Oracle® Fusion Middleware

Administrator's Guide for Oracle HTTP Server

11*g* Release 1 (11.1.1)

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This guide describes how to manage Oracle HTTP Server, including how to start and stop Oracle HTTP Server, how to manage network components, configure listening ports, and extend basic functionality using modules.

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Oracle Fusion Middleware Administrator's Guide for Oracle HTTP Server, 11*g* Release 1 (11.1.1)

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Preface

This guide describes how to manage Oracle HTTP Server, including how to start and stop Oracle HTTP Server, how to manage network components, configure listening ports, and extend basic functionality using modules.

Audience

Oracle Fusion Middleware Administrator's Guide for Oracle HTTP Server is intended for application server administrators, security managers, and managers of databases used by application servers. This documentation is based on the assumption that readers are already familiar with Apache HTTP Server.

Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.

For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*."

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Related Documents

For more information, see the following documents in the Oracle Fusion Middleware 11*g* Release 1 (11.1.1) documentation set:

- *Oracle Fusion Middleware Concepts*
- *Oracle Fusion Middleware Administrator's Guide*

- *Oracle Fusion Middleware High Availability Guide*
- Apache documentation included in this library

> **Note:** Readers using this guide in PDF or hard copy formats will be unable to access third-party documentation, which Oracle provides in HTML format only. To access the third-party documentation referenced in this guide, use the HTML version of this guide and click the hyperlinks.

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.

Part I

Understanding Oracle HTTP Server

This part presents introductory and conceptual information about Oracle HTTP Server. It contains the following chapters:

1

Introduction to Oracle HTTP Server

Oracle HTTP Server is the Web server component for Oracle Fusion Middleware. It provides a listener for Oracle WebLogic Server and the framework for hosting static pages, dynamic pages, and applications over the Web.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This chapter includes the following sections:

1.1 What is Oracle HTTP Server

Oracle HTTP Server 11*g*, Release 1 (11.1.1.9.0) is based on Apache HTTP Server 2.2.22 (with critical bug fixes from higher versions) infrastructure, and includes modules developed specifically by Oracle. The features of single sign-on, clustered deployment, and high availability enhance the operation of the Oracle HTTP Server. Oracle HTTP Server has the following components to handle client requests:

- HTTP listener, to handle incoming requests and route them to the appropriate processing utility.
- Modules (mods), to implement and extend the basic functionality of Oracle HTTP Server. Many of the standard Apache HTTP Server modules are included with Oracle HTTP Server. Oracle also includes several modules that are specific to Oracle Fusion Middleware to support integration between Oracle HTTP Server and other Oracle Fusion Middleware components.
- Perl interpreter, a persistent Perl runtime environment embedded in Oracle HTTP Server through mod_perl.

Oracle HTTP Server enables developers to program their site in a variety of languages and technologies, such as the following:

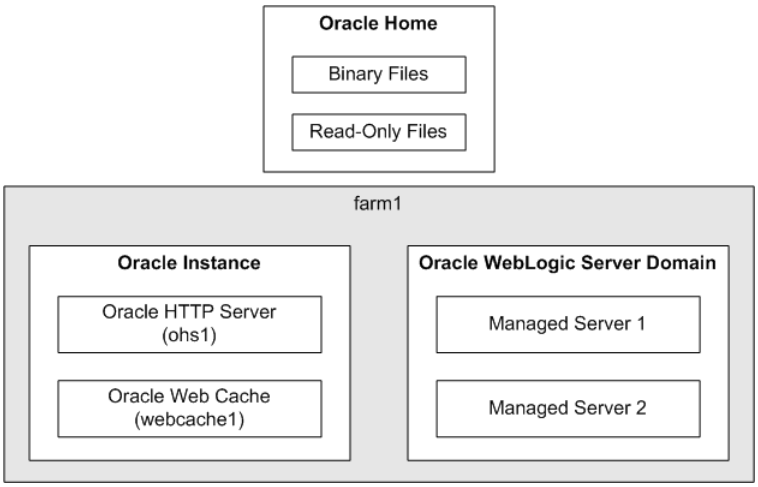
- Perl (through mod_perl and CGI)
- C (through CGI and FastCGI)
- C++ (through FastCGI)
- PHP (through mod_php)
- Oracle PL/SQL

Oracle HTTP Server can also be a proxy server, both forward and reverse. A reverse proxy enables content served by different servers to appear as if coming from one server.

Figure 1–1 shows an example of an Oracle home and a farm (`farm1`) consisting of an Oracle instance and an Oracle WebLogic Server domain. The Oracle instance in this example includes two components: Oracle HTTP Server (`ohs1`) and Oracle Web Cache (`webcache1`). The Oracle WebLogic Server domain includes two managed servers.

Note: For more information about Fusion Middleware concepts, see the *Oracle Fusion Middleware Concepts*.

Figure 1–1 Oracle Fusion Middleware Farm



1.1.1 Key Features of Oracle HTTP Server

The following sections describe some of the key features of Oracle HTTP Server:

- Section 1.1.1.1, "Security: Encryption with Secure Sockets Layer"
- Section 1.1.1.2, "Security: Single Sign-On"
- Section 1.1.1.3, "Distributed Authoring and Versioning (DAV) Support"
- Section 1.1.1.4, "URL Rewriting and Proxy Server Capabilities"
- Section 1.1.1.5, "Oracle Process Manager and Notification Server"
- Section 1.1.1.6, "Web Server 1.1 Plug-Ins for Use with Oracle WebLogic Server"
- Section 1.1.1.7, "Other Oracle Plug-Ins"
- Section 1.1.1.8, "mod_plsql"

- Section 1.1.1.9, "Server-Side Includes"
- Section 1.1.1.10, "Perl"
- Section 1.1.1.11, "C / C++ (CGI and FastCGI)"
- Section 1.1.1.12, "Load Balancing"
- Section 1.1.1.13, "SSL FIPS Mode Can Be Configured as a SSLFIPS Directive"

1.1.1.1 Security: Encryption with Secure Sockets Layer

Secure Sockets Layer (SSL) is required to run any Web site securely. Oracle HTTP Server supports SSL encryption based on patented, industry standard, algorithms. SSL works seamlessly with commonly-supported Internet browsers. Security features include the following:

- SSL hardware acceleration support uses dedicated hardware for SSL. Hardware encryption is faster than software encryption.
- Variable security per directory allows individual directories to be protected by different strength encryption.
- Oracle HTTP Server and Oracle WebLogic Server communicate using the HTTP protocol to provide both encryption and authentication. You can also enable HTTP tunneling for the T3 or IIOP protocols to provide non-browser clients access to WebLogic Server services.

See Also: *Oracle Fusion Middleware Security Guide*

1.1.1.2 Security: Single Sign-On

Basic authentication for HTTP servers uses a flat file with encrypted passwords. This functionality is provided by the Apache mod_access module.

Oracle HTTP Server supports standard authentication as well as single sign-on. The mod_osso module is included to support single sign-on across sites and across applications. This security feature provides a better end user experience because users only have to log in once. It also helps the development cycle because most of the security is declarative.

The mod_osso supported with the current release is associated with Oracle Access Manager and the SSO Agent. For more information, see "Understanding Single Sign-On with Access Manager" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*.

See Also:

- *Oracle Fusion Middleware Administrator's Guide for Oracle Access Management*
- *Oracle Fusion Middleware Security Guide*
- Section 3.7, "mod_osso"

1.1.1.3 Distributed Authoring and Versioning (DAV) Support

WebDAV is an HTTP based protocol that allows DAV enabled clients, such as Microsoft Office and Microsoft Windows Explorer, to edit files on a server. Oracle HTTP Server enhances DAV support with the mod_oradav module. This module enables WebDAV clients to connect to an Oracle database, read and write content, query, and lock documents in various schemas.

1.1.1.4 URL Rewriting and Proxy Server Capabilities

Active Web sites usually update their Web pages and directory contents often, and possibly their URLs as well. Oracle HTTP Server makes it easy to accommodate the changes by including an engine (supplied by the Apache mod_rewrite module) that supports URL rewriting so end users do not have to change their bookmarks.

Oracle HTTP Server also supports reverse proxy capabilities (supplied by the Apache mod_proxy module), making it easier to make content served by different servers to appear from one single server.

For more information on mod_rewrite and mod_proxy, see this URL:

`http://httpd.apache.org/docs/2.2/mod/`

1.1.1.5 Oracle Process Manager and Notification Server

Oracle Fusion Middleware provides a high availability infrastructure integration with Oracle Process Manager and Notification Server (OPMN), for process management, failure detection, and failover for Oracle HTTP Server processes.

See Also:

- *Oracle Fusion Middleware High Availability Guide*
- *Oracle Fusion Middleware Oracle Process Manager and Notification Server Administrator's Guide*

1.1.1.6 Web Server 1.1 Plug-Ins for Use with Oracle WebLogic Server

Web server plug-ins allow requests to be proxied from Oracle HTTP Server, Oracle iPlanet Web Server, Apache HTTP Server, or Microsoft Internet Information Server (IIS) to Oracle WebLogic Server. In this way, plug-ins enable the HTTP server to communicate with applications deployed on the WebLogic Server.

The plug-in enhances an HTTP server installation by allowing Oracle WebLogic Server to handle requests that require dynamic functionality. In other words, you typically use a plug-in where the HTTP server serves static pages such as HTML pages, while Oracle WebLogic Server serves dynamic pages such as HTTP Servlets and Java Server Pages (JSPs).

Oracle WebLogic Server may be operating in a different process, possibly on a different host. To the end user (the browser) the HTTP requests delegated to Oracle WebLogic Server still appear to be coming from the HTTP server.

In addition, the HTTP-tunneling facility of the WebLogic client-server protocol also operates through the plug-in, providing access to all Oracle WebLogic Server services.

For more information, see *Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*.

1.1.1.7 Other Oracle Plug-Ins

Oracle provides the following plug-ins to enable third-party web servers to work with Oracle HTTP Server:

- Oracle SSO Plug-In is a separately-available component that enables Microsoft IIS to be integrated with Oracle Fusion Middleware Single Sign-On. For more information, see Appendix A, "Using Oracle WebLogic Server Proxy Plug-In for Third-Party Web Servers."
- WebGates for Oracle Access Manager. A WebGate is a web-server plug-in for Oracle Access Manager (OAM) that intercepts HTTP re-quests and forwards them to the Access Server for authentication and authorization. For more information,

see *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service.*

- OProxy Plug-In for Oracle HTTP Server 11g and other Web Servers has been deprecated and will be discontinued in a future release. This legacy proxy solution was designed to front-end applications deployed on Oracle Application Server 10g. Oracle Fusion Middleware 11g Applications are now deployed on WebLogic. Oracle HTTP Server 11g includes a built-in proxy module optimized to front-end this environment. If you are using FMW 10g-based Proxy Plug-In, you should migrate to Oracle HTTP Server 11g based proxy solutions for a well integrated deployment or leverage the built-in proxy modules within other Web Servers. For more information, see *Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*.

1.1.1.8 mod_plsql

The mod_plsql module connects Oracle HTTP Server to an Oracle database, enabling you to create Web applications using Oracle stored procedures. For more information, see Section 3.10, "mod_plsql."

1.1.1.9 Server-Side Includes

Server-Side Includes provide an easy way of adding dynamic or uniform static content across all pages on a site. It is typically used for header and footer information. Oracle HTTP Server supports special directives to enable these only for certain types of files, or for specified virtual hosts.

1.1.1.10 Perl

Perl is a scripting language often used to provide dynamic content. Perl scripts can either be called as a CGI program, or directly through the mod_perl module. Oracle Fusion Middleware uses Perl version 5.10.

See Also: Section 3.8, "mod_perl"

1.1.1.11 C / C++ (CGI and FastCGI)

CGI programs are commonly used to program Web applications. Oracle HTTP Server enhances the programs by providing a mechanism to keep them alive beyond the request lifecycle.

1.1.1.12 Load Balancing

Oracle HTTP Server includes the mod_wl_ohs module, which routes requests to Oracle WebLogic Server. The mod_wl_ohs module provides the same load balancing functionality as the Oracle WebLogic Server plug-in for Apache HTTP Server (mod_wl). Note that the modules mentioned in this section are different from the plug-ins described in Section 1.1.1.7, "Other Oracle Plug-Ins."

For more information, see "The Dynamic Server List" section of *Using Web Server Plug-Ins with Oracle WebLogic Server*.

1.1.1.13 SSL FIPS Mode Can Be Configured as a SSLFIPS Directive

In the current release of Oracle HTTP Server, SSL FIPS mode can be configured as a SSLFIPS directive, just as can be done in Apache open source. For more information on Oracle HTTP Server support, for the SSL FIPS mode, see Section E.4.6, "SSLFIPS."

1.2 Understanding Oracle HTTP Server Directory Structure

Oracle HTTP Server directories are divided between the Oracle home and the Oracle instance. The Oracle home directories are read-only, and contain the Oracle Fusion Middleware binaries. The Oracle instance directories contain the module configuration files and content pages for Oracle HTTP Server. Table 1–1 shows the subdirectories for Oracle HTTP Server in the Oracle home directory.

Table 1–1 Oracle Home Directories

Directory	Contents
`ohs/bin`	Oracle HTTP Server binary files.
`ohs/conf`	Oracle HTTP Server template configuration files, which get provisioned to an Oracle instance when an Oracle HTTP Server component is configured. **Note:** These files should only be edited by advanced Oracle HTTP Server users.
`ohs/modules`	Oracle HTTP Server modules

Table 1–2 shows the subdirectories for Oracle Fusion Middleware in the Oracle instance directory.

Table 1–2 Oracle Instance Directories

Directory Name	Contents
`config/OHS/`*`component_name`*	Oracle HTTP Server configuration files.
`config/OHS/`*`component_name`*`/htdocs`	Static content and CGI scripts for Oracle HTTP Server.
`config/OHS/`*`component_name`*`/moduleconf`	Configuration files that are automatically included in Oracle HTTP Server configuration. Be careful not to create any files with a `.conf` extension in this directory that you do not want to be included in the configuration.
`diagnostics/logs/OHS/`*`component_name`*	Oracle HTTP Server component instance log files.

1.3 Understanding Configuration Files

Configuration for Oracle HTTP Server are specified through **directives** in configuration files in the exact same manner as Apache HTTP Server configuration files. For more information about Apache HTTP Server configuration files, see the Apache HTTP Server 2.2 Users Guide.

1.4 Oracle HTTP Server Support

Oracle provides technical support for the following Oracle HTTP Server features and conditions:

- Modules included in the Oracle distribution. Oracle does not support modules obtained from any other source, including the Apache Software Foundation. Oracle HTTP Server will still be supported when non-Oracle-provided modules are included. If it is suspected that the non-Oracle-provided modules are contributing to reported problems, customers may be requested to reproduce the problems without including those modules.

- Problems that can be reproduced within an Oracle HTTP Server configuration consisting only of supported Oracle HTTP Server modules.
- Use of the included Perl interpreter with the supported Oracle HTTP Server configuration.

2

Management Tools for Oracle HTTP Server

Note: Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.

For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

Oracle provides the following management tools for Oracle HTTP Server:

- Fusion Middleware Control, which is a browser-based management tool
- `opmnctl`, which is a command-line management tool.

This chapter includes the following sections:

2.1 Overview of Oracle HTTP Server Management

The main tool for managing Oracle HTTP Server is Fusion Middleware Control, which is a browser-based tool for administering and monitoring the Oracle Fusion Middleware environment.

See Also: *Oracle Fusion Middleware Administrator's Guide*

2.2 Accessing Fusion Middleware Control

To display Fusion Middleware Control, you enter the Fusion Middleware Control URL, which includes the name of the WebLogic Administration Server host and the port number assigned to Fusion Middleware Control during the installation. The following shows the format of the URL:

`http://`*`hostname.domain:port`*`/em`

If you saved the installation information by clicking **Save** on the last installation screen, the URL for Fusion Middleware Control is included in the file that is written to disk.

1. Display Fusion Middleware Control by entering the URL in your Web browser. For example:

   ```
   http://host1.acme.com:7001/em
   ```

   The Welcome page is displayed:

2. Enter the Fusion Middleware Control administrator user name and password and click **Login**.

   The default user name for the administrator user is `weblogic`. This is the account you can use to log in to the Fusion Middleware Control for the first time. The `weblogic` password is the one you supplied during the installation of Fusion Middleware Control.

2.3 Accessing the Oracle HTTP Server Home Page

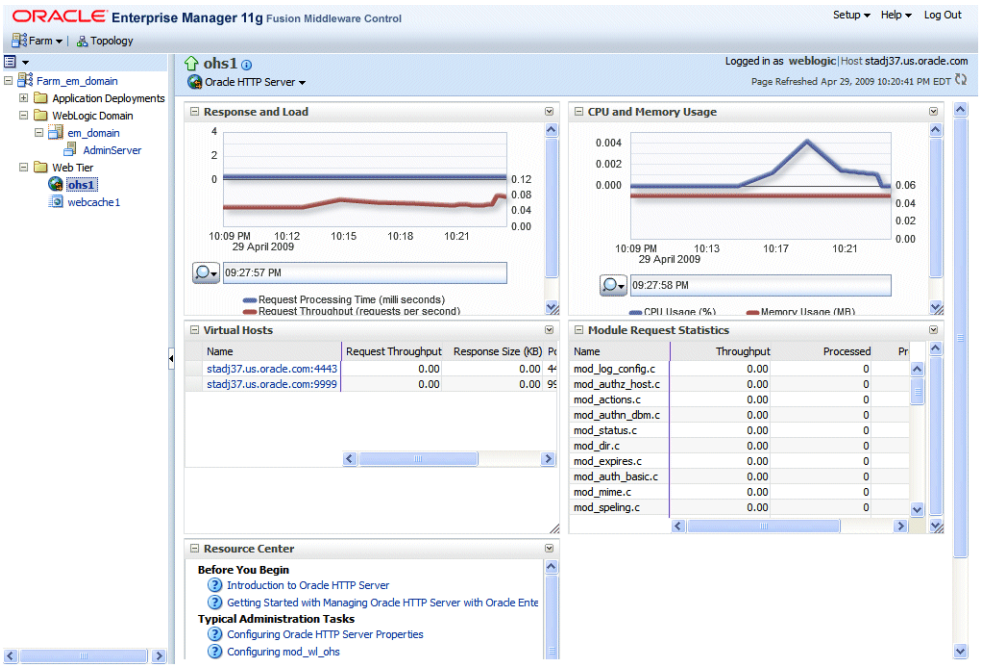
The Oracle HTTP Server Home page in Fusion Middleware Control contains menus and regions that enable you to manage the server. Use the menus for monitoring, managing, routing, and viewing general information.

2.3.1 Navigating Within Fusion Middleware Control

When you select a target, such as a WebLogic Managed Server or a component, such as Oracle HTTP Server, the target's home page is displayed in the content pane and that target's menu is displayed at the top of the page, in the context pane. For example, if you select an Oracle HTTP Server component from the Web Tier folder, the Oracle HTTP Server menu is displayed. You can also view the menu for a target by right-clicking the target in the navigation pane.

Figure 2–1 shows the target navigation pane and the home page of Oracle HTTP Server.

Figure 2–1 Oracle HTTP Server Home Page



The Oracle HTTP Server home page contains the following regions:

- Response and Load Region: Provides information such as the number of active requests, how many requests were submitted, and how long it took for Oracle HTTP Server to respond to a request. It also provides information about the number of bytes processed with the requests.
- CPU and Memory Usage Region: Shows how much CPU (by percentage) and memory (in megabytes) are being used by an Oracle HTTP Server instance.
- Virtual Hosts Region: Shows the virtual hosts for Oracle HTTP Server.
- Module Request Statistics Region: Shows the modules for Oracle HTTP Server.
- Resource Center: Provides links to books and topics related to Oracle HTTP Server.

> **See Also:** The *Oracle Fusion Middleware Administrator's Guide* contains detailed descriptions of all the items on the target navigation pane and the home page.

2.4 Using the opmnctl Command-line Tool

You can use the `opmnctl` command-line interface to start and stop system components, monitor system components, and perform many other tasks related to process management.

The following are some of the `opmnctl` operations that you can perform with Oracle HTTP Server components:

- Create additional components.
- Delete existing components.
- Start and/or stop components.

- Check a component's status.
- Check a component's port usage (see Chapter 6, "Managing Connectivity").

See Also: *Oracle Process Manager and Notification Server*

The `opmnctl` command is located in the *`ORACLE_HOME`*`/opmn/bin` directory in an Oracle home and in the *`ORACLE_INSTANCE`*`/bin` directory in an Oracle instance.

Note: Oracle recommends running `opmnctl` from the same `ORACLE_INSTANCE` in which Oracle HTTP Server is running, unless that instance is unavailable.

If an `ORACLE_INSTANCE` has not been created, then run `opmnctl` from *`ORACLE_HOME`*`/opmn/bin`.

The following example demonstrates using `opmnctl` in a command shell to start an Oracle HTTP Server component, and to then verify the status of that component.

```
> $ORACLE_INSTANCE/bin/opmnctl startproc ias-component=ohs1
> $ORACLE_INSTANCE/bin/opmnctl status
Processes in Instance: instance1
---------------------------------+--------------------+---------+---------
ias-component                    | process-type       |     pid | status
---------------------------------+--------------------+---------+---------
webcache1                        | WebCache-admin     |   19556 | Alive
webcache1                        | WebCache           |   19555 | Alive
ohs1                             | OHS                |    7249 | Alive
```

3

Understanding Oracle HTTP Server Modules

Modules (mods) extend the basic functionality of Oracle HTTP Server, and support integration between Oracle HTTP Server and other Oracle Fusion Middleware components.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This chapter discusses the modules developed specifically by Oracle for Oracle HTTP Server. It includes the following sections:

3.1 List of Included Modules

This section lists all of the modules bundled with Oracle HTTP Server.

Oracle-developed Modules for Oracle HTTP Server

The following modules have been developed specifically by Oracle for Oracle HTTP Server:

- mod_certheaders
- mod_dms
- mod_onsint
- mod_oradav
- mod_ossl
- mod_osso
- mod_plsql
- mod_security
- mod_wl_ohs

Apache HTTP Server and Third-party Modules in Oracle HTTP Server

Oracle HTTP Server also includes the following Apache HTTP Server and third-party modules out-of-the-box. These modules are *not* developed by Oracle.

> **See Also:** For information about Apache HTTP Server modules, including lists and descriptions of their valid directives, see the Apache documentation at:
>
> `http://httpd.apache.org/docs/2.2/mod/`

- mod_authz_host
- mod_actions
- mod_alias
- mod_asis
- mod_auth_basic
- mod_auth_dbm
- mod_authn_anon
- mod_autoindex
- mod_authn_dbm
- mod_authn_file
- mod_authz_groupfile
- mod_authz_host
- mod_authz_user
- mod_cern_meta
- mod_cgi
- mod_cgid (Unix only)
- mod_charset_lite (**deprecated**)
- mod_deflate
- mod_dir
- mod_env
- mod_expires
- mod_fastcgi
- mod_headers
- mod_imagemap
- mod_include
- mod_info
- mod_log_config
- mod_logio
- mod_mime
- mod_mime_magic
- mod_negotiation
- mod_perl
- mod_proxy
- mod_proxy_balancer
- mod_proxy_connect
- mod_proxy_ftp
- mod_proxy_http
- mod_rewrite
- mod_reqtimeout
- mod_setenvif
- mod_speling
- mod_status
- mod_unique_id
- mod_userdir
- mod_usertrack

3.2 mod_certheaders

The mod_certheaders module enables reverse proxies that terminate Secure Sockets Layer (SSL) connections in front of Oracle HTTP Server to transfer information regarding the SSL connection, such as SSL client certificate information, to Oracle HTTP Server and the applications running behind Oracle HTTP Server. This information is transferred from the reverse proxy to Oracle HTTP Server using HTTP headers. The information is then transferred from the headers to the standard CGI environment variable. The mod_ossl module or the mod_ssl module populate the variable if the SSL connection is terminated by Oracle HTTP Server.

The mod_certheaders module also enables certain requests to be treated as HTTPS requests even though they are received through HTTP. This is done using the `SimulateHttps` directive.

`SimulateHttps` takes the container it is contained within, such as `<VirtualHost>` or `<Location>`, and treats all requests received for this container as if they were received through HTTPS, regardless of the real protocol used by the request.

3.3 mod_dms

Note: mod_dms is disabled by default in Oracle HTTP Server 11.1.1.9.

The mod_dms module enables you to monitor the performance of site components using Oracle Dynamic Monitoring Service (DMS).

For more information about DMS, see the "Oracle Dynamic Monitoring Service" chapter in the *Oracle Fusion Middleware Performance and Tuning Guide*.

3.4 mod_onsint

The mod_onsint module provides integration support with Oracle Notification Service (ONS) and Oracle Process Manager and Notification Server (OPMN). It is an Oracle module and provides the following functionality.

- Provides a subscription mechanism for ONS notifications within Oracle HTTP Server. mod_onsint receives notification for all modules within an Oracle HTTP Server instance.
- Publishes `PROC_READY ONS` notifications so that OPMN knows that the listener is up and ready. It also provides information such as DMS metrics and information about how the listener can be contacted. These notifications are sent periodically by mod_onsint as long as the Oracle HTTP Server instance is running.

mod_onsint runs as a child process within a Oracle HTTP Server on UNIX and runs as a thread within a child process on Windows. This thread is responsible for sending and receiving ONS messages.

There is an optional directive called `OpmnHostPort` that can be configured for mod_onsint. This directive enables you to specify a hostname and port that OPMN should use for pinging the Oracle HTTP Server instance that mod_onsint is running in. If `OpmnHostPort` is not specified, mod_onsint chooses an HTTP port automatically. In certain circumstances, you may want to choose a specific HTTP port and hostname that OPMN should use to ping the listener with.

`OpmnHostPort` has the following syntax that specifies the values to pass to OPMN:

```
OpmnHostPort [<http> | <https>://]<host>:<port>
```

For example, the following line would specify that OPMN should use HTTP, the localhost interface and port 7778 to ping this listener:

```
OpmnHostPort http://localhost:7778
```

For more information about ONS and OPMN, see the "Oracle Process Manager and Notification Overview" chapter in the *Oracle Fusion Middleware Oracle Process Manager and Notification Server Administrator's Guide*.

mod_onsint Directives

See Section E.2 for a list and descriptions of directives accepted by mod_onsint.

3.5 mod_oradav

The mod_oradav module is an Oracle Call Interface (OCI) application written in C that extends the implementation of mod_dav. The mod_oradav directive can read and write to local files or to an Oracle database. The Oracle database must have an OraDAV driver (a stored procedure package) for the mod_oradav module to map WebDAV activity to database activity. Essentially the mod_oradav module enables WebDAV clients to connect to an Oracle database, read and write content, and query and lock documents in various schemas.

You can configure the mod_oradav module using standard Oracle HTTP Server directives. Use the Advanced Server Configuration page of Fusion Middleware Control to configure the mod_oradav module. The mod_oradav directive can immediately leverage other module code (such as mime_magic) to perform content management tasks. Most OraDAV processing activity involves streaming content to and from a content provider. The mod_oradav directive uses OCI streaming logic directly within Oracle HTTP Server.

See Also:

- Chapter 9, "Configuring mod_oradav"
- *Oracle Portal Administrator's Guide*
- For information about using the mod_oradav module to access database schemas for access by third-party tools, such as Adobe GoLive, Macromedia Dreamweaver, and Oracle *inter*Media, go to the OraDAV information available on OTN at:

  `http://www.oracle.com/technology/index.html`

mod_oradav Directives

See Section E.3 for a list and descriptions of directives accepted by mod_oradav.

3.6 mod_ossl

The mod_ossl module enables strong cryptography for Oracle HTTP Server. This Oracle module is a plug-in to Oracle HTTP Server that enables the server to use SSL. It is very similar to the OpenSSL module, mod_ssl. The mod_ossl module is based on the Oracle implementation of SSL, which supports TLS version 1.0, 1.1, and 1.2, and is based on RSA Security technology.

Note: The SSLv2 protocol is no longer supported by Oracle HTTP Server. SSLv3 protocol is supported for backward compatibility. However Oracle discourages the use of SSLv3 protocol due to security concerns. For more information, see Section 8.9, "Disable SSLv2 and SSLv3 Security Protocols."

mod_ossl Directives

See Section E.4 for a list and descriptions of directives accepted by mod_ossl.

See Also: For more information, see the "Configuring SSL for the Web Tier" section of the *Oracle Fusion Middleware Administrator's Guide*.

3.7 mod_osso

Note: mod_osso is deprecated with Oracle Single Sign-On Server 10g. You should use one of the following options:

- Use the Webgate plug-in; for more information, see one of the following documents:
  - *Oracle® Fusion Middleware Installing WebGates for Oracle Access Manager*
  - *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service*
- Use the SSO Agent solution provided in Oracle Access Manager 11*g*, which uses the same mod_osso module and configuration. For more information, see "Registering Partners (Agents and Applications) by Using the Console" in *Oracle Fusion Middleware Administrator's Guide for Oracle Access Manager with Oracle Security Token Service*.

The mod_osso module enables single sign-on for Oracle HTTP Server by examining incoming requests and determining whether the requested resource is protected. If the resource is protected, then the module retrieves the Oracle HTTP Server cookie.

