserted Attributes.

Part XIII

Integrating Access Manager with Other Products

Part XI describes how to integrate Access Manager with products from other vendors.

Part XI contains the following chapters:

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Integrating RSA SecurID Authentication with Access Manager

Oracle provides components that interface with RSA Security products to provide native RSA SecurID® authentication for Access Manager protected resources.

This chapter introduces SecurID authentication and the components, requirements, and processes needed to successfully integrate SecurID authentication with Access Manager 11.1.2. The following topics are included:

49.1 Introduction to Access Manager and RSA SecurID Authentication

Access Manager 11.1.2 integrates with RSA components to provide SecurID authentication. RSA SecurID authentication is based on two factors: something the user knows and something the user has:

- Something the User Knows: This is a secret personal identification number (PIN), similar in concept to a personal bank code PIN. In this case, the PIN may be system generated or personally chosen and registered with the RSA Authentication Manager.
- Something the User Has: This is the current code generated by a hand held device known as a token. Oracle Access Manager supports all RSA SecurID token form factors, both hardware and software-based.

These tokens algorithmically, based on an internal clock or event, generate tokencodes with unpredictable values. Together, the user's PIN and the SecurID tokencode become the user's Passcode.

Access Manager uses and supports RSA two-factor SecurID authentication security features and enables integration with SecurID authentication by providing:

- The HTML forms required for SecurID authentication operations
- The RSA SecurID Plugin you can use with the User Identification Plugin to create and orchestrate authentication

Access Manager integrates with RSA Authentication Manager and provides the integration features described in Table 49–1.

Table 49–1 Access Manager Support for RSA Features

RSA Feature	Access Manager Support
Authentication method	Native SecurID authentication
New PIN Mode (user-generated PINs)	Asks for new PIN with confirmation. The token may be in New PIN mode the first time the user logs in or the Authentication Manager Administrator can enable New PIN mode. New PIN mode requires the user to complete a sequence of forms to define, or have the system generate, a new PIN number. Oracle-Provided New PIN Forms and Functions: ▪ System Generated PIN (not supported) ▪ User Defined (4-8 Alpha/numeric characters) ▪ User Defined (5-7 Numeric) ▪ Deny 4 and 8 Digit PIN ▪ Deny Alphanumeric PIN ▪ Deny Numeric PIN ▪ PIN Reuse See Also: "SecurID New PIN Authentication" on page 49-6.
Next Tokencode	During authentication, the Authentication Manager may direct the user to provide the next tokencode that appears on their SecurID token to prove that they have the assigned token. This operation is known as Next Tokencode mode, which can be triggered by one of the following situations: See Also: "SecurID Next Tokencode Authentication". on page 49-6.
Passcode	▪ 16 Digit Passcode ▪ 4 Digit Fixed Passcode
Load Balancing	RSA Authentication Manager Replicas.
Secondary server support	Yes
SecurID user specification	Designated users
SecurID protection of Administrators	Yes
Access Manager features and functions	All

Access Manager does not support the RSA features in Table 49–2.

Table 49–2 RSA Features Not Supported

RSA Feature	Not supported by Access Manager
RSA Authentication Manager 7.1 SP2	Is not supported in an Active Directory Forest multi-domain environment
Multiple ACE Realms	The RSA Authentication API uses an automatic response time load balancing algorithm to determine where to send an authentication request. Such requests go to either a primary RSA Authentication Manager or a replica. The automatic algorithm can be overridden by creating a manual load balancing configuration file, sdopts.rec. However manually weighting an RSA Authentication Manager as a server of last resort does not preclude the Agent from communicating with it. As such, a true failover setup cannot be achieved with this method. For more information, see your RSA Authentication Manager documentation
System Generated PINs	Not supported by Access Manager.
Failover	Not supported for OAM SecurID Servers because only one OAM SecurID Server can perform SecurID authentication.

49.2 Components Required for SecurID Authentication

The following components are needed for the integration:

- Supported Versions and Platforms
- Required RSA Components
- Installation and Configuration Requirements

49.2.1 Supported Versions and Platforms

For the latest support information, see the Oracle Technology Network (OTN). You must register with OTN to view this information.

The certification matrix provides platform and version support for this integration, which includes RSA Authentication Manager v7.x and the SecurID Authentication API:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

49.2.2 Required RSA Components

The following RSA components are required for integrating Access Manager and SecurID Authentication.

- RSA Authentication Manager
- RSA SecurID Tokens

49.2.2.1 RSA Authentication Manager

Residing somewhere in your network are records of users, agents, tokens, and user's PINs. Portions of these records might reside in the Authentication Manager or in LDAP directories. During authentication, Authentication Manager compares these records to the information it receives when a user attempts to access the network. If the records and tokencode or passcode match, the user is granted access.

49.2.2.2 RSA SecurID Tokens

An RSA SecurID token is either a hardware device or software-based security token that generates and displays a random number that enables users to securely access protected resources. The random number is called a tokencode. Before a user can authenticate with a token, the token must be recognized by Authentication Manager. RSA, or your vendor, ships a token seed file that you must import into the data store. Seeds listed in this file are assigned to tokens for generating the tokencode when an authentication request is received from an Authentication Manager agent.

During the SecurID authentication process, users must submit their username and passcode using an HTML form. The RSA Authentication Manager authenticates the identity of each user through a server that is registered with the Authentication Manager as a client (RSA Authentication Agent). One Access Server (known as the Oracle SecurID Access Server to distinguish it from other Access Servers) must be registered and set up as a client/Agent.

The RSA Authentication Manager compares the tokencode it has generated with the tokencode the user has entered. Tokencodes change at a specified interval, typically 60 seconds. Time synchronization ensures that the tokencode displayed on a user's token is the same code the Authentication Manager software has generated for that moment.

Authentication is successful when the tokencodes match. Two-factor authentication provides stronger legal evidence of who performed the task. When properly configured, the Authentication Manager tracks all login requests and operations to reliably identify the user who is responsible for each logged action.

49.2.3 Installation and Configuration Requirements

SecurID requires affinity between the OAM Server and the RSA Authentication Manager for a user interaction. Therefore, the authentication dialog between the user and OAM Server must be sticky (this constraint is a security feature of SecurID authentication). In a cluster environment, if a load balancer is used to route requests to multiple managed server, ensure that stickiness is set between the load balancer and OAM Server.

The SecurID Authentication API is bundled with Access Manager and installed on all OAM Servers. The SecurID Authentication API provides the connection functionality that eliminates the need for an Authentication Agent to be installed on the OAM Server. In other words, the API is the agent.

Every OAM Server must be registered as an RSA Authentication Agent host on the Authentication Manager along with other requirements in Table 49–3.

Table 49–3 Installation and Configuration Guidelines

Only one designated OAM SecurID Server can complete SecurID authentication. However, every OAM Server must be registered as an RSA Authentication Agent Host on the Authentication Manager.
Enable the OAM SecurID Server to be recognized as an Authentication Manager client.
Port 5500 (UDP) should be available for the Authentication Manager to communicate with authentication agents (OAM SecurId Server). This service receives authentication requests from Oracle SecurId Server and sends replies. For more details refer to your RSA Authentication Manager documentation.
Manage authentication requests from the client to the Authentication Manager.
Enforce two-factor authentication and block unauthorized access.
Provide automatic load balancing by detecting replica Authentication Manager response times and routing authentication requests accordingly.
Ensure that the system time on the client is correct to prevent the server and client from being out of sync.
Failover is not supported for Access Manager.
The SecurID Authentication Manager must be installed on a supported platform.
The system time must be correct to prevent the server and client from being out of sync.
The SecurID tokens or key fobs must be provisioned with the Authentication Manager by providing it with the token seed records
Each user name must be mappable through an LDAP filter to a Distinguished Name in the directory
An Authentication Manager slave and/or replicated Authentication Manager can provide failover if the primary Authentication Manager is down

Table 49–3 (Cont.) Installation and Configuration Guidelines

This integration requires a custom HTML login form and a properties file. Sample Oracle-provided custom html and custom html properties files can be found in: `$ORACLE_HOME/oam/server/tools/customLoginHtml` See Also: ■ Developing Custom Login Pages in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management ■ "Configuring Access Manager for RSA SecurID Authentication" on page 49-7

49.3 SecurID Authentication Modes

The following scenarios illustrate the three modes of operation:

- Standard SecurID Authentication
- SecurID Next Tokencode Authentication
- SecurID New PIN Authentication

49.3.1 Standard SecurID Authentication

When a user attempts to access a resource protected by the SecurID authentication scheme, the following process occurs.

Note: References to the 11.1.2 Credential Collector can be either the default Embedded Credential Collector or the optional Detached Credential Collector. For more information, see "Understanding Authentication Methods and Credential Collectors" on page 19-17.

Process overview: When the user requests a resource

1. The WebGate intercepts the resource request and queries the Access Server to determine if and how the resource is protected, and if the user is authenticated.
2. The OAM SecurId Server queries the directory for the authentication scheme, and receives authentication information from the directory.
3. The Webgate redirects to the Credential Collector, which presents a form challenging the user for a two-part SecurID Passcode.
4. The user submits credentials to the Credential Collector
5. The Credential Collector hands off the credentials to the OAM SecurId Server
6. The SecurID Authentication API on the OAM SecurId Server performs the authentication dialog and sends an LDAP bind to the Authentication Manager.
7. The Authentication Manager database matches the SecurID passcode to the user ID and returns a success response to the Authentication Manager, which matches the user's PIN.
8. The Authentication Manager returns the response to its Agent, the OAM SecurId Server.
9. When the user's credentials are valid, SecurID authentication is successful. The OAM SecurId Server creates a session for the user and redirects the user to the Webgate, which then queries the OAM SecurId Server for resource authorization:

- Under certain conditions a New Tokencode mode is initiated, as described in "Standard SecurID Authentication".
- Under certain conditions a New Pin mode is initiated, as described in "SecurID Next Tokencode Authentication".

10. The OAM SecurId Server evaluates the authorization request, which allows or denies access based upon the authorization rule.
11. When access is granted, the OAM SecurId Server passes authorization to the WebGate, which presents the resource to the user.

49.3.2 SecurID Next Tokencode Authentication

When Next Tokencode mode is On, the user must supply the next tokencode on their SecurID token. This mode can be triggered when:

- An incorrect Passcode was provided repeatedly during login. When a user attempts authentication with incorrect passcodes four consecutive times, the Authentication Manager turns on Next Tokencode mode, as noted in the Authentication Manager's Activity Report. The next time the user successfully authenticates with their correct Passcode, they are challenged for the next tokencode that appears on their SecurID token.
- The Authentication Manager requires confirmation of, or synchronization with the token. Even with a correct Passcode, the Authentication Manager Administrator might set the Next Tokencode mode On to force the user to confirm that they have the SecurID token or to synchronize the token with the Authentication Manager. When Next Tokencode mode is On, the Next Tokencode challenge form is presented to the user immediately following a successful login.

Process overview: When Next Tokencode is On

1. The Credential Collector presents a form to challenge the user for the next tokencode on the token following a successful login.
2. The user enters a username, waits 60 seconds, then enters the next tokencode on the SecurID token.
3. When the tokencode is correct, the Passcode the user originally entered is accepted and the user is authenticated.

49.3.3 SecurID New PIN Authentication

When the user is required to have a new PIN, the Credential Collector prompts the user with specific forms.

Process overview: When New PIN is required

1. The Credential Collector presents a form that allows the user to enter the PIN they want.
2. The user enters the new PIN and then re-enters the new PIN to complete the form.
3. The OAM SecurID Server forwards the information to the Authentication Manager.
4. The Authentication Manager registers the new PIN, which becomes part of the Pincode the user must supply during subsequent logins.
5. The Login Form appears again where the user enters the username and Passcode for a forced re-authentication.

49.4 Configuring Access Manager for RSA SecurID Authentication

Users with valid Oracle Access Management Administrator credentials can follow the steps in this section to enable RSA SecurID authentication.

Prerequisites

See Table 49–3 for installation and configuration that is outside the scope of this manual) and which must be completed before you begin SecurID integration with Access Manager.

See Also:

- Developing Custom Login Pages in the Oracle Fusion Middleware Developer's Guide for Oracle Access Management

To set up SecurID Authentication with Access Manager

1. In your oam-config.xml, set the OAM SecurID Sever serverRequestCacheType parameter to BASIC, as follows:
   a. Stop all WebLogic servers (OAM Servers and AdminServer).
   b. Locate oam-config.xml in the following path:

      ```
      $DOMAIN_HOME/config/fmwconfig/oam-config.xml
      ```

   c. Change the `serverRequestCacheType` from `COOKIE` (default) to `BASIC`, as follows:

      ```
      <Setting Name="serverRequestCacheType" Type="xsd:string">BASIC</Setting>
      ```

   d. Start all WebLogic Servers (OAM Servers and AdminServer).
2. Register a Web agent from the RSA Console that will be used by Access Manager, then copy the agent configuration file (sdconf.rec) as follows:

   ```
   $DOMAIN_HOME/config/fmwconfig/servers/$SERVER_NAME/oam/sdconf.rec
   ```

3. From Oracle Access Management Console, create a custom authentication module for RSA, as follows:

   See Also: "Orchestrating Multi-Step Authentication with Plug-in Based Modules" on page 19-28

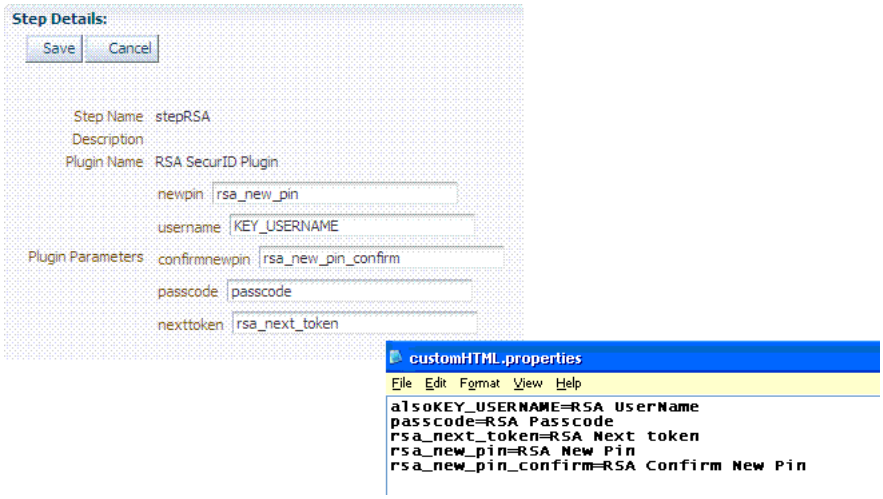
   a. Open the System Configuration tab, Access Manager section, Authentication modules node, Custom Authentication module node.
   b. Create a new module, *RSA_AUTH*, by clicking the Add (+) button on the Steps tab and entering the following information:
   c. General tab:

      ```
      Name: RSA_AUTH
      ```

   d. Steps tab: Enter a name for the Step, then choose the RSA SecurID Plugin

      ```
      Step Name: stepRSA
      Plugin Name: RSA SecurID Plugin
      OK
      ```

   e. stepRSA, Step Details: Enter and Save the Step Details shown in the next screen, which should also appear in your customhtml.properties file:



f. Steps tab: Add the User Identification Plugin: Enter a name for the Step, then choose the RSA SecurID Plugin:

```
Step Name: rsa_useridentification
Plugin Name: UserIdentificationPlugin
OK
```

g. rsa_useridentification, Step Details: Enter and Save the following details for your environment:

KEY_LDAP_FILTER: (uid={KEY_USERNAME})

KEY_IDENTITY_STORE_REF: The registered Default Store.

KEY_SEARCH_BASE_URL: *dc=us,dc=example,dc=com*

4. Orchestrate the steps as follows: stepRSA should be first (to authenticate the user with the RSA Server); designate your User Identification Plugin for the success step.

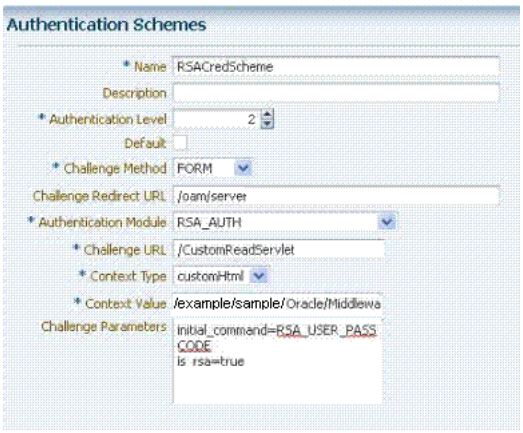
```
Initial Step: stepRSA

Name: StepRSA
On Success: rsa_useridentification
On Failure: failure
On Error: failure
Apply

Name: rsa_useridentification
On Success: Success
On Failure: failure
On Error: failure
Apply
```

Note: The On Failure and On Error fields must both be set to failure.

5. Create a new authentication scheme (*RSACredScheme*, for example) that uses the custom authentication module that you just created for RSA with a custom HTML login form. Sample values are shown in the following screen:



Note: The authentication scheme's Context Value specifies the path to your custom HTML login form. Your custom HTML properties file must share the same name as the form (with a .properties extension) in the same directory path. This example uses *customhtml.html* and *customhtml.properties*.

Challenge parameters specify the initial RSA command for authentication (RSA_USER_PASSCODE). The `is_rsa=true` parameter and value must be specified for RSA.

---

6. Use this scheme in the Application Domain protecting resources requiring SecurID authentication.
7. Ensure that your custom HTML file is present in:

   `$`*`DOMAIN_HOME`*`/config/fmwconfig/`*`customhtml`*`.html`

   The Custom HTML for RSA Login Form requires form action set to `/oam/server/auth_cred_submit`, as follows:

```
<form id="loginData" action="/oam/server/auth_cred_submit" method="post"
name="loginData">

<div id="oam_credentials" class="input-row">
<span class="ctrl"></span>
</div>
div class="button-row">
    <span class="ctrl">
<input id="login_button" type="submit" value="Login" class="formButton"
  onclick="this.disabled=true;document.body.style.cursor = 'wait';
  this.className='formButton-disabled';form.submit();return false;"/>
     </span>
</div>
<div id="oam_error_messages"></div>
</form>
```

8. Ensure that your *`customHTML`*`.properties` file is:
   - Named as your custom HTML file with a `.properties` extension
   - Stored in the same path as your custom HTML file

- Confirmed; settings match the RSA SecurID plugin configuration parameters. For example:

```
username=Username
password=Password
passcode=Mother's maiden name
rsa_new_pin=RSA New Pin
rsa_new_pin_confirm=RSA Confirm New Pin
Pin=RSA Pin
rsa_sysgen_pin=RSA Create New Pin
rsa_sysgen_pin_confirm=RSA System Generated Pin
error1=Username not specified
```

9. Restart OAM Servers.
10. Test your configuration by accessing the appropriate protected resource and validating the various modes.
11. See "RSA SecurID Issues and Logs" on page E-23 for details if you experience problems.

49.5 Running a Custom RSA Plug-in

These steps should be followed to run a custom RSA plug-in, located in <ORACLE_HOME>/oam/custom_plugins/rsa/RSAPlugin.jar.

1. Download the RSA dependent libraries named `authapi.jar` and `cryptoj.jar`.
2. Add the `authapi.jar` and `cryptoj.jar` libraries to <DOMAIN_HOME>/config/fmwconfig/oam/plugin-lib.
3. Get the custom RSAPlugin.jar file from its directory and import the plugin to add it to the list of custom plugins.
4. Once successfully imported, distribute and activate the plug-in.

   Activation will fail the first time. When it does, restart the server and activate again. After activation, use the plugin to specify the necessary orchestration steps.

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Configuring Access Manager for Windows Native Authentication

Access Manager enables Microsoft Internet Explorer users to automatically authenticate to their Web-based single sign-on applications using their desktop credentials. This is known as Windows Native Authentication (WNA)

This chapter contains the following sections to describe how to prepare your environment and perform this integration using Active Directory:

50.1 Introducing Access Manager with Windows Native Authentication

Access Manager supports Active Directory Multi-Domain and Multi-Forest topology integration with Windows Native Authentication (WNA). The Active Directory directory service uses a data store (known as the directory) for all directory information about objects (users, groups, computers, domains, organizational units, and security policies).

> **See Also:** The System Requirements and Supported Platforms for Oracle Identity and Access Management 11gR1 at `https://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html`

For the integration described in this chapter, an application must be protected by an Access Manager authentication policy that uses the Kerberos authentication scheme (KerberosScheme) with WNA as the Challenge Method with the KerberosPlugin

Authentication Module. In this case, credentials must be stored in a Windows Active Directory instance that is registered as a user-identify store with Access Manager.

Put another way, each protected resource is defined in an Access Manager Application Domain. The Authentication Policy includes the Authentication Scheme (KerberosScheme) that uses an Authentication Module (Kerberos) that is tied to the default User Identity Store. The store uses the value of "User Name Attribute" for authentication. This value is tied to the user in Active Directory and its values for `userprincipalname = username@domian` or `SamAccountName = username`, depending on the specific Access Manager release.

When Access Manager single sign-on is combined with WNA, a Kerberos session ticket is generated that contains the user's login credentials (among other things). This Kerberos session ticket is not visible to the user.

Access Manager interoperates with Windows Native Authentication (WNA), which uses Kerberos credentials obtained when the user logs in to a Windows Domain. This cross-platform authentication is achieved by emulating the negotiate behavior of native Windows-to-Windows authentication services that use the Kerberos protocol. For this cross-platform authentication to work, OAM Servers must parse SPNEGO tokens to extract the Kerberos tokens that are then used for authentication.

- **SPNEGO** is a Generic Security Services Application Programming Interface (GSSAPI) "pseudo mechanism" used to negotiate one of a number of possible real mechanisms. SPNEGO is largely employed in the Microsoft "HTTP Negotiate" authentication extension which uses it to allow initiators and acceptors to negotiate either Kerberos or NTLMSSP mechanisms. GSSAPI implementation is included with most major Kerberos distributions. For more information on SPNEGO see `http://tools.ietf.org/html/rfc4559`.
- **Kerberos** is a network authentication protocol that provides strong authentication for client/server applications and services using a secret-key cryptography. A free implementation of Kerberos protocol is available from the Massachusetts Institute of Technology and is also commercially available.

For more information, see:

- Access Manager WNA Login and Fall Back Authentication
- Supported Integration Approaches

50.1.1 Access Manager WNA Login and Fall Back Authentication

With WNA implemented, a user can click her Web application without another challenge for credentials because her Kerberos session ticket is passed through the browser to the OAM Server. The OAM Server decrypts the received token (using keytab) and derives the authenticated user name from that. If authentication succeeds the user is granted access to her Web applications automatically.

> **See Also:** Supported browsers in the System Requirements and Supported Platforms for Oracle Identity and Access Management 11gR1 at `https://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html`

This section describes several WNA login scenarios.

Process overview: Successful Access Manager WNA Authentication

1. The Browser is configured for Integrated Windows Authentication (IWA).

2. A resource protected by Access Manager and WNA is called.
3. A valid Kerberos ticket is present - Http headers... Authorization: Negotiate YIIJ/...
4. The user is not challenged for authentication.
5. The requested resource is displayed, proving that WNA works.

In other words, when the browser is configured to use Integrated Windows Authentication, and a resource is protected by the Access Manager Kerberos authentication module, then:

- If a Kerberos ticket is received by Access Manager (regardless of the domain), authentication is attempted:
  - Successful: Access is granted.
  - Failure: An incorrect user name or password error occurs if information from the Kerberos ticket is either not present or does not match the value of the User Name Attribute defined in the Default User Identity Store. Access is denied. The browser automatically submits the ticket, and the interaction with Access Manager is repeated until the user has been locked out. The browser cannot be made to pause before the start of each exchange.
- If the user is not logged on to a Windows Domain by way of Kerberos authentication, the browser sends OAM an NTLM token for authentication instead of a Kerberos token. Depending on how Access Manager is configured, it either uses WNA Fallback Authentication upon receiving an NTLM token or authentication fails.

  Note: You need to configure Access Manager to provide fallback authentication when the browser sends an NTLM token. Without configuration, authentication fails. For configuration steps, see Section 50.7.3, "Configuring WNA for NTLM Fallback."

  NTLMSSP is a security support provider that is available on all versions of the Distributed Component Object Model (DCOM). It uses the NTLM protocol for authentication, which does not actually transmit the user's password to the server during authentication.
- If the browser being used is not configured to use Integrated Windows Authentication, no TGT is supplied when a resource protected by Access Manager Kerberos authentication module is requested. A browser basic authentication window is displayed where you can enter a valid username/password combination defined in the Default Identity Store for Access Manager `User login attribute`.

  Note: If a Kerberos ticket cannot be identified by Access Manager (regardless of browser, Operating System, domain-login, and so on), the fallback mechanism is invoked.

WNA Fallback Authentication: Fallback uses the authentication scheme "BasicScheme" with a challenge method of "Basic" and authentication module "LDAP". The authentication module can be changed using the console.

This LDAP Authentication Module uses the LDAP plug-in. In this plug-in, the User Identity Store can be defined as any currently registered User Identity Store in which you define the attribute to be used for "User Name Attribute."

Process overview: Access Manager WNA Fallback Authentication

1. The Browser is configured for Integrated Windows Authentication (IWA).
2. A resource protected by Access Manager WNA is requested.
3. No ticket is present (NTLM/Kerberos) - Http headers... Authorization: Basic
4. A basic authentication window pops up.
5. The user enters a valid username/password.
6. The requested resource is displayed (WNA Fallback works).

50.1.2 Supported Integration Approaches

Access Manager supports the following approaches:

- **Kerberos Plugin with Oracle Virtual Directory**: Using Access Manager with orchestrated authentication plug-ins integrated with Oracle Virtual Directory virtualize multiple Active Directory Global Catalogs.

  See Also:

  - Preparing Your Active Directory/Kerberos Topology
  - Performing Oracle-Specific Prerequisite Tasks
  - Integrating KerberosPlugin with Oracle Virtual Directory

- **Kerberos Plugin with Search Failover Across Multiple ADGCs**: Using Access Manager with orchestrated authentication plug-ins that exercise a failover pattern across multiple Active Directory Global Catalogs.

  See Also:

  - Preparing Your Active Directory/Kerberos Topology
  - Performing Oracle-Specific Prerequisite Tasks
  - Integrating Access Manager KerberosPlugin with Search Failover

50.2 Preparing Your Active Directory/Kerberos Topology

The tasks in this section are required regardless of the approach you choose.

You need a fully-configured Microsoft Active Directory authentication service set up as described here. The procedure in this section ensures that Active Directory and the Kerberos client will operate together. However, none of this is Oracle specific.

The following sample scenario represents a typical Active Directory topology, and is not a requirement dictated by or for Access Manager. The naming used here is an example only. Your environment will be different.

Sample Forests and Trust

As an example, consider two Active Directory forests operating within a company.

Forest	Domain Name
ORACLE	lm.example.com
SPRITE	lmsib.sprite.com

Consider that a child domain exists within the ORACLE forest: child.lm.example.com.

Trust is required as follows:

- Between forests: Two-way, non-transitive trust.
- Between the child domain and its parent: Two-way, transitive trust.

Suffixes and Inheritance

- SPRITE users have UPN suffixes such as sun.com orjava.com. The SPRITE forest contains testuser.java.com.
- ORACLE users have suffixes such as myoracleco.com and oracleco.com. The ORACLE forest contains testuser.oracleco.com.
- ORACLE child domain inherits the UPN suffixes of the parent domain.

> **Note:** Pre-Windows usernames, formed as DOMAIN\USERNAME, are not supported.

Default Identity Store User Name Attribute for WNA

For integration with WNA, the User Name Attribute defined for the Default Identity Store an be any attribute whose value matches the Active Directory user's samAccountName.

Encryption Type

You need to know which encryption type your environment will use. In some cases a user might be created with "Use DES encryption types for this account" enabled. However, Active Directory is not using DES encryption.

> **Note:** The keytab file created in the following procedure uses RC4-HMAC encryption.

Access Manager supports what JGSS/JDK6 supports. The limitation on the TGT encryption that can be used would be determined by the piece that is the least common or lowest encryption supported: KDC, Keytab, Operating System, Kerberos client.

Access Manager does not support any specific Kerberos encryption type. It is dependent on the Generic Security Services (GSS)/Kerberos jdk encryption types with which it is certified. Access Manager is not dependent on any encryption type and does not use TGT encryption. As part of SPNEGO token Access Manager only looks into the Service Ticket which is encrypted with a key that the service (in this case Access Manager) has registered when executing the ktpass/keytab commands.

> **Note:** The keytab file created in the following procedure uses RC4-HMAC encryption.

Encryptions are used for communication among the different OS (Windows/Linux acting as Kerberos Server/Client). OAM Server just needs the SPNEGO token, from which it extracts the user credential. The encryption used in this three way negation process between the Windows Client (Browser), the Windows KDC, and the Generic Security Services (GSS) classes used by Access Manager, depend on the versions used (which must match).

> **See Also:** My Oracle Support for details about the Kerberos Encryption types Access Manager Supports [Doc 1212906.1] at: https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1212906.1

Domain Requirements

In the trusted domain (for example, the root domain `lm.example.com`), you will follow steps provided to:

- Create an account for the OAM Server.
- Extract the keytab file that was configured with the Active Directory Multi-Domain or Multi-Forest topology and trust relationships.
- Specify the Service Principal Name (SPN) using the fully-qualified hostname of the OAM Server (or the load balancer that represents the OAM Cluster), followed by the Realm name.

Sample Naming

For this example the names in Table 50–1 are used.

Table 50–1 Sample Naming

Name	Description
kdc.lm.example.com	KDC *hostname* KDC is a trusted network service that supplies session tickets and temporary session keys to users and computers within an Active Directory domain. The KDC runs on each domain controller as part of Active Directory Domain Services and is implemented as a domain service. The KDC uses Active Directory as its account database. In implementations of the Kerberos protocol, the KDC is a single process that provides two services: Authentication Service (AS) and Ticket Granting Service (TGS).
kdc.lm.example.com	AdminServer *hostname* This is the same as the KDC *hostname*.
`oam11g.example.com`	OAM Server *hostname*
`LM.EXAMPLE.COM`	Default Active Directory Realm
`LMSIB.SPRITE.COM`	Second Active Directory Realm The realm name identifies the location of the user account. A realm name can be either a prefix or a suffix. When an access client sends user credentials, a user name is often included. Within the user name are two elements: a user account name and user account location.

Table 50–1 (Cont.) Sample Naming

Name	Description
HTTP/*fully_qualified_OAMServerhostname@REALM_NAME* (in CAPITAL letters	Service Principal Names (SPNs) are needed for user accounts (the name by which a client uniquely identifies an instance of a service). **Note**: If you install multiple instances of a service on computers throughout a forest, each instance must have its own Service Principal Name.

Commands in the following procedure are for a Unix Operating System. Command syntax will vary depending on the specific Operating System in your environment.

To prepare Active Directory and Kerberos

1. Check the Oracle certification matrix to ensure you are installing a supported version of Active Directory for this integration:

   https://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

2. Install and configure Active Directory as follows:

   - Multi-Forest topology with requisite trust relationships configured and functional, including:

     a. User accounts to map Kerberos services

     b. Service Principal Names (SPNs) for these user accounts (the name by which a client uniquely identifies an instance of a service).

     c. Key tab files

   - Active Directory Global Catalog (ADGC) enabled and functional within each forest
   - **Multi-Forest Deployment**: In this case, ensure there exists a naming attribute (available in global catalog) that uniquely identifies the users originating from various forests. Generally, `userprincipalname` is unique for the forest and `samAccountName` is unique for the domain
   - One domain that is directly or indirectly trusted by every other domain, regardless of forest affiliation.

3. Create a user for Access Manager, use during WNA authentication and record this username for generating the keytab file (no DES encryption).

4. Record the OAM Server *hostname*. For example:

   oam11g.example.com

5. Record the KDC *hostname* and the Active Directory domain/realm:

   ```
   KDC = kdc.lm.example.com
   Default AD Realm = lm.example.com
   ```

6. Create the Service Principal Name (SPN) of the Active Directory user that the OAM Server client is using, and record the results (including encryption type). For example:

   ktpass -princ <*protocol/oamserver_host*> -pass <*mypassword*> -mapuser <user *from step 1*> -out <*path_to_filename*>

   ```
   ktpass -princ HTTP/oam11g.example.com@lm.example.com -mapuser oam -pass
   ```

```
examplepw -out c:\temp\oam.keytab

C:\Users\Administrator>ktpass -princ HTTP/oam11g.example.com@LM.EXAMPLE.COM
-mapuser oam -pass welcome1 -out c:\temp\oam.keytab
Targeting domain controller: kdc.lm.example.com
Using legacy password setting method
Successfully mapped HTTP/oam11g.example.com to oam.
WARNING: pType and account type do not match. This might cause problems.
Key created.
Output keytab to c:\temp\oam.keytab:
Keytab version: 0x502
keysize 80 HTTP/oam11g.example.com@lm.example.com ptype 0 (KRB5_NT_
UNKNOWN) vno 3 etype 0x17 (RC4-HMAC) keylength 16 (0xa3a685f89364d4a
5182b028fbe79ac38)
```

Note: If the user is not part of the Administrators group, follow this procedure to explicitly allow a remote desktop connection for the user.

1. From the Oracle Access Management Console, navigate to the Remote tab through Control Panel -> Remote Settings -> System Properties.
2. Select the "allow connections from computers running any version of Remote Desktop" option.
3. Click Select Users.
4. Add the user.
5. Click Apply.

7. Copy the newly created keytab file to the proper location on the OAM Server and ensure permissions are correct so that the user who created Access Manager can access this file for running `ktpass` command.
8. Create a simple OAM Server Kerberos krb5.conf or krb5.ini configuration. For example:

```
[libdefaults]
default_realm = lm.example.com
ticket_lifetime = 600
clock_skew = 600

[realms]
lm.example.com = { --
kdc = kdc.lm.example.com
admin_server = kdc.lm.example.com
default_domain = lm.example.com
}
[domain_realm]
lm.example.com =LM.EXAMPLE.COM
.lm.example.com = LM.EXAMPLE.COM
```

Note: The OAM account is created in one domain that is trusted by all, lm.example.com. This is not required for lmsib.sprite.com.

9. Verify the `klist` and `kinits` work using the keytab file and SPN of the Active Directory and Access Manager user created, then record the results.

a. kdestroy

b. klist [-k] [-t <*keytab_filename*>]. For example:

```
bash-3.2$ klist -k -t -K -e FILE:/refresh/home/oam.keytab
Keytab name: FILE:/refresh/home/oam.keytab
KVNO Timestamp Principal
---- ----------------- ---------------------------------------------------
3 12/31/69 19:00:00 HTTP/oam11g.example.com@lm.example.com (ArcFour
with HMAC/md5)(0xa3a685f89364d4a5182b028fbe79ac38)
bash-3.2$
```

c. kdestroy

d. kinit [-k] [-t <*keytab_filename*>] [<*principal*>]. For example:

```
klist -k -t -K -e FILE:/refresh/home/oam.keytab

bash-3.2$ kinit -V -k -t /refresh/home/oam.keytab
HTTP/oam11g.example.com@lm.example.com
Authenticated to Kerberos v5
```

e. klist -e

```
bash-3.2$ klist -e
Ticket cache: FILE:/tmp/krb5cc_8000
Default principal: HTTP/oam11g.example.com@lm.example.com

Valid starting Expires Service principal
02/25/12 18:46:55 02/25/12 18:56:55 krbtgt/LM.EXAMPLE.COM@LM.EXAMPLE.COM
Etype (skey, tkt): ArcFour with HMAC/md5, AES-256 CTS mode with 96-bit
SHA-1 HMAC

Kerberos 4 ticket cache: /tmp/tkt8000
klist: You have no tickets cached
bash-3.2$
```

10. Proceed as follows:

Successful: Continue with "Performing Oracle-Specific Prerequisite Tasks".

Not Successful: Stop and resolve the issue which is not related to this integration. Any failure at this point indicates Access Manager WNA cannot work.

50.3 Performing Oracle-Specific Prerequisite Tasks

You need a fully-functioning Access Manager deployment. The tasks in this section are required regardless of the approach you choose. See:

- Confirming Access Manager Operation

50.3.1 Confirming Access Manager Operation

In this procedure you will install and register a WebGate, which configures an Application Domain to protect resources. Then you verify that the environment is working with an authentication scheme other than Kerberos.

Note: Information in this chapter is based on Access Manager.

See Also: Oracle Fusion Middleware High Availability Guide for details about high availability environments with two or more Managed Servers configured to operate as a cluster

To validate your Access Manager environment

1. Log in to the Oracle Access Management Console using Administrator credentials, as described in the Chapter 2.
2. Verify the Default Identity Store connection.
3. Register and install WebGate as an OAM Agent and accept automatic policy generation, as described in the Chapter 16.
4. Add resources to the Application Domain and customize the authentication policy protecting resources to use any Authentication Scheme other than Kerberos.
5. Test the configuration to ensure that resource protection and access are working as expected.
6. Proceed to "Enabling the Browser to Return Kerberos Tokens".

50.4 Enabling the Browser to Return Kerberos Tokens

Use either of the following procedures to configure the Internet Explorer or Mozilla Firefox browsers to return Kerberos tokens. Perform the appropriate procedure on all Active Directory servers.

Note: With Internet Explorer browsers, Integrated Windows Authentication is enabled by default and you might not need any changes to the default configuration for WNA to work.

To enable Kerberos tokens in Internet Explorer

1. On a Windows host in the Active Directory domain, sign in as a domain user.
2. Open the Internet Explorer browser.
3. From the Tools menu, click Internet Options, click Security, click Local Intranet, click Advanced.
4. On the Advanced tab, Security section, check the box beside Enable Integrated Windows Authentication, and click OK.
5. Add *Oracle Access Manager CC host or domain name* to Local Intranet zone (use the format `http://node.host:port` (the *port* is not required)). For example:

   ```
   http://oam11g.example.com
   ```

6. Restart the Internet Explorer browser to enable the change.

To enable Kerberos tokens in Mozilla Firefox

1. In the browser Address bar, enter `about:config`.
2. Add *Oracle Access Manager CC host or domain name* under network.negotiate-auth.trusted-uris as:
   `network.negotiate-auth.trusted-uris=http://oam11g.example.com`

   Multiple URIs are separated with a comma.

50.5 Integrating KerberosPlugin with Oracle Virtual Directory

Oracle Virtual Directory provides the ability to integrate LDAP-aware applications into diverse directory environments while minimizing or eliminating the need to change either the infrastructure or the applications. This section provides the tasks you must perform to configure Access Manager KerberosPlugin authentication for WNA with Oracle Virtual Directory.

This section provides the following topics with steps you can follow:

Task overview: Integrating Access Manager KerberosPlugin with Oracle Virtual Directory

1. Perform tasks in this section:
   - Preparing Oracle Virtual Directory for Integration
   - Registering Oracle Virtual Directory as the Default Store for WNA
   - Setting Up Authentication with Access Manager KerberosPlugin and OVD
2. Configuring Access Manager for Windows Native Authentication
3. Enabling the Browser to Return Kerberos Tokens
4. Validating WNA with Access Manager-Protected Resources

50.5.1 Preparing Oracle Virtual Directory for Integration

Oracle Virtual Directory communicates with other directories through adapters. Before you can start using Oracle Virtual Directory as an identity store, you must create adapters to each of the directories you want to use.

The procedure differs slightly, depending on the directory to which you are connecting. If you choose to use Oracle Internet Directory, Active Directory, Oracle Directory Server Enterprise Edition (ODSEE), or Oracle Unified Directory, the required adapters are created and configured while installing and configuring the Oracle Identity Management Server. For more information on managing the adapters, see "Managing Identity Virtualization Library (libOVD) Adapters" in the Oracle Fusion Middleware Administrator's Guide for Oracle Identity Manager.

In the following procedure you create an account for the OAM Server in the trusted domain. Additionally, you create two Active Directory Adapters (one for each forest) using the fully-qualified domain names as namespaces.

By default Active Directory uses `dc` to construct the root context distinguished name. If this is different in your deployment, adjust your adapter namespaces accordingly.

To deploy Oracle Virtual Directory for this integration

1. Perform tasks described in "Confirming Access Manager Operation".
2. Install Oracle Virtual Directory, as described in Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
3. In **Oracle Virtual Directory Console**, create two Active Directory Adapters (one for each forest) using the fully-qualified domain names as namespaces as follows:
   a. Adapter 1, EXAMPLE Adapter namespace (domain DNS `lm.example.com`):

      ```
      dc=lm,dc=example,dc=com
      ```

   b. Adapter 2, SPRITE Adapter namespace (domain DNS `lmsib.sprite.com`):

      ```
      dc=lmsib,dc=sprite,dc=com
      ```

4. Shut down the OAM Cluster.
5. Restart the AdminServer and all OAM Servers.
6. Proceed with "Registering Oracle Virtual Directory as the Default Store for WNA".

50.5.2 Registering Oracle Virtual Directory as the Default Store for WNA

Users with valid Oracle Access Management Administrator credentials can perform the following task to register Oracle Virtual Directory as the user store for Access Manager interoperating with Windows Native Authentication.

For Windows Native Authentication, the user credentials must reside in Microsoft Active Directory. Access Directory can be managed by Oracle Virtual Directory instance. For single sign-on with Access Manager, each User Identity Store must be registered to operate with Access Manager.

Typically, `userprincipalname` reflects the Windows login name. For WNA with Access Manager, either leave the User Search Base and Group Search Base blank or provide the distinguished name path that is common to both the adapters configured while performing prerequisite tasks.

Prerequisites

Preparing Your Active Directory/Kerberos Topology

Performing Oracle-Specific Prerequisite Tasks

See Also: Chapter 5

To register the Oracle Virtual Directory with Access Manager

1. From the Oracle Access Management Console, open the Data Sources node:

   System Configuration tab
   Common Configuration section
   Data Sources node

2. Click the **User Identity Stores** node, and then click the **Add** button in the tool bar.
3. Enter required values for your Oracle Virtual Directory instance. For example:

   Name: *OVD*
   LDAP Url: *ldap://ovd_host.domain.com:389*
   Principal: `cn=Administrator,cn=users,dc=lm,dc=example,dc=com`
   Credential: `********`
   User Search Base: *dc=com*
   User Name Attribute: *userprincipalname*
   Group Name: cn
   Group Search Base: *dc=com*
   LDAP Provider: Oracle Virtual Directory

4. **Default Store**: Click the **Default Store** button to make this the user Identity Store for Access Manager.
5. Click **Apply** to submit the registration, then dismiss the Confirmation window.
6. Restart the AdminServer and OAM Servers.
7. Proceed to "Setting Up Authentication with Access Manager KerberosPlugin and OVD".

50.5.3 Setting Up Authentication with Access Manager KerberosPlugin and OVD

When a native authentication module does not offer enough flexibility for your needs, you can create a custom authentication module using plug-ins designed to meet specific needs.

The `KerberosPlugin` is a credential mapping module that matches the credentials (encrypted username in the Kerberos ticket (SPNEGO token)) of the user who requests the resource. By default, `KerberosPlugin` maps the domain DNS name to the corresponding distinguished name using the `dc` component. However, if the mapping is different, you can specify the correct mapping as a semi-colon (;) separated list of name:value tokens. For example:

```
LM.EXAMPLE.COM:dc=lm,dc=example,dc=com;LMSIB.SPRITE.COM:dc=lmsib,dc=sprite,dc=com
```

Users with valid Oracle Access Management Administrator credentials can perform the following task to replace default `KerberosPlugin` steps with steps that enable integration for Windows Native Authentication using the Oracle Access Management Console.

See Also: Chapter 14

To set up the Access Manager KerberosPlugin for OVD

1. From the Oracle Access Management Console, open the:

   System Configuration tab
   Access Manager section
   Authentication Modules node
   Custom Authentication Modules node
   KerberosPlugin

2. On the KerberosPlugin page, click the **Steps** tab.

   Steps Tab: Replace stepKTA, as described here, then click **Save**.

   a. Click **stepKTA** then click the **Delete** (**x**) button to remove this step.

   b. Click **the Add (+)** button and add the following step to the plug-in:

Element	Description
Name	**stepKTA**
Class	**KerberosTokenAuthenticator**

   Step Details:

   Edit this new **stepKTA** to change the Step Orchestration value from NULL (defined during the step deletion) to its default value of:

   ```
   On Success: StepUIF Failure Failure
   ```

   Also, confirm that this new **stepKTA** includes the parameter `KEY_DOMAIN_DNS2DN_MAP` (created earlier), enter the appropriate values for your deployment and click Save.

Element	Description
KEY_DOMAIN_DNS2DN_MAP	Active Directory Forests in your deployment. For example: `LM.EXAMPLE.COM:dc=lm,dc=example,dc=com;LMSIB.SPRITE.COM:dc=lmsib,dc=sprite,dc=com` Note: By default, a DN domain name a.b.c is mapped into dc=a,dc=b,dc=c. Only if the mapping is different, one has to specify the parameter. Otherwise it is best not to use it and let the default behavior take its course.
Service Principal	HTTP/oam11g.example.com@LM.EXAMPLE.COM
keytab.conf	keytab.conf location for stepKTA
krb5.conf	krb5.conf location for stepKTA

3. **stepUIF Details**: Configure as follows and click **Save**:

Element	Description
KEY_LDAP_FILTER	(samAccountName={KEY_USERNAME})
KEY_IDENTITY_STORE_REF	*OVD*
KEY_SEARCHBASE_URL	Leave this empty

4. **stepUI and stepUA:** Configure as follows and **Save**:

KEY_IDENTITY_STORE_REF	*OVD*

5. Save the changes.
6. Restart the OAM Cluster.
7. Proceed with "Configuring Access Manager for Windows Native Authentication".

50.6 Integrating Access Manager KerberosPlugin with Search Failover

In cases where Oracle Virtual directory deployment is not viable, and it is acceptable to perform search failover based on some order or hierarchy when finding the user, you can configure Access Manager as described in this section.

Task overview: Integrating Access Manager KerberosPlugin with Search Failover

1. Completing tasks in the following earlier sections:
   - "Preparing Your Active Directory/Kerberos Topology"
   - "Performing Oracle-Specific Prerequisite Tasks" (except "Preparing Oracle Virtual Directory for This Integration", which is not needed for Search Failover)
   - "Enabling the Browser to Return Kerberos Tokens"
2. Performing tasks in this section:
   - "Registering Microsoft Active Directory Instances with Access Manager"
   - "Setting Up Access Manager KerberosPlugin for ADGCs"
3. "Configuring Access Manager for Windows Native Authentication"
4. "Validating WNA with Access Manager-Protected Resources"

50.6.1 Registering Microsoft Active Directory Instances with Access Manager

Users with valid Oracle Access Management Administrator credentials can perform the following task to register each Active Directory Global Catalog (ADGC), with relevant search bases and naming attributes, as an individual User Identity Store for Oracle Access Management.

Prerequisites

A fully-configured Microsoft Active Directory authentication service should be set up with User accounts for mapping Kerberos services, Service Principal Names (SPNs) for those accounts, and Key tab files. For more information, see *Oracle Fusion Middleware Securing Oracle WebLogic Server* 11*g* Release 1 (10.3.3).

See Also: Chapter 5 for details about registering data sources

To register Microsoft Active Directory Global Catalogs with Access Manager

1. From the Oracle Access Management Console, open the Data Sources node:

   System Configuration tab
   Common Configuration section
   Data Sources node

2. Click the **User Identity Stores** node, and then click the **Add** button in the tool bar.
3. Enter required values for your first ADGC. For example:

   Name: *ADGC1-EXAMPLE*
   LDAP Url: *ldap://ADGC1_host.domain.com:389*
   Principal: `cn=Administrator,cn=users,dc=lm,dc=example,dc=com`
   Credential: ********
   User Search Base: *dc=lm,dc=example,dc=com*
   User Name Attribute: *userprincipalname*
   Group Search Base: *dc=lm,dc=example,dc=com*
   LDAP Provider: AD

4. **Default Store**: Click the **Default Store** button.
5. Click **Apply** to submit the changes and dismiss the confirmation window.
6. Repeat these steps to add the second ADGC (ADGC2-SPRITE) with appropriate search bases and naming attributes.

   Name: *ADGC2-SPRITE*
   LDAP Url: *ldap://ADGC2_host.domain.com:389*
   Principal: `cn=Administrator,cn=users,dc=lm,dc=example,dc=com`
   Credential: ********
   User Search Base: *dc=lmsib,dc=example,dc=com*
   User Name Attribute: *userprincipalname*
   Group Search Base: *dc=lmsib,dc=example,dc=com*
   LDAP Provider: AD

7. Restart the AdminServer and OAM Servers.
8. Proceed to "Setting Up Access Manager KerberosPlugin for ADGCs".

50.6.2 Setting Up Access Manager KerberosPlugin for ADGCs

When a native authentication module does not offer enough flexibility for your needs, you can create a custom authentication module using plug-ins designed to meet specific needs.

The KerberosPlugin is a credential mapping module that matches the credentials (username and password) of the user who requests a resource to the encrypted "Kerberos ticket". By default, KerberosPlugin maps the domain DNS name to the corresponding distinguished name using the `dc` component. However, if the mapping is different, you can specify the correct mapping as a semi-colon (;) separated list of name:value tokens. For example:

```
LM.EXAMPLE.COM:dc=lm,dc=example,dc=com;LMSIB.SPRITE.COM:dc=lmsib,dc=sprite,dc=com
```

Users with valid Oracle Access Management Administrator credentials can perform the following task to replace or update KerberosPlugin steps with steps that point to the ADGCs you have created. These will operate in tandem with their counterparts (if the initial step and ADGC fail, the secondary ADGC is used).

Prerequisites

Preparing Your Active Directory/Kerberos Topology

Performing Oracle-Specific Prerequisite Tasks

See Also: Chapter 14 for plug-in details

To set up the Access Manager KerberosPlugin for ADGCs

1. From the Oracle Access Management Console, open the:

   System Configuration tab
   Access Manager section
   Authentication Modules node
   Custom Authentication Modules node
   KerberosPlugin

2. On the KerberosPlugin page, click the **Steps** tab.

   Steps Tab: Replace **stepKTA**, as described here, then click **Save**.

   a. Click **stepKTA** then click the **Delete** (x) button to remove this step.

   b. Click **the Add (+)** button and add the following step to the plug-in:

Element	Description
Name	**stepKTA**
Class	**KerberosTokenAuthenticator**

New stepKTA Details:

Confirm that this new stepKTA includes the parameter `KEY_DOMAIN_DNS2DN_MAP` (created earlier) and enter values for your deployment:

Element	Description
KEY_DOMAIN_DNS2DN_MAP	`LM.EXAMPLE.COM:dc=lm,dc=example,dc=com;LMSIB.SPRITE.COM:dc=lmsib,dc=sprite,dc=com`
Service Principal	HTTP/oam11g.example.com@LM.EXAMPLE.COM

Element	Description
keytab.conf	keytab.conf location for stepKTA. For example: /refresh/home/oam.keytab
krb5.conf	krb5.conf location for stepKTA. /etc/krb5.conf

3. **stepUIF: Step Details** (configure as follows and save):

Element	Description
KEY_IDENTITY_STORE_REF	ADGC1-ORACLE
KEY_SEARCHBASE_URL	{KEY_USERDOMAIN}
KEY_LDAP_FILTER	(samAccountName={KEY_USERNAME}) NOTE: For untrusted, multi-domain Active Directory environments, use the `userPrincipalName` user attribute.

4. **stepUI and stepUA: Step Details (**configure these steps and save):

Element	Description
KEY_IDENTITY_STORE_REF	ADGC1-ORACLE

5. Save the changes.
6. **Add stepUIF2**: This will operate in tandem and execute if stepUIF fails:

Element	Description
KEY_IDENTITY_STORE_REF	ADGC2-SPRITE
KEY_SEARCHBASE_URL	{KEY_USERDOMAIN}
KEY_LDAP_FILTER	(samAccountName= {KEY_USERNAME}) NOTE: For untrusted, multi-domain Active Directory environments, use the `userPrincipalName` user attribute.

7. **Add stepUI2:** This will operate in tandem and execute if stepUI fails:

Element	Description
KEY_IDENTITY_STORE_REF	ADGC2-SPRITE

8. **Add stepUA2:** This executes when stepUI2 succeeds:

Element	Description
KEY_IDENTITY_STORE_REF	ADGC1-EXAMPLE and ADGC2-SPRITE, respectively

9. **Add Step Details**: Common Configuration, Plugins, KerberosTokenAutheticator.

   Enter values for your deployment:

Element	Description
keytab.conf	keytab.conf location for stepKTA. For example: `/refresh/home/oam.keytab`
krb5.conf	krb5.conf location for stepKTA. For example: `/etc/krb5.conf`

10. Restart the OAM Cluster.
11. Proceed with "Configuring Access Manager for Windows Native Authentication".

50.7 Configuring Access Manager for Windows Native Authentication

Whether you are using Oracle Virtual Directory or Active Directory with Global Catalogs, this section provides the following topics with steps you can follow:

- Creating the Authentication Scheme for Windows Native Authentication
- Configuring Access Manager Policies for Windows Native Authentication
- Configuring WNA for NTLM Fallback
- Verifying the Access Manager Configuration File

50.7.1 Creating the Authentication Scheme for Windows Native Authentication

Users with valid Oracle Access Management Administrator credentials can perform the following task to define an authentication scheme for the Access Manager to use in policies protecting applications for Windows Native authentication.

Prerequisites

Integrating KerberosPlugin with Oracle Virtual Directory

Or

Integrating Access Manager KerberosPlugin with Search Failover

See Also: Chapter 19 for authentication scheme details

To create the Kerberos authentication scheme for WNA

1. Open the Oracle Access Management Console, Launch Pad and click **Authentication Schemes** in the **Access Manager** section.

   The Search Authentication Schemes page opens.
2. Under **Search**, type *KerberosScheme* in the **Name** box and click Search.
3. Click **KerberosScheme** in the search results to open it.

   Set (or confirm) the following attributes:

   Challenge Method: **WNA**

   Authentication Module: **KerberosPlugin**
4. Finish configuring **KerberosScheme** for your deployment.
5. Click **Apply** and close the confirmation window.
6. Proceed to "Configuring Access Manager Policies for Windows Native Authentication".

50.7.2 Configuring Access Manager Policies for Windows Native Authentication

In this procedure you edit (or Create) an Application Domain and policies to protect resources for Windows Native Authentication.

Prerequisites

Creating the Authentication Scheme for Windows Native Authentication

See Also: Chapter 20 for details about managing policies

To set Access Manager policies for Windows Native Authentication

1. Open the Oracle Access Management Console, Launch Pad and click **Application Domains** in the **Access Manager** section.
2. Open (or Create) the desired Application Domain, as described in "Managing Application Domains and Policies Using the Console" on page 20-10.
3. **Resource Definitions**: Add Resource Definitions to the domain as described in "Adding and Managing Policy Resource Definitions" on page 20-14.
4. **Authentication Policies**:
   a. Open the Authentication Policies node, and open (or Create) the desired Authentication Policy with the following attributes:

      Authentication Scheme: **KerbScheme** as the and ensure that it includes the updated **KerberosPlugin**.

      Choose **KerbScheme** as the Authentication Scheme and ensure that it includes the updated **KerberosPlugin**.

   b. Click **Apply**, close the Confirmation window.
   c. **Resources for Authentication Policy**: Add Resources to the Authentication Policy as described in the Oracle Fusion Middleware Administrator's Guide for Oracle Access Management.
   d. Complete the Authentication Policy with any desired Responses.
5. **Authorization Policies**: Complete the Authentication Policy with any desired Responses or Conditions as described in "Defining Authorization Policies for Specific Resources" on page 20-37.
6. Proceed to "Verifying the Access Manager Configuration File".

50.7.3 Configuring WNA for NTLM Fallback

Follow these steps to configure Access Manager to use WNA Fallback Authentication upon receiving an NTLM token. For more information, see Section 50.1.1, "Access Manager WNA Login and Fall Back Authentication."

1. Stop the OAM managed server.
2. Back up the following file to a safe location:

   `<WLS domain>/config/fmwconfig/oam-config.xml`
3. Modify `<WLS domain>/config/fmwconfig/oam-config.xml` as follows:
   a. Find the following line:

      ```
      <Setting Name="CredentialCollector" Type="htf:map">
      ```

   b. After the line, add the following elements (if they are not already present):

```
-------------------------------------------------------------------------
       <Setting Name="WNAOptions" Type="htf:map">
       <Setting Name="HandleNTLMResponse" Type="xsd:string">BASIC</Setting>
       </Setting>

-------------------------------------------------------------------------
```

If the following parameter already exists:

```
<Setting Name="HandleNTLMResponse" Type="xsd:string">DEFAULT</Setting>
```

change the `HandleNTLMResponse` value from `DEFAULT` to `BASIC`. For example:

```
<Setting Name="HandleNTLMResponse" Type="xsd:string">BASIC</Setting>
```

4. Restart the OAM server processes.

50.7.4 Verifying the Access Manager Configuration File

Verify that the following are specified in the `oam-config.xml` file:

- path to the `krb5.conf` file
- path to the `keytab` file
- a principal to connect with KDC

Example: oam-config.xml

```
<Setting Name="KerberosModules" Type="htf:map">
   <Setting Name="6DBSE52C" Type="htf:map">
      <Setting Name="principal"
          Type="xsd:string">HTTP/oam11g.example.com@LM.EXAMPLE.COM
      </Setting>
      <Setting Name="name" Type="xsd:string">XYZKerberosModule</Setting>
      <Setting Name="keytabfile"
          Type="xsd:string">/refresh/home/oam.keytab
      </Setting>
      <Setting Name="krbconfigfile" Type="xsd:string">/etc/krb5.conf</Setting>
   </Setting>
</Setting>
```

50.8 Validating WNA with Access Manager-Protected Resources

Integrated Windows Authentication (IWA) is associated with Microsoft products that use SPNEGO, Kerberos, and NTLMSSP authentication protocols included with certain Windows operating systems. The term Integrated Windows Authentication (IWA) is used for the automatic authentication process that happens between Microsoft Internet Information Services, Internet Explorer, and Microsoft's Active Directory.

> **Note:** IWA is also known by other names such as HTTP Negotiate authentication, NT Authentication, NTLM Authentication, Domain authentication, Windows Integrated Authentication, Windows NT Challenge/Response authentication and Windows Authentication.

WNA authentication occurs internally. When integrated with Access Manager:

- The user is redirected to the Access Manager for authentication.

- The OAM Server requests authentication with a www-negotiate header when the resource is protected by Access Manager with a challenge method of WNA.
- The browser configured for Integrated Windows Authentication (IWA) sends the Kerberos SPNEGO token to the OAM Server for decryption.
- The OAM Server decrypts the received user SPNEGO token (using keytab) and redirects the user back to the Agent with the cookie and gets access to the resource.

To validate WNA with Access Manager-protected resources

1. Log in to a Windows system in the Active Directory domain as a domain user.
2. Sign in to the Windows OS client using the Windows domain credentials stored in a hosted Active Directory that is registered with Access Manager.
3. Open an Internet Explorer browser window, and enter the URL for the OAM-protected application in your environment.
4. Confirm that you are logged in to the application with your Windows domain credentials with no additional login.

50.9 Configuring WNA For Use With DCC

The Kerberos authentication protocol provides a mechanism for mutual authentication between entities before a secure network connection is established. This section provides information on how to configure Windows Native Authentication and Kerberos to use the DCC with Access Manager. It contains the following topics.

- Initializing the Kerberos Protocol
- Configuring Access Manager

> **Note:** See Section 18.5, "Introducing Access Manager Credential Collection and Login" for details on DCC.

50.9.1 Initializing the Kerberos Protocol

To initialize Access Manager for the Kerberos protocol, do the following.

1. Run the `ktpass` command on the Windows data store, substituting the appropriate values for service, realm, user and user password.

   ```
   ktpass -princ <SPN>@<REALM> -pass <Password> -mapuser <UserName>
    -out <Keytab file name>
   ```

   For example:

   ```
   ktpass -princ HTTP/adc.example1.com@EXAMPLE.COM -pass Welcome1 -mapuser
   anil@example.com -out foobar2.keytab
   ```

   This command creates an SPN and associates it with the local service account created in the previous step.

   > **Note:** Only RC4-HMAC encryption is supported; do not use DES encryption.

2. Copy the keytab output generated by the `ktpass` command and leave it at an appropriate location on the Access Manager server.