The module is disabled by default. You can enable mod_osso module on the Server Configuration Properties page of Fusion Middleware Control. For more information see Section 4.3.1, "Using Fusion Middleware Control to Specify Server Properties."

mod_osso Directives

See Section E.5 for a list and descriptions of directives accepted by mod_osso.

See also: For information about forced authentication, see the *Oracle Fusion Middleware Application Developer's Guide for Oracle Identity Management*.

For information about single sign-on, see the *Oracle Fusion Middleware Security Guide*.

3.8 mod_perl

The mod_perl module embeds the Perl interpreter into Oracle HTTP Server. This eliminates start-up overhead and enables you to write modules in Perl. Oracle Fusion Middleware uses Perl version 5.10.

The module is disabled, by default. To enable the mod_perl module, follow the instructions in Section 4.4.3, "Configuring the mod_perl Module".

> **See Also:** mod_perl documentation at `http://perl.apache.org/docs/index.html`

3.8.1 Using mod_perl with a Database

This section provides information for mod_perl users working with databases. It explains how to test a local database connection and set character forms.

3.8.1.1 Using Perl to Access the Database

Perl scripts access databases using the DBI/DBD driver for Oracle. The DBI/DBD driver is part of Oracle Fusion Middleware. It calls Oracle Call Interface (OCI) to access the databases.

Once mod_perl is enabled, DBI must be enabled in the `mod_perl.conf` file to function. To enable DBI, perform the following steps:

1. Edit the `mod_perl.conf` file:
   a. In Fusion Middleware Control, navigate to the Oracle HTTP Server Advanced Server Configuration page.
   b. Select the `mod_perl.conf` file from the menu and click **Go**.
   c. Add the following line to the `mod_perl.conf` file:

      ```
      PerlModule Apache::DBI
      ```

2. Click **Apply** to save the file.
3. Restart Oracle HTTP Server as described in Section 4.1.4, "Restarting Oracle HTTP Server."

Place the Perl scripts that you want to run in the *ORACLE_INSTANCE*`/config/OHS/`*component_name*`/cgi-bin` directory.

Example 3–1 Using a Perl Script to Access a Database

```
#!ORACLE_HOME/perl/bin/perl -w
  use DBI;
  my $dataSource = "host=hostname.domain;sid=orclsid;port=1521";
  my $userName = "userid";
  my $password = "password";
  my $dbhandle = DBI->connect("dbi:Oracle:$dataSource", $userName, $password)
    or die "Can't connect to the Oracle Database: $DBI::errstr\n";
  print "Content-type: text/plain\n\n";
  print "Database connection successful.\n";
  ### Now disconnect from the database
  $dbhandle->disconnect
    or warn "Database disconnect failed; $DBI::errstr\n";
  exit;
```

To run the DBI scripts, the URLs would look like the following:

```
http://hostname.domain:port/cgi-bin/scriptname
http://hostname.domain:port/perl/scriptname
```

If a script specifies "`use Apache::DBI`" instead of "`use DBI`", then it can only run from the URL `http://hostname.domain:port/perl/scriptname`.

3.8.1.2 Testing a Database Connection

Example 3–2 shows a sample Perl script for testing a database connection. Replace the instance name, user ID, and password in the `connect` statement with proper values for the target database.

Example 3–2 Sample Perl Script For Testing Connection for Local Seed Database

```
use DBI;
print "Content-type: text/plain\n\n";
$dbh = DBI->connect("dbi:Oracle:instance_name", userid/password, "") ||
            die $DBI::errstr;
$stmt = $dbh->prepare("select * from emp order by empno")|| die $DBI::errstr;
$rc = $stmt->execute() || die $DBI::errstr;
while (($empno, $name) = $stmt->fetchrow()) {
   print "$empno $name\n";
}
warn $DBI::errstr if $DBI::err;
die "fetch error: " . $DBI::errstr if $DBI::err;
$stmt->finish() || die "can't close cursor";
$dbh->disconnect() || die "cant't log off Oracle";
```

3.8.1.3 Using SQL NCHAR Data Types

SQL NCHAR data types (NCHAR, NVARCHAR2 and NCLOB) are reliable Unicode data types. SQL NCHAR data types enable you to store Unicode characters regardless of the database character set. The character set for those data types is specified by the national character set, which is either AL16UTF16 or UTF8.

Example 3–3 shows an example of accessing SQL NCHAR data.

Example 3–3 Sample Script to Access SQL NCHAR Data

```
# declare to use the constants for character forms
use DBD::Oracle qw(:ora_forms);
# connect to the database and get the database handle
$dbh = DBI->connect( ... );

# prepare the statement and get the statement handle
$sth = $dbh->prepare( 'SELECT * FROM TABLE_N WHERE NCOL1 = :nchar1' );

# bind the parameter of a NCHAR type
$sth->bind_param( ':nchar1', $param_1 );
# set the character form to NCHAR
$sth->func( { ':nchar1' => ORA_NCHAR } , 'set_form' );

$sth->execute;
```

As shown in Example 3–3, the `set_form` function is provided as a private function that you can invoke with the standard DBI `func` method. The `set_form` function takes an anonymous hash that enables you to set the character form for parameters.

The valid values of character form are either `ORA_IMPLICIT` or `ORA_NCHAR`. Setting the character form to `ORA_IMPLICIT` causes the application's bound data to be converted to

the database character set, and ORA_NCHAR to the national character set. The default is ORA_IMPLICIT.

The constants are available as ora_forms in DBD::Oracle.

set_default_form sets the default character form for a database handle. The following example shows its syntax:

```
# specify the default form to be NCHAR
$dbh->func( ORA_NCHAR, 'set_default_form' );
```

This syntax causes the form of all parameters to be ORA_NCHAR, unless otherwise specified with set_form calls. Unlike the set_form function, the set_default_form functions on the database handle, so every statement from the database handle has the form of your choice.

Example 3–4 Sample for set_form

```
# a declaration example for the constants ORA_IMPLICIT and ORA_NCHAR
use DBD::Oracle qw(:ora_forms);

# set the character form for the placeholder :nchar1 to NCHAR
$sth->func( { ':nchar1' => ORA_NCHAR } , 'set_form' );

# set the character form using the positional index
$sth->func( { 2 => ORA_NCHAR } , 'set_form' );

# set the character form for multiple placeholders at once
$sth->func( { 1 => ORA_NCHAR, 2 => ORA_NCHAR } , 'set_form' );
```

3.9 mod_reqtimeout

mod_reqtimeout sets timeout and minimum data rate for receiving requests. mod_reqtimeout module provides protection against some DOS attacks and related issues. For more information, see:

http://httpd.apache.org/docs/2.2/mod/mod_reqtimeout.html

3.10 mod_plsql

The mod_plsql module connects Oracle HTTP Server to an Oracle database, enabling you to create Web applications using Oracle stored procedures.

To access a Web-enabled PL/SQL application, configure a PL/SQL **database access descriptor** (DAD) for the mod_plsql module. A DAD is a set of values that specifies how the module connects to a database server to fulfill an HTTP request. Besides the connection details, a DAD contains important configuration parameters for various operations in the database and for the mod_plsql module in general. Any Web-enabled PL/SQL application which makes use of the PL/SQL Web ToolKit needs to create a DAD to invoke the application.

See Also:

- *Oracle Fusion Middleware User's Guide for mod_plsql 11g Release 1 (11.1.1)*
- *Oracle Fusion Middleware PL/SQL Web Toolkit Reference 11g Release 1 (11.1.1)*

This section contains the following topics:

- Section 3.10.1, "Creating a DAD"
- Section 3.10.2, "Configuration Files for mod_plsql"
- Section 3.10.3, "Using Configuration Files and Parameters"

mod_plsql Directives

See Section E.6 for a list and descriptions of directives accepted by mod_plsql.

3.10.1 Creating a DAD

To create a DAD, perform the following steps:

1. Open the `dads.conf` configuration file.

   For the locations of mod_plsql configuration files, see Table 3–1.

   Note: You can also open and edit the `dads.conf` file by using Oracle Fusion Middleware Control, on the Oracle HTTP Server Advanced Server Configuration page, as described in Section 4.4.5, "Modifying an Oracle HTTP Server Configuration File."

2. Add the following:

   a. The `<Location>` element, which defines a virtual path used to access the PL/SQL Web Application. This directive groups a set of directives that apply to the named `Location`.

      For example, the following directive defines a virtual path called `/myapp` that will be used to invoke a PL/SQL Web application through a URL such as `http://host:port/myapp/`.

      ```
      <Location /myapp>
      ```

      Note: Earlier releases of the mod_plsql module were always mounted on a virtual path with a prefix of `/pls`. This restriction is removed in later releases but might still be a restriction imposed by some of the earlier PL/SQL applications.

   b. The `SetHandler` directive, which directs Oracle HTTP Server to enable the mod_plsql module to handle the request for the virtual path defined by the named Location:

      ```
      SetHandler pls_handler
      ```

   c. Additional Oracle HTTP Server directives that are allowed in the context of a `<Location>` directive. Typically, the following directives are used:

      ```
      Order deny,allow
      Allow from all
      ```

   d. One or more specific mod_plsql directives. For example:

      ```
      PlsqlDatabaseUsername        scott
      PlsqlDatabasePassword        tiger
      PlsqlDatabaseConnectString   orcl
      PlsqlAuthenticationMode      Basic
      ```

e. The </Location> tag to close the <Location> element.

3. Save the edits.

4. Obfuscate the DAD password by running the dadTool.pl script located in the ORACLE_HOME/bin directory.

   See Also: Section E.6.2.11, "PlsqlDatabasePassword" for instructions on performing the obfuscation.

5. Restart Oracle HTTP Server as described in Section 4.1.4, "Restarting Oracle HTTP Server."

You can create additional DADs by defining other uniquely named <Location> elements in dads.conf.

Example DADs

The following DAD connects as a specific user and has a default home page:

```
<Location /pls/mydad>
SetHandler pls_handler
Order allow,deny
Allow from All
PlsqlDatabaseUsername scott
PlsqlDatabasePassword tiger
PlsqlDatabaseConnectString prod_db
PlsqlDefaultPage scott.myapp.home
</Location>
```

The following DAD uses HTTP Basic Authentication and supports document upload/download operations:

```
<Location /pls/mydad2>
SetHandler pls_handler
Order allow,deny
Allow from All
PlsqlDatabaseConnectString prod_db2
PlsqlDefaultPage scott.myapp.my_home
PlsqlDocumentTablename scott.my_documents
PlsqlDocumentPath docs
PlsqlDocumentProcedure scott.docpkg.process_download
</Location>
```

3.10.2 Configuration Files for mod_plsql

The mod_plsql configuration parameters reside in the configuration files that are located in the *ORACLE_INSTANCE* directory, as described in Table 3–1.

Table 3–1 mod_plsql Configuration Files In an Oracle Instance

Directory Name	Contents
config/OHS/*component_name*/moduleconf	plsql.conf configuration file.
config/OHS/*component_name*/mod_plsql	dads.conf and cache.conf configuration files.

The mod_plsql configuration directives are used in these configuration files:

- plsql.conf
- dads.conf
- cache.conf

3.10.2.1 plsql.conf

The `plsql.conf` file resides in the *`ORACLE_INSTANCE`*`/config/OHS/config/OHS/`*`component_name`*`/moduleconf` directory and Oracle HTTP Server automatically loads all `.conf` files under this location. The `plsql.conf` file contains the `LoadModule` directive to load the mod_plsql module into Oracle HTTP Server, any global settings for the mod_plsql module, and include directives for `dads.conf` and `cache.conf`.

mod_plsql Directives in plsql.conf

See Section E.6.1 for a list and description of the directives used in `plsql.conf`.

> **See Also:** The `plsql.README` file, located in `ORACLE_HOME/ohs/mod_plsql`, for a detailed description of `plsql.conf`

3.10.2.2 dads.conf

The `dads.conf` file contains the configuration parameters for the PL/SQL database access descriptor. (See Table 3–1 for the file location.) A DAD is a set of values that specifies how the mod_plsql module connects to a database server to fulfill a HTTP request.

mod_plsql Directives in dads.conf

See Section E.6.2 for a list and description of the directives used in `dads.conf`.

3.10.2.3 cache.conf

The `cache.conf` file contains the configuration settings for the file system caching functionality implemented in the mod_plsql module. This configuration file is relevant only if PL/SQL applications use the `OWA_CACHE` package to cache dynamically generated content in the file system.

mod_plsql Directives in cache.conf

See Section E.6.3 for a list and description of the directives used in `cache.conf`.

3.10.3 Using Configuration Files and Parameters

While specifying a value for a configuration parameter, follow Oracle HTTP Server conventions for specifying values. For instance, if a value has white spaces in it, enclose the value with double quotes. For example:

```
PlsqlNLSLanguage "TRADITIONAL CHINESE_TAIWAN.UTF8"
```

Multi-line directives enable you to specify same directive multiple times in a DAD.

3.11 mod_security

Notes: Be aware of the following:

- mod_security was removed from earlier versions of Oracle HTTP Server but was reintroduced in version 11.1.1.7. The current release follows the recommendations and practices prescribed for open source mod_security 2.6.2. Only documentation applicable to open source Apache mod_security 2.6.2 is applicable to the Oracle HTTP Server implementation of the module.
- In Oracle HTTP Server 11.1.1.7 and later, mod_security is not loaded or configured by default; however, if you have an installation patched from 11.1.1.6, it might have loaded and configured the module due to the patch implementation.
- Oracle only supports the Oracle-supplied version of mod_security. Newer versions from modsecurity.org will not be supported.

mod_security is an open-source module that you can use to detect and prevent intrusion attacks against Oracle HTTP Server; for example, you can specify a mod_security rule to screen all incoming requests and deny requests that match the conditions specified in the rule. The mod_security module (version 2.6.2) and its prerequisites are included in the Oracle HTTP Server installation as a shared object named mod_security2.so in the ORACLE_HOME/ohs/modules directory.

This version of OHS supports only mod_security (version 2.6.2) directives, variables, action, phases and functions. *It will not be supported if you replace this module with a later version.* For more information about these directives, see the mod_security documentation, at:

http://www.modsecurity.org/documentation/ .

3.11.1 Enabling mod_security

To make the mod_security module available for use when Oracle HTTP Server is running, ensure that mod_security.conf begins with the following lines:

```
#Load Module
LoadModule security2_module "${ORACLE_HOME}/ohs/modules/mod_security2.so"
```

as shown in the mod_security.conf example in Appendix D, "Configuring mod_security". If you are an Oracle HTTP Server 11.1.1.6 user who is now using 11.1.1.9, the module is already configured properly due to previous patch implementations.

3.11.2 Configuring mod_security

Configuring mod_security involves specifying certain directives in the Oracle HTTP Server configuration file. You can specify the directives directly in the httpd.conf file in an IfModule container. Alternatively, you can specify the mod_security directives in a separate mod_security.conf file and include that .conf file in httpd.conf by using the `Include` directive.

Note that, by default, mod_security.conf does not exist, so you need to create one for your system. Appendix D, "Configuring mod_security", contains a sample mod_security.conf file that you can use for this purpose. Copy and paste the sample into a

text editor and read the entire file, editing it for your system. Then save it as your own mod_security.conf and included from your httpd.conf.

3.12 mod_wl_ohs

The mod_wl_ohs module enables requests to be proxied from Oracle HTTP Server 11g to Oracle WebLogic Server.

For information about the prerequisites and procedure for configuring mod_wl_ohs, see "Configuring the mod_wl_ohs Plug-In for Oracle HTTP Server" in *Using Web Server 1.1 Plug-Ins with Oracle WebLogic server*.

mod_wl_ohs Directives

See Section E.7 for a list and descriptions of directives accepted by mod_wl_ohs.

Note: mod_wl_ohs is similar to the mod_wl plug-in, which you can use to proxy requests from Apache HTTP Server to Oracle WebLogic server. However, while the mod_wl plug-in for Apache HTTP Server should be downloaded and installed separately, the mod_wl_ohs plug-in is included in the Oracle HTTP Server installation.

Part II

Managing Oracle HTTP Server

This part presents information about management tasks for Oracle HTTP Server. It contains the following chapters:

4

Getting Started with Oracle HTTP Server

This chapter provides information on getting started with Oracle HTTP Server. It discusses the procedures needed to configure and use Oracle HTTP Server in your environment.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

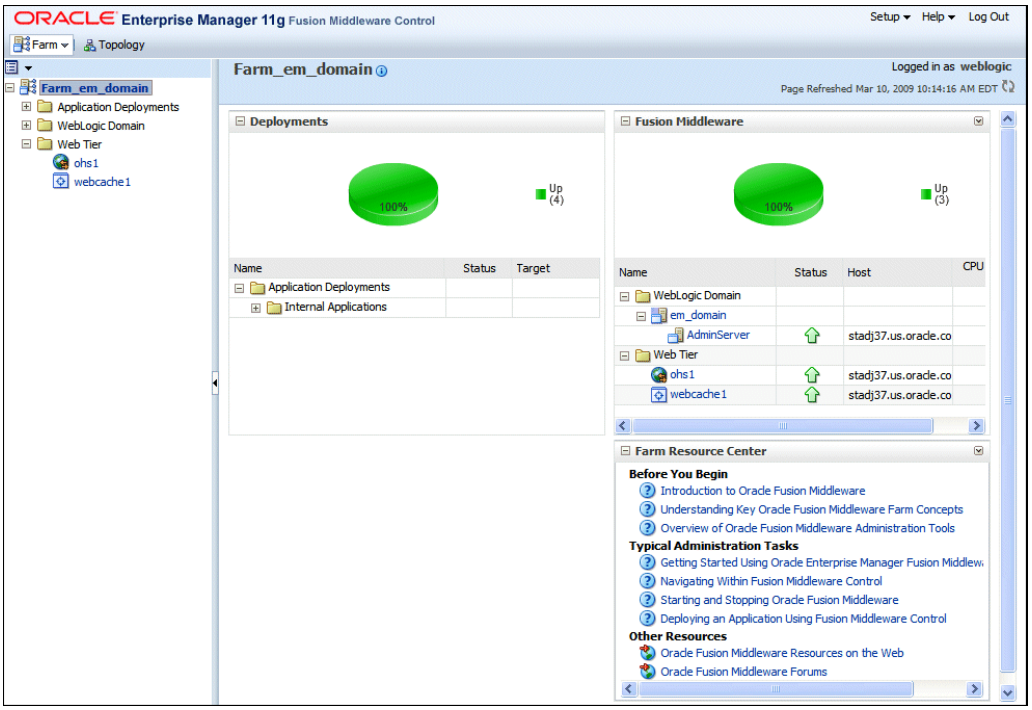
This chapter includes the following sections:

4.1 Starting, Stopping, and Restarting Oracle HTTP Server

You can use Fusion Middleware Control or the `opmnctl` command to start, stop, and restart Oracle HTTP Server.

> **Note:** Do not use the `apachectl` utility to manage Oracle HTTP Server.

The Fusion Middleware Control home page shows the status of all installed components, including Oracle HTTP Server, as illustrated in the following figure:



You can determine the status of Oracle HTTP Server components using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl status

Processes in Instance: instance1
---------------------------------+--------------------+---------+---------
ias-component                    | process-type       |     pid | status
---------------------------------+--------------------+---------+---------
webcache1                        | WebCache-admin     |   19556 | Alive
webcache1                        | WebCache           |   19555 | Alive
ohs1                             | OHS                |    7249 | Alive
```

4.1.1 Understanding the PID File

When Oracle HTTP Server starts up, it writes the process ID (PID) of the parent `httpd` process to the `httpd.pid` file located, by default, in the following directory:

ORACLE_INSTANCE`/diagnostics/logs/OHS/`*component_name*

The process ID can be used by the administrator when restarting and terminating the daemon. If a process stops abnormally, it is necessary to stop the httpd child processes using the kill command.

The `PidFile` directive in `httpd.conf` specifies the location of the PID file.

Note: On UNIX/Linux platforms, if you edit the `PidFile` directive, you also have to edit the `ORACLE_HOME/ohs/bin/apachectl` file to specify the new location of the PID file.

See Also: PidFile directive in the Apache HTTP Server documentation.

4.1.2 Starting Oracle HTTP Server

This section describes how to start Oracle HTTP Server using Fusion Middleware Control and `opmnctl`.

4.1.2.1 Using Fusion Middleware Control to Start Oracle HTTP Server

To start Oracle HTTP Server using Fusion Middleware Control:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Control** from the Oracle HTTP Server menu.
3. Select **Start Up** from the Control menu.

4.1.2.2 Using opmnctl to Start Oracle HTTP Server

To start all Oracle HTTP Server components in an Oracle instance using `opmnctl`:

> **Note:** The `opmnctl` script can be run only under the user ID that was used to install the product. Typically, this user ID is "oracle", but can be any ID you decide to use.

```
> $ORACLE_INSTANCE/bin/opmnctl startproc process-type=OHS
```

To start a specific Oracle HTTP Server component using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl startproc ias-component=component_name
```

To get detailed information about the start process, include the verbose option with the command, as follows:

```
> $ORACLE_INSTANCE/bin/opmnctl verbose startproc ias-component=component_name
```

The following is an example of the information provided using the verbose option:

```
HTTP/1.1 200 OK
Content-Length: 656
Content-Type: text/html
Response: 1 of 1 processes started.

<?xml version='1.0' encoding='WINDOWS-1252'?>
<response>
<opmn id="stadk58:6701" http-status="200" http-response="1 of 1 processes
started.">
  <ias-instance id="inst1">
    <ias-component id="ohs1">
      <process-type id="OHS">
        <process-set id="OHS">
          <process id="699033550" pid="11366" status="Alive" index="1"
log="/scratch/oracle/product/11110/test090306/instances/inst1/diagnostics/logs/OHS
/ohs1/console~OHS~1.log" operation="request" result="success">
            <msg code="0" text="">
            </msg>
          </process>
        </process-set>
      </process-type>
    </ias-component>
  </ias-instance>
</opmn>
</response>
```

4.1.2.3 Starting Oracle HTTP Server on a Privileged Port

On UNIX/Linux systems the TCP/IP port numbers below 1024 are special in that only processes with root privileges are allowed to listen on those ports. You can configure Oracle HTTP Server to run on a port below 1024;

By default, Oracle HTTP Server runs as a non-root user (the user that installed Oracle Fusion Middleware). Therefore, on UNIX/Linux systems, if you plan on running Oracle HTTP Server on a privileged port (for example, port 80), you must enable Oracle HTTP Server to run as root.

1. Stop Oracle HTTP Server using Fusion Middleware Control, or with the `opmnctl` command. The `opmnctl` command can be run only under the user ID that was used to install the product. Typically, this user ID is "oracle", but can be any ID you decide to use.

   ```
   > $ORACLE_INSTANCE/bin/opmnctl stopproc ias-component=component_name
   ```

2. Change to the root user.
3. Navigate to `ORACLE_HOME/ohs/bin` and run the following commands:

   ```
   chown root .apachectl
   chmod 6750 .apachectl
   ```

   This allows the Oracle HTTP Server installed user to start processes on a privileged port and it is expected to see root and oracle processes on the system as a result. The oracle processes will run as the user and group specified in the User and Group directives in the httpd.conf file. It is not supported to change the values for these directives as noted in Section 4.3.1, "Using Fusion Middleware Control to Specify Server Properties" and " Section 4.3.2, "Editing the httpd.conf File to Specify Server Properties."
4. Exit as the root user and log back in as the Oracle HTTP Server installed user.
5. Start Oracle HTTP Server using Fusion Middleware Control, or with the `opmnctl` command:

   ```
   > $ORACLE_INSTANCE/bin/opmnctl startproc ias-component=component_name
   ```

4.1.3 Stopping Oracle HTTP Server

This section describes how to stop Oracle HTTP Server using Fusion Middleware Control and `opmnctl`. Other services may be impacted when Oracle HTTP Server is stopped.

4.1.3.1 Using Fusion Middleware Control to Stop Oracle HTTP Server

To stop Oracle HTTP Server using Fusion Middleware Control:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Control** from the Oracle HTTP Server menu.
3. Select **Shut Down** from the Control menu.

4.1.3.2 Using opmnctl to Stop Oracle HTTP Server

To stop all Oracle HTTP Server components in an Oracle instance using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl stopproc process-type=OHS
```

To stop a specific Oracle HTTP Server component using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl stopproc ias-component=component_name
```

To get detailed information about the stop process, include the verbose option with the command, as follows:

```
> $ORACLE_INSTANCE/bin/opmnctl verbose stopproc ias-component=component_name
```

4.1.4 Restarting Oracle HTTP Server

Restarting Oracle HTTP Server causes the Apache parent process to advise its child processes to exit after their current request (or to exit immediately if they are not serving any requests). Upon restarting, the parent process re-reads its configuration files and reopens its log files. As each child process exits, the parent replaces it with a child process from the new generation of the configuration file, which begins serving new requests immediately.

The following sections describe how to restart Oracle HTTP Server using Fusion Middleware Control and `opmnctl`.

4.1.4.1 Using Fusion Middleware Control to Restart Oracle HTTP Server

To restart Oracle HTTP Server using Fusion Middleware Control:

1. Navigate to the Oracle HTTP Server home page.
2. Select the **Control** from the Oracle HTTP Server menu.
3. Select **Restart** from the Control menu.

4.1.4.2 Using opmnctl to Restart Oracle HTTP Server

To restart all Oracle HTTP Server components in an Oracle instance using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl restartproc process-type=OHS
```

To restart a specific Oracle HTTP Server component using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl restartproc ias-component=component_name
```

To get detailed information about the start process, include the verbose option with the command, as follows:

```
> $ORACLE_INSTANCE/bin/opmnctl verbose restartproc ias-component=component_name
```

4.2 Creating an Oracle HTTP Server Component

When you install Oracle Web Tier, you can choose one of the following approaches:

- Install the software and configure an Oracle instance with an Oracle HTTP Server component.
- Install only the software.

If you choose to install only the software, you should subsequently configure an Oracle instance by running the configuration tool (`config.sh` on UNIX and `config.bat` on Windows), which is located in the *ORACLE_HOME*`/bin` directory. For more information, see the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

In either approach, you can create additional Oracle HTTP Server components in an Oracle instance by using the `opmnctl` command available in the *ORACLE_INSTANCE*`/bin` directory, as described in this section. Note that you cannot create Oracle HTTP Server components by using Fusion Middleware Control.

To create an Oracle HTTP Server component by using `opmnctl`, run the following command:

```
> $ORACLE_INSTANCE/bin/opmnctl createcomponent -componentType OHS -componentName component_name
```

For example, to create an Oracle HTTP Server component named `ohs2`, use the following command:

```
> $ORACLE_INSTANCE/bin/opmnctl createcomponent -componentType OHS -componentName ohs2
```

When you create the Oracle HTTP Server component, ports are automatically assigned. However, you can use the following parameters to specify the ports of your choice:

- `-listenPort`: HTTP listening port
- `-sslPort`: HTTPS (SSL) listening port
- `-proxyPort`: Proxy MBean port internally used by Oracle HTTP Server to communicate with Fusion Middleware Control

4.3 Specifying Server Properties

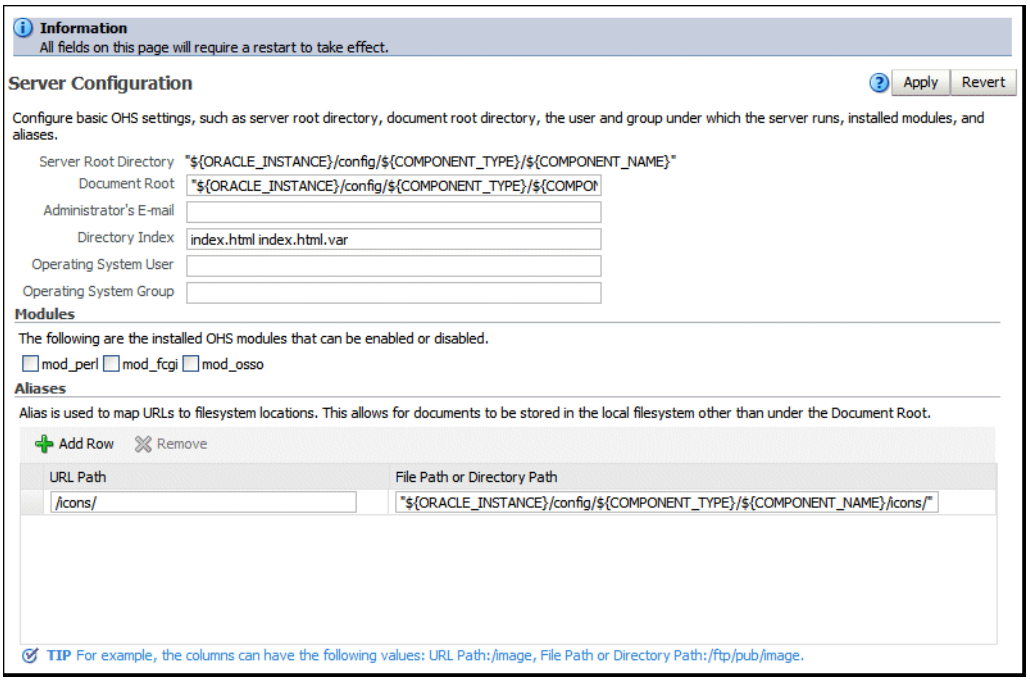
Server properties for Oracle HTTP Server can be set using Fusion Middleware Control or direct editing of the Oracle HTTP Server configuration files. You cannot specify the server properties using `opmnctl` commands.

- Using Fusion Middleware Control to Specify Server Properties
- Editing the httpd.conf File to Specify Server Properties

4.3.1 Using Fusion Middleware Control to Specify Server Properties

To specify the server properties using the Fusion Middleware Control:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **Server Configuration** from the Administration menu. The Server Configuration page appears.



3. Enter the documentation root directory in the Document Root field that forms the main document tree visible from the Web site.
4. Enter the e-mail address in the Administrator's E-mail Address field that the server will includes in error messages sent to the client.
5. Enter the directory index in the Directory Index field. The is the main (index) page that will be displayed when a client first accesses the Web site.
6. Enter the user name in the Operating System User field and the group name in the Operating System Group field.

   For Oracle HTTP Server, the Operating System User and Operating System Group fields must be the Oracle installed user and group to maintain security and see expected functionality throughout the integrated components
7. The Modules region is used to enable or disable modules. There are three modules that you can enable or disable: mod_perl, mod_fcgi, and mod_osso.

   For instructions on configuring the mod_perl module, see "Configuring the mod_perl Module" on page 4-11.
8. Create an alias, if necessary in the Aliases table. An alias maps to a specified directory. For example, to use a specific set of content pages for a group you can create an alias to the directory that has the content pages.
9. Review the settings. If the settings are correct, then click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, then click **Revert** to return to the original settings.
10. Restart Oracle HTTP Server as described in Section 4.1.4.

The server properties are saved, and shown on the Server Configuration page.

4.3.2 Editing the httpd.conf File to Specify Server Properties

To specify the server properties using the `httpd.conf` file:

1. Open the `httpd.conf` file using either a text editor or the Advanced Server Configuration page in Fusion Middleware Control. (See Section 4.4.5, "Modifying an Oracle HTTP Server Configuration File.")
2. In the `DocumentRoot` section of the file, enter the directory that stores the main content for the Web site. The following is an example of the syntax:

   ```
   DocumentRoot "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_
   NAME}/htdocs"
   ```

3. In the `ServerAdmin` section of the file, enter the administrator's e-mail address. This is the e-mail address that will appear on client pages. The following is an example of the syntax:

   ```
   ServerAdmin WebMaster@example.com
   ```

4. In the `DirectoryIndex` section of the file, enter the directory index. This is the main (index) page that will be displayed when a client first accesses the Web site. The following is an example of the syntax:

   ```
   DirectoryIndex index.html index.html.var
   ```

5. For Oracle HTTP Server, the User and Group directives must be the Oracle installed user and group to maintain security and see expected functionality throughout the integrated components.
6. Create aliases, if needed. An alias maps to a specified directory. For example, to use a specific set of icons, you can create an alias to the directory that has the icons for the Web pages. The following is an example of the syntax:

   ```
   Alias /icons/ "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_
   NAME}/icons/"

   <Directory "${ORACLE_INSTANCE}/content/${COMPONENT_TYPE}/${COMPONENT_
   NAME}/icons/">
       Options MultiViews
       Order allow, deny
       Allow from all
   </Directory>
   ```

7. Save the file.
8. Restart Oracle HTTP Server as described in Section 4.1.4.

4.4 Configuring Oracle HTTP Server

This section includes the following sections:

- Section 4.4.1, "Configuring Secure Sockets Layer"
- Section 4.4.2, "Configuring MIME Settings"
- Section 4.4.3, "Configuring the mod_perl Module"
- Section 4.4.4, "Configuring mod_wl_ohs"
- Section 4.4.5, "Modifying an Oracle HTTP Server Configuration File"
- Section 4.4.6, "Removing Access to Unneeded Content"
- Section 4.4.7, "Configuring the Oracle HTTP Server Environment to Use the apxs Script"
- Section 4.4.8, "Disabling the Options Method"

- Section 4.4.9, "Updating Oracle HTTP Server Component Configurations on a Shared Filesystem"

4.4.1 Configuring Secure Sockets Layer

Secure Sockets Layer (SSL) is an encrypted communication protocol that is designed to securely send messages across the Internet. It resides between Oracle HTTP Server on the application layer and the TCP/IP layer, transparently handling encryption and decryption when a secure connection is made by a client.

One common use of SSL is to secure Web HTTP communication between a browser and a Web server. This case does not preclude the use of non-secured HTTP. The secure version is simply HTTP over SSL (HTTPS). The differences are that HTTPS uses the URL scheme `https://` rather than `http://`.

By default, an SSL listen port is configured and enabled using a default **wallet** during installation. Wallets store your credentials, such as certificate requests, certificates, and private keys.

The default wallet that is automatically installed with Oracle HTTP Server is for testing purposes only. A real wallet must be created for your production server. The default wallet is located in the *ORACLE_INSTANCE*`/config/OHS/`*component_name*`/keystores/default` directory. You can either place the new wallet in this location, or change the `SSLWallet` directive in *ORACLE_INSTANCE*`/config/OHS/`*component_name*`/ssl.conf` to point to the location of your real wallet.

For the changes to take effect, you should restart the Oracle HTTP Server components as described in Section 4.1.4.

For information about configuring wallets and SSL using Fusion Middleware Control, see "Enabling SSL for Oracle HTTP Server Virtual Hosts" in the *Oracle Fusion Middleware Administrator's Guide*.

4.4.2 Configuring MIME Settings

Multipurpose Internet Mail Extension (MIME) settings are used by Oracle HTTP Server to interpret file types, encodings, and languages. MIME settings for Oracle HTTP Server can only be set using Fusion Middleware Control. You cannot specify the MIME settings using `opmnctl` commands.

The following tasks can be completed on the MIME Configuration page:

- Configuring MIME Types
- Configuring MIME Encoding
- Configuring MIME Languages

4.4.2.1 Configuring MIME Types

MIME type maps a given file extension to a specified content type. The MIME type is used for filenames containing an extension.

4.4.2.1.1 Using Fusion Middleware Control to Configure MIME Types

To configure a MIME type using Fusion Middleware Control, do the following:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **MIME Configuration** from the Administration menu. The MIME configuration page appears.

3. Click **Add Row** in MIME Configuration region. A new, blank row is added to the list.
4. Enter the MIME type.
5. Enter the file extension.
6. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
7. Restart Oracle HTTP Server, as described in Section 4.1.4.

The MIME configuration is saved, and shown on the MIME Configuration page.

4.4.2.2 Configuring MIME Encoding

MIME encoding enables Oracle HTTP Server to determine the file type based on the file extension. You can add and remove MIME encodings. The encoding directive maps the file extension to a specified encoding type.

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **MIME Configuration** from the Administration menu. The MIME configuration page appears.
3. Expand the MIME Encoding region by clicking the plus sign (+) next to MIME Encoding.
4. Click **Add Row** in MIME Encoding region. A new, blank row is added to the list.
5. Enter the MIME encoding, such as x-gzip.
6. Enter the file extension, such as .gx.
7. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
8. Restart Oracle HTTP Server as described in Section 4.1.4.

4.4.2.3 Configuring MIME Languages

The MIME language setting maps file extensions to a particular language. This directive is commonly used for content negotiation, in which Oracle HTTP Server returns the document that most closely matched the preferences set by the client.

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **MIME Configuration** from the Administration menu. The MIME configuration page appears.
3. Expand the MIME Languages region by clicking the plus sign (+) next to MIME Languages.
4. Click **Add Row** in MIME Languages region. A new, blank row is added to the list.
5. Enter the MIME language, such as en-US.
6. Enter the file extension, such as en-us.
7. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
8. Restart Oracle HTTP Server as described in Section 4.1.4.

4.4.3 Configuring the mod_perl Module

The mod_perl module embeds the Perl interpreter into Oracle HTTP Server. This eliminates start-up overhead and enables you to write modules in Perl. The module is disabled, by default.

To enable the mod_perl module using Fusion Middleware Control, do the following:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **mod_perl Configuration** from the Administration menu. The mod_perl configuration page appears.

   Note: If mod_perl has not been enabled, then you will be redirected to the Server Configuration page. Select mod_perl and click **Apply** to enable mod_perl. After the confirmation page has been displayed, restart Oracle HTTP Server, and then return to the mod_perl Configuration page.

3. Enter the switch information in the Switches field.
4. Enter the environment variables to be passed to the scripts in the Environment field.
5. Enter the required script names in the Require field.
6. Click **Add Row** to create a new row.
7. Configure mod_perl directives for a Location in the Perl Locations table. The Location assigns a number of rules that the server should follow when the request's URI matches the Location.
   a. Enter the base URI for the Perl scripts in the Locations field. Just as it is the widely accepted convention to use `/cgi-bin` for your mod_cgi scripts, it is also conventional to use `/perl` as the base URI of the Perl scripts that are running under mod_perl.
   b. Enter options in the Options field. The `PerlOptions` directive provides fine-grained configuration by providing control over which class of Perl interpreter pool to be used. Options are enabled by prepending them with a plus sign (+) and are disabled by prepending them with a minus sign (-).
   c. If you want to send headers, then click the **Send Header** check box. The `PerlSendHeader` directive is for mod_perl 1.0 backwards-compatibility. When enabled, the server sends an HTTP header to the browser on every script invocation. You should disable this option for NPH (non-parsed-headers) scripts.
   d. Enter the environment in the Environment field. The `PerlSetEnv` directive allows you to specify system environment variables and pass them into your mod_perl handlers.
   e. Enter the response handler in the Response Handler field. The `PerlResponseHandler` directive tells mod_perl which callback is going to do the job.
   f. Enter the authentication handler in the Authentication Handler field. The `PerlAuthenHandler` directive is used to set the handler to verify a user's identification credentials.

8. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
9. Restart Oracle HTTP Server as described in Section 4.1.4.

The mod_perl module configuration is saved and shown on the mod_perl Configuration page.

Note: If you are manually editing the mod_perl configuration instead of using Fusion Middleware Control, then all directives must be defined within the `<IfModule mod_perl.c>` block of the `mod_perl.conf` file. Any mod_perl related directives defined outside of this block might be ignored.

4.4.4 Configuring mod_wl_ohs

You can configure `mod_wl_ohs` either by using Fusion Middleware Control or by editing the `mod_wl_ohs.conf` configuration file manually.

For information about the prerequisites and procedure for configuring mod_wl_ohs to proxy requests from Oracle HTTP Server to Oracle WebLogic Server, see "Configuring the mod_wl_ohs Plug-In for Oracle HTTP Server" in *Using Web Server 1.1 Plug-Ins with Oracle WebLogic server*.

4.4.5 Modifying an Oracle HTTP Server Configuration File

To modify an Oracle HTTP Server configuration file using Fusion Middleware Control, do the following:

1. Select **Administration** from the HTTP Server menu.
2. Select **Advanced Configuration** from the Administration menu item. The Advanced Server Configuration page appears.
3. Select the configuration file from the list, such as the `httpd.conf` file.
4. Edit the file, as needed.
5. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
6. Restart Oracle HTTP Server as described in Section 4.1.4.

The file is saved and shown on the Advanced Server Configuration page.

4.4.6 Removing Access to Unneeded Content

By default, the httpd.conf file allows server access to extra content such as documentation and sample scripts. This access might present a low level security risk.

You might want to tailor this extra content in your own environment to suit your use cases. To access the httpd.conf file, see Section 4.4.5, "Modifying an Oracle HTTP Server Configuration File."

- Section 4.4.6.1, "Edit the cgi-bin Section"
- Section 4.4.6.2, "Edit the Fancy Indexing Section"
- Section 4.4.6.3, "Edit the Product Documentation Section"

4.4.6.1 Edit the cgi-bin Section

Examine the contents of the `cgi-bin` directory. You can either remove the code from the httpd.conf file that you do not need, or change the following Directory directive to point to your own CGI script directory.

```
...
#
# "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_NAME}/cgi-bin" should
be changed to whatever your ScriptAliased
# CGI directory exists, if you have that configured.
#
<Directory "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_
NAME}/cgi-bin">
    AllowOverride None
    Options None
    Order allow,deny
    Allow from all
</Directory>
...
```

4.4.6.2 Edit the Fancy Indexing Section

Edit the following sections pertaining to fancy indexing in the httpd.conf file for your use cases.

```
...
#
# IndexOptions: Controls the appearance of server-generated directory
# listings.
#
IndexOptions FancyIndexing HTMLTable VersionSort

# We include the /icons/ alias for FancyIndexed directory listings.  If
# you do not use FancyIndexing, you may comment this out.
#
Alias /icons/ "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_
NAME}/icons/"

<Directory "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_NAME}/icons">
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>

#
# AddIcon* directives tell the server which icon to show for different
# files or filename extensions.  These are only displayed for
# FancyIndexed directories.
#
AddIconByEncoding (CMP,/icons/compressed.gif) x-compress x-gzip

AddIconByType (TXT,/icons/text.gif) text/*
AddIconByType (IMG,/icons/image2.gif) image/*
AddIconByType (SND,/icons/sound2.gif) audio/*
AddIconByType (VID,/icons/movie.gif) video/*

AddIcon /icons/binary.gif .bin .exe
AddIcon /icons/binhex.gif .hqx
AddIcon /icons/tar.gif .tar
AddIcon /icons/world2.gif .wrl .wrl.gz .vrml .vrm .iv
AddIcon /icons/compressed.gif .Z .z .tgz .gz .zip
```

```
AddIcon /icons/a.gif .ps .ai .eps
AddIcon /icons/layout.gif .html .shtml .htm .pdf
AddIcon /icons/text.gif .txt
AddIcon /icons/c.gif .c
AddIcon /icons/p.gif .pl .py
AddIcon /icons/f.gif .for
AddIcon /icons/dvi.gif .dvi
AddIcon /icons/uuencoded.gif .uu
AddIcon /icons/script.gif .conf .sh .shar .csh .ksh .tcl
AddIcon /icons/tex.gif .tex
AddIcon /icons/bomb.gif core


AddIcon /icons/back.gif ..
AddIcon /icons/hand.right.gif README
AddIcon /icons/folder.gif ^^DIRECTORY^^
AddIcon /icons/blank.gif ^^BLANKICON^^

#
# DefaultIcon is which icon to show for files which do not have an icon
# explicitly set.
#
DefaultIcon /icons/unknown.gif

#
# AddDescription allows you to place a short description after a file in
# server-generated indexes.  These are only displayed for FancyIndexed
# directories.
# Format: AddDescription "description" filename
#
#AddDescription "GZIP compressed document" .gz
#AddDescription "tar archive" .tar
#AddDescription "GZIP compressed tar archive" .tgz
...

#
# ReadmeName is the name of the README file the server will look for by
# default, and append to directory listings.
#
# HeaderName is the name of a file which should be prepended to
# directory indexes.
ReadmeName README.html
HeaderName HEADER.html

#
# IndexIgnore is a set of filenames which directory indexing should ignore
# and not include in the listing.  Shell-style wildcarding is permitted.
#
IndexIgnore .??* *~ *# HEADER* README* RCS CVS *,v *,t
...
```

4.4.6.3 Edit the Product Documentation Section

You can remove the following documentation configuration sections from the httpd.conf file if they are not needed.

```
...
#
# This should be changed to the ServerRoot/manual/.  The alias provides
# the manual, even if you choose to move your DocumentRoot.  You may comment
# this out if you do not care for the documentation.
```

```
#
AliasMatch ^/manual(?:/(?:de|en|es|fr|ja|ko|pt-br|ru|tr))?(/.*)?$ "${ORACLE_
INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_NAME}/manual$1"

<Directory "${ORACLE_INSTANCE}/config/${COMPONENT_TYPE}/${COMPONENT_NAME}/manual">
    AllowOverride None
    Order allow,deny
    Allow from all

    <Files *.html>
        SetHandler type-map
    </Files>
    # .tr is text/troff in mime.types!
    <Files *.html.tr.utf8>
        ForceType text/html
    </Files>

    SetEnvIf Request_URI ^/manual/(de|en|es|fr|ja|ko|pt-br|ru|tr)/
prefer-language=$1
    RedirectMatch 301 ^/manual(?:/(de|en|es|fr|ja|ko|pt-br|ru|tr)){2,}(/.*)?$
/manual/$1$2

    LanguagePriority en de es fr ja ko pt-br ru tr
    ForceLanguagePriority Prefer Fallback
</Directory>

...
```

4.4.7 Configuring the Oracle HTTP Server Environment to Use the apxs Script

You can use the `apxs` command in the $ORACLE_HOME/ohs/bin directory to build and install Apache extension modules for Oracle HTTP Server. To be able to use the apxs command, you should configure the Oracle HTTP Server environment as follows:

Set the following environment variables from command line:

- `ORACLE_HOME=~/`*`oraHome1`*
- `ORACLE_INSTANCE=~/`*`oraInstance1`*
- `CONFIG_FILE_PATH=$ORACLE_INSTANCE/config/OHS/`*`oraInstance1`*
- `LD_LIBRARY_PATH=$ORACLE_HOME/lib:$ORACLE_HOME/ohs/lib:$LD_LIBRARY_PATH`

Where `ORACLE_HOME` and `ORACLE_INSTANCE` are set to the appropriate values for the customer; for example:

```
export ORACLE_HOME=/scratch/jjones/PS6/Middleware/Oracle_WT1
export ORACLE_INSTANCE=$ORACLE_HOME/instances/instance1
export CONFIG_FILE_PATH=$ORACLE_INSTANCE/config/OHS/ohs1
export LD_LIBRARY_PATH=$ORACLE_HOME/lib:$ORACLE_HOME/ohs/lib:$LD_LIBRARY_PATH
```

You can now use the apxs from `ORACLE_HOME` to build, install and configure a new module; for example, to build, install and configure a new extension module called mod_experimental, from the module's source directory, you would enter the following:

```
$ORACLE_HOME/ohs/bin/apxs -c mod_experimental.c
$ORACLE_HOME/ohs/bin/apxs -i -a mod_experimental.c
```

For more information about the `apxs` command, see the Apache HTTP Server documentation at http://httpd.apache.org/docs/2.0/programs/apxs.html.

Note: apxs is available only to Unix/Linux versions of OHS.

4.4.8 Disabling the Options Method

The Options method enables clients to determine which methods are supported by a web server. If enabled, it appears in the `Allow` line of HTTP response headers.

For example, if you send a request such as:

```
---- Request -------
OPTIONS / HTTP/1.0
Content-Length: 0
Accept: */*
Accept-Language: en-US
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Win32)
Host: host123:80
```

you might get the following response from the web server:

```
---- Response --------
HTTP/1.1 200 OK
Date: Wed, 23 Apr 2008 20:20:49 GMT
Server: Oracle-Application-Server-11g/11.1.1.0.0 Oracle-HTTP-Server
Allow: GET,HEAD,POST,OPTIONS
Content-Length: 0
Connection: close
Content-Type: text/html
```

Some sources consider exposing the Options method a low security risk because malicious clients could use it to determine the methods supported by a web server. However, because web servers support only a limited number of methods, disabling this method will just slow down malicious clients, not stop them. In addition, the Options method may be used by legitimate clients.

If your Oracle Fusion Middleware environment does not have clients that require the Options method, you can disable it by including the following lines in the `httpd.conf` file:

```
<IfModule mod_rewrite.c>
RewriteEngine on
RewriteCond %{REQUEST_METHOD} ^OPTIONS
RewriteRule .* - [F]
</IfModule>
```

4.4.9 Updating Oracle HTTP Server Component Configurations on a Shared Filesystem

Functional or performance issues may be encountered when an Oracle HTTP Server component is created on a shared filesystem, including NFS (Network File System). In particular, lock files or Unix sockets used by OHS may not work or may have severe performance degradation; WLS requests routed by mod_wl_ohs may have severe performance degradation due to filesystem accesses in the default configuration.

Table 4-1 provides information about the Lock file issues and the suggested changes in the `httpd.conf` file specific to the operating systems.

Table 4–1 Lock File issues

Operating System	Description	httpd.conf changes
Linux	Lock files are not required. The Sys V semaphore is the preferred cross-process mutex implementation.	Change `AcceptMutex fcntl` to `AcceptMutex sysvsem` (two places). Comment out the LockFile directive (three places).
Solaris	Lock files are not required. The cross-process pthread mutex is the preferred cross-process mutex implementation.	Change `AcceptMutex fcntl` to `AcceptMutex pthread` (two places). Comment out the LockFile directive (three places).
Other Unix platforms		Change the LockFile directive to point to a local filesystem (three places).
Unix socket issues	`mod_cgid` - is not enabled by default. If enabled, use the ScriptSock directive to place mod_cgid's Unix socket on a local filesystem. `mod_fastcgi` - is not enabled by default. If enabled, use the FastCgiIpcDir directive to place mod_fastcgi's Unix sockets on a local file system.	

Note: Because of character length limitations on various operating systems, the CGI module might throw the following error when it creates the Scriptsock path:

```
No such file or directory: Couldn't set permissions on unix
domain socket
```

The error is thrown because the character length for the Scriptsock path was exceeded. The path was truncated by the system and the error was thrown.

To workaround this issue, specify a Scriptsock path that is within the bounds of your operating system's character length limitations. Character length limitations vary by system: for example AIX 1024, HPIA 98, Linux, and Solaris operating systems have a limit of 108 characters. See your operating system's documentation for more information.

4.5 Deleting an Oracle HTTP Server Component

This section describes how to delete an Oracle HTTP Server component using `opmnctl`. You cannot delete an Oracle HTTP Server component using Fusion Middleware Control.

To delete an Oracle HTTP Server component using `opmnctl`:

```
> $ORACLE_INSTANCE/bin/opmnctl deletecomponent -componentName component_name
```

For example, to delete an Oracle HTTP Server component named `ohs2` use the following command:

```
> $ORACLE_INSTANCE/bin/opmnctl deletecomponent -componentName ohs2
```

5

Managing and Monitoring Server Processes

This chapter describes how to manage and monitor Oracle HTTP Server. It discusses the procedures and tools to manage Oracle HTTP Server in your environment.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier Without Oracle WebLogic Server" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This chapter includes the following sections:

5.1 Oracle HTTP Server Processing Model

The following sections explain the processing model for Oracle HTTP Server.

5.1.1 Request Process Model

After Oracle HTTP Server is started, it is ready to listen for and respond to HTTP(S) requests. The request processing model on Microsoft Windows systems differs from that on UNIX systems.

- On Microsoft Windows, there is a single parent process and a single child process. The child process creates threads that are responsible for handling client requests. The number of created threads is static and can be configured for performance.
- On UNIX, there is a single parent process that manages multiple child processes. The child processes are responsible for handling requests. The parent process brings up additional child processes as necessary, based on configuration. Although the server has the ability to dynamically bring up additional child

processes, it is best to configure the server to start enough child processes initially so that requests can be handled without having to spawn more child processes.

5.1.2 Single Unit Process Model

Oracle HTTP Server provides functionality that allows it to terminate as a single unit if the parent process fails. The parent process is responsible for starting and stopping all the child processes for an Oracle HTTP Server instance. The failure of the parent process without first shutting down the child processes leaves Oracle HTTP Server in an inconsistent state that can only be fixed by manually shutting down all the orphaned child processes. Until all the child processes are closed, a new Oracle HTTP Server instance cannot be started because the orphaned child processes still occupy the ports the new Oracle HTTP Server instance needs to access.

To prevent this from occurring, the DMS instrumentation layer in child processes on UNIX and monitor functionality within WinNT MPM on Windows monitor the parent process. If they detect that the parent process has failed, then all of the remaining child processes are shut down.

When this functionality is combined with OPMN, it means that Oracle HTTP Server is easily restarted in case of a parent process failure. The DMS instrumentation layer on UNIX and a monitor within WinNT MPM on Windows ensures that all of the Oracle HTTP Server child processes are shut down, leaving the ports open for a new Oracle HTTP Server instance. OPMN ensures that a new instance is started once the failure of the original instance is detected.

5.2 Monitoring Oracle HTTP Server Performance

Oracle Fusion Middleware automatically and continuously measures run-time performance for Oracle HTTP Server. The performance metrics are automatically enabled; you do not need to set options or perform any extra configuration to collect them. If you encounter a problem, such as an application that is running slowly or is hanging, you can view particular metrics to find out more information about the problem.

Note that Fusion Middleware Control provides real-time data. If you are interested in viewing historical data, consider using Grid Control.

5.2.1 Viewing Oracle HTTP Server Performance Metrics

You can view metrics from the Oracle HTTP Server home menu of Fusion Middleware Control:

1. Select the Oracle HTTP Server that you want to monitor.

   The Oracle HTTP Server home page is displayed.

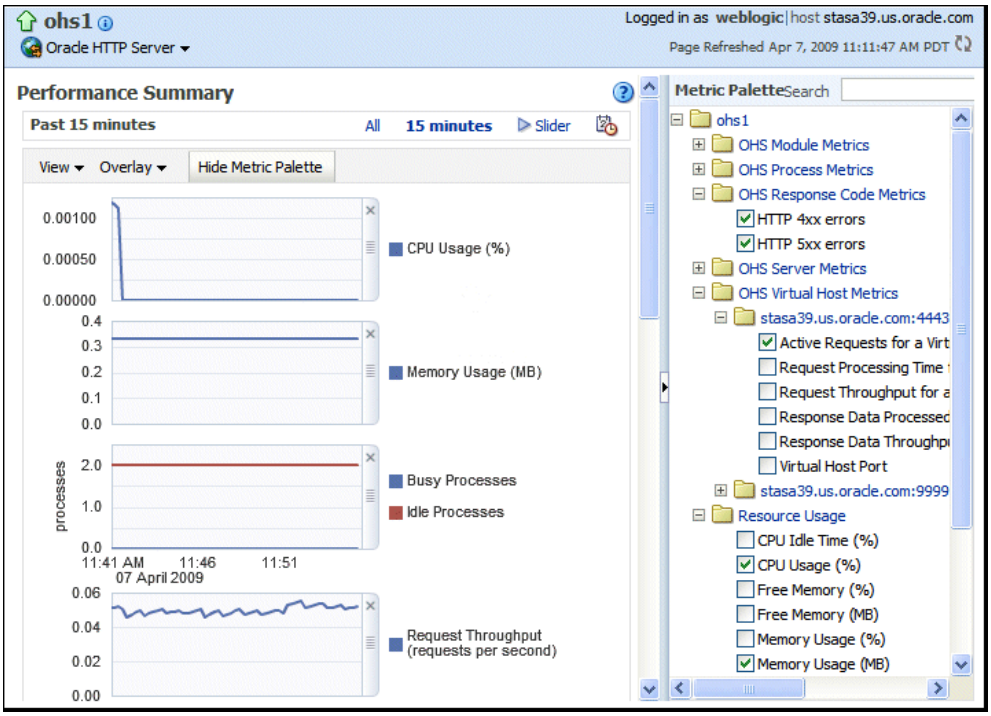
2. From the Oracle HTTP Server menu, choose **Monitoring**, and then select **Performance Summary**.

   The Performance Summary page is displayed. It shows performance metrics, as well as information about response time and request processing time for the Oracle HTTP Server instance.

3. To see additional metrics, click **Show Metric Palette** and expand the metric categories.

   Tip: Oracle HTTP Server port usage information is also available from the Oracle HTTP Server home menu.

The following figure shows the Oracle HTTP Server Performance Summary page with the Metric Palette displayed:



4. Select additional metrics to add them to the Performance Summary.

5.2.2 Understanding Oracle HTTP Server Performance Metrics

This section lists some of the most commonly-used metrics that can help you analyze Oracle HTTP Server performance.

OHS Server Metrics

The OHS Server Metrics folder contains performance metric options for Oracle HTTP Server. The following table describes the metrics in the OHS Server Metrics folder:

Element	Description
CPU Usage	CPU usage and idle times
Memory Usage	Memory usage and free memory, in MB
Processes	Busy and idle process metrics
Request Throughput	Request throughput, as measured by requests per second
Request Processing Time	Request processing time, in seconds
Response Data Throughput	Response data throughput, in KB per second
Response Data Processed	Response data processed, in KB per second
Active HTTP Connections	Number of active HTTP connections
Connection Duration	Length of time for connections
HTTP Errors	Number of HTTP 4xx and 5xx errors

OHS Virtual Host Metrics

The OHS Virtual Host Metrics folder contains performance metric options for virtual hosts, also known as access points. The following table describes the metrics in the OHS Virtual Host Metrics folder:

Element	Description
Request Throughput for a Virtual Host	Number of requests per second for each virtual host
Request Processing Time for a Virtual Host	Time to process each request for each virtual host
Response Data Throughput for a Virtual Host	Amount of data being sent for each virtual host
Response Data Processed for a Virtual Host	Amount of data being processed for each virtual host

OHS Module Metrics

The OHS Module Metrics folder contains performance metric option for modules. The following table describes the metrics in the OHS Module Metrics folder.