3. Modify the `/etc/krb5.conf` file on the Access Manager server accordingly.

   For example:

```
[loggings]
 default = FILE:/scratch/anikukum/krb/krb5libs.log
 kdc = FILE:/scratch/anikukum/krb/krb5kdc.log
 admin_server = FILE:/scratch/anikukum/krb/krbadmin.log

[libdefaults]
 default_realm = EXAMPLE.COM
 ticket_lifetime = 24h
 forwardable = yes
 dns_lookup_realm = false
 dns_lookup_kdc = false
 default_tkt_enctypes = rc4-hmac
 default_tgs_enctypes = rc4-hmac
 permitted_enctypes = rc4-hmac
 clockskew = 3600

[realms]
 EXAMPLE.COM = {
  kdc = adc.example1.com
  admin_server = adc.example1.com
  default_domain = EXAMPLE.COM
 }

[domain_realm]
example.com = EXAMPLE.COM
.example.com = EXAMPLE.COM
```

   Note: For multiple domain Active Directory environments, add entries for each domain as documented below.

```
[realms]
 EXAMPLE.COM = {
  kdc = adc.example1.com
  admin_server = adc.example1.com
  default_domain = EXAMPLE.COM
 }

 SPRITE.COM = {
  kdc = lmsib.sprite.com
  admin_server = lmsib.sprite.com
  default_domain = SPRITE.COM
 }

[domain_realm]
example.com = EXAMPLE.COM
.example.com = EXAMPLE.COM
sprite.com = SPRITE.COM
.sprite.com = SPRITE.COM
```

4. Run the `kinit` command on the Access Manager machine to obtain a Kerberos ticket.

```
kinit  -k -t <keytab file>  <SPN>@<Realm>
```

For example:

```
kinit -k -t foobar1.keytab HTTP/adc.example1.com@EXAMPLE.COM
```

5. Validate the Kerberos ticket on the Access Manager machine using the klist command.

```
klist
```

50.9.2 Configuring Access Manager

This procedure will configure Access Manager to use the Kerberos Authentication Module.

1. Modify the Challenge Method of the Kerberos authentication scheme to WNA, if applicable.
   a. Click Authentication Schemes from the Launch Pad.
   b. Search for KerberosScheme and click Edit.
   c. Change the Challenge Redirect URL to DCC WebGate URL.

      For example, http://<DCC-WebGate-Hostname>:<Port>
   d. Click Apply and close the page.
2. Configure the User Identity Store for LDAP Authentication Module to the configured Windows data store.
   a. Click Authentication Modules from the Launch Pad.
   b. Search for LDAP and click Edit.
   c. Change the User Identity Store to, for example, Active Directory.
   d. Click Apply and close the page.
3. Configure the Application Domain protecting the resource to use the Kerberos authentication scheme.

   Before accessing the protected resource ensure that its URL is added to the local intranet Site of Security. Additionally, check the Enable Integrated Windows Authentication option under Security in the Advance tab.

50.10 Configuring Access for Multiple Untrusted Active Directory Forests

Windows Native Authentication (WNA) allows a User who is logged into their desktop, and is a member of an Active Directory domain, to open an Internet browser, locate an Access Manager protected application, and login using their Windows Kerberos ticket without being challenged (essentially, single sign-on). This solution currently works against a single Active Directory Forest, but if a client has multiple untrusted Active Directory Forests the procedure documented in this section must be followed. This procedure requires that:

- (Minimally) OAM11gR1 with Bundle Patch 05 (11.1.1.5.5) or OAM11gR2 (11.1.2.0.1) is installed and working.

  This procedure requires that OAM11gR1 (11.1.1.5.0) be patched with bundle patch BP05 (patch 14760839). It is not necessary to patch OAM11gR2 (11.1.2.0.1) although it is a best practice to apply the latest patch which usually includes fixes and some new features.

- OVD11gR1+ is installed and configured against all three Active Directory Forests.

  An alternative is to use a single Enterprise Directory Server LDAP store as long as the userPrincipalName or samAccountNames are synchronized in all Active Directory domains from which the Users would login.

- An experienced Administrator who is familiar with OAM11g, OVD11g, and has knowledge of Kerberos and WNA is following the procedure.

Additionally, out-of-the-box the standard OAM Kerberos plugin works to accomplish basic WNA integration against a single domain. However, a custom Kerberos authentication module is required to authenticate against multiple untrusted forests or domains. The following sections guide you through the procedure.

- Create Service Principal Accounts
- Generating a Master Keytab File
- Configuring the krb5.conf File
- Validating Access to the KDC Servers Using the Keytabs
- Creating the Active Directory or Oracle Virtual Directory User Stores
- Creating the Custom Kerberos Authentication Module
- Configuring Integrated Windows Authentication
- Testing the Configurations
- Troubleshooting the Configurations

50.10.1 Create Service Principal Accounts

A service principal account must be created on each Kerberos Key Distribution Center (KDC) server that will be used by the Access Manager server for WNA. The service principal account is created like any User, does not need any special permission or to be part of any group, and the user name can be different across individual KDC servers. However, even though this new account is created like a regular User, it should be considered a service account. The account is not meant for a User to login to a domain; it is only meant as a service principal that is mapped and encrypted into a keytab. Access Manager will use the keytab for WNA against each respective KDC server.

Note: If the user is not part of the Administrators group, you must explicitly *Allow Remote Desktop connection* using the KDC console as follows.

1. Navigate through Control Panel -> Remote Settings -> System Properties (Remote tab).
2. Select the *Allow connections from computers running any version of Remote Desktop* option.
3. Click *Select Users* and add the service principal user.
4. Click Apply.

50.10.2 Generating a Master Keytab File

A keytab is a file that contains an unencrypted list of service principals and their respective keys. The Access Manager Kerberos authentication module will use the keytab to validate the User's Kerberos service ticket as part of the SSO process.

The ktpass tool is a utility, available with the Windows Server, used to create keytab files. The first keytab generated for a KDC server is considered the seed keytab file. ktpass will then be used to generate a keytab for each KDC server to which Access Manager will be authenticating. These additional keytabs will be appended to the seed file so that the final keytab file will contain all keytabs from all KDC servers to be used by WNA and Access Manager. This final file is called the master keytab file.

1. Run one of the following ktpass commands to generate the first seed keytab file based on the server you are running.

   - If running a Windows 2003 Server, use:

     ```
     ktpass -princ HTTP/myoam.hostname.com@FOREST1.SPRITE.COM /
      -mapuser oamkrb5 /
      -pass Oracle123 /
      -out forest1.krb5.keytab
     ```

   - If running a Windows 2008 Server, use:

     ```
     ktpass -princ HTTP/myoam.hostname.com@FOREST1.SPRITE.COM /
      -mapuser oamkrb5 /
      -pass Oracle123 /
      -ptype KRB5_NT_PRINCIPAL /
      -crypto ALL /
      -out forest1.krb5.keytab
     ```

   The parameters are described in Table 50–2.

Table 50–2 ktpass Keytab Generation Parameter Descriptions

Parameter	Description
-princ	HTTP/<oam_server_hostname>@<kdc_server_hostname>
-mapuser	samAccountName of the security principal account
-pass	Password for the security principal account
-ptype	The general principal type (for Windows 2008 Server only)
-crypto	Tells ktpass to output all crypto types (for Windows 2008 Server only)
-out	The keytab output file name. The file name is arbitrary and can be anything. This command generates a keytab file named forest1.krb5.keytab. A tip to remember: prefix the file name with the KDC server on which it was generated.

   Successful keytab file generation will display the following message. The warning is benign and can be ignored.

   ```
   Targeting domain controller: orcl.forest1.sprite.com
   Using legacy password setting method
   Successfully mapped HTTP/myoam.hostname.com to oamkrb5.
   WARNING: pType and account type do not match. This might cause problems.
   Key created.
   Output keytab to forest1.krb5.keytab:
   Keytab version: 0x502
   keysize 75 HTTP/myoam.hostname.com@FOREST1.SPRITE.COM ptype 0
    (KRB5_NT_UNKNOWN) vno 3 etype 0x17
    (RC4-HMAC) keylength 16 (0x8b2318524d2e3e2e31885afc21024cf5)
   ```

2. Using the Active Directory console, validate that the seed keytab was correctly mapped to the service account.

a. Open Active Directory Users and Computers in the Active Directory console and navigate to the container in which the service account was created.

b. Right click on the service principal user created and select Properties.

   In this procedure, the service principal account is oamkrb5.

c. Select the Account tab and check to see that the User logon name field has the value HTTP/myoam.hostname.com.

   This shows that when ktpass was run it mapped oamkrb5 to the keytab file that was generated. This validation sequence can be used for any keytab generation.

3. Generate the keytabs for each KDC server being used, appending these subsequent keytabs to the seed keytab file just created.

   This is an iterative process that will create a single master file containing all keytabs; this file will be named the master.krb5.keytab file. Follow this sub procedure to build a master keytab file in a systematic way.

   a. Copy the seed forest1.krb5.keytab file previously created to the server on which you are creating the second/next keytab.

      The seed file will be configured as the input file when you run ktpass on the next server; in this example, forest2.

   b. Run the ktpass tool using an additional -in parameter.

      The value of this parameter would be the name of the seed keytab file previously created on forest1 but currently residing on forest2. The value of -in will be <kdc_server_host>.krb5.keytab; in this example, forest1.krb5.keytab.

      Note: Be sure to use the correct parameters for your server as documented in Table 50–2.

```
ktpass -princ HTTP/myoam.hostname.com@FOREST2.PIXIE.COM /
 -mapuser oamkrb5 /
 -pass Oracle123 /
 -ptype KRB5_NT_PRINCIPAL /
 -crypto ALL /
 -in forest1.krb5.keytab /
 -out forest2.krb5.keytab
```

      Note that the new keytab file (with two defined keytabs) is now named forest2.krb5.keytab, the value of the -out parameter.

   c. Repeat these steps on each KDC server for which you are generating a keytab.

      For example, copy the new forest2.krb5.keytab file to the next forest3 KDC server and run ktpass. Be sure to change the values of the -in and -out parameters, and use the correct parameters (Table 50–2) based on the server. Each new keytab file will be appended with the appropriate generated keytab.

   d. After configuring a keytab and appending it to the keytab file for each KDC server, copy the last keytab file created to master.krb5.keytab.

      For example:

```
copy forest3.krb5.keytab master.krb5.keytab
```

e. Copy the master.krb5.keytab file to each of the Access Manager Servers being used in the topology.

You can place it anywhere as long as it is accessible by the Access Manager server. It is recommended that the file is owned by the same user account that can start and stop the Access Manager server.

4. Run the following command in a Linux terminal session to display and validate the contents of the master keytab file.

```
klist -k -t -K -e /u01/oracle/wna/master.krb5.keytab
```

klist is a Linux tool. If using a different platform, search for a tool that will do this on your platform. The output lists each keytab line-by-line. Ensure that the proper crypto is used for your Windows server. Following is a sample output for our example input.

```
Keytab name: FILE:/u01/oracle/wna/master.krb5.keytab
KVNO Timestamp         Principal
---- ----------------- --------------------------------------------------------
   3 12/31/69 18:00:00 HTTP/iam.acme.com@FOREST1.SPRITE.COM (ArcFour with
HMAC/md5)  (0x8b2318524d2e3e2e31885afc21024cf5)
   5 12/31/69 18:00:00 HTTP/iam.acme.com @FOREST2.PIXIE.COM (ArcFour with
HMAC/md5)  (0x8b2318524d2e3e2e31885afc21024cf5)
   3 12/31/69 18:00:00 HTTP/iam.acme.com @FOREST3.PIXIE.COM (ArcFour with
HMAC/md5)  (0x8b2338524d2e3a2e31885afc21024cf5)
```

Follow this step on every Access Manager server to which the master keytab file is copied.

50.10.3 Configuring the krb5.conf File

The /etc/krb5.conf file contains Kerberos configuration information including a mapping to all the KDC and administration servers for the Kerberos realms that the Access Manager server will use. The following example illustrates KDC mapping for this example. If additional KDC configuration is required, copy the respective lines from the [realms] and [domain_realm] sections as needed. Once created, the krb5.conf file can be copied to all the Access Manager servers.

Note: You need to be root to make changes to the krb5.conf file.

```
[libdefaults]
 default_realm = FOREST1.SPRITE.COM
 ticket_lifetime = 600
 dns_lookup_realm = false
 dns_lookup_kdc = false
 forwardable = yes
 udp_preference_limit=1
 default_tkt_enctypes = RC4-HMAC
 default_tgs_enctypes = RC4-HMAC

[realms]
 FOREST1.SPRITE.COM = {
  kdc = AD_HOSTNAME_FQN
  admin_server = AD_HOSTNAME_FQN
  default_domain = FOREST1.SPRITE.COM
 }
 FOREST2.PIXIE.COM = {
```

```
  kdc = host1.server.com
  admin_server = host1.server.com
  default_domain = FOREST2.PIXIE.COM
 }
 FOREST3.FAY.COM = {
  kdc = host2.server.com
  admin_server = host2.server.com
  default_domain = FOREST3.FAY.COM
 }


[domain_realm]
 .forest1.sprite.com = FOREST1.SPRITE.COM
 forest1.sprite.com = FOREST1.SPRITE.COM
 .forest2.pixie.com = FOREST2.PIXIE.COM
 forest2.pixie.com = FOREST2.PIXIE.COM
.forest3.fay.com = FOREST3.FAY.COM
 forest3.fay.com = FOREST3.FAY.COM
```

50.10.4 Validating Access to the KDC Servers Using the Keytabs

Since the master.krb5.keytab file lives on each Access Manager server, the Access Manager server must be able to reach each KDC server across the network or Kerberos authentication will fail. The command line tool kinit is used for this validation. It forces each keytab to attempt authentication against its respective KDC server. The following commands will attempt authentication of the keytabs in our example.

```
kinit -V HTTP/iam.acme.com@FOREST1.SPRITE.COM /
-k -t /u01/oracle/wna/master.krb5.keytab

Authenticated to Kerberos v5

kinit -V HTTP/iam.acme.com@FOREST2.PIXIE.COM /
-k -t /u01/oracle/wna/master.krb5.keytab

Authenticated to Kerberos v5

kinit -V HTTP/iam.acme.com@FOREST3.FAY.COM /
-k -t /u01/oracle/wna/master.krb5.keytab

Authenticated to Kerberos v5
```

Each time kinit is run an output should be displayed that proves the Kerberos authentication was successful against the KDC. If an error is displayed, verify that the Access Manager server can reach the KDC host by checking that there is no firewall causing problems or network issues. In a worst case scenario, recreate the master.krb5.keytab file. Perform this validation on each Access Manager server to which the master.krb5.keytab was copied.

50.10.5 Creating the Active Directory or Oracle Virtual Directory User Stores

This procedure will create the User Directory profiles for each user store in the topology.

1. Log into Access Manager Administration Console using Administrator credentials.
2. Click the User Identity Stores link.

3. Click Create in the resulting tab.
4. Enter the appropriate details in the attribute fields.
5. In the Access System Administrators section, click the + above the table.
6. Follow the displayed dialog boxes to add administrative users from the directory.
7. Click Apply and log out of the Administration Console.
8. Validate the configuration by logging into the Access Manager Administration Console as one of administrative users added.

   You should be able to see the store's profile.
9. Set the store to be the Default Store if it is the primary store.

Follow these steps to add other user stores as required.

50.10.6 Creating the Custom Kerberos Authentication Module

The Kerberos authentication module retrieves the Kerberos ticket, iterates through the keytabs to find a match that will validate the ticket and, based on the domain into which the user is logged, it provides the correct search base to find the user in the correct forest. The latter function allows for identification of the correct person even if there are duplicate samAccountNames. This procedure will create the custom Kerberos authentication module needed for this function.

1. Log into Access Manager Administration Console using Administrator credentials.
2. Navigate to System Configuration > Access Manager Settings and expand Authentication Modules.
3. Select Custom Authentication module.
4. Click the Create (+) button.
5. Enter a name.

   For example, wnaMultiDomainAuthnModule.
6. Enter a description.

   For example, WNA Multi-domain Untrusted Authentication Module.
7. Select the Steps tab.
8. Click the + sign to add a new step.

   The Add new step dialog is displayed.
9. Enter values for this first step (stepKTI as documented in Table 50–3) and click OK.
10. Create four more steps using the values documented in Table 50–3.

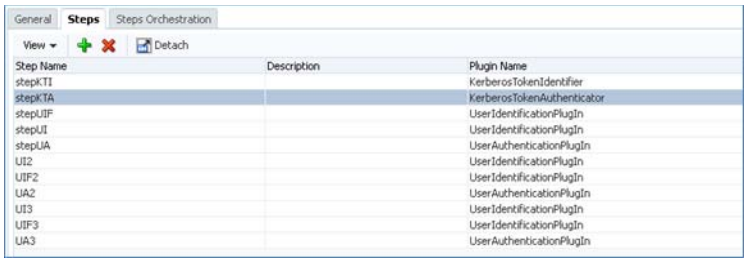
Table 50–3 Values for Kerberos Authentication Module Steps

Step Name	Description	Plugin Name
stepKTI	KTI	KerberosTokenIdentifier
stepKTA	KTA	KerberosTokenAuthenticator
stepUIF	UIF	UserIdentificationPlugin
stepUI	UI	UserIdentificationPlugin
stepUA	UA	UserAuthenticationPlugin

11. Click Apply after (and only after) all five steps have been created.

    When all five steps have been created they will be listed under the Steps tab. For multiple Active Directory instances in your environment, you need only repeat "stepUIF", "stepUI" and "stepUA" plugins for each instance as illustrated in Figure 50–1.

Figure 50–1 Steps After Creation



12. Click the Steps Orchestration tab to configure the Steps order.

    a. Select "stepKTI" as the Initial Step.

    b. Configure the orchestration of the remaining steps as in Table 50–4 .

Table 50–4 Steps Orchestration Order

Step Name	On Success	On Failure	On Error
stepKTI	stepKTA	stepUI	failure
stepKTA	stepUIF	failure	failure
stepUIF	success	failure	failure
stepUI	stepUA	failure	failure
stepUA	success	failure	failure

For the multiple Active Directory instances example previously referred to, the orchestration is illustrated in Figure 50–2.

Figure 50–2 Steps After Orchestration

    c. Click Apply only after all the orchestration steps have been properly configured.

    A message is displayed that the Authentication Module has been successfully created.

13. Click the Steps tab to enter values for the parameters.

In this step, click Save and Apply after entering the values for each step. Appropriate values are documented in Table 50–5.

Table 50–5 Steps Parameter Values

Step Name	Parameter	Value
StepKTA	KEY_KRB_CONFIG_FILE	/etc/krb5.conf
	KEY_PRINCIPAL	HTTP/myoam.hostname.com@forest1.sprite.com This value is only the first domain because Access Manager iterates through the master keytab file to find the correct server.
	KEY_KEYTAB_FILE	/u01/oracle/wna/master.krb5.keytab
	KEY_DOMAIN_DNS2DN_MAP	<KDC SERVER NAME>:<top_namespace_of_KDC> For example: FOREST1.SPRITE.COM:dc=forest1,dc=sprite,dc=com; FOREST2.PIXIE.COM:dc=forest2,dc=pixie,dc=com; FOREST3.FAY.COM:dc=forest3,dc=fay,dc=com If there are more or less KDC servers, simply add or subtract as needed. Use a semi-colon as a delimiter to separate each KDC server.
StepUIF	KEY_IDNETITY_STORE_REF	<IdentityStoreName> (the name of identity store defined in the Access Manager Console)
	KEY_LDAP_FILTER	(uid={KEY_USERNAME}) This parameter uses a value to tell the plugin which attribute to search in order to find the user's samAccountName. For example, (uid={KEY_USERNAME}) tells Access Manager to use uid because the OVD adapter uses the OAM/AD Adapter with Mapper, which maps the standard inetOrgPerson attribute to the Microsoft implementation of the User object classes which translates to samAccountName. You should change the attribute to whatever your OVD adapter is mapping to the attribute samAccountName.
	KEY_SEARCH_BASE_URL	{KEY_USERDOMAIN} This parameter tells the plugin to grab the domain from which the User has logged in and uses that name space to set the searchbase when searching in OVD. For example, if the user is user.name@forest1.sprite.com, the plugin constructs (dc=forest1,dc=sprite,dc=com) for the searchbase. This helps deal with duplicate samAccountNames across forests.
StepUI	KEY_IDENTITY_STORE_REF	<IdentityStoreName> (the name of identity store defined in the Access Manager Console)
StepUA	KEY_IDENTITY_STORE_REF	<IdentityStoreName> (the name of identity store defined in the Access Manager Console)

Tip: Another option is to use the values (userprincipalname={KEY_USERNAME}@{KEY_USERREALM}). The plugin would extract the username and realm; for example with user.name@forest1.sprite.com the search passed from OAM to LDAP would be (&(userprincipalname=user.name@FOREST1.SPRITE.COM)(objectclass=user)). If the attribute in your LDAP store is not userprincipalname, then change it.

14. Apply the new authentication module to an Authentication Scheme.
    a. As an OAM administrator, navigate through Policy Configuration -> Shared Components -> Authentication Schemes.
    b. Select KerberosScheme.
    c. Click Duplicate.
    d. Enter the values as per Table 50–6.

Table 50–6 Kerberos Authentication Scheme Parameter Values

Parameter	Value
Name	WNA_AuthnScheme
Description	WNA Kerberos Scheme
Authentication Level	2
Default	leave unchecked
Challenge Method	WNA
Challenge Redirect URL	/oam/server/
Authentication Module	wnaMultiDomainAuthnModule
Challenge Parameters	leave blank

15. Navigate to all Protected Resource Policies that require WNA and apply the new authentication scheme.

50.10.7 Configuring Integrated Windows Authentication

Integrated Windows Authentication (IWA) may not be supported over a reverse proxy so this solution is best used on Intranets. But, for WNA to work with an Internet browser, the browser has to be configured for IWA or the default NTLM pop-up login prompt will display. The following steps need to be performed on Active Directory host machines based on the four most common Internet browsers.

Internet Explorer 2+ (Windows only)

1. Open Internet Explorer.
2. Select Tools > Internet Options > Security.
3. Select the Local intranet zone and click Sites > Advanced.
4. Enter all the site host names that are protected including the OAM hosts where the URL goes to "http://iam.acme.com:14100/oam/server" used for authentication processing.

   If there is a common top domain, for example my.sprite.com, help.sprite.com, etc. you can enter "http://*.sprite.com".

5. Click OK > OK.
6. Select the Advanced tab and make sure under Security > Enable Integrated Windows Authentication option is selected.
7. Click OK to save the changes and close the Internet Options dialog.

Firefox 3+ (Windows or OSX)

1. Open FireFox.
2. Type "about:config" in the address bar and press Enter.
3. Click the button "I'll be careful, I promise!"
4. Type in the Preference Name according to Table 50–7 and change the value as documented. Multiple values need to be comma-separated.

Table 50–7 Firefox Preferences for IWA

Preference Name	Type	Value
network.automatic-ntlm-auth.trusted-uris	string	http://,https://
network.negotiate-auth.allow-proxies	boolean	true
network.negotiate-auth.delegation-uris	string	http://,https://
network.negotiate-auth.gsslib	string	<blank> 1
network.negotiate-auth.trusted-uris	string	http://,https://
network.negotiate-auth.using-native-gsslib	boolean	true

Note: Be sure that for http(s) values, enter all site host names that are protected, along with the Access Manager host where the URL goes to "http://iam.acme.com:14100/oam/server" used for authentication processing.

5. Restart Firefox.

Chrome 8+ (Windows or OSX)

Follow the steps for Internet Explorer, and Google Chrome will automatically pick up the Internet Options. No special configuration is needed beyond the computer being a domain member.

Safari 4+ (OSX Only)

Safari is enabled for IWA automatically. No special configuration is needed beyond the OSX computer being a domain member.

50.10.8 Testing the Configurations

1. Login to a desktop that is a member of one of the Active Directory domains.
2. Open an Internet browser and browse to an OAM protected application.

   If working properly, you should not be challenged to login.

50.10.9 Troubleshooting the Configurations

The following sections contain troubleshooting procedures.

50.10.9.1 Adding Kerberos Debugging to the Access Manager Server

This procedure provides Kerberos debugging output from the Access Manager server logs. This is useful to review the Kerberos output and make sure there are no issues with Access Manager mapping the User Principal Name to the correct user in the Domain of which that user is a member.

1. Login to the Access Manager installation directory using the command line.
2. Go to the <FMW_HOME>/user_projects/domains/<DOMAIN_HOME>/bin directory.
3. Backup the setDomainEnv.sh file.
4. Open the setDomainEnv.sh file in a text editor.
5. Search for the first line with EXTRA_JAVA_PROPERTIES.
6. Add the following two lines.

```
EXTRA_JAVA_PROPERTIES="-Dsun.security.krb5.debug=true -
Dsun.security.spnego.debug=true ${EXTRA_JAVA_PROPERTIES}"
export EXTRA_JAVA_PROPERTIES
```

   Note the first line should not wrap in the file.

7. Save the file.
8. Restart both the Admin Server and Access Manager Server.

   You should now be able to tail the Access Manager Server logs and see Kerberos debug output. The following is an example.

```
Entered Krb5Context.acceptSecContext with state=STATE_NEW
>>> EType: sun.security.krb5.internal.crypto.ArcFourHmacEType
Using builtin default etypes for permitted_enctypes
default etypes for permitted_enctypes: 3 1 23 16 17.
>>> EType: sun.security.krb5.internal.crypto.ArcFourHmacEType
object 0: 1359604847000/156
object 1: 1359604776000/152
object 2: 1359604739000/151
object 0: 1359604847000/156
object 1: 1359604776000/152
object 2: 1359604739000/151
replay cache found.
>>> KrbApReq: authenticate succeed.
Krb5Context setting peerSeqNumber to: 227772863
>>> EType: sun.security.krb5.internal.crypto.ArcFourHmacEType
Krb5Context setting mySeqNumber to: 349851240
SPNEGO Negotiated Mechanism = 1.2.840.113554.1.2.2 Kerberos V5
SpNegoContext.acceptSecContext: mechanism wanted = 1.2.840.113554.1.2.2
SpNegoContext.acceptSecContext: negotiated result = ACCEPT_COMPLETE
SpNegoContext.acceptSecContext: sending token of type = SPNEGO NegTokenTarg
SpNegoToken NegTokenTarg: sending additional token for MS Interop
SpNegoContext.acceptSecContext: sending token = a1 81 eb 30 81 e8 a0 03 0a 01
00 a1 0b 06 09 2a 86 48 86 f7 12 01 02 02 a2 69 04 67 60 65 06 09 2a 86 48 86
f7 12 01 02 02 02 00 6f 56 30 54 a0 03 02 01 05 a1 03 02 01 0f a2 48 30 46 a0
03 02 01 17 a2 3f 04 3d e9 4b 77 88 6c ac f7 6a c6 8e 52 e0 16 66 51 fa 7b 59
da 15 ff e0 a7 ce b7 39 0f 57 3b 80 31 15 fa ed 92 b2 0c 03 2c dd 3a 54 42 52
40 ba b2 bd df b7 f5 90 af 35 aa 6b 1e ac b9 4d 04 a3 69 04 67 60 65 06 09 2a
```

```
86 48 86 f7 12 01 02 02 02 00 6f 56 30 54 a0 03 02 01 05 a1 03 02 01 0f a2 48
30 46 a0 03 02 01 17
```

50.10.9.2 Turning Access Manager Server Debug Mode to TRACE

TRACE mode in Access Manager server debug logs can capture information like the Principal that logged in, the User Domain that shows the namespace to search, the authentication scheme used and other details. Before you begin, make sure the WebLogic Admin Server is running.

1. Login as the administrator that starts and stops the Access Manager Managed server using the command line.
2. Change to the directory <FMW_HOME>/common/bin.
3. Run the command ./wlst.sh.
4. Connect to the Admin Server by running the following command.

   ```
   connect('weblogic','<weblogic_password>','t3://localhost:7001');
   ```

5. Run the following command to list the logging modules.

   ```
   listLoggers(pattern='oracle.oam.*',target='oam_server1')
   ```

6. Run the following command to set the Access Manager server to TRACE mode.

   ```
   setLogLevel(logger='oracle.oam',level='TRACE:32',persist='0',
    target='oak_server1');
   ```

To revert back to the normal mode, run the following command.

```
setLogLevel(logger='oracle.oam',level='NOTIFICATION:1', persist='1',
 target='oam_server1')
```

50.10.9.3 Verifying LDAP Searches in OVD

You can tail the diagnostic logs in OVD to determine if the correct search is being made.

1. Login as the administrator that starts and stops OVD using the command line.
2. Change to the <FMW_HOME>/ovd1/diagnostics/logs/OVD/ovd1 directory.
3. Use a text editor or tail to view the diagnostic.log log file.

   For example:

   ```
   [2013-02-06T15:38:59.192-06:00] [octetstring] [NOTIFICATION] []
   [com.octetstring.vde.chain.plugins.DumpTransactions.DumpTransactions] [tid: 27]
   [ecid: 4aaf7073ad441920:-49d5bd7a:13cb14e92f1:-8000-0000000000000232,0:2]
   !SEARCH Operation: (Transaction#Adapter_Forest4.Dump Before.30)[[
   BindDN: cn=orcladmin
   Base:   dc=FOREST4,dc=MELANDER,dc=US
   Scope:  2
   Filter: (&(uid=tim.melander)(objectclass=inetorgperson))
   TypesOnly:      FALSE
   Attrs:  [uid, mail, cn, description, orclguid, objectclass, displayname, uid]!
   ]]
   ```

50.11 Troubleshooting WNA Configuration

This section provides the following topics:

- Keytab Format Results in Authentication Error When Using IBM JDK
- Kinit Fails
- Unable To Access a Protected Resource Using WNA Authentication Scheme
- User Identity Store is Not Active Directory

> **See Also:** Access Manager WNA Quick Start Guide on My Oracle Support, Knowledge Base note 1416903.1 at: https://support.oracle.com/

50.11.1 Keytab Format Results in Authentication Error When Using IBM JDK

When using the IBM JDK, format the path to the keytab file in the `oam-config.xml` file using the following syntax.

```
file://<absolute path to keytab file>/<keytab file name>
```

For example,

```
<Setting Name="keytabfile"
Type="xsd:string">file:///refresh/home/oam.keytab</Setting>
```

50.11.2 Kinit Fails

Error

Client not found in Kerberos database while getting initial credentials

Cause

This is Kerberos version of "User not found", which might be related to one of the following:

- Misspelling or typo of the principal name
- The principal was not added to the Kerberos database, the principal doesn't exist.
- The user name does not exist in Active Directory or has not been registered as a Kerberos user.
- The SPN is not unique.
- On the Active Directory side one or more duplicate entries were found.

Solution

Have the Active Directory Administrator search the LDAP tree for duplicate entries of the SPN, and remove them.

50.11.3 Unable To Access a Protected Resource Using WNA Authentication Scheme

Unable to access a resource protected by Access Manager-protected resource using WNA authentication scheme. Error: An incorrect Username or password was specified.

Error

An incorrect username or password was specified.

50.11.4 User Identity Store is Not Active Directory

Cause

The Identity Store used by Access Manager might not point to Windows Active Directory. By default, the identity store is Embedded LDAP.

Solution

1. Register Active Directory: Oracle Access Management Console, System Configuration, Data Sources, User Identity Store, Create *ActiveDirectory*.
2. Set Active Directory as the Default Store, as described in "Setting the Default Store and System Store" on page 5-21.

51

Integrating JBoss with Access Manager

Oracle provides a J2EE-type JBoss Agent and JBoss Login Module for a smooth integration between Access Manager and JBoss. This chapter provides the following information to assist you with this integration:

51.1 Introduction to JBoss with Access Manager

JBoss application server is an open source alternative to IBM WebSphere and SAP NetWeaver application servers. The JBoss application server and related services are a J2EE platform used for developing and deploying enterprise Java applications, Web applications services, and portals. J2EE allows the use of standardized modular components and enables the Java platform to handle many aspects of programming automatically.

For integration with JBoss, Oracle provides:

- Access Manager JBoss Agent (a J2EE type agent)
- JAAS-compliant Login Module, which can be used with any client to authenticate against Access Manager

> **Note:** There is no special processing within (or by) Access Manager with (or for) the JBoss Agent.

Integration with JBoss and Access Manager enables you to:

- Protect Web applications and establish user single sign-on
- Secure EJB access by configuring the login module for EJBs

- Secure Web Services using the login module with Web service handlers to authenticate and authorize the caller

There are no client interfaces. For more information, see the following topics:

- About Configuration and Processing by Access Manager JBoss Agent
- About Configuration and Processing by Access Manager Login Module

51.1.1 About Configuration and Processing by Access Manager JBoss Agent

The JBoss Agent is a fully capable agent running on the JBoss Server.

This JBoss Agent supports Access Manager Web single sign-on flows with (or without) a Webgate. Authentication and authorization are based on resource URLs defined within Access Manager policies. The JBoss Agent intercepts every incoming request to the OAM Server and checks for access permissions for the requested resource. If the resource is protected by an OAM policy, the JBoss Agent initiates authentication and authorization for the user trying to access the resource.

Whenever an unauthenticated user requests access to any protected resource, the JBoss Agent redirects the user to the credential collector for a username and password. The username and password that is entered is authenticated by the OAM Server. The JBoss Agent then establishes user session on the JBoss Container using the login module for the user. The login module queries the LDAP directory and fetches the authenticated user principals to set the subject.

The JBoss Agent depends on the Pure Java ASDK classes and APIs for accessing and communicating with the OAM Server. The JBoss Agent implements the javax.servlet.Filter interface. For more information, see the Oracle Fusion Middleware Access SDK Java API Reference for Oracle Access Management Access Manager.

The JBoss Agent requires OAM Server communication details, certificate store, and more, which can be configured as:

- A properties file containing all configuration details (the path to this file can be set as a filter parameter)
- The absolute path of the properties file added within the filter configuration in web.xml

> **Note:** The custom headers that are defined by the Oracle Access Management Administrator can only be defined using these methods.

The application filter should log messages at different logging levels (FATAL, ERROR, WARNING, DEBUG, TRACE). Each level indicates the severity of information logged, in descending order. The filter should be able to log the detailed trace of an incoming message as one set. The JBoss Agent and the Login Module are both equipped with messages for various log levels. For logging in the same log file (server.log):

```
<category name="<<Component_code_package>>">
 <priority value="FINEST" class="org.jboss.logging.log4j.JDKLevel"/>
</category>
```

For example, for ASDK, the category name in the previous tag is oracle.security.am.asdk, as shown:

```
<category name="<<oracle.security.am.asdk>>">
 <priority value="FINEST" class="org.jboss.logging.log4j.JDKLevel"/>
</category>
```

The following overview outlines processing functions for the Access Manager JBoss Agent.

Process overview: Access Manager JBoss Agent functions

1. Query the OAM Server to check whether the requested resource is protected.
2. Call the OAM Server to retrieve the authentication scheme.
3. Analyze the authentication scheme for the protected resource, and redirect the request to the credential collector.
4. Authenticate the user credentials.
5. Successful Authentication: Set the authentication token generated from the OAM Server in the cookie.
6. Authentication Token: Validate the integrity of the token before servicing the request. Request the OAM Server to verify the user is authorized to access the protected resource and handle the response from the OAM Server accordingly.
7. Depending upon the user requests and OAM Server responses, the JBoss Agent identifies where user requests should be redirected to allow or deny access to the protected resource.

51.1.2 About Configuration and Processing by Access Manager Login Module

The JAAS-compliant OAM Login Module is a pluggable authentication module using JAAS APIs provided by the Access Manager `javax.security.*` package. The JAAS-compliant Access Manager Login Module interfaces enable the client to pass authentication data to the server. The login module is configured with the JBoss server and application to integrate the module with the JBoss application server.

The JAAS-compliant Access Manager Login Module implementation class is:

```
public class OAMLoginModule implements LoginModule
```

The standard JAAS packages required by this class are `javax.security.*` . The login module class is stored in a jar file: $*JBOSS_HOME*/server/default/lib

The Login Module operates in two modes:

- **usernamePassword**: Authenticates the user based on username and password or a user and certificate combination that forms a security identity and credential pair. The login module does not directly query the LDAP. Instead the login module uses the OAM Java ASDK to communicate and authenticate the user credentials with the OAM Server; user and group information is retrieved as responses.
- **tokenBased**: Sets the Subject by validating the SSO token

The JAAS-compliant Access Manager Login Module consumes username, password, or Access Manager token. This module authenticates and validates the credentials or token with the OAM Server (using the Access Manager Java ASDK APIs) and populates the JAAS subject with user and group information obtained from the OAM Server.

JAAS-compliant Access Manager Login Module Configuration

The login-config.xml file is the default JBoss Login Module configuration file. This Login Module requires a JAAS security domain name (*`OAMLoginModule`*, for instance). Information is stored in login-config.xml as a list of named security domains, each of which specifies a number of JAAS Login Modules that are used for authentication

within that domain. For example, you add this manually and then restart the JBoss Server:

```
 <application-policy name="OAMLoginModule">
    <authentication>
      <login-module
code="oracle.security.am.agent.common.jaas.login.OAMLoginModule"
        flag="required">
      <module-option name="loginType">tokenBased</module-option>
      <module-option name="configPath">D:/agentconfig</module-option>
      <module-option name="publicAuthnResourceName">/Authen/Basic</module-option>
      <module-option name="rolesParam">OAM_GROUPS</module-option>
      <module-option
name="publicAuthzResourceName">/Authen/SSOToken</module-option>
      </login-module>
    </authentication>
</application-policy>
```

Security Domains and Deployment Descriptors

Whenever an application requires security, you must specify the domain name to use in the application's JBoss-specific deployment descriptors (either one or both):

- jboss.xml: Defines JBoss-specific configurations for an application.
- jboss-web.xml: Defines JBoss for a Web application. This file must declare the security domain and should be placed in the WEB-INF folder.

The JAAS-compliant OAM Login Module operates as outlined in the following overviews.

Process overview: JAAS-compliant OAM Login Module in usernamePassword mode

1. Fetches login information.
2. Authenticates the user with Access Manager based on credentials collected by the JBoss Agent.
3. Creates the container session for the client on the server.
4. Sets the JAAS subject with the userID and roles.
5. On logout, clears the principal settings of the subject in the session and removes the privilege settings associated with the roles of the subject.

Although the Login Module processing that occurs in token based mode is similar to usernamePassword mode, the differences are outlined in the next overview.

Process overview: JAAS-compliant OAM Login Module in tokenBased mode

1. Fetches login information.
2. Validates the SSO authentication token generated from the OAM Server in the cookie.
3. Creates the container session for the client on the server.
4. Sets the JAAS subject with the userID and roles fetched using the existing SSO session token.
5. On logout, clears the principal settings of the subject in the session and removes the privilege settings associated with the roles of the subject.

51.2 Integration Topology

This section provides the following topics:

- Access Manager JBoss Agent Functionality
- Topology: Access Manager with JBoss Agent
- Topology: JBoss Agent Behind Web Server Configured with Webgate
- Sample Integration Topology

51.2.1 Access Manager JBoss Agent Functionality

The JBoss Agent is comprised of components described in Table 51–1. Each component uses the Access ASDK to communicate with the OAM Server.

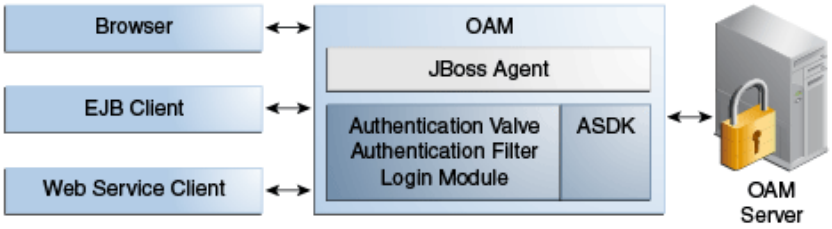
Table 51–1 JBoss Agent Composition

Component	Description
Authentication Valve	Invoked during the JBoss Authentication phase for all incoming requests. If the resource is marked as protected by security constraints in the application's Web descriptor, the Authentication Valve checks for the presence of a user principal in the HTTP session: ■ Valid User Present: The Authentication Valve evaluates whether the user principal satisfies the security constraints from the application's Web description. If constraints are satisfied, the request proceeds. Otherwise, an authorization failure message is displayed. ■ Valid Single Sign On Cookie Present (ObSSOCookie) (No Valid User): The Authentication Valve verifies the cookie's validity by using the Access Manager Login module (and sets the user principal in the session). ■ No Valid Single Sign On Cookie Present (ObSSOCookie) / No Valid User: The Valve redirects to the OAM Login page when the resource is marked as protected using Access Manager policies.
Authentication Filter	Invoked for each incoming request following the JBoss authentication phase. For each incoming request, the filter verifies whether a token is present. ■ Token Present: The filter uses the ASDK to validate the token. ■ Invalid Token: The filter redirects to the Access Manager Login page.
Access Manager Login Module	Used internally by the JBoss Agent to authenticate the user based on the SSO token. Any client (stand alone or deployed within the JBoss Container) can use the Login Module to authenticate the incoming user based on username and password or a valid token.

51.2.2 Topology: Access Manager with JBoss Agent

Figure 51–1 illustrates the various clients (whether browser, EJB, or Webserivce) that can securely access any J2EE application deployed on the JBoss Application Server. The JBoss Agent is configured for this access and is deployed within the JBoss Application Server.

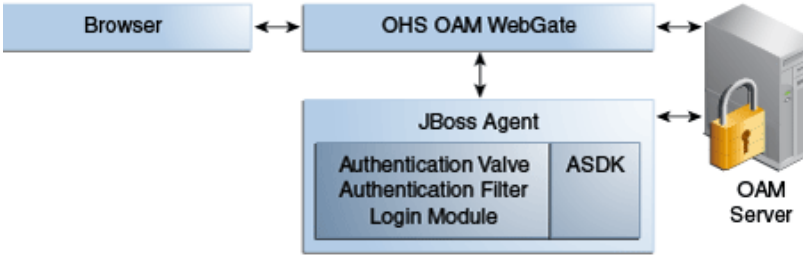
Figure 51–1 Various Clients Deployed on JBoss Application Server



51.2.3 Topology: JBoss Agent Behind Web Server Configured with Webgate

In addition to operating alone, the JBoss Agent can be also work in conjunction with an Oracle HTTP Server (proxy) configured with a WebGate, as shown in Figure 51–2.

Figure 51–2 JBoss Agent Deployed with an Oracle HTTP Server Webgate

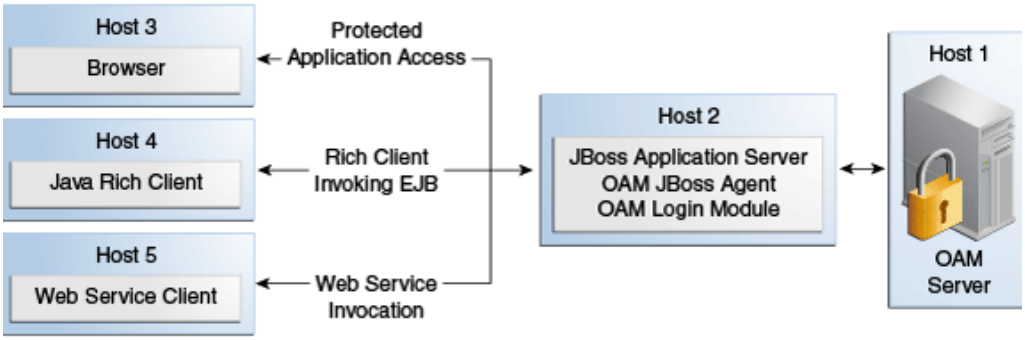


Applications are deployed in the JBoss Application Server protected with the JBoss Agent. Additionally the request comes through an Oracle HTTP Server instance that is configured with a WebGate. Both the WebGate and the JBoss Agent are configured against the same Access Manager deployment. Here, the JBoss Agent plays the role of an Identity Asserter that simply validates that the token forwarded by the Webgate is valid and uses the identity established by the WebGate.

51.2.4 Sample Integration Topology

Figure 51–3 illustrates the topology used in this chapter for integration between Access Manager and JBoss.

Figure 51–3 Sample Integration Topology



Details for this deployment are described in "Preparing Your Environment for JBoss Integration" on page 51-7.

Use Cases

The topology in Figure 51–3 supports:

- **Protecting Web Applications**

  This use case is Application specific and JBoss specific. It uses Access Manager SSO with the JBoss Agent and an authorization policy for browsers accessing Web applications on JBoss (with local EJB invocation, if any).

  – Access Manager (Host 1)

  – Application hosted on JBoss Application Server (Host 2)

- **Invoking Secured EJBs using Rich Java Clients**

  The client can access an EJB in different ways depending on the client architecture, as follows:

  a. Configure the JAAS-compliant Access Manager Login Module on the JBoss Container to secure access to the EJB. The client can then make use of JBoss-specific mechanism to propagate the Access Manager SSO token to the JBoss Container.

  The client can either make use of an already procured Access Manager SSO token or the client can use the JAAS-compliant Access Manager Login Module to obtain the SSO token based on user's credentials.

  b. Alternatively, the Access Manager SSO token can be obtained using a custom HTTP Web server-based Access Manager Authentication Service exposed to Rich Java clients.

- **EJB invocation as a Web Service Provider (WSP)**

  JAAS-compliant Access Manager Login Module can be configured on the Web Service Provider side to validate the Username and Password or the SSO Token.

  Alternatively: If only the Username is available for Web Services Consumption (WSC), you need the WSP requiring the SAML token issued by Security Token Service asserting the Username, followed by invocation of JAAS-compliant Access Manager Login Module with extra username-only assertion capability).

  – Secure EJB access using the JAAS-compliant Access Manager Login Module on (Host 2)

  – Host the EJB Application on the JBoss server (Host 2)

  – Access Manager (Host 1)

Remaining sections in this chapter describe how to complete this integration.

51.3 Preparing Your Environment for JBoss Integration

The following procedure describes how to prepare your environment for integrating JBoss Application Server with Access Manager, which includes:

- Oracle Access Management Console and OAM Server
- JBoss Application Server 5.1.0
- Access Manager Access SDK
- Access Manager Jboss Agent

To prepare for integrating JBoss Application Server with Access Manager

1. Check the latest support information on:

   http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

2. Host 1:
   a. Install Access Manager as described in Oracle Fusion Middleware Installation Guide for Oracle Identity Management
3. Host 2:
   a. Install JBoss 5.1.0 Application Server, as described in your JBoss installation guide.
   b. Edit JBoss server.xml to change <Engine name="jboss.web" defaultHost="localhost"> to <Engine name="jboss.web" defaultHost="0.0.0.0">. For example:

      JBoss_install_directory\server\default\deploy\jbossweb.sar\server.xml

      From

      <Engine name="jboss.web" defaultHost="localhost">

      To

      ```
      <Engine name="jboss.web" defaultHost="0.0.0.0">
      ```

4. Host 2, Install Access Manager Access SDK, as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management. For example:
5. Host 2, Install OAM JBoss Agent. For example:
   a. Extract `oam-j2eeagent.zip`:

      From

      `/agentconfig/oam_config.properties` file

   b. Copy `oam-authenticatorvalve.jar` and `j2eeagent.jar`:

      To

      JBoss_install_directory\server\default\lib

6. Proceed to "Protecting JBoss-Specific Resources":

51.4 Protecting JBoss-Specific Resources

This task is JBoss specific and is required for all JBoss integration use cases: protecting applications, Web Services, or EJBs.

This section describes how to create an Agent registration and how to add resources and configure authorization policies for use with the Access Manager JBoss Agent. For details, see:

- Registering the JBoss Agent with Automatic Policy Creation
- Creating a Custom Policy for JBoss Resource Protection

51.4.1 Registering the JBoss Agent with Automatic Policy Creation

For this task, you can use either the Oracle Access Management Console as described here, or remote registration as described in Oracle Fusion Middleware Administrator's Guide for Oracle Access Management.

For communication between Access Manager and the JBoss Agent, you can use Open, Simple, or Cert Security Mode. Configuring the JBoss Agent to use Simple or Cert mode signals the Java ASDK to operate in the same mode. During registration, a new file system directory is created for the agent on the Oracle Access Management Console host (AdminServer). After registration, you copy artifacts to the Agent directory path:

- ObAccessClient.xml
- password.xml (Simple or Cert mode only)
- oamclient-keystore.jks (see "Setting Up The Keystore" in: Oracle Fusion Middleware Developer's Guide for Oracle Access Management

In the following procedure, replace variables with values for your environment. This example uses Cert mode. Your deployment will be different.

See Also: Chapter 25

To create a fresh registration for a 10g OAM Agent

1. Go to the Oracle Access Management Console (host 1) and log in using Administrator credentials. For example:

   ```
   https://host1:port/oamconsole
   User: adminuserID
   Password ********
   ```

2. From the **Welcome** page, **SSO Agent** panel, click **New OAM 10g Agent** to open a fresh page.
3. On the Create: OAM Agent page, enter the following (and required details) to register this OAM Agent. For example:
   - Name: *JBoss*
   - Security: Cert (see Oracle Fusion Middleware Developer's Guide for Oracle Access Management)
   - User-defined Parameter:

     ```
     logoutRedirectUrl=http://OAM_Server.domain.com:14100/oam/server/logout
     ```

4. **Protected Resource List**: Click the Add (+) button in this table and enter the resources you want protected by the default Authentication and Authorization policies:

   ```
   /Authen/Basic
   /Authen/SSOToken
   ```

5. **Auto Create Policies**: Check to create fresh policies and an Application Domain.
6. Click **Apply** to submit the registration.
7. Check the Confirmation window for the location of generated artifacts and then close the window.
8. In the navigation tree, confirm the Agent name is listed.

9. Copy ObAccessClient.xml from the AdminServer to the JBoss Agent installation directory path:

   From: *$WLS_HOME*/middleware/user_projects/domains/base_domain/output/*AGENTNAME*

   To: *D:\agentconfig*

10. Proceed with "Creating a Custom Policy for JBoss Resource Protection".

51.4.2 Creating a Custom Policy for JBoss Resource Protection

In this task, you create a custom Authorization Policy and add responses that return the user groups as header variables. For example, name the response OAM_GROUPS (with value $user.groups).

Note: For this custom authorization policy, the success and failure redirect URLs are not needed because the single purpose of this policy is to provide responses for an authorized user. If redirect URLs are provided, no redirection occurs with the processing logic of the JBoss Agent or Login Module.

See Also: Chapter 20

Skip Step 1 if the *JBoss* Application Domain is open in the Console.

To create a custom authorization policy to protect JBoss Agent-specific resources

1. From the Oracle Access Management Console Policy Configuration tab, open the JBoss Application Domain:

   Application Domains
   JBoss

2. **Authorization Policies**:
   a. Click the **Authorization Policies** node and click the **Create** (+) button.
   b. In the **Name** field of the Summary tab, enter a unique name. For example:

      Custom Authorization Policy

3. **Add Resources**: JBoss Agent-specific resources were defined during agent registration.
   a. Click the **Resources** tab on the Authorization Policy page.
   b. Click the **Add** (+) button.
   c. Click the **Search** button.
   d. Choose a URL from the list, then click Add Selected:

      /Authen/Basic

   e. Repeat Steps a through d to add:

      /Authen/SSOToken

   f. Click **Apply**

4. **Add Responses**: Click the **Responses** tab, click the **Add** (+) button and:
   - In the **Name** field, enter a unique name for this response: *OAM_GROUPS*.
   - From the **Type** list, choose a response type (**Header**).
   - In the **Value** field, enter a value for this response. For example: *$user.groups*
5. Click **Apply** to save changes and close the Confirmation window.
6. Proceed to the proper topic for your deployment:
   - Protecting Web Applications with the JBoss Agent
   - Configuring the Login Module to Secure EJBs
   - Configuring the Login Module to Secure Web Service Access

51.5 Protecting Web Applications with the JBoss Agent

This section provides the following tasks required to protect Web Applications with the JBoss Agent:

- Creating Configuration Properties for the JBoss Agent
- Configuring the Authentication Valve
- Mapping the Filter in the Application's web.xml File
- Configuring the JBoss Login Module to Use Access Manager Policies

Prerequisites

Deploy the application as usual.

51.5.1 Creating Configuration Properties for the JBoss Agent

In this task, you copy Jboss Agent registration artifacts from the AdminServer to the JBoss host and create a filter configuration properties file that is referenced later.

> **Note:** The JBoss Agent relies on the 11g Java ASDK which operates in the same mode as the registered JBoss Agent.

The JBoss Agent requires a configuration file (oam_config.properties) that defines a number of critical properties. These include the file system path to the agent's registration artifact (`ObAccessClient.xml`), the security domain defined in the JBoss server's login configuration file, parameters and values that return to the JBoss Agent during authentication, and an optional attribute to check for the presence of `authToken` in the request.

To create configuration properties for the JBoss Agent

1. Create a JBoss Agent configuration file named oam_config.properties using the following sample as a guide:

```
##Path of the folder containing the ObAccessClient.xml
configPath=D:\\agentconfig

##Name of the security domain as configured in JBoss's login-config.xml
realmName=oamrealm

##Optional. If not specified then defaults to /Authen/Basic
```

```
##publicAuthnResourceName=/Authen/Basic

##Optional. If not specified then defaults to http
##publicAuthnResourceType=http

##Optional. If not specified then defaults to GET
##publicAuthnResourceOperation=GET

##Optional. If not specified then defaults to /Authen/SSOToken
##publicAuthzResourceName=/Authen/SSOToken

##Optional. If not specified then defaults to http
##publicAuthzResourceType=http

##Optional. If not specified then defaults to GET
##publicAuthzResourceOperation=GET

rolesParam=OAM_GROUPS

##Optional. This attribute is responsible to check whether the credential in
##the subject / callback handler is an authn token. Defaults to authnToken.
authToken=authToken

###################################
##### OAM logout related properties #####
###################################
##Host name of the OAM 11g Server
##oamHost=abchost.us.example.com

##Managed server port number of the OAM 11g Server
##oamPort=Port_value
```

2. Save oam_config.properties on the JBoss host:

   /agentconfig/oam_config.properties

3. Proceed to "Configuring the Authentication Valve".

51.5.2 Configuring the Authentication Valve

This procedure must be performed to configure the authentication valve. There are two methods to perform this task. Choose the one that is best suited to your environment:

- To add the Authentication Valve to context.xml: This global configuration causes the Authentication Valve to intercept all requests to the Jboss Agent.
- To add the Valve to the application's deployment: This configuration affects only the concerned application (the Authentication Valve intercepts requests coming only to this specific application).

To add the Authentication Valve to context.xml

1. Locate and open for editing the JBoss Agent context.xml file in:

   JBoss_install_dir\server\default\deploy\jbossweb.sar\context.xml

2. Add the following Valve entry and save the file:

```
<Valve
className="oracle.security.am.agent.common.authenticator.OAMAuthenticatorValve"
configFile="<full_path_to_oamagent_config_properties_file> " />
```

3. Proceed to "Mapping the Filter in the Application's web.xml File".

Rather than adding the Authentication Valve to context.xml for global use, you can instead perform the following task to add a context.xml as part of the application's deployment.

To add the Valve to the application's deployment

1. Create a fresh context.xml file and store it under WEB-INF with web.xml:

   JBoss_install_dir\server\default\deploy\jbossweb.sar\context.xml

2. Add the following Valve entry:

```
<?xml version="1.0" encoding="UTF-8"?>

<Context privileged="true">
   <Valve
className="oracle.security.am.agent.common.authenticator.OAMAuthenticatorValve"
configFile="<full_path_to_oamagent_config_properties_file> " />

</Context>
```

3. Redeploy the application.
4. Proceed to "Mapping the Filter in the Application's web.xml File".

51.5.3 Mapping the Filter in the Application's web.xml File

In this procedure, you add filter mapping for this integration to the application's web.xml. You also add the name of the filter's configuration properties file.

To add filter mapping to web.xml

1. Locate the web.xml file in the application EAR file:

   my_app/WEB-INF/web.xml

2. Add the following filter mapping to the application's web.xml. For example:

```
<filter>
  <filter-name>OAMFilterAgent</filter-name>
  <filter-class>
    oracle.security.am.agent.common.filter.OAMAuthenticationFilter
  </filter-class>
  <init-param>
    <param-name>configFile</param-name>
    <param-value>D:/oam_config.properties</param-value>
  </init-param>
</filter>
<filter-mapping>
  <filter-name>OAMFilterAgent</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
```

3. Save the file.
4. Proceed to Configuring the JBoss Login Module to Use Access Manager Policies.

51.5.4 Configuring the JBoss Login Module to Use Access Manager Policies

This procedure describes the required login module entry for JBoss to use Access Manager policies.

After you add filter mapping to web.xml, you redeploy the application and start the JBoss Server.

> **Note:** Starting JBoss Server using -b 0.0.0.0 allows the user to access the server by the host name rather than `localhost / 127.0.0.1`. Without this parameter, JBoss Server can be accessed using `localhost / 127.0.0.1` as well as the host name.

To configure the login module that enables JBoss to use OAM policies

1. Locate and open the login-config.xml file:

   JBoss_install_dir\server\default\conf\login-config.xml

2. Add a new entry for the login module, as follows:

```
<application-policy name="oamrealm">
  <authentication>
    <login-module
code="oracle.security.am.agent.common.jaas.login.OAMLoginModule"
flag="required">
      <module-option name="loginType">tokenBased</module-option>
      <module-option name="configPath">D:/agentconfig</module-option>
      <module-option>
      <module-option
name="publicAuthnResourceName">/Authen/Basic</module-option>
      <module-option name="rolesParam">OAM_GROUPS</module-option>
      <module-option
name="publicAuthzResourceName">/Authen/SSOToken</module-option>
    </login-module>
  </authentication>
</application-policy>
```

   The name of `application-policy` in this entry should have the same value as that defined for the `realmname` property in `oam_config.properties`.

3. Deploy the application.
4. Start JBoss as follows using the following command:

   JBoss_install_dir\bin\run -b 0.0.0.0

   See "Configuring JBoss Server to Access a Host Name (not localhost)".

51.6 Configuring JBoss Server to Access a Host Name (not localhost)

This procedure is optional. Perform this only to access the JBoss Server using the host name (rather than localhost/127.0.0.1).

> **Note:** Starting JBoss Server using -b 0.0.0.0 allows the user to access the server using host name rather than localhost / 127.0.0.1. Otherwise, JBoss Server can be accessed using localhost / 127.0.0.1 as well as host name.

To access the JBoss Server using the host name

1. On the JBoss Server host, locate the server.xml file in the following path:

   ```
   JBoss_install_dir\server\default\deploy\jbossweb.sar\server.xml
   ```

2. Edit server.xml to change the default host, as follows:

   From:

   ```
   <Engine name="jboss.web" defaultHost="localhost">
   ```

   To:

   ```
   <Engine name="jboss.web" defaultHost="defaultHost="0.0.0.0">
   ```

3. Save server.xml.

51.7 Configuring the Login Module to Secure EJBs

This task involves both the server-side and client-side configuration, as explained in following topics:

- Configuring the Server to Secure EJBs
- Configuring the Client Side to Secure EJBs

51.7.1 Configuring the Server to Secure EJBs

On the server side, you must add the security domain annotation to the EJB and add descriptors to jboss.xml. You also add a new entry to the JBoss server configuration file for the Login Module.

Securing EJBs, Web applications or a Web Service based on roles requires additional configuration in login-config.xml as follows:

```
<module-option name="rolesParam">OAM_GROUPS</module-option>
```

Here OAM_GROUPS is the response configured when "Creating a Custom Policy for JBoss Resource Protection" on page 51-10.

You can use either the agent configured in previous steps or a new agent.

> **Note:** To use a new agent you must copy the ObAccessClient.xml from the /agent directory on the JBoss host, to another directory.

To configure the server to secure EJBs

1. Copy ObAccessClient.xml as follows (one or the other):
   - **From**: $*WLS_HOME*/middleware/user_projects/domains/base_domain/output/*agent_name*.
   - **To**: A directory on the JBoss host.
2. Add the `@SecurityDomain("oamrealm")` annotation to the EJB. For example, if the EJB class is *DemoEJB* the following should be added at the code level:

   ```
   import org.jboss.security.annotation.SecurityDomain;

   @SecurityDomain("oamrealm")
   public class DemoEJB{ ... }
   ```

The `application-policy` defined as the value of `@SecurityDomain` (in this example, `oamrealm`) should have the same value as that defined for the `realmname` property in `oam_config.properties`.

3. **Option**: Add the following descriptor to the `jboss.xml` file to define the security domain.

```
META-INF/jboss.xml

<jboss>
    <security-domain>java:/jaas/myother</security-domain>
</jboss>
```

The application-policy name defined in this descriptor (myother) should have the same value as the realmname property defined in oam_config.properties.

> **Note:** The name associated with the security domain annotation should be specified in the Login Module to be used, as described in Step 4. See Also: Configuring the JBoss Login Module to Use Access Manager Policies on page 51-14.

4. JBoss Server Login Configuration: Add an entry for the Login Module class name, which must be part of the login mechanism:

JBoss_install_dir\server\default\conf\login-config.xml

```
<application-policy name="oamrealm">
  <authentication>
    <login-module
code="oracle.security.am.agent.common.jaas.login.OAMLoginModule"
      flag="required">
      <module-option name="loginType">tokenBased</module-option>
      <module-option name="configPath">D:/agentconfig</module-option>
      <module-option name="rolesParam">OAM_GROUPS</module-option>
      <module-option
name="publicAuthnResourceName">/Authen/Basic</module-option>
      <module-option
name="publicAuthzResourceName">/Authen/SSOToken</module-option>
    </login-module>
  </authentication>
</application-policy>
```

> **Note:** The `name` value in the `application-policy` element should match the `realmname` property value defined in `oam_config.properties`.

5. Deploy the application.
6. Start JBoss using the following command:

```
JBoss_install_dir\bin\run -b 0.0.0.0
```

See "Configuring JBoss Server to Access a Host Name (not localhost)".