Element	Description
Request Handling Throughput	Request handling throughput for a module, in requests per second
Request Handling Time	Request handling time for a module, in seconds
Module Metrics	Modules including active requests, throughput, and time for each module

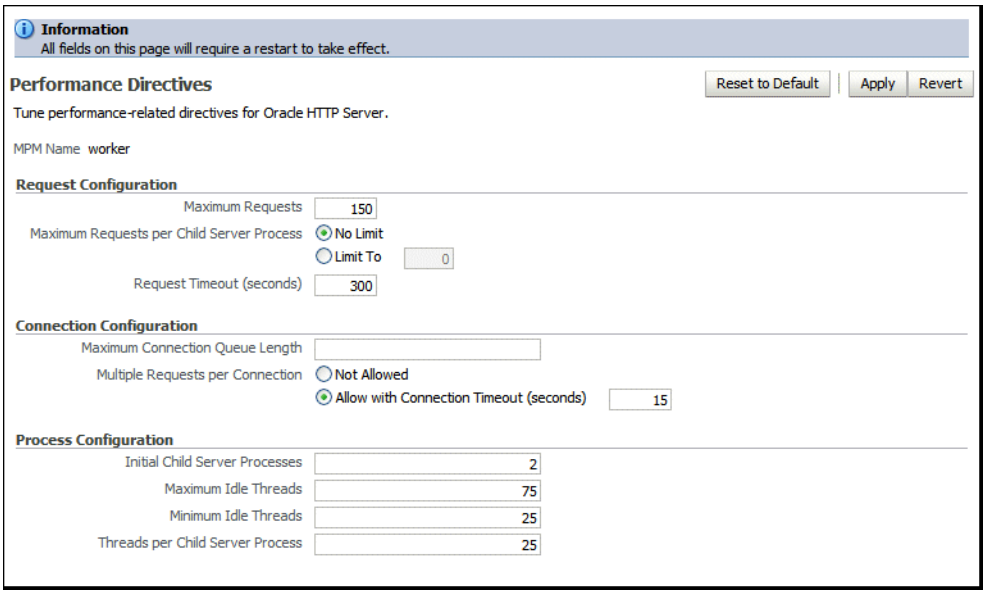
5.3 Configuring Oracle HTTP Server Performance Directives

Oracle HTTP Server uses directives in `httpd.conf`. This configuration file specifies the maximum number of HTTP requests that can be processed simultaneously, logging details, and certain limits and timeouts. Oracle HTTP Server supports and ships with the following three Multi-Processing Modules (MPMs) which are responsible for binding to network ports on the machine, accepting requests, and dispatching children to handle the requests:

- Worker - This is the default MPM for Oracle HTTP Server on UNIX/Linux platforms. This MPM implements a hybrid multi-process multi-threaded server. By using threads to serve requests, it is able to serve a large number of requests with fewer system resources than a process-based server. However, it retains much of the stability of a process-based server by keeping multiple processes available, each with many threads.
- WinNT - This is the default MPM for Oracle HTTP Server on Windows platforms. It uses a single control process which launches a single child process which in turn creates threads to handle requests.
- Prefork - This MPM implements a non-threaded, pre-forking server that handles requests in a manner similar to Apache 1.3. It is appropriate for sites that need to avoid threading for compatibility with non-thread-safe libraries. It is also the best MPM for isolating each request, so that a problem with a single request will not affect any other.

The discussion and recommendations in this section are based on the use of Worker or WinNT MPM, which uses threads. The thread-related directives listed below are not applicable if you are using the Prefork MPM.

The Performance Directives page allows you to tune performance-related directives for Oracle HTTP Server, as illustrated in the following figure:



Performance directives management consists of three areas: request configuration, connection configuration, and process configuration. You can set these configurations using the Performance Directive page of Fusion Middleware Control and by following the instructions in the following sections:

- Using Fusion Middleware Control to Set the Request Configuration
- "Using Fusion Middleware Control to Set the Connection Configuration"
- Using Fusion Middleware Control to Set the Process Configuration

5.3.1 Using Fusion Middleware Control to Set the Request Configuration

To specify the Oracle HTTP Server request configuration using Fusion Middleware Control, do the following:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **Performance Directives** from the Administration menu. The Performance Directives page appears.
3. Enter the maximum number of requests in the Maximum Requests field (`MaxClients` directive). This setting limits the number of requests that can be dealt with at one time. The default and recommended value is 150. This is applicable for all Linux/UNIX platforms.
4. Set the maximum requests per child process in the Maximum Request per Child Process field (`MaxRequestPerChild` directive). You can choose to have no limit, or a maximum number. If you choose to have a limit, enter the maximum number in the field.
5. Enter the request timeout value in the Request Timeout (seconds) field (`Timeout` directive). This value sets the maximum time, in seconds, Oracle HTTP Server waits to receive a GET request, the amount of time between receipt of TCP packets

on a POST or PUT request, and the amount of time between ACKs on transmissions of TCP packets in responses.

6. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
7. Restart Oracle HTTP Server. See Section 4.1.4.

The request configuration settings are saved, and shown on the Performance Directives page.

5.3.2 Using Fusion Middleware Control to Set the Connection Configuration

To specify the connection configuration using Fusion Middleware Control, do the following:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **Performance Directives** from the Administration menu. The Performance Directives page appears.
3. Enter the maximum connection queue length in the Maximum Connection Queue Length field (`ListenBacklog` directive). This is the queue for pending connections. This is useful if the server is experiencing a TCP SYN overload, which causes numerous new connections to open up, but without completing the pending task.
4. Set the Multiple Requests per Connection field (`KeepAlive` directive) to indicate whether or not to allow multiple connections. If you choose to allow multiple connections, enter the number of seconds for timeout in the Allow With Connection Timeout field.

   The Allow With Connection Timeout value sets the number of seconds the server waits for a subsequent request before closing the connection. Once a request has been received, the specified value applies. The default is 15 seconds.
5. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
6. Restart Oracle HTTP Server. See Section 4.1.4.

The connection configuration settings are saved, and shown on the Performance Directives page.

5.3.3 Using Fusion Middleware Control to Set the Process Configuration

The child process and configuration settings impact the ability of the server to process requests. You may need to modify the settings as the number of requests increase or decrease to maintain a well-performing server.

For UNIX, the default number of child server processes is 2. For Microsoft Windows, the default number of threads to handle requests is 150.

To specify the process configuration using Fusion Middleware Control, do the following:

1. Select **Administration** from the Oracle HTTP Server menu.
2. Select **Performance Directives** from the Administration menu. The Performance Directives page appears.

3. Enter the number for the initial child server processes in the Initial Child Server Processes field (`StartServers` directive). This is the number of child server processes created when Oracle HTTP Server is started. The default is 2. This is for UNIX only.
4. Enter the number for the maximum idle threads in the Maximum Idle Threads field (`MaxSpareThreads` directive). An idle thread is a process that is running, but not handling a request.
5. Enter the number for the minimum idle threads in the Minimum Idle Threads field (`MinSpareThreads` directive).
6. Enter the number for the threads per child server process in the Threads per Child Server Process field (`ThreadsPerChild` directive).
7. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
8. Restart Oracle HTTP Server. See Section 4.1.4.

The process configuration settings are saved, and shown on the Performance Directives page.

5.4 Understanding Process Security

By default, Oracle HTTP Server runs as a non-root user (the user that installed Oracle Fusion Middleware). Therefore, on UNIX systems, if you plan on running Oracle HTTP Server on a privileged port (for example, port 80), you must enable Oracle HTTP Server to run as root. See "Starting Oracle HTTP Server on a Privileged Port" on page 4-4.

For additional security on UNIX, you can change the `User` directive in the `httpd.conf` configuration file to nobody. Be sure that the child processes can accomplish their tasks as the user nobody.

If your PL/SQL application is using the file system caching functionality in mod_plsql, then the httpd processes should have read and write privileges to the cache directory, specified through the parameter PlsqlCacheDirectory in *ORACLE_INSTANCE*`/config/OHS/`*component_name*`/mod_plsql/cache.conf`. By default, this parameter points to *ORACLE_INSTANCE*`/OHS/`*component_name*.

Finally, given that the cached content might contain sensitive data, the contents of the file system cache should be protected. So, although Oracle HTTP Server might run as nobody, access to the system as this user should be well-protected.

See Also: Section 3.10, "mod_plsql"

6 Managing Connectivity

Note: Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.

For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier Without Oracle WebLogic Server" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

Oracle HTTP Server comes configured with two listen ports: a non-SSL port (http) and an SSL port (https). The default, non-SSL port is 7777. If port 7777 is occupied, the next available port number, within a range of 7777-7877, is assigned. The default SSL port is 4443. Similarly, if port 4443 is occupied, the next available port number, within a range of 4443-4543, is assigned.

You can set these ports during installation or when creating a new Oracle HTTP Server component. For specifying ports at installation time, see the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*. For information about specifying ports when creating a new Oracle HTTP Server component using `opmnctl`, see Section 4.2, "Creating an Oracle HTTP Server Component".

Note: An additional SSL port (9999) is configured to run out-of-the-box in the `admin.conf` file. It is called *Proxy MBean* or *Admin port* and is used internally by Oracle HTTP Server to communicate with Fusion Middleware Control.

This chapter includes the following sections:

6.1 Viewing Port Number Usage

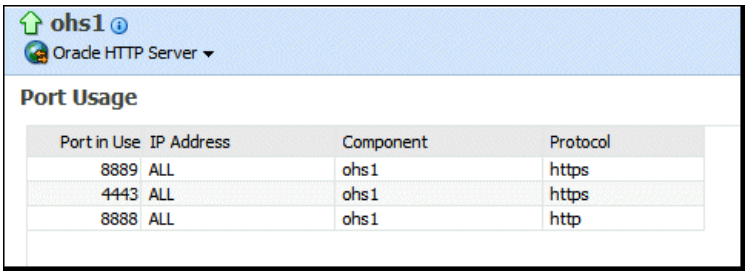
This section describes how to view ports using Fusion Middleware Control.

6.1.1 Using the Fusion Middleware Control to View Port Number Usage

To view the port number usage using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Port Usage** from the Oracle HTTP Server menu.

   The Port Usage detail page shows the component, the ports that are in use, the IP address the ports are bound to, and the protocol being used, as illustrated in the following figure:



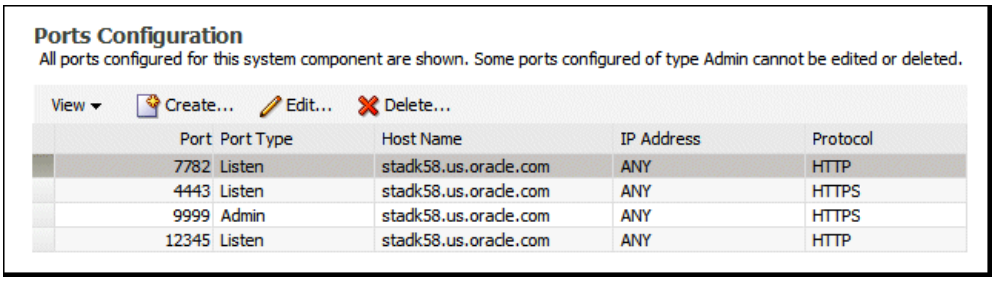
6.2 Managing Ports

The ports used by Oracle HTTP Server can be set during and after installation. In addition, you can change the port numbers, as needed. This section describes how to create, edit, and delete ports using Fusion Middleware Control.

Caution: The Oracle HTTP Server administration (proxy MBean) virtual host and its configuration, defined in the `admin.conf` file, must not be edited with the WebLogic Scripting Tool (WLST).

See Also: "Changing the **Oracle HTTP Server** Listen Ports" in the ***Oracle Fusion Middleware Administrator's Guide***.

- Starting Oracle HTTP Server on a Privileged Port
- Using Fusion Middleware Control to Create Ports
- Using Fusion Middleware Control to Edit Ports
- Updating OHS Registration with a WebLogic Domain

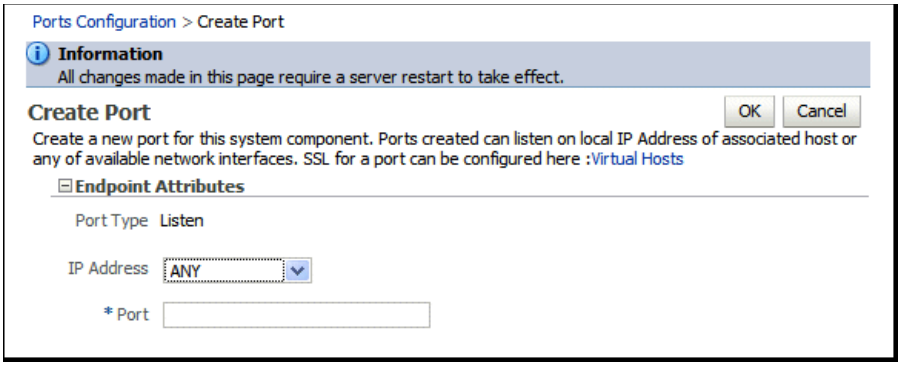


Note: When deleting a port, if there is a virtual host configured to use the port you want to delete, you must first delete that virtual host before deleting the port.

6.2.1 Using Fusion Middleware Control to Create Ports

To create ports using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Administration** from the Oracle HTTP Server menu.
3. Select **Ports Configuration** from the Administration menu.
4. Click **Create**.



5. Use the IP Address menu to select an IP address for the new port. Ports can listen on a local IP Address of an associated host or on any available network interfaces.

   SSL for a port can be configured on the Virtual Hosts page, as described in Section 6.3.2, "Using Fusion Middleware Control to Configure Virtual Hosts".
6. Use the **Port** field to enter the port number.
7. Click **OK**.
8. Restart Oracle HTTP Server. See Section 4.1.4.

> **Note:** If you change the port or make other changes that affect the URL, such as changing the host name, enabling or disabling SSL, you need to re-register partner applications with the SSO server using the new URL. For more information, see "Registering Oracle HTTP Server mod_osso with OSSO Server 10.1.4" in the *Oracle Fusion Middleware Application Security Guide*.

6.2.2 Using Fusion Middleware Control to Edit Ports

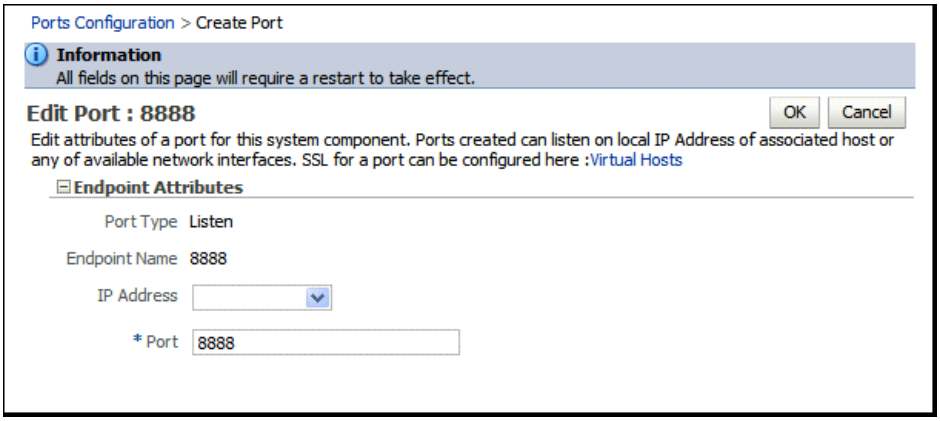
To create the ports using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Administration** from the Oracle HTTP Server menu.
3. Select **Ports Configuration** from the Administration menu.
4. Select the port for which you want to change the port number.

   Note that the Admin port cannot be edited using Fusion Middleware Control. Although this is a port Oracle HTTP Server uses for its internal communication with Fusion Middleware Control, in most of the cases it does not need to be changed. If you really want to change it, manually edit the *ORACLE_INSTANCE*/config/OHS/*component_name*/admin.conf file. For information about the additional steps to be performed after changing the Admin port, see

Section 6.2.3, "Updating OHS Registration with a WebLogic Domain"

5. Click **Edit**.



6. Edit the IP Address and/or Port number for the port.

   SSL for a port can be configured on the Virtual Hosts page, as described in Section 6.3.2, "Using Fusion Middleware Control to Configure Virtual Hosts".

7. Click **OK**.

8. Restart Oracle HTTP Server. See Section 4.1.4.

Note: If you change the port or make other changes that affect the URL, such as changing the host name, enabling or disabling SSL, you need to re-register partner applications with the SSO server using the new URL. For more information, see "Registering Oracle HTTP Server mod_osso with OSSO Server 10.1.4" in the *Oracle Fusion Middleware Application Security Guide*.

6.2.3 Updating OHS Registration with a WebLogic Domain

In an Oracle Instance that is registered with a WebLogic domain, if the Oracle HTTP Server administration port (proxy MBean port in the `admin.conf` file) is changed after creating the component, then you must update the component registration with the WebLogic domain using the `opmnctl updatecomponentregistration` command, as follows:

```
> $ORACLE_INSTANCE/bin/opmnctl updatecomponentregistration -componentType OHS
-componentName component_name -proxyPort port
```

For example, if the proxy port of an Oracle HTTP Server component named `ohs2` has been changed to 8787, then use the following command:

```
> $ORACLE_INSTANCE/bin/opmnctl updatecomponentregistration -componentType OHS
-componentName ohs2 -proxyPort 8787
```

6.3 Configuring Virtual Hosts

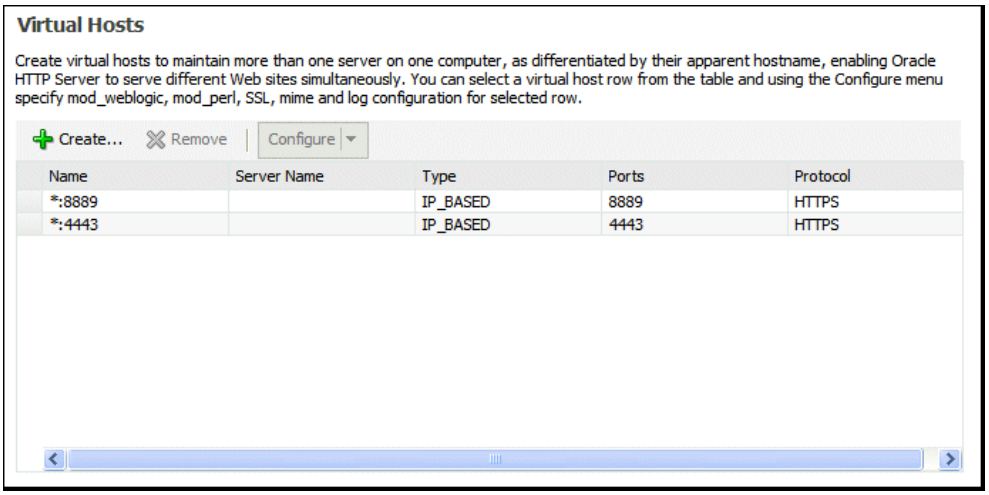
You can create virtual hosts to run more than one Web site (such as `www.company1.com` and `www.company2.com`) on a single machine. Virtual hosts can be *IP-based*, meaning that you have a different IP address for every Web site, or *name-based*, meaning that you have multiple names running on each IP address. The fact that they are running on the same physical server is not apparent to the end user.

Caution: The Oracle HTTP Server administration (proxy MBean) virtual host and its configuration, defined in the `admin.conf` file, must not be edited with the WebLogic Scripting Tool (WLST).

This section describes how to create and edit virtual hosts using Fusion Middleware Control.

- Using Fusion Middleware Control to Create Virtual Hosts
- Using Fusion Middleware Control to Configure Virtual Hosts

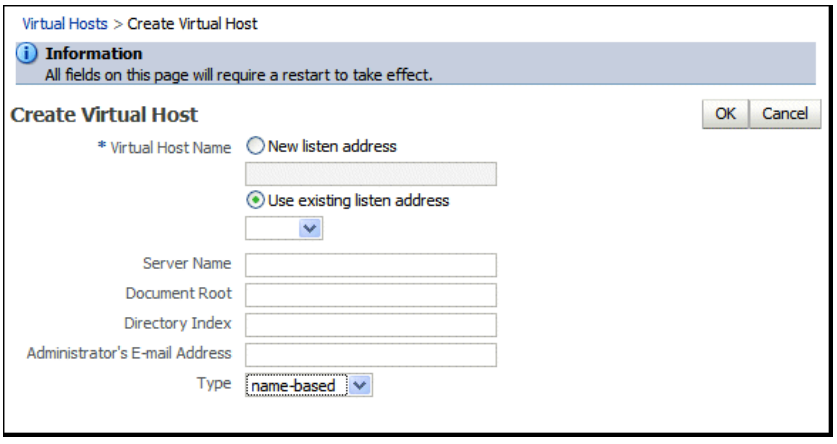
See Also: For more information about virtual hosts, refer to the Apache HTTP Server documentation.



6.3.1 Using Fusion Middleware Control to Create Virtual Hosts

To create a virtual Host using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Administration** from the Oracle HTTP Server menu.
3. Select **Virtual Hosts** from the Administration menu.
4. Click **Create**.



5. Enter a name for the virtual host field and then choose whether to enter a new listen address or to use an existing listen address.
   - New listen address - use this option when you want to create a virtual host that maps to a specific hostname or IP address, for example mymachine.com:8080. This will create following type NameVirtualHost and VirtualHost directives:

     ```
     NameVirtualHost mymachine.com:8080
     <VirtualHost mymachine.com:8080>
     ```

   - Use existing listen address - use this option when you want to create a virtual host using an existing listen port and the one that maps to all IP addresses. This will create following type `VirtualHost` directive:

     ```
     <VirtualHost *:8080>
     ```

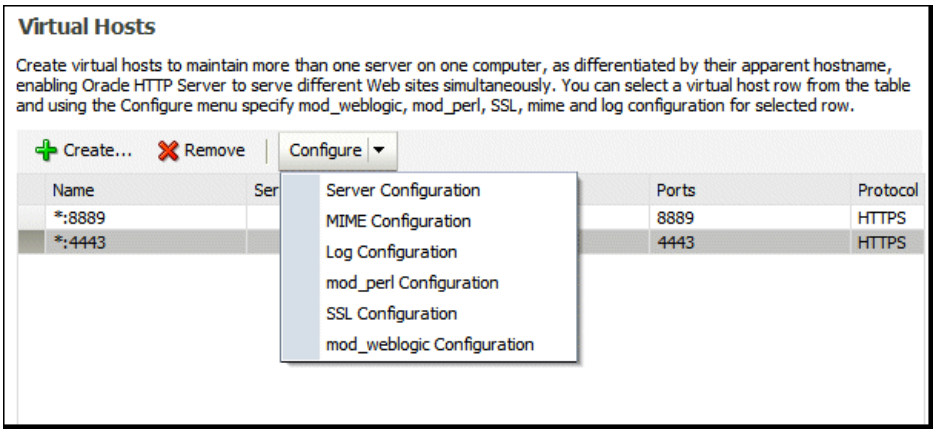
6. Enter the remaining attributes for the new virtual host.
   - **Server Name**—the name of the server for Oracle HTTP Server
   - **Document Root**— documentation root directory that forms the main document tree visible from the website
   - **Directory Index**—the main (index) page that will be displayed when a client first accesses the website
   - **Administrator's E-mail Address**—the e-mail address that the server will include in error messages sent to the client
   - **Type**—Virtual hosts can be IP-based, meaning that you have a different IP address for every website, or name-based, meaning that you have multiple names running on each IP address.
7. Use the Type field to select whether the virtual host will be IP-based or name-based.
8. Click **OK**.
9. Restart Oracle HTTP Server. See Section 4.1.4.

6.3.2 Using Fusion Middleware Control to Configure Virtual Hosts

You can use the options on the Configure menu to specify Server, MIME, Log, mod_perl, SSL, and mod_wl_ohs configuration for a selected virtual host.

To configure a virtual host using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Administration** from the Oracle HTTP Server menu.
3. Select **Virtual Hosts** from the Administration menu.
4. Highlight an existing virtual host in the table.
5. Click **Configure**.



6. Select one of the following options from Configure menu to open its corresponding configuration page. The values on these pages apply only to the virtual host. If the fields are blank, the virtual host uses the values configured at the server level.

   - Server Configuration – Configure basic virtual host properties, such as document root directory, installed modules, and aliases. See Section 4.3.1, "Using Fusion Middleware Control to Specify Server Properties."
   - MIME Configuration – Configure MIME settings, which are used by Oracle HTTP Server to interpret file types, encodings, and languages. Section 4.4.2, "Configuring MIME Settings."
   - Log Configuration – Configure access logs that will record all requests processed by the virtual host. The logs contain basic information about every HTTP transaction handled by the virtual host. See Section 7.2, "Configuring Oracle HTTP Server Logs."
   - mod_perl Configuration – Configure the mod_perl module to embed the Perl interpreter into the virtual host, thereby eliminating startup overhead and enabling you to write modules in Perl. This module is disabled, by default. See Section 4.4.3, "Configuring the mod_perl Module."
   - SSL Configuration – For instructions on configuring SSL using Fusion Middleware Control, see "Enabling SSL for Oracle HTTP Server Virtual Hosts" in the *Oracle Fusion Middleware Administrator's Guide*.
   - mod_wl_ohs Configuration – Configure the mod_wl_ohs module to allow requests to be proxied from an Oracle HTTP Server to Oracle WebLogic Server. See Section 4.4.4, "Configuring mod_wl_ohs."

7. Review the settings on each configuration page. If the settings are correct, click **OK** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Cancel** to return to the original settings.

8. Restart Oracle HTTP Server. See Section 4.1.4.

7

Managing Oracle HTTP Server Logs

Note: Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.

For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier Without Oracle WebLogic Server" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

Oracle HTTP Server generates log files containing messages that record all types of events, including startup and shutdown information, errors, warning messages, access information on HTTP requests, and additional information. This chapter describes how to find information about the cause of an error and its corrective action, to view and manage log files to assist in monitoring system activity and to diagnose problems.

This chapter includes the following sections:

7.1 Overview of Server Logs

You can view Oracle Fusion Middleware log files using either Fusion Middleware Control or a text editor. The log files for Oracle HTTP Server are located in the following directory:

ORACLE_INSTANCE/diagnostics/logs/OHS/*component_name*

There are two types of logs for Oracle HTTP Server:

- Error logs, which record server problems.
- Access logs, which record which components and applications are being accessed and by whom.

This section contains the following topics:

7.1.1 About Error Logs

Oracle HTTP Server enables you to choose the format in which you want to generate log messages. You can choose to generate log messages in the legacy Apache message format, or use Oracle Diagnostic Logging (ODL) to generate log messages in text or XML-formatted logs, which complies with Oracle standards for generating error log messages.

By default, Oracle HTTP Server error logs use ODL for generating diagnostic messages. It provides a common format for all diagnostic messages and log files, and a mechanism for correlating the diagnostic messages from various components across Oracle Fusion Middleware.

The default name of the error log file is *component_name*.log.

7.1.2 About Access Logs

Access logs record all requests processed by the server. The logs contain basic information about every HTTP transaction handled by the server. The access log contains the following information:

- Host name
- Remote log name
- Remote user and time
- Request
- Response code
- Number of transferred bytes

The default name of the access log file is access_log.

Access Log Format

You can specify the information to include in the access log, and the manner in which it is written. The default format is the Common Log Format (CLF).

The CLF format contains the following fields:

```
host ident authuser date request status bytes
```

- host: This is the client domain name or its IP number. Use %h to specify the host field in the log.
- ident: If IdentityCheck is enabled and the client system runs identd, this is the client identity information. Use %i to specify the client identity field in the log.
- authuser: This is the user ID for the authorized user. Use %a to specify the authorized user field in the log.
- date: This is the date and time of the request in the day/month/year:hour:minute:second format. Use %t to specify date and time in the log.
- request: This is the request line, in double quotes, from the client. Use %r to specify request in the log.

- status: This is the three-digit status code returned to the client. Use `%s` to specify the status in the log. If the request will be forwarded from another server, use `%>s` to specify the last server in the log.
- bytes: This is the number of bytes, excluding headers, returned to the client. Use `%b` to specify number of bytes in the log. Use `%i` to include the header in the log.

See Also: Access Log in the Apache HTTP Server documentation.

7.1.3 Log Rotation

Oracle HTTP Server supports two types of log rotation policies: size-based and time-based. You can configure the Oracle HTTP Server logs to use either of the two rotation polices, by using `odl_rotatelogs` in *ORACLE_HOME*/ohs/bin. By default, Oracle HTTP Server uses `odl_rotatelogs` for both error and access logs.

`odl_rotatelogs` supports all the features of Apache HTTP Server's `rotatelogs` and the additional feature of log retention.

You can find information about the features and options provided by `rotatelogs` at the following URL:

http://httpd.apache.org/docs/2.2/programs/rotatelogs.html

The following is the general syntax of `odl_rotatelogs`:

```
odl_rotatelogs [-u:offset] logfile {size-|time-based-rotation-options}
```

`odl_rotatelogs` is meant to be used with the piped logfile feature. This feature allows error and access log files to be written through a pipe to another process, rather than directly to a file. This increases the flexibility of logging, without adding code to the main server. To write logs to a pipe, replace the filename with the pipe character "|", followed by the name of the executable which should accept log entries on its standard input. For more information on the piped logfile feature, see the following URL:

http://httpd.apache.org/docs/2.2/logs.html#piped

Used with the piped logfile feature, the syntax of `odl_rotatelogs` becomes the following:

```
CustomLog " |${PRODUCT_HOME}/bin/odl_rotatelogs [-u:offset] logfile
{size-|time-based-rotation-options}" log_format
```

Whenever there is an input to `odl_rotatelogs`, it checks if the specified condition for rotation has been met. If so, it rotates the file. Otherwise it simply writes the content. If no input is provided, then it will do nothing.