51.7.2 Configuring the Client Side to Secure EJBs

This procedure describes how to create a client-login configuration file.

To configure the client side for the Login Module to secure EJBs

1. Copy ObAccessClient.xml as follows (one or the other):
   - **New Agent**: From *$MW_HOME*/middleware/user_projects/domains/base_domain/output/*agent_name* to a folder on the Agent host.
   - **Existing Agent**: From its location on the JBoss host to another directory on the Agent host.
2. On the client host, create a client-login configuration text file as follows:

```
oamauth {
   oracle.security.am.agent.common.jaas.login.OAMLoginModule required
   loginType="usernamePassword"
   configPath="D:/agentconfig"
   publicAuthzResourceName="/Authen/Basic"
   publicAuthzResourceName="/Authen/SSOToken";
};
```

3. Add the following to your entry to configure the login module to propagate identity to the EJB Container:

```
propagate {
   org.jboss.security.ClientLoginModule required
   restore-login-identity="true";
};
```

4. Save the file.

> **Note:** Perform Step 5 while invoking EJBs from a Rich Client to ensure that Access Manager performs authentication (using the Pure Java ASDK) and then propagates the credentials to the EJB Application Server.

5. **Rich Client**: Add the following to the client code before invoking the EJB from the Client side:

```
System.setProperty("java.security.auth.login.config", authFile);
MyCallbackHandler handler = new MyCallbackHandler(<USERNAME>,<PASSWORD>);
LoginContext lc = new LoginContext("oamauth", handler);
lc.login();
//Fetch the private credentials of type String.class
Set<String> set = lc.getSubject().getPrivateCredentials(String.class);

//Set the SSO Token in callback handler along with the username
handler = new MyCallbackHandler(<USERNAME>, set.iterator().next());
LoginContext lc2 = new LoginContext("propagate", handler);
lc2.login();
```

51.8 Configuring the Login Module to Secure Web Service Access

The Web Service Provider may provide for one of the various mechanisms to intercept and handle the incoming web service SOAP message in order to enforce security on the web service invocation.

This task involves both the server-side and client-side configuration, as explained in following topics:

- Configuring the Server to Secure Web Services Access
- Configuring the Client to Secure Web Services Access

51.8.1 Configuring the Server to Secure Web Services Access

Configuring the Server to Secure Web Services Access involves copying Agent registration artifacts, and adding the Access Manager JAAS-compliant Login Module for Web Service security to the JBoss Server login-configuration file.

You can use either the agent configured in previous steps or a new agent. To use a new agent you must copy the ObAccessClient.xml from the */agent* directory on the JBoss host, to another directory on this host.

No specific details are provided for configuring or deploying a Web Service because any of several frameworks can be used to create a Web Service. The provider of the Web Services deployed on the JBoss Container should adhere to the following guidelines in general:

- Include functionality to look for specific headers injected by the client order to retrieve the OAM SSO token.
- Use the OAM JAAS Login Module to validate the OAM SSO token
- If any EJB Session Beans are exposed as Web Services, the JBoss-specific JAAS Login Module `ClientLoginModule` must be used to propagate the OAM token to the EJB container.

To configure the server to secure Web Services access

1. Copy ObAccessClient.xml as follows (one or the other):
   - **Existing Agent**: From its location on the JBoss host to another directory on the Agent host.
   - **New Agent**: From $*MW_HOME*/middleware/user_projects/domains/base_domain/output/*agent_name* to another directory on the Agent host.
2. Register the SOAP Handler with the Web Service (ideally using the .wsdd file).

   The .wsdd file is generated when the WS stubs are created (and is located inside the application's WEB-INF folder).
3. Edit the JBoss Server login-configuration file to add an entry for the Access Manager JAAS-compliant Login Module for Web Service security, as follows:

   JBoss_install_dir\server\default\conf\login-config.xml

```
<application-policy name="WSRealm">
  <authentication>
    <login-module
code="oracle.security.am.agent.common.jaas.login.OAMLoginModule"
      flag="required">
      <module-option name="loginType">tokenBased</module-option>
      <module-option name="configPath">D:/agentconfig</module-option>
      <module-option name="rolesParam">OAM_GROUPS</module-option>
      <module-option
name="publicAuthnResourceName">/Authen/Basic</module-option>
      <module-option
name="publicAuthzResourceName">/Authen/SSOToken</module-option>
    </login-module>
  </authentication>
</application-policy>
```

4. Save the JBoss Server login configuration file.
5. Deploy the application.
6. Start JBoss using the following command:

   ```
   JBoss_install_dir\bin\run -b 0.0.0.0
   ```

   See "Configuring JBoss Server to Access a Host Name (not localhost)".
7. Proceed to "Configuring the Client to Secure Web Services Access".

51.8.2 Configuring the Client to Secure Web Services Access

In this task, you configure user authentication with the OAM Server and then create a security header element, containing the SSO token, for the SOAP message.

> **Note:** Ideally, this step is performed before invoking a Web Service method, which means that this code must be added in the client code while invoking the Web Service.

To configure the client to secure Web Services Access

1. **On the WS-client**: Perform user authentication with OAM Server and then create a security header element, containing the SSO token, for the SOAP message.
2. Invoke the Web service, as usual.
3. Proceed with "Configuring Logging for the JBoss Agent and Login Module".

51.9 Configuring Logging for the JBoss Agent and Login Module

The JBoss Agent and the Login Module are both equipped with logging messages at various log levels. To log these messages, you must edit the jboss-log4j.xml file as described in this procedure.

To configure logging for the JBoss Agent and Login Module

1. Locate the jobss-log4j.xml file in the following path:

   ```
   $JBOSS_HOME/server/default/conf/jboss-log4j.xml
   ```

2. Open the file in an editor and add the following information:

```
  <appender name="J2EEAGENT"
class="org.jboss.logging.appender.DailyRollingFileAppender">
     <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
     <param name="File" value="${jboss.server.log.dir}/j2eeagent.log"/>
     <param name="Append" value="true"/>
     <param name="DatePattern" value="'.'yyyy-MM-dd"/>
     <layout class="org.apache.log4j.PatternLayout">
        <param name="ConversionPattern" value="%d %-5p [%c] (%t) %m%n"/>
      </layout>
   </appender>

  <category name="oracle.security.am.agent.common">
    <appender-ref ref="J2EEAGENT"/>
  </category>

   <root>
     ...
```

```
        <appender-ref ref="J2EEAGENT"/>
    </root>
```

3. Save the file.

51.10 Validating Your Configuration

There is no specific mechanism to validate your configuration. However, you can manually determine whether the configuration is correctly functioning.

To validate your configuration

1. Authorized User: Invoke the Web Service manually by providing the SSO token generated for the user who is authorized to invoke the Web Service.
   - Success: The authorized user is granted access.
   - Failure: The authorized user is denied access.
   - Error: The configuration is incorrect. Review the OAM Server logs for the entries generated by the Login Module.
2. Unauthorized User: Invoke the Web Service manually and provide the SSO token for a non-authorized user.
   - Success: The unauthorized user is denied access.
   - Failure: The unauthorized user is granted access.
   - Error: If any error occurs, the configuration is incorrect. Review the OAM Server logs for the entries generated by the Login Module.

52

Integrating Microsoft SharePoint Server with Access Manager

This chapter explains how to integrate Access Manager with a 10g WebGate and Microsoft SharePoint Server. It covers the following topics:

> **Note:** Access Manager with a 10g WebGate supports both Microsoft SharePoint Server 2010 and Microsoft SharePoint Server 2013. Other versions of Microsoft SharePoint Server are not supported in this release.
>
> Unless explicitly stated, all details in this chapter apply equally to Access Manager integration with Microsoft SharePoint Server using the OAM impersonation plug-in, and Microsoft SharePoint Server configured with the LDAP Membership Provider.

52.1 What is Supported in This Release?

Support for integration between Access Manager and SharePoint enables the following functionality:

- When a user accesses SharePoint before SSO login with Access Manager, the user is prompted for Access Manager SSO login credentials.
- When a user with a valid Access Manager login session wants to access SharePoint documents, he must be established with SharePoint (logged in and authenticated with SharePoint). Once the Access Manager session is established, it is also respected by SharePoint for integration with Access Manager and SharePoint using LDAP Membership Provider, OAM WNA, and impersonation. Based on authentication status, SharePoint either allows or denies access to documents stored in SharePoint.
- When a user opens an Office document from SharePoint using a browser, the SSO session should persist into the MS Office program so that access to the document through the MS Office program is maintained. See "Configuring Single Sign-On for Office Documents" on page 52-33.
- Full feature parity with SharePoint integration with Access Manager 10g is provided to ease upgrades to Access Manager.

Note: 11g WebGates are not supported on the IIS Web server. Only the WebGate 10g WebGate for IIS can be used for this integration.

52.2 Introduction to Integrating With the SharePoint Server

SharePoint Server is a Microsoft-proprietary secure and scalable enterprise portal server that builds on Windows Server Microsoft Internet Information Services (IIS) and Windows SharePoint Services (WSS). SharePoint Server is typically associated with Web content and document management systems. SharePoint Server works with Microsoft IIS web server to produce sites intended for collaboration, file sharing, web databases, social networking and web publishing. In addition to WSS functionality, SharePoint Server incorporates additional features such as News and Topics as well as personal and public views for My Site, and so on.

Microsoft SharePoint Server enhances control over content, business processes, and information sharing. Microsoft SharePoint Server provides centralized access and control over documents, files, Web content, and e-mail, and enables users to submit files to portals for collaborative work.

SharePoint server farms can host web sites, portals, intranets, extranets, Internet sites, web content management systems, search engine, wikis, blogs, social networking, business intelligence, workflow as well as providing a framework for web application development.

When integrated with Microsoft SharePoint Server, Access Manager handles user authentication through an ISAPI filter and an ISAPI Module. This enables single sign-on between Access Manager and SharePoint Server.

SharePoint Server supports the following authentication methods:

- Form Based Authentication
- Impersonation Based Authentication
- Windows Authentication: Used only for the configuration where the information about the users is stored in Active Directory server

The integrations in this chapter provide single sign-on to Microsoft SharePoint Server resources and all other Access Manager-protected resources. For more information, see:

52.2.1 About Windows Impersonation

Unless explicitly stated, the integrations described in this chapter rely on Windows impersonation.

Windows impersonation enables a trusted user in the Windows server domain to assume the identity of any user requesting a target resource in Microsoft SharePoint Server. This trusted impersonator maintains the identity context of the user while accessing the resource on behalf of the user.

Impersonation is transparent to the user. Access appears to take place as if the SharePoint resource were a resource within the Access System domain.

Note: Windows impersonation is not used when integrating Microsoft SharePoint Server configured with the LDAP Membership Provider.

52.2.2 About Form Based Authentication With This Integration

You can integrate Access Manager with SharePoint Server using any of the three authentication methods. Given common use of LDAP servers (Sun Directory Server and Active Directory for instance), your integration can include any LDAP server.

Form-based authentication in SharePoint Server is claims-aware. When a user enters credentials on the Forms login page of SharePoint Relying Party (RP), these are passed to the SharePoint Security Token Service (STS). SharePoint STS authenticates the users against its membership provider and generates the SAML token, which is passed to SharePoint RP. SharePoint RP validates the SAML token and generates the FedAuth cookie. The user is then allowed to access the SharePoint RP site.

With form-based authentication, the WebGate is configured as an ISAPI filter. The form login page of SharePoint RP is customized such that the user is not challenged to enter the credentials by the SharePoint RP. Also, the membership provider is customized such that it just validates the ObSSOCookie set by the WebGate to authenticate the user.

Note: The WebGate only supports Form Based Authentication using the HTTP validation method (`OAMHttp` validation mode). The ASDK validation method (`OAMAsdk` validation mode) is not supported for Form Based Authentication.

The following overview outlines the authentication flow for this integration using form-based authentication.

Process overview: Request processing with form-based authentication

1. The user requests access to an SharePoint Server RP site.

2. The WebGate protecting the site intercepts the request, determines if the resource is protected, and challenges the user.
3. The user enters their OAM credentials. Next the OAM WebGate server verifies the credentials from LDAP and authenticates the user.

   The WebGate generates the OAM native SSO cookie (ObSSOCookie), which enables single sign-on and sets the User ID header variable (to the user name) in the HTTP request and redirects the user to the SharePoint RP site.
4. The SharePoint RP custom login page is invoked, which sets the user name to the user ID passed in the header variable, and sets the password to the ObSSOCookie value. The login page also automatically submits these credentials to the SharePoint RP site.
5. The SharePoint RP site passes the credentials to SharePoint STS, which invokes the custom membership provider to validate the user credentials.
6. The custom membership provider gets the ObSSOCookie value (passed as a password) and sends it as part of the HTTP request to a resource protected by the WebGate to validate the ObSSOCookie.
7. If the ObSSOCookie is valid, SharePoint STS generates the SAML token and passes it to SharePoint RP.
8. SharePoint RP validates the SAML token and generates the FedAuth cookie. The user is then allowed to access the SharePoint RP site.

52.2.3 About Authentication With Windows Impersonation and SharePoint Server Integration

As described earlier, Windows impersonation enables a trusted user in the Windows server domain to assume the identity of any user requesting a target resource in SharePoint Portal Server. This trusted impersonator maintains the identity context of the user while accessing the resource on behalf of the user. Impersonation is transparent to the user. Access appears to take place as if the SharePoint resource were a resource within the OAM Server domain. Windows based integration with SharePoint Server 2010 and 2013 is the same as the supported integration with SharePoint 2007.

> **Note:** With the SharePoint 2007 integration, the Access Manager ISAPI extension (`IISImpersonationExtension.dll`) was used. Because the internal architecture of event handing changed with SharePoint 2010, Access Manager has changed the ISAPI extension to an HTTP module.

The next overview identifies the authentication processing flow with SharePoint Server and Windows impersonation enabled.

Process overview: Integration Authentication with Windows Impersonation

1. The user requests access to a SharePoint Portal Server resource.
2. The WebGate ISAPI filter protecting SharePoint Portal Server intercepts the request, determines whether the target resource is protected, and if it is, challenges the user for authentication credentials.
3. If the user supplies credentials and the OAM Server validates them, the WebGate sets an ObSSOCookie in the user's browser, which enables single sign-on. The

WebGate also sets an HTTP header variable named "impersonate," whose value is set to one of the following:

- the authenticated user's LDAP `uid`
- `samaccountname`, if the user account exists in Active Directory

4. The Access Manager HTTP module `IISImpersonationModule.dll` checks for the Authorization Success Action header variable named `impersonate`.
5. When the header variable exists, the Oracle ISAPI module obtains a Kerberos ticket for the user.

   This Service for User to Self (S4U2Self) impersonation token enables the designated trusted user to assume the identity of the requesting user and obtain access to the target resource through IIS and the SharePoint Portal Server.

52.2.4 About Access Manager and Windows Native Authentication

Access Manager provides support for Windows Native Authentication (WNA). Your environment may include:

- Windows 2008 or 2008 R2 server
- Internet Information services (IIS) 7 or 7.5
- Active Directory

  If the user's directory server has, for example, an NT Logon ID, or if the user name is the same everywhere, then a user is able to authenticate into any directory server. The most common authentication mechanism on Windows Server 2008 is Kerberos.

The use of WNA by Access Manager is seamless. The user does not notice any difference between a typical authentication and WNA when they log on to their desktop, open an Internet Explorer (IE) browser, request a protected web resource, and complete single sign-on.

Process overview: Using WNA for authentication

1. The user logs in to the desktop computer, and local authentication is completed using the Windows Domain Administrator authentication scheme.
2. The user opens an Internet Explorer (IE) browser and requests an Access System-protected Web resource.
3. The browser notes the local authentication and sends a Kerberos token to the IIS Web server.

   Note: Ensure that Internet Explorer's security settings for the Internet and (or) intranet security zones are adjusted properly to allow automatic logon.

4. The WebGate installed on the IIS Web server sends the Kerberos token to the OAM 11g sever. The OAM 11g Server negotiates the Kerberos token with the KDC (Key distribution center).
5. Access Manager sends authentication success information to the WebGate.
6. The WebGate creates an ObSSOCookie and sends it back to the browser.
7. Access Manager authorization and other processes proceed as usual.

The maximum session time-out period configured for the WebGate is applicable to the generated ObSSOCookie.

52.3 Integration Requirements

Unless explicitly stated, this section introduces components required for integrations described in this chapter. It includes the following topics:

- Confirming Requirements
- Required Access Manager Components
- Required Microsoft Components

52.3.1 Confirming Requirements

References to specific versions and platforms are for demonstration purposes. For the latest Access Manager certification information, see the certification matrix on Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

52.3.2 Required Access Manager Components

Access Manager provides access and security functions, including Web-based single sign-on, policy management, reporting, and auditing. When integrated with Microsoft SharePoint Server, Access Manager handles user authentication through an ISAPI filter and an ISAPI Module, which enables single sign-on between the two products.

The components in Table 52–1 are required to integrate with Microsoft SharePoint Server (or Microsoft SharePoint Server configured with LDAP Membership Provider.)

Table 52–1 Access Manager Component Requirements

Component	Description
10g WebGate	The ISAPI version 10g WebGate must reside on the same computer as the SharePoint Server. Within the context of this integration, this WebGate is an ISAPI filter that intercepts HTTP requests for Web resources and forwards them to the OAM Server to authenticate the user who made the request. If authentication is successful, the WebGate creates an ObSSOCookie and sends it to the user's browser, thus facilitating single sign-on. The WebGate also sets impersonate as a HeaderVar action for this user session. **For LDAP Membership Provider Scenario**: See "Integrating With Microsoft SharePoint Server Configured With LDAP Membership Provider" on page 52-23.
`IISImpersonationModule.dll`	This IIS-native module is installed with the WebGate. The `IISImpersonationModule.dll` module determines whether the Authorization Success Action HeaderVar has been set to impersonate and, if it has, the DLL file creates a Kerberos S4U2Self ticket that enables the special trusted user in the SharePoint Server Active Directory to impersonate the user who originally made the request. After a WebGate installation, you must configure `IISImpersonationModule.dll` manually to enable impersonation and this integration. **For LDAP Membership Provider Scenario**: Do not configure `IISImpersonationModule.dll`.

Table 52–1 (Cont.) Access Manager Component Requirements

Component	Description
Directory Server	Access Manager can be connected to any supported directory server including, but not limited to, LDAP and Active Directory. Access Manager can even connect to the same instance of Active Directory used by SharePoint Server. In any case, the directory is not required on the same machine as SharePoint Server and the protecting WebGate.
OAM Server	The integration also requires installation of the OAM Server with which the WebGate protecting your SharePoint Server installation is configured to inter-operate. Except for the WebGate protecting SharePoint Server, your components do not need to reside on the machine hosting SharePoint Server. See Also: "Preparing for Integration With SharePoint Server" on page 52-8.

52.3.3 Required Microsoft Components

Minimum requirements dictate a 64-bit, four cores processor. However, references to specific versions and platforms are for demonstration purposes. For the latest Access Manager certification information, see the following Microsoft library location for Microsoft SharePoint Server:

https://technet.microsoft.com/en-us/library/cc262485.aspx

The SharePoint multi-purpose platform allows for managing and provisioning of intranet portals, extranets, and Web sites; document management and file management; collaboration spaces; social networking tools; enterprise search and intelligence tooling; process and information integration; and third-party developed solutions.

Note: Minimum requirements dictate a 64-bit, four cores processor. However, references to specific versions and platforms are for demonstration purposes. For the latest Access Manager certification information, see Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

Table 52–2 describes the other components required for this integration.

See Also: The following library location for Microsoft SharePoint Server and access to applicable software:

http://technet.microsoft.com/en-us/library/cc262485.aspx

Table 52–2 Microsoft Requirements for this Integration

Component	Description
Custom Login Page for SharePoint site	When the user tries to access a SharePoint site configured to use Form Based Authentication, the user is redirected to a login page where the user enters his or her credentials (user name and password). The custom login page passes the credentials to the SharePoint site.

Table 52–2 (Cont.) Microsoft Requirements for this Integration

Component	Description
SharePoint site	You create the SharePoint site using the SharePoint Central Administration application. The site is configured to use Form Based Authentication as the authentication method by following the steps mentioned in http://technet.microsoft.com/en-us/library/ee806890.aspx. The SharePoint site passes the user credentials to the SharePoint STS that generates SAML token upon successful ObSSOCookie validation by the custom membership provider. The SharePoint site also generates FedAuth cookie upon receiving the SAML token from SharePoint STS. The SharePoint site passes the FedAuth cookie to the user so that he/she can access the SharePoint site.
SharePoint Security Token Service (STS)	The SharePoint site passes the user credentials (user name and password) to SharePoint STS, which invokes the custom membership provider and passes the credentials to it. Once the custom membership provider validates the ObSSOCookie passed to it, the SharePoint STS generates the SAML token for the user that is passed to the SharePoint Relying Party (RP).
Custom Membership Provider for SharePoint STS	The SharePoint STS invokes the membership provider (configured with Form Based Authentication). STS passes the user credentials and the URL for the IIS resource (configured in `web.config` on the SharePoint site) to the custom membership provider for cookie validation. The membership provider is customized such that it returns success if the ObSSOCookie value passed to it is valid. The custom membership provider library (`OAMCustomMembershipProvider.dll`) is packaged and installed with the 10g WebGate for IIS Web server. You must deploy the library in the global assembly cache of the SharePoint Server host. The `CustomMembershipProvider` class is derived from `LdapMembershipProvider` class present in the `Microsoft.Office.Server.Security` namespace.
IIS resource for Cookie validation	Configure the URL for the IIS resource in the SharePoint site's `web.config` file. For the HTTP validation method, the WebGate intercepts the request sent by the custom membership provider, extracts the ObSSOCookie from the request, and validates it. If the cookie is valid, then the request is redirected to the IIS resource, which returns the response with a 200 (OK) status code to the custom membership provider. Otherwise, a 403 (Forbidden) error code is returned to the custom membership provider.

52.4 Preparing for Integration With SharePoint Server

Tasks in the following procedure are required for all integration scenarios described in this chapter.

After installing and testing Microsoft components, perform steps here to install Access Manager for your integration. This task applies to both integration scenarios in this chapter. To avoid repetition, information here is not repeated elsewhere.

The ISAPI 10g WebGate must be installed on the same computer as the SharePoint Server. Other components in this integration can reside on the same host as the WebGate or any other computer in your deployment (Solaris, Linux, or Windows platforms). A different host can be set up for Active Directory or some other directory service. If both Access Manager and SharePoint Server are set up for different instances of Active Directory, both instances must belong to the same Active Directory domain.

> **See Also:** Chapter 25 for information about the 10g WebGate installation.

Prerequisites

Install and test Microsoft components described in "Required Microsoft Components" on page 52-7.

To prepare for integration with SharePoint Server

1. Install Oracle Identity Management and Access Manager as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
2. Register a 10g WebGate for IIS Web server with Access Manager:
   a. Log in to the Oracle Access Management Console. For example: `http://`*host*`:`*port*`/oamconsole`.
   b. From the Welcome page, SSO Agent panel, click **New OAM 10g Agent** to open a fresh page.
   c. On the Create: OAM Agent page, enter required details (those with an *):

      Name
      SharePoint user name and password
      Security mode (Agent host must match OAM Server)
      Auto Create Policies (Checked)

      Note: Do not specify a Base URL.

   d. **Protected Resource List**: In this table, enter individual resource URLs to be protected by this OAM Agent.
   e. **Public Resource List**: In this table, enter individual resource URLs to be public (not protected).
   f. Click Apply to submit the registration, check the Confirmation window for the location of generated artifacts, then close the window.
3. Proceed as follows:
   - **Install a fresh WebGate**: Continue with steps 6, 7, and 8.
   - **Existing WebGate on SharePoint Host**: Skip to "Integrating With Microsoft SharePoint Server" on page 52-10.

   Note: Only 64-bit ISAPI WebGates are supported as described in "Integrating With Microsoft SharePoint Server Configured With LDAP Membership Provider" on page 52-23.

4. Locate and download the 64-bit ISAPI WebGate installer as follows:
   a. Go to Oracle Fusion Middleware 11gR1 Software Downloads at:

      `https://www.oracle.com/technology/software/products/middleware/htdocs/fmw_11_download.html`

   b. Click **Accept License Agreement**, at the top of the page.
   c. From the **Access Manager Webgates (10.1.4.3.0)** row, click the download link for the desired platform and follow on-screen instructions.

d. Store the WebGate installer in the same directory as any 10*g* (10.1.4.3) Access System Language Packs you want to install.

5. Launch the WebGate installer for your platform, installation mode, and Web server. See Chapter 25 for information about 10g WebGate installation.

   Follow these steps:

   a. Follow on-screen prompts.

   b. Provide Administrator credentials for the Web server.

   c. **Language Pack**—Choose a Default Locale and any other Locales to install, then click Next.

   d. WebGate installation begins (`IISImpersonationModule.dll` will be installed in *WebGate_install_dir*`\access\Oblix\apps\Webgate\bin\`).

6. Before updating the Web server configuration, copy WebGate artifacts from the Admin Server to the computer hosting the WebGate.

   a. On the computer hosting the Oracle Access Management Console (AdminServer), locate and copy ObAccessClient.xml (and any certificate artifacts):

      $DOMAIN_HOME*`/output/`*$Agent_Name`/`

      `ObAccessClient.xml`
      `password.xml` (if needed)
      `aaa_key.pem` (your private key generated by openSSL)
      `aaa_cert.pem` (signed certificates in PEM format)

   b. On the OAM Agent host, add the artifacts to the WebGate path. For example:

      WebGate_install_dir`/access/oblix/lib/ObAccessClient.xml`
      WebGate_install_dir`/access/oblix/config`

   c. Restart the WebGate Web server.

   d. (Optional.) Restart the OAM Server that is hosting this Agent. This step is recommended but not required.

7. Proceed as needed to complete this integration within your environment:

   - Integrating With Microsoft SharePoint Server
   - Integrating With Microsoft SharePoint Server Configured With LDAP Membership Provider

52.5 Integrating With Microsoft SharePoint Server

The following overview outlines the tasks that you must perform for this integration and the topics where you will find the steps and details.

The custom membership provider library (`OAMCustomMembershipProvider.dll`) is packaged and installed with the 10g WebGate for IIS Web Server. You must deploy the library in the global assembly cache of the computer hosting SharePoint Server as outlined next.

Task overview: Integrating with Microsoft SharePoint Server includes

1. Performing prerequisite tasks:

   - Installing "Required Microsoft Components" on page 52-7.

- "Preparing for Integration With SharePoint Server" on page 52-8

2. Creating a new Web application (or site application) in SharePoint Server is described in following topics:
   - "Creating a New Web Application in Microsoft SharePoint Server" on page 52-11
   - Creating a New Site Collection for Microsoft SharePoint Server on page 52-13
3. "Setting Up Microsoft Windows Impersonation" on page 52-14 (not used with LDAP Membership Provider).
4. "Completing the SharePoint Server Integration" on page 52-22.
5. "Configuring Single Sign-off for Microsoft SharePoint Server" on page 52-33.
6. "Synchronizing User Profiles Between Directories" on page 52-38.
7. "Testing Your Integration" on page 52-38.

52.5.1 Creating a New Web Application in Microsoft SharePoint Server

You perform this task when integrating with Microsoft SharePoint Server, with or without LDAP Membership Provider.

Prerequisites

Installing Microsoft components. See "Required Microsoft Components" on page 52-7.

To create a new Web application in Microsoft SharePoint Server

1. On the host where SharePoint Server is installed, open the Central Administration home page: Start, All Programs, SharePoint Products, SharePoint, Central Administration.
2. From the Central Administration home page, click Application Management.
3. From the Application Management page, Web Applications section, click Manage Web Applications.
4. In the top-left corner, click the New button to create a new web application.
5. Configure the items in Table 52–3 on the Create New Web Application page:

Table 52–3 Create Web Application Options for Microsoft SharePoint Server

Section	What You Configure in This Section
Authentication	In this section you select either Claim Based Authentication or Classic Mode Authentication, as appropriate.

Table 52–3 (Cont.) Create Web Application Options for Microsoft SharePoint Server

Section	What You Configure in This Section
IIS Web Site	In this section you configure the following settings for your new Web application, as follows: ■ To choose an existing Web site, click Use an Existing Web Site... ■ To create a new site, click Create. ■ In the Port field, enter the port number you want to use to access the Web application. For a new Web site, this field contains a default port number. For an exiting site, this field contains the currently configured port number. ■ In the optional Host Header field, enter the URL for accessing the Web application. ■ In the Path field, enter the path to the directory that contains the site on the server. For a new Web site, this field contains a default path. For an exiting site, this field contains the current path.
Security Configuration	In this section you configure authentication and encryption for your Web application, as follows: ■ In the Authentication Provider section, select **Negotiate(Kerberos)** or **NTLM**, as appropriate. ■ In the **Allow Anonymous** section, choose **Yes** or **No**. A value of **Yes** allows anonymous access to the Web site by using a computer-specific anonymous access account. The account name is IUSR_*computername*. ■ In the Secure Sockets Layer (SSL) section, choose **Yes** or **No**. If you choose to enable SSL for the Web site, you must configure SSL by requesting and installing a certificate.
Public URL	Enter the URL for the domain name for all sites that users will access in this Web application. This URL domain will be used in all links shown on pages in the Web application. By default, the box is populated with the current server name and port. The Zone field is automatically set to Default for a new Web application and cannot be changed from this page.
Application Pool	In the Application Pool section, choose whether to use an existing application pool or create a new application pool for this Web application, as follows: ■ To use an existing application pool, select Use Existing Application Pool, then select the application pool you wish to use from the drop-down menu. ■ To create a new application pool, select Create a New Application Pool, and in the Application Pool Name field, type the name of the new application pool, or keep the default name. In the section Select a Security Account for This Application Pool, select Predefined to use an existing application pool security account, then select the security account from the drop-down menu. To use a security account that is not currently being used for an existing application pool, select Configurable, enter the user name of the account you want to use in the User Name field, and enter the password for the account in the Password field.

Table 52–3 (Cont.) Create Web Application Options for Microsoft SharePoint Server

Section	What You Configure in This Section
Database Name and Authentication	In this section, choose the database server, database name, and authentication method for your new Web application. In the Database Name field, enter the name of the database or use the default entry. In the Database Authentication field, choose whether to use Windows authentication (recommended) or SQL authentication, as follows: ▪ If you want to use Windows authentication, leave this option selected. ▪ If you want to use SQL authentication, select SQL authentication. In the Account field, type the name of the account that you want the Web application to use to authenticate to the SQL Server database, then type the password in the Password field.
Failover Server	You can optionally choose to specify a fail-over database server to configure a Fail-over Server.
Service Application Connections	You can use the default value or choose custom value and optionally select the services you want your web application to connect to.

6. Click OK to create the new Web application, or click Cancel to cancel the process and return to the Application Management page.
7. Proceed with "Creating a New Site Collection for Microsoft SharePoint Server".

52.5.2 Creating a New Site Collection for Microsoft SharePoint Server

You perform this task when integrating with Microsoft SharePoint Server, with or without LDAP Membership Provider.

To create a new site collection for Microsoft SharePoint Server

1. From the Application Management page, Site Collection section, click Create Site Collections.
2. On the Create Site Collection page, in the Web Application section, either select a Web application to host the site collection (from the Web Application drop-down list), or create a new Web application to host the site collection, as follows:

Table 52–4 Create a Web Application to Host a Site Collection for SharePoint Server

Section	What You Configure in This Section
Quota Template	You can decide to use predefined quota template to limit resources used for this site collection or use "No quota" as appropriate.
Title and Description	Enter a title and description for the site collection
Web Site Address	Select a URL type, and specify a URL for the site collection.
Template	Select a template from the tabbed template control.
Primary Site Collection Administrator	Enter the user account name for the user you want to be the primary Administrator for the site collection. You can also browse for the user account by clicking the book icon to the right of the text box. You can verify the user account by clicking the check names icon to the right of the text box.

Table 52–4 (Cont.) Create a Web Application to Host a Site Collection for SharePoint

Section	What You Configure in This Section
Secondary Site Collection Administrator (optional)	Enter the user account for the user that you want to be the secondary Administrator for the site collection. You can also browse for the user account by clicking the book icon to the right of the text box. You can verify the user account by clicking the Check Names icon to the right of the text box.

3. Refer to the following topics as you finish this integration:
   - "Setting Up Microsoft Windows Impersonation" on page 52-14
   - "Completing the SharePoint Server Integration" on page 52-22
   - "Configuring Single Sign-off for Microsoft SharePoint Server" on page 52-33
   - "Synchronizing User Profiles Between Directories" on page 52-38
   - "Testing Your Integration" on page 52-38

   See Also: "Task overview: Integrating with Microsoft SharePoint Server Configured with LDAP Membership Provider" on page 52-24

52.6 Setting Up Microsoft Windows Impersonation

If you want to use a directory server other than Active Directory, use LDAP Membership provider. The OAMCustomMembership provider leverages the functionality of LDAP Membership provider.

This section describes how to set up impersonation, whether for SharePoint Server integration or for use by some other application.

Note: Skip this section if you are integrating Microsoft SharePoint Server configured with LDAP Membership Provider. Windows impersonation is not used with the LDAP Membership Provider.

Task overview: Setting up impersonation

1. Create a trusted user account for only impersonation in the Active Directory connected to SharePoint Server, as described in "Creating Trusted User Accounts" on page 52-15.
2. Give the trusted user the special right to act as part of the operating system, as described in "Assigning Rights to the Trusted User" on page 52-15.
3. Bind the trusted user to the WebGate by supplying the authentication credentials for the trusted user, as described in "Binding the Trusted User to Your WebGate" on page 52-16.
4. Add a header variable named *IMPERSONATE* to the Authorization Success Action in the Application Domain for impersonation, as described in "Adding an Impersonation Response to an Authorization Policy" on page 52-17.
5. Configure IIS by adding the `IISImpersonationModule.dll` to your IIS configuration, as described in "Adding an Impersonation DLL to IIS" on page 52-18.
6. Test impersonation, as described in "Testing Impersonation" on page 52-20.

52.6.1 Creating Trusted User Accounts

This special user should not be used for anything other than impersonation.

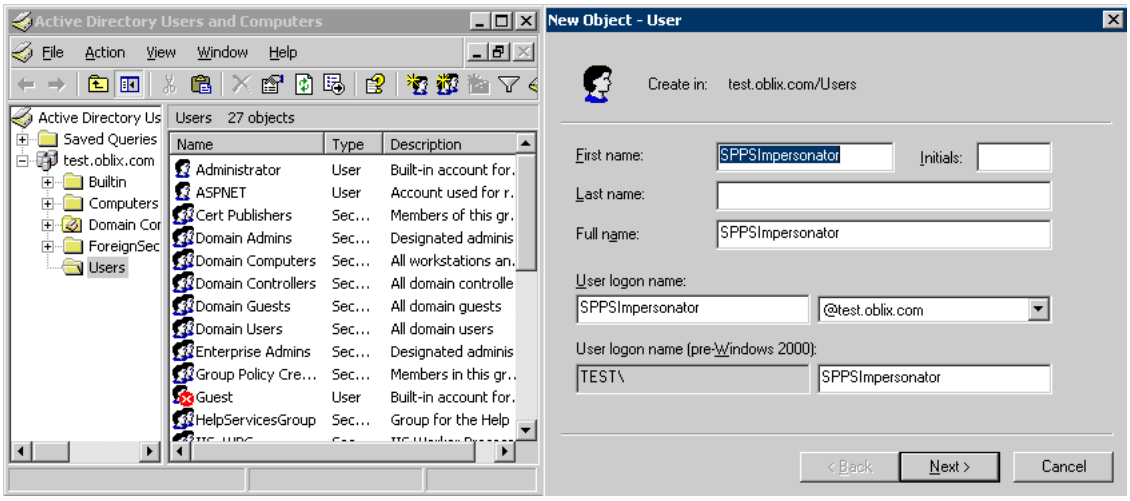
The example in the following procedure uses *Impersonator* as the New Object - User. Your environment will be different.

To create a trusted user account

1. Perform the following steps on the computer hosting your SharePoint Server installation:
   - Windows 2008: Select Start, Programs, Administrative tools, Active Directory Users and Computers.
2. In the Active Directory Users and Computers window, right-click Users on the tree in the left pane, then select New, User.
3. In the First name field of the pane entitled New Object - User, enter an easy-to-remember name such as *Impersonator*.
4. Copy this same string to the User logon name field, then click Next.
5. In succeeding panels, you will be asked to choose a password and then retype it to confirm.

Note: Oracle recommends that you chose a very complex password, because your trusted user is being given very powerful permissions. Also, be sure to check the box marked Password Never Expires. Since the impersonation module should be the only entity that ever sees the trusted user account, it would be very difficult for an outside agency to discover that the password has expired.

Figure 52–1 Setting up a Trusted User Account for Windows Impersonation



52.6.2 Assigning Rights to the Trusted User

You need to give the trusted user the right to act as part of the operating system.

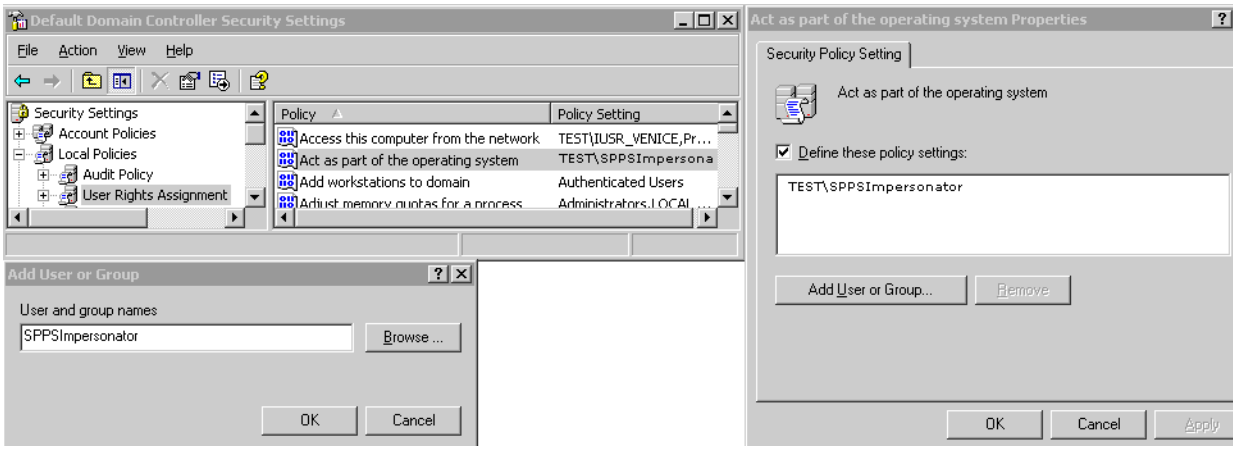
To give appropriate rights to the trusted user

1. Perform steps for your environment:

- Windows 2008: Select Start, Programs, Administrative tools, Local Security Policy.

2. On the tree in the left pane, click the plus icon (+) next to Local Policies.
3. Click User Rights Assignment on the tree in the left pane.
4. Double-click Act as part of the operating system in the right pane.
5. Click Add User or Group.
6. In the Add User or Group panel, type the User logon name of the trusted user (SPPSImpersonator in our example) in the User and group names text entry box, then click OK to register the change.

Figure 52–2 Configuring Rights for the Trusted User in Windows Impersonation



52.6.3 Binding the Trusted User to Your WebGate

You need to bind the trusted user to the 10g WebGate that communicates with Access Manager by supplying the authentication credentials for the trusted user, as follows.

The following procedure presumes that you have not yet registered a 10g WebGate with Access Manager. Values in the following procedure are provided as an example only. Your environment will be different.

See Also: Chapter 25 for details on managing 10g WebGates

To bind your trusted user to your WebGate

1. Go to the Oracle Access Management Console.

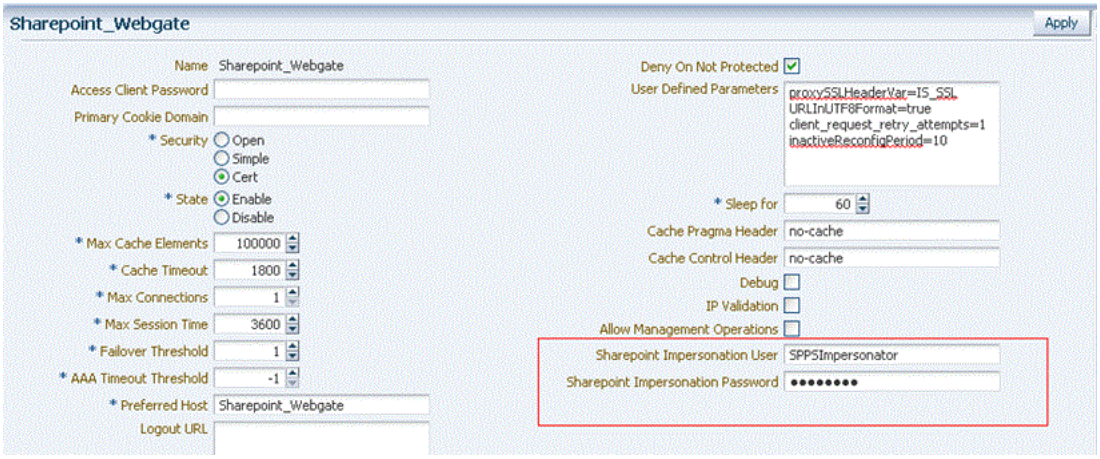
   For example:

   `http://hostname:port/oamconsole`

   where *hostname* is the fully-qualified DNS name of the computer hosting the Oracle Access Management Console; *port* is the listening *port* configured for the OAM Server; oamconsole leads to the Oracle Access Management Console.

2. From the Welcome page, SSO Agent panel, click New OAM 10g Agent to open a fresh page:
3. On the Create: OAM Agent page, enter required details (those with an *) to register this WebGate.

4. **Protected Resource List**: In this table, enter individual resource URLs to be protected by this OAM Agent, as shown in Table 14–9.
5. **Public Resource List**: In this table, enter individual resource URLs to be public (not protected), as shown in Table 14–9.
6. **Auto Create Policies**: Check to create fresh policies (or clear and use the same host identifier as another WebGate to share policies (Table 14–9)).
7. Click Apply to submit the registration.
8. Check the Confirmation window for the location of generated artifacts, then close the window.
9. In the navigation tree, open the Agent page.
10. **SharePoint Requirements**: Add trusted user credentials in the fields shown here:, and click Apply.



11. Copy the artifacts as follows (or install the WebGate and then copy these artifacts):
    a. On the Oracle Access Management Console host, locate the updated OAM Agent ObAccessClient.xml configuration file (and any certificate artifacts). For example:

       $*DOMAIN_HOME*/output/$*Agent_Name*/ObAccessClient.xml

    b. On the computer hosting the agent, copy the artifacts. For example

       10g WebGate/AccessClient: $*WebGate_install_dir*/oblix/lib/ObAccessClient.xml

    c. Proceed to "Adding an Impersonation Response to an Authorization Policy".

52.6.4 Adding an Impersonation Response to an Authorization Policy

An Application Domain and basic policies to protect your SharePoint resources was created when you registered the WebGate with Access Manager. Now you must add an Authorization Success Action (Response) with a return type of Header, set the name to `IMPERSONATE`, with the Response value of $*user.userid*, "samaccountname" for a single-domain Active Directory installation or "userPrincipalName" for a multi-domain Active Directory forest.

See Also: Chapter 20 for details about Application Domains and policies.

To add an impersonation response to your Authorization Policy

1. From the Oracle Access Management Console Policy Configuration tab, open Application Domains, find and open the *DesiredDomain*, then open the *DesiredPolicy*.

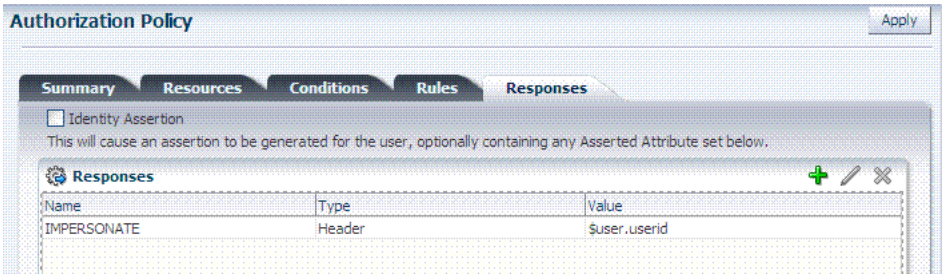
   See "Searching for an Existing Application Domain" on page 20-12.

   Here *DesiredDomain* refers to the Application Domain created specifically for impersonation (*Impersonation* for example). *DesiredPolicy* is your default policy created during agent registration. By default, no policy Responses exist until you create them.

2. Responses: On the open Policy page, click the Responses tab, click the Add (+) button, and:

   - From the Type list, choose **Header**.
   - In the Name field, enter a unique name for this response: `IMPERSONATE`
   - In the Value field, enter a value for this Response. For example: $*user.userid*.
   - See also: "Adding and Managing Policy Responses for SSO" on page 20-47.

3. Click Add to save the Response, which is used for the second WebGate request (for authorization). Following is a sample.



52.6.5 Adding an Impersonation DLL to IIS

You are ready to configure IIS Web server for this integration by registering and configuring the IISImpersonationModule.dll across all sites including central administration and web services.

Alternatively, if you have multiple Web sites, where some are integrated with Access Manager while others are not, you might want to enable impersonation only for those Web sites that are integrated with Access Manager. To do this, you must configure the Native Module only at those sites that require integration. See:

- To configure and register ImpersonationModule to IIS
- To configure site level Native Modules for Web sites

To configure and register ImpersonationModule to IIS

1. Select Start, Administrative Tools, Internet Information Services (IIS) Manager.
2. In the left pane of IIS 7, click the hostname.
3. In the middle pane, under the IIS header, double click Modules.
4. In the right pane, click Configure Native Modules and click Register.

5. In the window, provide a module Name (for example, *Oracle Impersonation Module*).
6. In the Path field, type the full path to IISImpersonationModule.dll.

   By default, the path is:

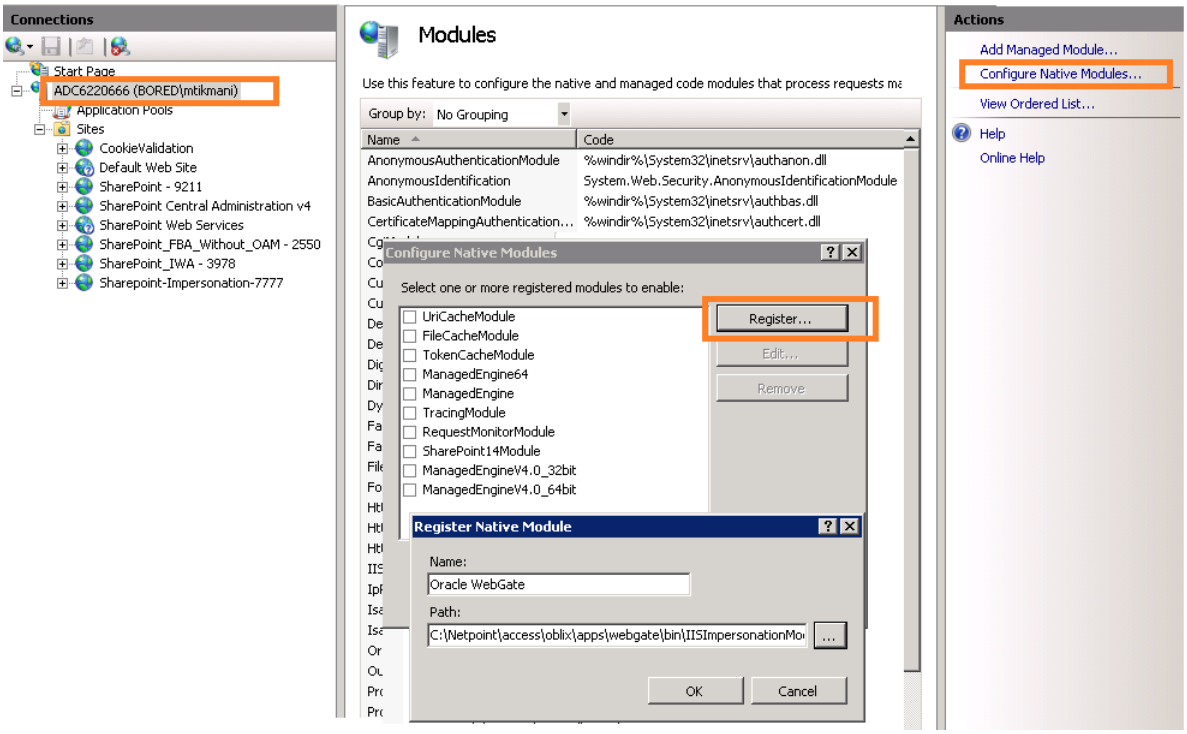
   `WebGate_install_dir\access\oblix\apps\Webgate\bin\IISImpersonation`

   Where *WebGate_install_dir* is the directory of your WebGate installation.

   Note: If any spaces exist in the path (for example, `C:\Program Files\Oracle\...`) surround the entire string with double quotes (" ").

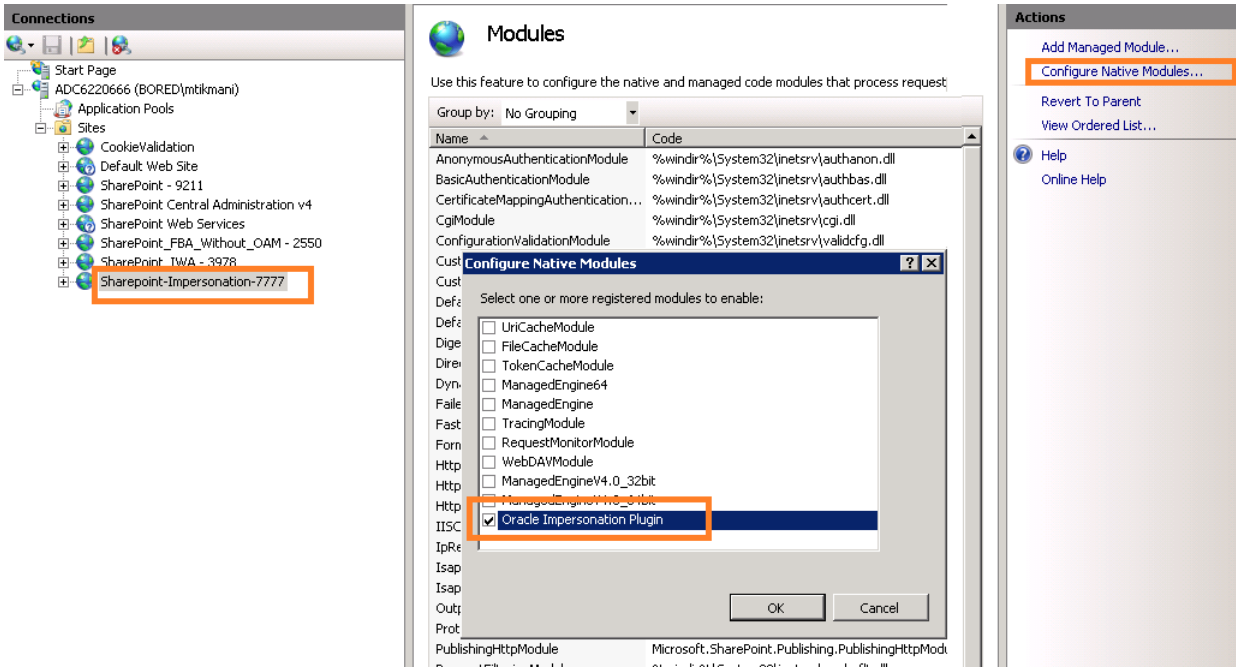
7. Click OK to register the module.
8. Check the name of the newly created module and click OK to apply the module across the Web sites.

Figure 52–3 Registering the Impersonation Module



To configure site level Native Modules for Web sites

1. Click the plus icon (+) icon to left of Sites.
2. Click the site where you want to enable Impersonation.
3. In the Middle pane, under IIS, double click Modules.
4. In the right pane, click Configure Native Modules and select the Impersonation Module registered earlier.
5. Click OK.



6. Proceed with:
   - Testing Impersonation
   - Completing the SharePoint Server Integration

52.6.6 Testing Impersonation

You can test to ensure that impersonation is working properly in the following ways before you complete the integration:

- Outside the SharePoint Server context or test single sign-on, as described in "Creating an IIS Virtual Site Not Protected by SharePoint Server" on page 52-20
- Using the Event Viewer, as described in "Testing Impersonation Using the Event Viewer" on page 52-21
- Using a Web page, as described in "Testing Impersonation using a Web Page" on page 52-22
- Using negative testing as described in "Negative Testing for Impersonation" on page 52-22

> **See Also:** "Completing the SharePoint Server Integration" after confirming impersonation configuration is working properly

52.6.6.1 Creating an IIS Virtual Site Not Protected by SharePoint Server

To test the impersonation feature outside the SharePoint Server context or to test single sign-on, you will need a target Web page on an IIS virtual Web site that is not protected by SharePoint Server. You create such a virtual Web site by completing the following task.

To create an IIS virtual site not protected by SharePoint Server

1. Select Start, Administrative Tools, Internet Information Services (IIS) Manager.

2. Click the plus icon (+) to the left of the local computer icon on the tree in the left pane.
3. Right-click Web Sites on the tree in the left pane, then navigate to New, Web Site on the menu.
4. Respond to the prompts by the Web site creation wizard.
5. After you create the virtual site, you must protect it with policies in an Application Domain. See Chapter 20 for details about Application Domains and policies.

52.6.6.2 Testing Impersonation Using the Event Viewer

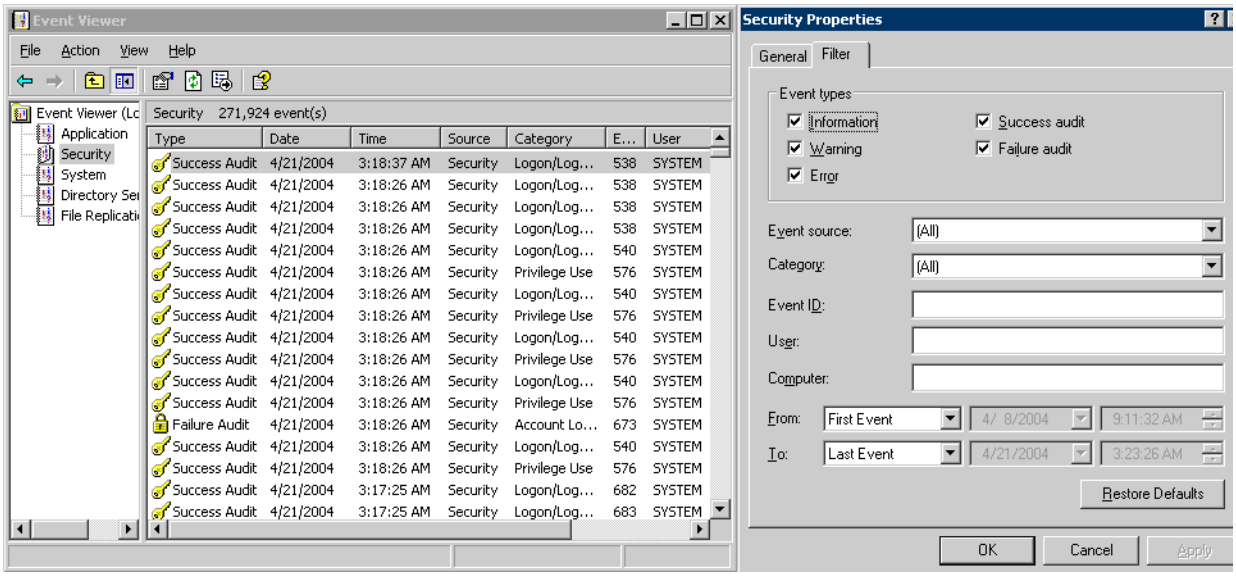
When you complete impersonation testing using the Windows 2003 Event Viewer, you must configure the event viewer before conducting the actual test.

To test impersonation through the Event Viewer

1. Select Start Menu, Event Viewer.
2. In the left pane, right-click Security, then click Properties.
3. Click the Filter tab on the Security property sheet.
4. Verify that all Event Types are checked, and the Event Source and Category lists are set to All, then click OK to dismiss the property sheet.

   Your Event Viewer is now configured to display information about the HeaderVar associated with a resource request.

Figure 52–4 Verifying Event Viewer Settings



5. Create a new IIS virtual server (virtual site).
6. Place a target Web page anywhere in the tree on the virtual site.
7. Point your browser at the Web page.

If impersonation is working correctly, the Event Viewer will report the success of the access attempt.

52.6.6.3 Testing Impersonation using a Web Page

You can also test impersonation using a dynamic test page, such as an .asp page or a Perl script, that can return and display information about the request.

To test impersonation through a Web page that displays server variables

1. Create an .asp page or Perl script that will display the parameters AUTH_USER and IMPERSONATE, which can resemble the sample page presented in the following listing:

Example 52–1 Sample .ASP Page Code

```
<TABLE border=1>
       <TR>
             <TD>Variable</TD>
             <TD>  </TD>
             <TD>Value</TD></TR>
       <%for each servervar in request.servervariables%>
       <TR>
             <TD><%=servervar%></TD>
             <TD>  </TD>
             <TD><%=request.servervariables(servervar)%> </TD>
       </TR>
```

2. Create an IIS virtual site, or use the one you created for the previous task.
3. Place an .asp page or Perl script (such as the sample in the preceding listing) anywhere in the tree of the new virtual site.
4. Point your browser at the page, which should appear, with both AUTH_USER and IMPERSONATE set to the name of the user making the request.

52.6.6.4 Negative Testing for Impersonation

To conduct negative testing for impersonation, you need to unbind the trusted user from the WebGate, as explained in the following procedure.

To unbind the trusted user from your WebGate

1. In the Oracle Access Management Console, locate the WebGate.

   See "Searching for an OAM Agent Registration" on page 16-20.

2. Open the desired WebGate registration page and remove the credentials for the trusted user.
3. Click Apply to save the change.
4. Restart the IIS server and in a browser window, go to a protected code page (previously accessible to the trusted user).
5. Confirm that you receive an message page should appear. Values for AUTH_USER and IMPERSONATE are necessary for impersonation credentials to be bound to a WebGate.
6. Restore the trusted user to the WebGate registration page.

52.7 Completing the SharePoint Server Integration

You need to complete several procedures to set up Access Manager with SharePoint Server integration.

Note: Skip this section if you are integrating with SharePoint Server configured with LDAP Membership Provider.

Task overview: Completing the SharePoint Server integration

1. Set up IIS security, as described in "Configuring IIS Security" on page 52-23.
2. Test the integration, as described in "Testing the SharePoint Server Integration" on page 52-38.

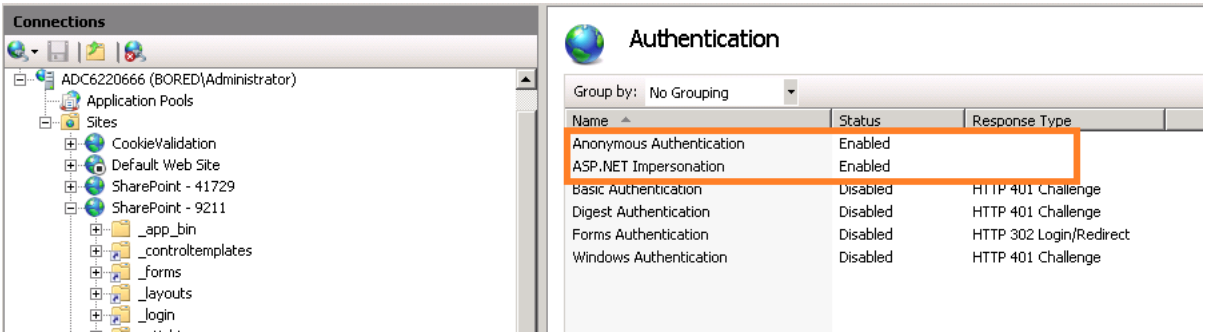
52.7.1 Configuring IIS Security

Be sure to configure IIS Security before you continue.

To configure IIS Security for the SharePoint Server integration

1. Select Start, Administrative Tools, Internet Information Services (IIS) Manager.
2. Click the plus icon (+) to the left of the local computer icon on the tree in the left pane.
3. Click Web Sites on the tree in the left pane.
4. In the center pane, double-click on the Authentication under IIS.
5. Ensure that Anonymous access is enabled and Windows Authentication is disabled.

Figure 52–5 Impersonation Authentication



52.8 Integrating With Microsoft SharePoint Server Configured With LDAP Membership Provider

In this scenario, Access Manager gets integrated with SharePoint Server using SharePoint Security Token Service (STS). This includes the ISAPI WebGate installation on IIS, as well as Access Manager configuration and steps needed to achieve the HeaderVar integration.

Note: Only 64-bit ISAPI WebGates are supported for this integration.

The following overview introduces the tasks that you must perform for this integration, including prerequisites, and where to find the information you need for each task.