Table 7–1 describes the size- and time-based rotation options:

Table 7–1 Options for odl_rotatelogs

Option	Description
`-u`	The time (in seconds) to offset from UTC.

Table 7–1 (Cont.) Options for odl_rotatelogs

Option	Description
logfile	The path and name of the log file, followed by a hyphen (-) and then the timestamp format. The following are the common timestamp format strings: ■ %m: Month as a two-digit decimal number (01-12) ■ %d: Day of month as a two-digit decimal number (01-31) ■ %Y: Year as a four-digit decimal number ■ %H: Hour of the day as a two-digit decimal number (00-23) ■ %M: Minute as a two-digit decimal number (00-59) ■ %S: Second as a two-digit decimal number (00-59) It should not include formats that expand to include slashes.
frequency	The time (in seconds) between log file rotations.
retentionTime	The maximum time for which the rotated log files are retained.
startTime	The time when time-based rotation should start.
maxFileSize	The maximum size (in MB) of log files.
allFileSize	The total size (in MB) of files retained.

Syntax and Examples for Time- and Size-Based Rotation

- Time-based rotation

  Syntax:

  ```
  odl_rotatelogs u:offset logfile frequency retentionTime startTime
  ```

  Example:

  ```
  CustomLog "| odl_rotatelogs u:-18000 /varlog/error.log-%Y-%m-%d 21600 172800
  2014-03-10T08:30:00" common
  ```

  This configures log rotation to be performed for a location UTC-05:00 (18000 seconds, such as New York). The rotation will be performed every 21600 seconds (6 hours) starting from 8:30 a.m. on March 10, 2014, and it specifies that the rotated log files should be retained for 172800 seconds (2 days). The log format is `common`.

  Syntax:

  ```
  odl_rotatelogs logfile frequency retentionTime startTime
  ```

  Example:

  ```
  CustomLog "| odl_rotatelogs /varlog/error.log-%Y-%m-%d 21600 172800
  2014-03-10T08:30:00" common
  ```

  This configures log rotation to be performed every 21600 seconds (6 hours) starting from 8:30 a.m. on March 10, 2014, and it specifies that the rotated log files should be retained for 172800 seconds (2 days). The log format is `common`.

- Size-based rotation

  Syntax:

  ```
  odl_rotatelogs logfile maxFileSize allFileSize
  ```

  Example:

This configures log rotation to be performed when the size of the log file reaches 10 MB, and it specifies the maximum size of all the rotated log files as 70 MB (up to 7 log files (=70/10) will be retained). The log format is `common`.

```
CustomLog "| odl_rotatelogs /var/log/error.log-%Y-%m-%d 10M 70M" common
```

7.2 Configuring Oracle HTTP Server Logs

You can use Fusion Middleware Control to configure error and access logs. The following logging tasks can be set from the Log Configuration page:

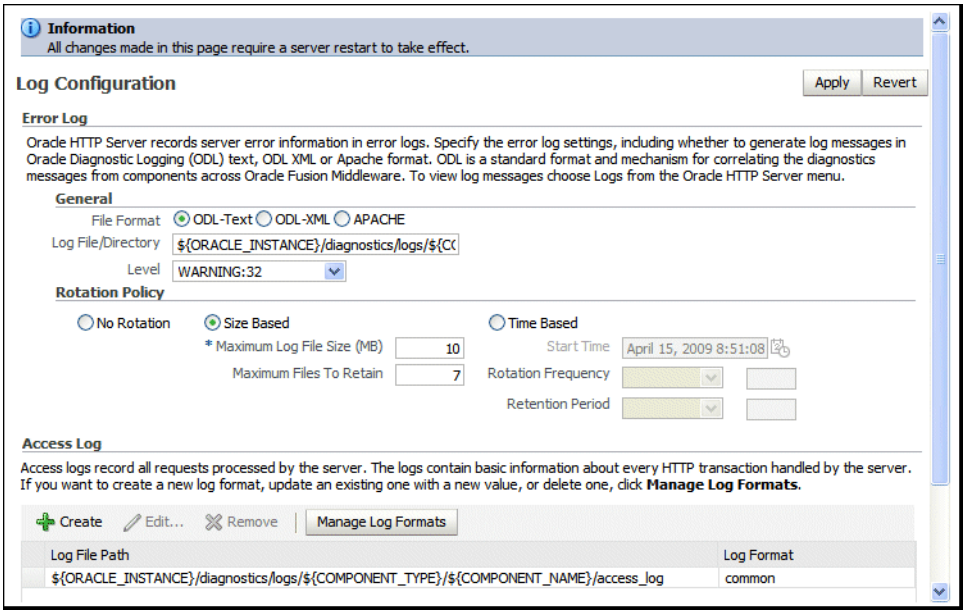
- Using Fusion Middleware Control to Configure Error Logs
- Using Fusion Middleware Control to Configure Access Logs

7.2.1 Using Fusion Middleware Control to Configure Error Logs

To configure an error log for Oracle HTTP Server using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Log Configuration** from the Administration menu.

   The Log Configuration page is displayed, as shown in the following figure.



3. The following error log configuration tasks can be set from this page:
   - Configuring the Error Log Format and Location
   - Configuring the Error Log Level
   - Configuring Error Log Rotation Policy

7.2.1.1 Configuring the Error Log Format and Location

Oracle HTTP Server by default uses ODL-Text as the error log format and creates the log file with the name *component_name*`.log` under the *ORACLE_INSTANCE*`/diagnostics/logs/OHS/` *component_name* directory. To use a different format or log location, do the following:

1. From the Log Configuration page, navigate to the General section under the Error Log section.
2. Select the desired file format. Although both ODL-Text and ODL-XML formats provide the same information, the ODL-XML file includes XML elements and wrappers, and so may be easier to read.
   - ODL-Text – the format of the diagnostic messages conform to an Oracle standard and are written in text format.
   - ODL-XML – the format of the diagnostic messages conform to an Oracle standard and are written in XML format.
   - Apache – the format of the diagnostic messages conform to the legacy Apache HTTP Server message format.
3. Enter a path for the error log in the Log File/Directory field. This directory must exist before you enter it here.

   Note: You cannot configure console~ohs~1.log to be logged into another location.

4. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
5. Restart Oracle HTTP Server. See Section 4.1.4.

7.2.1.2 Configuring the Error Log Level

You can configure the amount and type of information written to log files by specifying the message type and level. Error log level for Oracle HTTP Server by default is configured to WARNING:32. To use a different error log level do the following:

1. From the Log Configuration page, navigate to the General section under the Error Log section.
2. Select a level for the logging from the Level menu. The higher the log level, the more information that is included in the log.
3. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
4. Restart Oracle HTTP Server. See Section 4.1.4.

   Note: The log levels are different for the Apache log format from ODL-Text and the ODL-XML log format.
   - For details on ODL log levels, refer to "Setting the Level of Information Written to Log Files" in the *Oracle Fusion Middleware Administrator's Guide*.
   - For details on Apache log levels, refer to the LogLevel Directive in the Apache HTTP Server documentation.

7.2.1.3 Configuring Error Log Rotation Policy

Log rotation policy for error logs can either be time-based, such as once a week, or sized-based, such as 120MB. By default, the error log file is rotated when it reaches 10 MB in size and a maximum of 7 error log files will be retained. To use a different rotation policy, do the following:

1. From the Log Configuration page, navigate to the General section under the Error Log section.
2. Select a rotation policy.
   - No Rotation – if you do not want to have the log file rotated ever.
   - Size Based – rotate the log file whenever it reaches a configured size. Set the maximum size for the log file in Maximum Log File Size (MB) field and the maximum number of error log files to retain in Maximum Files to Retain field.
   - Time Based – rotate the log file whenever configured time is reached. Set the start time, rotation frequency, and retention period.
3. Review the settings. If the settings are correct, click **Apply** to apply the changes. If the settings are incorrect, or you decide to not apply the changes, click **Revert** to return to the original settings.
4. Restart Oracle HTTP Server. See Section 4.1.4.

7.2.2 Using Fusion Middleware Control to Configure Access Logs

To configure an access log for Oracle HTTP Server using Fusion Middleware Control, do the following:

1. Navigate to the Oracle HTTP Server home page.
2. Select **Log Configuration** from the Administration menu.

The following access log configuration tasks can be set from this page:

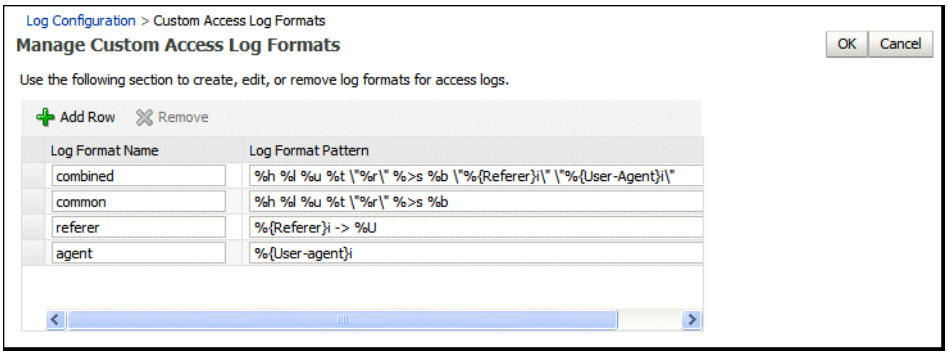
- Configuring the Access Log Format
- Configuring the Access Log File

7.2.2.1 Configuring the Access Log Format

Log format specifies the information included in the access log file and the manner in which it is written. To add a new access log format or to edit or remove an existing format, do the following:

1. From the Log Configuration page, navigate to the Access Log section.
2. Click **Manage Log Formats**.

   The Manage Custom Access Log Formats page is displayed, as shown in the following figure.



3. Select an existing format to change or remove, or click **Add Row** to create a new format.
4. If you choose to create a new format, then enter the new log format in the Log Format Name field and the log format in the Log Format Pattern field.

   See Also: Refer to the Apache HTTP Server documentation for information about log format directives.

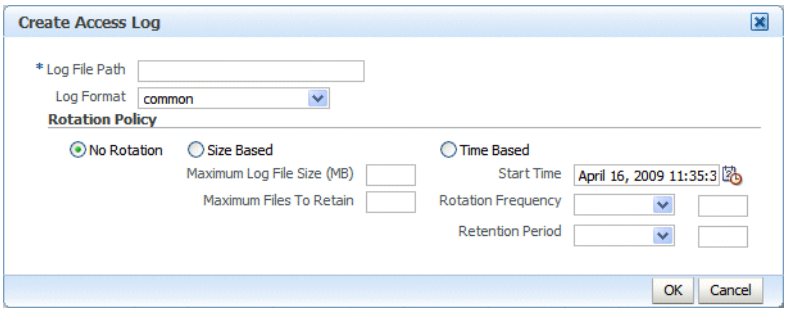
5. Click **OK** to save the new format.

7.2.2.2 Configuring the Access Log File

To configure an access log for file Oracle HTTP Server, do the following:

1. From the Log Configuration page, navigate to the Access Log section.
2. Click **Create** to create a new access log, or select a row from the table and click **Edit** button to edit an existing access log file.

   The Create or Edit Access Log page is displayed.



3. Enter the path for the access log in the Log File Path field. This directory must exist before you enter it.
4. Select an existing access log format from the Log Format menu.
5. Select a rotation policy.
   - No Rotation – if you do not want to have the log file rotated ever.
   - Size Based – rotate the log file whenever it reaches a configured size. Set the maximum size for the log file in Maximum Log File Size (MB) field and the maximum number of error log files to retain in Maximum Files to Retain field.
   - Time Based – rotate the log file whenever configured time is reached. Set the start time, rotation frequency, and retention period.

6. Click **OK** to continue.

   Note that you can create multiple access log files.

7.3 Log Directives for Oracle HTTP Server

This section discuss Oracle HTTP Server error and access log-related directives in the `httpd.conf` file. The directives discussed are:

- Oracle Diagnostic Logging Directives
- Apache HTTP Server Log Directives

7.3.1 Oracle Diagnostic Logging Directives

Oracle HTTP Server by default uses Oracle Diagnostic Logging (ODL) for generating diagnostic messages. The following directives are used to setup logging using ODL:

- OraLogMode
- OraLogDir
- OraLogSeverity
- OraLogRotationParams

7.3.1.1 OraLogMode

Enables you to choose the format in which you want to generate log messages. You can choose to generate log messages in the legacy Apache, ODL text, or ODL XML format.

```
OraLogMode Apache | ODL-Text | ODL-XML
```

Default value: `ODL-Text`

For example: `OraLogMode ODL-XML`

> **Note:** The Apache log directives `ErrorLog` and `LogLevel` are only effective when `OraLogMode` is set to `Apache`. When `OraLogMode` is set to either `ODL-Text` or `ODL-XML`, the `ErrorLog` and `LogLevel` directives are ignored.

7.3.1.2 OraLogDir

Specifies the path to the directory that contains all log files. This directory must exist.

This directive is used only when `OraLogMode` is set to either `ODL-Text` or `ODL-XML`. When `OraLogMode` is set to `Apache`, `OraLogDir` is ignored and `ErrorLog` is used instead.

```
OraLogDir <path>
```

Default value: *`ORACLE_INSTANCE`*`/diagnostics/logs/OHS/`*`component_name`*

For example: `OraLogDir /tmp/logs`

7.3.1.3 OraLogSeverity

Enables you to set message severity. The message severity specified with this directive is interpreted as the lowest desired message severity, and all messages of that severity level and higher are logged.

This directive is used only when OraLogMode is set to either ODL-Text or ODL-XML. When OraLogMode is set to Apache, OraLogSeverity is ignored and LogLevel is used instead.

OraLogSeverity <msg_type>[:msg_level]

Default value: WARNING:32

For example: OraLogSeverity NOTIFICATION:16

msg_type

Message types can be specified in upper or lower case, but appear in the message output in upper case. This parameter must be of one of the following values:

- INCIDENT_ERROR
- ERROR
- WARNING
- NOTIFICATION
- TRACE

msg_level

This parameter must be an integer in the range of 1–32, where 1 is the most severe, and 32 is the least severe. Using level 1 will result in fewer messages than using level 32.

7.3.1.4 OraLogRotationParams

Enables you to choose the rotation policy for an error log file. This directive is used only when OraLogMode is set to either ODL-Text or ODL-XML. When OraLogMode is set to Apache, OraLogRotationParams is ignored.

OraLogRotationParams <rotation_type> <rotation_policy>

Default value: S 10:70

For example: OraLogRotationParams T 43200:604800 2009-05-08T10:53:29

rotation_type

This parameter can either be S (for sized-based rotation) or T (for time-based rotation).

rotation_policy

When rotation_type is set to S (sized-based), set the rotation_policy parameter to:

maxFileSize:allFilesSize (in MB)

For example, when configured as 10:70, the error log file is rotated whenever it reaches 10MB in size and a total of 70MB is allowed for all error log files (a maximum of 70/10=7 error log files will be retained).

When rotation_type is set to T (time-based), set the rotation_policy parameter to:

frequency(in sec) retentionTime(in sec) startTime(in YYYY-MM-DDThh:mm:ss)

For example, when configured as 43200:604800 2009-05-08T10:53:29, the error log is rotated every 43200 seconds (that is, 12 hours), rotated log files are retained for maximum of 604800 seconds (7 days) starting from May 5, 2009 at 10:53:29.

7.3.2 Apache HTTP Server Log Directives

Although Oracle HTTP Server uses ODL by default for error logs, you can configure the `OraLogMode` directive to `Apache` to generate error log messages in the legacy Apache HTTP Server message format. The following directives are discussed in this section:

- ErrorLog
- LogLevel
- LogFormat
- CustomLog

7.3.2.1 ErrorLog

The `ErrorLog` directive sets the name of the file where the server logs any errors it encounters. If the file-path is not absolute then it is assumed to be relative to the ServerRoot.

This directive is used only when `OraLogMode` is set to `Apache`. When `OraLogMode` is set to either `ODL-Text` or `ODL-XML`, `ErrorLog` is ignored and `OraLogDir` is used instead.

> **See Also:** For information about the `ErrorLog` directive, see the Apache HTTP Server documentation .

7.3.2.2 LogLevel

The `LogLevel` directive adjusts the verbosity of the messages recorded in the error logs.

This directive is used only when `OraLogMode` is set to `Apache`. When `OraLogMode` is set to either `ODL-Text` or `ODL-XML`, `LogLevel` is ignored and `OraLogSeverity` is used instead.

> **See Also:** Refer to the Apache HTTP Server documentation for information about the `LogLevel` directive.

7.3.2.3 LogFormat

The `LogFormat` directive specifies the format of the access log file. By default, Oracle HTTP Server comes with the following four access log formats defined:

```
LogFormat "%h %l %u %t \"%r\" %>s %b" common
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined
LogFormat "%{Referer}i -> %U" referer
LogFormat "%{User-agent}i" agent
```

> **See Also:** Refer to the Apache HTTP Server documentation for information about the `LogFormat` directive.

7.3.2.4 CustomLog

The `CustomLog` directive is used to log requests to the server. A log format is specified and the logging can optionally be made conditional on request characteristics using environment variables. By default, the access log file is configured to use the common log format.

> **See Also:** Refer to the Apache HTTP Server documentation for information about the `CustomLog` directive.

7.4 Viewing Oracle HTTP Server Logs

You can search, view, and list Oracle HTTP Server log files using Fusion Middleware Control, or you can download a log file to your local client and view the log files using another tool.

You can also use the text editor of your choice to view Oracle HTTP Server log files directly from the *ORACLE_INSTANCE* directory. By default, Oracle HTTP Server log files are located in the *ORACLE_INSTANCE*/diagnostics/logs/OHS/*component_name* directory.

As discussed in Section 7.1, "Overview of Server Logs", there are mainly two types of log files for Oracle HTTP Server: error logs and access logs. The error log file is an important source of information for maintaining a well-performing server. The error log records all of the information about problem situations so that the system administrator can easily diagnose and fix the problems. The access log file contains basic information about every HTTP transaction that the server handles. This information can be used to generate statistical reports about the server's usage patterns.

> **See Also:** For information about searching and viewing log files, see the *Oracle Fusion Middleware Administrator's Guide*

8

Managing Application Security

This chapter contains an overview of Oracle HTTP Server security features, and provides configuration information for setting up a secure Web site.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier Without Oracle WebLogic Server" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This chapter includes the following sections:

8.1 About Oracle HTTP Server Security

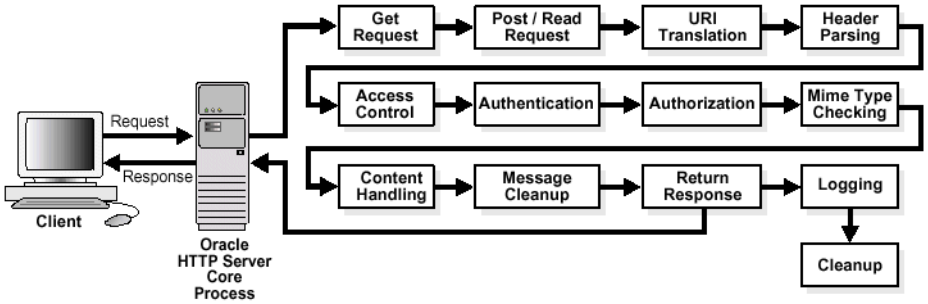
Security can be organized into the categories of authentication, authorization, and confidentiality. Oracle HTTP Server provides support for all three of these categories. It is based on the Apache Web server, and its security infrastructure is primarily provided by the Apache modules, mod_auth_basic, mod_authn_file, mod_auth_user, and mod_authz_groupfile, and the Oracle modules, mod_ossl and mod_osso. The mod_auth_basic, mod_authn_file, mod_auth_user, and mod_authz_groupfile modules provide authentication based on user name and password pairs, while mod_authz_host controls access to the server based on the characteristics of a

request, such as host name or IP address, mod_ossl provides confidentiality and authentication with X.509 client certificates over SSL, and mod_osso enables single sign-on authentication for Web applications.

Oracle HTTP Server provides access control, authentication, and authorization methods that can be configured with access control directives in the `httpd.conf` file. When URL requests arrive at Oracle HTTP Server, they are processed in a sequence of steps determined by server defaults and configuration parameters. The steps for handling URL requests are implemented through a module or plug-in architecture that is common to many Web listeners.

Figure 8–1 shows how URL requests are handled by the server. Each step in this process is handled by a server module depending on how the server is configured. For example, if basic authentication is used, then the steps labeled "Authentication" and "Authorization" in Figure 8–1 represent the processing of the Apache mod_auth_basic, mod_authn_file, mod_auth_user, and mod_authz_groupfile modules.

Figure 8–1 Steps for Handling URL Requests in Oracle HTTP Server



8.2 Classes of Users and Their Privileges

Oracle HTTP Server authorizes and authenticates users before allowing them to access, or modify resources on the server. The following are three classes of users that access the server using Oracle HTTP Server, and their privileges:

- Users that access the server without providing any authentication. They have access to unprotected resources only.
- Users that have been authenticated and potentially authorized by modules within Oracle HTTP Server. This includes users authenticated by Apache HTTP Server modules like mod_auth_basic, mod_authn_file, mod_auth_user, and mod_authz_groupfile modules and Oracle's mod_ossl. Such users have access to URLs defined in `http.conf` file.

  See Also: Section 8.5, "Authentication, Authorization and Access Control".

- Users that have been authenticated through mod_osso and Single Sign-On server. These users have access to resources allowed by Single Sign-On.

  See Also: *Oracle Fusion Middleware Security Guide*

8.3 Resources Protected

Oracle HTTP Server may be configured since these resources are not protected out of the box:

- Static content such as static HTML pages, graphics interchange format, `.gif`, files, and other static files that Oracle HTTP Server provides directly.
- CGI/FastCGI scripts, simple scripts or programs that Oracle HTTP Server invokes directly.
- Content generated by modules within Oracle HTTP Server. Modules such as mod_perl, mod_dms generate responses that are returned to the client.
- Oracle Application Server components that exist behind Oracle HTTP Server, including servlets and JSPs running with Oracle WebLogic Server that are accessed through mod_wl_ohs. Oracle HTTP Server forms the first line of authentication and authorization for these components, although further authentication may occur at the component level.

8.4 Terminating SSL Requests

This section describes how to terminate SSL before or within Oracle HTTP Server, where the `mod_wl_ohs` module is used to forward requests to WebLogic Server. Whether you terminate SSL before the request reaches Oracle HTTP Server or when the request is in the server, depends on your topology. A common reason to terminate SSL is for performance considerations when an internal network is otherwise protected with no risk of a third-party intercepting data within the communication. Another reason is when WebLogic Server is not configured to accept HTTPS requests.

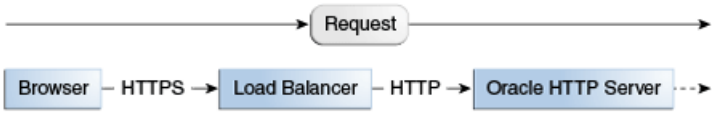
- Terminating SSL Before Oracle HTTP Server
- Terminating SSL at Oracle HTTP Server

8.4.1 Terminating SSL Before Oracle HTTP Server

If you are using another device such as a load balancer or a reverse proxy which terminates requests using SSL before reaching Oracle HTTP Server, then you must configure the server to treat the requests as if they were received through HTTPS. The server must also be configured to send HTTPS responses back to the client.

Figure 8–2 illustrates an example where the request transmitted from the browser through HTTPS to WebLogic Server. The load balancer terminates SSL and transmits the request as HTTP. Oracle HTTP Server must be configured to treat the request as if it was received through HTTPS.

Figure 8–2 Terminating SSL Before Oracle HTTP Server



To instruct the Oracle HTTP Server to treat requests as if they were received through HTTPS, configure the `httpd.conf` file with the `SimulateHttps` directive in the `mod_certheaders` module.

For more information on `mod_certheaders` module, see Section E.1, "mod_certheaders."

> **Note:** This procedure is not necessary if SSL is configured on Oracle HTTP Server (that is, if you are directly accessing Oracle HTTP Server using HTTPS).

1. Configure the `httpd.conf` configuration file with the external name of the server and its port number, for example:

   ```
   ServerName <www.company.com:port>
   ```

2. Configure the `httpd.conf` configuration file to load the `mod_certheaders` module, for example:

   - On UNIX:

     ```
     LoadModule certheaders_module libexec/mod_certheaders.so
     ```

   - On Windows:

     ```
     LoadModule certheaders_module modules/ApacheModuleCertHeaders.dll
     AddModule mod_certheaders.c
     ```

   > **Note:** Oracle recommends that the `AddModule` line should be included with other `AddModule` directives.

3. Configure the `SimulateHttps` and `AddCertHeader` directives at the bottom of the `httpd.conf` file to send HTTPS responses back to the client, for example:

   ```
   # For use with other load balancers and front-end devices:
   SimulateHttps On
   # For use with Oracle Web Cache:
   AddCertHeader HTTPS
   ```

4. Restart Oracle HTTP Server and test access to the server. Especially, test whether you can access static pages such as `https://`*`host:port`*`/index.html`

   Test your configuration as a basic setup. If you are having issues, then you should troubleshoot from here to avoid overlapping with other potential issues, such as with virtual hosting.

5. Ideally, you may want to configure a `VirtualHost` in the `httpd.conf` file to handle all HTTPS requests. This separates the HTTPS requests from the HTTP requests as a more scalable approach. This may be more desirable in a multi-purpose site or if a load balancer or other device is in front of Oracle HTTP Server which is also handling both HTTP and HTTPS requests.

   The following sample instructions load the `mod_certheaders` module, then creates a virtual host to handle only HTTPS requests.

   ```
   # Load correct module here or where other LoadModule lines exist:
   LoadModule certheaders_module libexec/mod_certheaders.so
   # This only handles https requests:
   NameVirtualHost <name>:<port>
      <VirtualHost <name>:<port>
          # Use name and port used in url:
          ServerName <www.company.com:port>
          SimulateHttps On
          # The rest of your desired configuration for this VirtualHost goes here
      </VirtualHost>
   ```

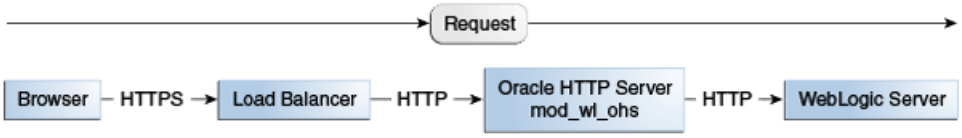
6. Restart Oracle HTTP Server and test access to the server, First test a static page such as `https://host:port/index.html` and then your test your application.

8.4.2 Terminating SSL at Oracle HTTP Server

If SSL is configured in Oracle HTTP Server but not on WebLogic Server, then you can terminate SSL for requests sent by Oracle HTTP Server.

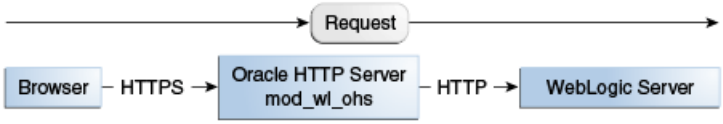
The following figures illustrate request flows, showing where HTTPS stops. In Figure 8–3, an HTTPS request is sent from the browser. The load balancer transmits the HTTPS request to Oracle HTTP Server. SSL is terminated in Oracle HTTP Server and the HTTP request is sent to WebLogic Server.

Figure 8–3 Terminating SSL at Oracle HTTP Server—With Load Balancer



In Figure 8–4, there is no load balancer and the HTTPS request is sent directly to Oracle HTTP Server. Again, SSL is terminated in Oracle HTTP Server and the HTTP request is sent to WebLogic Server.

Figure 8–4 Terminating SSL at Oracle HTTP Server—Without Load Balancer



1. Configure the `mod_wl_ohs.conf` file to add the `WLSProxySSL` directive for the location of your non-SSL configured managed servers, for example:

   ```
   WLProxySSL ON
   ```

2. If using a load balancer or other device in front of Oracle HTTP Server (which is also using SSL), you might need to configure the `WLProxySSLPassThrough` directive instead, depending on if it already sets `WL-Proxy-SSL`, for example:

   ```
   WLProxySSLPassThrough ON
   ```

   For more information, see your load balancer documentation. For more information on WLProxySSLPassThrough, see "Parameters for Web Server Plug-Ins" in *Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*.

3. Ensure that the `SecureProxy` directive is **not** configured, as it will interfere with the intended communication between the components. This directive is to be used only when SSL is used throughout. The `SecureProxy` directive is commented out in the following example:

   ```
   # To configure SSL throughout (all the way to WLS):
   # SecureProxy ON
   # WLSSLWallet  "<Path to Wallet>"
   ```

4. Restart Oracle HTTP Server and test access to a Java application, for example: `https://host:port/path/application_name.`

8.5 Authentication, Authorization and Access Control

Oracle HTTP Server provides user authentication and authorization at two stages:

- Access Control (stage one): This is based on the details of the incoming HTTP request and its headers, such as IP addresses or host names.
- User Authentication and Authorization (stage two): This is based on different criteria depending on the HTTP server configuration. The server can be configured to authenticate users with user name and password pairs that are checked against a list of known users and passwords. You can also configure the server to use single sign-on authentication for Web applications or X.509 client certificates over SSL.