Task overview: Integrating with Microsoft SharePoint Server Configured with LDAP Membership Provider

1. Preparing for this integration:
   a. Install "Required Microsoft Components", as described on page 52-7.
   b. Create a SharePoint Web site, as described in "Creating a New Web Application in Microsoft SharePoint Server" on page 52-11.
   c. Configure the SharePoint site collection, as described in "Creating a New Site Collection for Microsoft SharePoint Server" on page 52-13.
   d. Configure the created Web site with LDAP directory using Claim-Based Authentication type (which uses the LDAP Membership Provider), as described in your SharePoint documentation.
   e. Ensure that users who are present in the LDAP directory can log in to the SharePoint Web site and get proper roles.
   f. Test the configuration to ensure that users who are present in the LDAP directory can log in to the SharePoint Web site and get proper roles, as described in your SharePoint documentation.
2. Perform all tasks described in "Installing Access Manager for Microsoft SharePoint Server Configured With LDAP Membership Provider" on page 52-25.

   This task includes installing a 10g WebGate for IIS and configuring a `WebGate.dll` for the individual SharePoint Web site.
3. Add an authentication scheme for this integration, as described in "Configuring an Authentication Scheme for Use With LDAP Membership Provider" on page 52-26.
4. Update the Application Domain that protects the SharePoint Web Site, as described in "Updating the Application Domain Protecting the SharePoint Web Site" on page 52-27.
5. In the new Application Domain, create an authorization rule for this integration, as described in "Creating an Authorization Response for Header Variable SP_SSO_UID" on page 52-29.
6. Perform all steps in "Creating an Authorization Response for the OAMAuthCookie" on page 52-29.
7. Perform all steps in "Configuring and Deploying OAMCustomMembershipProvider" on page 52-30.
8. Synchronize directory servers, if needed, as described in "Ensuring Directory Servers are Synchronized" on page 52-33.
9. Configure single-sign-on for office documents as described in "Configuring Single Sign-On for Office Documents" on page 52-33.
10. Configure single sign-off, as described in "Configuring Single Sign-off for Microsoft SharePoint Server" on page 52-33.
11. Finish by testing your integration to ensure it operates without problem, as described in "Testing the Integration" on page 52-33.

52.8.1 About Integrating With Microsoft SharePoint Server Configured With LDAP Membership Provider

The previous scenario, "Integrating With Microsoft SharePoint Server" on page 52-10, describes how to use Windows authentication. In that scenario, authentication and

authorization are performed for users residing in Active Directory. Access Manager used Windows impersonation for integration.

For the integration described in this section, support for the LDAP Membership Provider is achieved by using a HeaderVar-based integration. The ISAPI WebGate filter intercepts HTTP requests for Web resources and works with the OAM Server to authenticate the user who made the request. When authentication is successful, WebGate creates an ObSSOCookie and sends it to the user's browser to facilitate single sign-on (SSO). The WebGate also sets `SP_SSO_UID` as a `HeaderVar` action for this user session. The Oracle Custom Membership provider in SharePoint validates the ObSSOCookie using the HTTP validation method, whereby the Access Manager Custom Membership Provider makes an HTTP/HTTPS request to a protected resource. Access Manager then validates and compares the user login returned on Authorization success with `SP_SSO_UID`.

> **See Also:** "Introduction to Integrating With the SharePoint Server" on page 52-2 for a look at processing differences between this integration and the other integrations described in this chapter.

Requirements: This integration requires that Microsoft SharePoint Server:

- Must be integrated with the LDAP Membership Provider
- Must not use Windows authentication
- Must not have `IISImpersonationModule.dll` configured at the Web site using Claim Based Authentication

> **See Also:** "Integration Requirements" on page 52-6

52.8.2 Installing Access Manager for Microsoft SharePoint Server Configured With LDAP Membership Provider

This procedure describes how to prepare your installation for integration with Microsoft SharePoint Server Configured with LDAP Membership Provider.

Prerequisites

Perform Step 1 of the previous "Task overview: Integrating with Microsoft SharePoint Server Configured with LDAP Membership Provider" on page 52-24.

To prepare your deployment for integration that includes LDAP Membership Provider

1. Install Oracle Identity Management and Access Manager as described in the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.
2. Provision and install an ISAPI WebGate using steps in Chapter 25 and Chapter 28
3. Configure `Webgate.dll` at the SharePoint Web site that you want to protect. For example:
   a. Start the Internet Information Services (IIS) Manager: Click Start, Programs, Administrative Tools, Internet Information Services (IIS) Manager
   b. Under Web Sites, double click the name of the SharePoint Web site to protect.
   c. In the Middle pane, double click ISAPI Filters and click Add in the right pane.
   d. Enter the filter name as **`Oracle WebGate`**.
   e. Enter the following path to the `Webgate.dll` file.

WebGate_install_dir/access/oblix/apps/Webgate/bin/Webgate.dll

f. Save and apply these changes.

g. Double click Authentication in the middle pane.

h. Verify that the following Internet Information Services settings are correct: **Anonymous Authentication** and **Forms Authentication** is enabled, and **Windows Authentication** is disabled.

Note: For Claim-based Authentication to work with the Access Manager, Windows Authentication for the SharePoint Site must be disabled.

---

i. Save and Apply these changes.

4. Go to the Web sites level to protect and create an /access application that points to the newly installed *WebGate_install_dir*. For instance:

   a. Under Web Sites, right-click the name of the Web site to be protected.

   b. Select Add application named with the alias "access" that points to the appropriate *WebGate_install_dir*\access.

   c. Under Access Permissions, check **Read**, **Run Scripts**, and **Execute**.

   d. Save and apply these changes.

5. Proceed to "Configuring an Authentication Scheme for Use With LDAP Membership Provider".

52.8.3 Configuring an Authentication Scheme for Use With LDAP Membership Provider

When your integration includes the LDAP Membership Provider, only three Access Manager authentication methods are supported, as described in this procedure.

> **See Also:** Chapter 19 for details about managing authentication schemes

To configure an authentication scheme for SharePoint with LDAP Membership Provider

1. From the Oracle Access Management Console, Policy Configuration tab, expand the Shared Components node.
2. Click the Authentication Schemes node, then click the Create button in the tool bar.
3. On the Authentication Scheme page, fill in the:

   Name: Enter a unique name for this scheme. For example: *SharePoint w/LDAP-MP*

   Description: Optional
4. Authentication Level: Choose a level of security for the scheme.
5. Choose a Challenge Method:

   Basic Authentication for SharePoint Web site root (/)

   Form Authentication with Challenge Redirect for SharePoint Web site root (/)

   Client Certificate Authentication for SharePoint Web site root (/)

6. Challenge Redirect: Enter your challenge redirect value, if required.
7. Choose an Authentication Module from those listed.
8. Challenge Parameters: Enter your challenge parameter values, if required.
9. Challenge URL: The URL the credential collector will redirect to for credential collection.
10. Click Apply to submit the new scheme, review details in the Confirmation window.
11. **Optional**: Click the Set as Default button to automatically use this with new Application Domains, then close the Confirmation window.
12. In the navigation tree, confirm the new scheme is listed, and then close the page.
13. Proceed with "Updating the Application Domain Protecting the SharePoint Web Site".

Note: If the SharePoint resource is protected with an Access Manager client-cert authentication scheme, you might need to add to the PATH environment variable `C:\Program Files\Microsoft Office Servers\14.0\Bin;C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\BIN`.

52.8.4 Updating the Application Domain Protecting the SharePoint Web Site

This Application Domain was created when you provisioned the IIS WebGate to protect the Microsoft SharePoint Server Web site for the integration scenario with LDAP Membership Provider.

Within an Application Domain, resource definitions exist as a flat collection of objects. Each resource is defined as a specific type, and the URL prefix that identifies a document or entity stored on a server and available for access by a large audience. The location is specified using an existing shared Host Identifier.

Note: For this integration, leave empty the URL Prefix. Do not enter a region to be appended to the URL prefix.

You need to use the authentication scheme that you created earlier. To validate the ObSSOCookie, you must create another policy for a resource protected by a WebGate; for example: */ValidateCookie*. This resource should be deployed on a Web server protected by a WebGate and you should be able to access it after providing correct Access Manager credentials: `http(s)://`*host:port*`/`*ValidateCookie*

This example uses *SharePoint w/LDAP-MP* as the Application Domain name. Your environment will be different.

Note: Step 4 includes an alternative Authentication Scheme to protect the SharePoint Web site with a Form authentication scheme.

See Also: Chapter 20 for details about managing policies to protect resources

To update the Application Domain protecting the root SharePoint Web site

1. From the Oracle Access Management Console, open the *SharePoint w/LDAP-MP* Application Domain.

   See "Searching for an Existing Application Domain" on page 20-12.

2. Open the Resources tab, then click the New Resource button.
3. On the Resource Definition page, select or enter your details for a single resource and click Apply:

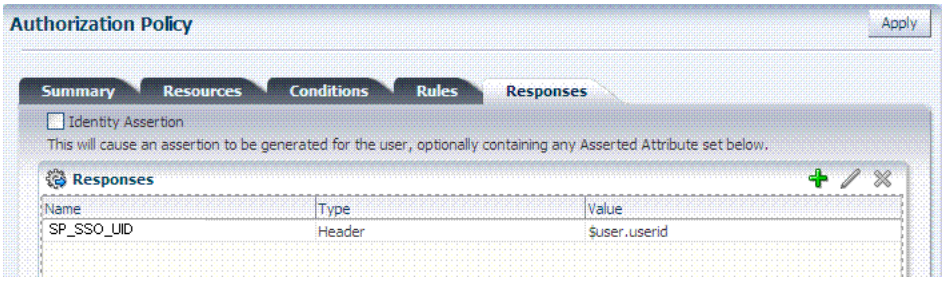
   Type: http
   Description (optional): *Protecting SharePoint Website*
   Host Identifier: Select the host identifier that you added earlier.
   Resource URL: Enter */ValidateCookie*.
   Protection Level: Protected
   Authentication Policy (*if level is Protected*)
   Authorization Policy (if *level is Protected and Authentication Policy is chosen*)

4. In the Protected Resource Policy for Authentication, add a defined resource:

   See "Viewing or Editing an Authentication Policy" on page 20-36.

   - Click the Resources tab on the Authentication Policy page.
   - Click the Add button on the Resources tab.
   - Locate and select the desired resource definition, then click Add Selected.
   - Click Apply to add the resources.
   - Repeat to add more resources.

5. Click the Responses tab, then click its Add button and:
   - In the Name field, enter a unique name for this response (*SP_SSO_UID*).
   - From the Type list, choose Header.
   - In the Value field, enter a value for this response. For example: $*user.userid*.
   - Click Apply.
   - See also: "Adding and Managing Policy Responses for SSO" on page 20-47.



6. **Add a Policy**: Add a policy for a resource used with the HTTP validation method, If selected.
7. Before you enable this Application Domain, proceed to "Creating an Authorization Response for Header Variable SP_SSO_UID"

52.8.5 Creating an Authorization Response for Header Variable SP_SSO_UID

This topic describes how to add an Authorization Response for the integration configured with LDAP Membership Provider. For this integration, you add the following Header Variable to the Application Domain as Responses for Authorization success:

```
Type = Header
Name = SP_SSO_UID
Return Attribute = $user.userid
```

In this case:

- The Return Attribute is the login attribute used in Login
- This authorization rule protects the root SharePoint Web site "/ "

See Also: Chapter 20 for details about authorization rules

To create an authorization response for SharePoint with LDAP Membership Provider

1. From the Oracle Access Management Console, open the *SharePoint w/LDAP-MP* Authorization Policy: *ProtectedResourcePolicy*.

   See "Searching for an Authorization Policy" on page 20-39.

2. Click to activate the Authorization Policy Responses tab, then click its Add button:
   - In the Name field, enter a unique name for this response (*SharePoint w/LDAP-MP*).
   - From the Type list, choose Header.
   - In the Value field, enter a value for this response. For example: *$user.userid*.
   - Click Apply.
   - Repeat as needed.
3. Proceed to "Creating an Authorization Response for the OAMAuthCookie".

52.8.6 Creating an Authorization Response for the OAMAuthCookie

Here, you add the following Header Variable named `OAMAuthCookie` to the Application Domain as Responses under Authorization success:

```
Type = Cookie
Name = OAMAuthCookie
Return Attribute = $user.userid
```

See Also: Chapter 20 for details about policy responses

To create a Application Domain to protect the validation URL

1. From the Oracle Access Management Console, open the *SharePoint w/LDAP-MP* Authorization Policy: *Protected Resource Policy*:

   See "Searching for an Authorization Policy" on page 20-39.

2. Click the Responses tab, then click its Add button and:

   Redirection URL: Not required for this integration

   Return

   ```
   Type = Cookie
   ```

```
Name = OAMAuthCookie
Return Attribute = $user.userid
```

- In the **Name** field, enter a unique name for this response (*OAMAuthCookie*).
- From the **Type** list, choose **Cookie**.
- In the **Value** field, enter a value for this response. For example: *$user.userid*.
- Click **Apply** to submit the response, then close the confirmation window.
- Repeat as needed.

3. Proceed to "Configuring and Deploying OAMCustomMembershipProvider."

52.8.7 Configuring and Deploying OAMCustomMembershipProvider

You perform the following configuration steps in SharePoint to use the Access Manager Authentication Module to authenticate and authorize the user.

Note: You can specify a default login page bundled in this file:

WebGate_install_dir`\access\oblix\apps\Webgate\OAMCustomMembershipProvider\samples\Sample.Default.aspx`

To configure SharePoint to use OAM authentication Module

1. Go to the physical location of the SharePoint Web site directory. For example:

   `C:\Inetpub\wwwroot\wss\VirtualDirectories\`*`SharePoint website Name`*

2. From the folder_forms, copy the file `Default.aspx` as `Default.ORIG.aspx`.
3. Open `Default.aspx`, search for `</asp:login>`, add the following after the line, and then save the file:

```
<asp:HiddenField EnableViewState="false" ID="loginTracker" runat="server"
Value="autoLogin" />

 <%bool autoLogin = loginTracker.Value == "autoLogin";%>

 <script runat="server">
    void Page_Load()
    {

        signInControl.LoginError += new EventHandler(OnLoginError);
        NameValueCollection headers = Request.ServerVariables;
        NameValueCollection queryString = Request.QueryString;
        string loginasanotheruser = queryString.Get("loginasanotheruser");
        string username = Request.ServerVariables.Get("HTTP_SP_SSO_UID");
        HttpCookie ObSSOCookie = Request.Cookies["ObSSOCookie"];
        bool isOAMCredsPresent = username != null && username.Length > 0  &&
ObSSOCookie != null && ObSSOCookie.Value != null;
        bool signInAsDifferentUser = loginasanotheruser != null &&
loginasanotheruser.Contains("true");

        if (isOAMCredsPresent)
        {

            //Handling For UTF-8 Encoding in HeaderName
            if (username.StartsWith("=?UTF-8?B?") && username.EndsWith("?="))
            {
```

```
                username = username.Substring("=?UTF-8?B?".Length,
username.Length - 12);
                byte[] decodedBytes = Convert.FromBase64String(username);
                username = Encoding.UTF8.GetString(decodedBytes);
            }
        }
       if (isOAMCredsPresent  && loginTracker.Value == "autoLogin" &&
!signInAsDifferentUser)
        {
           bool
status=Microsoft.SharePoint.IdentityModel.SPClaimsUtility.AuthenticateFormsUser
(new
Uri(SPContext.Current.Site.Url),username,"ObSSOCookie:"+ObSSOCookie.Value);
        if(status){
                if (Context.Request.QueryString.Keys.Count > 1)
                {

Response.Redirect(Context.Request.QueryString["Source"].ToString());
                }
                else

Response.Redirect(Context.Request.QueryString["ReturnUrl"].ToString());
      }
         else{
                  loginTracker.Value =
          }

        }
        else
        {

            // DO NOTHING
        }
    }
        void OnLoginError(object sender, EventArgs e)
    {
                  loginTracker.Value = "";
    }
</script>
```

4. Go to IIS Manager and click the Plus icon (**+**) before **Sites**.
5. Click on the plus icon (**+**) before **SharePoint Web Services**.
6. Right -click **SecurityTokenServiceApplication**, then click **Explore**.
7. Create a backup copy of `Web.config` as `Web.config.ORIG`, then open `Web.config`.
8. In the membership provider entries for enabling the LDAP membership provider go to <membership>, <providers>, type, and then modify the type value as follows:

   ```
   type = "Oracle.CustomMembershipProvider, OAMCustomMembershipProvider,
   Version=1.0.0.0, Culture=neutral, PublicKeyToken=52e6b93f6f0427a1
   ```

9. Add the following attribute at the end of the entry in Step 8 `ValidationMode="OAMHttp"` to indicate the ObSSOCookie validation method.

   ```
   <add name="membership"
               type = "Oracle.CustomMembershipProvider,
   OAMCustomMembershipProvider, Version=1.0.0.0, Culture=neutral,
   PublicKeyToken=52e6b93f6f0427a1"
   ```

```
    server="HOST1.COM"
            port="389"
            useSSL="false"
            userDNAttribute="distinguishedName"
            userNameAttribute="sAMAccountName"
            userContainer="cn=users,dc=bored,dc=com"
            userObjectClass="person"
            userFilter="(&amp;(ObjectClass=person))"
            scope="Subtree"
            otherRequiredUserAttributes="sn,givenname,cn"
ValidationURL="http(s)://host:port/ValidateCookie.html"
            OAMAuthUser="OAMAuthCookie
            ValidationMode="OAMHttp"
/>
```

Note: The resource configured for `ValidationURL` must be present on the Web server. Also, the value of the `OAMAuthUser` parameter should be configured as the authorization return action as described in Step 6.

10. Save the file.
11. Using command prompt go to the following directory:

    ```
    C:\Program Files\Microsoft SDKs\Windows\v6.0A\Bin\gacutil.exe
    ```

12. Type:

    ```
    gacutil -l OAMCustomMembershipProvider
    ```

13. Confirm that no results are returned.
14. Type the following.

    ```
    gacutil -i <Webgate_install_
    dir>\access\oblix\apps\Webgate\OAMCustomMembershipProvider\OAMCustomMembershipP
    rovider.dll
    ```

15. Type:

    ```
    gacutil -l OAMCustomMembershipProvider
    ```

16. Confirm that one result is returned.
17. Restart the SharePoint Web site.
18. Proceed as follows:
    - Enabling Logging for CustomMemberShipProvider
    - Ensuring Directory Servers are Synchronized
    - Configuring Single Sign-off for Microsoft SharePoint Server

52.8.8 Enabling Logging for CustomMemberShipProvider

If you want to enable logs for the Oracle Custom Membership Provider, you must configure the `DebugFile` parameter in the configuration file for the Oracle Custom Membership Provider. For example: a sample entry for the `DebugFile=`*Location_of_logs_file*":

```
type = "Oracle.CustomMembershipProvider, OAMCustomMembershipProvider,
Version=1.0.0.0, Culture=neutral, PublicKeyToken=52e6b93f6f0427a1"
DebugFile="c:\Debug.txt"
```

52.8.9 Ensuring Directory Servers are Synchronized

Users in the directory server configured for Access Manager should be synchronized with the directory server used by SharePoint if these are different. This is the same task that you perform for other integration scenarios in this chapter. When your SharePoint integration includes an LDAP Membership Provider, however, you can use a directory server that supports LDAP commands.

See Also: "Synchronizing User Profiles Between Directories" on page 52-38

52.8.10 Testing the Integration

This is similar to the task you perform for other integration scenarios in this chapter. There are no differences when configured with LDAP Membership Provider.

See Also: "Testing the SharePoint Server Integration" on page 52-38

52.9 Configuring Single Sign-On for Office Documents

Single sign-on for Office documents can be achieved by setting a persistent cookie in the authentication scheme. To do this, you need to set `ssoCookie:max-age` in the authentication scheme. This creates a persistent cookie which lasts for more than one session.

Note: For integration based on Windows Native Authentication, you need not set the persistent cookie parameter.

To define a persistent cookie for single sign-on for Office Documents

1. Log in to the Oracle Access Management Console.
2. Find the Authentication Scheme being used and open the page.
3. In the **Challenge Parameter**, add:

   ```
   ssoCookie:max-age=1000000    (Table 19-30)
   ```

   Where, `time-in-seconds` represents the time interval when the cookie expires. For example, `ssoCookie:max-age=3600` sets the cookie to expire in 1 hour (3600 seconds).
4. Save the change.
5. Configure centralized logout for the 10g WebGate, as described in Chapter 25.

52.10 Configuring Single Sign-off for Microsoft SharePoint Server

Manual Logout occurs when the user clicks the Logout button from SharePoint Server. You can also configure the SharePoint Server logout URL in Access Manager so that when a user clicks the Logout button from SharePoint Server site, Access Manager logout is also triggered.

Note: Closing the browser window after sign-off is always recommended, for security.

Cookie time-out occurs when the overall user session is controlled by ObSSOCookie. Consider the following use-case:

- FedAuth cookie time-out and ObSSOCookie is still valid: The user won't be challenged again because the ObSSOCookie is present. A new FedAuth cookie is generated (using the same flow described earlier).
- ObSSOCookie time-out and FedAuth Cookie is still valid: Since each request is intercepted by the WebGate, the user is challenged for credentials again.

Access Manager provides single logout (also known as global or centralized log out) for user sessions. With Access Manager, single logout refers to the process of terminating an active user session.

This topic describes how to configure single sign-off for integration with SharePoint. Single sign-off kills the user session.

- Configuring a Custom Logout URL in SharePoint Server
- Configuring Logout in SharePoint Server With Impersonation

See Also: Chapter 22 for details about configuring centralized logout for 10g WebGate with OAM 11g Servers

52.10.1 Configuring a Custom Logout URL in SharePoint Server

To configure a Custom Logout URL in SharePoint Server

1. From the generated artifacts for WebGate, add `logout.html` to the SharePoint Server Site
2. Locate `C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\TEMPLATE\CONTROLTEMPLATES`.
3. In `\CONTROLTEMPLATES`, change the `welcome.ascx` by adding the following tag. For example:

```
<SharePoint:MenuItemTemplate runat="server" id="ID_OverrideLogout" Text="Custom
Logout"
     ClientOnClickNavigateUrl="/logout.html?end_url=_layouts/SignOut.aspx"
     Description="My Custom Logout"
   MenuGroupId="200"
   Sequence="100"
   UseShortId="true" />
```

4. Click Save.
5. Protect the two URLs /_layouts/SignOut.aspx and /_layouts/closeConnection.aspx in an Application Domain using Anonymous authentication.
6. Proceed to Configuring Logout in SharePoint Server With Impersonation.

52.10.2 Configuring Logout in SharePoint Server With Impersonation

You can skip this procedure if you do not have Impersonation configured.

To configure Logout in SharePoint Server with Impersonation

1. Copy `signout.aspx` from `C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\TEMPLATE\LAYOUTS`) to `MySignout.aspx` in the same path.
2. In `MySignout.aspx`, below (`<asp:content contentplaceholderid="PlaceHolderAdditionalPageHead" runat="server">`) add the following script details:

```
<script runat="server">
private void Page_Load(object sender, System.EventArgs e)
{
 Response.Status = "302 Moved Temporarily";
 Response.AddHeader("Location", "/logout.html?end_url=/_layouts/SignOut.aspx");
}
</script>
```

3. Save.
4. Use this URL `_layouts/Mysignout.aspx` as custom logout URL for SharePoint Server in the case of Impersonation.
5. Proceed with "Testing Your Integration".

52.11 Setting Up Access Manager and Windows Native Authentication

This section provides the following topics:

- Setting Up Access Manager WNA
- Setting Up WNA With SharePoint Server
- Installing Access Manager for WNA and SharePoint Server
- Testing Your WNA Implementation

52.11.1 Setting Up Access Manager WNA

Configure Access Manager to use Windows Native Authentication, as described in Chapter 50.

52.11.2 Setting Up WNA With SharePoint Server

The following overview outlines the tasks that must be performed to set up WNA with Access Manager and the SharePoint Server.

Task overview: Setting up WNA with SharePoint Server

1. Complete the following prerequisite tasks:
   - Perform tasks in "Required Microsoft Components" on page 52-7.
   - Create a SharePoint Web site, as described in "Creating a New Web Application in Microsoft SharePoint Server" on page 52-11.
   - Configure the SharePoint site collection, as described in "Creating a New Site Collection for Microsoft SharePoint Server".
   - Test the configuration to ensure that users who are present in the directory server can log in to the SharePoint Web site and get proper roles, as described in your SharePoint documentation.

2. Install Access Manager as described in "Installing Access Manager for WNA and SharePoint Server" on page 52-36.

   This step includes installing the WebGate for IIS and configuring `Webgate.dll` for the individual SharePoint Web site.

3. Configure the Active Directory authentication provider, as follows:

   a. Login to the WebLogic Console.

   b. Go to Security Realm and click the realm being used.

   c. Go to the Provider tab provider, click New.

   d. Enter the provider name, select the Type **ActiveDirectoryAuthenticator**, click OK.

   e. Select the newly created Provider, change Control Flag to Sufficient, and Save.

   f. Go to Provider Specific tab, enter details for your Active Directory, and save these.

4. Perform "Testing Your WNA Implementation" on page 52-37.

52.11.3 Installing Access Manager for WNA and SharePoint Server

You perform this task after you perform all prerequisites described in step 1 of the "Task overview: Setting up WNA with SharePoint Server". Installing most Access Manager components for this integration scenario is the same as for any other situation.

Installing the IIS WebGate is similar to installing any other WebGate. The WebGate should be installed with the IIS v7 Web server; later it can be configured at the specific SharePoint Web site level to be protected. For IIS, the WebGate must be configured at the "web sites" level. For Microsoft SharePoint Server, you must configure the WebGate for the specific SharePoint Web site level to be protected.

To install Access Manager for WNA and SharePoint Server

1. Install Oracle Access Management Access Manager as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.

2. Install the ISAPI WebGate using steps in *Chapter 25* for:

   - Installing WebGates
   - Installing Web components for the IIS Web server

   Next, you configure `Webgate.dll` at the SharePoint Web site that yo want to protect. Configuring `Webgate.dll` at the "Website level" protects all Web sites on the IIS Web server. However, configuring `Webgate.dll` at the "SharePoint Website" protects only the expected Web site.

3. Configure `Webgate.dll` at the SharePoint Web site that you want to protect. For example:

   a. Start the Internet Information Services (IIS) Manager: Click **Start**, **Programs, Administrative Tools, Internet Information Services (IIS) Manager**.

   b. Select the hostname from the **Connections** pane.

   c. From the host name Home pane, double-click **ISAPI Filters**, look for any `Webgate.dll`; if it is present, select it and click **Remove** from the **Action** pane.

d. In the **Connection** pane, under Sites, click the name of the Web Site for which you want to configure a WebGate filter.

e. In the **Home** pane, double-click **ISAPI Filters**.

f. In the **Actions** pane, click **Add…**

g. In the **Filter** name text box of the **Add ISAPI Filter** dialog box, type WebGate as the name of the ISAPI filter.

h. In the **Executable** box, type the file system path of the WebGate ISAPI filter file or click the ellipsis button (...) to go to the folder that contains the `Webgate.dll` ISAPI filter file, and then click **OK**.

```
WebGate_install_dir\access\oblix\apps\Webgate\bin\Webgate.dll
```

4. Creating a Virtual Directory

a. Expand the **Sites** pane and select the Web Site for which you just configured the ISAPI filter (`Webgate.dll`).

b. On the **Action** pane, click **View Virtual Directories** and then select **Add Virtual Directory**.

c. In the **Alias** field, specify access and the physical path to the WebGate \access folder (or click the ellipsis button (**...**), go to the \access folder, then click **OK**).

```
WebGate_install_dir\access\
```

5. Set permissions on the Virtual Directory:

a. Select the "access" virtual directory created in Step 3.

b. From the access Home pane, double click **Handler Mappings**; from the **Action** pane, select **Edit Feature Permissions…**.

c. Select **Read**, **Script**, and **Execute**, then click **OK**

6. Configure Access Manager to use Windows Native Authentication, as described in Chapter 50.

7. Configure Microsoft SharePoint Server Authentication to Classic Mode Authentication while creating a new Web Application in Microsoft SharePoint. In the Authentication Provider section, select Negotiate(Kerberos).

8. Go to IIS newly created SharePoint site and:

a. Open **Authentication, Windows Authentication, Advance Settings**.

b. Select **Enable Kernel mode authentication**.

c. Select providers, delete NTLM provider.

d. Add **Negotiate:Kerberos** and move it to the top level.

e. Restart IIS.

9. Proceed to "Testing Your WNA Implementation".

52.11.4 Testing Your WNA Implementation

Use the following steps to confirm your WNA implementation is working properly.

To test your WNA implementation

1. Log in to the machine as someone who is a user of both Access Manager and the Windows operating system.

2. Enter the URL of the protected resource.

52.12 Synchronizing User Profiles Between Directories

Unless explicitly stated, this task should be performed for all integration scenarios in this chapter.

> **Note:** When your integration includes LDAP Membership Provider, you can use any directory server that supports LDAP commands.

You need to synchronize user profiles between the SharePoint Server directory and the Access Manager directory:

- **Uploading user data**—If your Access Manager installation is configured for any directory server other than SharePoint Active Directory, you must load the user profiles that reside on the other directory server to SharePoint Active Directory.

  Proceed to "Testing Your Integration"

52.13 Testing Your Integration

After you complete the tasks to enable integration, you should test to verify that integration is working.

This section contains the following topics:

52.13.1 Testing the SharePoint Server Integration

You can verify that a user can access SharePoint Server resources through Access Manager authentication and SharePoint Server authorization.

To test your SharePoint Server integration

1. Navigate to any SharePoint Server Web page using your browser.

   You are challenged for your credentials.

2. Log in by supplying the necessary credentials.
3. Verify that the page you requested is visible.
4. **Optional**: Check the Event Viewer to confirm that the access request was successful.

52.13.2 Testing Single Sign-On for the SharePoint Server Integration

You can also test single sign-on by demonstrating that a user who has just supplied credentials and accessed an SharePoint Server resource can (before the ObSSOCookie expires) access a non-SharePoint Server resource without having to supply credentials a second time. For example, use a resource defined in the Policy Manager.

When single sign-on is working, you should be granted access to the page without having to supply credentials a second time.

To test single sign-on for your SharePoint Server integration

1. Create and protect a new virtual site with a Application Domain (or use one you have already created.
2. Place a Web page anywhere in the tree of this virtual site.
3. Using a browser, navigate to the page in the new virtual site.

   If you have already passed authentication, you should be granted access to the page without having to supply credentials a second time.

52.14 Troubleshooting

52.14.1 Internet Explorer File Downloads Over SSL Might Not Work

This issue may occur if the server sends a `Cache-control:no-store` header or sends a `Cache-control:no-cache` header. The WebGate provides configuration parameters to control setting these headers. Following are the parameters and their default value:

```
CachePragmaHeader    no-cache

CacheControlHeader    no-cache
```

You can modify the WebGate configuration not to set these headers at all (the values for these parameters would be kept blank). By this, it would mean that Access Manager will not control the caching behavior.

53

Integrating Access Manager with Outlook Web Application

In a Windows environment, after a user authenticates, the authenticating application can impersonate that user's identity. The primary purpose of impersonation is to trigger access checks against a client's identity.

This chapter focuses on how to enable impersonation in Access Manager to override impersonation enabled with IIS. The following topics are provided:

53.1 What is New in This Release?

Support for integration between Access Manager and Outlook Web Application (OWA) 2010.

This chapter illustrates:

53.2 Introduction to Integration with Outlook Web Application

This section provides the following information to introduce the integration described in this chapter:

53.2.1 About Impersonation Provided by Microsoft Windows

When running in a client's security context, a service can to an extent become a client. After the user authenticates, the service can take on that user's identity through impersonation. One of the service's threads uses an access token, known as an impersonation token, to obtain access to objects the client can access. The access token is a protected object that represents the client's credentials.

The impersonation token identifies the client, the client's groups, and the client's privileges. The information in the token is used during access checks when the thread requests access to resources on the client's behalf. When the server is impersonating the client, any operations performed by the server are performed using the client's credentials.

Impersonation ensures that the server can or cannot do exactly what the client can or cannot do. Access to resources can be restricted or expanded, depending on what the client has permission to do. Impersonation requires the participation of both the client and the server. The client must indicate its willingness to let the server use its identity, and the server must explicitly assume the client's identity programmatically.

When impersonation concludes, the thread uses the primary token to operate using the service's own security context rather than the client's. The primary token describes the security context of the user account associated with the process (the person who started the application).

Services run under their own accounts and act as users in their own right. For example, system services that are installed with the operating system run under the Local System account. You can configure other services to run under the Local System account, or separate accounts on the local system or in Active Directory.

The IIS Web server provides impersonation capabilities. However, the OAM Server overrides IIS authentication, authorization, and impersonation functions. For more information, see "About Access Manager 11g Support for Windows Impersonation" in the next section.

53.2.2 About Access Manager 11g Support for Windows Impersonation

You can enable support for Windows impersonation to provide additional access control for protected applications. You bind a trusted user to a Webgate and protect the application with a application domain that includes an impersonation action in the authorization rule. During the authorization process, the protected application creates an impersonation token.

For more information, see, "Enabling Impersonation With a Header Variable" on page 53-3. It provides prerequisites and details about implementing impersonation using header variables.

53.2.3 About Single Sign-On for Authenticated Access Manager Users into Exchange

This is also supported using the Windows Impersonation feature. Outlook Web Access (OWA) provides Web access to Exchange mail services and may be configured on either of the following:

- An IIS Web server that does not reside on the same host as the Exchange server, which is also known as a front-end server
- An IIS Web server running on the same host as the Exchange server, which is also known as the back-end server

In a front-end server configuration, the front-end OWA server authenticates the user, determines the back-end Exchange server that hosts the user's mailbox, then proxies the request to the appropriate back-end Exchange server. No additional credential information is passed. No delegation is performed. Setting up Impersonation on the back-end Exchange server ensures that the Exchange server does not need to request credentials before granting access.

For more information, see "Setting Up Impersonation for Outlook Web Application (OWA)" on page 53-11.

53.2.4 About Confirming Requirements

The example in this chapter illustrates setting up the impersonation feature for the OAM Server to Microsoft Exchange Server 2010 integration. The principles are the same regardless of your application.

Any references to specific versions and platforms in this chapter are for demonstration purposes. For the latest Access Manager certification information, see Oracle Technology Network at:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

53.3 Enabling Impersonation With a Header Variable

Enabling impersonation with a header variable involves the following procedures.

Task overview: Enabling impersonation with a header variable includes

1. Reviewing all Requirements for Impersonation with a Header Variable
2. Creating an Impersonator as a Trusted User
3. Assigning Rights to the Trusted User
4. Binding the Trusted User to Your Webgate
5. Adding an Impersonation Response to An Application Domain
6. Adding an Impersonation DLL to IIS
7. Testing Impersonation

See Also: "Setting Up Impersonation for Outlook Web Application (OWA)" on page 53-11.

53.3.1 Requirements for Impersonation with a Header Variable

Prepare the environment and confirm that it is operating properly before implementing Windows impersonation with the OAM Server.

Table 53–1 identifies the Access Manager platform requirements when you enable impersonation using a header variable.

Table 53–1 Requirements for Impersonation with a Header Variable

Item	Platform
10g Webgate (and Impersonation dll)	Microsoft IIS 7.x and Windows Server 2008

Table 53–1 (Cont.) Requirements for Impersonation with a Header Variable

Item	Platform
Impersonation dll	*Webgate_install_dir*\access\oblix\apps\webgate\bin\IISImpersonationModule.dll ■ Must be installed as an IIS Module. ■ May be installed at any level of the Web site tree.
Kerberos Key Distribution Center (KDC) and Active Directory	Windows Server 2008
Client and Server machines	■ Both must be in the same Windows Server 2008 domain with a trust relationship. ■ A bi-directional trust path is required because the service, acting on the client's behalf, must request tickets from the client's domain.
Security context	Must have *Act as operating system* privileges. Note: IWAM_Machine is not recommended
Mutual authentication is required	Mutual authentication is supported remotely.

53.3.2 Creating an Impersonator as a Trusted User

Whether you enable impersonation using a HeaderVar or user profile attribute, the return value must be a trusted user in Active Directory. This special user should not be used for anything other than impersonation.

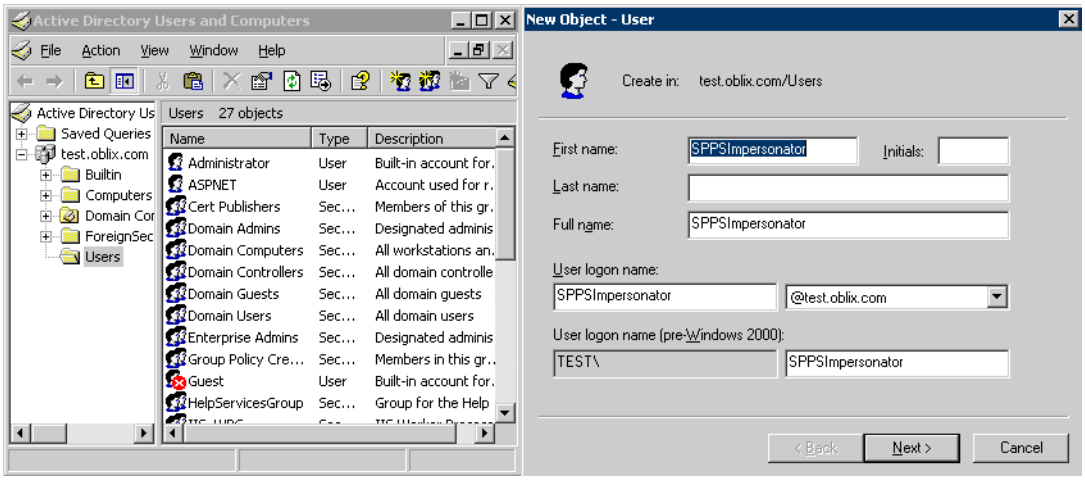
The example in the following procedure uses *SPPSImpersonator* as the New Object - User. With *OWAImpersonator* as *SPPSImpersonator* denotes SharePoint impersonation specifically. Your environment will be different.

To create a trusted user account

1. Perform the steps for your environment on the computer hosting your Microsoft Exchange Server 2010 installation:
   - Windows 2008: Select Start, Programs, Administrative tools, Active Directory Users and Computers.
2. In the Active Directory Users and Computers window, right-click Users on the tree in the left pane, then select New; User.
3. In the First name field of the pane entitled New Object - User, enter an easy-to-remember name such as *SPPSImpersonator*.
4. Copy this same string to the User logon name field, then click Next.
5. In succeeding panels, you are asked to choose a password and then retype it to confirm.

Note: Oracle recommends that you choose a very complex password, because your trusted user is being given very powerful permissions. Also, be sure to check the box marked Password Never Expires. Since the impersonation module should be the only entity that ever sees the trusted user account, it would be very difficult for an outside agency to discover that the password has expired.

Figure 53–1 Setting up a Trusted User Account for Windows Impersonation



53.3.3 Assigning Rights to the Trusted User

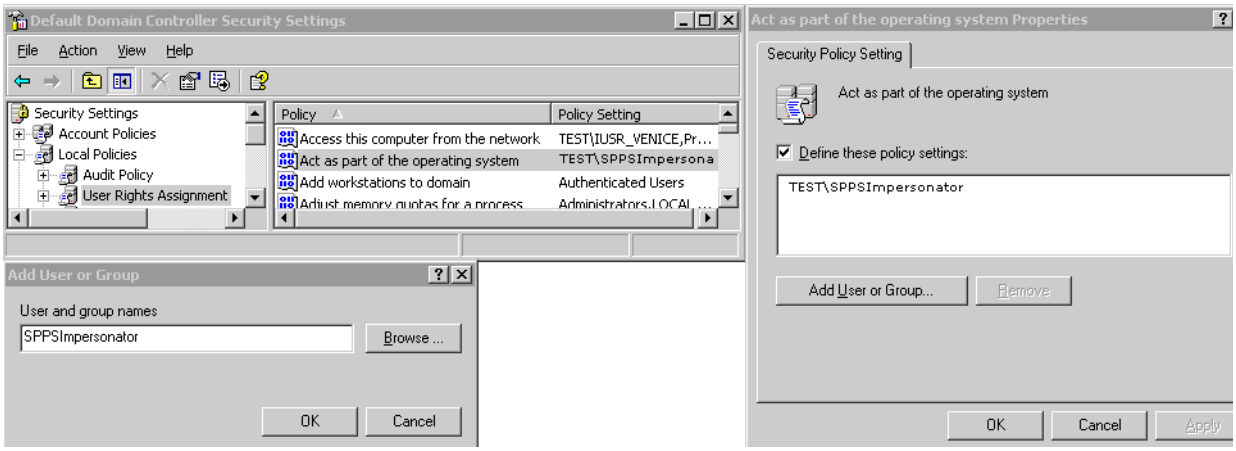
You need to give the trusted user the right to act as part of the operating system

To give appropriate rights to the trusted user

1. Perform the appropriate step for your environment:
   - Windows 2008: Select Start > Programs > Administrative tools > Local Security Policy.

     You must modify the group policy object that applies to the computer where the Webgate is installed.
2. On the tree in the left pane, click the plus icon (+) next to Local Policies.
3. Click User Rights Assignment on the tree in the left pane.
4. Double-click "Act as part of the operating system" in the right pane.
5. Click Add User or Group.
6. In the Add User or Group panel, type the User logon name of the trusted user (Microsoft Exchange Server 2010 Impersonator in our example) in the User and group names text entry box, then click OK to register the change.

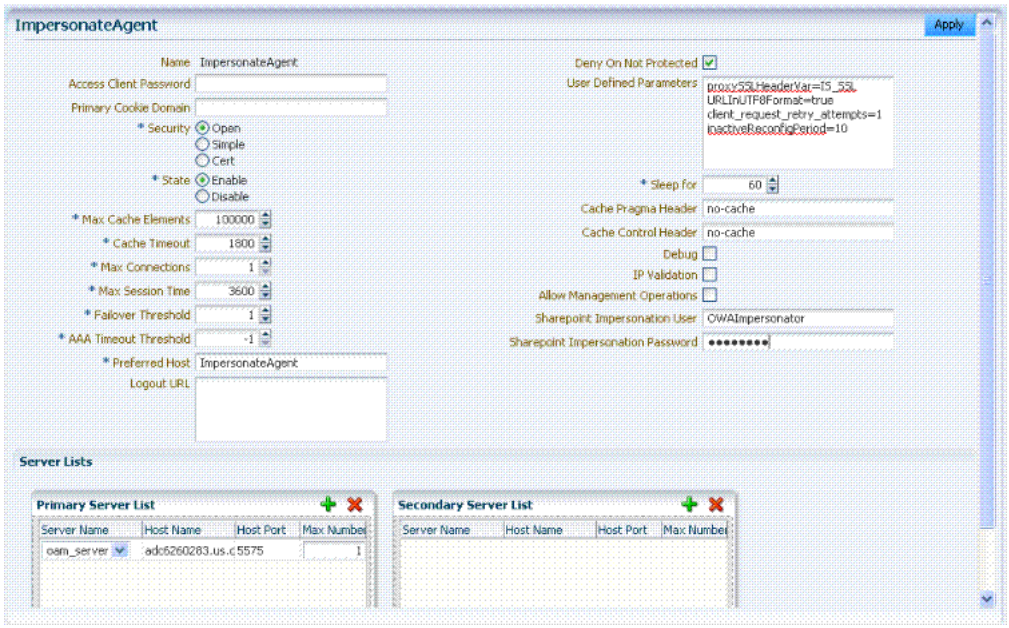
Figure 53–2 Configuring Rights for the Trusted User in Windows Impersonation



53.3.4 Binding the Trusted User to Your Webgate

You need to bind the trusted user to the Webgate by supplying the authentication credentials for the trusted user, as described in here.

Figure 53–3 Sample Webgate Registration Page



The following procedure presumes that you have registered a 10g Webgate with Access Manager. The values in the following procedure are provided as an example only. Your environment will be different.

> **See Also:** Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management* .

To bind your trusted user to your Webgate

1. Go to the Oracle Access Management Console.

For example:

`http://hostname:port/oamconsole`

where *hostname* is the fully-qualified DNS name of the computer hosting the Oracle Access Management Console; *port* is the listening *port* configured for the OAM Server; oamconsole leads to the Oracle Access Management Console.

2. From the Oracle Access Management Console, open the:

   System Configuration tab
   Access Manager Settings section
   SSO Agents node
   OAM Agents node

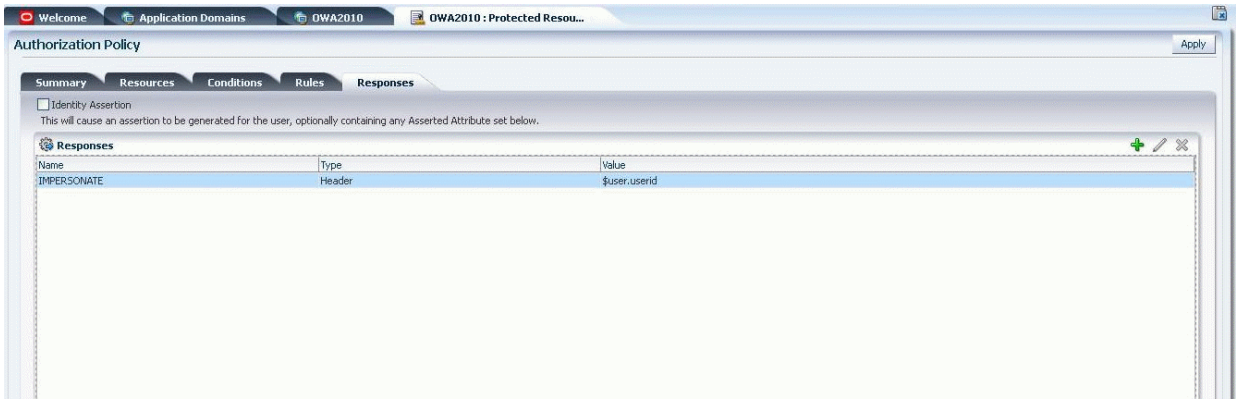
3. Find the desired 10g Webgate registration to modify for this integration:
   - **Find All Enabled**: Select State All, click the Search button, click the desired Webgate name in the results list.
4. On the Webgate registration page, enter the SharePoint username and password for the trusted user account, which you created earlier.
5. Click Apply to commit the changes.

   A bind has been created for the Webgate and the trusted user. The Webgate is now ready to provide impersonation on demand. The demand is created by an Authorization Success Action in the application domain created for impersonation.

53.3.5 Adding an Impersonation Response to An Application Domain

You must create or configure an application domain to protect your OWA resources. For this you must add Responses in Authorization Policies (Header type Responses), as described here and shown in Figure 53–4.

Figure 53–4 Impersonation Response in An Application Domain



See Also: Chapter 20, "Managing Policies to Protect Resources and Enable SSO" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

The procedure here presumes that you have an application domain created for the 10g Webgate you registered. The application domain in this example is *MyImpersonationDomain*. Your environment will be different.

To add an impersonation action to your application domain (type headerVar)

1. In the Oracle Access Management Console, navigate as follows:

   Policy Configuration tab
   Application Domains (Double-click to open).

   Click **Search** in the Application Domains tab.

2. Open the OWA2010 Application Domain (the relevant application domain for impersonation).

   Navigate as follows:

   Authorization Policies
   Protected Resource Policy
   Responses

3. Click the **Add** button, then **Add Response**.

   Complete the form as follows:

   - From the **Type** list, choose **Header**.
   - In the **Name** field, type a unique name for this response. For example, *IMPERSONATE*.
   - In the **Value** field, type a value for this response. For example, *$user.userid*.

4. Click **Add**, then click **Apply** to submit the changes.

This Response is used for the second Webgate request (for authorization).

53.3.6 Adding an Impersonation DLL to IIS

You are ready to configure IIS by adding the `IISImpersonationModule.dll` to your IIS configuration.

To configure and register ImpersonationModule to IIS

1. Select Start > Administrative Tools > Internet Information Services (IIS) Manager.
2. In the left pane of IIS 7.x, click the hostname.
3. In the middle pane, under the "IIS" header, double click on "Modules".
4. In the right pane, click "Configure Native Modules" and click "Register".
5. In the window, provide a module Name (for example, *Oracle Impersonation Module*).
6. In the Path field, type the full path to `IISImpersonationModule.dll`.

   By default, the path is:

   Webgate_install_dir`\access\oblix\apps\webgate\bin\IISImpersonationModule.dll`

   Where *Webgate_install_dir* is the directory of your Webgate installation.

Note: If any spaces exist in the path (for example, `C:\Program Files\Oracle\...`) surround the entire string with double quotes (" ").

7. Click OK to register the module.
8. Check the name of the newly created module and click OK to apply the module across the Web sites.
9. Remove the module from the Default site level (otherwise, it inherits when you add it on the machine level).
10. Ensure that the `IISImpersonationModule.dll` file added in these steps is applied only to "owa" and "ecp" applications and removed from the site level.

    Go to OWA, double-click **modules, Configure Native Modules**, and check the desired module (for example, **Oracle Impersonation Module**).

    Go to (ecp): Double-click **modules, Configure Native Modules**, and check the desired module (for example, **Oracle Impersonation Module**).

53.3.7 Testing Impersonation

You can test Impersonation in the following two ways:

- Testing Impersonation Using the Event Viewer
- Testing Impersonation using a Web Page

53.3.7.1 Creating an IIS Virtual Site

To test the impersonation feature outside the Microsoft OWA 2010 context or to test single sign-on, you will need a target Web page on an IIS virtual Web site You create such a virtual Web site by performing the following task.

To create an IIS virtual site

1. Click Start > Administrative Tools > Internet Information Services (IIS) Manager.
2. Click the plus icon (+) to the left of the local computer icon on the tree in the left pane.
3. Right-click Web Sites on the tree in the left pane, then select New, then select Web Site on the menu.
4. Respond to the prompts by the Web site creation wizard.
5. After you create the virtual site, you must protect it with an application domain, as described elsewhere in this guide.

53.3.7.2 Testing Impersonation Using the Event Viewer

When you perform impersonation testing using the Windows 2008 Event Viewer, you must configure the event viewer before conducting the actual test.

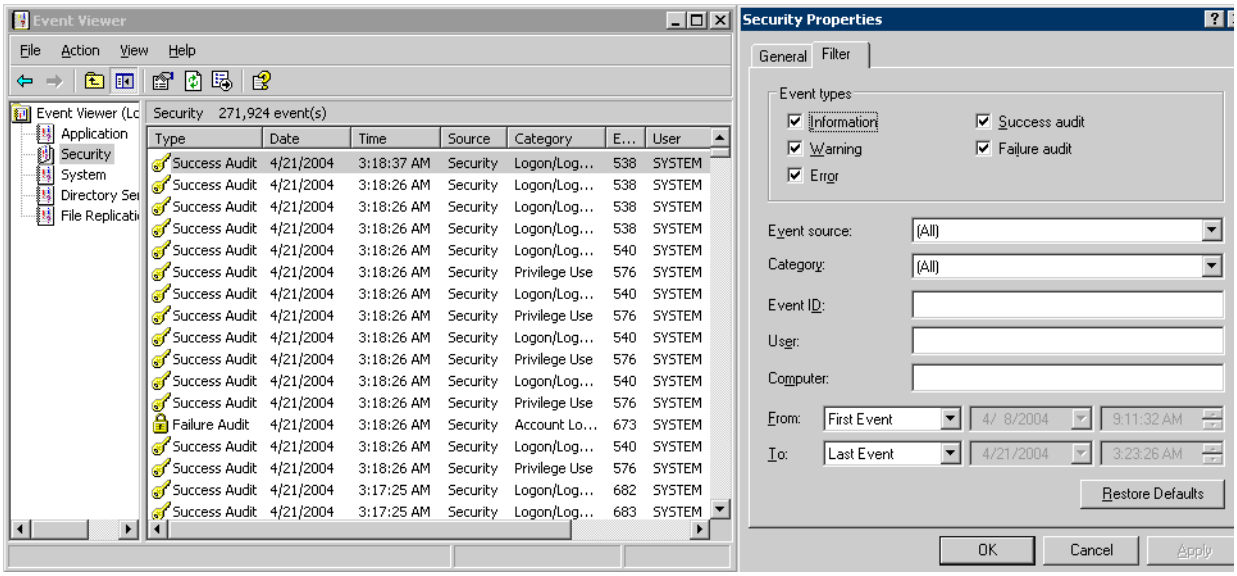
To test impersonation through the Event Viewer

1. Select Start Menu > Event Viewer.
2. In the left pane, right-click Security, then click Properties.
3. Click the Filter tab on the Security property sheet.

4. Verify that all Event Types are checked and the Event Source and Category lists are set to All, then click OK to dismiss the property sheet.

   Your Event Viewer is now configured to display information about the headerVar associated with a resource request.

Figure 53–5 Verifying Event Viewer Settings



5. Create a new IIS virtual server (virtual site).
6. Place a target Web page anywhere in the tree on the virtual site.
7. Point your browser at the Web page

   If impersonation is working correctly, the Event Viewer will report the success of the access attempt.

53.3.7.3 Testing Impersonation using a Web Page

You can also test impersonation using a dynamic test page, such as a `.asp` page or a Perl script, that can return and display information about the request.

To test impersonation through a Web page that displays server variables

1. Create a `.asp` page or Perl script that will display the parameters AUTH_USER and IMPERSONATE. It can resemble the sample page presented in the following listing:

```
<TABLE border=1>
<TR>
<TD>Variable</TD>
<TD>  </TD>
<TD>Value</TD></TR>
<%for each servervar in request.servervariables%>
<TR>
<TD><%=servervar%></TD>
<TD>  </TD>
<TD><%=request.servervariables(servervar)%> </TD>
</TR>
```

2. Create an IIS virtual site, or use the one you created for the previous task.
3. Place a `.asp` page or Perl script (such as the sample in the preceding listing) anywhere in the tree of the new virtual site.
4. Point your browser at the page. The page should display, with both AUTH_USER and IMPERSONATE set to the name of the user making the request.

53.4 Setting Up Impersonation for Outlook Web Application (OWA)

In a distributed Exchange/OWA single sign-on environment, each server needs Access Manager to impersonate the current user. When you enable Impersonation, you need to include additional HTTP headers in the "Response" tab of the Authorization Policy of your impersonation application domain.

The following solution has been tested in both standalone and distributed OWA environments.

Task overview: Setting up impersonation for OWA

1. Install Access Manager 11g, as described in the *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management*.
2. Install a 10g Webgate on all OWA client servers, as described in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.
3. On the WebGate registration page, Disable IP Checking for Webgates on the back-end server using the AccessGate (because the request comes from the front-end server, not from the user's browser).
4. Ensure that OWA is not using Integrated Windows Authentication, as described in "Prerequisites to Setting Impersonation for Outlook Web Application" on page 53-12.
5. Create a trusted user account for only impersonation in the Active Directory, as described in "Creating a Trusted User Account for Outlook Web Application" on page 53-12.
6. Give the trusted user the special right to act as part of the operating system, as described in "Assigning Rights to the Outlook Web Application Trusted User" on page 53-12.
7. Bind the trusted user to the Webgate by supplying the authentication credentials for the trusted user, as described in "Binding the Trusted Outlook Web Application User to Your Webgate" on page 53-13.
8. Add a header variable named *impersonate* to the Authorization Policy Response tab (in the impersonation application domain), as described in, as described in "Adding an Impersonation Action to an Application Domain for Outlook Web Application" on page 53-14.
9. Configure IIS by adding `IISImpersonationModule.dll` to your IIS configuration, as described in "Adding an Impersonation dll to IIS" on page 53-15.
10. Test Impersonation, as described in "Testing Impersonation for Outlook Web Application" on page 53-16.

> **See Also:** "Enabling Impersonation With a Header Variable" on page 53-3.

53.4.1 Prerequisites to Setting Impersonation for Outlook Web Application

Before setting Impersonation for Outlook Web Application, ensure that OWA is not using Integrated Windows (or any other) Authentication. If it is not, you can use the following steps to get this working.

To set up OWA with Windows Authentication

1. Open Exchange Management console.
2. Go to Server Configuration and click Client Access.
3. Select Outlook Web Access and click Properties.
4. In the Properties dialog box, click the Authentication tab.
5. Clear (unselect) all the authentication methods.
6. Click Apply, and click OK.
7. Restart the IIS server.
8. Proceed with "Creating a Trusted User Account for Outlook Web Application."

53.4.2 Creating a Trusted User Account for Outlook Web Application

This special user should not be used for anything other than impersonation.

Oracle recommends that you chose a very complex password, because your trusted user is being given very powerful permissions. Also, be sure to check the box marked Password Never Expires. Since the impersonation module should be the only entity that ever sees the trusted user account, it would be very difficult for an outside agency to discover that the password has expired.

To create a trusted user account for OWA

1. On the Windows 2008 machine, select Start; Programs; Administrative tools, Active Directory Users and Computers.
2. In the Active Directory Users and Computers window, right-click Users on the tree in the left pane, then select New; User.
3. In the First name field of the pane entitled New Object - User, enter an easy-to-remember name such as OWAImpersonator.
4. Copy this same string to the User logon name field, then click Next.
5. In succeeding panels, you will be asked to choose a password and then retype it to confirm.
6. Proceed to "Assigning Rights to the Outlook Web Application Trusted User" on page 53-12.

53.4.3 Assigning Rights to the Outlook Web Application Trusted User

You need to give the trusted user the right to act as part of the operating system.

To give appropriate rights to the trusted user

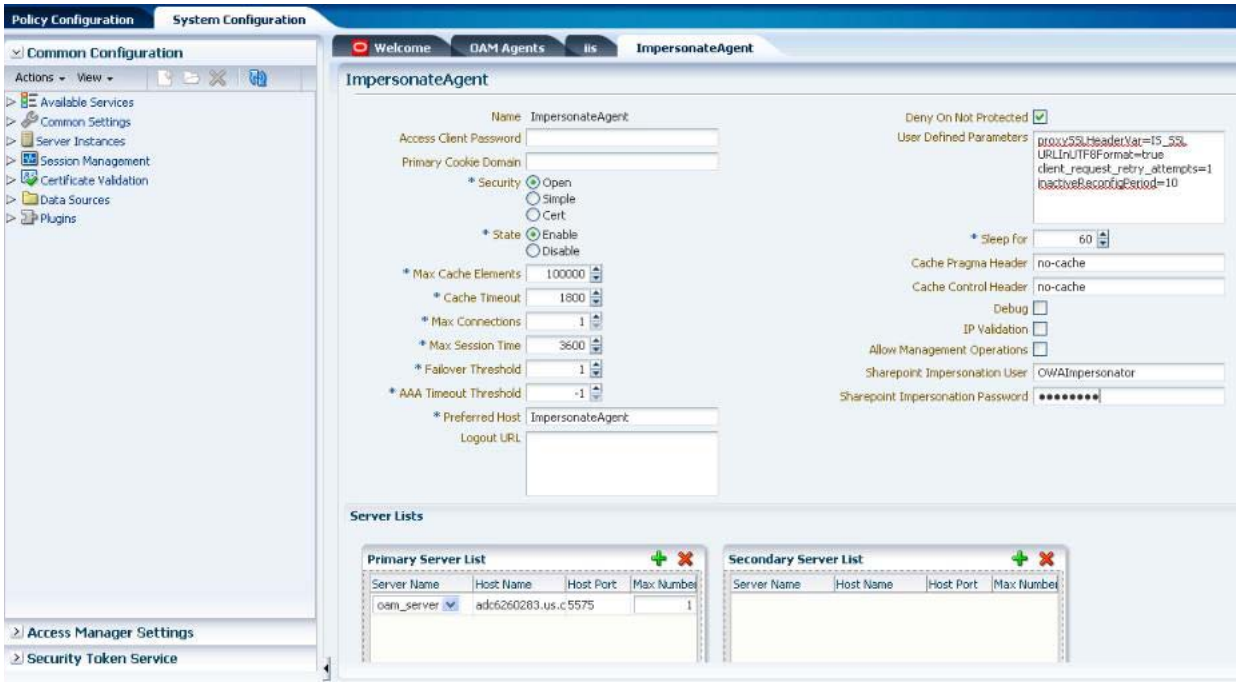
1. Select Control Panel, Administrative Tools; and click either the Domain Controller Security Policy (if the computer is a domain controller) or Local Security Policy.
2. On the tree in the left pane, click the plus icon (+) next to Local Policies.
3. Click User Rights Assignment on the tree in the left pane.

4. Double-click "Act as part of the operating system" in the right pane.
5. Click Add User or Group.
6. In the Add User or Group panel, type the User logon name of the trusted user (OWAImpersonator in our example) in the User and group names text entry box, then click OK to register the change.
7. Proceed to "Binding the Trusted Outlook Web Application User to Your Webgate."

53.4.4 Binding the Trusted Outlook Web Application User to Your Webgate

You need to bind the trusted user to the Webgate by supplying the authentication credentials for the trusted user, as described in the following procedure.

Figure 53–6 Webgate Registration Page



When the bind has been created for the Webgate and the trusted user, Webgate is ready to provide impersonation on demand. The demand is created by a Response set in the Authorization Policy of application domain created for impersonation.