8.5.1 Access Control

Access control refers to any means of controlling access to any resource.

> **See Also:** Refer to the Apache HTTP Server documentation for more information on how to configure access control to resources.

8.5.2 User Authentication and Authorization

> **Critical Note:** The FMW 10*g*-based Single Sign-On Plug-In, OSSO Plug-In for Oracle HTTP Server and other web servers. such as IIS, has been deprecated and will be discontinued in future releases.
>
> You should migrate to the FMW 11*g*-based Oracle Access Manager WebGate for single sign-on functionality. Note that Oracle Access Manager and WebGate must be installed separately. For more information, see *Fusion Middleware Administrator's Guide for Oracle Access Management* at:
>
> http://docs.oracle.com/cd/E40329_01/admin.1112/e27239/toc.htm

Authentication is any process by which you verify that someone is who they claim they are. Authorization is any process by which someone is allowed to be where they want to go, or to have information that they want to have.

8.5.2.1 Using Apache HTTP Server Modules to Authenticate Users

The Apache HTTP Server authentication directives can be used to verify that users are who they claim to be.

> **See Also:** Refer to the Apache HTTP Server documentation for more information on how to authenticate users.

8.5.2.2 Using mod_osso to Authenticate Users

> **Note:** mod_osso for use with Oracle Single Sign-On 10g is deprecated and is not recommended for use. Instead, you should use the Oracle Access Manager.

mod_osso enables single-sign on for Oracle HTTP Server. mod_osso examines incoming requests and determines whether the resource requested is protected, and if so, retrieves the Oracle HTTP Server cookie for the user.

Through mod_osso, Oracle HTTP Server becomes a single sign-on (SSO) partner application enabled to use SSO to authenticate users and obtain their identity using Oracle Single Sign-On, and to make user identities available to Web applications as an Apache header variable.

Using mod_osso, Web applications can register URLs that require SSO authentication. When Oracle HTTP Server receives URL requests, mod_osso detects which requests require SSO authentication and redirects them to the SSO server. Once SSO server authenticates the users, it passes the user's authenticated identity back to mod_osso in a secure token, or cookie. mod_osso retrieves the user's identity from the cookie and propagates the user's identity information to applications running in Oracle HTTP Server instance. mod_osso can propagate the user's identity information to applications running in CGI, and those running in Oracle WebLogic Server, and it can also authenticate users for access to static files.

See Also: *Oracle Fusion Middleware Security Guide*

8.5.3 Support for FMW Audit Framework

Oracle HTTP Server supports a directive called `OraAuditEnable`. The purpose of this directive is to enable auditing of authentication and authorization using the FMW Common Audit Framework. This directive takes on two values, ON and OFF. When the value is set to ON, all the audit events reported by Oracle HTTP Server are recorded into an audit framework specific file. By default, the value is ON. If `OraAuditEnable` is set to OFF or is not present, then audit is disabled. The default `httpd.conf` file that is provided with Oracle HTTP Server sets it to ON. For more information, see

`http://download.oracle.com/docs/cd/E14571_01/core.1111/e10043/audintro.htm#JISEC2372`

8.6 Implementing SSL

Oracle HTTP Server secures communications by using a Secure Sockets Layer (SSL) protocol. SSL secures communication by providing message encryption, integrity, and authentication. The SSL standard allows the involved components (such as browsers and HTTP servers) to negotiate which encryption, authentication, and integrity mechanisms to use.

For details on how to implement SSL for Oracle HTTP Server, see "Configuring SSL for the Web Tier" in *Oracle Fusion Middleware Administrator's Guide*. For information on using mod_ossl, Oracle's SSL module, see Section 3.6, "mod_ossl." For information on the directives available under mod_ossl, see Section E.4, "mod_ossl." .

8.7 New Protocols and Ciphers for the Current Release

The current release of Oracle HTTP Server and Oracle Web Cache adds support for the TLS v1.1 and TSL v1.2 security protocols and the following ciphers. For the complete list of security protocols and ciphers supported by the current release of Oracle HTTP Server, see Section E.4.12, "SSLProtocol" and Section E.4.4, "SSLCipherSuite."

- `TLS_RSA_WITH_AES_128_CBC_SHA256`
- `TLS_RSA_WITH_AES_256_CBC_SHA256`

- TLS_RSA_WITH_AES_128_GCM_SHA256
- TLS_RSA_WITH_AES_256_GCM_SHA384
- TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA
- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA
- TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256
- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384
- TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
- TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384

8.8 Configuring TLS v1.1 and TLS v 1.2 Protocols and Ciphers

In the current release, you cannot configure the security protocols TLSv1.1 or TLSv1.2 and their corresponding ciphers though Fusion Middleware Control. To implement these protocols and ciphers for your applications, you must manually edit the `ssl.conf` file (`<ORACLE_INSTANCE_DIR>/config/OHS/<instance_name>/ssl.conf`).

The following example configures the TLS v1.1 and TLS v1.2 protocols and three ciphers in the `ssl.conf` file:

```
...
#  SSL Protocol Support:
#  Configure usable SSL/TLS protocol versions.

SSLProtocol +TLSv1.1 +TLSv1.2

#  SSL Cipher Suite:
#  List the ciphers that the client is permitted to negotiate.
SSLCipherSuite TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA:TLS_ECDHE_ECDSA_WITH_AES_256_
CBC_SHA384:TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
...
```

8.9 Disable SSLv2 and SSLv3 Security Protocols

Because of security concerns, the SSLv3 security protocol is disabled out-of-the-box in the Oracle HTTP Server 11.1.1.9 release. The SSLv2 protocol is no longer supported by Oracle HTTP Server.

If you are upgrading from an earlier release of Oracle HTTP Server, the SSLv3 and/or SSLv2 security protocol might be a part of your configuration. Oracle strongly recommends that you disable any SSLv3 or SSLv2 configuration from Oracle HTTP Server.

To disable SSL security protocols from Oracle HTTP Server:

1. Examine your `.conf` files (such as `ssl.conf`, `admin.conf`, and any custom `.conf` files) to look for security declarations such as `SSLProtocol` and `SSLProxyProtocol`.

   You can find the `ssl.conf` and `admin.conf` files in the following location:

   `ORACLE_INSTANCE/config/OHS/<component_name>`

2. Edit the security declaration to use a non-SSL protocol.

   For example, to explicitly configure all of the currently supported security protocols, enter the following:

   ```
   SSLProtocol +TLSv1 +TLSv1.1 +TLSv1.2
   ```

3. Save the files and restart Oracle HTTP Server.

Notes:

- If you are editing files manually, ensure you edit a currently configured value instead of adding another. It could be easy to add a global parameter when it will be overridden by a value in the VirtualHost.
- You must edit the `ssl.conf` and `admin.conf` files, but note that you might have other customized `.conf` files and/or have another product installed and configured using its own `.conf` file.
- You can also use FMW Control to edit the configuration and choose `TLSv1` for the VirtualHost ports used for SSL. However, if you attempt to modify the built-in *.9999 VirtualHost, then you will be presented with a alert stating `You cannot edit or delete a virtual host of type ADMIN`. In this case, you must manually edit the `ORACLE_INSTANCE/config/OHS/<OHS_name>/admin.conf` file to add the `SSLProtocol TLSv1` configuration.

9 Configuring mod_oradav

This chapter describes distributed authoring and versioning (DAV) concepts, and explains how to configure OraDAV using the mod_oradav module. The mod_oradav module enables you to use OraDAV to access content in files from a Web browser or a WebDAV client.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier Without Oracle WebLogic Server" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This chapter includes the following sections:

9.1 Introduction to the mod_oradav Module

The mod_oradav module is an extended implementation of the Apache implementation of the WebDAV specification. The mod_oradav module is an OCI application written in C and is integrated with Oracle HTTP Server. The mod_oradav module enables WebDAV clients to connect to files, read and write content, and query and lock documents.

This section includes the following subsections:

9.1.1 WebDAV

WebDAV is a protocol extension to HTTP that supports distributed authoring and versioning. With WebDAV, the Internet becomes a transparent read and write medium, where content can be checked out, edited, and checked in to a URL address.

WebDAV enables collaboration among authors building Web sites. WebDAV also serves as universal read and write access protocol to arbitrary hierarchies of content, not necessarily Web sites. With WebDAV, you can save content to a URL provided by an Internet Service Provider (ISP), and then access and optionally change that content from various devices.

Note: When a WebDAV client first connects to Oracle HTTP Server, it must use the full ServerName string in the URL for the connection. Do not use an abbreviated form of the server name.

For example, if the server name value is `server1.example.com`, then connect to Oracle HTTP Server using the string `http://server1.example.com:7778`, not an abbreviated form such as `http://server1:7778`.

If you use an abbreviated form, the connection might succeed, but COPY and MOVE operations will fail to run, and generate BAD_GATEWAY errors.

9.1.2 OraDAV

OraDAV refers to the set of capabilities available through the mod_oradav module to Oracle Fusion Middleware users. Some OraDAV-specific terms include:

- OraDAV: Code in the Oracle HTTP Server that supports file-based DAV access. Apache DAV directives can be used with OraDAV.

  See Also: For more information about DAV directives, see the article written by Greg Stein (`gstein@lyra.org`) available at

  `http://www.webdav.org/mod_dav/install.html#apache`

- OraDAV API: Stored procedure calls that are used by the OraDAV driver to provide support for the following WebDAV functions over the Internet:
  - Reading and writing documents
  - Locking and unlocking documents
  - Managing, such as creating, populating, and deleting, hierarchies of information
  - Retrieving properties associated with documents
  - Associating properties with specific documents
- OraDAV driver: Stored procedure implementation of the OraDAV driver API that runs in Oracle and manages a repository.

The primary users of OraDAV are Oracle HTTP Server Web administrators and content editors. End users interact only indirectly with OraDAV through Web

browsers or WebDAV client tools. OraDAV interaction requires the following proficiency:

- The Web administrator needs to know how to start and stop Oracle HTTP Server, and how to configure Oracle HTTP Server to direct URL traffic to an OraDAV driver.
- The content editors need to know how to connect to the server, and upload and retrieve files.

9.1.3 OraDAV Architecture

The mod_oradav module, which includes OraDAV, is part of the Oracle HTTP Server architecture. A simple form of the architecture is illustrated in Figure 9–1.

Figure 9–1 OraDAV Architecture

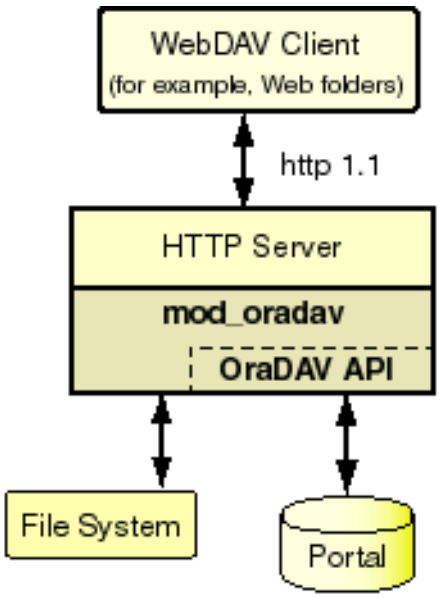


Figure 9–1 shows a WebDAV client, such as Web folders, passing HTTP requests to Oracle HTTP Server. If the request is for content stored in the file system, the mod_oradav module handles the access. If the request is for content stored in Oracle Portal, the OraDAV API handles the access.

The OraDAV API capabilities are equivalent to using the mod_oradav module running with a file system. The following HTTP methods are supported by the OraDAV API:

- COPY: Copies files within a Web site folder.
- DELETE: Deletes files within a Web site folder.
- MOVE: Moves files within a Web site folder.
- MKCOL: Makes a new directory.
- GET: Retrieves a file from the server. This method is not supported by Oracle Web Cache.
- PUT: Puts a file back to the server. This method is not supported by Oracle Web Cache.

- HEAD: Gets the header content of a file without retrieving the file.
- LOCK: Locks a file when the file is checked out. This method is not supported by Oracle Web Cache.
- UNLOCK: Unlocks a file after check in. This method is not supported by Oracle Web Cache.
- PROPFIND: Gets properties defined for a file.
- PROPPATCH: Sets the properties for a file.

The OraDAV API supports shared and exclusive locking, retrieving basic DAV properties, and defining and retrieving server-defined properties or client-defined properties. Set-based operations such as COPY, MOVE, DELETE can be done completely by a single call to an OraDAV driver.

9.1.4 OraDAV Usage Model

OraDAV usage can involve any combination of the following activities:

- Browsing: Read-only activity which uses WebDAV to access content on the file server. Its usage model is typical of a read-only Web site.

  The DAVOraReadOnly directive specifies whether or not WebDAV should be used in a read-only mode by WebDAV clients. A value of Off specifies that WebDAV clients function normally. A value of On prevents WebDAV clients from performing write operations while using WebDAV. It does allow read-only activity by Web browsers and WebDAV clients. The default is Off.

- Restructuring: Deleting, moving, and copying content. Restructuring is usually done infrequently by a restricted set of individuals who have write access to the WebDAV content.

  Restructuring has the same limitations and complications that one encounters when restructuring a file directory. In some cases, this directory hierarchy is owned and managed by one user. If the directory is shared, then the client doing restructuring is given sole access to the hierarchy through WebDAV exclusive locks.

- Editing: Modifying one or a small subset of resources in a hierarchy. Properly designed WebDAV clients use shared or exclusive locks on such resources to coordinate these activities.

- Property Management: Associating properties and attributes (for example, author) with documents for ease of lookup and for categorization. WebDAV clients assign properties to documents using the PROPPATCH directive and retrieve properties using the PROPFIND directive.

9.1.5 PROPFIND Security

The PROPFIND method can be used to list all the files in the DAV-enabled directory. For security reasons, it is probably best to protect the list of files from general read access.

An alternative is to limit the PROPFIND to a group of people, a set of domains, or a set of hosts, while the methods that modify content are limited to just a few authors. This scenario allows, for example, your company's employees to browse the files on the server, yet only a few people can change them. Anonymous (non-authenticated) visitors cannot browse or modify.

Finally, you can simply omit PROPFIND from the limits if your Web server is intended as a general, read-only repository of files. This allows anybody to arbitrarily browse the directories and to fetch the files.

9.2 Configuring mod_oradav

Use the Advanced Server Configuration page of Fusion Middleware Control to configure the mod_oradav module.

This section includes the following subsections:

- Section 9.2.1, "OraDAV Configuration Directives"
- Section 9.2.2, "Using Fusion Middleware Control to Configure mod_oradav"

9.2.1 OraDAV Configuration Directives

When Oracle Fusion Middleware is installed, all required OraDAV parameters, called "directives", are set to their default values. If the default values do not meet your needs, you can modify the values for required parameters and specify values for optional parameters. The OraDAV parameters in the `mod_oradav.conf` file start with "DAV" and "DAVParam".

The `DAV` parameter indicates that a URL location is DAV-enabled. The `DAV` keyword is followed by one of the following values:

- `On` – indicates that mod_oradav is to use the local file system for content.
- `Oracle` – indicates that mod_oradav is to use OraDAV for all content.

The DAVParam parameters are used to specify name-value pairs. The required pairs are those that enable Oracle HTTP Server to connect to an Oracle database. These include the names OraService, OraUser, and OraPassword or OraAltPassword.

Each OraDAV driver can use the DAVParam mechanism to create its own driver-specific settings. All DAVParam name-value pairs are passed to the OraDAV driver. In addition to the OraDAV parameters, you should consider whether to specify additional DAV parameters, such as `DavMinTimeout`.

Example 9–1 shows the syntax to configure access to files on the local system. It specifies that the directory dav_portal under the Web server documents directory is to be DAV-enabled, along with all directories under dav_portal in the hierarchy. There must not be any symlinks defined on the dav_portal directory or any of its subdirectories.

Example 9–1 Configuring File System Access

```
<Location /dav_portal>
  DAV On
</Location>
```

The following recommendations should be considered when mapping containers under the root location:

- Do not map the root itself. For example, do not specify `<Location / >` in the `mod_oradav.conf` file.
- Do not map a container as a subelement in the hierarchy to another container. For example, do not specify the containers `<Location /project1>` and `<Location /project1/project2>`. It is acceptable to specify `<Location /project1>` and `<Location /project2>`.

- Do not create any symbolic links to the container or any location under the container in the hierarchy.

> **Note:** The OraDAV directives are described in Appendix D, "OHS Module Directives". See Section E.3, "mod_oradav."

9.2.2 Using Fusion Middleware Control to Configure mod_oradav

On the Advanced Server Configuration page of Fusion Middleware Control, you can enter parameters within a `<Location>` container directive in the `mod_oradav.conf` file. The `<Location>` container directive specifies the DAV-enabled URL. The `DAV` keyword is followed by the parameter `On`, which instructs mod_dav to use the local file system for content.

The following example specifies that the directory `myfiles` under the Web server documents directory (`htdocs` by default) is to be DAV-enabled, along with all directories under `myfiles` in the hierarchy. There must not be any symbolic links defined on the `myfiles` directory or any of its subdirectories.

```
<Location /myfiles>
   DAV On
</Location>
```

9.2.3 Editing mod_oradev.conf

Create the `mod_oradev.conf` file at the following location:

```
<oracle_instance>/config/OHS/ohs1/moduleconf/mod_oradav.conf
```

Insert the below mentioned entries in the mod_oradev file.

```
LoadModule oradav_module "${ORACLE_HOME}/ohs/modules/mod_oradav.so"


#<Location /dav/lsn>
#DAV oracle
#DAVDepthInfinity Off
#DavParam ORACONTAINERNAME LSNDAV
#DavParam ORALockExpirationPad 0
#DavParam ORAException RAISE
#DavParam ORATraceLevel 0
#DavParam OraTraceEvents "request"
#DavParam ORASERVICE psgprod
#DavParam ORACONNECTSN db-host
#DAVParam ORAUser lsn
#DAVParam ORAPassword psg_lsn
#DAVParam ORAPackageName ordsys.dav_api_driver
#DAVParam OraWebCacheReadOnly On
#</Location>
```

Save the file, and restart Oracle HTTP Server as described in Section 4.1.4, "Restarting Oracle HTTP Server." The option for editing `mod_oradev.conf` file is displayed on the Advanced Server Configuration page of Fusion Middleware Control.

9.3 WebDAV Security Considerations

Because WebDAV enables read/write capabilities, Internet users can write to your Web site or to an Oracle repository. A major concern is preventing users from placing

an inappropriate file, such as a Trojan horse, that can run on the Web server system. If the WebDAV configuration and authorization is not set up properly, an inappropriate file from the file system can be run. However, mod_oradav is disabled by default in new installations of Oracle HTTP Server so that your system is secure out-of-the-box.

> **See Also:** Apache Module mod_dav Security Issues in the Apache HTTP Server documentation.

Be sure to apply the standard Basic or Digest authentication and authorization mechanisms supported by Oracle HTTP Server. Generally, you do this for the default location, such as dav_public, in the supplied `mod_oradav.conf` file. This restricts who can use your system for remote storage, preventing unauthorized users from filling up your disks.

In addition, you should always apply Oracle HTTP Server authentication and authorization to authors of the Web site. You should also provide both an execution context and an editing context, so that Web authors, after being properly authenticated and authorized, can edit a JSP file or other executable file and then see how it runs. To do this, create an alias for the directory associated with the execution context, and then DAV-enable the aliased location.

9.4 OraDAV Performance Considerations

This section provides information that can help you optimize the performance of various operations. It contains the following subsections:

- Section 9.4.1, "Using Disk Caching with OraDAV"
- Section 9.4.2, "Bypassing Oracle Web Cache for WebDAV Activities"

9.4.1 Using Disk Caching with OraDAV

The performance benefit from disk caching is greatest with medium to large-size files (approximately 50 KB and larger). With smaller files, the performance benefit is less, and with very small files the performance can be worse with disk caching than without disk caching. For example, if the file myfile.dat is requested and if the file size is only 24 bytes, the time required for copying the file from the server to the local system is very small compared to the time required for accessing the server to check if the file has changed. If disk caching is not used, there is no check of the server to see if the file has changed, and the file is copied in all cases.

You can set the following OraDAV parameters to control disk caching for OraDAV operations:

- `ORACacheDirectory`
- `ORACacheTotalSize`
- `ORACacheMaxResourceSize`
- `ORACachePrunePercent`

If you specify `ORACacheDirectory`, disk caching for OraDAV operations is enabled. You must also specify a value for `ORACacheTotalSize`, and you can specify values for `ORACacheMaxResourceSize` and `ORACachePrunePercent` parameters. If you do not specify `ORACacheDirectory`, disk caching for OraDAV operations is not enabled, and other disk cache-related parameters are not relevant.

9.4.2 Bypassing Oracle Web Cache for WebDAV Activities

Oracle Web Cache enhances performance for most Web activity that involves client read-only operations of data on the Web server system. Oracle Web Cache does not cache OraDAV operations for GET, PUT, LOCK and UNLOCK, which are designed for read/write capability. For better performance, WebDAV clients can connect directly to Oracle HTTP Server.

To bypass Oracle Web Cache for WebDAV clients, you can send requests directly to the Oracle HTTP Server listen port, which is set in the `httpd.conf` file. By doing this, WebDAV clients will connect directly to Oracle HTTP Server, resulting in better performance than if Oracle Web Cache is used.

Note: 11*g* is the terminal release for the Oracle Web Cache product. For the 11.1.1.9 release, the Oracle Web Cache product is in sustaining mode.

See Also: *Oracle Fusion Middleware Administrator's Guide for Oracle Web Cache*

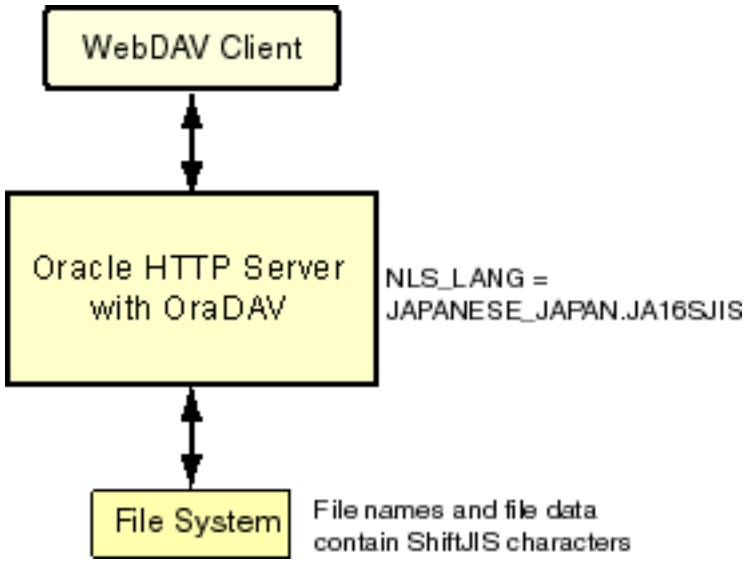
9.5 Globalization Support Considerations with OraDAV

The `DAVOraNLSLangClient` directive provides globalization support for access to the local file systems. This directive specifies whether or not the file names in the file system need to go through conversion using the NLS_LANG setting. A value of `Off` specifies that no conversion is needed. A value of `On` specifies that the character set for the file system provides for conversion of all possible characters in client requests. The default is `Off`.

For access to the local file system, the character set for the file system must be the same as, or compatible with, the character set for URLs embedded in client requests. The character set for the file system must provide for conversion of all possible characters in client requests. The NLS_LANG parameter value must represent the character set of both the client and the OraDAV server. You must also specify a value of `On` for the parameter `DAVOraUseNLSLang`.

For example, assume that you are using Web folders on a system where the files have ShiftJIS characters and that the file system under dav_public is represented by the operating system in the JAPANESE_JAPAN.JA16SJIS character sets shown in Figure 9–2.

Figure 9–2 OraDAV Access to File System with ShiftJIS Characters



You must do the following:

1. Set the NLS_LANG value to JAPANESE_JAPAN.JA16SJIS.
2. Include the following in the mod_oradav.conf file:

```
<Location /dav_public>
 DAV On
 DAVOraNLSLangClient On
</Location>
```

> **Note:** If you use Microsoft Internet Explorer with OraDAV and a multibyte character set, you must disable the Internet option Always send URLs as UTF-8, located under the Advanced tab in the Internet Options section. By default, this option is enabled. The requirement to disable this option applies to both database access and file system access.

9.6 Location of DAV Files

When the `ORACLE_HOME/ohs/cas/templates/default/moduleconf/mod_oradav.conf` file is configured to use file storage, it places the files by default in:

`ORACLE_INSTANCE/config/OHS/`*`component_name`*`/moduleconf`

Oracle Fusion Middleware Backup and Recovery Service backs up this default location. If you change the location where the files are stored, and you want Oracle Fusion Middleware Backup and Recovery Service to backup the files, then you must register the new location.

Part III

Appendices and Glossary

This part contains the following appendixes and a glossary:

- Appendix A, "Using Oracle WebLogic Server Proxy Plug-In for Third-Party Web Servers"
- Appendix B, "Frequently Asked Questions"
- Appendix C, "Troubleshooting Oracle HTTP Server"
- Section E, "OHS Module Directives"
- "Glossary"

A

Using Oracle WebLogic Server Proxy Plug-In for Third-Party Web Servers

This appendix explains how the Oracle WebLogic Server Proxy Plug-In and Oracle SSO Plug-In enable you to use Oracle Fusion Middleware components in conjunction with a third-party HTTP listener.

> **Note:** Unless otherwise mentioned, the information in this document is applicable when Oracle HTTP Server is installed with Oracle WebLogic Server and Oracle Fusion Middleware Control. It is assumed that readers are familiar with the key concepts of Oracle Fusion Middleware, as described in the *Oracle Fusion Middleware Concepts Guide* and the *Oracle Fusion Middleware Administrator's Guide*.
>
> For information about installing Oracle HTTP Server in standalone mode, see "Installing Oracle Web Tier in Stand-Alone Mode" in the *Oracle Fusion Middleware Installation Guide for Oracle Web Tier*.

This appendix includes the following sections:

Documentation from the Apache Software Foundation is referenced when applicable.

A.1 Plug-in Compatibility

In the 11*g* environment, the expectation is that the Oracle WebLogic Server Plug-ins will be used instead of OProxy. The expectation is that you are using Oracle WebLogic Server.

Critical Note: The FMW 10g-based Proxy Plug-In known as the OProxy Plug-In for Oracle HTTP Server 11g and other Web Servers, such as IIS has been deprecated and will be discontinued in a future release. This legacy proxy solution is designed to front-end applications deployed on Oracle Application Server 10g. Oracle Fusion Middleware 11g Applications are now deployed on WebLogic. Oracle HTTP Server 11g includes a built-in proxy module optimized to front-end this environment.

If you are using FMW 10g-based Proxy Plug-In, you should migrate to Oracle HTTP Server 11g based proxy solutions for a well integrated deployment or leverage the built-in proxy modules within other Web Servers

The following table recommends which plug-ins to use with various servers and server combinations.

For These Servers...	Use These Plug-ins...
Oracle HTTP Server	Use mod_wl_ohs, the WebLogic plug-in for Oracle HTTP Server.
Oracle HTTP Server and iPlanet or Microsoft IIS, but not using Oracle WebLogic Server	Use OProxy, but be careful of limited certifications. It is assumed you will not be using Java or servlets.
Both Oracle WebLogic Server and other applications with Oracle HTTP Server	Use both OProxy and mod_wl_ohs, but keep them separate.
Microsoft IIS or iPlanet with Oracle WebLogic Server only (no Oracle WebLogic Server)	Use the Oracle WebLogic Server Plug-ins supplied with Oracle WebLogic Server—not OProxy.

A.2 Deprecated Plug-ins

- The FMW 10*g*-based Single Sign-On Plug-In, OSSO Plug-In for Oracle HTTP Server and other web servers. such as IIS, has been deprecated and will be discontinued in future releases.

  You should migrate to the FMW 11*g*-based Oracle Access Manager WebGate for single sign-on functionality. Note that Oracle Access Manager and WebGate must be installed separately. For more information, see *Fusion Middleware Administrator's Guide for Oracle Access Management* at:

  http://docs.oracle.com/cd/E40329_01/admin.1112/e27239/toc.htm

- The FMW 10*g*-based Proxy Plug-In known as the OProxy Plug-In for Oracle HTTP Server 11*g* and other Web Servers, such as IIS has been deprecated and will be discontinued in a future release. This legacy proxy solution is designed to front-end applications deployed on Oracle Application Server 10g. Oracle Fusion Middleware 11*g* Applications are now deployed on WebLogic. Oracle HTTP Server 11*g* includes a built-in proxy module optimized to front-end this environment.

  If you are using FMW 10*g*-based Proxy Plug-In, you should migrate to Oracle HTTP Server 11*g* based proxy solutions for a well integrated deployment or use the built-in proxy modules within other Web Servers.

A.3 Using Oracle WebLogic Server Proxy Plug-In

Oracle WebLogic Server Proxy Plug-In enables you to proxy/send requests from a third-party HTTP listener to Oracle Fusion Middleware. The Oracle WebLogic Server Proxy Plug-In is provided and certified to work with Sun Java System Web Server Enterprise Edition on UNIX and Microsoft Windows systems, or Microsoft Internet Information Server (IIS). For more information on using Oracle WebLogic Server Proxy Plug-Ins on these systems, see *Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server* at:

http://docs.oracle.com/middleware/11119/webtier/PLGWL/toc.htm

For other third-party HTTP listeners, you can use the respective listener's native proxy functionality.

See Also:
http://www.oracle.com/technology/software/products/ias/files/fusion_certification.html for complete certification information.

A.4 Using Oracle SSO Plug-In

Oracle SSO Plug-In is designed to protect native third-party listener applications using the Oracle single sign-on (SSO) infrastructure. The Oracle SSO Plug-In is provided and certified to work with Microsoft Internet Information Server (IIS) v6.0 and v7.0 on Microsoft Windows systems.

See Also:
http://www.oracle.com/technology/software/products/ias/files/fusion_certification.html for complete certification information

This chapter includes the following topics:

- Section A.4.1, "Overview of Oracle SSO Plug-In."
- Section A.4.2, "Installing Oracle SSO Plug-In."
- Section A.4.3, "Registering with the Oracle Single Sign-On Server."
- Section A.4.4, "Configuring the Oracle SSO Plug-In."
- Section A.4.4.2, "Rules to Protect Resources."
- Section A.4.5, "Configuring Microsoft IIS 6.0 Listener to Use Oracle Single Sign-On."
- Section A.4.6, "Configuring Microsoft IIS 7.0 Listener to Use Oracle Single Sign-On."
- Section A.4.7, "Troubleshooting Oracle SSO Plug-In."

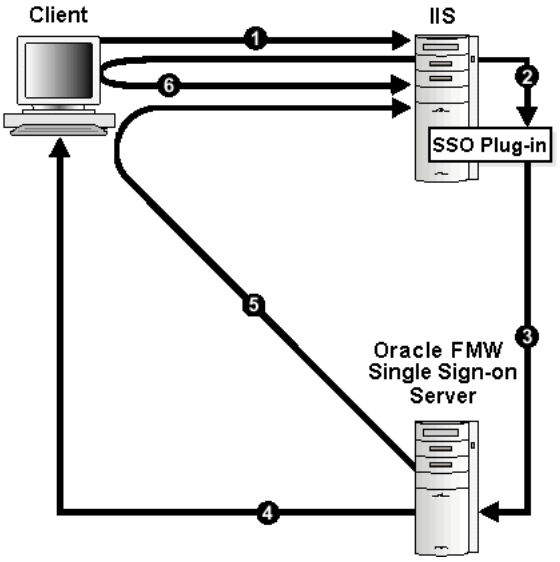
A.4.1 Overview of Oracle SSO Plug-In

Oracle SSO Plug-In is the Oracle single sign-on (SSO) solution for Microsoft IIS. The **plug-in** is designed to protect native third-party listener applications using the SSO infrastructure. With the help of the Oracle SSO Plug-In, users can be authenticated to different third-party listener applications using only one SSO password. You can integrate these SSO-protected third-party listener applications with SSO-enabled Oracle HTTP Server applications or legacy Oracle SSO enabled applications as long as they are all protected on the same SSO server.

Oracle SSO Plug-In is a simple version of mod_osso, and only implements some of its basic functionality. Features such as dynamic authentication, global logout, idle timeout, global timeout, and basic authentication for legacy application are not implemented in the current Oracle SSO Plug-In release.

Figure A–1 illustrates the process when a user requests a URL protected by the Oracle SSO Plug-In.

Figure A–1 Oracle SSO Plug-In



1. The user requests a URL through a Web browser.
2. The Web server looks for an Oracle SSO Plug-In cookie for the user. If the cookie exists, the Web server extracts the user's information and uses it to log the user in to the requested application.
3. If the cookie does not exist, the Oracle SSO Plug-In redirects the user to the single sign-on server.
4. The single sign-on server looks for its own cookie in the browser. If a cookie exists, then the single sign-on server authenticates using the cookie. If authentication is successful, then the single sign-on server creates a cookie in the browser as a reminder that the user has been authenticated. If it finds none, it tries to authenticate the user with a user name and password.
5. The single sign-on server returns the user's encrypted information to the Oracle SSO Plug-In.
6. Oracle SSO Plug-In creates its own cookie for the user in the browser and redirects the user to the requested URL.

   During the same session, if the user again seeks access to the same or to a different application, the user is not prompted for a user name and password. The application uses an HTTP header to obtain this information from the Oracle SSO Plug-In session cookie.

See Also: *Oracle Fusion Middleware Security Guide*

A.4.2 Installing Oracle SSO Plug-In

The Oracle SSO Plug-In for Microsoft IIS is available in the Oracle Fusion Middleware Web Tier and Utilities installer (11.1.1.2 and later *full* installers, not on patch-set installers).

Location: `\Disk1\plugins\iis\oracle_osso.dll`

To install the plug-in for the listener, copy `oracle_osso.dll` to a directory the listener can access. For security reasons, ensure that the plug-in library is given minimum privileges.

Install Oracle SSO Plug-In on a system that has an Oracle Fusion Middleware installation. This installation is required only for the network and security dependent libraries and the single sign-on registration tool. It is not required to be running.

A.4.3 Registering with the Oracle Single Sign-On Server

The **single sign-on** registration process enables the single sign-on server and the listener to share information such as server location, protocol version, and common encryption key, before they communicate. After the registration process, this information is stored on the single sign-on server side as a single sign-on partner application entry. On the listener side, a single sign-on file called `osso_conf` is created. The `osso_conf` file is obfuscated for security purposes. Copy the file to an appropriate location so the listener can access it.

> **See Also:** *Oracle Fusion Middleware Security Guide* for details on how to register with Oracle Single Sign-On.

A.4.4 Configuring the Oracle SSO Plug-In

To configure Oracle SSO Plug-In, you must create a configuration file such as the `osso_plugin.conf` file. This file must reside in a directory that is readable by the third-party listener. You define all the plug-in functionality within the file. It can also be referred as the `osso` property file. The file contains the following:

- Plug-in directives such as `LoginServerFile` and `IpCheck`
- A set of rules that match resources to be protected.

A.4.4.1 Oracle SSO Plug-In Directives

Table A–1 lists the configuration directives for the Oracle SSO Plug-In.

Table A–1 Oracle SSO Plug-In Configuration Directives

Directive	Function
`LoginServerFile`	Specifies the location of the single sign-on server configuration file such as the `osso.conf` file that is attained from the SSO registration process. This is a global parameter and should not be used on a per-resource basis. You must provide one and only one single sign-on server configuration file. ■ Value: The full path of your Single Sign-On Server configuration file ■ Default: None ■ Example: `LoginServerFile=c:\OSSO\config\osso.conf`

Table A–1 (Cont.) Oracle SSO Plug-In Configuration Directives

Directive	Function
`IpCheck`	Specifies whether the Oracle SSO plug-in should check the IP address of each request when it examines the cookie. Setting it to `true` prevents cookies from being accessed by another person. ■ Values: `true` | `false` ■ Default: `false` ■ Example: `IpCheck=true` **Note:** Set it to `false` if you have a proxy server or firewall between your Sun Java System server and your client browsers.

A.4.4.2 Rules to Protect Resources

To ensure resource protection via the Oracle SSO Plug-In, a set of rules must be defined. The rules are defined according to the following format:

```
<OSSO url-matching-rule>
  SSO_configuration_directives
</OSSO>
```

Use the following rules to define the url-matching-rule:

Rule Name	Description
Exact Match	This option identifies an exact file as a protected resource, for example: `/examples/hello.html`
Context Match	This option identifies a directory as a protected resource, for example: `/examples/*`
Extension Match	This option identifies files with a certain extension in a particular directory as a protected resource, for example: `/examples/*.jsp`

When multiple rules apply to the same URL, the following precedence applies:

1. Exact matches
2. Longest context match plus suffix match
3. Longest context match

Some examples of the precedence are:

- /foo/bar/index.html would take precedence over /foo/bar/*
- /foo/bar/*.jsp would take precedence over /foo/bar/*
- /foo/bar/* would take precedence over /foo/*

Example A–1 shows a simple file with the commands for resource protection. In the example, the `IpCheck` directive is set to `false` for the `/private/hello.html` file, but it is set to `true` for `/private2/*.jsp`. This setting ensures the cookies used with requests to the `/private2/*.jsp` files are not accessed by another user.

Example A–1 Simple Single Sign-on Configuration File, osso_plugin.conf

```
LoginServerFile=c:\OSSO\conf\osso.conf
<OSSO /private/hello.html>
  IpCheck=false
</OSSO>
<OSSO /private1/*>
```

```
</OSSO>
<OSSO /private2/*.jsp>
  IpCheck=true
</OSSO>
```

A.4.5 Configuring Microsoft IIS 6.0 Listener to Use Oracle Single Sign-On

This section provides instructions on configuring the Microsoft IIS 6.0 Listener to use Oracle SSO Plug-In. The plug-in consists of a single `.dll` file, `oracle_osso.dll`. To install the plug-in, copy the `.dll` to the host on which Microsoft IIS 6.0 resides and perform the following steps:

1. Use the Microsoft Windows Registry Editor to create new registry entries.
   a. From the Start menu, Select **Run**, and the type `regedit` in the dialog box, and click **OK**. The Registry Editor window opens
   b. Expand the HKEY_LOCAL_MACHINE folder by clicking the plus sign (+) preceding its name In the Registry Editor window.
   c. Expand the SOFTWARE folder by clicking the plus sign (+) preceding its name, and then Click the **ORACLE** folder.
   d. From the Edit menu, select **New** > **Key**. A new folder is added under the ORACLE folder with the name New Key #1.
   e. Enter `IIS OSSO Adapter` for the key name.
   f. From the Edit menu, select **New** > **String Value**. A new value is added in the right window pane with the name New Value #1. Enter `cfg_file` for the value name.
   g. From the Edit menu, select **Modify**. The Edit String dialog box appears.
   h. In the Value data field, enter the full path of the OSSO plug-in configuration file you created (e.g., `c:\osso\osso_plugin.conf`).

      Note: This is the plug-in configuration file and not the encrypted `osso.conf file` generated by the SSO registration process.

   i. Optionally, you can specify log_file and log_level using the procedure specified in steps **d.)** through **h.)**.
      – Add a string value with the name `log_file` and the desired location of the log file, such as `c:\osss\osso_plugin.log`.
      – Add a string value with the name `log_level` and a value for the desired log level. Valid values are `debug`, `inform`, `error`, and `emerg`.
   j. Close the Registry Editor window by selecting **Exit** from the File menu.
2. Use the Microsoft IIS management console to add a new virtual directory to your Microsoft IIS Web site with the same physical path as that of the `osso.dll`.
   a. Open the IIS Manager by clicking **Start** -> **Programs** -> **Administrative Tools** -> **Internet Information Services (IIS) Manager**.
   b. Expand the server folder by clicking the plus sign (+) preceding the server name.

c. Right-click the **Default Sites** folder, and then select the **New** -> **Virtual Directory** option from the menu.

d. In the Virtual Directory Creation Wizard window, enter **osso** for the Alias. Then, enter the path or browse to the directory containing the `oracle_osso.dll` file (e.g., `c:\osso`) and select the **Execute (such as ISAPI applications or CGI)** check box.

e. Click **Finish** to close the Virtual Directory Creation Wizard.

3. Use the Microsoft IIS management console to add `oracle_osso.dll` as a filter in your Microsoft IIS Web site. The name of the filter should be **osso** and its executable must point to the directory containing the `oracle_osso.dll` file.

a. Right-click the **Default Sites** folder, and then select the **Properties** option from the menu.

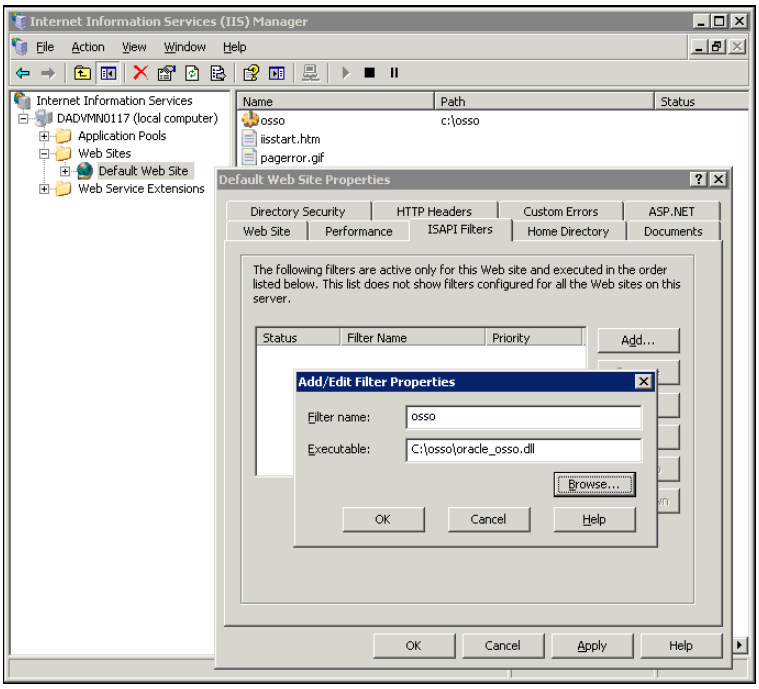
b. In the Default Web Site Properties window, select the **ISAPI Filters** tab.

c. Click **Add** to add a new filter.

The Add/Edit Filter Properties window is displayed.

d. In the Filter Name field, enter **osso** for the filter name.

e. In the Executable field, enter the path for the location containing the `oracle_osso.dll` (e.g., `c:\osso\oracle_osso.dll`), or click the **ellipsis** button (...) to navigate to the folder that contains the `oracle_osso.dll` file.



f. Click **OK** to close the Add/Edit Filter Properties window.

g. Click **OK** to close the Default Web Site Properties window.

4. Configure security settings for Oracle Home directory. Make sure you login to machine as an administrator user.

a. In Windows Explorer, right-click the `ORACLE_HOME\bin` folder, select **Properties** from the menu, and then click the **Security** tab.

b. Add the IIS_WPG, NETWORK and NETWORK SERVICE groups with Read and Execute permissions.

c. Click **OK**.

5. Stop and restart the Microsoft IIS 6.0 Server.

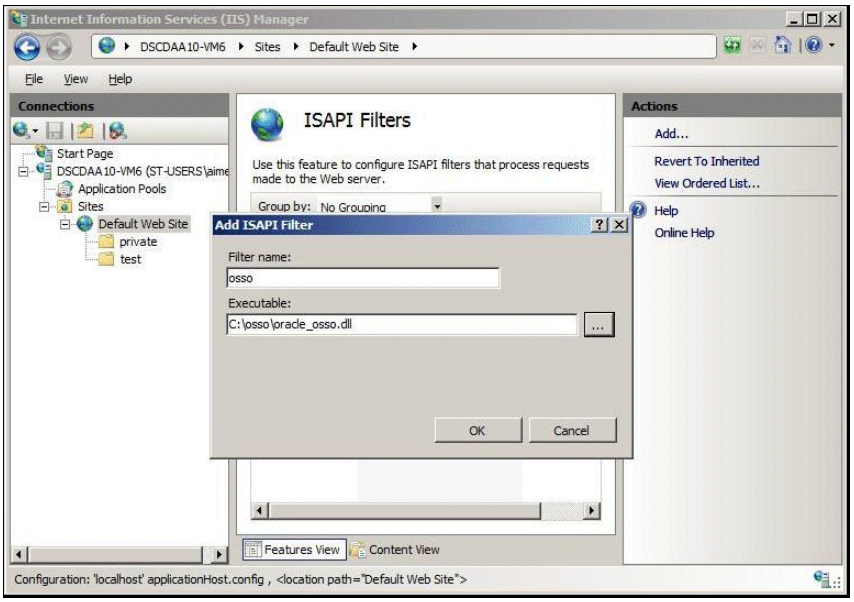
Notes:

- To restart Microsoft IIS 6.0, you must stop all the Microsoft IIS 6.0 services through the control panel or restart the computer. This is the only way to ensure that the `.dll` file is reloaded. Restarting Microsoft IIS 6.0 through the management console is not sufficient.
- If you want multiple Oracle installations on the same home, then the `ORACLE_HOME\bin` PATH entry for the installation that you plan to use in conjunction with the Oracle SSO Plug-In must appear first in your PATH.
- Make sure the newly added ISAPI filter is marked with a green upward arrow.

A.4.6 Configuring Microsoft IIS 7.0 Listener to Use Oracle Single Sign-On

This section provides instructions on configuring the Microsoft IIS 7.0 Listener to use Oracle SSO Plug-In. The plug-in consists of a single `.dll` file, `oracle_osso.dll`. To install the plug-in, copy the `.dll` to the host on which Microsoft IIS 7.0 resides and perform the following steps:

1. Complete step 1 in Section A.4.5, "Configuring Microsoft IIS 6.0 Listener to Use Oracle Single Sign-On" to use the Microsoft Windows Registry Editor to create new registry entries for the plug-in.
2. Use the Microsoft IIS management console to add the `oracle_osso.dll` as a filter in your Microsoft IIS Web site:
   a. Open the IIS Manager by clicking **Start** -> **Programs** -> **Administrative Tools** -> **Internet Information Services (IIS) Manager**.
   b. Expand the server folder by clicking the plus sign (+) preceding the server name (e.g, DSCDAA10-VM6).
   c. Expand the Sites folder by clicking the plus sign (+) preceding its name.
   d. Click the **Default Web Site** icon to open the Default Web Site Home page.
   e. Double-click the **ISAPI Filters** icon to open the ISAPI Filters page, and then complete the following tasks:
      – In the Actions pane, click **Add** to open the Add ISAPI Filter dialog box.
      – In the Filter Name field, enter osso.
      – In the Executable field, enter the file system path for the location containing the `oracle_osso.dll` (e.g., `c:\osso\oracle_osso.dll`), or click the **ellipsis** button (...) to navigate to the folder that contains the `oracle_osso.dll` file.



– Click **OK**.

3. Configure security settings for Oracle Home directory. Make sure you log in to machine as an administrator user.

   a. In Windows Explorer, right-click the `ORACLE_HOME\bin` folder, select **Properties** from the menu, and then click the **Security** tab.

   b. Add the IIS_WPG, NETWORK and NETWORK SERVICE groups with Read and Execute permissions.

   c. Click **OK**.

4. Restart the Microsoft IIS server by opening the Services Control Panel, and then stopping and restarting the World Wide Web Publishing Service.

Notes:

- To restart Microsoft IIS 7.0, you must stop all the Microsoft IIS 7.0 services through the Services Control Panel or restart the computer. This is the only way to ensure that the `.dll` file is reloaded. Restarting Microsoft IIS 7.0 through the management console is not sufficient.
- If you want multiple Oracle installations on the same home, then the `ORACLE_HOME\bin` PATH entry for the installation that you plan to use in conjunction with the Oracle SSO Plug-In must appear first in your PATH.

A.4.7 Troubleshooting Oracle SSO Plug-In

This section describes common problems and solutions.

Oracle Dependency Libraries Not Found

You may not have included *`ORACLE_HOME`* in your path.

Solution

Check to see that you have *ORACLE_HOME*/lib included in your library path variable on UNIX. On Microsoft Windows, ensure that you have *ORACLE_HOME*\bin in your path.

If you continue to receive this message in your osso.log file, then verify that all configuration files are properly configured, as described in Section A.4.4, "Configuring the Oracle SSO Plug-In".

Microsoft IIS Oracle SSO Plug-In Does not Work with HTML Authentication

The Oracle SSO Plug-In is designed not to work with other authentication modules. Authentication is either a native listener authentication module or a third-party module.

B

Frequently Asked Questions

This appendix provides answers to frequently asked questions about Oracle HTTP Server. It includes the following topics:

Documentation from the Apache Software Foundation is referenced when applicable.

> **Note:** Readers using this guide in PDF or hard copy formats will be unable to access third-party documentation, which Oracle provides in HTML format only. To access the third-party documentation referenced in this guide, use the HTML version of this guide and click the hyperlinks.

B.1 How Do I Create Application-Specific Error Pages?

Oracle HTTP Server has a default content handler for dealing with errors. You can use the `ErrorDocument` directive to override the defaults.

> **See Also:** ErrorDocument directive in the Apache HTTP Server documentation

B.2 What Type of Virtual Hosts Are Supported for HTTP and HTTPS?

For HTTP, Oracle HTTP Server supports both name-based and IP-based virtual hosts. Name-based virtual hosts are virtual hosts that share a common listening address (IP plus port combination), but route requests based on a match between the Host header sent by the client and the `ServerName` directive set within the `VirtualHost`. IP-based virtual hosts are virtual hosts that have distinct listening addresses. IP-based virtual hosts route requests based on the address they were received on.

For HTTPS, only IP-based virtual hosts are possible with Oracle HTTP Server. This is because for name-based virtual hosts, the request must be read and inspected to determine which virtual host is used to process the request. If HTTPS is used, an SSL handshake must be performed before the request can be read. In order to perform the SSL handshake, a server certificate must be provided. In order to have a meaningful server certificate, the host name in the certificate must match the host name the client requested, which implies a unique server certificate per virtual host. However, because the server cannot know which virtual host to route the request to until it has read the request, and it can't properly read the request unless it knows which server certificate to provide, there is no way to make name-based virtual hosting work with HTTPS.

See Also: Apache Virtual Host documentation at:

`http://httpd.apache.org/docs/2.2/vhosts/`

B.3 Can I Use Oracle HTTP Server As Cache?

Oracle recommends using Oracle Web Cache instead. Oracle Web Cache is a content-aware server accelerator and secure reverse proxy server that improves the performance, scalability, and availability of Web sites. For more details, refer to the *Oracle Fusion Middleware Administrator's Guide for Oracle Web Cache*.

Note: 11*g* is the terminal release for the Oracle Web Cache product. For the 11.1.1.9 release, the Oracle Web Cache product is in sustaining mode.

B.4 Can I Use Different Language and Character Set Versions of Document?

Yes, you can use multiviews, a general name given to the Apache server's ability to provide language and character-specific document variants in response to a request.

See Also: Multiviews in the Apache HTTP Server documentation

B.5 Can I Apply Apache Security Patches to Oracle HTTP Server?

No, you cannot apply the Apache HTTP Server security patches to Oracle HTTP Server for the following reasons:

- Oracle tests and appropriately modifies security patches before releasing them to Oracle HTTP Server users.
- In many cases, the Apache HTTP Server alerts, such as OpenSSL alerts, may not be applicable because Oracle has removed those components from the stack.

The latest security related fixes to Oracle HTTP Server are performed through the Oracle Critical Patch Update (CPU). For more details, refer to Oracle's Critical Patch Updates and Security Alerts Web page.

Note: After applying a CPU, the Apache HTTP Server-based version may stay the same, but the vulnerability will be fixed. There are third-party security detection tools that can check the version, but do not check the vulnerability itself.

B.6 Can I Upgrade the Apache Version of Oracle HTTP Server?

No, you cannot upgrade only the Apache HTTP Server version inside Oracle HTTP Server. Oracle provides a newer version of Apache HTTP Server that Oracle HTTP Server is based on, which is part of either a patch update or the next major or minor release of Oracle Fusion Middleware.

B.7 Can I Compress Output From Oracle HTTP Server?

In general, Oracle recommends using Oracle Web Cache for this purpose. Oracle Web Cache provides efficient delivery of contents by using on-the-fly compression, dynamically learning which MIME types are compressible, and throttling responses to slower network clients. Another compression solution is mod_deflate, which is included with Oracle HTTP Server. For more information pertaining to mod_deflate module, see http://httpd.apache.org/docs/2.2/mod/mod_deflate.html

For additional information, refer to the *Oracle Fusion Middleware Administrator's Guide for Oracle Web Cache*.

Note: 11*g* is the terminal release for the Oracle Web Cache product. For the 11.1.1.9 release, the Oracle Web Cache product is in sustaining mode.

B.8 How Do I Create a Namespace That Works Through Firewalls and Clusters?

The general idea is that all servers in a distributed Web site should use a single URL namespace. Every server serves some part of that namespace, and is able to redirect or proxy requests for URLs that it does not serve to a server that is closer to that URL. For example, your namespaces could be the following:

```
/app1/login.html
/app1/catalog.html
/app1/dologin.jsp
/app2/orderForm.html
/apps/placeOrder.jsp
```

You could initially map these name spaces to two Web servers by putting app1 on server1 and app2 on server2. The configuration for server1 might look like the following:

```
Redirect permanent /app2 http://server2/app2
Alias /app1 /myApps/application1
<Directory /myApps/application1>
  ...
```

```
</Directory>
```

The configuration for Server2 is complementary.

If you decide to partition the namespace by content type (HTML on server1, and JSP on server2), then you can change server configuration and move files around, but you do not have to make changes to the application itself. The resulting configuration of server1 might look like the following:

```
RedirectMatch permanent (.*) \.jsp$ http://server2/$1.jsp
AliasMatch ^/app(.*) \.html$ /myPages/application$1.html
<DirectoryMatch "^/myPages/application\d">
  ...
</DirectoryMatch>
```

The amount of actual redirection can be minimized by configuring a hardware load balancer like F5 system BIG-IP to send requests to server1 or server2 based on the URL.

B.9 How Can I Enhance Web Site Security?

The following are some general guidelines for securing your web site.

- Use a commercial firewall between your ISP and your Web server.
- Use switched Ethernet to limit the amount of traffic a compromised server can detect. Use additional firewalls between Web server machines and highly sensitive internal servers running the database and enterprise applications.
- Remove unnecessary network services such as RPC, Finger, and telnet from your server.
- Always validate all input from Web forms and output from your applications. Be sure to validate encodings, long input strings and input that contains non-printable characters, HTML tags, or javascript tags.
- Encrypt the contents of cookies when it is relevant.
- Check often for security patches for all your system and application software, and install them as soon as possible. Only accept patches from Oracle or your Oracle support representative.
- Where it is relevant, use an intrusion detection package to monitor for defaced Web pages, viruses, and presence of rootkits. If possible, mount system executables and Web content on read-only file systems.
- Remove unneeded content from the httpd.conf file. For more information, see Section 4.4.6, "Removing Access to Unneeded Content."
- Take precautions to protect your web pages from clickjacking attempts. There is a lot of helpful information available on the internet. For more information on clickjacking, see the Security Best Practices section in "Security Vulnerability FAQ for Oracle Database and Fusion Middleware Products (Doc ID 1074055.1)".

B.10 Do I Need to Re-register Partner Applications with the SSO Server If I Disable or Enable SSL?

Yes, if you enable or disable SSL, you have to re-register partner applications with the SSO server. When you make any changes that affect the URL (for example, changing the host name or port, or enabling or disabling SSL), you have to re-register partner

applications with the SSO server because the old URL registered with the SSO server is no longer valid. You have to re-register the partner applications with the new URL.

B.11 Why REDIRECT_ERROR_NOTES is not set for file-not-found errors?

The REDIRECT_ERROR_NOTES CGI environment variable is not set for file not found errors in Oracle HTTP Server 11g because the Apache HTTP Server 2.0 and above do not make that information available to CGI and other applications for this condition.

B.12 How can I hide information about the Web Server Vendor and Version

Specify "ServerSignature Off" to remove this information from web server generated responses. Specify "ServerTokens Custom some-server-string" to disguise the web server software when Oracle HTTP Server generates the web Server response header. (When a backend server generates the response, the Server response header may come from the backend server depending on the proxy mechanism.)

Note: `<code>ServerTokens Custom some-server-string</code>` is a replacement for the `<code>ServerHeader Off</code>` setting in Oracle HTTP Server 10g.

C

Troubleshooting Oracle HTTP Server

This appendix describes common problems that you might encounter when using Oracle HTTP Server, and explains how to solve them. It includes the following topics:

C.1 Oracle HTTP Server Unable to Start Due to Port Conflict

You can get the following error if Oracle HTTP Server is unable to start due to port conflict:

```
[VirtualHost: main] (98)Address already in use: make_sock: could not bind to
address [::]:7777
```

Solution

Determine what process is already using that port, and then either change the IP:port address of Oracle HTTP Server or the port of the conflicting process.

C.2 System Overloaded by Number of httpd Processes

When too many httpd processes are running on a system, the response time degrades because there are insufficient resources for normal processing.

Solution

Lower the value of `MaxClients` to a value the machine can accommodate.

C.3 Permission Denied When Starting Oracle HTTP Server On a Port Below 1024

You will get the following error if you try to start Oracle HTTP Server on a port below 1024:

```
[VirtualHost: main] (13)Permission denied: make_sock: could not bind to address
[::]:443
```

Oracle HTTP Server will not start on ports below 1024 because root privileges are needed to bind these ports.

Solution

Follow the steps in Section 4.1.2.3, "Starting Oracle HTTP Server on a Privileged Port" to start Oracle HTTP Server on a Privileged Port.