The following procedure presumes that you have registered a 10g Webgate (*ImpersonateAgent*) with Access Manager. The values in the following procedure are provided as an example only. Your environment will be different.

> **See Also:** Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g" in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management* .

To bind your trusted OWA user to your Webgate

1. Go to Oracle Access Management Console.

   For example:

   `http://hostname:port/oamconsole`

where *hostname* is the fully-qualified DNS name of the computer hosting the Oracle Access Management Console; *port* is the listening *port* configured for the OAM Server; oamconsole leads to the Oracle Access Management Console.

2. From the Oracle Access Management Console, open the:

   System Configuration tab
   Access Manager Settings section
   SSO Agents node
   OAM Agents node

3. Find the desired 10g Webgate registration to modify for this integration. For example: ImpersonateAgent.

   - **Find All Enabled**: Select State All, click the Search button, click the desired Webgate name in the results list.

4. Open the Webgate registration page and enter the SharePoint username and password for the trusted user account, which you created earlier.

5. Click Apply to commit the changes.

   A bind has been created for the Webgate and the trusted user. The Webgate is now ready to provide impersonation on demand. The demand is created by an Authorization Success Action in the application domain created for impersonation.

53.4.5 Adding an Impersonation Action to an Application Domain for Outlook Web Application

You must create or configure a application domain to protect your OWA resources (/owa and /ecp only).

> **Note:** Ensure that `IISImpersonation Module.dll` is applied only to "owa" and "ecp" applications in IIS7.x, and removed from the site level.

The Authorization policy must set several HTTP Header variables (Header type Responses in the Authorization policy).

This procedure presumes that you have an existing application domain for the 10g Webgate (*ImpersonateAgent*) you registered with Access Manager.

> **See Also:** The chapter on managing policies to protect resources and enable SSO in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*

To add an impersonation action to your application domain

1. In the Oracle Access Management Console, navigate as follows:

   Policy Configuration tab
   Application Domains (Double-click to open).

   Click **Search** in the Application Domains tab.

2. Open the OWA2010 Application Domain (the relevant application domain for impersonation).

   Navigate as follows:

Authorization Policies
Protected Resource Policy
Responses

3. Click the **Add** button, then **Add Response**.

   Complete the form as follows:

   - From the **Type** list, choose **Header**.
   - In the **Name** field, type a unique name for this response. For example, *IMPERSONATE*.
   - In the **Value** field, type a value for this response. For example, *$user.userid*.

4. Click **Add**, then click **Apply** to submit the changes.
5. Go to the next section, "Adding an Impersonation DLL to IIS."

This Response is used for the second Webgate request (for authorization).

53.4.6 Adding an Impersonation dll to IIS

You are ready to configure IIS by adding the `IISImpersonationModule.dll` to your IIS configuration. You also need to set Enable Anonymous Access because this is required for impersonation of a user.

To configure IIS by adding the IISImpersonationModule.dll

1. Select Start, Administrative Tools, Internet Information Services (IIS) Manager.
2. In the left pane of IIS 7.x, click the hostname.
3. In the middle pane, under the "IIS" header, double click on "Modules".
4. In the right pane, click "Configure Native Modules" and click "Register".
5. In the window, provide a module Name (for example, *Oracle Impersonation Module*).
6. In the Path field, type the full path to `IISImpersonationModule.dll`.

   By default, the path is:

   Webgate_install_dir`\access\oblix\apps\webgate\bin\IISImpersonationModule.dll`

   Where *Webgate_install_dir* is the directory of your Webgate installation.

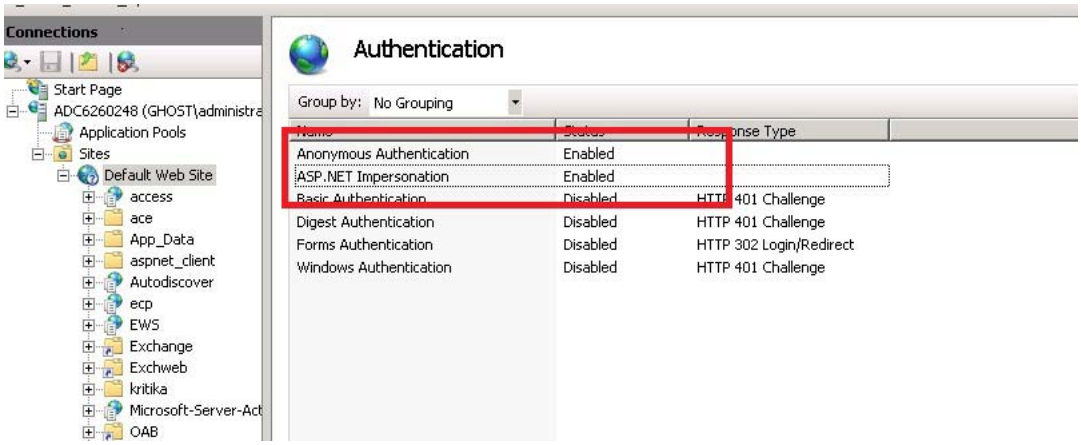
   Note: If any spaces exist in the path (for example, `C:\Program Files\Oracle\...`) surround the entire string with double quotes (" ").

7. Click OK to register the module.
8. Check the name of the newly created module and click OK to apply the module across the Web sites.

53.4.7 Configuring IIS Security

Be sure to configure IIS Security before you continue. Figure 53–7 shows an example.

Figure 53–7 Impersonation Authentication



To configure IIS Security for the Exchange Server integration

1. Select Start, Administrative Tools, Internet Information Services (IIS) Manager.
2. Click the plus icon (+) to the left of the local computer icon on the tree in the left pane.
3. Click Web Sites on the tree in the left pane.
4. In the center pane, double-click Authentication under IIS.
5. Ensure that Anonymous Authentication is enabled and Windows Authentication is disabled.

53.4.8 Testing Impersonation for Outlook Web Application

The following options are provided to test the Impersonation configuration for OWA.

- Testing Impersonation Using the Event Viewer
- Testing Impersonation using a Web Page

53.4.8.1 Testing Impersonation Using the Event Viewer

To test impersonation through the Event Viewer

1. Select Start Menu; Event Viewer.
2. In the left pane, right-click Security, then click Properties.
3. Click the Filter tab on the Security property sheet.
4. Verify that all Event Types are checked, and the Event Source and Category lists are set to All, then click OK to dismiss the property sheet.
5. Your Event Viewer is now configured to display information about the headerVar associated with a resource request.
6. Create a new IIS virtual server (virtual site).
7. Place a target Web page anywhere in the tree on the virtual site.
8. From your browser, enter the URl to the Web page.

   If impersonation is working correctly, the Event Viewer will report the success of the access attempt.

53.4.8.2 Testing Impersonation using a Web Page

You can also test impersonation using a dynamic test page, such as a.asp that can return and display information about the request.

To test impersonation through a Web page

1. Create a `.asp` page or Perl script that will display the parameters `AUTH_USER` and `IMPERSONATE`, which can resemble the sample page presented in the following listing:

```
<TABLE border=1>
<TR>
<TD>Variable</TD>
<TD>  </TD>
<TD>Value</TD></TR>
<%for each servervar in request.servervariables%>
<TR>
<TD><%=servervar%></TD>
<TD>  </TD>
<TD><%=request.servervariables(servervar)%> </TD>
</TR>
```

2. Create an IIS virtual site, or use the one you created for the previous task.
3. Place a `.asp` page or Perl script (such as the sample in the preceding listing) anywhere in the tree of the new virtual site.
4. Point your browser at the page, which should appear, with both `AUTH_USER` and `IMPERSONATE` set to the name of the user making the request.

53.4.8.3 Negative Testing for Impersonation

To conduct negative testing for impersonation, you need to unbind the trusted user from the Webgate, as explained in the following procedure.

To unbind the trusted user from your Webgate

1. In the Oracle Access Management Console, locate the Webgate Search page. For example:

   System Configuration tab
   Access Manager Settings section
   SSO Agents node
   OAM Agents node

2. In the text field, enter the exact name of the desired instance. For example: *`ImpersonateAgent`* and click Search.
3. Open the desired WebGate registration page and Remove the credentials for the trusted user.
4. Click Apply to save the change.
5. Restart the IIS server and in a browser window, go to a protected code page (previously accessible to the trusted user).
6. Confirm that you receive a message page. Values for `AUTH_USER` and `IMPERSONATE` are necessary for impersonation credentials to be bound to a Webgate.
7. Restore the trusted user to the Webgate registration page.

53.5 Setting Up Access Manager WNA for Outlook Web Application

Access Manager 11*g* interoperates with Windows Native Authentication (WNA). This section describes setting up Access Manager with Windows Native Authentication (WNA) for Outlook Web Application (OWA).

Enabling Windows Authentication for the IIS Site front-ending OWA is described here.

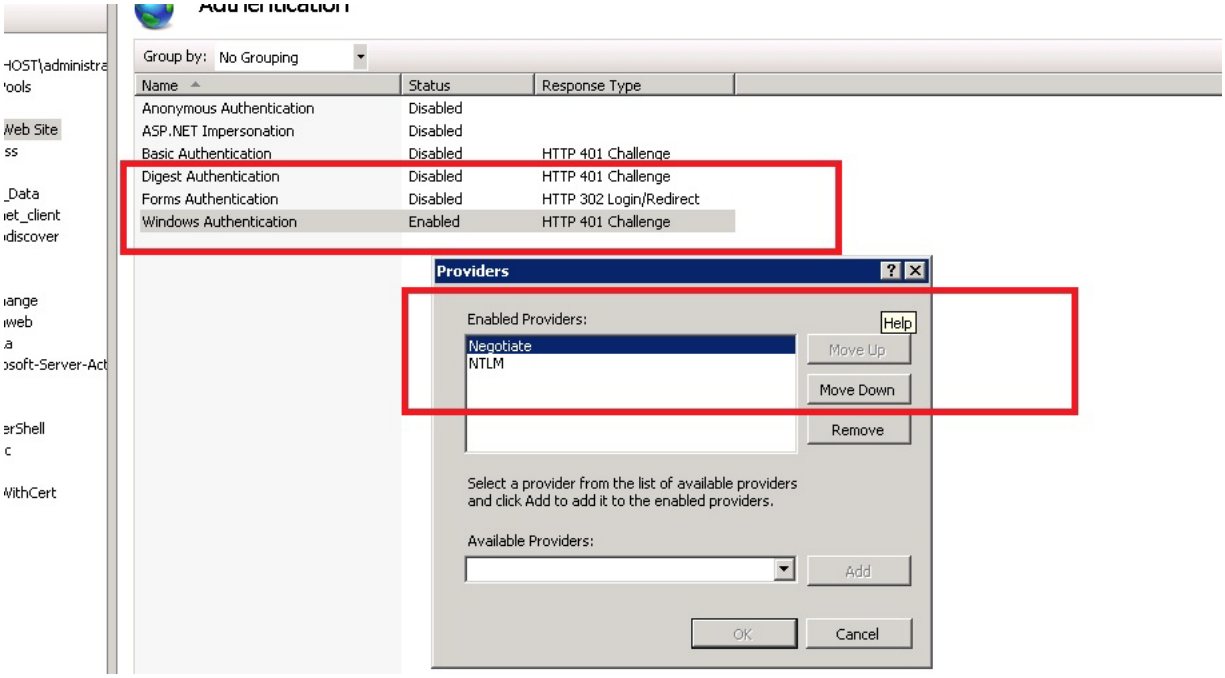
Prerequisites

A fully-configured Microsoft Active Directory authentication service should be set up with user accounts to map Kerberos services, Service Principal Names (SPNs) for those accounts, and key tab files. For more information, see *Oracle Fusion Middleware Securing Oracle WebLogic Server 11g* Release 1 (10.3.3) E13707-03.

You need to configure Access Manager to use Windows Native Authentication (WNA), as described in Chapter 50, "Configuring Access Manager for Windows Native Authentication."

To enable WNA for IIS Outlook Web Application (OWA)

1. Perform all prerequisite tasks.
2. Open IIS Authentication (OWA on the front-ending Site).
3. Enable Windows authentication.
4. Click on Provider.
5. Add Negotiate to Provider and move it to the top of the list.



6. Create an Access Manager policy to protect OWA in IIS, as described in the *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

54

Integrating Microsoft Forefront Threat Management Gateway 2010 with Access Manager

This chapter describes how to configure communication between Access Manager and Microsoft Forefront Threat Management Gateway (TMG) 2010. The following sections are provided:

54.1 What is New in This Release?

Support for integration between Access Manager and Microsoft Forefront Threat Management Gateway (TMG) 2010.

Details in this chapter presume that you are familiar with Access Manager policies and operation.

54.2 Introduction to Integration with TMG Server 2010

This section provides an overview of the tasks that, once perfoermed, enable this integration. Topics included are:

54.2.1 About This Integration

Microsoft Forefront Threat Management Gateway (TMG) 2010 is the next generation of the Internet Security and Acceleration (ISA) Server 2006. This chapter provides steps to configure an open (non-secured) connection between the Forefront TMG Web server and Access Manager. This communication is based on using a 10g Webgate for ISAPI.

For details about using a secured connection, see your Forefront TMG Server documentation.

You can have IIS Web server and Forefront TMG installed on same or on different computer. In examples in ths chapter, both reside on same host.

The following overview outlines the tasks that you must perform and the topics where you will find the steps to set up the ISAPI Webgate with the TMG Server within this chapter.

Task overview: Installing and configuring the ISAPI Webgate on TMG Server

1. Getting the latest certification matrix as described in "About Confirming Certification Requirements".
2. "Creating a Forefront TMG Policy and Rules"
3. "Installing and Configuring 10g Webgate for Forefront TMG Server"
4. "Configuring the TMG 2010 Server for the ISAPI 10g Webgate"

54.2.2 About Confirming Certification Requirements

Any references to specific versions and platforms in this chapter are for demonstration purposes.

For the latest Access Manager certification information, see Oracle Technology Network at:

`http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html`

54.3 Creating a Forefront TMG Policy and Rules

After you install Forefront TMG 2010, other computers cannot ping the computer hosting Forefront because the default firewall policy denies all the traffic from and to the host. This section provides the information you need for:

- Creating a Custom Policy for Forefront TMG
- Creating a Forefront TMG Firewall Policy Rule
- Verifying Forefront TMG Proxy Configuration

54.3.1 Creating a Custom Policy for Forefront TMG

Use the following procedure to create a custom Forefront firewall policy.

Prerequisites

Install Forefront TMG 2010 using documentation from your vendor.

To create a custom policy to over ride the default firewall policy

1. Open the Forefront TMG console: Start, Programs, Microsoft Forefront TMG, Forefront TMG Management.
2. From the left pane, click Firewall Policy.
3. From the right pane, click Create Access Rule to create a custom policy,
4. Create a rule with the following attributes and values assigned:
   - Name: *Name for custom policy*

- Action =Allow
- Protocol =All Outbound
- Malware Inspection = Don not enable Malware Inspection for this rule
- From =External,Internal,Local Host
- To= External,Internal,Local Host
- Condition =All Users

5. Click Next to create the Access Rule, then click Apply.
6. Restart Forefront TMG to have changes take affect:
   - Stop Firewall Service use the command `net stop fwsrv`
   - Start Firewall Service use the command `net start fwsrv`
7. Proceed to "Creating a Forefront TMG Firewall Policy Rule"

54.3.2 Creating a Forefront TMG Firewall Policy Rule

To protect the resource, you must create a firewall policy rule using the Forefront TMG console as described in the following procedure.

When you create a listener for Authentication Preferences, be sure to check Allow client authentication over HTTP and Require All users to authenticate. Otherwise, you will not be able to access the published Web site using the TMG proxy.

Authentication Delegation is used by the TMG server to authenticate to the published Web server.

Note: You can have IIS and Forefront TMG installed on the same (or a different) computer. Here, both reside on same host.

To create a custom policy to override the default firewall policy

1. Open the Forefront TMG console: Start, Programs, Microsoft Forefront TMG, Forefront TMG Management.
2. From the left pane, click Firewall Policy.
3. From the Tasks tab, click Publish Web Sites.
4. In the Web publishing rule name field, type a descriptive name for the rule, and then click Next.
5. On the Select Rule Action page, confirm that the Allow option is selected, and then click Next.
6. In the Publishing type, confirm that the Publish a single Web site or load balancer option is selected, and then click Next.

   Step 7 describes configuration with an open (non-secured) connection with the Web server. If you are using a secured connection, see your Forefront TMG Server documentation.
7. On the Server Connection Security page, click Use non-secured connections to connect the published Web server or server farm, and then click Next.
8. Perform the following steps to set internal publishing details:

- In the Internal site name field, type the internally-accessible name of the IIS/apache Web server host: *iis_host.us.example.com*, for example.
- Check the box beside Use a computer name or IP address to connect to the published serve (or enter the IP address of the IIS Web server host).
- Click Next.

9. Protecting Resources: Perform following steps to protect resources within a particular folder in the Web site (or a single resource):

   Note: The folder must reside within htdocs/wwwroot of the corresponding Web server.

   - Folder Containing Resources: In the Path field, type the folder name to display the full path of the published Web site in the Web site field (Res/* for example).
   - Single Resource: Type the resource name (`test.html` for example).
   - Click Next.

10. In the Accept requests for list:
    - Click your domain name (for example: `myhost.example.com`).
    - In the Public name field, type the publicly-accessible fully-qualified Web site domain name of the host where Forefront TMG will be installed (for example: `myhost.example.com`).
    - Click Next.
11. In the Web listener list, either click the Web listener to use for this Web publishing rule, or create a new Web listener as follows:

    Note: Listener can also be configured in SSL mode if required; see your Forefront TMG documentation.

    - Click New, type a descriptive name for the new Web listener, and then click Next.
    - Click Do not require SSL secured connections with clients, and then click Next.
    - In the Listen for requests from these networks list, click the required networks (External, Internal, and Localhost) then click Next.
    - Click No on the message that appears.
    - In the Select how clients will provide credentials to Forefront TMG Server list, click No Authentication, and then click Next.
    - On the Single Sign On Settings page, click Next, and then click Finish.
12. On the Select Web Listener page:
    - Click Edit.
    - Click connections tab.
    - Provide any unused port for Enable HTTP connections on port attribute (This will act as Forefront TMG port.)
    - Click Apply; click Ok.

- Click Next.
- On the Single Sign On Settings page, click Next, and then click Finish.

13. Authentication Delegation: Perform the following steps to choose the method used by Forefront TMG to authenticate to the published Web server list.
    - Click No Delegation, and Client Cannot Authenticate Directly.
    - Click Next.
14. On the User Sets page:
    - Choose All (the default user setting - All Users) to set the rule that applies to requests from the user sets field.
    - Click Next, and then click Finish.
15. Click Apply to update the firewall policy, and then click OK.
16. Double-click the recently created Firewall Policy.
17. Bridging:
    - Open the Bridging tab.
    - Provide suitable unused port for Redirect request to HTTP port attribute (which will act as the IIS or Apache Web server port).
18. Click Apply to update the firewall policy, and then click OK.
19. IIS or Apache Web server.
20. Restart Forefront TMG to have changes take affect:
    - Stop Firewall Service use the command net stop fwsrv
    - Start Firewall Service use the command net start fwsrv
21. Double-click the rule just created:
    - Open the Link Translation tab.
    - Confirm that Apply Link Translation to this rule is checked.
    - Click the Mapping button to see the mapping created between Forefront TMG and IIS or Apache
22. Proceed to "Verifying Forefront TMG Proxy Configuration"

54.3.3 Verifying Forefront TMG Proxy Configuration

To validate the Forefront TMG proxy configuration, you can simply access the protected resource using the TMG port, as described in the following procedure.

To verify Forefront TMG proxy configuration

1. **Protected Single Resource**: Enter the URL to the TMG host and port where the protected resource resides. For example:

   `http://TMG_hostname:TMG_port/resource_name`

2. **Protected Folder**: Enter the URL to the TMG host and port where the folder containing the resource resides. For example:

   `http://TMG_hostname:TMG_port/folder-name/resource_name`

3. Confirm there are no issues accessing the protected resource.

54.4 Installing and Configuring 10g Webgate for Forefront TMG Server

This section describes how to set up the 10g Webgate and register plug-ins as Web filters.

Task overview: Configuring WebGate and Filters for TMG Server includes

1. Installing 10g WebGate with TMG Server
2. Changing /access Directory Permissions
3. Registering Access Manager Plug-ins as TMG Server Web Filters
4. Ordering the ISAPI Filters
5. Verifying Form-based Authentication

54.4.1 Installing 10g WebGate with TMG Server

When you install WebGate with the Forefront TMG Server, the destination for the ISAPI WebGate installation (also known as the *Webgate_install_dir*) should be same as that of the Microsoft Forefront TMG. For example, if Forefront TMG is installed in `C:\Program Files\Microsoft Forefront Threat Management Gateway`, the ISAPI WebGate should also be installed there.

Task overview: Installing the ISAPI Webgate for Forefront TMG Server

1. Register a 10g ISAPI WebGate with Access Manager, as described in Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g."

   Note: During Webgate installation, select the TMG option.

2. Install the ISAPI WebGate for TMG, as described in Section 25.7, "Locating and Installing the Latest 10g WebGate for Access Manager 11g."
3. Proceed to the "Changing /access Directory Permissions" section.

54.4.2 Changing /access Directory Permissions

After finishing ISAPI WebGate installation and configuration for the Forefront TMG Server, you must change permissions to the `\access` subdirectory. This subdirectory was created in the Forefront TMG Server (also WebGate) installation directory. You must add the user NETWORK SERVICE and grant full control to SYSTEM ADMINISTRATOR.

This enables the Forefront TMG Server to establish a connection between the Webgate and Access Server. Certain configuration files should be readable by system administrators, which is why you grant SYSTEM ADMINISTRATOR full control.

Note: Webgate in Simple Mode: add user NETWORK SERVICE and give Full Control for the `password.xml` file in *TMG_install_dir*`\access\oblix\config\password.xml`.

To change permissions for the \access subdirectory

1. In the file system, right-click *Webgate_install_dir*`\access`, and select **Properties**.
2. In the Properties window, click the **Security** tab.

3. Add user "NETWORK SERVICE" and then select "Allow" to give "**Full Control**".
4. For the "SYSTEM ADMINISTRATOR", select "**Full Control**".
5. Proceed to the "Configuring the TMG 2010 Server for the ISAPI 10g Webgate" section.

54.5 Configuring the TMG 2010 Server for the ISAPI 10g Webgate

The following topics describe how to configure the TMG Server to operate with the 10g ISAPI Webgate for Access Manager.

Task overview: Configuring the TMG 2010 Server for the ISAPI 10g Webgate

1. Registering Access Manager Plug-ins as TMG Server Web Filters
2. Ordering the ISAPI Filters
3. Verifying Form-based Authentication.

54.5.1 Registering Access Manager Plug-ins as TMG Server Web Filters

After resetting ISAPI Webgate permissions, you need to register Access Manager `webgate.dll` and `postgate.dll` plug-ins as Web Filters within Forefront TMG Server. Web filters screen all HTTP traffic that passes through the TMG Server host. Only compliant requests are allowed to pass through.

The following procedure describes how to register Access Manager plug-ins in the TMG Server.

Note: To undo the filter registration, you can use the following procedure with the `/u` option in the `regsvr32` command. For example:
`regsvr32 /u TMG_install_dir\access\oblix\apps\webgate\bin\webgate.dll`

To register Access Manager plug-ins as TMG Server Web filters

1. Locate the TMG Server installation directory, from which you will perform the following tasks.
2. Run `net stop fwsrv` to stop the TMG Server.
3. Register the `webgate.dll` as an ISAPI Web filter by running:

   `regsvr32 TMG_install_dir\access\oblix\apps\webgate\bin\webgate.dll`

4. Register the `postgate.dll` as an ISAPI Web filter by running:

   `regsvr32 TMG_install_dir\access\oblix\apps\webgate\bin\postgate.dll`

5. Restart the TMG Server by running `net start fwsrv`.
6. Proceed to "Ordering the ISAPI Filters".

54.5.2 Ordering the ISAPI Filters

It is important to ensure that the Webgate ISAPI filters are included in the right order. `postgate.dll` should be loaded before `webgate.dll`.

To order the Webgate ISAPI filters for TMG Server

1. From the Start menu, click All Programs, click Microsoft Forefront TMG, then click Forefront TMG Management.
2. In the left pane, select System, then select Web Filters, to display your Web-filters.
3. Confirm the following .dll files appear.

   For example:

   postgate.dll
   webgate.dll

4. Add any missing filters, if needed, then select a filter name and use the up and down arrows to arrange the filter order as shown in Step 3.
5. Proceed with "Verifying Form-based Authentication".

54.5.3 Verifying Form-based Authentication

Here you ensure that the published Web site is accessible using the TMG proxy and verify that form-based authentication is working.

TMG supports both Basic over LDAP and Form-based or Basic authentication. You can choose the desired authentication scheme. TMG need access to `login.html`, which you configure as described here.

To verify that form-based authentication is working

1. Store the login page at the docroot of the Web server protecting the resource so that the TMG server can access the login page.
2. Ensure that the published Web site is accessible to the TMG proxy.
3. Open the Forefront TMG console: Start, Programs, Microsoft Forefront TMG, Forefront TMG Management.
4. From the left pane, select the Firewall Policy.
5. On the right, under the Firewall Policy Rule, select the rule that was created to protect the resource.
6. Go to the policy rule properties, select the Path tab, then add the `/login.html` and click OK.
7. Click Apply to save changes and update the configuration.
8. Restart Forefront TMG to have changes take affect:
   - Stop Firewall Service use the command net stop fwsrv
   - Start Firewall Service use the command net start fwsrv

54.6 Starting, Stopping, and Restarting the TMG Server

When instructed to restart your TMG Server during Access Manager Web component installation or setup, be sure to follow any instructions that appear on the screen. Also, the `net` commands help to ensure that the Metabase does not become corrupted following an installation. Consider the following commands, hich provide good ways to stop and start the TMG Server:

- net stop fwsrv
- net start fwsrv

For more information, see your TMG Server documentation.

54.7 Removing Access Manager Filters Before WebGate Uninstall on TMG Server

If you plan to uninstall the WebGate that is configured to operate with the TMG Server, you must first unregister the Access Manager filters manually, and then uninstall WebGate.

> **See Also:** Section 28.11, "Removing Web Server Configuration Changes Before Uninstall."

To unregister filters before Webgate uninstall

1. Stop the TMG Server.
2. Run the following command to unregister `webgate.dll`. For example:

   ```
   regsvr32 /u TMG_install_dir\access\oblix\apps\webgate\bin\webgate.dll
   ```

3. Run the following command to unregister `postgate.dll`. For example:

   ```
   regsvr32 /u TMG_install_dir\access\oblix\apps\webgate\bin\postgate.dll
   ```

54.8 Troubleshooting

The error "Failed Connection Attempt" in TMG logs on accessing any Access Manager-protected resource does not affect functionality and can be ignored.

55

Integrating Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal

This chapter describes the integration of Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal.

This chapter covers the following topics:

55.1 What is Supported in This Release?

Versions 7.0.*x* and 7.4.*x* of SAP NetWeaver Enterprise Portal are supported in this release.

Access Manager 11.1.2 supports SAP NetWeaver Enterprise Portal v7.4.*x* with the following caveats:

- Apache 2.2.*x* and 2.0.*x* (from Apache.org) are supported Web servers with this release.
- MySAP is not certified.

Access Manager 11.1.2 supports SAP NetWeaver Enterprise Portal v7.0.*x* with the following caveats:

- Apache 2.0 (from Apache.org) is supported as a Web server with this release.
- MySAP is not certified.

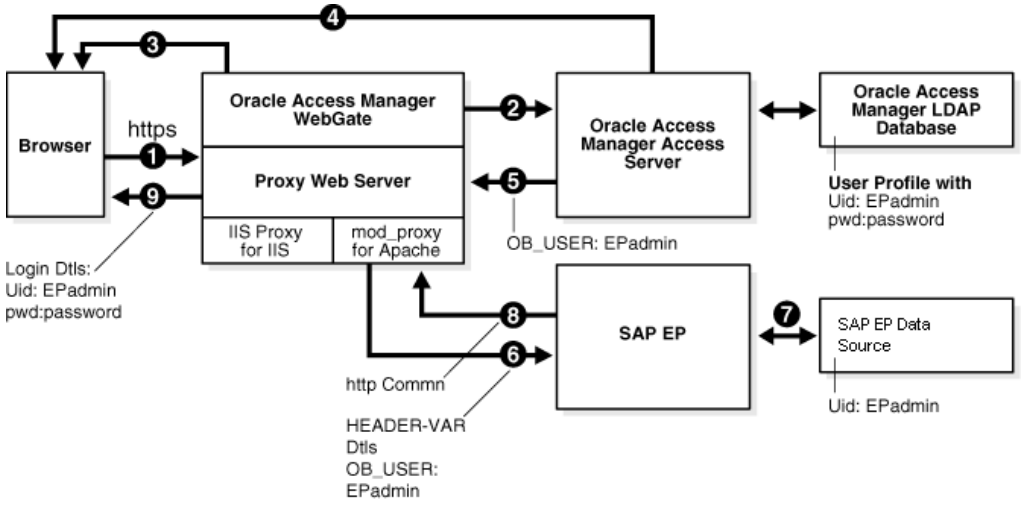
55.2 Supported Versions and Platforms

Access Manager 11.1.2 supports the versions and platforms described on the following site:

http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html

55.3 Integration Architecture

The following diagram illustrates the integration between Access Manager and SAP NetWeaver Enterprise Portal.



55.3.1 Process Overview: Integration with SAP NetWeaver Enterprise Portal

1. A user attempts to access content via the SAP NetWeaver Enterprise Portal.

   For example, the user may enter the following URL to access an HR application through a proxy server:

   `https://`*host:port*`/irj`

2. The WebGate intercepts the request and queries the Access Server for the security policy that determines if the resource is protected.

   The security policy consists of an authentication scheme, authorization rules, and allowed operations. Based on the authentication and authorization success or failure, specified actions are performed.

   The Access System security policy for the SAP `/irj` login URL is applicable to all resources accessed using the `https://`*host*`:`*port*`/irj` URL.

   Note that the SAP NetWeaver Enterprise Portal has its own authorization system that can be configured to set user access to iViews.

3. If the resource is protected, the WebGate prompts the user for authentication credentials.

   The credentials that the WebGate requests depend on the authentication scheme configured in the Access System, for example, Basic over LDAP or Form-based authentication.

4. If the credentials are validated, the Access System authenticates the user and sets an encrypted ObSSOCookie in the user's browser.

5. After authenticating, the authorization rules defined in the Access System are applied based on the security policy.

   Specific actions are performed based on the authorization rules. If the user is authorized, access to the SAP Portal login (the requested content) is allowed. For SAP Enterprise Portal header variable integration, the Access Server sets the authenticated user ID in a header variable.

If the user is not authenticated or authorized, he or she is denied access and redirected to another URL, as determined by the administrator. For example, the user may be redirected to an "invalid credentials" page.

6. For the integration with SAP NetWeaver Enterprise Portal, the proxy Web server redirects the request to the SAP NetWeaver Enterprise Portal internal Web server that contains the header variable details.
7. The SAP NetWeaver Enterprise Portal uses the header variable value to check the mapping of the user ID against the configured data source in the portal.

   Both the Access Manager and SAP NetWeaver Enterprise Portal data source must contain the same user ID value.

   Upon successful mapping, SAP NetWeaver Enterprise Portal allows the user to access the requested resource.

   SAP NetWeaver Enterprise Portal sends a response to the proxy, and the proxy redirects to the client browser.
8. All interaction with the SAP Enterprise Portal takes place through the proxy server.

55.4 Configuring Oracle Access Management and NetWeaver Enterprise Portal 7.0.*x*

This section describes how to configure Access Manager 11.1.2 and SAP NetWeaver Enterprise Portal 7.0.*x* to work together.

This section contains the following tasks:

- Before You Begin
- Configuring the Apache HTTP Server as a Proxy
- Configuring SAP NetWeaver Enterprise Portal for External Authentication
- Adjusting the Login Module Stacks for using Header Variables
- Configuring Access Manager 11.1.2 for SAP Enterprise Portal

55.4.1 Before You Begin

- Install SAP NetWeaver Enterprise Portal version 7.0.*x* before completing the steps in this section.
- Install the Apache HTTP Server by following the installation steps provided by apache.org.
- Install and configure a WebGate on each Apache HTTP Server instance that supports the proxy connection to the SAP Enterprise Portal instance. See *Installing Webgates for Oracle Access Manager* for details.
- Install Access Manager 11.1.2 before completing the steps in Section 55.4.5, "Configuring Access Manager 11.1.2 for SAP Enterprise Portal." See the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management for details.
- Synchronize the time on all servers where SAP NetWeaver Enterprise Portal and Access Manager components are installed.

- Ensure that the users exist in the Access Manager LDAP directory as well as on the SAP R3 system database.

  The user ID in Access Manager and the SAP database must be the same or be mapped to each other. Any attribute in a user's profile can be configured as the SAP ID and passed directly to SAP. Alternatively, SAP can be configured to map the SAP ID to any user attribute that it receives from Access Manager.

- Verify that the Web browser is configured to allow cookies.

Note: Oracle suggests reviewing the following topics prior to integrating Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal.

- Chapter 5, "Managing Data Sources" to understand how to add and configure data sources in Access Manager.
- Chapter 19, "Managing Authentication and Shared Policy Components" to understand how to configure Form and Basic mode authentication in Access Manager.
- Section C.4, "Configuring Cert Mode Communication for Access Manager" to understand how to configure Cert mode for Access Manager.

55.4.2 Configuring the Apache HTTP Server as a Proxy

The following procedure describes how to configure a proxy (Apache HTTP Server 2.0.*x*) to access SAP NetWeaver Enterprise Portal v7.0.*x*.

To configure Apache HTTP Server 2.0.*x*

1. Set up the Apache HTTP Server proxy in non-SSL mode or SSL mode, as described in the Apache documentation.

   If HTTPS communication is used with the SAP NetWeaver Enterprise Portal, use SSL mode.

2. To enable the proxy to access the SAP NetWeaver Enterprise Portal, enter the following in the `httpd.conf` configuration file:

   ```
   ProxyRequests Off
   ProxyPass /webdynpro http://sap_host:port/irj
   ProxyPassReverse /webdynpro http://sap_host:port/irj
   ProxyPreserveHost On
   ```

   Where *sap_host* is the name of the machine hosting the SAP NetWeaver Enterprise Portal instance and *port* is the listen port for the SAP NetWeaver Enterprise Portal instance. This set of directives specifies that all of the requests to this Web server of the form `http://`*apache_host*`:`*port*`/irj` or `https://`*apache_host*`:`*port*`/irj` are redirected to `http://`*sap_host*`:`*port*`/`irj or `https://`*sap_host*`:`*port*`/irj`.

3. Restart the proxy Web server.

4. Access the following URL:

   Non-SSL—`http://`*apachehost*`:`*port*`/irj`

   SSL—`https://`*apachehost*`:`*port*`/irj`

   This request should be redirected to the SAP NetWeaver Enterprise Portal login.

5. Log in using the SAP NetWeaver Enterprise Portal administrator login ID.

   The administrator should be able to perform the available administrative functions.

6. Log in as a non-administrative user.

   This user should be able to perform non-administrative functions.

55.4.3 Configuring SAP NetWeaver Enterprise Portal for External Authentication

The following steps describe enabling external authentication in SAP Enterprise Portal using the `OB_USER` header variable.

For more information about configuring authentication schemes for SAP Enterprise Portal, see the *SAP NetWeaver 7.0 Security Guide*.

To configure the header variable

1. Stop the SAP J2EE dispatcher and server.
2. Browse to the following directory:

   SAP_J2EE_engine_install_dir`\ume`
3. Back up the file `authschemes.xml.bak` to another directory.
4. Rename `authschemes.xml.bak` to `authschemes.xml`.
5. Open `authschemes.xml` in an editor and change the reference of the default authentication scheme to the authentication scheme header as follows:

```
<authscheme-refs>
     <authscheme-ref name="default">
          <authscheme>header</authscheme>
          <authscheme>uidpwdlogon</authscheme>
     </authscheme-ref>
</authscheme-refs>
```

6. In the authentication scheme header of `authschemes.xml`, specify the name of the HTTP header variable where the Access System provides the user ID.

   As described in "Configuring Access Manager 11.1.2 for SAP Enterprise Portal" on page 55-7, this is the `OB_USER` header variable. You configure this header variable as follows:

```
<authscheme name="header">
     <loginmodule>
          <loginModuleName>
               com.sap.security.core.logon.imp.HeaderVariableLoginModule
          </loginModuleName>
               <controlFlag>REQUISITE</controlFlag>
               <options>Header=OB_USER</options>
     </loginmodule>
     <priority>5</priority>
     <frontEndType>2</frontEndType>
     <frontEndTarget>com.sap.portal.runtime.logon.header</frontEndTarget>
</authscheme>
```

   The control flag value `REQUISITE` means the login module must succeed. If login succeeds, authentication continues through the list of login modules. If it fails, control immediately returns to the application and authentication does not continue through the list of login modules.

7. Restart the portal server and J2EE engine.

   The modified `authschemes.xml` file will be loaded into the Portal Content Directory (PCD). SAP Enterprise Portal will rename it as `authschemes.xml.bak`.

To Configure Logout

1. To enable logout from a single sign-on session in both SAP Enterprise Portal and Access Manager, configure a logout URL in SAP Enterprise Portal from the administration interface.

   The URL for the administration interface is as follows:

   `http://`*SAP_host*`:`*port*`/irj/`

   Where *SAP_host* is the name of the machine hosting the SAP Enterprise Portal and *port* is the listen port for the portal.

2. From the administration interface, click System Administration, then System Configuration, then UM Configuration, then Direct Editing.

3. Add the following lines to the end of the configuration file:

   ```
   ume.logoff.redirect.url=http(s)://proxy_host:port/logout.html
   ume.logoff.redirect.silent=false
   ```

   Where *http(s)* is either `http` or `https`, *proxy_host* is the name of the proxy Web server, and *port* is the listen port for the proxy.

4. Save the changes and log out.

55.4.4 Adjusting the Login Module Stacks for using Header Variables

Add the `HeaderVariableLoginModule` to the appropriate login module stack or template and configure the options as described here.

Table 55–1 Login Module Stacks for using Header Variables

Login Modules	Flag	Options
EvaluateTicketLoginModule	SUFFICIENT	`{ume.configuration.active=true`
HeaderVariableLoginModule	OPTIONAL	`{ume.configuration.active=true, Header=<header_name>}`
CreateTicketLoginModule	SUFFICIENT	`{ume.configuration.active=true}`
BasicPasswordLoginModule	REQUISITE	`{}`
CreateTicketLoginModule	OPTIONAL	`{ume.configuration.active=true}`

To adjust the Login Module Stacks for using Header Variables

1. Run the Visual Administrator tool, in the following location:

   SAPJ2EEEngine_install_dir`\j2ee\admin\go.bat`

2. In the Visual Administrator, choose Security Provider.

3. Switch to edit mode by choosing the pencil icon.

4. Choose Policy Configurations, then Authentication.

5. For each template or application that is to support header variable authentication, add the login module HeaderVariableLoginModule to the login module stack (see Table 55–1.

55.4.5 Configuring Access Manager 11.1.2 for SAP Enterprise Portal

The following procedure describes configuration of the security policy in Access Manager to protect log-ins to SAP NetWeaver Enterprise Portal. For more information about configuring application domains, see *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

To configure Access Manager for SAP NetWeaver Enterprise Portal

1. Log in to the Oracle Access Management Console.

   The Launch Pad opens.

2. Click the drop-down menu in the **Access Manager** section and choose **Create 11g Webgate**.

   The Create OAM 11g Webgate page opens.

3. Complete the form to create a WebGate for this integration. For example:

   Name—*SAP_AG*

   Host Identifier—Apache proxy host

   Auto Create Policies—Enabled (checked)

   Public Resource List—Add any public Resources to this list.

   Apply—Click to create the WebGate.

4. Click the **Authorization Policies** tab, then click the **Create Authorization Policy** button to open a fresh page (Chapter 20).

5. **Summary Tab**: Add your information to the Summary tab.

6. **Add Resources**: The Resource must be defined in the Application Domain before you can add the resource to a specific policy.

   - Click the **Resources** tab on the Authorization Policy page.
   - Click the **Add** button on the Resources tab.
   - Click the **Search** button.
   - Click a URL in the Results table, then click **Add Selected**.
   - Repeat these steps to add more resources.

7. Click **Apply** to save changes and close the Confirmation window.

8. **Responses**: Add policy Responses, as described in "Adding and Managing Policy Responses for SSO" on page 20-47.

9. **Conditions**: Add authorization conditions, as described in "Defining Authorization Policy Conditions" on page 20-52.

10. **Rules**: Add authorization rules, as described in "Defining Authorization Policy Rules" on page 20-69.

11. Close the page when you finish.

55.5 Configuring Oracle Access Management and NetWeaver Enterprise Portal 7.4.*x*

This section contains the following tasks.

55.5.1 Before You Begin

- Install SAP NetWeaver Enterprise Portal version 7.4.*x* before completing the steps in this section.
- Install Access Manager 11.1.2 as described in the Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management.
- Install Apache HTTP Server 2.0.*x* or 2.2.*x* by following the installation steps provided by apache.org.
- Install and configure an 11*g* WebGate on each Apache HTTP Server instance that supports the proxy connection to the SAP Enterprise Portal 7.4 instance. See *Installing Webgates for Oracle Access Manager* for details.
- Synchronize the time on all servers where SAP NetWeaver Enterprise Portal and Access Manager components are installed.
- Ensure that the users exist in the Access Manager LDAP directory as well as on the SAP R3 system database.

  The user ID in Access Manager and the SAP database must be the same or be mapped to each other. Any attribute in a user's profile can be configured as the SAP ID and passed directly to SAP. Alternatively, SAP can be configured to map the SAP ID to any user attribute that it receives from Access Manager.
- Verify that your Web browser is configured to allow cookies.

Note: Oracle suggests reviewing the following topics prior to integrating Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal.

- Chapter 5, "Managing Data Sources" to understand how to add and configure data sources in Access Manager.
- Chapter 19, "Managing Authentication and Shared Policy Components" to understand how to configure Form and Basic mode authentication in Access Manager.
- Section C.4, "Configuring Cert Mode Communication for Access Manager" to understand how to configure Cert mode for Access Manager.

55.5.2 Configuring Access Manager for SAP NetWeaver Enterprise Portal 7.4.*x*

Complete the following steps to configure the Access Manager security policy that protects SAP NetWeaver Enterprise Portal log-ins. For more information about configuring application domains, see *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

1. Log in to the Oracle Access Management Console.

The Launch Pad opens.

2. Click the drop-down menu in the **Access Manager** section and choose **Create 11g Webgate**.

   The Create OAM 11g Webgate page opens.

3. Complete the form to create a WebGate for this integration. For example:

   Name—Type a meaningful name, for example, *SAP_AG.* Do not include spaces in the name.

   Access Client Password—Enter a password to be used during the installation of the WebGate.

   Security—Choose the type of communication that should occur between the WebGate and the OAM server.

   Click **Apply**.

   A confirmation page opens.

4. At the bottom of the confirmation page, in the **Server Lists** section, associate the WebGate with a defined Access Server.

   Click **Apply**.

5. On the Launch Pad page, go to the **Access Manager** section and click **Host Identifiers**.

   Click **Search**, then click the WebGate in the search results.

   Configure the host identifiers using the fully qualified proxy machine name and port for the Apache proxy.

6. Click **Application Domains** and search for the application domain name that you used to create the WebGate (for example, *SAP_WG*).

   Click the application domain name in the search results to open it

   a. Click the **Resources** tab and search for the resource that the WebGates should protect. Select the resource in the search results then click the **Create** button.

      Complete the form and click **Apply**.

      Type - HTTP

      Resource URL - `/irj`

      Protection Level - Protected

      Authentication Policy - Protected Resource Policy

      Authorization Policy - Protected Resource Policy

   b. Click the **Authentication Policies** tab, then click **Protected Resource Policy**.

      Choose the appropriate authentication scheme from the **Authentication Scheme** drop-down that you want to configure for this particular domain. For example, for a form-based authentication policy (FAAuthScheme), enter the following:

      Name - Protected Resource Policy

      Authentication Scheme - FAAuthScheme

Note: Select either basic-over-LDAP or form-based authentication.

Oracle recommends that you use a form-based authentication scheme. If you use the basic authentication scheme, also set the **Challenge Redirect** field to another WebGate to ensure that the `ObSSOCookie` is set.

Click **Apply** to save your changes.

c. Click the **Authorization Policies** tab, then click **Protected Resource Policy**.

Click the **Responses** tab and add the following:

Type - Header

Name - OAM_REMOTE_USER

Value - Same account name

The other tabs in Authorization Policies include conditions and rules:

Condition - Creates a list of users and puts them in a group.

Rule - Allows or denies access to the group of users created in the conditions tab.

Click **Apply** to save your changes.

7. If you configured a form-based authentication scheme, ensure that a `login.html` page is configured in the proxy server document root.

   Also, ensure that a `logout.html` page is present on the proxy Web server document root. You can create a custom logout page using HTML, a JSP file, or a CGI protocol.

   The default logout page (`logout.html`) is located here:

   `WebGate_install_dir``/webgate/apache/oamsso/logout.html`

   Where:

   `WebGate_install_dir` is the directory where the WebGate is installed. Ensure that the name of the logout page contains the string `logout`.

8. Ensure that the user ID that is returned by the `OAM_REMOTE_USER` header variable exists in the user management data sources for SAP Enterprise 7.4.

9. On the Launch Pad page, go to the **Access Manager** section and click **Authentication Schemes**.

   Choose the authentication scheme to use. This is the scheme that you selected inside the application domain of the WebGate.

55.5.3 Configuring Apache Web Server 2.0.*x* or 2.2.*x*

Follow these steps to configure a proxy to access SAP Enterprise Portal 7.4.

1. Set up the Apache proxy in non-SSL mode or in SSL mode. Refer to the Apache documentation for details.

   If HTTPS communication is used with the SAP Enterprise Portal 7.4, use SSL mode.

2. To enable the proxy to the SAP Enterprise Portal 7.4, add the following to the `httpd.conf` file:

```
ProxyRequests Off

ProxyPass /http://sap_host:port/

ProxyPassReverse / http://sap_host:port//

ProxyPreserveHost On
```

Where:

sap_host - The name of the machine hosting the SAP Enterprise Portal 7.4 instance

port - The listening port for the SAP Enterprise Portal 7.4 instance.

This set of directives specifies that all requests to the Web server that take the form `http://apache_host:port/irj` or `https://apache_host:port/irj` are redirected to `http://sap_host:port/irj` or `https://sap_host:port/irj`.

3. Uncomment the following proxy related modules:
   - `LoadModule proxy_module modules/mod_proxy.so`
   - `LoadModule proxy_http_module modules/mod_proxy_http.so`
4. Restart the proxy Web server.
5. Open a browser and access the following URL:
   - Non-SSL: `http//apachehost:port/irj`
   - SSL: `https://apachehost:port/irj`

   This request should be redirected to the SAP Enterprise Portal 7.4 login ID.
6. Log in using the SAP Enterprise Portal 7.4 administrator login ID.

   Verify that you can perform the provided administrative functions when logged in as an administrator.
7. Log in as a non-administrative user.

   Verify that you can perform the provided non-administrative functions when logged in.

55.5.4 Configuring SAP Enterprise Portal 7.4 for External Authentication

Complete the following steps to enable external authentication in SAP Enterprise Portal 7.4 using the OAM_REMOTE_USER header variable.

> **Note:** See the *SAP Enterprise Portal 7.4 Enterprise Postal Security Guide* for more information about configuring authentication schemes for SAP Enterprise Portal.

1. To enable logout from a single sign-on session in both SAP Enterprise Portal 7.4 and Access Manager, use the SAP NetWeaver Administrator interface to configure a logout URL.

   Set the SAP NetWeaver Portal Logoff URL (`ume.logoff.redirect.url`) to the appropriate logout URL.
2. Open the config tool by running the `configtool.bat` file, which is located here:

   ```
   SAP_J2EE_engine_install_dir\configtool
   ```

Prepare to edit the configuration by switching to configuration editor mode, and choosing edit mode.

3. Edit the properties for the following workernode service:
`com.sap.security.core.ume.service`

   Update the `ume.logoff.redirect.url` property and the `ume.logoff.redirect.silent` property with the logoff URL configured in step 1.

   `ume.logoff.redirect.url=http(s)://proxy_host:port/logout.html`

   `ume.logoff.redirect.silent=false`

   Save your changes and close the config tool.

4. Stop the SAP J2EE dispatcher and server.

5. Again, open the config tool by running the `configtool.bat` file, which is located here:

   `SAP_J2EE_engine_install_dir\configtool`

   Prepare to edit the configuration by switching to configuration editor mode, and choosing edit mode.

6. Back up the `authschemes.xml` file (cluster_config > globals > clusternode_config > workernode > services > com.sap.security.core.service > persistent).

7. Open `authschemes.xml` in an editor and change the reference of the default authentication scheme to the authentication scheme header as follows:

```
<authscheme-refs>
     <authscheme-ref name="default">
          <authscheme>header</authscheme>
     </authscheme-ref>
</authscheme-refs>

<authscheme-ref name="default"> ----------------> (for fall back)
            <authscheme>uidpwdlogon</authscheme>
  </authscheme-ref>
</authscheme-refs>
```

8. In `authschemes.xml`, go to the authentication scheme header and specify the name of the HTTP header variable where the access system provides the user ID. Configure this header variable as follows:

```
<authscheme name="header">
     <loginmodule>
          <loginModuleName>
               com.sap.security.core.logon.imp.HeaderVariableLoginModule
          </loginModuleName>
               <controlFlag>REQUISITE</controlFlag>
               <options>Header=OAM_REMOTE_USER</options>
     </loginmodule>
     <priority>5</priority>
     <frontEndType>2</frontEndType>
     <frontEndTarget>com.sap.portal.runtime.logon.header</frontEndTarget>
</authscheme>
```

   The REQUISITE control flag value specifies that the login module must succeed. If login succeeds, authentication continues through the list of login modules. If it fails, control immediately returns to the application and authentication does not continue through the list of login modules.

9. Save the XML to the same location.
10. Restart the portal server and J2EE engine.

    The modified `authschemes.xml` file is loaded into the Portal Content Directory (PCD). SAP Enterprise Portal 7.4 renames it as `authschemes.xml.bak`.

55.5.5 Adjusting the Login Module Stacks for Using Header Variables

Use the NetWeaver Admin console to add the `HeaderVariableLoginModule` to the appropriate login module stack or template and configure the options as described here. In the console, choose **Configuration** > **Authentication and Single Sign-On**. Click **Login Modules** under the **Authentication** tab. Select the `HeaderVariableLoginModule` login module, choose **ticket** from the **Login Module Use** tab, and add the login module `HeaderVariableLoginModule` to the login module stack for each template or application that is to support header variable authentication.

Table 55–2 Login Module Stacks for using Header Variables

Login Modules	Flag	Options
EvaluateTicketLoginModule	SUFFICIENT	`{ume.configuration.active=true`
HeaderVariableLoginModule	OPTIONAL	`{ume.configuration.active=true, Header=<header_name>}`
CreateTicketLoginModule	SUFFICIENT	`{ume.configuration.active=true}`
BasicPasswordLoginModule	REQUISITE	`{}`
CreateTicketLoginModule	OPTIONAL	`{ume.configuration.active=true}`

55.6 Testing the Integration

Use the following procedures to test the integration.

Front-End Integration Test Procedure

Follow these steps to test the integration using a Web browser.

1. Open a protected URL. For example: `https://`*host:port*`/irj`

   Access Manager should prompt for authentication (either form based, or basic authentication over LDAP, or Cert Mode authentication).

2. Enter the correct user credentials.

   If the credentials are correct, you will be logged into the SAP NetWeaver Enterprise Portal system.

Back-End Integration Test Procedure

To use these steps, download and install a plug-in for your Web browser that displays the HTTP requests and responses that happen when your browser requests a resource. Live HTTP Headers for Firefox, or ieHTTPHeaders for Internet Explorer are two such plug-ins.

1. Open the plug-in and type a URL in your browser to request a protected resource, for example: `https://`*host:port*`/irj`

   The plug-in window will be populated with the HTTP requests and responses.

2. Analyze the requests and responses and make sure that each request returns a response without errors.

   Once the user is authenticated you should see some sessions and cookies set in the HTTP Header logs. The cookies that are set include the following:

- ObSSOCookie
- JSESSIONID
- OAM_ID
- OAM_REQ

When the request reaches the SAP NetWeaver Enterprise Portal, you will receive responses from the Enterprise Portal system in the header logs.

55.7 Troubleshooting the Integration

The following information is intended to help you troubleshoot issues with this integration.

Problem: The browser has problems displaying the SAP 7.0.x administration interface through the proxy server. You may receive an "object not found" error and related JavaScript errors.

Solution: See the following SAP document for a list of supported browsers, "SAP NetWeaver 7.0.x Product Availability Matrix."

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Integrating Oracle Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal Using OpenSSO Policy Agent 2.2

This chapter describes how to use Sun Java System Access Manager / OpenSSO Policy Agent 2.2 to integrate Oracle Access Manager 11.1.2 with SAP NetWeaver Enterprise Portal 7.01.

This chapter covers the following topics:

56.1 What is Supported in This Release?

Only SAP Netweaver Enterprise Portal 7.01 is supported by the OpenSSO Policy Agent 2.2 in this release. MySAP is not certified.

Note: The following patch must be applied to the OpenSSO Policy Agent 2.2:

```
PSE ID: OpenSSO.J2EE.PSE.2.2.18810674
```

SAP single sign-on will not work without this patch.

56.2 Registering the OpenSSO Agent

Before you begin, complete the following steps:

- Remotely register the agent so that the Agent Profile is created on the Oracle Access Management side. Use the remote registration tool on the OAM server located here:

  `<Middleware_Home>/Oracle_IDM1/oam/server/rreg`

- Ensure that the fully-qualified domain name of the OAM server and the SAP server are updated in the `hosts` file on both systems.

  Always use the SAP and OAM server's fully-qualified domain name while installing or registering the agent and doing OAM configuration.

1. Open the appropriate XML request file for editing. The request file will provide inputs for the registration.

   Request files are located inside the input folder.

2. Modify the specific values to match your environment.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Copyright (c) 2009, 2013, Oracle and/or its affiliates. All rights
reserved.
   NAME: OpenSSORequest.xml - Template (with all options) for OpenSSO Agent
Registration Request file
   DESCRIPTION: Modify with specific values and pass file as input to the
tool-->
<OpenSSORegRequest>
    <serverAddress>http://OAMserver.example.com:7001</serverAddress>
    <hostIdentifier>OPENSSO_HOSTID8</hostIdentifier>
    <agentName>OPENSSO_SAP8</agentName>
    <agentBaseUrl>http://SAPserver.example.com:50000</agentBaseUrl>
    <applicationDomain>OPENSSO_APPDOMAIN</applicationDomain> //Modify this.
    <autoCreatePolicy>true</autoCreatePolicy>
    <agentType>J2EE</agentType>
    <agentVersion>2.2</agentVersion> //Important: Make sure the version is 2.2.
    <agentDebugDir></agentDebugDir>
    <agentAuditDir></agentAuditDir>
    <agentAuditFileName></agentAuditFileName>
    <protectedAuthnScheme></protectedAuthnScheme>
</OpenSSORegRequest>
```

3. To register the agent, open a command prompt and run the following command from the `bin` directory in the rreg tool:

   ```
   oamreg.sh inband input/OpenSSORequest
   ```

   The command outputs the `AMAgent.properties` file, which is located in the output directory.

   > **Note:** For OpenSSO agent 2.2, there is only one output file (`AMAgent.properties`), whereas for OpenSSO agent 3 there are two output files (`OpenSSOAgentBootstrap.properties` and `OpenSSOAgentConfiguration.properties`).

   This registration creates a footprint in the `oam-config.xml` file for the OAM domain, which is located here:

<Middleware_home>/user_projects/domains/base_domain1/config/fmwconfig/oam-config.xml

The registered agent is in an entry similar to the following:

<Setting Name="*<Agent_Name>*" Type="htf:map">

The registration process is now complete.

56.3 Installing the OpenSSO Policy Agent 2.2 on SAP Enterprise Portal

Complete the following steps to install the agent on the SAP container.

1. Extract the OpenSSO Policy agent and navigate to the `bin` folder.
2. Open a command prompt and type the following command to install the agent on the SAP container.

   `agentadmin.sh - -install`

   The command will prompt you for values as needed. The following table summarizes the requested inputs.

Table 56–1

Request prompt	Sample Input	Description
SAP <SID> Directory	*<SAP_Server_Instance>*\JC00\j2ee\cluster\server0	Path to the SAP directory
Agent installed on WebAS domain	false	
Access Manager Services host	OAMserver.example.com	OAM server fully-qualified domain name
Access Manager Services Port	8003	Port where the OAM server is running
Access Manager Services protocol	http	
Access Manager Services deployment URI	/opensso	OpenSSO proxy URL
Agent host name	SAPserver.example.com	SAP server fully-qualified domain name
Application server instance port number	50000	Port where the SAP EP server is running
Protocol for Application Server instance	http	
Deployment URI for the Agent Application	/agentapp	URI of the WAR file that we deploy
Encryption key	gSwxyctnKWkx8fBgbwj8Mn5ziksjaUqi	
Agent profile name	OPENSSO_SAP8	Agent profile name given during registration
Agent profile password file name	/Policy_Agent/sap_v7_agent/Info/p.txt	

56.3.1 Post-Installation Steps

After installation, an agent instance is created on the SAP container. Inside this directory is another instance of the `AMAgent.properties` file. (So there are two

AMAgent.properties files: one generated during remote registration, and one generated just previously during the Agent installation.)

1. Compare the two properties files and consolidate them so that you have one properties file that contains all of the information.

   Be sure that all of the settings in the AMAgent.properties file matches the Agent Profile entry in the oam-config.xml file on the OAM server.

2. In oam-config.xml, add the following entry under the <Setting Name="NamingData" Type="htf:map"> element:

```
<Setting Name="iplanet-am-platform-server-id"
Type="xsd:string">serverprotocol://serverhost:serverport</Setting>
```

Note: Be sure to increment the version integer every time you update the oam-config.xml file:

```
<Setting Name="Version" Type="xsd:integer">113</Setting>
```

56.4 Deploying the Agent Software Delivery Archive

1. Go to the etc folder in the agent to locate the AmSAPAgent2.2.sda archive. The .sda file is a library that you will deploy onto the SAP server using the Software Deployment Manager (SDM).

2. Use the Software Deployment Manager (/usr/sap/*SID*/*InstanceName*/SDM/program/RemoteGui.sh) to deploy the AmSAPAgent2.2.sda file. Refer to the SAP documentation for details.

   Once the deployment is complete, verify that the library is deployed by viewing the **Undeployment** tab. The AmSAPAgent2.2 library should be listed.

   You can also use the SAP Visual Administrator tool (/usr/sap/*SID*/*InstanceName*/j2ee/admin/go.sh) to verify that the deployed library, along with the SAP-dependent libraries, are available in the container.

56.5 Making a Class Loader Reference to the Login Module

Use the SAP Visual Administrator tool (/usr/sap/*SID*/*InstanceName*/j2ee/admin/go.sh) to make a class loader reference for the newly deployed library. Add the reference to the LoginModuleClassLoader by adding the following key-value pair on the **Properties** tab on the Security Provider configuration page (Server Instance > Services > Security Provider).

Table 56–2

Key	Value
LoginModuleClassLoader	library: AmSAPAgent2.2

56.6 Modifying the SAP Enterprise Portal 7.0 / Web Application Server 7.0 Class Path

Open the SAP Config Tool (`/usr/sap/SID/InstanceName/j2ee/configtool/configtool.sh`), navigate to Cluster_data > Instance ID > Server instance, and on the **General** tab, add the following paths to the **Classpath** field:

`/Policy_Agent/sap_v7_agent/j2ee_agents/sap_v7_agent/<Agent_Instance>/config`

`/Policy_Agent/sap_v7_agent/j2ee_agents/sap_v7_agent/locale`

56.7 Deploying and Starting the Agentapp.war File

1. Open the SAP Deployment Manager (`deploy.sh`) and create a new project.
2. Go to an empty directory owned by the SAP instance user (j2eeadm) and type *agentapp* for the address field.

   Go to the Assembler tab and add the `agentapp.war` archive (right-click the agentapp node and select **Add Archive** from the context menu).

   Save the project.

   Browse to the directory specified previously as owned by the SAP Instance user (j2eeadm), type agentapp for the address field, and click OK.

   Right-click the agentapp root node and select Make Ear from the context menu.

56.8 Using Telnet to Create a Reference Between agentapp and Library AmSAPAgent2.2

1. Telnet to the SAP host (for example, `saphost.example.com 50008`) and log on as an administrator.
2. Issue the following commands:
   a. `$ jump 0`

      The system returns a message similar to the following:

      ```
      You jumped on node 4503950.
      ```

   b. `$ add deploy`

   c. `$ CHANGE_REF -m sap.com/agentapp library:AmSAPAgent2.2`

      The system returns the following message:

      ```
      The reference between application sap.com/agentapp and
      library:AmSAPAgent2.2 was made!
      ```

3. Stop and Start the SAP Enterprise Portal instance.

Note: You can also use the SAP Visual Administrator tool (`/usr/sap/SID/InstanceName/j2ee/admin/go.sh`) to verify that the references were made properly. Choose Server Instance > Services > ClassLoader Viewer.

56.9 Adding the Login Module to the Stack

Before You Begin - Start the SAP Enterprise Portal instance if it is not running.

1. Start the SAP Visual Administrator tool and log in. (`/usr/sap/SID/InstanceName/j2ee/admin/go.sh`).
2. Select the **Security Provider** service, click the **User Management** tab, and switch to edit mode.
3. Click Manage Security Stores > Add Login Module.

   Click OK when the dialog box opens.
4. In the **Class Name** field, type the following:

   `com.sun.identity.agents.sap.v70.AmSAPEP70LoginModule`
5. In the **Display Name** field, type the following:

   `AmSAPEP70LoginModule`

56.10 Modifying the Login Module Stack

1. Start the SAP Visual Administrator tool and log in. (`/usr/sap/SID/InstanceName/j2ee/admin/go.sh`).
2. Select the **Security Provider** service, click the **Policy Configurations** tab, and switch to edit mode.
3. In the **Components** list, select the **ticket** authentication template.
4. Delete all login modules *except for* the following:
   - `com.sap.security.core.server.jaas.EvaluateTicketLoginModule`
   - `com.sap.security.core.server.jaas.CreateTicketLoginModule`
5. Click **Add New** and select **AmSAPEP70LoginModule** from the list of modules.
6. Click Modify and move `AmSAPEP70LoginModule` between the two remaining login modules.

   The new ticket authentication template should match the values in the following table.

Table 56–3 Login Module Flags

Login Module	Flags
`EvaluateTicketLoginModule`	SUFFICIENT
`AmSAPEP70LoginModule`	REQUISITE
`CreateTicketLoginModule`	OPTIONAL
`EvaluateTicketLoginModule`	SUFFICIENT

56.11 Updating the ume.logoff.redirect.uri

1. Open the SAP Config Tool (`/usr/sap/SID/InstanceName/j2ee/configtool/configtool.sh`) and switch to edit mode.
2. Click the pencil and glasses button and choose **cluster_data** > **server** > **cfg** > **services**.

The UME service property sheet opens.

3. Open the `com.sap.security.core.ume.service` property sheet and add the following custom value to the `ume.logoff.redirect.uri` property.

   `http://OAM-Server-Hostname:OAM-Port/oam/server/logout`

56.12 Configuring the AMAgent.properties File

Open the `AMAgent.properties` file for the Agent Instance and edit the following properties:

Note: The following properties in `AMAgent.properties` must match the properties in `oam-config.xml`. If the properties do not match, update the properties in `oam-config.xml`.

Be sure to increment the version integer every time you update the `oam-config.xml` file:

```
<Setting Name="Version" Type="xsd:integer">113</Setting>
```

---

1. In **Debug Service Properties**, update the complete path of the log location similar to the following:

   ```
   com.iplanet.services.debug.directory = /Policy_Agent/sap_v7_agent/j2ee_
   agents/sap_v7_agent/Agent_003/logs/debug
   ```

2. In **COMMON ATTRIBUTE FETCH PROCESSING PROPERTIES**, set cookie encode to false.

   ```
   com.sun.identity.agents.config.attribute.cookie.encode = false
   ```

3. In **COOKIE RESET PROCESSING PROPERTIES**, edit the following properties:

   ```
   com.sun.identity.agents.config.cookie.reset.enable = true
   ```

   ```
   com.sun.identity.agents.config.cookie.reset.name[0] = MYSAPSSO2
   ```

   ```
   com.sun.identity.agents.config.cookie.reset.domain[MYSAPSSO2] =
   .corp.example.com
   ```

4. In **URL DECODE SSO TOKEN FLAG**, set decode to false:

   ```
   com.sun.identity.agents.config.sso.decode = false
   ```

5. In **FILTER OPERATION MODE**, add or update the following property:

   ```
   com.sun.identity.agents.config.filter.mode = SSO_ONLY
   ```

56.13 Testing the Integration

Users in the Oracle Access Management user store should also be in the SAP server. Be sure to allow user access in OAM.

To verify that the integration is working properly, try the following:

1. Access the protected URL (for example, `/irj`).

   You should be redirected to the Oracle Access Manager login form.

2. Enter a valid user name and password.

You should be authenticated and logged into the SAP server (`/irj`).

Part XIV

Appendixes

Part XII provides information that is outside the scope of day-to-day administration tasks with Oracle Access Management 11.1.2.

Part XII contains the following appendixes:

A

Integrating Oracle ADF Applications with Access Manager SSO

The Oracle Application Developer Framework (ADF) and applications that are coded to Oracle ADF standards interface with the OPSS SSO Framework. The Oracle Platform Security Services (OPSS) single sign-on framework provides a way to integrate applications in a domain with a single sign-on (SSO) solution.

You can integrate a Web application that uses Oracle ADF security and the OPSS SSO Framework with an Access Manager SSO security provider for user authentication. This chapter provides the following sections:

- Introducing Oracle Platform Security Services and Oracle Application Developer Framework
- Integrating Access Manager With Web Applications Using Oracle ADF Security and the OPSS SSO Framework
- Configuring Centralized Logout for Oracle ADF-Coded Applications
- Confirming Application-Driven Authentication During Runtime

A.1 Introducing Oracle Platform Security Services and Oracle Application Developer Framework

This section provides the following topics:

- Oracle Platform Security Services Single Sign-on Framework
- Oracle Application Developer Framework

A.1.1 Oracle Platform Security Services Single Sign-on Framework

A single sign-on (SSO) solution must provide a standard way for applications to login and logout users. After successful authentication, the SSO service is responsible to redirect the user to the appropriate URL.

The Oracle Platform Security Services (OPSS) SSO Framework provides a way to integrate applications in a domain with an SSO solution. Specifically, it provides applications with a common set of APIs across SSO products to handle login, auto login, and logout.

The Oracle Application Developer Framework (ADF) and applications that are coded to Oracle ADF standards interface with the OPSS SSO Framework. For more information about Oracle ADF, see "Oracle Application Developer Framework" on page A-2.

The Access Manager SSO solution is available out-of-the-box and provides the following to applications that are coded to Oracle ADF standards and the OPSS SSO Framework:

- Login (application-driven): Upon accessing a part of a secured artifact that requires authentication, the application triggers authentication and redirects the user to be authenticated by the appropriate solution.
- Auto login: A user who has initially accessed an application anonymously registers an account with the application (Oracle Identity Manager, for instance); upon a successful registration, the user is redirected to the authentication URL; the user can also be automatically logged in without being prompted.
- Global logout: When a user logs out of one application, the logout propagates across to any other application that is enabled by the solution.

Note: The OPSS SSO framework does not support multi-level authentication.

See Also: *Oracle Fusion Middleware Application Security Guide* part "Single Sign-On Configuration" for more information about choosing an SSO solution, and the Access Manager solutions.

A.1.2 Oracle Application Developer Framework

The Oracle Application Development Framework is an end-to-end application framework that builds on Java EE standards and open-source technologies to simplify and accelerate implementing service-oriented applications.

The development and run-time environment required to deploy and manage ADF applications is similar in many ways to the environment required for other Java EE applications.

The difference between a typical Java EE environment and an environment that supports Oracle ADF applications is the availability of the Oracle ADF run-time libraries:

- In Oracle Fusion Middleware 11g, an Oracle WebLogic Server domain, by default, does not contain the Oracle ADF run-time libraries. However, you can optionally configure or extend your domain to include the Java Run-time Files (JRF). The Oracle ADF run-time libraries are included as part of the JRF component.

  The Oracle WebLogic Server domain can be extended with the Java Run-time Files (JRF) domain template, which includes the required Oracle ADF libraries, and other important Oracle-specific technologies.
- In Oracle Application Server 10g, each instance of OC4J automatically provided the Oracle ADF run-time libraries required to support Oracle ADF applications.

For information about the types of Java EE environments available in 10g and instructions for upgrading those environments to Oracle Fusion Middleware 11g, refer to the *Oracle Fusion Middleware Upgrade Guide for Java EE*.

A.2 Integrating Access Manager With Web Applications Using Oracle ADF Security and the OPSS SSO Framework

This section describes how to integrate a Web application that uses Oracle ADF security and the OPSS SSO Framework with an Access Manager SSO security provider for user authentication.

Before the Web application can be run, you must configure the domain-level `jps-config.xml` file on the application's target Oracle WebLogic Server for the Access Manager security provider.

The domain-level `jps-config.xml` file is in the following path and should not be confused with the deployed application's jps-config.xml file:

```
$DOMAIN_HOME/config/fmwconfig/jps-config.xml
```

> **Note:** Do not confuse the domain-level `jps-config.xml` file with the deployed application's jps-config.xml file.

You can use an Oracle JRF WLST script to configure the domain-level jps-config.xml file, either before or after the Web application is deployed. This Oracle JRF WLST script is named as follows:

Linux: wlst.sh

Windows: wlst.cmd

The Oracle JRF WLST script is available in the following path if you are running through JDev:

```
$JDEV_HOME/oracle_common/common/bin/
```

In a standalone JRF WebLogic installation, the path is:

```
$MW_HOME/oracle_common/wlst
```

> **Note:** The Oracle JRF WLST script is required. When running WLST for Oracle Java Required Files (JRF), do **not** use the WLST script under $JDEV_HOME/wlserver_10.3/common/bin.

Command Syntax

```
addOAMSSOProvider(loginuri, logouturi, autologinuri)
```

Table A–1 defines the expected value for each argument in the addOAMSSOProvider command line addOAMSSOProvider

Table A–1 addOAMSSOProvider Command-line Arguments

Argument	Definition
loginuri	Specifies the URI of the login page **Note**: For ADF security enabled applications, "/<*context-root*>/adfAuthentication" should be provided for the 'loginuri' parameter. Here is the flow: 1. User accesses a resource that has been protected by authorization policies in OPSS, fox example. 2. If the user is not yet authenticated, ADF redirects the user to the URI configured in 'loginuri'. 3. Access Manager, should have a policy to protect the value in 'loginuri': for example, "/<*context-root*>/adfAuthentication. 4. When ADF redirects to this URI, Access Manager displays a Login Page (depending on the authentication scheme configured in Access Manager for this URI).
logouturi	Specifies the URI of the logout page **Note**: For ADF security enabled applications, logouturi should be configured based on logout guidelines in Chapter 22. For the: ■ 11g Webgate the value of the logouturi should be sought from the 11g Webgate Administrator. ■ 10g Webgate requires a logouturi value of "/oamsso/logout.html
autologinuri	Specifies the URI of the autologin page.

The procedure to configure domain-level jps-config.xml for a Fusion Web application with Oracle ADF Security enabled is part of a larger task. With the exception of the command syntax, all tasks are the same for Access Manager 10g and 11g.

For more information, see:

- Sample SSO Configuration for Access Manager
- SSO Provider Configuration Details

See Also:

- Oracle Fusion Middleware Oracle WebLogic Scripting Tool
- Oracle Fusion Middleware WebLogic Scripting Tool Command Reference "Infrastructure Security Commands" chapter

A.2.1 Sample SSO Configuration for Access Manager

The SSO service configuration entered with the procedure described in Oracle Fusion Middleware Application Security Guide for all tasks involving Access Manager SSO providers and an OAM Configuration Example is written to the file `jps-config.xml`. The data specified includes:

- A particular SSO service
- The auto-login and auto-logout URIs
- The authentication level
- The query parameters contained in the URLs returned by the selected SSO service
- The appropriate settings for token generation

The following fragment of a `jps-config.xml` file illustrates the configuration of an Access Manager SSO provider. Some values are merely placeholders for actual content. Your configuration should contain values for your implementation.

See Also: "SSO Provider Configuration Details"

Example A–1 Sample SSO Configuration for Access Manager

```
<propertySets>
  <propertySet name = "props.auth.url">
    <property name = "login.url.BASIC" value = "http://host:port/oam_
login.cgi?level=BASIC"/>
    <property name = "login.url.FORM" value = "http://host:port/oam_
login.cgi?level=FORM"/>
    <property name = "login.url.DIGEST" value = "http://host:port/oam_
login.cgi?level= DIGEST"/>
    <property name = "autologin.url" value = " http://host:port/obrar.cgi"/>
    <property name = "logout.url" value = "http://host:port/logout.cgi"/>
    <property name = "param.login.successurl"  value = "successurl"/>
    <property name = "param.login.cancelurl"   value = "cancelurl"/>
    <property name = "param.autologin.targeturl" value = "redirectto"/>
    <property name = "param.autologin.token"   value = "cookie"/>
    <property name = "param.logout.targeturl"   value = "targeturl"/>
  </propertySet>

  <propertySet name="props.auth.uri">
    <property name="login.url.BASIC"
value="/${app.context}/adfAuthentication?level=BASIC" />
    <property name="login.url.FORM"
value="/${app.context}/adfAuthentication?level=FORM" />
    <property name="login.url.DIGEST"
value="/${app.context}/adfAuthentication?level=DIGEST" />
    <property name="autologin.url" value="/obrar.cgi" />
    <property name="logout.url" value="/${oamsso/logout.html" />
  </propertySet>

  <propertySet name = "props.auth.level">
    <property name = "level.anonymous" value = "0"/>
    <property name = "level.BASIC"    value = "1"/>
    <property name = "level.FORM"    value = "2"/>
    <property name = "level.DIGEST"   value = "3"/>
  </propertySet>
<propertySets>

<serviceProviders>
  <serviceProvider name = "sso.provider"
    class = "oracle.security.jps.internal.sso.SsoServiceProvider"
    type = "SSO">
    <description>SSO service provider</description>
  </serviceProvider>
</serviceProviders>

<serviceInstances>
  <serviceInstance name = "sso" provider = "sso.provider">
    <propertySetRef ref = "props.auth.url"/>
    <propertySetRef ref = "props.auth.level"/>
    <property name = "default.auth.level" value = "2"/>
    <property name = "token.type" value = "OAMSSOToken"/>
    <property name = "token.provider.class" value =
"oracle.security.wls.oam.providers.sso.OAMSSOServiceProviderImpl"/>
```

```
  </serviceInstance>
</serviceInstances>

<jpsContexts default = "default">
  <jpsContext name = "default">
    <serviceInstanceRef ref = "sso"/>
  </jpsContext>
</jpsContexts>
```

A.2.2 SSO Provider Configuration Details

Note the following important points:

- Any SSO provider must define the URI for at least the FORM login with the property `login.url.FORM`. The value need not be a URL.
- If the application supports a self-registration page URI or URL, it must be specified with the property `autologin.url`.
- If the SSO solution supports a global logout URI or URL, it must be specified with the property `logout.url`. The OAM solution supports global logout.
- The following properties, illustrated in Example A–1, are optional:
  - `param.login.successurl`
  - `param.login.cancelurl`
  - `param.autologin.targeturl`
  - `param.login.token`
  - `param.logout.targeturl`
- The use of the variable `app.context` in URI specifications, in values within the property set `props.auth.uri` for instance, is allowed for only ADF applications when integrating with the Access Manager solution.
- The property set `props.auth.level` is required.
- The reference to `props.auth.url` is required.
- The property `sso.provider.class` within a service instance of the SSO provider is the fully qualified name of the class implementing a specific SSO solution.

  In the case of the OAM solution, the provided class name is `oracle.security.wls.oam.providers.sso.OAMSSOServiceProviderImpl`.
- The property name `default.auth.level` within a service instance of the SSO provider must be set to "2", as illustrated in Example A–1.
- The property `token.type` within a service instance of the SSO provider is required.

  This token type identifies the token set on the HTTP request by the SSO provider upon a successful authentication; the SSO provider uses this token, after the first time, to ensure that the user does not need to be reauthenticated and that his sign-on is still valid. In the case of the OAM solution, the token type must be `OAMSSOToken`, as illustrated in Example A–1.
- The property `token.provider.class` within a service instance of the SSO provider is the fully qualified name of the token class, and it is provider-specific.
- An application that implements a self-registration logic and wants to auto login a user after successful self-registration, it must call the OPSS autoLogin API; in turn,

to allow this call, it must grant that application a code source permission named `CredentialMapping` with class `JpsPermission`.

The following fragment of the file `system-jazn-data.xml` illustrates the specification of this permission to the application `MyApp`:

```
<grant>
  <grantee>
    <codesource>
      <url>file:${domain.home}/servers/MyApp/-</url>
    </codesource>
  </grantee>
  <permissions>
    <permission>
      <class>oracle.security.jps.JpsPermission</class>
      <name>CredentialMapping</name>
    </permission>
  </permissions>
</grant>
```

A.3 Configuring Centralized Logout for Oracle ADF-Coded Applications

The Access Manager SSO solution is available for applications that are coded to Oracle ADF standards and the OPSS SSO Framework. ADF-coded applications that are configured to perform logout with Access Manager, redirect to the /oamsso/logout.html resource.

IAMSuiteAgent intercepts and processes the request, cleans up the session, redirects to the central logout page (done by the OAM Server) and redirects back to the end_url.

See Also: Oracle Fusion Middleware Application Security Guide

Note: For ADF applications, only one extra configuration step is needed (to configure the OAMSSOProvider for OPSS).

Task overview: Protecting ADF-coded applications with Access Manager

1. Review "About Centralized Logout Processing for Applications Coded to Oracle ADF Standards".
2. Protect the ADF-coded application using either an:
   - 11g Webgate
   - 10g Webgate
3. Perform the single extra configuration step for ADF-coded applications: configure the OAMSSOProvider as described in "Configuring Centralized Logout for ADF-Coded Applications with Access Manager" on page A-8.
4. Perform logout configuration steps for your chosen Webgate version.

A.3.1 About Centralized Logout Processing for Applications Coded to Oracle ADF Standards

ADF-coded applications refer to either applications that have been fully integrated with ADF or those that simply use ADF Authentication Servlet to integrate with OPSS.

In this case, logout is initiated when an ADF application causes the invocation of the logout URI. The following process overview outlines the Access Manager centralized logout process for applications coded to Oracle ADF standards.

Process overview: Centralized logout for ADF applications with 10g Webgate

1. An ADF application causes the invocation of the following URI.

   `/<application context root>/adfAuthentication?logout=true&end_url=<any uri>`

   The `end_url` parameter specifies the URI to which the application returns control following logout.

2. ADF invokes the configured OPSS SSO provider (OAM in this case) and delegates the logout functionality to the configured logout URI by redirecting the request to the logout URI. The `end_url` value is passed as a query string to the logout URI. For example: `/oamsso/logout.html?end_url=<end_uri>`.

3. The logout URI is invoked on the Webgate front-ending the application.

4. 10g Webgate clears the ObSSOCookie for its domain and loads the logout.html script.

5. If the `end_url` parameter does not include *host:port*, the logout.html script gets the *host:port* of the local server and constructs the `end_url` parameter as a URL. For example:

   ```
   http://serverhost:port/oam/server/logout?end_url=http://my.site.com/
   welcome.html
   ```

6. Logic in logout.html redirect to the OAM Server. For example:

   ```
   http://myoamserverhost:port/oam/server/logout?end_url=http://my.site.com/
   welcome.html
   ```

7. The OAM Server executes logout as follows:

   a. Cleans up the session information associated with the user at the server side.

   b. Validates the `end_url` and sends a page with callback URLs to the user's browser.

   Note: The Logout Callback URL is specified in the expanded (not short) OAM Agent registration, as described in Table 16–3.

   c. From the callback page, a new request is initiated to a specific URI on each Webgate. When this request reaches the specific Webgate in the specific domain, the ObSSOCookie for that domain is cleared.

   d. The user is redirected to the `end_url` in the logout script. However, if the `end_url` parameter is not present, an appropriate message is sent by the OAM Server.

A.3.2 Configuring Centralized Logout for ADF-Coded Applications with Access Manager

The following procedure is similar to configuring logout for 10g Webgates, with specific step for ADF-coded applications. The ADF-coded application must send the `end_url` value to identify where to redirect the user after logout processing. However,

with ADF-coded applications, logout occurs when the application causes the following URI to be invoked:

```
/<app context root>/adfAuthentication?logout=true&end_url=<any uri>
```

> **Note:** The Applcore f/w could facilitate triggering of the above URL and the ADF application could leverage that.

Some steps in this procedure require the WebLogic Scripting Tool (WLST): wlst.sh (Linux) or wlst.cmd (Windows), which you must invoke from the *WLST_install_dir*.

See Also:

- "Using Custom WLST Commands" in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference

To configure centralized logout for ADF-coded applications

1. Check with the Administrator to confirm the location of the logout.html script configured with the agent, which you need in following steps.
2. Configure OPSS for OAM as the SSO provider to update jps-config.xml for the WebLogic administration domain, as follows:
   a. On the computer hosting the Oracle WebLogic Server and the Web application using Oracle ADF security, locate the Oracle JRF WLST script. For example:

      ```
      cd $ORACLE_HOME/oracle_common/common/bin
      ```

   b. Connect to the computer hosting the Oracle WebLogic Server, enter the Administrator ID and password, and the host and port of the WebLogic AdminServer:

      ```
      wls:/> /connect('admin_ID', 'admin_pw', 'hostname:port'
      ```

      For example, the Oracle WebLogic Administration Server host could be `localhost` using port `7001`. However, your environment might be different.

   c. Check with the Administrator to confirm the location of the logout.html script configured with the agent.

      In Step d, you must use the value provided by the Administrator. Here, `logouturi` value is the URI of the logout script /logout.html. The value could either begin with "logout." (exceptions are logout.gif and logout.jpg) or it could be any other value configured by the Administrator.

   d. Enter the loginuri for ADF authentication and the logouturi (location of the logout.html script configured with the agent); the host and port are not needed.

      ```
      wls:/>addOAMSSOProvider(loginuri="/${app.context}/adfAuthentication",
      logouturi="/oamsso/logout.html", autologinuri="/obrar.cgi")
      ```

      Here, loginuri=/${app.context}/adfAuthentication; logouturival is the URI of the logout script /logout.html. The logouturl could either begin with "logout" (exceptions are logout.gif and logout.jpg) or it could be any other value configured by the Administrator.
3. **Required**: The ADF application must pass the end_url parameter indicating where to redirect the user after logout, as follows:

If the `end_url` parameter does not include *host:port*, the logout.html script gets the *host:port* of the local server and constructs the `end_url` parameter as a URL. For example:

```
http://serverhost:port/oam/server/logout?end_url=http://serverhost:port/
welcome.html
```

4. **11g Webgate**: Perform steps in "Configuring Centralized Logout for 11g Webgates" on page 22-4.
5. **10g Webgate**: Perform steps in "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers" on page 25-22.

See Also: "Scenario: Identity Propagation with the Access Manager Token" on page 35-2 for details about setting up providers for Access Manager Identity Assertion.

A.4 Confirming Application-Driven Authentication During Runtime

As mentioned earlier in this chapter, it is the application that triggers authentication and redirects the user to be authenticated by the appropriate solution. For instance, when the application determines that a user is accessing a part of a secured artifact that requires authentication application-driven authentication is triggered, in this case using Access Manager SSO.

To confirm application-driven authentication during run time

1. Create the application based on the Oracle ADF framework.
2. Configure the Access Manager SSO Security provider, as described in "Integrating Access Manager With Web Applications Using Oracle ADF Security and the OPSS SSO Framework" on page A-3.
3. Access the protected field and confirm that the application triggers authentication.

B

Internationalization and Multibyte Data Support for 10g WebGates

The information here might be of interest if you are using 10g WebGates:

- Introduction to Internationalization and Multibyte Data Support

B.1 Introduction to Internationalization and Multibyte Data Support

Access Manager provides multi-lingual applications and software products that can be accessed and run anywhere simultaneously, without modification, while rendering content in the native user's language and locale preferences.

A locale is the linguistic and cultural environment in which a system or program is running; data associated with a locale provides support for formatting and parsing of dates, times, numbers, currencies, and the like based on the linguistic and cultural requirements that corresponds to a given language and country.

Oracle product globalization is a two part process that includes internationalization and localization. *Internationalization* (sometimes shortened to "I18N", meaning "I - eighteen letters -N") requires that software products and applications must be usable on a computer running any supported operating system (in any supported language), with non-US keyboards or other country-specific hardware. Oracle applications do not have hard-coded dependencies on language strings, and inter-operate with non-US versions of other products. Oracle applications can handle multibyte characters and differences in a distributed environment, and also being able to detect the user's desired locale. Access Manager meets these requirements and conforms to Unicode Standard 4.0.

Localization includes translation of separated file text. In Oracle products, information is presented in a manner that is consistent with the user's local cultural conventions, including data formatting, collation, currency, date, time, and directionality of text (right-to-left or left-to-right), as discussed next.

For more information, see:

- Languages For Localized Messages
- Bi-directional Language Support
- UTF-8 Encoding

B.1.1 Languages For Localized Messages

Translatable information can be categorized into two types: end-user information (accessible to all users) and administrative information (for users with Administrator privileges). When you install Oracle Access Manager 10.1.4 without a Language Pack,

English is the default language for Administrators and end users. When you install 10.1.4 with Oracle-provided Language Packs, you can choose the language to be used as the default for Administrative activities. Regardless of the default Administrator language you choose during installation, English is always installed.

> **Note:** Messages added for minor releases (10*g* (10.1.4.2.0) and 10*g* (10.1.4.3) as a result of new functionality might not be translated and can appear in only English.

For end-users, the display of static application data is provided in the End Users languages identified in Table B–1: error messages, and display names for tabs, panels, and properties. Administrative information can be displayed in only the Administrators languages listed in Table B–1. If administrative pages are requested in any other language (by the browser setting), the language that was selected as the default during product installation is used to display the pages.

Table B–1 Languages for Localized Messages

Language Tag for Installation Directory	End User Information	Administrators
en-us	English	English
ar-ar	Arabic	
pt-br	Brazilian Portuguese	Brazilian Portuguese
fr-ca	Canadian French	
cs-cs	Czech	
da-dk	Danish	
nl-nl	Dutch	
fi-fi	Finnish	
fr-fr	French	French
de-de	German	German
el-gr	Greek	
he-il	Hebrew	
hu-hu	Hungarian	
it-it	Italian	Italian
ja-jp	Japanese	Japanese
ko-kr	Korean	Korean
es-mx	Latin American Spanish	
no-no	Norwegian	
pl-pl	Polish	
pt-pt	Portuguese	
ro-ro	Romanian	
ru-ru	Russian	
zh-cn	Simplified Chinese	Simplified Chinese
sk-sk	Slovak	

Table B–1 (Cont.) Languages for Localized Messages

Language Tag for Installation Directory	End User Information	Administrators
es-es	Spanish/Spain	Spanish
sv-sv	Swedish	
th-th	Thai	
zh-tw	Traditional Chinese	Traditional Chinese
tr-tr	Turkish	

B.1.2 Bi-directional Language Support

Most Western languages are written left to right (LTR), from the top of the page to the bottom. East Asian languages are usually written top to bottom, from the right side of the page to the left (RTL)—although exceptions are frequently made for technical books translated from Western languages.

Some languages, such as Hebrew and Arabic, are written and read predominantly from right to left. Numbers reverse direction in Arabic and Hebrew. While the text is written right to left, numbers within the sentence are written left to right with the most significant digit on the left, as in European and other LTR languages.

When LTR languages are mixed in with RTL languages, the complete document or content is considered *bi-directional*. Access Manager can support bi-directional languages. If the browser on the host computer is configured to use any bi-directional language, then Access Manager handles it properly.

Note: No administrative languages require bi-directional support.

To provide support for multiple languages and bi-directional languages, Access Manager 10.1.4 supports the Unicode standard for encoding.

Note: Writing direction does not affect the encoding of a character. Regardless of the writing direction, Oracle stores data in logical order—the order used by someone typing a language—rather than the order in which it is presented on the screen.

B.1.3 UTF-8 Encoding

UTF-8 encoding and support is provided automatically, whether you have a new 10.1.4 installation or upgrade an older installation to Access Manager. You do not need to make any changes to your environment. As with previous releases, data in the directory server is stored with UTF-8 encoding.

Note: All of your directory data is UTF-8 format. Access Manager does not support a mix of data types in the directory.

C

Securing Communication

This appendix provides the information and steps required to ensure that OAM Servers and clients (OAM Agents) can communicate securely across the Access Protocol channel. This chapter provides the following details:

- Prerequisites
- Securing Communication Between OAM Servers and WebGates
- Generating Client Keystores for OAM Tester in Cert Mode
- Configuring Cert Mode Communication for Access Manager
- Configuring Simple Mode Communication with Access Manager

C.1 Prerequisites

If OAM Server mode is Cert mode, agents must use Cert mode. During agent registration, at least one OAM Server instance must be running in the same mode as the agent. After agent registration, you can change the mode of the OAM Server.

See Also:

- "About Communication Between OAM Servers and Webgates" on page 6-4
- Oracle Fusion Middleware Administrator's Guide for details about the SSL automation tool, managing ports for WebLogic Server, Oracle HTTP Server, and Oracle Fusion Middleware

C.2 Securing Communication Between OAM Servers and WebGates

Securing communication between OAM Servers and clients (WebGates) means defining the transport security mode for the NAP (also known as the OAP) channel within the component registration page. The security level for the channel is specified as either:

- Open: Un-encrypted communication

  In Open mode, there is no authentication or encryption between the WebGate and OAM Server. The WebGate does not ask for proof of the OAM Server's identity and the OAM Server accepts connections from all WebGates. Use *Open* mode if communication security is not an issue in your deployment.

- Simple: Encrypted communication through the Secure Sockets Layer (SSL) protocol with a public key certificate issued by Oracle.

Use Simple mode if you have some security concerns, such as not wanting to transmit passwords as plain text, but you do not manage your own Certificate Authority (CA). In this case, OAM Servers and WebGates use the same certificates, issued and signed by Oracle CA. For more information, see "About Simple Mode, Encryption, and Keys" on page C-13.

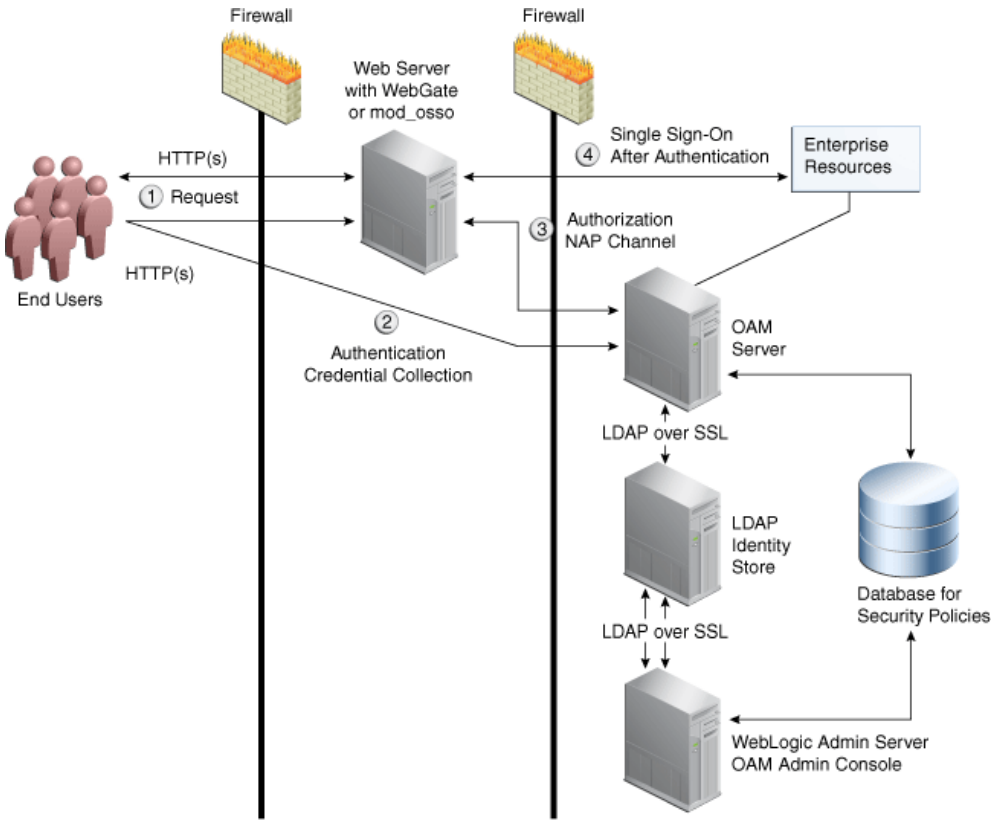
- Cert: Encrypted communication through SSL with a public key certificate issued by a trusted third-party certificate authority (CA).

  Use Cert mode if you want different certificates on OAM Servers and WebGates and you have access to a trusted third-party CA. In this mode, you must encrypt the private key using the DES algorithm. Access Manager components use X.509 digital certificates in PEM format only. PEM refers to Privacy Enhanced Mail, which requires a passphrase. The PEM (Privacy Enhanced Mail) format is preferred for private keys, digital certificates, and trusted certificate authorities (CAs). The preferred keystore format is the JKS (Java KeyStore) format. For more information, see "About Cert Mode Encryption and Files" on page C-6.

  See Also: "About Certificates, Authorities, and Encryption Keys" on page C-3

Figure C–1 illustrates the communication channels used by OAM Servers and WebGates during user authentication and authorization. Logically the request is to the Access Manager credential collector. However, when you have a Web server proxy in front of the WebLogic AdminServer, with a <LocationMatch "/*">, all requests are routed through the proxy. In this case, there is perimeter defense using the proxy.

Figure C–1 Communication Channels for OAM Servers and WebGates



Process overview: Authentication and authorization

1. Request is intercepted by WebGate.
2. Authentication (credential collection) occurs over HTTP(s) channel.
3. Authorization occurs over the NAP channel with OAM Agents only (not mod_osso).

Using the secure-sockets layer (SSL) protocol helps prevent eavesdropping and successful man-in-the-middle attacks across the HTTP (HTTPS) channel. The SSL protocol is included as part of most Web server products and Web browsers. SSL uses the public-and-private key encryption system, which includes the use of a digital certificate. For details about enabling SSL communication for a Web server or directory server, see your vendor's documentation.

The PEM (Privacy Enhanced Mail) format (BASE64-encoded ASCII) is preferred for private keys, digital certificates, and trusted certificate authorities (CAs). The preferred keystore format for OAM Servers is JCEKS and for OAM Clients is JKS (Java KeyStore) format. Access Manager components use X.509 digital certificates in DER (binary form of a certificate) format only.

For more information, see:

- About Certificates, Authorities, and Encryption Keys
- About Security Modes and X509Scheme Authentication
- About the Importcert Tool

C.2.1 About Certificates, Authorities, and Encryption Keys

Depending on the public key infrastructure, the digital certificate establishes credentials for Web-based transactions based on:

- Certificate owner's name
- Certificate serial number
- Certificate expiration date
- A copy of the certificate holder's public key, which is used to encrypt messages and digital signatures
- The digital signature of the certificate-issuing authority is provided so that a recipient can verify that the certificate is real

Digital certificates can be stored in a registry from which authenticating users can look up the public keys of other users.

In cryptography, a public key is a value provided by a designated authority to be used as an encryption key. The system for using public keys is called a public key infrastructure (PKI). As part of a public key infrastructure, a certificate authority checks with a registration authority (RA) to verify information provided by the requestor of a digital certificate. When the RA verifies the requestor's information, the CA can issue a certificate.

Private keys can be derived from a public key. Combining public and private keys is known as asymmetric cryptography, which can be used to effectively encrypt messages and digital signatures.

See Also:

- "About Cert Mode Encryption and Files" on page C-6
- "About Simple Mode, Encryption, and Keys" on page C-13

C.2.2 About Security Modes and X509Scheme Authentication

Administrators must ensure that the OAM Server is reachable only over the transport specified in the OAM Server configuration. OAM Server configuration defines the end points for the Server and accounts for the deployment of load balancers or reverse proxies. When the OAM Server is reachable over both HTTP and HTTPS, all requests (over either transport) are accepted.

To allow the user to interact with the OAM Server (and logout) over SSL with non-X509 authentication schemes, the specified Server Port must not be configured to require CLIENT CERTS.

With the X509 authentication scheme (X509Scheme), the OAM Server SSL Port must differ from the Server Port, and must be configured to require Client Certificates. When X509Scheme is used, the X509 module is called after credential collection. X509Scheme requires the X509 challenge method and the X509 authentication module. The fully-qualified URL to the credential collector must be specified as the Challenge URL within X509Scheme. For example: `https://managed_server_host:managed_server_ssl_port/oam/CredCollectServlet/X509`

Note: If a relative Challenge URL is specified with X509Scheme, the OAM Server uses the specified Server *Host/Port* to construct the fully-qualified URL of the X509 Credential Collector. However, this configuration will not work.

See Also: "Managing SSO Tokens and IP Validation" on page 14-5

C.2.3 About the Importcert Tool

Administrators use the Oracle-provided `importcert` tool for several different procedures related to keystores, keys, and certificates. Table C–1 provides the syntax for `importcert` commands.

Table C–1 importcert Command Syntax

Option	Description

keystore	Follow this command with the path to an existing (or new) keystore. For example:
	`/scratch/.oamkeystore`
	or
	`/scratch/clientKey.jks`

privatekeyfile	Follow this option with the path to your private key. For example: `/scratch/aaa_key.der`
signedcertfile	Follow this option with the path to your signed certificate. For example: `/scratch/aaa_cert.der`

Table C–1 (Cont.) importcert Command Syntax

Option	Description
alias	Follow this option with your keystore entry alias. Required with genkeystore.: `alias`

storetype	Follow this option with your keystore type. By default, the store type is JCEKS (OAM Server keystore). For example:
	Server keystore .oamkeystore, of type:
	`JCEKS`
	Client keystore/scratch/clientTrustStore.jks and /scratch/clientKey.jks can be used. Both are type:
	`JKS`

genkeystore	This flag is required for generating OAM client certificates. The client does not expose the alias and alias password parameters. However, importcert tool sets the keystore password as the alias password. Specify: `Yes or No` Yes imports the certificates in a new keystore. No imports certificates into an existing keystore.
Sample for OAM Server	`- java -cp importcert.jar oracle.security.am.common.tools.importcerts.CertificateImport -keystore <path to .oamkeystore> -privatekeyfile <path to aaa_key.der> -signedcertfile <path to aaa_cert.der> -alias oam.certmode -aliaspassword <password> -storetype <JCEKS> genkeystore <yes>` Enter the keystore password and alias password when prompted.
Sample for OAM Client See Also "Generating Client Keystores for OAM Tester in Cert Mode"	`- java -cp importcert.jar oracle.security.am.common.tools.importcerts.CertificateImport -keystore <path to clientkey.JKS> -privatekeyfile <path to aaa_key.der> -signedcertfile <path to aaa_cert.der> -storetype <JKS> genkeystore <yes>` Enter the keystore password when prompted.

C.3 Generating Client Keystores for OAM Tester in Cert Mode

This section is required to generate JKS keystores to be used with OAM Tester in Cert mode only. Otherwise, you can skip this section.

This section describes how to use importcert commands to generate client keystores for OAM Tester in Cert mode to contain the imported trusted certificate chain.

See Also: "About the Importcert Tool" on page C-4

To generate client keystores for OAM Tester in Cert mode

1. Use ImportCert tool to create JKS keystores (file name specified by -privatekeyfile and -signedcertfile). For example:

```
- java -cp importcert.jar
oracle.security.am.common.tools.importcerts.CertificateImport -keystore
<Keystore path> -privatekeyfile <Private key file> -signedcertfile  <Signed
```

```
certificate file> path -storetype <JKS> genkeystore <yes>
```

Enter the keystore password when prompted.

2. Proceed as needed for your environment:
   - Configuring Cert Mode Communication for Access Manager
   - Configuring Simple Mode Communication with Access Manager
3. **Remove a Keystore**: Use the following command to remove the JKS keystore. For example:

```
keytool -delete -alias <alias> -keystore  <path to clientkey.JKS> -storetype
<JKS>
```

Enter the keystore password when prompted.

C.4 Configuring Cert Mode Communication for Access Manager

This section describes how to configure Cert mode communication for Access Manager. The following tasks apply to Cert mode only.

> **Note:** In Simple mode, the bundled Access Manager-CA-signed certificates are used and most of the following tasks are not needed.

Prerequisites

During agent registration, at least one OAM Server instance must be running in the same mode as the agent. Otherwise, registration fails. After agent registration, however, you could change the communication mode of the OAM Server.

Task overview: Adding certificates for the OAM Server includes

1. Reviewing:
   - Securing Communication Between OAM Servers and WebGates
   - About Cert Mode Encryption and Files
2. Generating a Certificate Request and Private Key for OAM Server
3. Retrieving the OAM Keystore Alias and Password
4. Importing the Trusted, Signed Certificate Chain Into the Keystore
5. Adding Certificate Details to Access Manager Settings
6. Generating a Private Key and Certificate Request for WebGates
7. Updating WebGate to Use Certificates

C.4.1 About Cert Mode Encryption and Files

The certificate request for WebGate generates the request file aaa_req.pem, which you must send to a root CA that is trusted by the OAM Sever. The root CA returns the certificates, which can then be installed either during or after 10g WebGate installation (for 11g WebGate these must be copied to the WebGate instance area manually after WebGate installation and configuration).

- aaa_key.pem (reserved name for WebGate key file, which cannot be changed)

- aaa_cert.pem (reserved name for WebGate certificate file, which cannot be changed)
- aaa_chain.pem (reserved name for CA Cert for WebGate side)

During component installation in Cert mode, you are asked to present a certificate obtained from an external CA. If you do not yet have a certificate you can request one. Until you receive the certificate, you can configure the WebGate in Simple mode. However, you cannot complete OAM deployment until the certificates are issued and installed.

If you choose Cert mode when registering WebGate as an OAM Agent, a field appears where you can enter the Agent Key Password. When editing an 11g WebGate registration, password.xml is updated only when the mode is changed from Open to Cert or Simple to Cert. In cert mode, once generated, password.xml cannot be updated. Editing the agent Key Password does not result in creation of a new password.xml.

You must create a Cert request and send that to the CA. When the certificate is returned you must import it to the OAM Server (or copy it to the WebGate).

C.4.2 Generating a Certificate Request and Private Key for OAM Server

Use the following procedure to retrieve the private key, certificate, and CA certificate for the OAM Server.

> **Note:** The certified tool to maintain consistency between 10g and 11g registration, is openSSL. Oracle recommends that you use openSSL rather than other tools to generate certificates and keys in PEM format.

To retrieve the private key and certificates for OAM Server

1. Generate both the certificate request (aaa_req.pem) and Private Key (aaa_key.pem) as follows:

```
-OpenSSL req -new -keyout aaa_key.pem -out aaa_req.pem -utf8
 -nodes -config openssl_silent_ohs11g.cnf
```

2. Submit the certificate request (aaa_req.pem) to a trusted CA.
3. Download the CA Certificate in base64 as aaa_chain.pem.
4. Download the Certificate in both base64 and DER format as aaa_cert.pem and aaa_cert.der.
5. Encrypt the private key (aaa_key.pem) using a password as follows:

```
openssl rsa -in aaa_key.pem -passin pass: -out aaa_key.pem -passout pass:
******** -des
```

6. Proceed to "Retrieving the OAM Keystore Alias and Password".

C.4.3 Retrieving the OAM Keystore Alias and Password

Users with valid Administrator credentials can perform the following task to retrieve the alias of the certificate in the specified keystore to be used for authentication, and the password that is required to import a certificate.

To retrieve the OAM Keystore password

1. Confirm the Oracle Access Management Console is running.
2. On the computer hosting the Oracle Access Management Console, locate the WebLogic Scripting Tool in the OAM Installation path to use when retrieving the keystore password. For example:

   $ORACLE_IDM_HOME/common/bin/

   Here, $ORACLE_IDM_HOME is the base installation directory; /common/bin is the path in which the scripting tool is located.
3. Start the WebLogic Scripting Tool:

   ```
   ./ wlst.sh
   ```

4. In the WLST shell, enter the command to connect and then enter the requested information. For example:

   ```
   wls:/offline> connect()
   Please enter your username [weblogic] :
   Please enter your password [welcome1] :
   Please enter your server URL [t3://localhost:7001] :
   wls:/base_domain/serverConfig>
   ```

5. Enter the following command to change the location to the read-only domainRuntime tree (For help, use help(domainRuntime)). For example:

   ```
   wls:/OAM_AC> domainRuntime()
   ```

6. Enter the following command to list the credentials for the OAM keystore. For example:

   ```
   wls:/OAM_AC/domainruntime> listCred(map="OAM_STORE",key="jks")
   ```

   Here, OAM_STORE represents the name of the Keystore used by Access Manager.
7. Pay close attention to the password of the OAM Keystore that is displayed because this is required to import the certificates.
8. Proceed to "Importing the Trusted, Signed Certificate Chain Into the Keystore".

C.4.4 Importing the Trusted, Signed Certificate Chain Into the Keystore

The Oracle-provided importcert tool is used to import existing private key, signed certificate (public key) files into the specified keystore format: JKS (client keystore format) or JCEKS (OAM Server keystore format; .oamkeystore for instance.).

The keystores associated with Access Manager accepts only PKCS8 DER format certificates:

- If you have PEM format certificates signed by your certificate authority (CA), the following procedure describes how to convert and then import these using the `importcert` shipped with Access Manager.
- If PEM format certificates are not available, create a certificate request and have it signed by your CA before beginning the following procedure.

Following are the steps for using the JDK version 6 keytool. If you have a different version of keytool, refer the documentation for your JDK version.

Note: When you use the keytool utility, the default key pair generation algorithm is Digital Signature Algorithm (DSA). However, Oracle Access Management and WebLogic Server do not support DSA and you must specify another key pair generation and signature algorithm.

Prerequisites

Retrieving the OAM Keystore Alias and Password

To import the trusted certificate chain into the keystore

1. Locate the keytool in the following path:

   ```
   $MW_HOME/jdk160_18/bin/keytool
   ```

2. Unzip importcert.zip and locate the Readme file in the following location:

   ```
   $ORACLE_IDM_HOME/oam/server/tools/importcert/README
   ```

3. **aaa_chain.pem**: Using a text editor, modify the aaa_chain.pem file to remove all data except that which is contained within the CERTIFICATE blocks, then save the file.

   ```
   ----BEGIN CERTIFICATE-----
       ...
       CERTIFICATE
       ...
    -----END CERTIFICATE-----
   ```

4. Import the trusted certificate chain using the following command with details for your environment. For example:

   ```
   keytool -importcert -file aaa_chain.pem -trustcacerts -storepass <password>
   -keystore $ORACLE_HOME\user_projects\domains\$DOMAIN\config\fmwconfig\
   .oamkeystore -storetype JCEKS
   ```

5. When prompted to trust this certificate, type **yes**.

6. **aaa_cert.pem**:

   a. Edit aaa_certn.pem using TextPad to remove all data except that which is contained within the CERTIFICATE blocks, and save the file in a new location to retain the original. For example:

      ```
      ----BEGIN CERTIFICATE-----
          ...
          CERTIFICATE
          ...
       -----END CERTIFICATE-----
      ```

   b. Enter the following command to convert the signed certificate (aaa_cert.pem) to DER format using openSSL or any other tool. For example:

      ```
      openssl x509 -in aaa_cert.pem -inform PEM -out aaa_cert.der -outform DER
      ```

7. **aaa_key.pem**:

   a. Edit aaa_key.pem to remove all data except that which is contained within the CERTIFICATE blocks, and save the file in a new location to retain the original. For example:

```
----BEGIN CERTIFICATE-----
    ...
    CERTIFICATE
    ...
 -----END CERTIFICATE-----
```

b. Enter the following command to convert the private key (aaa_key.pem) to DER format using openSSL or any other tool. For example:

```
openssl pkcs8 -topk8 -nocrypt -in aaa_key.pem -inform PEM -out aaa_key.der
-outform DER
```

8. Import signed DER format certificates into the keystore. For example:

a. Import aaa_key.der using the following command line arguments and details for your environment. For example:

c:\Middleware\idm_home\oam\server\tools\importcert

```
- java -cp importcert.jar
oracle.security.am.common.tools.importcerts.CertificateImport
-keystore <> -privatekeyfile <path> -signedcertfile  <path>
-alias [ -storetype <> genkeystore <> -help]
```

Note: Enter the key store password and alias password when prompted. On a Windows system, use a semicolon (;) instead of a colon (:) in the command line.

---

9. Proceed to "Adding Certificate Details to Access Manager Settings".

C.4.5 Adding Certificate Details to Access Manager Settings

After importing the certificates into the keystore, you must add the alias and password that you specified earlier into Access Manager settings configuration in Oracle Access Management Console, as described here.

Note: No explicit configuration is needed for Simple mode, which is provided out of the box.

Prerequisites

Importing the Trusted, Signed Certificate Chain Into the Keystore

See Also:

- "Managing the Access Protocol for OAM Proxy Simple and Cert Mode Security" on page 14-6

To add certificate details to Access Manager Settings

1. From the Oracle Access Management Console, click the System Configuration tab.
2. From the System Configuration tab, Access Manager section, open the Access Manager Settings page.
3. Expand the **Access Protocol** section of the page, if needed.
4. Fill in the alias and alias password details acquired in the previous procedure. For example:

Cert Mode Configuration

PEM keystore Alias: *my_keystore_alias*

PEM keystore Alias Password: *my_keystore_alias_pw*

5. Click Apply to save the configuration.
6. Close the page.
7. Open the OAM Server registration page, click the Proxy tab, change the Proxy mode to Cert, and click Apply.
8. Restart the OAM Server.
9. Proceed to "Generating a Private Key and Certificate Request for WebGates".

C.4.6 Generating a Private Key and Certificate Request for WebGates

Use the following procedure to retrieve the private key, certificate, and CA certificate for the WebGate.

Note: The certified tool to maintain consistency between 10g and 11g registration, is openSSL. Oracle recommends that you use openSSL rather than other tools to generate certificates and keys in PEM format.

To retrieve the private key and certificates for WebGates

1. Generate both the certificate request (aaa_req.pem) and Private Key (aaa_key.pem) as follows:

```
openssl req -new -keyout aaa_key.pem -out aaa_req.pem -utf8 -nodes
```

2. Submit the certificate request (aaa_req.pem) to a trusted CA.
3. Download the CA Certificate in base64 as aaa_chain.pem.
4. Download the Certificate in base64 format as aaa_cert.pem.
5. Encrypt the private key (aaa_key.pem) using a password as follows:

```
openssl rsa -in aaa_key.pem -passin pass: -out aaa_key.pem -passout pass:
******** -des
```

6. Proceed to "Updating WebGate to Use Certificates".

C.4.7 Updating WebGate to Use Certificates

For all communication modes (Open, Simple, or Cert), the Agent registration should be updated from the Oracle Access Management Console:

- Registering an Agent: If you choose Cert mode when registering an OAM Agent, a field appears where you can enter the Agent Key Password.
- Editing/Updating an Agent: When editing an 11g WebGate registration, password.xml is updated only when the mode is changed from Open to Cert or Simple to Cert.

  Editing the agent Key Password does not result in creation of a new password.xml. In Cert mode, once generated, password.xml cannot be updated.

Prerequisites

Adding Certificate Details to Access Manager Settings

To update the communication mode in the WebGate Agent registration

1. From the System Configuration tab, Access Manager section, expand the SSO Agents node, and expand OAM Agents.
2. On the Search page, define your criteria and open the desired agent registration, as described in "Searching for an OAM Agent Registration" on page 16-20.
3. On the agent's registration page, locate the Security options and click Cert (or Simple).
4. Cert Mode: Enter the Agent key Password as specified in Step 5 of "Generating a Private Key and Certificate Request for WebGates".
5. Click Apply to submit the changes.
6. Copy your updated WebGate files as follows:

   11g WebGate:

   ObAccessClient.xml
   cwallet.sso (11g WebGate only)
   password.xml

   - **From**: $IDM_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $OHS_INSTANCE_HOME/config/OHS/ohs2/webgate/config

   10g WebGate: ObAccessClient.xml

   - **From**: $WLS_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $*WebGate_install_dir*/oblix/lib

   10g WebGate: password.xml

   - **From**: $WLS_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $*WebGate_install_dir*/oblix/config

7. Copy the following files that were created when "Generating a Certificate Request and Private Key for OAM Server":

   11g WebGate:

   - From:

     aaa_key.pem: *WebGate11g_home*/webgate/ohs/tools/openssl
     aaa_cert.pem: The location where this was saved after receiving from CA
     aaa_chain.pem: The location where this was saved after receiving from CA

   - To: OHS_INSTANCE_HOME/config/OHS/ohs2/webgate/config

   10g WebGate:

   - From:

     aaa_key.pem: The location where the private key file was generated
     aaa_cert.pem: The location where this was saved after receiving from CA
     aaa_chain.pem: The location where this was saved after receiving from CA

   - To: $*WebGate_install_dir*/oblix/config

8. Restart the OAM Server and the Oracle HTTP Server instance.

C.5 Configuring Simple Mode Communication with Access Manager

The transport security communication mode is chosen during OAM installation. In Simple mode, the installer generates a random global passphrase initially, which can be edited as required later.

> **Note:** Communication between the agent and server works when the WebGate mode matches (or is higher) than the OAM Server mode.

When you register an OAM Agent or a new OAM Server, you can specify the Security mode. However, changing the global passphrase requires that you reconfigure all agents to use the mode and the new global passphrase.

> **Note:** During agent registration, at least one OAM Server instance must be running in the same mode as the agent. Otherwise, registration fails. After agent registration, however, you could change the communication mode of the OAM Server.

The agent mode can be higher but not lower. The highest level of security is Cert mode, the lowest is Open mode:

Cert mode Simple mode Open mode

This section provides the information you need to configure Simple mode communication.

Task overview: Configuring Simple mode communication includes

1. Reviewing:
   - "About Simple Mode, Encryption, and Keys"
   - "About the Importcert Tool"
2. Retrieving the Global Passphrase for Simple Mode
3. Updating WebGate Registration for Simple Mode
4. Verifying Simple Mode Configuration

C.5.1 About Simple Mode, Encryption, and Keys

For Simple mode encryption, Access Manager includes a certificate authority with its own private key, which is installed across all WebGates and OAM Servers. During installation, the OAM Server generates and saves the private-public keypair for the server. Similarly, for the OAM agent, an Oracle certificate authority is installed with the agent installation.

The installer generates a random global passphrase initially, which can be edited or viewed as needed. When an agent is registered in SIMPLE mode, the following client certificates are generated to be consumed by clients:

- aaa_key.pem: Contains private key
- aaa_cert.pem: Signed certificate
- password.xml: Contains the random global passphrase in obfuscated format

Note: Changing the global passphrase requires reconfiguring all agents that are already configured in Simple mode.

C.5.2 Retrieving the Global Passphrase for Simple Mode

Access Manager generates a random global passphrase for Simple mode communication during installation. The following procedure describes how to retrieve this password.

To retrieve the random global passphrase for Simple mode communication

1. Ensure that the Oracle Access Management Console is running.
2. On the computer hosting the Oracle Access Management Console, locate the WebLogic Scripting Tool in the following path. For example:

   ```
   $ORACLE_IDM_HOME/common/bin
   ```

   Where $ORACLE_IDM_HOME represents the base installation directory path; /common/bin is the path wherein the scripting tool is located.
3. Start the WebLogic scripting tool. For example, on a Unix system:

   ```
   ./ wlst.sh
   ```

4. In the WLST shell, enter the command to connect and then enter the requested information. For example:

   ```
   wls:/offline> connect()
   Please enter your username [weblogic] :
   Please enter your password [weblogic] :
   Please enter your server URL [t3://localhost:7001] :
   wls:/base_domain/serverConfig>
   ```

5. Enter the following command to change the location to the read-only domainRuntime tree (for help, use help(domainRuntime)). For example:

   ```
   wls:/OAM_AC>domainRuntime()
   ```

6. View the global passphrase by entering the following command. For example:

   ```
   wls:/OAM_AC> displaySimpleModeGlobalPassphrase()
   ```

7. Proceed to "Updating WebGate Registration for Simple Mode".

C.5.3 Updating WebGate Registration for Simple Mode

Artifacts generated for Simple Security mode use the Global Pass phrase and any change must be propagated to WebGates.

To update an existing WebGate registration for Simple mode, you can delete the WebGate registration using the Oracle Access Management Console, then re-register it (specifying Simple mode and disabling the automatic generation of policies). Alternatively, you can edit the WebGate registration and then copy the artifacts as described here.

See Also:

- "Viewing or Editing an OAM Agent Registration Page in the Console" on page 16-22

To update the WebGate registration for Simple mode

1. From the System Configuration tab, Access Manager section, expand the SSO Agents node, then expand OAM Agents.
2. On the Search page, define your criteria and open the desired agent registration, as described in "Searching for an OAM Agent Registration" on page 16-20.
3. In the registration page, locate the Security options and click **Simple**.
4. Click **Apply** to submit the changes.
5. Copy the updated WebGate files as follows:

   11g WebGate:

   ObAccessClient.xml
   cwallet.sso (11g WebGate only)
   password.xml

   - **From**: $WLS_DOMAIN_HOME/output/*AGENT_NAME* (the WebLogic domain home where the OAM AdminServer is installed)
   - **To**: $OHS_INSTANCE_HOME/config/OHS/ohs2/webgate/config

   10g WebGate: ObAccessClient.xml

   - **From**: $WLS_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $*WebGate_install_dir*/oblix/lib

   10g WebGate: password.xml

   - **From**: $WLS_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $*WebGate_install_dir*/oblix/config
6. Copy the following files, as directed for your WebGate release:

   aaa_key.pem
   aaa_cert.pem

   11g WebGate:

   - **From**: $IDM_DOMAIN_HOME/output/*AGENT_NAME*
   - **To**: $OHS_INSTANCE_HOME/config/OHS/ohs2/webgate/webgate/config/simple

   10g WebGate:

   - From: $IDM_DOMAIN_HOME/output/*AGENT_NAME*
   - To: $*WebGate_install_dir*/oblix/config/simple
7. Restart the OAM Server and the Oracle HTTP Server instance.

C.5.4 Verifying Simple Mode Configuration

You must restart the Web server to instantiate the change to Simple mode. Then you can validate the results

To validate Simple mode changes

1. From a command-line window, restart the Web server. For example:

```
d:\middleware\ohs_home\instances\ohs_webgate11g\bin
opmnctl stopall
```

```
opmnctl startall
```

2. In a browser window, enter the URL to a resource protected by the WebGate using Simple mode.
3. Enter your login credentials, when asked.
4. Confirm that the resource is served.

D

Reviewing Bundled, Generated, and Migrated Artifacts

This appendix provides a look at sample artifacts that are either bundled with Access Manager, or generated during agent registration. This appendix includes the following sections:

- Bundled 10g IAMSuiteAgent Artifacts
- Generated Artifacts: OpenSSO
- Migrated Artifacts: OpenSSO

D.1 Bundled 10g IAMSuiteAgent Artifacts

This section provides the following topics:

- Pre-Registered 10g IAMSuiteAgent
- IAMSuiteAgent Security Provider Settings, WebLogic Administration Console
- IAMSuiteAgent Registration
- Resources Protected by IAMSuiteAgent
- Pre-seeded IAM Suite Application Domain and Policies

D.1.1 Pre-Registered 10g IAMSuiteAgent

This 10g OAM Agent, and the companion Application Domain, described in Chapter 20, are available with 11.1.1.5. Oracle strongly recommends that you do not alter these definitions.

> **Note:** The original IDMDomainAgent is not available with this patch set. It remains as an artifact after you apply the patch set. However, all content is removed.

The IAMSuiteAgent provides single sign-on functionality for the IDM Administration Console. The IAMSuiteAgent is installed and pre-configured as part of the OAM Server installation and configuration.

The IAMSuiteAgent is a domain-wide agent:

- Once deployed, the IAMSuiteAgent is installed on every server in the domain
- Unless disabled, every request coming into the WebLogic Application Server is evaluated and processed by the IAMSuiteAgent

- Configuration details are located under the 10g Webgates node (Policy Configuration tab) in the Oracle Access Management Console

Certain IAMSuiteAgent configuration elements are available in the WebLogic Administration Console (in the Security Provider section) and others in the Oracle Access Management Console.

D.1.2 IAMSuiteAgent Security Provider Settings, WebLogic Administration Console

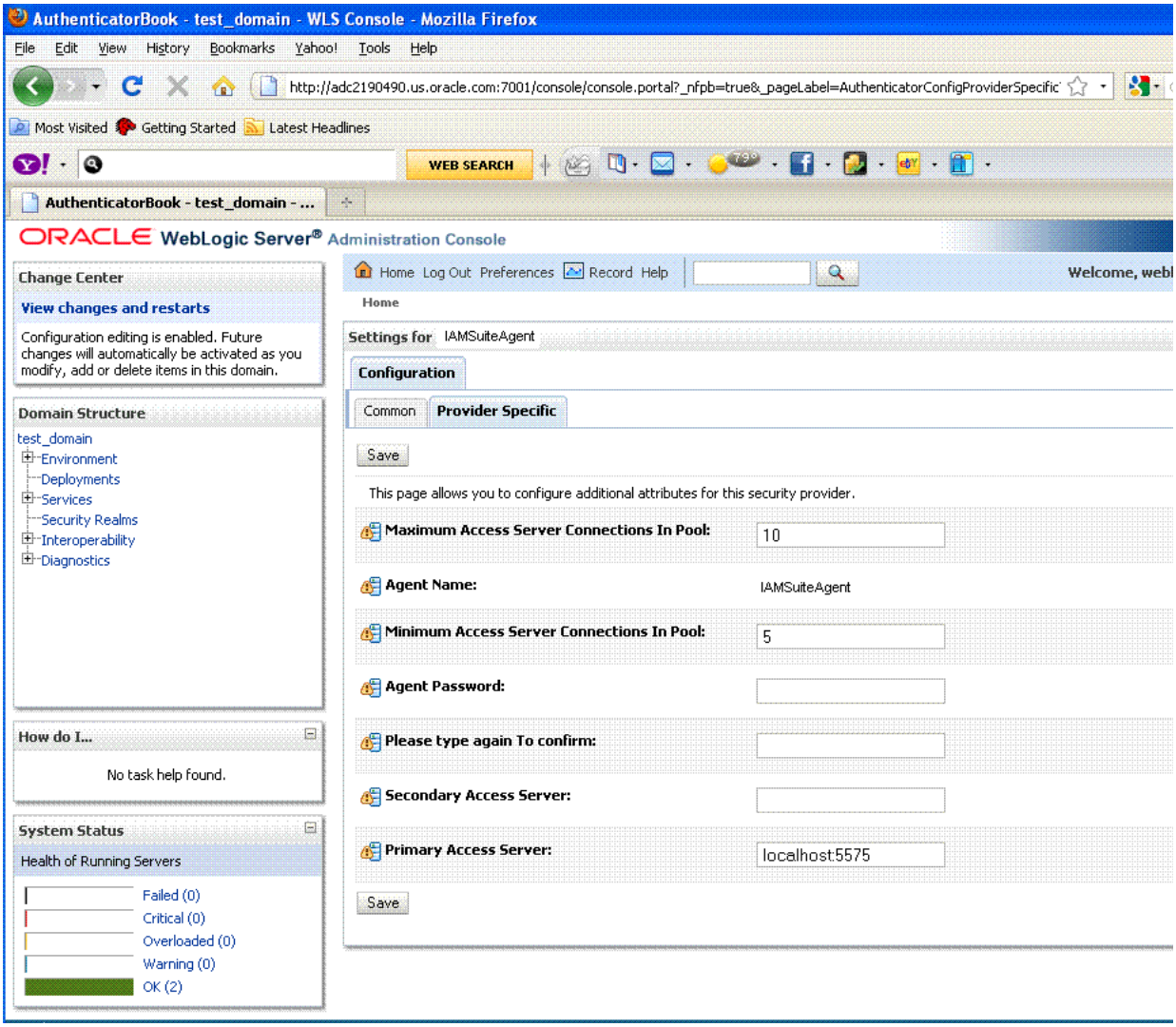
In the Security Provider section of the WebLogic Administration Console are five bootstrap configuration parameters.

While Oracle recommends that you retain these without making changes, there are circumstances where you might need to change one of the following parameters:

- Primary Access Server: You can replace this value with information for your actual OAM Server. The default value (localhost:5575) can be replaced with information for your actual OAM Server if more than one host is part of the IDM Domain. The IAM Suite Agent and companion Application Domain (IAMSuite) replaces the 11.1.1.3.0 IDM Domain Agent and its companion Application Domain.
- Agent Password: By default there is no password. However, you can add one here if you want to establish a password for the IAMSuiteAgent connection to the OAM Server through the NetPoint (now Oracle) Access Protocol (NAP or OAP).

Figure D–1 illustrates the default Security Provider settings for the IAMSuiteAgent.

Figure D–1 IAMSuiteAgent Settings in the WebLogic Administration Console



D.1.3 IAMSuiteAgent Registration

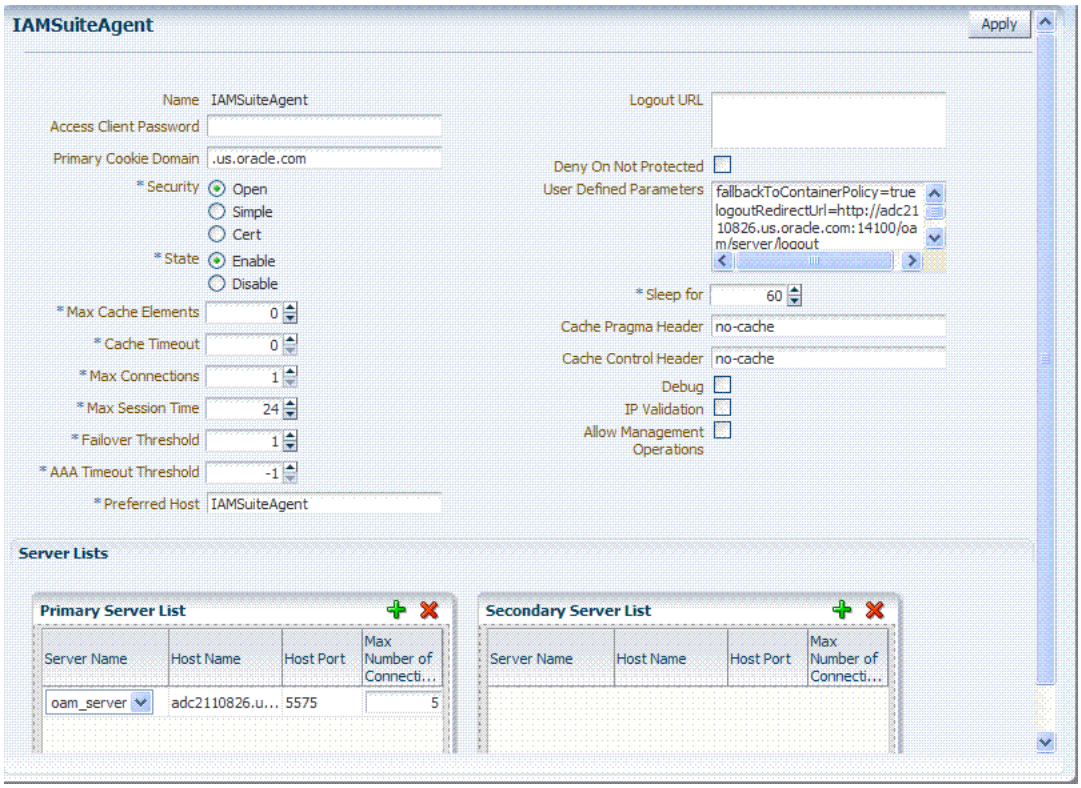
The IAMSuiteAgent registration page provides details about the agent, like all other OAM agent registration pages.

- Security Mode: Open is the only security mode available for the IAMSuiteAgent. This cannot be changed.
- Preferred Host: IAMSuiteAgent is the pre-configured host required by this agent

> **Note:** The Access Client Password here must match the Agent Password in the WebLogic Administration Console. If you changed the Agent Password, you must also change the Access Client Password.

Figure D–2 shows the IAMSuiteAgent page. Notice the User Defined Parameter, which informs behavior to fall back to the container policy in the WebLogic Server and provides a redirect URL for logout.

Figure D–2 IAMSuiteAgent Registration



You can replace this agent with a 10g Webgate, as described in Chapter 25, "Registering and Managing 10g WebGates with Access Manager 11g".

Table D–1 outlines the differences between IAMSuiteAgent and 11g and 10g Webgates.

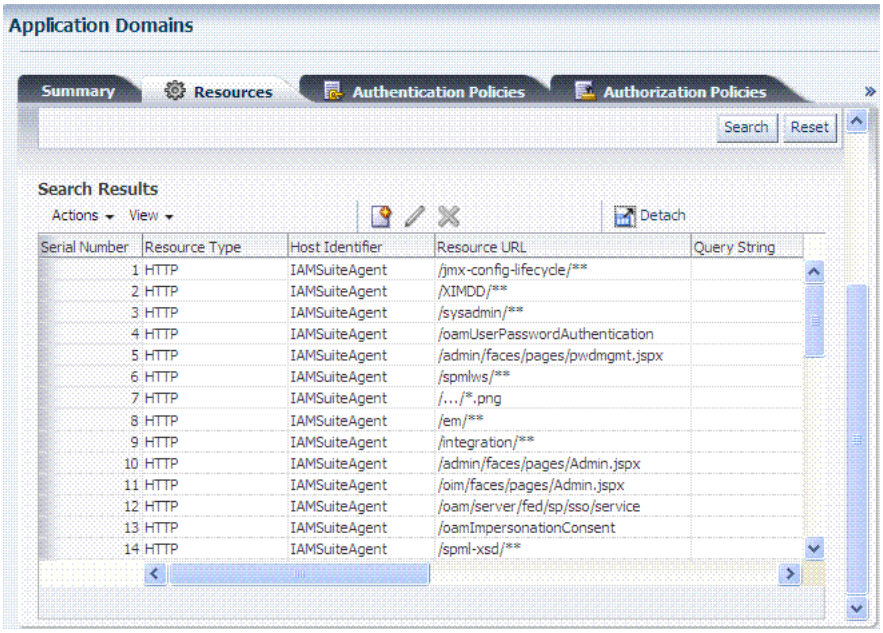
Table D–1 Comparing IAMSuiteAgent with 11g and 10g Webgates

Element	11g Webgate	10g Webgate	IAMSuiteAgent
Primary Cookie Domain	N/A	x	x
Token Validity Period	x	N/A	N/A
Preferred Host	x	x	x
Logout URL	x	x	x
Logout Callback URL	x	N/A	N/A
Logout Redirect URL	x	N/A	N/A
Logout Target URL	x	N/A	N/A
Cache Pragma Header	x	x	x
Cache Control Header	x	x	x
User Defined Parameters	`proxySSLHeaderVar=IS_SSL URLInUTF8Format=true client_request_retry_ attempts=1 inactiveReconfigPeriod=10`	`proxySSLHeaderVar=IS_SSL URLInUTF8Format=true client_request_retry_ attempts=1 inactiveReconfigPeriod=10`	`fallbackToContainerPolicy =true logoutRedirectUrl=http:// hostname.domain.com:14100 /oam/server/logout protectWebXmlSecuredPages Only=true`
Deny on Not Protected	x	x	x

D.1.4 Resources Protected by IAMSuiteAgent

Figure D–3 illustrates the resources protected by the IAMSuiteAgent, including the exact Authentication and Authorization policies. Oracle recommends that you do not make any additions or changes. The WebLogic Administration Console (/console) is protected.

Figure D–3 Resources Protected by the IAMSuiteAgent



D.1.5 Pre-seeded IAM Suite Application Domain and Policies

The following figures present Authentication Policies in the IAM Suite Application Domain:

- Figure D–4, "IAMSuite Authentication Policy: OAM Admin Console Policy"
- Figure D–5, "Protected HigherLevel Policy: Authentication, LDAP Scheme"
- Figure D–6, "Protected LowerLevel Policy: Authentication, OIMScheme"
- Figure D–7, "Public Policy: Authentication, AnonymousSheme"

Figure D–4 IAMSuite Authentication Policy: OAM Admin Console Policy

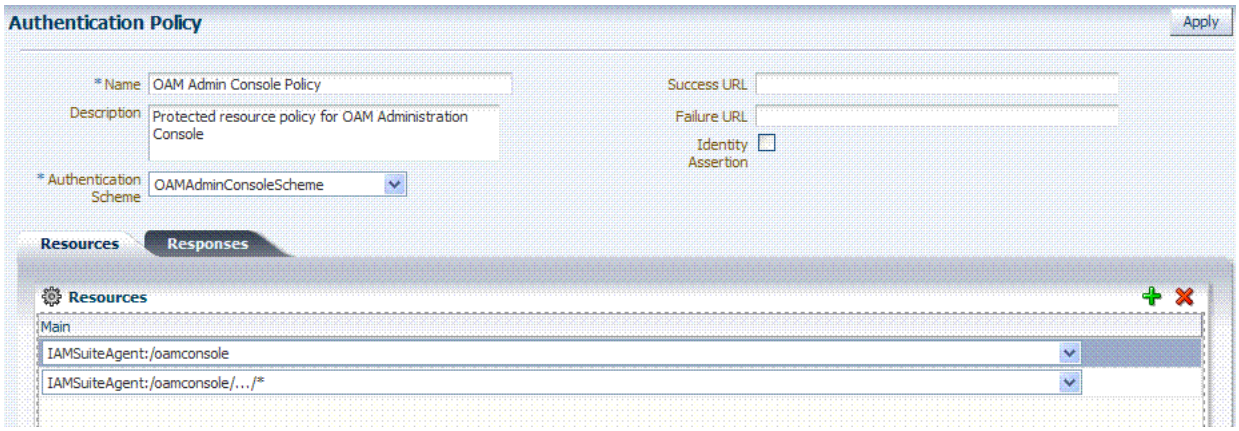


Figure D–5 Protected HigherLevel Policy: Authentication, LDAP Scheme

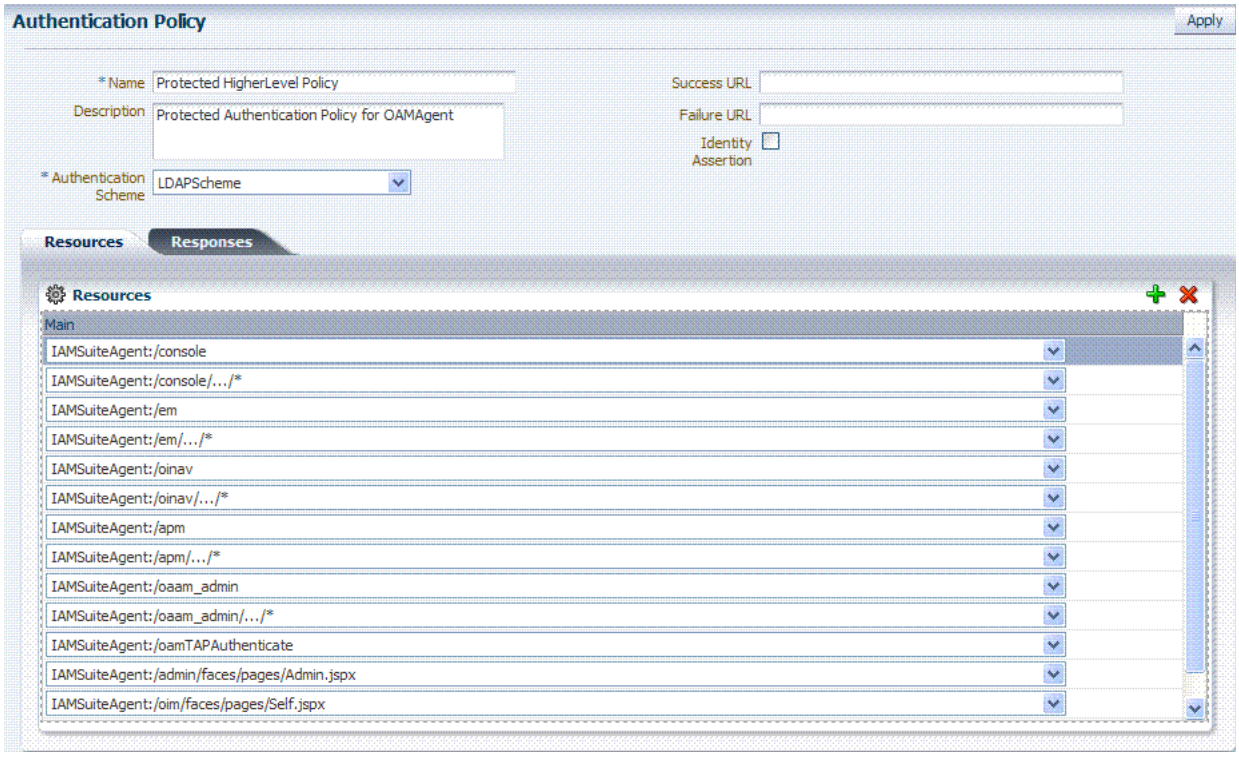


Figure D–6 Protected LowerLevel Policy: Authentication, OIMScheme

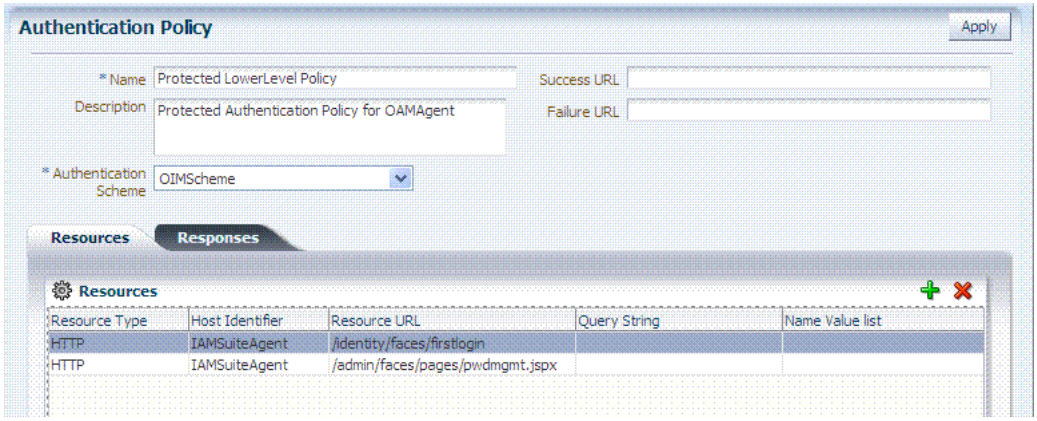
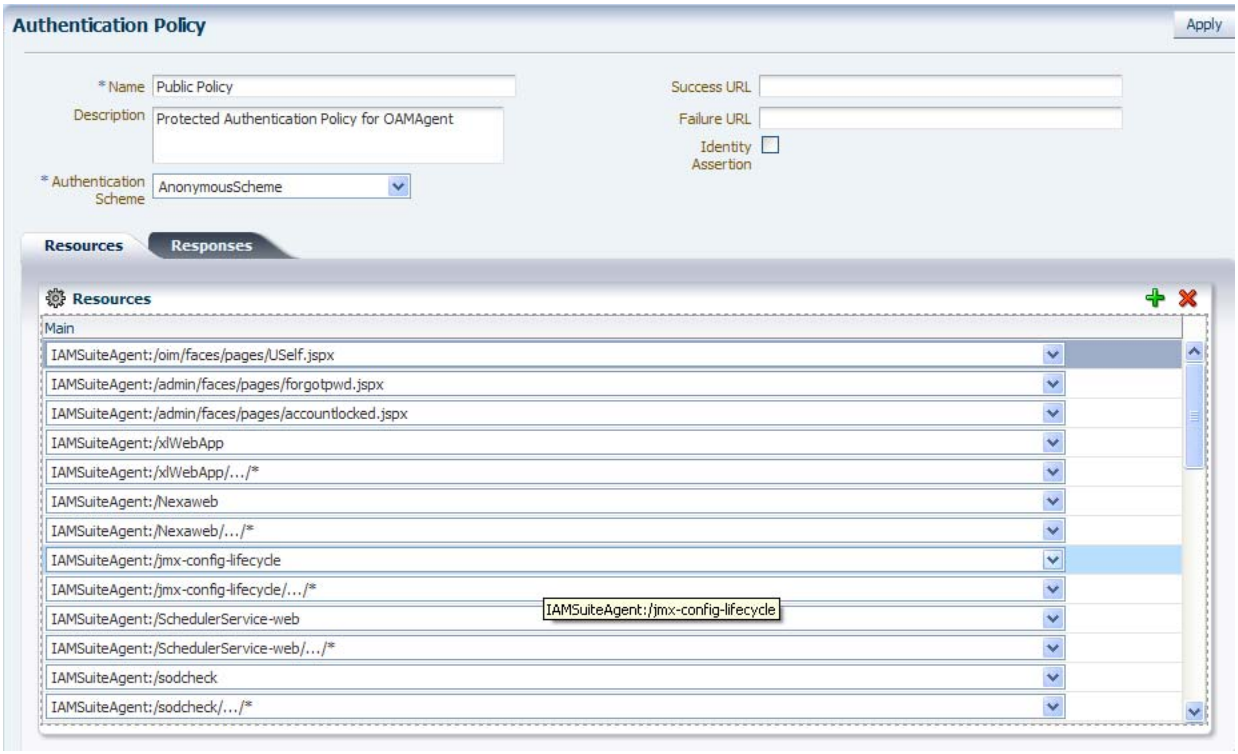


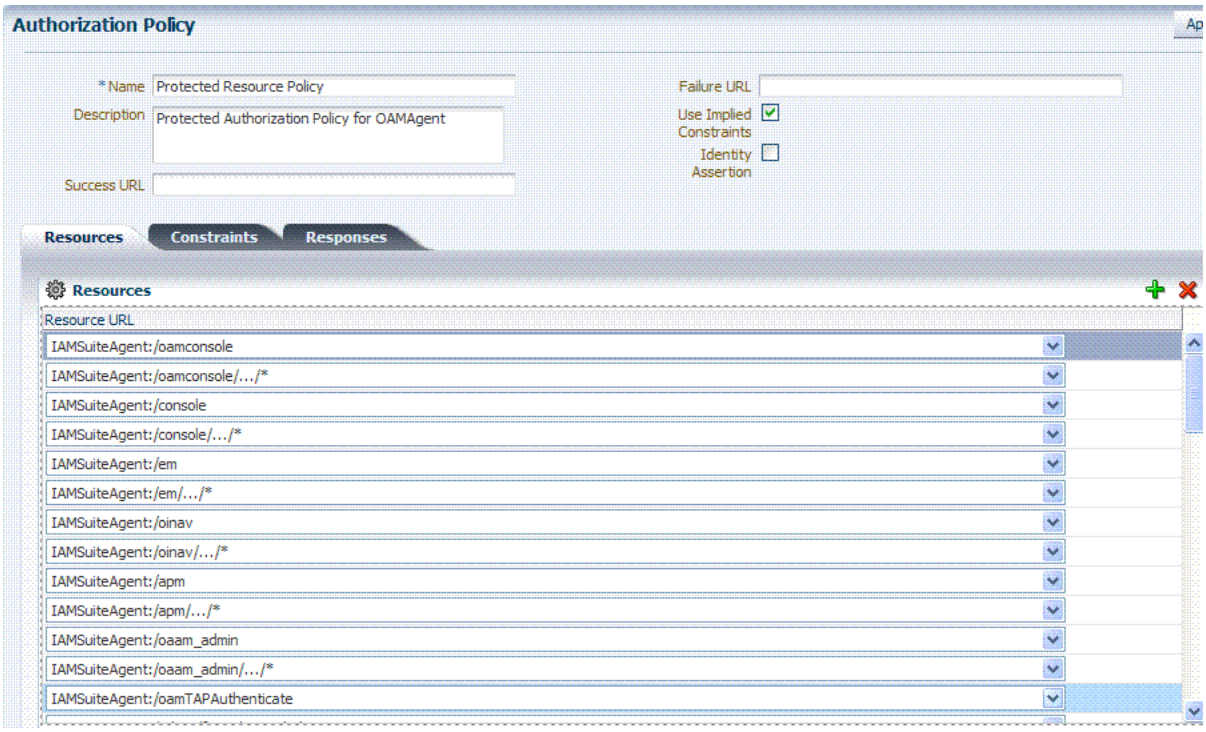
Figure D–7 Public Policy: Authentication, AnonymousSheme



IAM Suite Authorization Policy

Figure D–8 presents Authorization Policy in the IAM Suite Application Domain. By default, no explicit conditions or responses are defined. However, you can add any that are appropriate for your environment.

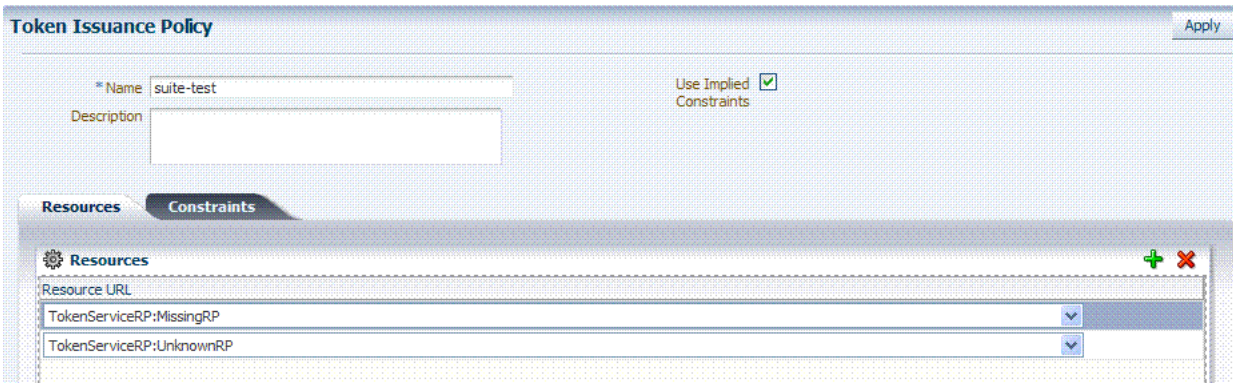
Figure D–8 IAM Suite Authorization Policy



IAM Suite Token Issuance Policy

Figure D–9 presents IAM Suite Token Issuance Policy in the IAM Suite Application Domain. By default, there are no explicit conditions defined. However, you can define any that are needed in your environment.

Figure D–9 IAM Suite Token Issuance Policy and Resource URLs



D.2 Generated Artifacts: OpenSSO

This section shows the custom authentication module, host identifier, Application Domain, and policies generated during OpenSSO Agent provisioning.

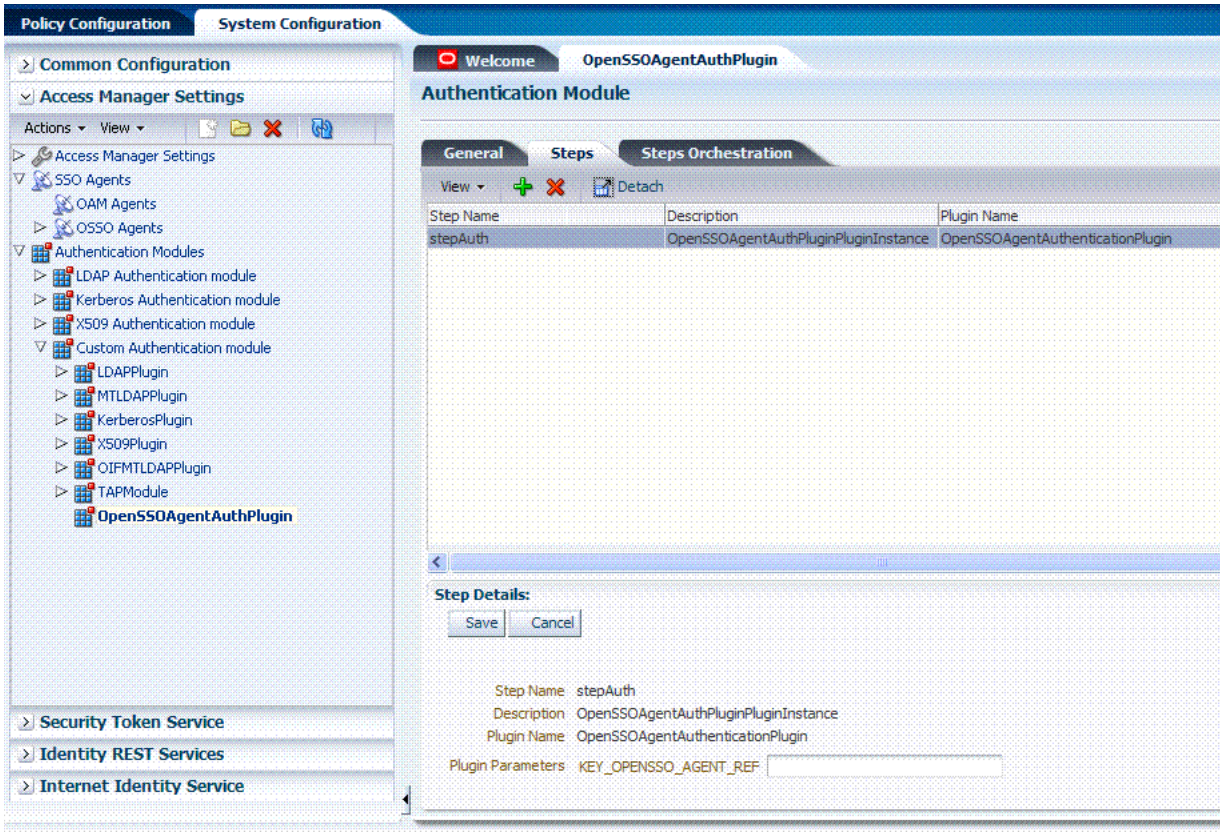
- Generated OpenSSOAgentAuthPlugin
- Generated Host Identifier: OpenSSOAgent

- Generated Application Domain: OpenSSOAgent
- Generated Resources: OpenSSOAgent
- Generated Authentication Policy: OpenSSOAgent Application Domain
- Generated Authorization Policy: OpenSSOAgent Application Domain

D.2.1 Generated OpenSSOAgentAuthPlugin

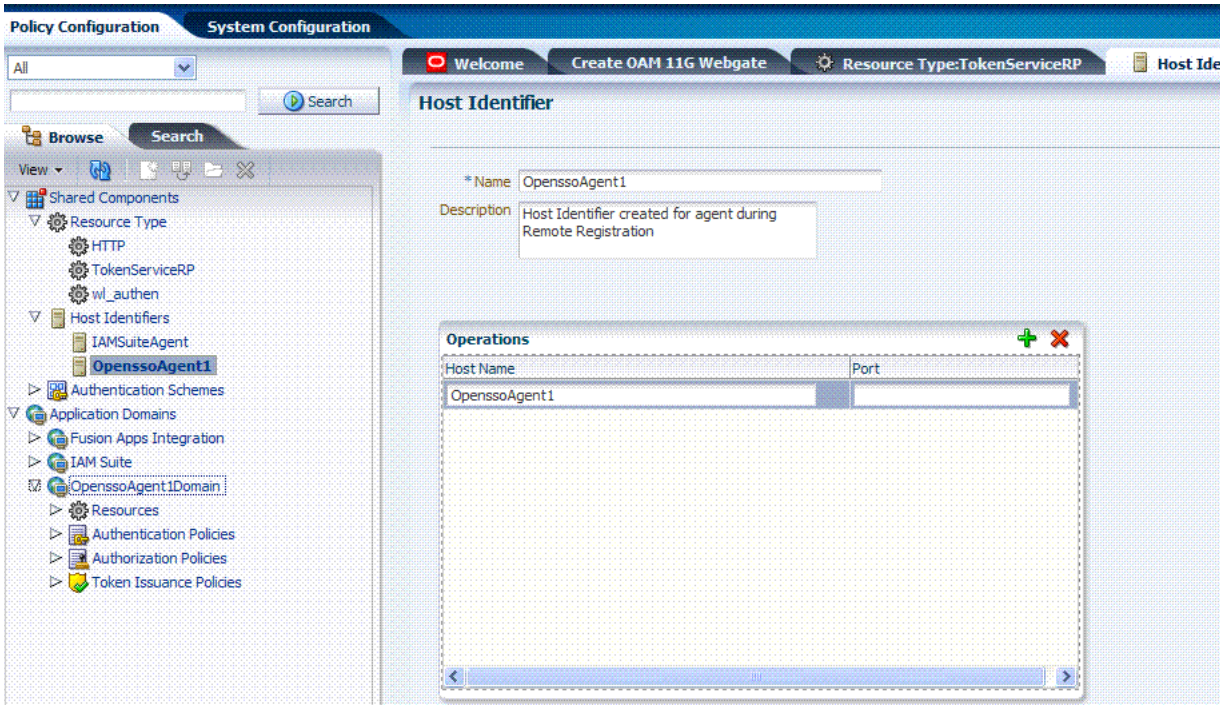
Figure D–10 shows the OpenSSOAgent Custom Authentication Module: OpenSSOAgentAuthPlugin.

Figure D–10 Generated Authentication Module: OpenSSOAgentAuthPlugin



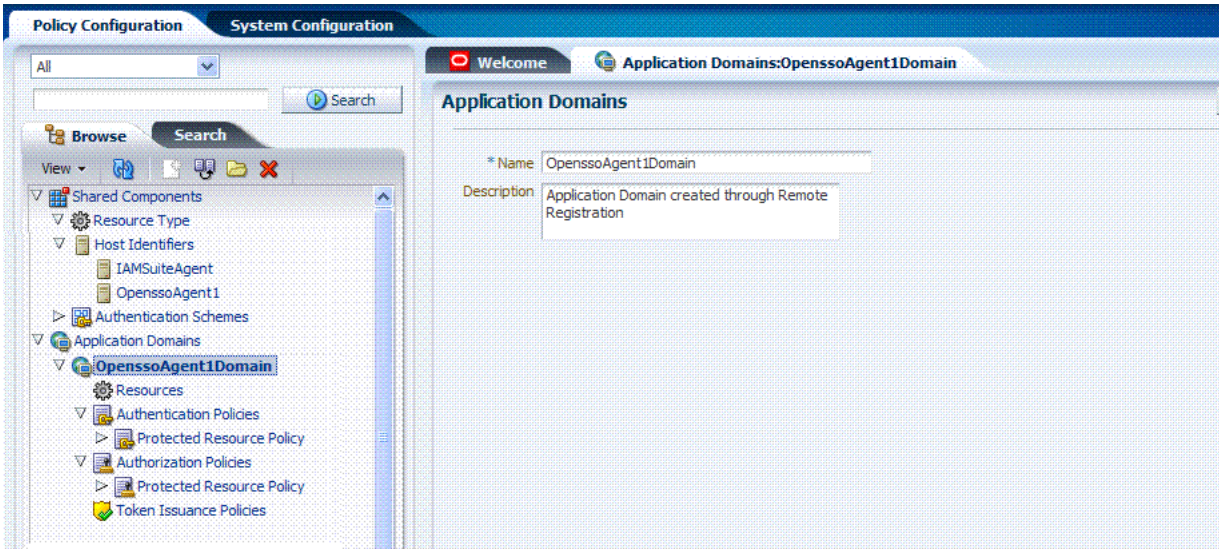
D.2.2 Generated Host Identifier: OpenSSOAgent

Figure D–11 Generated Host Identifier: OpenSSOAgent



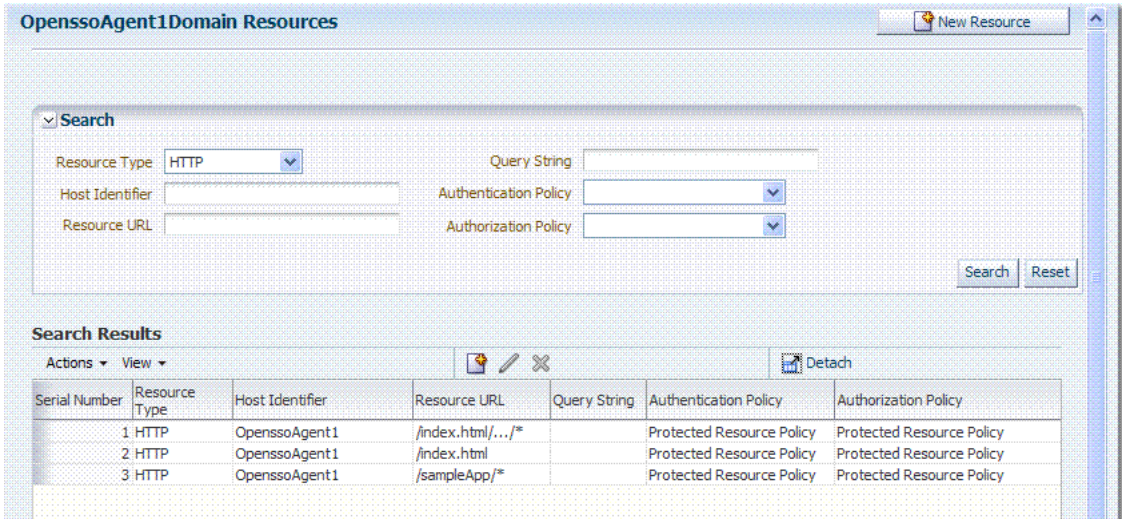
D.2.3 Generated Application Domain: OpenSSOAgent

Figure D–12 Generated Application Domain: OpenSSOAgent



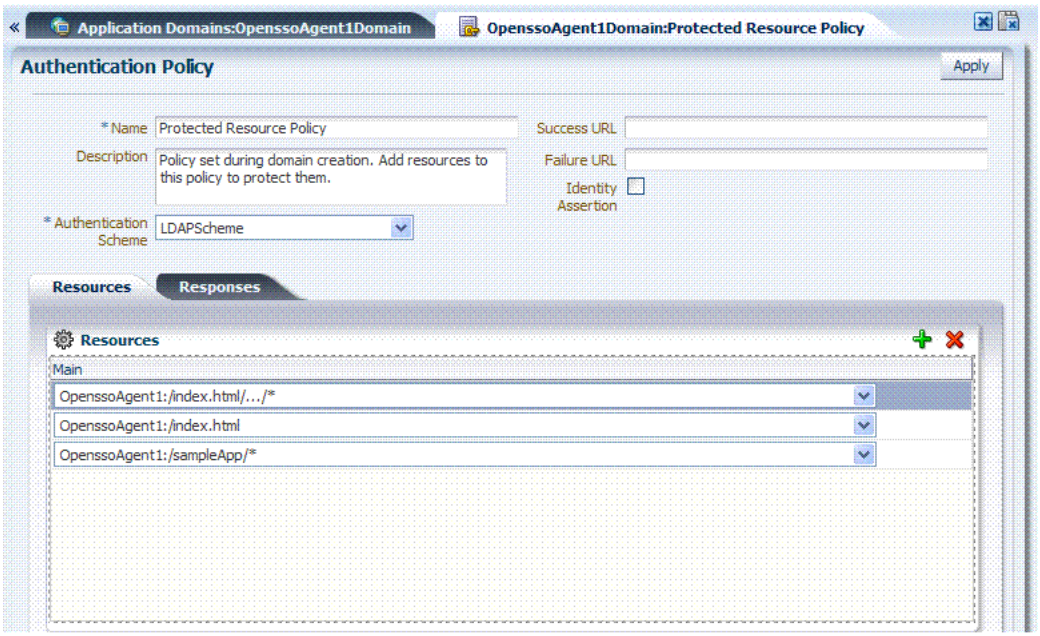
D.2.4 Generated Resources: OpenSSOAgent

Figure D–13 Application Domain Resources: OpenSSOAgent



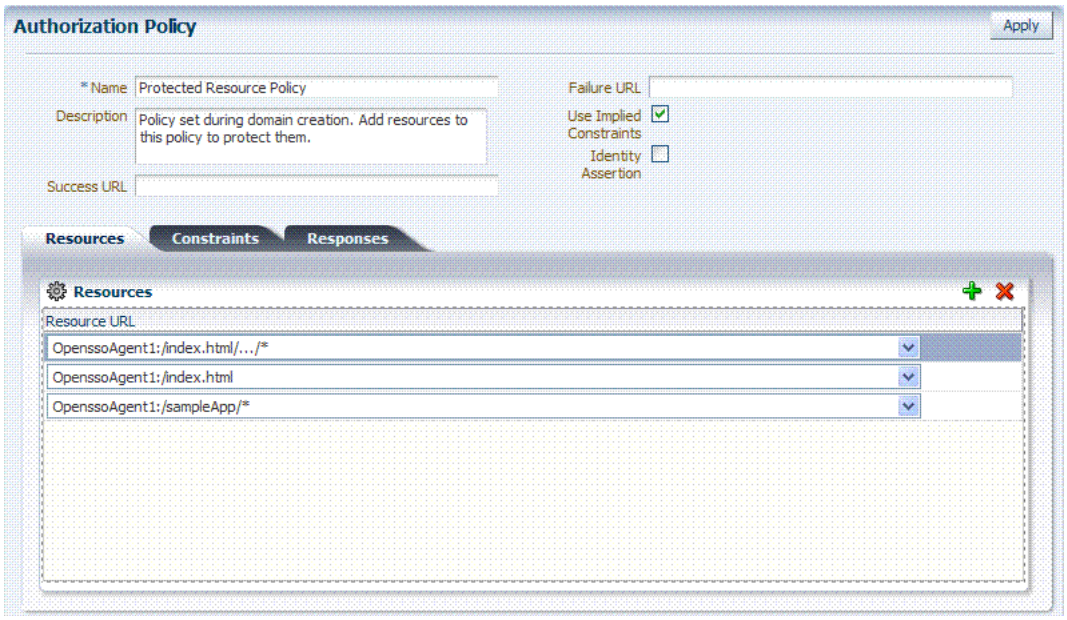
D.2.5 Generated Authentication Policy: OpenSSOAgent Application Domain

Figure D–14 Generated Authentication Policy: OpenSSOAgent Application Domain



D.2.6 Generated Authorization Policy: OpenSSOAgent Application Domain

Figure D–15 Generated Authorization Policy: OpenSSOAgent Application Domain



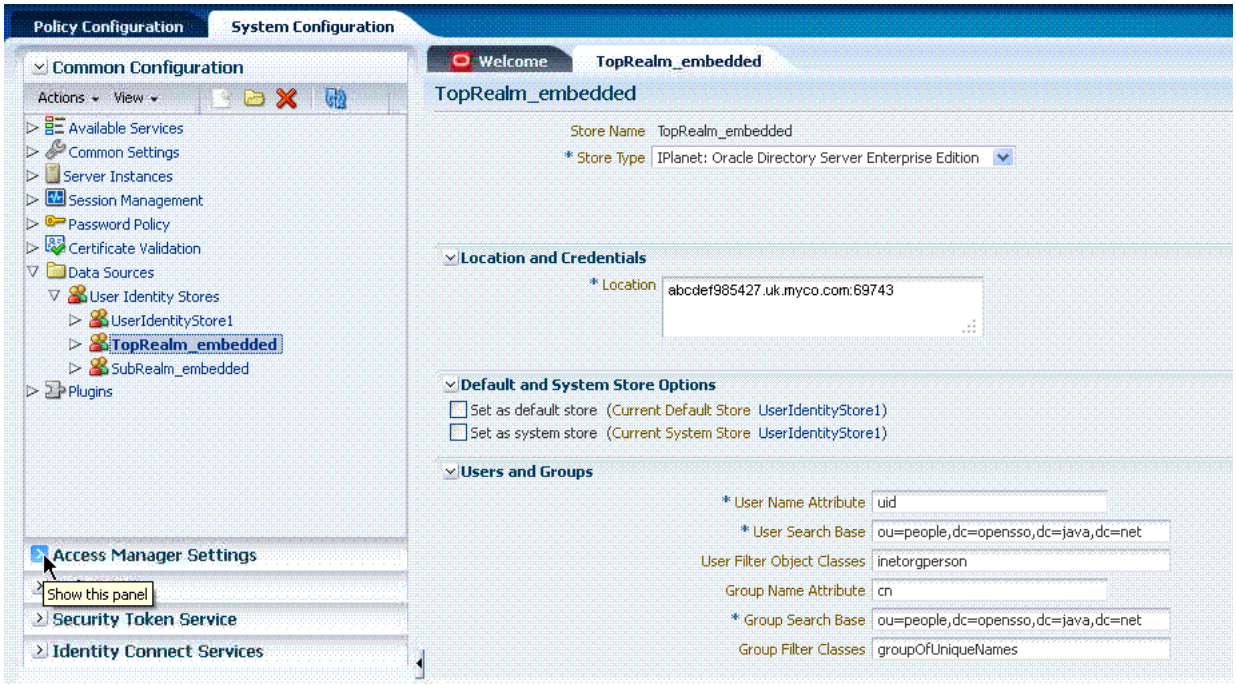
D.3 Migrated Artifacts: OpenSSO

This section shows the artifacts that are migrated when you use Oracle-provided tools to analyze and migrate an OpenSSO environment to Oracle Access Management Console.

- Migrated User Identity Store: OpenSSO
- Migrated Agents: OpenSSO
- Migrated Authentication Module: OpenSSO
- Migrated Host Identifier: OpenSSO
- Migrated Application Domain: OpenSSO
- Migrated Resources: OpenSSO
- Migrated Authentication Policy: OpenSSO
- Migrated Authorization Policy: OpenSSO

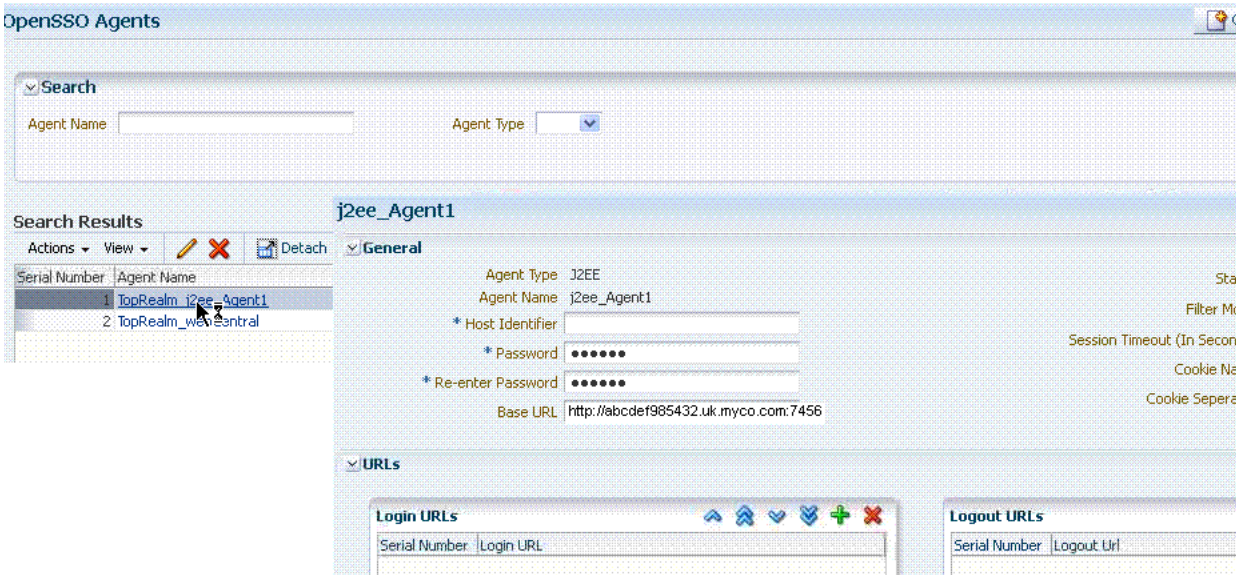
D.3.1 Migrated User Identity Store: OpenSSO

Figure D–16 Migrated User Identity Store: OpenSSO



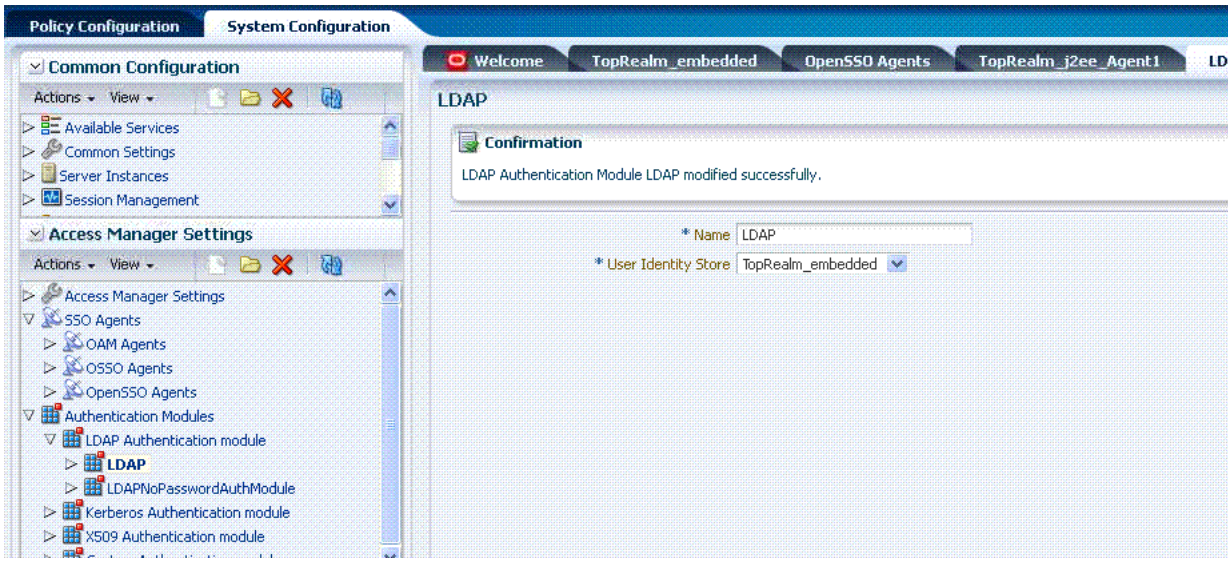
D.3.2 Migrated Agents: OpenSSO

Figure D–17 Migrated Agent: OpenSSO



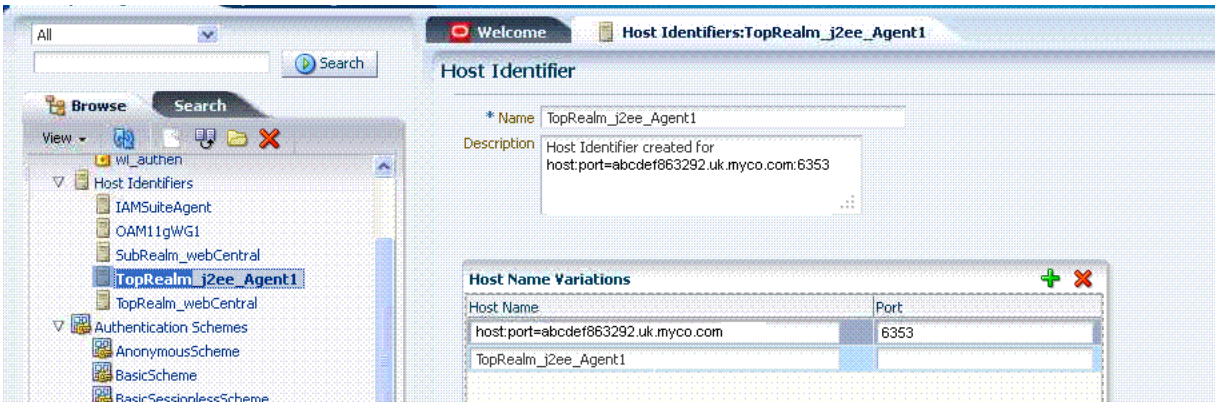
D.3.3 Migrated Authentication Module: OpenSSO

Figure D–18 Migrated Authentication Module: OpenSSO



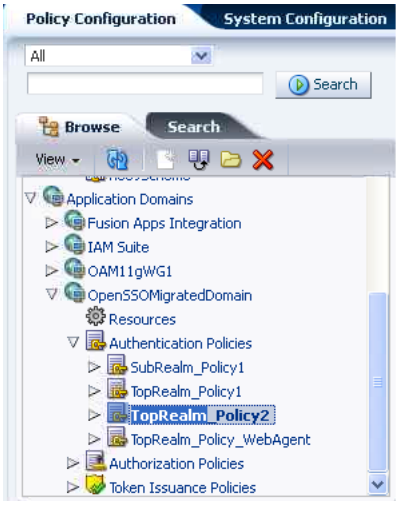
D.3.4 Migrated Host Identifier: OpenSSO

Figure D–19 Migrated Host Identifier: OpenSSO



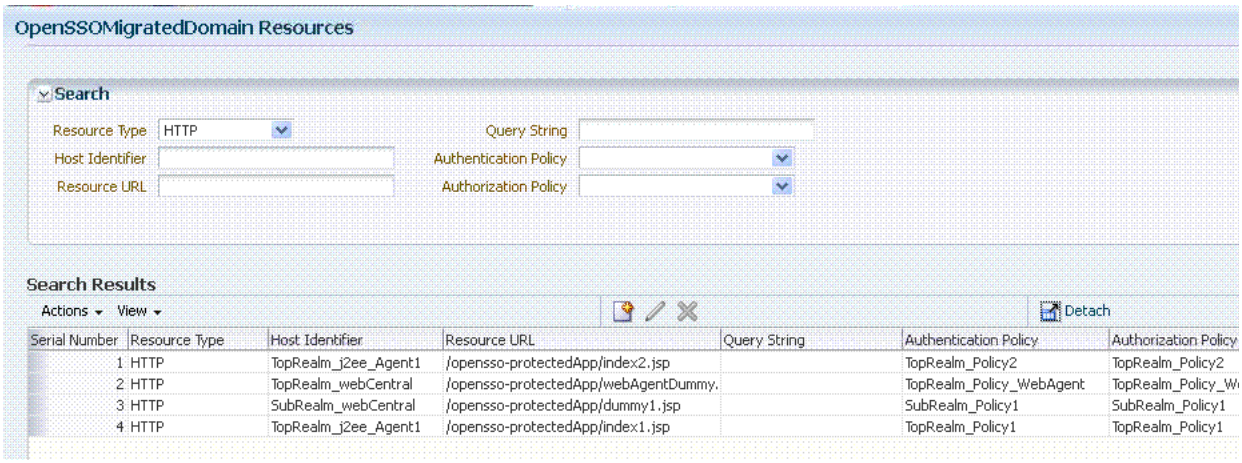
D.3.5 Migrated Application Domain: OpenSSO

Figure D–20 Migrated Application Domain: OpenSSO



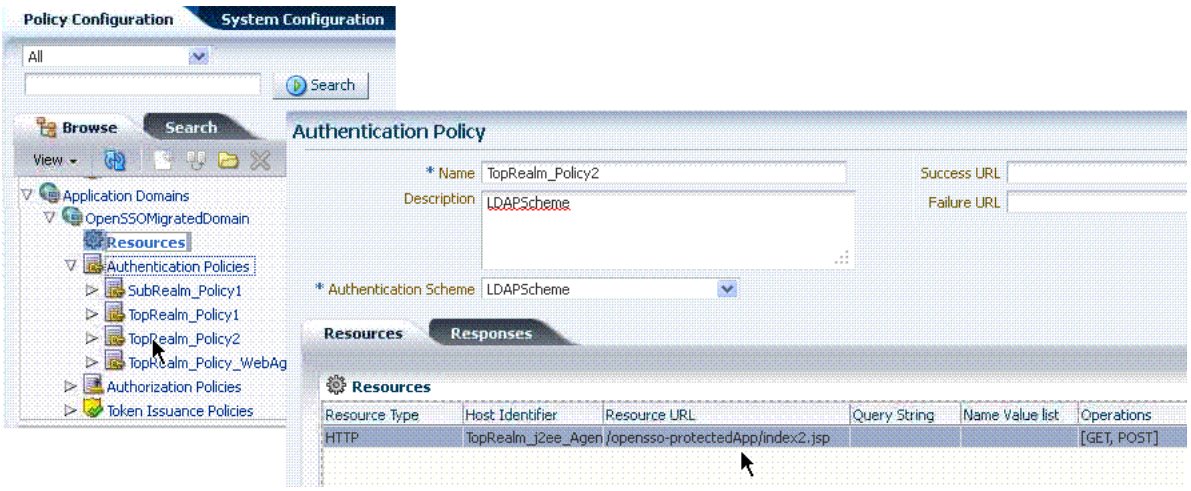
D.3.6 Migrated Resources: OpenSSO

Figure D–21 Migrated Resources: OpenSSO



D.3.7 Migrated Authentication Policy: OpenSSO

Figure D–22 Migrated Authentication Policy: OpenSSO



D.3.8 Migrated Authorization Policy: OpenSSO

Figure D–23 Migrated Authorization Policy2 Condition: OpenSSO

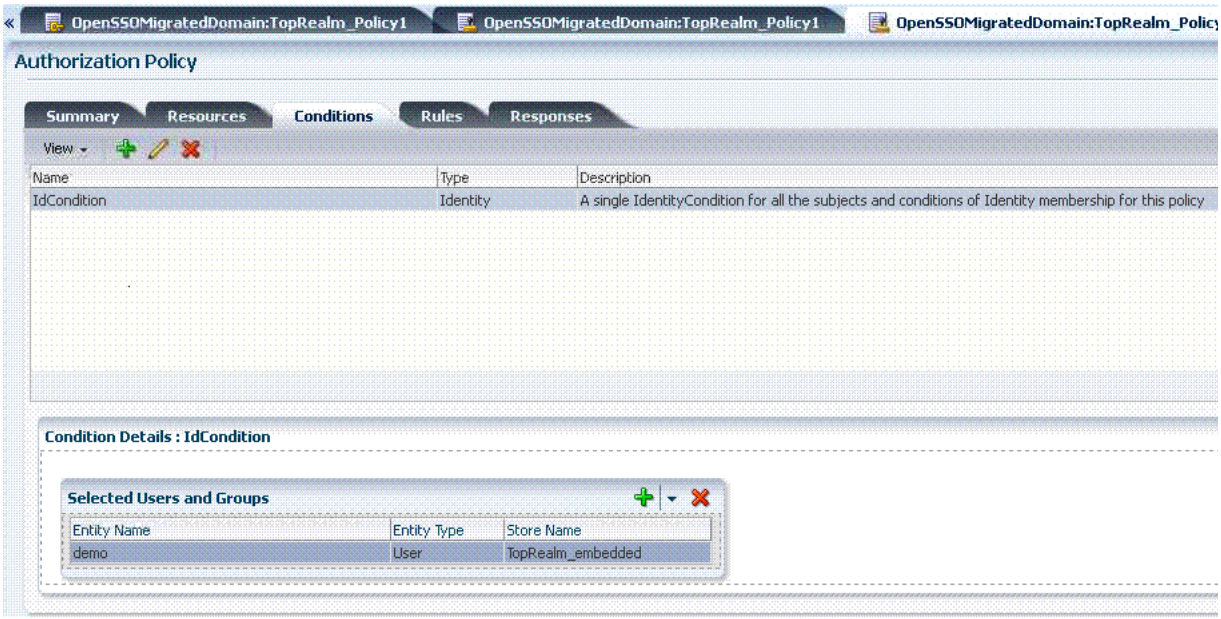
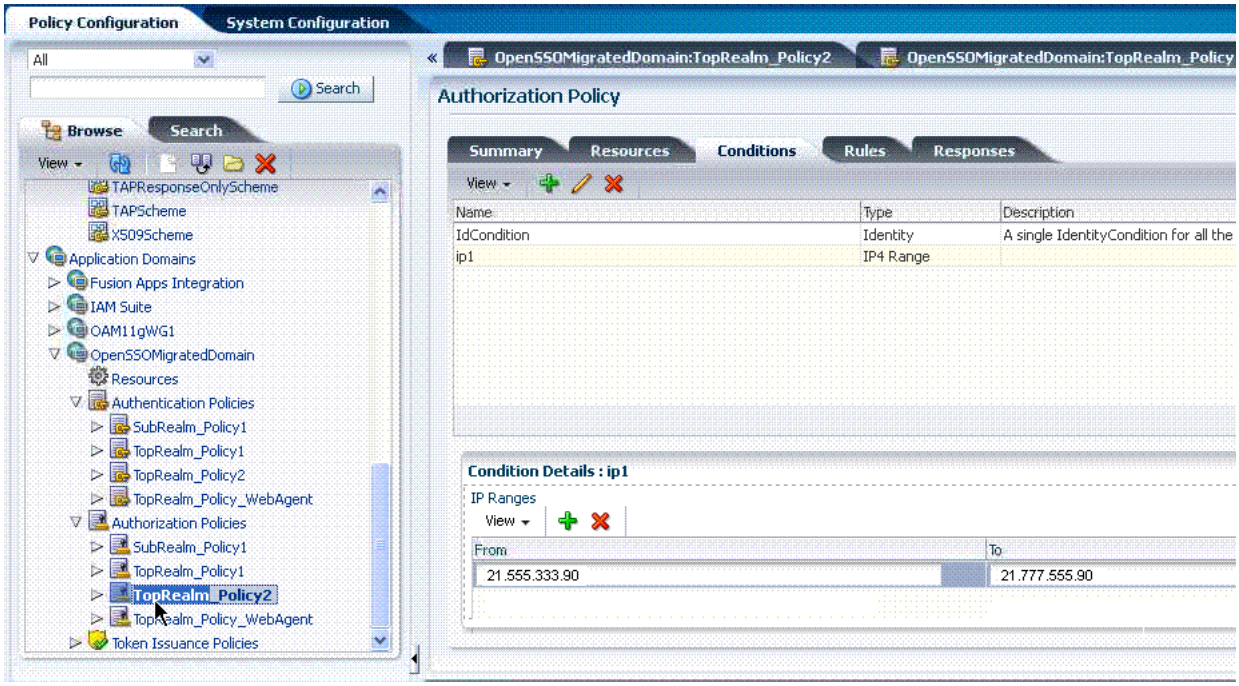


Figure D–24 Migrated Authorization Policy2: IP Condition Details



E

Troubleshooting

This chapter provides troubleshooting tips.

E.1 Introduction to Oracle Access Management Troubleshooting

Oracle Access Management is a business critical system; downtime comes with a potentially high cost to your business. The goal of system analysis is to quickly isolate and correct the cause of any problem. This requires a big picture view of your system and the tools to observe the live system and correlate components to the bigger picture.

To assist Administrators in performing a quick diagnosis, this section provides the following topics:

E.1.1 About System Analysis and Problem Scenarios

System analysis includes understanding how the product works, what can go wrong, how likely the scenarios are, and the consequences or observable issues.

System problems can be divided into two basic categories:

- Cascading catastrophic failure
- Gradual breakdown in performance

Cascading catastrophic failure might be caused by:

- LDAP server is loaded and unresponsive
- Morning peak load starts
- Webgates send requests to the primary OAM Server
- Webgate requests time-out and Webgates retry to secondary OAM Server

Gradual breakdown in performance might occur over time when, for example:

- OAM is sized and rolled out for 10,000 users and 500 groups
- Over the course of a year, the number of users and groups increases significantly (to 50,000 users and 250 groups for example)

For information on the most commonly encountered issues, see the following topics:

- About System Analysis and Problem Scenarios
- About LDAP Server or Identity Store Issues
- About OAM Server or Host Issues
- About Agent-Side Configuration and Load Issues
- About Runtime Database (Audit or Session Data) Issues
- About Change Propagation or Activation Issues
- About Policy Store Database Issues

E.1.2 About LDAP Server or Identity Store Issues

This topic provides symptoms, probable cause, and steps to diagnose the following issues:

- Symptoms: Operational Slowness
- Symptoms: Total loss of service

Symptoms: Operational Slowness

- Poor user experience
- Agent time outs lead to retries

Cause

- Non-OAM load might be impacting OAM operations
- Capacity problems due to gradual increase in peak load

Symptoms: Total loss of service

Cause

- Outage of all LDAP servers
- The load balancer is timing out old connections

Diagnosis

1. Shut down the LDAP server.
2. Restart your browser.
3. Try to access a protected site.
4. Review errors in the OAM Server log file, as described in Chapter 8 (alternatively, in Chapter 13).
5. Try to access Oracle Access Management Console.
6. Observe errors in WebLogic AdminServer log file.
7. Bring up the LDAP server again.
8. Retry access to a protected application.
9. Retry access to the Oracle Access Management Console.
10. Correct the issue based on the requirements in your environment.

E.1.3 About OAM Server or Host Issues

This topic provides symptoms, probable cause, and steps to diagnose the following issues:

- Symptoms: Capacity Problems
- Symptoms: Interference with Other Services on the Host

Symptoms: Capacity Problems

- Poor user experience due to slow operations
- Agent time outs and retry can result in extra load

Cause

- CPU cycles
- Memory issues

Symptoms: Interference with Other Services on the Host

- Poor user experience due to slow operations
- Agent time outs and retry may result in extra load

Cause

- CPU cycle contention
- Memory contention
- File system full

Diagnosis: OAM Server

1. Shut down the OAM Server
2. Try to access a Webgate or mod_osso protected resource
3. Bring up the OAM Server
4. Use the Access Tester to test authentication and authorization as described in Chapter 21.
5. Use 'top' to figure out the CPU and Memory consumption of the OAM Server as you use the access tester
6. Get a thread dump of the OAM Server.

Diagnosis: AdminServer

1. Shut down the AdminServer.
2. Restart your browser and access a protected resource, which should work.
3. Use remote registration to register a new partner, as described in Chapter 16 (this should fail).
4. Startup OAM AdminServer.

E.1.4 About Agent-Side Configuration and Load Issues

This topic provides symptoms, probable cause, and steps to diagnose time issues between agents and servers.

Symptoms: Difference in Clock time Between Agent and Server

- High CPU usage at both agent and server
- User experiences a system hang

Cause

- Agent thinks the token issued by the server is invalid
- Agent keeps going back to the server to re-issue the token

Diagnosis

1. Access protected resource.
2. Confirm: Client access hangs.
3. Confirm: High CPU usage on agent and server.

E.1.5 About Runtime Database (Audit or Session Data) Issues

The audit and session functions are both write intensive operations. The policy database can be tuned for read intensive service.

Symptoms

- Audit and session operations are slow
- File system on the OAM Server is full with audit data that is not yet written to the database
- Loss of in-memory session data when one of the servers in the cluster fails

Cause

- Database is not tuned for write intensive operations
- Database is unavailable due to maintenance
- Space issues in the database

Diagnosis

1. Shut down the database used to store Audit and Session data.
2. Try to access a protected resource.
3. Review error and warning messages in the OAM Server log files, as described in Chapter 8 (alternatively, in Chapter 13).

E.1.6 About Change Propagation or Activation Issues

This topic provides symptoms, probable cause, and steps to diagnose the following issues:

Symptoms

- Changes to policy do not take immediate effect
- Changes to system configuration do not take immediate effect

Cause

- Servers being too busy handling runtime requests (CPU contention)
- Coherence network slowness

Diagnosis: See "About Policy Store Database Issues"

E.1.7 About Policy Store Database Issues

This topic provides symptoms, probable cause, and steps to diagnose policy database issues.

Symptoms: No policy changes are allowed; no impact on runtime

Cause

- Database is unavailable (down for maintenance)
- Space issues in the database

Diagnosis

1. Shut down the database containing OAM policies.
2. Try to access a protected resource and observe the runtime access is not impacted.
3. Try to access the Oracle Access Management Console to edit policies, and then observe errors in the AdminServer log file.

E.2 Using My Oracle Support for Additional Troubleshooting Information

You can use My Oracle Support (formerly MetaLink) to help resolve Oracle Fusion Middleware problems. My Oracle Support contains several useful troubleshooting resources, such as:

- Knowledge base articles
- Community forums and discussions
- Patches and upgrades
- Certification information

Note: You can also use My Oracle Support to log a service request.

You can access My Oracle Support at `https://support.oracle.com`.

E.3 Administrator Lockout

Problem

Administrator cannot successfully log in to the Oracle Access Management Console. The following message appears:

```
Manually Change Identity Store Settings at OPSS Level and configure the
IDMDOmainAgent.
```

Cause

Access Manager secures the Oracle Access Management Console based on authentication information in the IAM Suite Application Domain: OAM Admin Console Policy. This policy relies on a single Authentication Scheme (OAMAdminConsoleScheme), which uses a Form challenge method and LDAP

Authentication Module. The LDAP Authentication Module must be pointing to the User Identity Store designated as the System Store.

If, for example, your deployment is configured to use Oracle Internet Directory (with all Administrators, users, and groups defined therein) ensure that the LDAP Authentication Module points to this user identity store and that this is designated as the System Store.

Solution

1. Insert a user identity into both your designated system store and the Embedded LDAP store.
2. Log in to Oracle Access Management Console.
3. Configure the `LDAP` Authentication Module used by the designated System Store to point to the appropriate User Identity Store, as described in "Managing Native Authentication Modules" on page 19-23.

E.4 Oracle Access Management Console Inconsistent State

Problem

Administrators performing updates concurrently will result in an inconsistent state within the system configuration of the Oracle Access Management Console.

Cause

Concurrent configuration updates are not supported.

Solution

Only one Administrator should be allowed to modify the system configuration at any given time.

E.5 AdminServer Won't Start if the Wrong Java Path Given with WebLogic Server Installation

WebLogic Server (wls1035_generic) installation is successful on Windows 64-bit with 32-bit Java (jdk1.6.0_24). When setup.exe is executed you must provide the path of the 64-bit java (jdk1.6.0_23) to successfully launch the install shield.

If you provide the 32-bit Java (jdk1.6.0_24) path, the install shield is not launched. However, if you execute config.cmd from \Middleware\Oracle_IDM1\common\bin, by default 32-bit Java (jdk1.6.0_24) path is used, but after successful installation Access Manager installation, you cannot start AdminServer.

On Windows host, the path to 32-bit JAVA_HOME (c:\Program files (x86)\java\jdkxxx) is not correctly handled by the startWeblogic.cmd. Replacing SUN_JAVA_HOME to use the path with the shorter name (c:\progra~2\java\jdkxxxx) works fine.

On Windows, the shorter names can be seen by executing "dir /X".

Alternatively, you can set windows cmd shell variable JAVA_HOME to path with shorter name and execute startWeblogic.cmd within that. For example:

>set JAVA_HOME=c:\progra~2\java\jdkXXX

>startweblogic.cmd

E.6 Agent Naming Not Unique

A unique identifying name for each Agent registration is preferred. However:

- If the Agent Name exists, no error occurs and the registration does not fail. Instead, Access Manager creates the policies if they are not already in place.
- If the host identifier exists, the unique Agent Base URL is added to the existing host identifier and registration proceeds.

E.7 Application URL Requirements

The number of characters allowed in a URL are based on browser version.

The main attribute that affects the size of a cookie is the length of the requested URL. Some of the system generated URLs for ADF applications are quite long and can cause the cookie to exceed the maximum size.

Another case is when using custom plug-ins. The data that a plug-in adds to the authentication context is persisted in the cookie and can cause the cookie size to grow.

Multiple wrong password attempts can also add more context data to the cookie. Combined with one of the above cases, the cookie size can rapidly grow.

Solutions

Ensure that your applications do not use URLs that exceed the length that Access Manager and the browser can handle.

The cookie cache mode can be changed to `FORM` mode from default `COOKIE` mode. `FORM` mode works with long URLs. The only difference in behavior is for programmatic authentication, which requires a proper form Submit to pass the `OAM_REQ` parameter set to the form. Custom credential collection pages need to handle the `OAM_REQ` parameter that is submitted with the form.

Also, to support long URLs, set the `serverRequestCacheType` parameter to `FORM` in oam-config.xml under $*`DOMAIN_HOME`*`/config/fmwconfig/oam-config.xml`:

```
<Setting Name="serverRequestCacheType"
Type="xsd:string">FORM</Setting>
```

E.8 Authentication Issues

This section provides the following information:

- Anonymous Authentication Issues
- X.509Scheme and SSL Handshake Issues
- X.509 Protected Resource and Single Sign Off
- X509CredentialExtractor Certificate Validation Error

E.8.1 Anonymous Authentication Issues

Problem

Challenge Redirect URL can be NULL; however, Challenge Method cannot be NULL.

If you open the Anonymous authentication scheme to edit, and click Apply without adding a value for Challenge method, the following errors might appear:

```
Messages for this page are listed below.

* Challenge Method You must make at least one selection.

* Challenge Redirect You must enter a value.
```

Solution

You must include both a challenge method and a challenge redirect whenever you edit an anonymous authentication scheme.

E.8.2 X.509Scheme and SSL Handshake Issues

The Access Manager X.509 Authentication Scheme relies on SSL to deliver the user's X.509 certificate to the OAM Server. The X.509 Authentication Scheme requires the X.509Plugin as the value of the Challenge Method (not the Authentication Module).

Problem

User has selected his certificate in the Browser but the Certificate is not available to the OAM Server.

Solution

The specific solution will depend on the reason for the SSL Handshake failure. For instance:

- For debugging SSL connections terminating on the Weblogic Server, please refer to http://docs.oracle.com/cd/E12840_01/wls/docs103/secmanage/ssl.html
- For debugging SSL connections terminating on the OHS server, see http://docs.oracle.com/cd/E12839_01/web.1111/e10144/under_mods.htm#i1007687.

Determine the reason for the SSL Handshake failure and the peer that is terminating the SSL Handshake. The solution will fall into the following categories:

- Configuration Issues
- Trust Issues
- Certificate Validation Issues

E.8.2.1 Configuration Issues

If you are encountering problems establishing a SSL connection with the default WebLogic server SSL implementation, switch to using the JSSE SSL implementation which is supported with WLS 10.3.3+.

The following list identifies other possible configuration issues.

- OHS plugin is incorrectly configured and not sending the user certificate to the WebLogic server.
- Cipher suites: As configured, are not compatible with the user certificate.
- Smart cards: The browser is not communicating with the smart card reader.
- PKCS#11 (or hardware cryptography): Ensure that the devices are in working order.

E.8.2.2 Trust Issues

The server name within the certificate does not match the host name. This check can be disabled through configuration.

The server does not contain a CA certificate on the user certificate path in its trust store.

E.8.2.3 Certificate Validation Issues

The following list identifies possible configuration issues.

- Certificate has expired.
- Certificate has been revoked.
- Certificate validation is not working because this is incorrectly configured or there are connectivity issues.

E.8.3 X.509 Protected Resource and Single Sign Off

Problem

Single Sign Off might not work after accessing the resource with X.509 authentication. When the user is logged out with the logout URL and tries to access the resource in the same browser, authentication might not occur. Instead, the user should be asked for authentication using the certificate pop up.

This can occur with any Agent type.

Solution

After executing the logout URL, click on Clear SSL State from the browser as follows, and the access the X.509-protected resource:

From the browser window, open the Tools menu, click Internet Options, choose Content, and then Clear SSL state.

E.8.4 X509CredentialExtractor Certificate Validation Error

Problem

Client certificate authentication works fine using the standard X509 Authentication Module after importing the root and sub CA certificates into the WebLogic Server and .oamkeystore keystores.

However, a certificate validation error can occur when using a Custom X509Plugin Authentication Module and root and sub CA certificates into the WebLogic Server and .oamkeystore keystores.

Solution

With the Custom X509Plugin Authentication Module the root and sub CA certificates must be added to the DOMAIN_HOME/config/fmwconfig/amtruststore because the X509CredentialExtractor plug-in loads certificates from this location.

E.9 Authorization Issues

This section provides the following topics:

- Authorization Condition Error

E.9.1 Authorization Condition Error

An error is logged in the oam-server diagnostic log file whenever you create or edit an IPv4 range or temporal condition:

```
.... refreshPolicy specified but no response collector supplied
```

Cause

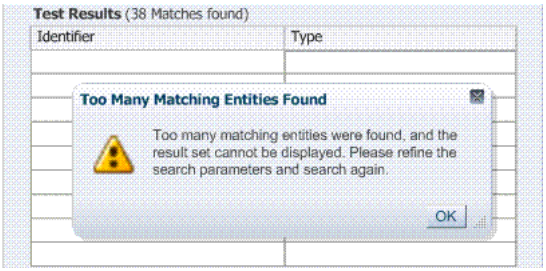
This is a message that is erroneously being logged at the ERROR level.

Solution

The correct level of the message is INFO.

E.9.2 LDAP Search Filter Test Results

If too many results are returned, you are informed as follows:



Solution

1. Click OK.
2. Click Test Filter button to initiate a new test.
3. In the Edit Search Filter dialog, make your changes.
4. Check the Test Results.

E.9.3 Authorization Header Response Names

Some characters might not be usable within header response names or values, depending on whether the client receiving these responses is a Webgate, and if so which Web server is protected. Certain characters might be subject to automatic conversion to other characters in a server-specific way.

Oracle recommends that you refer to your Web server documentation for more details.

E.10 Cannot Access Authentication LDAP or Database

If the LDAP directory that is used for authentication is down or inaccessible (or the database that is configured as the policy store), it might be due to a heavy load or a timeout. You see a message when attempting to a protected resource that uses this LDAP or policy store.

Solution

1. Manually shut down the registered LDAP or database.
2. Restart the registered LDAP or database.

E.11 Cannot Find Configuration

E.11.1 Configuration Does Not Exist ...

If you attempt to create and apply configuration details for an OAM Server before configuring the OAM Server in the WebLogic Server domain, a message informs you of the following:

```
Configuration does not exist for path
/DeployedComponent/Server/oamServer/Instance/test

For more information, please see the server's error log for
an entry beginning with: Server Exception during PPR, #6.
```

To resolve this issue, you must configure the OAM Server in the WebLogic Server domain before you register the configuration with Access Manager.

E.12 Co-existence Between OSSO and Access Manager

Problem

In the OSSO 10g coexistence with Access Manager 11g, if a user tries to access a protected resource when the OAM server is down, the request is redirected to the OSSO 10g login page through the load balancer. If the user enters valid credentials, the resource is provided.

However, if the user deletes the Oracle HTTP Server cookie and brings the OSSO 10g server down (and brings the OAM Server up), upon accessing the protected resource the user is asked for Access Manager login (authentication). Instead, the application should be accessible without authentication.

Solution

Confirm that the migrated User Identity Store is set as the Access Manager Default Store and System Store.

See Also:

- `enableCoexistMode` and `disableCoexistMode` in the Oracle Fusion Middleware WebLogic Scripting Tool Command Reference
- Oracle Fusion Middleware Upgrade Guide for Oracle Identity and Access Management

E.13 Could Not Find Partial Trigger

In the Administration Server output, you might see a "Could Not Find Partial Trigger" error (multiple times for each clicked policy configuration node or host identifier node) and also when you click any of other nodes in the navigation tree. This does not block functionality.

E.14 Denial of Service Attacks

A denial-of-service attack (DoS attack) or distributed denial-of-service attack (DDoS attack) is an attempt to make a computer resource unavailable to its intended users. One common method of attack involves saturating the target (victim) machine with external communication requests, such that it cannot respond to legitimate traffic, or responds so slowly as to be rendered effectively unavailable.

Denial of service attacks are classified into Authenticated and Unauthenticated Requests, and further classified as:

- NAP Requests
- HTTP Requests

Authenticated NAP Requests

For Authenticated NAP Requests, the OAM Server maintains a counter in the session and limits the number of retries. Despite this, after redirecting the user to an error page the user can repeat the cycle. This needlessly consumes server resources and can lead to OAM Server overloading.

> **Note:** To avoid OAM Server overloading with Authenticated NAP Requests, use relevant WebLogic overload configuration settings. These ensure that the server does not crash under load. However, this does not differentiate legitimate users from malicious users.

Authenticated HTTP Requests

You can handle a flood of HTTP Authenticated requests with a combination of WebLogic overload configuration and mod_security module settings.

Unauthenticated NAP Requests

Unauthenticated NAP Requests are handled by the WebLogic MDB pool throttling. This limits the number of NAP Requests that are forwarded to the OAM Server.

Again, this does not differentiate legitimate users from malicious ones.

Unauthenticated HTTP Requests

Configuring the mod_security module for the OHS server that front-ends the OAM Server enables rejection of malicious requests (unauthenticated HTTP Requests).

For more information, see:

- Protecting the OAM Server from Crashing Under Load
- Compensating for Network Latency
- Protecting OAM Servers from a Flood of HTTP Requests

E.14.1 Protecting the OAM Server from Crashing Under Load

If the number of requests to the OAM Server unexpectedly increases beyond what the server can handle, it could crash.

To limit the number of requests to the OAM Server:

1. In the WebLogic Console, use the Message Driven Bean pool to restrict the number of NAP requests to the OAM Server.

MDBeans pull NAP requests from the Server queue and deliver NAP requests to the Server for processing. Limiting the number of MDBean instances helps control the number of requests that are processed at a given time.

2. In the WebLogic Console, configure the number of WebLogic worker threads that can be used (to restrict the number of requests to the OAM Server).

   MDBeans pull NAP requests from the server queue and deliver NAP requests to the Server for processing. Limiting the number of MDBean instances helps control the number of requests that are processed at a given time.

3. In the WebLogic Console, configure the number of WebLogic worker threads that can be used (to restrict the number of requests to the OAM Server).

   See the topic on Thread Management in the guide to Oracle Fusion Middleware Performance and Tuning for Oracle WebLogic Server.

4. In the WebLogic Console, specify a maximum incoming request size, complete message timeout, and set the number of file descriptors, to optimize performance as described in following topics in the Oracle Fusion Middleware Performance and Tuning for Oracle WebLogic Server:

   - Tuning Message Size
   - Tuning Complete Message Timeout
   - Tuning Number of File Descriptors

E.14.2 Compensating for Network Latency

Consider the scenario where Webgate sends an authentication request to the OAM Server. After successful credential collection and validation, the OAM Server creates the session and the relevant cookies (OAM_ID, ObSSOCookie). However, due to network latency, the response times out by the time the OAM Server sends it to the Webgate which triggers Webgate to re-send the authentication request to the Server. The OAM Server recognizes the session, then recreates the ObSSOCookie, and sends the response to the agent.

If the network latency persists, the cycle continues in an infinite loop between the Server and the Webgate. The user is neither asked to login again nor presented with an error message.

E.14.3 Protecting OAM Servers from a Flood of HTTP Requests

ModSecurity is a Web application firewall (WAF) that can be deployed as part of the existing Apache-based Web server infrastructure. This module can be plugged into the OHS Server that front-ends the OAM Server. In this way, Mod_security module protects the OAM Server from denial of service attacks.

A flexible rule engine is at the heart of ModSecurity. It implements the ModSecurity Rule Language, a specialized programming language designed to work with HTTP transaction data. A new configuration directive uses the httpd-guardian script to monitor for Denial of Service (DoS) attacks. By default httpd-guardian defends against clients that send more than 120 requests in a minute, or more than 360 requests in five minutes.

See Also:

http://www.modsecurity.org/documentation/modsecurity-apache/2.5.12/html-multipage/configuration-directives.html#N10689

To protect from a flood of HTTP Requests

1. Add the mod_security module to the OHS Server that front-ends the OAM Server.
2. In the OHS Server configuration, set the configuration directive to use the httpd-guardian script to monitor for Denial of Service (DoS) attacks.

   Syntax:

   ```
   SecGuardianLog |/path/to/httpd-guardian
   ```

   Example:

   ```
   SecGuardianLog |/usr/local/apache/bin/httpd-guardian
   ```

E.15 Deployments with Freshly Installed 10g Webgates

Use the OAM Server's diagnostic features to debug on the OAM Server side. This section includes the following topics:

- Authentication Issues with 10g Webgates
- Logout Issues with 10g Webgates

> **See Also:** Chapter 22, "Configuring Centralized Logout for Sessions Involving 11g WebGates"

E.15.1 Authentication Issues with 10g Webgates

Use the following methods to troubleshoot authentication issues when you have freshly installed 10g Webgates in your Access Manager deployment.

- Confirm that your request was protected using an http header trace like Internet Explorer HTTP Headers or Firefox Live HTTP Headers
- Confirm that the request is sent to the OAM Server for authentication
  - GET /oam/server/obrareq.cgi?....
  - Host: oam-server:port

E.15.2 Logout Issues with 10g Webgates

Use the following methods to troubleshoot logout issues when you have freshly installed 10g Webgates in your Access Manager deployment.

- Make liberal use of HTTP Header Trace
- Confirm that the specific logout.html was copied to /access/oamsso folder in the 10g Webgate installation directory. If not present, you must create the logout.html as described in "Configuring Centralized Logout for 10g WebGate with 11g OAM Servers" on page 25-22.
- Change the 10g Webgate's httpd.conf to remove the following lines:

  ```
  <LocationMatch "/oamsso/*">
  Satisfy any
  </LocationMatch>
  ```

- From the Oracle Access Management Console, confirm that the LogoutUrls parameter (/oamsso/logout.html) is configured for this Webgate

E.16 Diagnosing Initialization and Performance Issues

This section includes the following topics:

E.16.1 Diagnosing an Initialization Issue

Problem

OAM Server does not start up.

Solution

1. Locate and review the OAM Server log file on the computer hosting the OAM Server.

   DOMAIN_HOME/servers/*SERVER-NAME*/logs/*SERVER-NAME*-diagnostics.log

2. Enable logging for this computer, as described in Chapter 8, "Logging Component Event Messages":

   DOMAIN_HOME/config/fmwconfig/servers/*SERVER-NAME*/logging.xml

3. Restart the OAM Server, observe the behavior, check the log file again if needed.

E.16.2 Diagnosing a Performance Issue

Problem

Monitoring the OAM Server reveals a significant spike in latency during authentication.

Solution

1. Locate and review the OAM Server log file on the computer hosting the OAM Server.

   DOMAIN_HOME/servers/*SERVER-NAME*/logs/*SERVER-NAME*-diagnostics.log

2. Enable logging for this computer, as described in Chapter 8, "Logging Component Event Messages":

   DOMAIN_HOME/config/fmwconfig/servers/*SERVER-NAME*/logging.xml

3. Restart the OAM Server, observe the behavior, check the log file again if needed.

E.16.3 Diagnosing Out-of-Memory Issues With a Heap Dump

Problem

Debugging for all expression parsing and evaluation produced a significant performance drag within ~20 hours due to memory growth; running out of memory in ~50 hours.

Configuration: 2GB heap; 3 minute session timeout; jdbc connections tuned min=32 max=200; jdbc connection idle timeout disabled; jbo pool size min = 10 & max=150

Solution

To generate heap-dumps for comparison, you use the following command-line tools jmap for Sun jvm or jrcmd for jrockit jvm located under JAVA_HOME/bin.

For jrockit jvm

```
jrcmd pid <command>
/jrockit_160_14_R27.6.5-32/bin/jrcmd 16775 heap_diagnostics
/jrockit_160_14_R27.6.5-32/bin/jrcmd 16775 print_threads
/jrockit_160_14_R27.6.5-32/bin/jrcmd 16775 jrarecording ....
```

For Sun jvm

```
jmap -histo <pid>
jmap -dump:live,format=b,file=heap.bin <pid>
```

E.17 Disabling Windows Challenge/Response Authentication on IIS Web Servers

The IIS Web server on Windows supports Challenge/Response Authentication, which defaults to On when IIS is installed. This enables users to use their domain log-ins when requesting resources from IIS and can conflict with Access Manager's authentication.

For example, on the first request from an Internet Explorer (IE) browser to a resource on IIS protected by Access Manager with a basic authentication scheme, IE displays a login dialog box requesting a domain along with the user name and password login provided by Access Manager.

To disable Windows challenge/response authentication

1. Launch the Microsoft Management Console for IIS.
2. Select the Web Server Host under Internet Information Server in the left hand panel.
3. Right click and select Properties.
4. Scroll down and select Edit the Master Properties for WWW Service.
5. Select the Directory Security tab.
6. Select Edit Anonymous Access and Authentication Control.
7. Complete the appropriate step for your platform:

   Windows 2000: Clear the Integrate Windows Authentication box.
8. Click OK.
9. In the Windows IIS properties screen, click OK.
10. Close the Microsoft Management Console.

E.18 Changing UserIdentityStore1 Type Can Lock Out Administrators

An Identity Store that is designated as the System Store should not be edited to change the store type (from Embedded LDAP to OID, for instance) nor the connection URLs.

If you do need to change the Identity Store that is designated as the System Store should not be edited to change the store type, Oracle recommends that you create a new Identity Store and then edit that registration to mark it as your System Store.

E.19 IIS Web Server Issues

The following topics are provided to assist you:

- Form Authentication or Pass-Through Not Working
- IIS and General Web Component Guidelines
- Issues with IIS v6 Web Servers
- Page Cannot Be Displayed Error
- Removing and Reinstalling IIS DLLs

E.19.1 Form Authentication or Pass-Through Not Working

If form authentication or pass-through functionality is not working, the problem might be that either "`UseWebGateExtForPassthrough`" parameter is not set to true in the Webgate profile or that webgate.dll is not configured as Wild Card Application Mapping in IIS. In such cases, Webgate does not perform authentication or authorization for HTTP "POST" requests for the resources protected by form-based authentication.

Solution: Confirm that the `UseWebGateExtForPassthrough` parameter is configured in the Webgate profile with a value of `true` and that webgate.dll is configured as Wild Card Application Mapping.

E.19.2 IIS and General Web Component Guidelines

Following are some general guidelines to follow when installing Access Manager Webgates with IIS Web servers.

Account Privileges: The account that performs Access Manager installation must have administration privileges. The user account that is used to run OAM services must have the "Log on as a service" right, which can be set by selecting **Administrative Tools, Local Policy, Local Policies, User Rights Assignments, Log on as a service.**

IIS 6 Web Servers: You must run the WWW service in IIS 5.0 isolation mode. This is required by the ISAPI postgate filter. During Access Manager installation, this is usually set automatically. If it is not, you must set it manually for the Default Web site.

Webgate for IIS 7 Web Server: To use Form-based authentication without enabling pass through functionality (for example, "access/oblix/apps/webgate/bin/webgate.dll" is an action in the Form-based authentication scheme), ensure that the entry "<add segment="bin"/>" is not present in the applicationHost.config file. If the entry is present, you must remove it. Use the following steps to check this entry:

- Go to Windows\System32\inetsrv\config and open the file applicationHost.config.
- Search for the `<hiddenSegments>` module and remove the entry **`<add segment="bin"/>`** if it is present.

Webgate: When installing IIS Webgates, setting various permissions for the /access directory is required for IIS Webgates only when you are installing on a file system that supports NTFS. For example, suppose you install the ISAPI Webgate in Simple or

Cert mode on a Windows 2000 computer running the FAT32 file system. The last installation panel provides instructions for manually setting various permissions that cannot be set on the FAT32 file system. In this case, these instructions may be ignored.

E.19.3 Issues with IIS v6 Web Servers

On IIS 6 Web servers only, you must run the WWW service in IIS 5.0 isolation mode, which is a requirement of the ISAPI postgate filter. This scenario will work if you have 32-bit Access Manager binaries running on a 32-bit Windows operating system. However, there is an issue if you attempt to run a 32-bit postgate.dll on a 64-bit Windows machine with IIS running in 32-bit mode.

Problem

When running IIS in IIS5.0 isolation mode, you see the following message:

"ISAPI Filter 'C:\webgate\access\oblix\apps\webgate\bin\webgate.dll' could not be loaded due to a configuration problem.

Cause

The current configuration only supports loading images built for an AMD 64-bit processor architecture. The data field contains the error number.

Solution

To learn more about this issue, including how to troubleshoot this kind of processor architecture mismatch error, see the following Web site:

http://go.microsoft.com/fwlink/?LinkId=29349

For more information, see Help and Support Center at:

http://go.microsoft.com/fwlink/events.asp

Problem

IIS5 never existed as 64-bit. However, IIS v6's IIS5 Compatibility Mode on 64-bit Windows computers only runs as 64-bit.

Cause

It is architecturally impossible run IIS5 Isolation Mode 32- bit on 64-bit Windows, as described in documentation available through the following URLs:

http://www.microsoft.com/communities/newsgroups/en-us/default.aspx?dg=microsoft.public.inetserver.iis&tid=5dd07102-8896-40cc-86cb-809060fa9426&cat=en_US_02ceb021-bb43-476d-8f8f-6c00a363ccf5&lang=en&cr=US&p=1

http://blogs.msdn.com/david.wang/archive/2005/12/14/HOWTO-Diagnose-one-cause-of-W3SVC-failing-to-start-with-Win32-Error-193-on-64bit-Windows.aspx

E.19.4 Page Cannot Be Displayed Error

A "The page cannot be displayed" error that appears after configuring Webgate for pass-through functionality, indicates a configuration issue.

Solution: Confirm that the `UseWebGateExtForPassthrough` parameter is configured in the Webgate profile with a value of `true` and that webgate.dll is configured as Wild Card Application Mapping.

E.19.5 Removing and Reinstalling IIS DLLs

When Access Manager is running with Microsoft's IIS Web server, you must manually uninstall and reinstall the following ISAPI filters when reinstalling Access Manager.

- `tranfilter.dll`
- `oblixlock.dll` (if you installed Webgate)
- `webgate.dll` (if you installed Webgate)

To remove and reinstall IIS DLLs

1. Uninstall Access Manager.
2. Manually uninstall the preceding DLLs.
3. Reinstall Access Manager.Active Directory.
4. Manually reinstall the DLLs.

> **Note:** These filters can change depending on the version of IIS you are using. If these filters do not exist or there are others present, contact Oracle to determine if the filters that are present need to be removed.

E.20 Import and File Upload Limits

The UPLOAD_MAX_MEMORY and UPLOAD_MAX_DISK_SPACE is set to "50mb". To upload more than 50mb, manually change these settings in web.xml.

To reset the memory and disk space parameters

1. Locate web.xml in WEB-INF/lib/ngam-ui.war.
2. Edit the file to change UPLOAD_MAX_MEMORY. For example:

```
<context-param>
   <param-name>org.apache.myfaces.trinidad.UPLOAD_MAX_MEMORY</param-name>
   <param-value>104857600</param-value>
<context-param>
```

3. Edit the file to change UPLOAD_MAX_DISK_SPACE. For example:

```
<context-param>
   <param-name>org.apache.myfaces.trinidad.UPLOAD_MAX_DISK_SPACE</param-name>
   <param-value>104857600</param-value>
<context-param>
```

4. Save the file.
5. Restart the OAM Server.

> **See Also:** "Providing File Upload Capability" in the Oracle Application Development Framework Developer's Guide.

E.21 jps Logger Class Instantiation Warning is Logged on Authentication

A jps logger class instantiation warning is might appear on the back end upon authentication. However, this is a harmless warning and no action is required.

E.22 Internationalization, Languages, and Translation

This section provides the following topics:

E.22.1 Automatically Generated Descriptions Are Not Translated

The automatically generated Description for some components are not translated. This is expected and enables Administrators to change the Description to whatever they require. Following such a change, translation by Oracle is not possible.

E.22.2 Console Looks Messy

The Oracle Access Management Console displays policies and resources oddly when the input configuration file for remote registration is not in UTF-8 format or when the OAM Server is not started in UTF-8 locale (en_US.utf8, for instance).

Be sure to use UTF-8 encoding if creating a configuration file for the remote registration tool, oamreg, to generate authentication policies and protected resources. Also, be sure to start OAM Server in UTF-8 locale machines. Otherwise, the Oracle Access Management Console might display policies and resources oddly following successful inband registration.

E.22.3 Authentication Fails: Users with Non-ASCII Characters

Configure Access Manager to use Kerberos Authentication Scheme with WNA challenge method, and create a non-ASCII user in Microsoft Active Directory.

Problem

An exception occurs when trying to get user details to populate the subject with the user DN and GUID attributes. Authentication fails and an error is recorded in the OAM Server log when a non-ASCII user in Active Directory attempts to access an Access Manager-protected resource:

```
... Failure getting users by attribute : cn, value ....
```

Cause

The username in the attribute is passed without modification as a java string.

Solution

Non-ASCII users can access the resource protected by Kerberos WNA scheme now by applying this JVM system property (for the built-in WebLogic SPNEGO support):

```
-Dsun.security.krb5.msinterop.kstring=true
```

E.22.4 Access Tester Does Not Work with Non-ASCII Agent Names

Register a Webgate with Access Manager using a non-ASCII name. In the Access Tester, enter the valid IP Address, Port, and Agent ID (non-ASCII name), then click Connect.

Connection testing fails.

E.22.5 Locales, Languages, and Oracle Access Management Console Login Page

When the browser locale is not supported, the Oracle Access Management Console Login page shows as server locale. It should fall back to English. This is the expected behavior:

- If the client Locale is not supported, Oracle Access Management falls back to the server locale.
- If the server locale is not supported, Oracle Access Management falls back to English.

When users select an unsupported language and come to the Access Manager SSO page, it shows as server locale (German, for example). However, after logging in, all the pages are displayed as English.

To fall back to English

Disable the Access Manager SSO page and the original Access Manager login page also falls back to English.

E.23 Login Failure for a Protected Page

Problem

After installing OAM and protecting a page using a physical host and port, register the application using the OHS physical host and port. Login fails to prompt the user for credentials when accessing the protected page. The log file shows that the URL is re-directed to a Virtual Host despite the fact that all configuration and registration is setup correctly.

Solution

Remove any Virtual Host Directives from httpd.conf when protecting a page using the Oracle HTTP Server (OHS) physical host and port.

E.24 OAM Metric Persistence Timer IllegalStateException: SafeCluster

Problem

After using the WebLogic Configuration Wizard to create an OAM Server cluster on two computers, and starting AdminServer, all servers start up properly. After shut down, a third server is added using the WebLogic Server Administration Console to create a new managed server and add it to the cluster. The third server goes into Running mode when started, with some exceptions in the start up log.

```
... Exception in thread "OAM Metric Persistence Timer"
```

Solution

in addition to the actions in the WebLogic Administration Console, you must register the server using the Oracle Access Management Console to ensure that the server can identify itself.

> **Note:** When adding and registering a second server instance for the same computer, all port numbers must differ: OAM Proxy port; the "port" that must match the one in the WebLogic Server Console; and the Coherence port.

For server registration details, see "Managing Individual OAM Server Registrations" on page 6-5.

E.25 Partial Cluster Failure and Intermittent Login and Logout Failures

Problem

In the event of a partial outage of Access Manager (on some, but not all instances of the cluster), end users might see intermittent login and logout failures.

Workarounds

1. Remove OHS from the deployment
2. Configure the OHS cluster such that each OHS instance is pinned to a WebLogic Server instance.
3. The WebLogic Server container with the malfunctioning Access Manager application must be removed from service (shutdown) and brought back up upon recovery.

E.26 RSA SecurID Issues and Logs

Each OAM SecurID Server must be registered as a separate agent with the RSA Authentication Manager. This provisions the OAM SecurID Server with its own node secret file. Every OAM SecurID Server must have its configuration file stored under $DOMAIN_HOME/config/fmwconfig/servers/$*SERVER_NAME*/oam.

If the RSA SecurID authentication plug-in returns an error, it is logged in the OAM Server log. Web Server logs can also provide clues as to what might be going wrong. Be sure the enable logging on your Web server.

If communication has been established between the Access Server and Authentication Manager, the `sdadmin` tool provides access to logs under the Report menu. Both Activity and Exception reports may give you helpful information.

Verify Authentication Manager Logging Configuration and Reports

1. Confirm that you have added the user and assigned a token using the Authentication Manager Administrator tool, `sdadmin`.
2. Verify that you have copied the `sdconf.rec` file to the OAM Server.
3. In the Authentication Manager console, Report menu, open Activity and Exception reports for helpful information.

Check SecurID Plug-In Parameters with Modified HTML Fields

If you have modified the HTML field names in the HTML forms, ensure that the RSA SecurID plug-in parameters are configured to match.

Remove the @ character From any Login Attribute Value

User login can fail if there is an at-sign (@) in the login attribute value. This is a known issue with SecurID.

E.27 Registration Issues

Problem: Remote Registration Tool Failure

Solution

Ensure that the agent name is unique (does not already exist) and that the AdminServer is running.

Problem: No ObAccessClient.xml File Generated

Solution

Protected and public resources must be described as relative URLs of the format '/index.html'. If the resource does not begin with a '/', no ObAccessClient.xml file will be generated.Verify the protected and public resource URLs and ensure all begin with a "/". For more information, see "About the Resource URL, Prefixes, and Patterns" on page 20-19.

Problem: Partner Registration Failure

Partner registration can fail if you do not supply a unique agent name, which is also used to create an Application Domain. The agent name and Application Domain name must be the same and must be unique. Using the oamreg validate command can fail when the agent name does not match the Application Domain name.

Solution

Ensure that the agent name and Application Domain name are the same.

E.28 Rowkey does not have any primary key attributes Error

While browsing across the Resources table in the Resource Type tab the following error message is logged:

```
@ <Error>
<oracle.adfinternal.view.faces.model.binding.CurrencyRowKeySet>
@ <BEA-000000> <ADFv: Rowkey does not have any primary key attributes. Rowkey:
oracle.jbo.Key[], table: model.ResTypeVOImpl@620289.>
```

This is harmless and does not hinder any functionality.

E.29 SELinux Issues

Delivered with Oracle Enterprise Linux, SELinux modifications provide a variety of policies through the use of Linux Security Modules (LSM) within the Linux kernel.

SELinux requires performing additional steps after installing Access Manager Webgates and before starting the associated Web server.

Problem

The following errors could be reported in logs/console when starting a Web server on Linux distributions that have more strict SELinux policies in place (after installing an Webgate):

11g Webgate

```
$Webgate_OH/webgate/ohs/lib/webgate.so: cannot restore segment prot after reloc:
Permission denied.
```

10g Webgate

```
$Webgate_install_dir/access/oblix/apps/webgate/bin/webgate.so: cannot restore
segment prot after reloc:
Permission denied.
```

Cause

These errors are reported due to Secure Linux security context policies on files.

Solution

To avoid these errors and start the Web server, run following `chcon` commands to change the security context on files after installing each Access Manager Web component and before restarting the associated Web server. For more information on the `chcon` command, see your Linux documentation.

1. Run chcon -t texrel_shlib_t PATH_TO_LIBWEBPLUGINS.SO. For example:

   ```
   chcon -t texrel_shlib_t  /Webgate_install_dir/access/oblix/lib/webgate.so
   ... and libxmlengine.so
   ```

2. Run chcon -t texrel_shlib_t PATH_TO_LIBWEBGATE.SO. For example:

   ```
   chcon -t texrel_shlib_t  /Webgate_install_dir/access/oblix/apps/webgate/
   bin/webgate.so
   ```

E.30 Session Issues

This section provides the following details:

- Session Impersonation Not Enabled by Default
- Sessions with Oracle Access Manager 11.1.1 Integrated with Oracle Identity Federation 11.1.1

E.30.1 Session Impersonation Not Enabled by Default

Session impersonation is not enabled by default. You can update the value in oam-config.xml, then update the version of oam-config.xml to automatically propagate the ImpersonationConfig status to all managed servers without a restart.

To enable Session Impersonation

1. Back up *DOMAIN_HOME*/config/fmwconfig/oam-config.xml.
2. Set `ImpersonationConfig` to `true`:

   ```
   <Setting Name="ImpersonationConfig" Type="htf:map">
        <Setting Name="EnableImpersonation" Type="xsd:boolean">false</Setting>
   </Setting>
   ```

3. **Configuration Version:** Increment the `Version xsd:integer` as shown in the next to last line of this example (existing value (25, here) + 1):

   Example:

```
<Setting Name="Version" Type="xsd:integer">
  <Setting xmlns="http://www.w3.org/2001/XMLSchema"
    Name="NGAMConfiguration" Type="htf:map:>
  <Setting Name="ProductRelease" Type="xsd:string">11.1.1.3</Setting>
    <Setting Name="Version" Type="xsd:integer">25</Setting>
</Setting>
```

4. Save oam-config.xml.

E.30.2 Sessions with Oracle Access Manager 11.1.1 Integrated with Oracle Identity Federation 11.1.1

Expected Behavior: Oracle Identity Federation 11.1.1 session is not cleared

When Oracle Access Manager 11.1.1 is integrated with Oracle Identity Federation 11.1.1, and you clear the session using the console, only the Oracle Access Manager session is cleared. The Oracle Identity Federation session is not cleared.

E.31 SSL versus Open Communication

If both the SSL and Open ports of the Managed Server are enabled, then the Managed Server is set to the SSL port by default.

If you must use the non-ssl port, the credential collector URL the authentication scheme must be set to the absolute URL which points to 'http' as the protocol and non-ssl port.

E.32 Start Up Issues

Problem: AdminServer Startup (or Remote Registration Tool Failure) on AIX Platforms

AdminServer start up fails with following message:

```
"java.net.SocketException:
No buffer space available".
```

Configuration for the number of AIX file descriptors set for the operating system is substantially high (`ulimit` file descriptor) resulting in a buffer overflow that causes remote registration failure with the following message:

The ulimit value is application dependent and applies exclusively to application program data and the application stack. The default number of open files setting (2000) is typically sufficient for most applications. If the value is too low, errors might occur when opening files or establishing connections. Because this value limits the number of file descriptors that a server process might open, a value that is too low prevents optimum performance. For the AIX operating system, the default setting is 2000.

Solution

Increasing the `ulimit` file descriptor limits might improve performance. Increasing some of the other limits might be needed depending on your application.

1. Log in as root.
2. Perform the following steps to change the open file limit to 10,000 files:
   a. Open the command window.
   b. Locate and edit /etc/security/limits file to add the following lines to the user account on which the AdminServer process runs:

      ```
      nofiles =  10000
      nofiles_hard = 10000
      ```

   c. Save the file and restart AIX.
3. In a command window, decrease the TCP_TIMEWAIT interval with the following command to set the state to 15 seconds (which allows TCP to release closed connections faster and increases the number of available resources for open connections).

   ```
   /usr/sbin/no -o tcp_timewait =1
   ```

4. Tune the following parameters to 256k, as shown:

   ```
   no -a |grep space
         tcp_recvspace = 262144
         tcp_sendspace = 262144
         udp_recvspace = 262144
         udp_sendspace = 262144
   ```

5. Tune the following parameters as indicated here:

   ```
   no -o rfc1323=1
   no -o sb_max=4194304
   ```

Problem: Connection to OAM Server could not be established: Exception in connecting to server. Connection refused.

Cause:

This is normal and expected behavior for the Managed Server where the OAM Server runs because the IAMSuiteAgent agent is started before the OAM Server.

The IAMSuiteAgent is deployed on every WebLogic container. When the WebLogic container starts, the agent tries to connect to the OAM Server. If it fails to connect, this message is logged and the agent tries to establish the connection in subsequent requests. When the agent is successful, this message is no longer displayed.

Solution

If the connection to the OAM Server is not successful, the IAMSuiteAgent falls back and the WebLogic container handles protection (including login), if it is configured.

E.33 Synchronizing OAM Server Clocks

The state of a session is the source of truth for relying parties. Synchronization of system clocks of the various Servers is required.

The system clock of the relying party might be out of synchronization with the SME clock. If the relying party's clock is:

- Ahead of the session clock A relying party's request for authentication is made and the active sessionID is returned.
- Behind the session clock: Event notifications to the relying party help invalidate the session.

For example, if a Web server clock is ahead of the server clock, a request sent from the Webgate to the OAM Server will contain a time that, to the OAM Server, has not yet occurred. This can cause login events to fail. When running in Simple or Cert mode, time stamps might become out of sync, or the client certificate might appear to be invalid.

Note: To avoid event notification issues, ensure that all OAM Server clocks are synchronized to Time Services such as NIST internet time service.

For successful operation:

- Ensure all computer clocks are synchronized. There is no tolerance level. If, for example, the Webgate clock is even slightly ahead of the OAM Server clock, a cookie generated by the Webgate will appear to be in the future and can cause problems in the OAM Server.
- Confirm that the clock on each computer running a Webgate is *not* running ahead of the OAM Servers with which it is associated. The OAM Server must be ahead of the Webgate clock by a maximum of 60 seconds.

E.34 Using Coherence

Access Manager uses Oracle Coherence to replicate session states within a distributed installation. Coherence is used to communicate state changes between the Oracle Access Management Console and OAM Servers.

Consider the following 2 distributed deployment topologies. Coherence relies on User Datagram Protocol (UDP) for cluster discovery and heartbeat. If a firewall exists between certain components of Access Manager, then the corresponding UDP ports used by Coherence must be open. Otherwise, Access Manager might not work correctly.

For example, the UDP ports used by Coherence must be opened as follows:

- The Oracle Access Management Console is deployed within the intranet, and OAM Servers are deployed in the DMZ. In this case, the UDP ports used by Coherence must be opened on the firewall between the DMZ and the intranet.
- The Oracle Access Management Console and OAM Servers are deployed in different security zones of the DMZ, with firewalls between any two adjacent zones. In this case, the UDP ports used by Coherence must be opened on the firewall between the adjacent security zones, where one or more instances of Oracle Access Management Console and OAM Servers run.

Access Manager 11g uses Oracle Coherence to provide a distributed cache with low-data access latencies and to transparently move data between distributed caches (and into the session store). Session data is redundant across these tiers. For example, when a session is created, it then exists within the local cache on the server that created it, the distributed cache, and (if enabled) within the session store database as well. For

more information, see Chapter 17, "Maintaining Access Manager Sessions".

WARNING: Oracle recommends that you do not modify Oracle Coherence settings unless requested to do so by an Oracle Support Representative.

Whether you are viewing Oracle Coherence settings for an individual server instance or Oracle Coherence details that are common to all OAM Servers, Oracle recommends that you do not modify Oracle Coherence settings unless requested to do so by an Oracle Support Representative.

Oracle Coherence logging appears in the WebLogic Server log only. There is no bridge from Oracle Coherence logging to Access Manager logging.

See Also: Oracle Coherence documentation.

E.35 Validation Errors

Problem: Resource not added to Authentication or Authorization Policy

While creating an Authentication or Authorization Policy, if you add a resource that is already used in another Authentication or Authorization Policy, a validation error appears when you click Apply. This is expected.

If you click OK in the error window and then attempt to add a valid resource that is not used within another Authentication or Authorization Policy, the resource is not added and the Authentication or Authorization Policy is not created.

Solution

1. Click Apply and close the Authentication or Authorization Policy page.
2. From the navigation tree, click the named policy again, click the Edit to open the page, and add the new resource.

Problem: Validation Failure - "description" attribute is not valid

A validation error appears if you enter an optional description longer than 200 characters.

Solution

Keep optional descriptions to 200 characters in length and less than 10 lines.

E.36 Web Server Issues

The following issues with Web servers may arise:

- Server Fails on an Apache Web Server
- Apache v2 on HP-UX
- Apache v2 Bundled with Red Hat Enterprise Linux 4
- Apache v2 Bundled with Security-Enhanced Linux
- Apache v2 on UNIX with the mpm_worker_module for Webgate
- Domino Web Server Issues
- Errors, Loss of Access, and Unpredictable Behavior

E.36.1 Server Fails on an Apache Web Server

Symptom: You are running an Apache Web server, and an OAM Server fails, displaying the following message:

```
libthread panic: cannot create new lwp
(PID: 9035 LWP 2). stackrace:
ff3424cc
0
```

This symptom may be caused by the Apache Web server launching more instances of itself. This can happen when the server determines that more instances are needed to service the number of connections between one or more Webgates and the OAM Server.

The additional instances create even more connections, which exceed the number of connections by the OAM Server.

Solution: Reduce the number of `MinSpareServers`, `MaxSpareServers`, `StartServers`, and `MaxClients` parameters.

Go to the OAM Server's configuration directory and open the `http.d` configuration file.

Recommended parameter settings:

- `MinSpareServers` 1
- `MaxSpareServers` 5
- `StartServers` 3
- `MaxClients` 5

E.36.2 Apache v2 on HP-UX

When running Apache v2 on HP-UX, do not use `nobody` for User or Group, because shared memory may not work. Instead, use your login name as User Name with a your group as Group Name On HP-UX (on Solaris, "www" is equivalent to "nobody").

When running Apache v2 on HPUX 11.11, ensure that the `AcceptMutex` directive in the Apache httpd.conf file is set to "`fcntl`". If the directive is not present, add it to the httpd.conf file (`AcceptMutex fcntl`). For more information, see:

`http://issues.apache.org/bugzilla/show_bug.cgi?id=22484`

E.36.3 Apache v2 Bundled with Red Hat Enterprise Linux 4

After installing a Webgate on vendor-bundled Apache, the Web server may give the following error upon startup:

```
Error: Cannot load libgcc_s.so.1 library - Permission denied.
```

Solution: Change the Security-Enhanced Linux (SELinux) policy rules for Access Manager Webgates as described in "Tuning Apache/IHS v2 Webgates for Access Manager" on page 26-27.

E.36.4 Apache v2 Bundled with Security-Enhanced Linux

Errors might be reported in WebServer logs/console when starting a Web server on Linux distributions, which have stricter SELinux policies in place, after installing an Access Manager Web component. You can avoid these errors by running appropriate `chcon` commands for the installed Web component before restarting the Web server.

See Also: "SELinux Issues" on page E-24

E.36.5 Apache v2 on UNIX with the mpm_worker_module for Webgate

The following item is required only if you compile Apache v2 for Webgate on UNIX with the mpm_worker_module. In this case, you need to modify the thread.c file from the Apache source for the UNIX environment. Making this change ensures that the default pthread stacksize for Webgate produces optimal performance during multi-threaded server implementation. If this change is not made, the default pthread stack size would not be sufficient for Webgate and could result in a crash.

Apache 2.0 does not support the ThreadStackSize option. Therefore:

- With UNIX-based Apache v2.1 and later you must use the ThreadStackSize directive to set the size of the stack (for autodata) of threads that handle client connections and call modules to help process those connections.
- With UNIX-based Apache 2, it is best to use the compilable source while adding the mpm_worker_module and changing the thread.c file to avoid a stack overflow.

The following procedure shows how to modify the Apache v2.0 thread.c file to provide the default pthread stacksize needed by Webgate for optimal performance during multi-threaded server implementation. For details about the Apache v2.1+ ThreadStackSize directive, see `http://httpd.apache.org/docs/2.2/mod/mpm_common.html#threadstacksize`.

Note: The following procedure should be performed only for the Apache 2.0 Webgate. Otherwise, the default pthread stack size is not sufficient for the Webgate and could result in a crash.

To modify the Apache v2.0 thread.c file for Webgate in a UNIX environment

1. Locate the thread.c file. For example:

   ```
   APACHE 2.0.52 source/srclib/apr/threadproc/unix/thread.c
   ```

2. Locate the function named apr_threadattr_create(apr_threadattr_t **new,apr_pool_t *pool) in the following code segment:

   ```
   **new,apr_pool_t *pool) in the following code segment:
   1-----> apr_status_t stat;
   2
   3-----> (*new) = (apr_threadattr_t *)apr_pcalloc(pool, sizeof(apr_threadattr_
   t));
   4-----> (*new)->attr = (pthread_attr_t *)apr_pcalloc(pool, sizeof(pthread_attr_
   t));
   ```

```
5
6-----> if ((*new) == NULL || (*new)->attr == NULL) {
7----->              return APR_ENOMEM;
8-----> }
9
10----->(*new)->pool = pool;
11----->stat = pthread_attr_init((*new)->attr);
12
13-----> if (stat == 0) {
14----->            return APR_SUCCESS;
15-----> }
16----->#ifdef PTHREAD_SETS_ERRNO
17----->stat = errno;
18----->#endif
19
20----->return stat;
21
```

3. Add the following code before line 13 shown earlier.

```
int stacksize = 1 << 20;
pthread_attr_setstacksize(&(*new)->attr, stacksize);
```

4. Run configure, make, and make install to set up the Apache Web server with the mpm_worker_module.

E.36.6 Domino Web Server Issues

Failure Authentication Event: For Domino Web servers, the redirection of a URL through Access Manager may not work if the authentication type is set as Basic Over LDAP and the URL to be redirected is mentioned as one of the following:

Either a relative path present on the same Web server

Or the Full path URL on the same Web server containing a computer name defined in the host identifier string combinations.

To overcome a failure authentication event, you must set the redirected URL with a computer name that is not defined under the host identifier group. For example, the IP address of the computer.

This problem does not occur with a form-based authentication type.

Header Variables: It may not be possible to pass header variables other than REMOTE_USER to Webgates installed on Lotus Notes Domino Web servers when using Client Certificate authentication scheme.

For example, header variables cannot be set on the one request where Client Certificate authentication occurs. However, all other requests do allow header variables to be set.

For more information, see Chapter 29, "Configuring Lotus Domino Web Servers for 10g WebGates".

E.36.7 Errors, Loss of Access, and Unpredictable Behavior

Symptom: If you installed Access Manager on UNIX under a different user ID than you used to create your Web server instance, Access Manager can become unstable. Users may experience behavior such as:

- Random bug report pages

- Failure to write to log file errors
- Loss of access to Web pages

Solution: Change file permissions using the chown command. Change the Access Manager directory to the same user ID that you used to create your Web server instance.

E.36.8 Known Issues for ISA Web Server

Webgate uses ISAPI extension for displaying user deny error message and for displaying the diagnostic page. However, ISA 2006 does not support extensions. Therefore:

- If the user is denied access by Webgate, the user gets Page Cannot be displayed error message instead of Access Manager denied access error message.
- The following diagnostic URL does not work for ISA: http(s)://hostname:port/access/oblix/apps/webgate/bin/webgate.dll?progid=1 for webgate.

E.36.9 Oracle HTTP Server Fails to Start with LinuxThreads

After installing a Webgate instance on an Oracle HTTP Server, the server does not start up. This occurs because Access Manager uses an older Linux threading model.

> **Note:** When running Access Manager, LinuxThreads is used by default. This requires setting the environment variable LD_ASSUME_KERNEL to 2.4.19. If you are using NPTL with Access Manager, you do not set LD_ASSUME_KERNEL to 2.4.19.9

Solution: When using LinuxThreads mode, comment out the Perl module in the httpd.conf file, update the LD_ASSUME_KERNEL environment variable, and restart, as described in the following procedure.

To resolve the failure to start Oracle HTTP Server in LinuxThreads mode

1. Comment out the Perl module in the httpd.conf file in the following location:

   Oracle HTTP Server 11g: `$ORACLE_INSTANCE/config/OHS/ohs_name/httpd.conf`

   Oracle HTTP Server v2: `OH$/ohs/conf/httpd.conf`

   Oracle HTTP Server v1.3: `OH$/Apache/Apache/conf/httpd.conf`

2. To update the LD_ASSUME_KERNEL value, open the following file in a text editor:

   `OH$/opmn/conf/opm.xml`

3. Find the following line:

   ```
   <process-type id="HTTP_Server" module-id="OHS">
   ```

   Add the following information under the line you found in the previous step:

   ```
   <environment>
   <variable id="LD_ASSUME_KERNEL" value="2.4.19" />
   </environment>
   ```

4. Save this file.

5. Run the following commands to implement your changes:

```
opmnctl stopall
opmnctl startall
```

E.36.10 Oracle HTTP Server Webgate Fails to Initialize On Linux Red Hat 4

This situation might arise whether you are using Access Manager with LinuxThreads or NPTL.

Symptom: Webgate fails to initialize when installed on an Oracle HTTP Server running Red Hat Enterprise Server version 4.0 with a kernel version lower than 2.6.9-34.EL. Version 2.6.9-34.EL is supplied with the Red Hat version 4, update 3.

Solution: To prevent this problem, you must upgrade to Red Hat version 4, update 3 or higher.

E.36.11 Oracle HTTP Server Web Server Configuration File Issue

Problem

With Oracle Application Server 10.1.x, OC4J, when the httpd.conf file is modified automatically during Webgate installation, it can be corrupted.

Solution

Before installing Webgate, run the following command to prevent the httpd.conf file from being overwritten.

```
$ORACLE_HOME/dcm/bin/dcmctl updateConfig -ct ohs
```

E.36.12 Issues with IIS v6 Web Servers

On IIS 6 Web servers only, you must run the WWW service in IIS 5.0 isolation mode, which is a requirement of the ISAPI postgate filter. This scenario will work if you have 32-bit Access Manager binaries running on a 32-bit Windows operating system. However, there is an issue if you attempt to run a 32-bit postgate.dll on a 64-bit Windows machine with IIS running in 32-bit mode.

Problem

When running IIS in IIS5.0 isolation mode, you see the following message:

"ISAPI Filter 'C:\webgate\access\oblix\apps\webgate\bin\webgate.dll' could not be loaded due to a configuration problem.

Cause

The current configuration only supports loading images built for an AMD 64-bit processor architecture. The data field contains the error number.

Solution

To learn more about this issue, including how to troubleshoot this kind of processor architecture mismatch error, see the following Web site:

http://go.microsoft.com/fwlink/?LinkId=29349

For more information, see Help and Support Center at:

http://go.microsoft.com/fwlink/events.asp

Problem

IIS5 never existed as 64-bit. However, IIS v6's IIS5 Compatibility Mode on 64-bit Windows computers only runs as 64-bit.

Cause

It is architecturally impossible run IIS5 Isolation Mode 32- bit on 64-bit Windows, as described in documentation available through the following URLs:

```
http://www.microsoft.com/communities/newsgroups/en-us/default.aspx?dg=microsoft.public.inetserver.iis&tid=5dd07102-8896-40cc-86cb-809060fa9426&cat=en_US_02ceb021-bb43-476d-8f8f-6c00a363ccf5&lang=en&cr=US&p=1

http://blogs.msdn.com/david.wang/archive/2005/12/14/HOWTO-Diagnose-one-cause-of-W3SVC-failing-to-start-with-Win32-Error-193-on-64bit-Windows.aspx
```

E.36.13 PCLOSE Error When Starting Sun Web Server

Symptom: When attempting to start the Sun Web server, you get an error like the following:

```
Unable to start, PCLOSE
```

Solution: A number of problems can cause this error:

- A syntax error in your `obj.conf` file
- Leading spaces in your `obj.conf` file
- Installing Access Manager as a different user ID than what you used to create your Web server instance
- A carriage return at the end of the `obj.conf` file

E.36.14 Removing and Reinstalling IIS DLLs

When Access Manager is running with Microsoft's IIS Web server, you must manually uninstall and reinstall the following ISAPI filters when reinstalling Access Manager.

- `tranfilter.dll`
- `oblixlock.dll` (if you installed Webgate)
- `webgate.dll` (if you installed Webgate)

To remove and reinstall IIS DLLs

1. Uninstall Access Manager.
2. Manually uninstall the preceding DLLs.
3. Reinstall Access Manager.Active Directory.
4. Manually reinstall the DLLs.

> **Note:** These filters can change depending on the version of IIS you are using. If these filters do not exist or there are others present, contact Oracle to determine if the filters that are present need to be removed.

E.37 Windows Native Authentication

Problem

After setting up Windows Native Authentication, and accessing the WNA-protected page, the browser might give an error indicating that the user name and/or password are incorrect.

Cause

The Identity Store used by Oracle Access Management might not point to Windows Active Directory. By default, the identity store is Embedded LDAP.

Solution

1. In the Oracle Access Management Console, review the identity store configuration: System Configuration, Data Sources, User Identity Store.
2. Confirm the LDAP store settings point to Active Directory.