C.4 Oracle HTTP Server May Fail To Start If PM Files Are Not Located Correctly

If Oracle HTTP Server is not able to locate Perl module (PM) files in the path defined in the `PERL5LIB` variable, Oracle HTTP Server may encounter the following errors, and fail to start:

```
[error] Can't locate mod_perl.pm in @INC (@INC contains:$ORACLE_HOME/perl/...)
```

or:

```
[error] Can't locate Apache::Registry.pm in @INC (@INC contains: $ORACLE_
HOME/perl/...)
```

Solution

Check that *ORACLE_HOME*`/ohs/bin/apachectl` is correctly defined in the `PERL5LIB` variable. It should point to the path(s) containing the PM files. By default, it points to PM files in the following directories:

ORACLE_HOME`/ohs/mod_perl/lib/site_perl/5.10.0`
ORACLE_HOME`/perl/lib/5.10.0`
ORACLE_HOME`/perl/lib/site_perl/5.10.0`

C.5 Unsetting PerSetEnv and Removing a Previously Configured PerSetEnv variable in EM Throws an Exception

If you configure mod_perl by using the EM mod_perl configuration page and try to remove a previously configured PerSetEnv variable from the Environment field, this error is thrown:

```
Failed to invoke operation save on MBean
oracle.as.management.mbeans.register:type=component,name=ohs1,instance=webtier

_inst7971,Location=AdminServer
Apply failed, modify required parameters and save again. Validation of
configuration trying to apply failed
...
```

Solution

To correct this situation:

1. Close the pop-up error and click **Revert**.
2. Remove the PerSetEnv by doing one of the following:
   - Go to the Advanced Configuration page of EM and modify the mod_perl.conf file directly.

     OR

   - Go to the instance home/config/OHS/component_name/moduleconf/mod_perl.conf and edit the configuration file directly to remove the PerSetEnv value.
3. Restart OHS.

C.6 Using Log Files to Locate Errors

You can use the following log files to help locate errors:

- Rewrite Log
- Script Log
- Error Log

C.6.1 Rewrite Log

This log file is necessary for debugging when mod_rewrite is used. The log file produces a detailed analysis of how the rewriting engine transforms requests. The level of detail is controlled by the RewriteLogLevel directive.

> **See Also:** Rewrite Log in the Apache HTTP Server documentation.

C.6.2 Script Log

This log file enables you to record the input to and output from the CGI scripts. This should only be used in testing, and not for production servers.

> **See Also:** Script Log in the Apache HTTP Server documentation.

C.6.3 Error Log

This log file records overall server problems. Refer to Chapter 7, "Managing Oracle HTTP Server Logs" for details on configuring and viewing error logs.

C.7 Client IP Address Not Used in a Configuration with Oracle Web Cache

The UseWebCacheIp directive allows Oracle HTTP Server to use the Client IP address for logging and mod_authz_host access control when the client connects to Oracle HTTP Server through Oracle Web Cache. This feature may be usable with other front-end proxy servers, if the proxy sets the ClientIP request header to the Client IP address. When UseWebCacheIp is not enabled and a client connects to Oracle HTTP Server through Oracle Web Cache or other proxy, the client address used for logging and mod_authz_host access control will be that of Oracle Web Cache or other proxy.

Solution

Set UseWebCacheIp to `ON` in your `httpd.conf` file.

Also, if you do not set UseWebCacheIp to `ON`, the address of the host connecting to Oracle HTTP Server will be used for logging and host-based access control. In some cases this will be a proxy instead of the client.

Note:

- The UseWebCacheIp directive is not available in Oracle HTTP Server versions 11.1.1.4.0 and 11.1.1.5.0.
- 11*g* is the terminal release for the Oracle Web Cache product. For the 11.1.1.9 release, the Oracle Web Cache product is in sustaining mode.

C.8 "Failed to invoke operation load on MBean" Errors When Using Fusion Middleware Control

Using Fusion Middleware Control to administer an Oracle HTTP Server instance results in an `IOException`: "`Failed to invoke operation load on MBean`" along with SSL handshake errors in the Oracle HTTP Server instance log file.

This error is seen if there is a mismatch between the communication protocols used in admin.conf and the ones supported by or configured for the JDK that the Weblogic Server uses.

Solution:

Ensure that the `SSLProtocol` directive in `admin.conf` contains the protocols that are configured for the JDK that the Weblogic Server uses. For more information on this directive, see Section E.4.12, "SSLProtocol." See also Section 8.9, "Disable SSLv2 and SSLv3 Security Protocols."

D

Configuring mod_security

This appendix contains a usable example (Example D–1) of the mod_security.conf file, including the LoadModule statement.

By default, this file does not exist, so you need to create it, preferably by using the template here. Copy and paste the sample into a text editor and read the entire file, editing it for your system. Then save it as your own mod_security.conf and include it from your httpd.conf. If you implement mod_security.conf as described in this appendix, it will use the LoadModule directive to load mod_security2.so into the run time environment.

For more information on mod_security, see Section 3.11, "mod_security".

> **Note:** Oracle strongly recommends that you change the value of the `/tmp/` directory to a location where users do not have access.

Example D–1 mod_security.conf Sample

```
#Load module
LoadModule security2_module "${ORACLE_HOME}/ohs/modules/mod_security2.so"
# -- Rule engine initialization ----------------------------------------------

# Enable ModSecurity, attaching it to every transaction. Use detection
# only to start with, because that minimises the chances of post-installation
# disruption.
#
SecRuleEngine DetectionOnly

# -- Request body handling ---------------------------------------------------

# Allow ModSecurity to access request bodies. If you don't, ModSecurity
# won't be able to see any POST parameters, which opens a large security
# hole for attackers to exploit.
#
SecRequestBodyAccess On


# Enable XML request body parser.
# Initiate XML Processor in case of xml content-type
#
SecRule REQUEST_HEADERS:Content-Type "text/xml" \
     "id:'200000',phase:1,t:none,t:lowercase,pass,nolog,ctl:requestBodyProcessor=XML"


# Maximum request body size we will accept for buffering. If you support
```

```
# file uploads then the value given on the first line has to be as large
# as the largest file you are willing to accept. The second value refers
# to the size of data, with files excluded. You want to keep that value as
# low as practical.
#
SecRequestBodyLimit 13107200
SecRequestBodyNoFilesLimit 131072
# Store up to 128 KB of request body data in memory. When the multipart
# parser reachers this limit, it will start using your hard disk for
# storage. That is slow, but unavoidable.
#
SecRequestBodyInMemoryLimit 131072

# What do do if the request body size is above our configured limit.
# Keep in mind that this setting will automatically be set to ProcessPartial
# when SecRuleEngine is set to DetectionOnly mode in order to minimize
# disruptions when initially deploying ModSecurity.
#
SecRequestBodyLimitAction Reject

# Verify that we've correctly processed the request body.
# As a rule of thumb, when failing to process a request body
# you should reject the request (when deployed in blocking mode)
# or log a high-severity alert (when deployed in detection-only mode).
#
SecRule REQBODY_ERROR "!@eq 0" \
"id:'200001', phase:2,t:none,log,deny,status:400,msg:'Failed to parse request
body.',logdata:'%{reqbody_error_msg}',severity:2"

# By default be strict with what we accept in the multipart/form-data
# request body. If the rule below proves to be too strict for your
# environment consider changing it to detection-only. You are encouraged
# _not_ to remove it altogether.
#
SecRule MULTIPART_STRICT_ERROR "!@eq 0" \
"id:'200002',phase:2,t:none,log,deny,status:44, \
msg:'Multipart request body failed strict validation: \
PE %{REQBODY_PROCESSOR_ERROR}, \
BQ %{MULTIPART_BOUNDARY_QUOTED}, \
BW %{MULTIPART_BOUNDARY_WHITESPACE}, \
DB %{MULTIPART_DATA_BEFORE}, \
DA %{MULTIPART_DATA_AFTER}, \
HF %{MULTIPART_HEADER_FOLDING}, \
LF %{MULTIPART_LF_LINE}, \
SM %{MULTIPART_MISSING_SEMICOLON}, \
IQ %{MULTIPART_INVALID_QUOTING}, \
IP %{MULTIPART_INVALID_PART}, \
IH %{MULTIPART_INVALID_HEADER_FOLDING}, \
FL %{MULTIPART_FILE_LIMIT_EXCEEDED}'"

# Did we see anything that might be a boundary?
#
SecRule MULTIPART_UNMATCHED_BOUNDARY "!@eq 0" \
"id:'200003',phase:2,t:none,log,deny,status:44,msg:'Multipart parser detected a possible unmatched
boundary.'"

# PCRE Tuning
# We want to avoid a potential RegEx DoS condition
#
SecPcreMatchLimit 1000
```

```
SecPcreMatchLimitRecursion 1000

# Some internal errors will set flags in TX and we will need to look for these.
# All of these are prefixed with "MSC_".  The following flags currently exist:
#
# MSC_PCRE_LIMITS_EXCEEDED: PCRE match limits were exceeded.
#
SecRule TX:/^MSC_/ "!@streq 0" \
        "id:'200004',phase:2,t:none,deny,msg:'ModSecurity internal error flagged: %{MATCHED_VAR_
NAME}'"

# -- Response body handling --------------------------------------------------

# Allow ModSecurity to access response bodies.
# You should have this directive enabled in order to identify errors
# and data leakage issues.
#
# Do keep in mind that enabling this directive does increases both
# memory consumption and response latency.
#
SecResponseBodyAccess On

# Which response MIME types do you want to inspect? You should adjust the
# configuration below to catch documents but avoid static files
# (e.g., images and archives).
#
SecResponseBodyMimeType text/plain text/html text/xml

# Buffer response bodies of up to 512 KB in length.
SecResponseBodyLimit 524288

# What happens when we encounter a response body larger than the configured
# limit? By default, we process what we have and let the rest through.
# That's somewhat less secure, but does not break any legitimate pages.
#
SecResponseBodyLimitAction ProcessPartial

# -- Filesystem configuration ------------------------------------------------

# The location where ModSecurity stores temporary files (for example, when
# it needs to handle a file upload that is larger than the configured limit).
#
# This default setting is chosen due to all systems have /tmp available however,
# this is less than ideal. It is recommended that you specify a location that's private.
#
SecTmpDir /tmp/

# The location where ModSecurity will keep its persistent data.  This default setting
# is chosen due to all systems have /tmp available however, it
# too should be updated to a place that other users can't access.
#
SecDataDir /tmp/


# -- File uploads handling configuration -------------------------------------

# The location where ModSecurity stores intercepted uploaded files. This
# location must be private to ModSecurity. You don't want other users on
# the server to access the files, do you?
#
```

```
#SecUploadDir /opt/modsecurity/var/upload/

# By default, only keep the files that were determined to be unusual
# in some way (by an external inspection script). For this to work you
# will also need at least one file inspection rule.
#
#SecUploadKeepFiles RelevantOnly
# Uploaded files are by default created with permissions that do not allow
# any other user to access them. You may need to relax that if you want to
# interface ModSecurity to an external program (e.g., an anti-virus).
#
#SecUploadFileMode 0600


# -- Debug log configuration ---------------------------------------------

# The default debug log configuration is to duplicate the error, warning
# and notice messages from the error log.
#
#SecDebugLog /opt/modsecurity/var/log/debug.log
#SecDebugLogLevel 3


# -- Audit log configuration ---------------------------------------------

# Log the transactions that are marked by a rule, as well as those that
# trigger a server error (determined by a 5xx or 4xx, excluding 404,
# level response status codes).
#
SecAuditEngine RelevantOnly
SecAuditLogRelevantStatus "^(?:5|4(?!04))"

# Log everything we know about a transaction.
SecAuditLogParts ABIJDEFHZ

# Use a single file for logging. This is much easier to look at, but
# assumes that you will use the audit log only ocassionally.
#
SecAuditLogType Serial
SecAuditLog "${ORACLE_INSTANCE}/diagnostics/logs/${COMPONENT_TYPE}/${COMPONENT_NAME}/modsec_
audit.log"

# Specify the path for concurrent audit logging.
SecAuditLogStorageDir "${ORACLE_INSTANCE}/diagnostics/logs/${COMPONENT_TYPE}/${COMPONENT_NAME}"
#Simple test
SecRule ARGS "\.\./" "t:normalisePathWin,id:99999,severity:4,msg:'Drive Access'"

# -- Miscellaneous -------------------------------------------------------

# Use the most commonly used application/x-www-form-urlencoded parameter
# separator. There's probably only one application somewhere that uses
# something else so don't expect to change this value.
#
SecArgumentSeparator &

# Settle on version 0 (zero) cookies, as that is what most applications
# use. Using an incorrect cookie version may open your installation to
# evasion attacks (against the rules that examine named cookies).
#
SecCookieFormat 0
```

```
# Specify your Unicode Code Point.
# This mapping is used by the t:urlDecodeUni transformation function
# to properly map encoded data to your language. Properly setting
# these directives helps to reduce false positives and negatives.
#
#SecUnicodeCodePage 20127
#SecUnicodeMapFile unicode.mapping
```

E

OHS Module Directives

This appendix describes the directives available in the Oracle-developed modules supported by OHS. It contains these sections:

Note: The directives described in this appendix are only for modules developed by Oracle. OHS also includes many Apache HTTP Server and third-party modules out-of-the-box. See "Apache HTTP Server and Third-party Modules in Oracle HTTP Server" in Chapter 3 for a list of these modules and a link to their documentation.

E.1 mod_certheaders

mod_certheaders accepts the following directives:

- AddCertHeader
- SimulateHttps

E.1.1 AddCertHeader

Specifies which headers should be translated to CGI environment variables. This can be achieved by using the AddCertHeader directive. This directive takes a single argument, which is the CGI environment variable that should be populated from a HTTP header on incoming requests. For example, to populate the SSL_CLIENT_CERT CGI environment variable. AddCertHeader is generally used for Web Cache in front of OHS.

Category	Value
Syntax	`AddCertHeader` *`environment_variable`*
Example	`AddCertHeader SSL_CLIENT_CERT`

Category	Value
Default	None

Note: If a simulated SSL connection needs to be passed to WebLogic Server, AddCertHeader can be used with mod_wl_ohs as well. That module's directive, WLProxySSLPassThrough, ensures that the certificate is passed to the backend (irrespective of the real or simulated SSL connection).

E.1.2 SimulateHttps

mod_certheaders can be used to instruct Oracle HTTP Server to treat certain requests as if they were received through HTTPS even though they were received through HTTP. This is useful when Oracle HTTP Server is front-ended by a reverse proxy or load balancer, which acts as a termination point for SSL requests, and forwards the requests to Oracle HTTP Server through HTTPS. and SimulateHttps is used for load balancer type of devices.

Category	Value
Syntax	`SimulateHttps on|off`
Example	`SimulateHttps on`
Default	`off`

E.2 mod_onsint

mod_certheaders accepts the OpmnHostPort directive.

E.2.1 OpmnHostPort

This directive enables you to specify a hostname and port that OPMN should use for pinging the Oracle HTTP Server instance that mod_onsint is running in. If OpmnHostPort is not specified, mod_onsint chooses an HTTP port automatically. However, in certain circumstances, you may want to choose a specific HTTP port and hostname that OPMN should use to ping the listener with.

Category	Value
Syntax	OpmnHostPort host:Port
Example	OpmnHostPort localhost:7778
Default	None

E.3 mod_oradav

mod_oradav accepts the following directives:

- ORAAllowIndexDetails
- ORAAltPassword
- ORACacheDirectory
- ORACacheMaxResourceSize

- ORACachePrunePercent
- ORACacheTotalSize
- ORAConnect
- ORAConnectSN
- ORAContainerName
- ORAException
- ORAGetSource
- ORALockExpirationPad
- ORAPackageName
- ORAPassword
- ORARootPrefix
- ORAService
- ORATraceEvents
- ORATraceLevel
- ORAUser

E.3.1 ORAAllowIndexDetails

In an Oracle HTTP Server environment that is not OraDAV-enabled, mod_dav does not respond to HTTP GET requests. Instead, normal Oracle HTTP Server mechanisms are used to respond to GET requests.

The `ORAAllowIndexDetails` parameter controls how OraDAV responds when a GET request is performed on a DAV collection and no `index.html` file is found in the directory. In a typical Oracle HTTP Server environment, a separate module takes control, automatically generating and returning to the client HTML that represents an "index" of the resources (files) in that collection.

Category	Value
Syntax	`ORAAllowIndexDetails true | false`
Example	`ORAAllowIndexDetails true`
Default	false

E.3.2 ORAAltPassword

Specifies the password for the user specified by the ORAUser parameter. The `OraAltPassword` uses a base-64 encoded character string. This parameter provides an alternative if you do not want the password to appear in unencoded plain text with the `ORAUser` parameter. If the ORAPassword parameter is not specified, this value is used for the password.

Category	Value
Syntax	`ORAAltPassword` *`password`*
Example	`ORAAltPassword myPassword`
Default	None

E.3.3 ORACacheDirectory

Specifies the directory to use for disk caching operations, per these requirements:

- The specified directory must exist and be readable by Oracle HTTP Server, but cannot be visible to normal GET requests. If the directory is visible to normal GET requests, security measures could be bypassed by users accessing the cache directory.
- The directory should be located on a file system that supports a last accessed time. On Microsoft Windows systems, this means using NTFS, not FAT, formatted partitions.
- You cannot use the cache directory for anything other than caching. Any files in the cache directory are subject to deletion.

If you use the `ORACacheDirectory` parameter, you must also use the ORACacheTotalSize parameter.

Category	Value
Syntax	`ORACacheDirectory` *`directoryName`*
Example	`ORACacheDirectory`
Default	If not used, disk caching is not performed for OraDAV operations

See Also: Section 9.4.1, "Using Disk Caching with OraDAV"

E.3.4 ORACacheMaxResourceSize

Specifies the maximum cacheable resource size for disk caching operations. You can specify kilobytes (KB) or megabytes (MB) after an integer. If you do not specify a unit after the integer, then the default unit is bytes.

This parameter enables Web administrators to prevent large media files from dominating the cache. The performance benefit of caching a large file is greater than from caching a small file.

Category	Value
Syntax	`ORACacheMaxResourceSize` *`nn`*`KB|MB`
Example	`ORACacheMaxResourceSize 1024KB`
Default	None

See Also: Section 9.4.1, "Using Disk Caching with OraDAV"

E.3.5 ORACachePrunePercent

Specifies the percentage of disk cache usage to be freed when the cache is full. When the disk cache is full, the oldest files in the cache are deleted until the cache disk usage is reduced by the `ORACachePrunePercent` value.

Category	Value
Syntax	`ORACachePrunePercent` *`nn`*
Example	`ORACachePrunePercent 40`
Default	25

See Also: Section 9.4.1, "Using Disk Caching with OraDAV"

E.3.6 ORACacheTotalSize

Specifies the size of the cache to use for disk caching operations. You can specify MB (for megabytes) or GB (for gigabytes) after an integer. If you do not specify a unit after the integer, the default unit is bytes.

If you use the ORACacheDirectory parameter, you must also use the `ORACacheTotalSize` parameter.

The `ORACacheTotalSize` value should be large enough to hold either a significant amount of your Web site, or all of the most frequently accessed files plus 25 percent more space. If the value is too small, overall performance degrades because of the extra work of writing BLOB data to the file system and deleting files to make room for newer cache requests.

The actual space utilized by the disk cache might sometimes exceed the `ORACacheTotalSize` value, possibly by as much as the ORACacheMaxResourceSize value. You should also be aware of file system block size issues that could cause the cache to use more disk space than the `ORACacheTotalSize` value.

Category	Value
Syntax	`DAVParam ORACacheTotalSize` *nn*`MB|GB`
Example	`DAVParam ORACacheTotalSize 1GB`
Default	None

See Also: Section 9.4.1, "Using Disk Caching with OraDAV"

E.3.7 ORAConnect

Specifies the Oracle database to connect to. The `ORAConnect` parameter lets you connect to a database that is not included in the `tnsnames.ora` file. The value must use the following format:

To connect to an Oracle database, you must specify one, and no more than one, of the parameters ORAConnect, ORAConnectSN, or ORAService. To connect to a database included in the `tnsnames.ora` file, use the ORAService parameter.

Category	Value
Syntax	`ORAConnect` *`database_host:database_port:database_sid`*
Example	`ORAConnect my-pc.example.com:1521:mysid`
Default	None

E.3.8 ORAConnectSN

Specifies the Oracle database to connect to. The `ORAConnectSN` parameter lets you connect to a database that is not included in the `tnsnames.ora` file. The value for this parameter is a character string.The value must use the following format:

To connect to an Oracle database, you must specify one, and no more than one, of the parameters ORAConnect, or ORAService. To connect to a database included in the `tnsnames.ora` file, use the ORAService parameter.

Category	Value
Syntax	`ORAConnectSN` *`database-host:database-port:database-service-name`*
Example	`ORAConnectSN my-pc.example.com:1521:mysid`
Default	None

E.3.9 ORAContainerName

Within the database user (schema) specified by the ORAUser parameter, there must exist a container, which is a set of PL/SQ packages and database tables that allow the storage of files in the database within a hierarchical structure. The `ORAContainerName` parameter specifies the name of the container to use for the location. The value for this parameter is a character string, up to 20 characters. For example, `<Location/project1>`.

Category	Value
Syntax	`ORAContainerName` *`Location/project1`*
Example	`ORAContainerName`
Default	None

E.3.10 ORAException

Writes PL/SQL stack dumps in the Oracle HTTP Server log file, error_log, in the event of an exception in the PL/SQL package.

Category	Value
Syntax	ORAException RAISE | NORAISE
Example	ORAException RAISE
Default	NORAISE

Note: Although this parameter is useful for debugging purposes, it can use a large amount of disk space and can slow the performance of your system.

E.3.11 ORAGetSource

Specifies one or more file extensions to identify types of files that are not to be run, but rather opened for editing. This allows you to open files for editing that are usually run as a result of a GET operation. When entering filetypes, include dot separators (.) and use a comma to separate file extensions. The value for this parameter is enclosed within double quotation marks. For example:

```
".htm, .html, .jsp1, .jsp2"
```

This directive applies only to file system access.

Category	Value
Syntax	`ORAGetSource "`*`.type[, .type, .type, .type]`*`"`

Category	Value
Example	`ORAGetSource ".htm, .html, .jsp1, .jsp2"`
Default	.JSP .SQLJSP

Note: The `.jsp` and `.sqljsp` files are by default opened for editing; you do not need to specify them in the `ORAGetSource` parameter.

E.3.12 ORALockExpirationPad

Intended to be used in high-latency network environments to adjust the refresh lock behavior in Microsoft Office. Microsoft Office attempts to refresh locks on DAV resources just before the lock is set to expire. If the Microsoft Office client and the DAV server experience network congestion between the refresh, the request might arrive after the lock has expired.

OraDAV periodically looks for locks on resources that have expired and deletes those locks. The `ORALockExpirationPad` parameter can be used to provide some additional time between when a lock expires and when that lock is deleted. For example, if `ORALockExpirationPad` is set to 120, OraDAV does not actually delete locks for at least two minutes after the expiration time.

Category	Value
Syntax	`ORALockExpirationPad` *nn*
Example	`ORALockExpirationPad 90`
Default	0

E.3.13 ORAPackageName

Identifies the OraDAV driver implementation that is to be called when issuing OraDAV commands. The default is the OraDAV driver, which is the ORDSYS.DAV_API_DRIVER package.

Category	Value
Syntax	`ORAPackageName` *name*
Example	`ORAPackageName`
Default	The OraDAV driver

E.3.14 ORAPassword

Specifies the password for the user specified by the ORAUser parameter.

If you do not want to specify the password as an unencoded text string with the `ORAPassword` parameter, you can specify the password as a base-64 encoded string with the ORAAltPassword parameter.

Category	Value
Syntax	`ORAPassword` *password*
Example	`ORAPassword myPassword`

Category	Value
Default	None

E.3.15 ORARootPrefix

Specifies the directory within the database repository to use as the root. If this parameter is specified, WebDAV clients see this directory as the root and are not able to see the repository directories that lead up to it. Do not include a trailing slash (/) in the value.

WebDAV clients can view the /third directory and can navigate to the /third/fourth directory, but will not be able to view or navigate to the /first or /first/second directories.

Category	Value
Syntax	`ORARootPrefix /dirName1[/dirName1/dirName1/dirName1]`
Example	`ORARootPrefix /first/second`
Default	None

E.3.16 ORAService

Specifies the Oracle database to connect to. The specified value must match a SID value in the `tnsnames.ora` file.

To connect to an Oracle database, you must specify one, and no more than one, of the parameters ORAConnect, ORAConnectSN, or ORAService. To connect to a database that is not included in the tnsnames.ora file, use the ORAConnect or ORAConnectSN parameter.

Category	Value
Syntax	`ORAService databaseName`
Example	`ORAService`
Default	None

E.3.17 ORATraceEvents

Specifies the types of events to be recorded in the Oracle HTTP Server error log for debugging. The value for this parameter is one of the following:

- `getsource`: traces GET activity against the file system
- `hreftoutf8`: traces the HREF conversion from the native character set to UTF-8
- `request`: traces DAV requests, responses, and status values handled by mod_oradav

Category	Value
Syntax	`ORATraceEvents getsource | hreftoutf8 | request`
Example	`ORATraceEvents getsource`
Default	None

Note: Although this parameter is useful for debugging purposes, it can use a large amount of disk space and can slow the performance of your system.

E.3.18 ORATraceLevel

Specifies the level of debugging (trace statements) that will be entered in the Oracle HTTP Server error log. The lowest level is `0` (the default), which performs no tracing. The highest level is `4`, which performs maximum tracing. The value for this parameter is an integer between `0` and `4`.

The higher the number for the debugging level, the more information is written to the error log file.

Category	Value
Syntax	`ORATraceLevel 0 | 1 | 2 | 3 | 4`
Example	`ORATraceLevel 2`
Default	0

Note: Although setting this parameter to a high number is useful for debugging purposes, it can use a large amount of disk space and can slow the performance of your system.

E.3.19 ORAUser

Specifies the database user (schema) to use when connecting to the service specified by the ORAConnect, ORAConnectSN, or ORAService parameter.

This user must have the following privileges:

- CONNECT
- RESOURCE
- CREATE TABLESPACE
- DROP TABLESPACE
- CREATE ANY TRIGGER

Category	Value
Syntax	`ORAUser`
Example	`ORAUser`
Default	None

E.4 mod_ossl

To configure SSL for your Oracle HTTP Server, enter the `mod_ossl` directives you want to use in the `ssl.conf` file.

The following directives are described in subsequent sections:

- SSLAccelerator

- SSLCARevocationFile
- SSLCARevocationPath
- SSLCipherSuite
- SSLEngine
- SSLFIPS
- SSLLog
- SSLLogLevel
- SSLMutex
- SSLOptions
- SSLPassPhraseDialog
- SSLProtocol
- SSLProxyCipherSuite
- SSLProxyEngine
- SSLProxyProtocol
- SSLProxyWallet
- SSLRequire
- SSLRequireSSL
- SSLSessionCache
- SSLSessionCacheTimeout
- SSLVerifyClient
- SSLWallet
- SSLWalletPassword

E.4.1 SSLAccelerator

Specifies if SSL accelerator is used. Currently only nFast card is supported.

Category	Value
Syntax	`SSLAccelerator yes|no`
Example	SSLAccelerator yes
Default	`SSLAccelerator no`

Note: The `SSLAccelerator` directive has been deprecated. For information on enabling SSL acceleration support using a wallet, refer to the *Oracle Advanced Security Administrator's Guide* on `http://www.oracle.com/technology/documentation`.

E.4.2 SSLCARevocationFile

Specifies the file where you can assemble the Certificate Revocation Lists (CRLs) from CAs (Certificate Authorities) that you accept certificates from. These are used for client authentication. Such a file is the concatenation of various PEM-encoded CRL files in

order of preference. This directive can be used alternatively or additionally to SSLCARevocationPath.

Category	Value
Syntax	`SSLCARevocationFile` *file_name*
Example	`SSLCARevocationFile` */ORACLE_HOME*`/Apache/Apache/conf/ssl.crl/ca_bundle.crl`
Default	None

E.4.3 SSLCARevocationPath

Specifies the directory where PEM-encoded Certificate Revocation Lists (CRLs) are stored. These CRLs come from the CAs (Certificate Authorities) that you accept certificates from. If a client attempts to authenticate itself with a certificate that is on one of these CRLs, then the certificate is revoked and the client cannot authenticate itself with your server.

Category	Value
Syntax	`SSLCARevocationPath` *path/to/CRL_directory/*
Example	`SSLCARevocationPath` */ORACLE_HOME*`/Apache/Apache/conf/ssl.crl/`
Default	None

E.4.4 SSLCipherSuite

Specifies the SSL cipher suite that the client can use during the SSL handshake. This directive uses a colon-separated cipher specification string to identify the cipher suite. Table E–1 displays the tags you can use in the string to describe the cipher suite you want. SSLCipherSuite accepts the following values:

- none: Adds the cipher to the list
- + : Adds the cipher to the list and place it in the correct location in the list
- - : Remove the cipher from the list (can be added later)
- ! : Remove the cipher from the list permanently

Tags are joined together with prefixes to form a cipher specification string. Cipher suite tags are listed in Table E–1. Available ciphers are described in Table E–2.

Category	Value
Example	`SSLCipherSuite` *ALL:!LOW:!DH* In this example, all ciphers are specified except low strength ciphers and those using the Diffie-Hellman key negotiation algorithm.
Syntax	`SSLCipherSuite` *cipher-spec*
Default	`ALL:!ADH:+HIGH:+MEDIUM:+LOW`
Context	server configuration, virtual host, directory

Table E–1 SSLCipher Suite Tags

Function	Tag	Meaning
Key exchange	`kRSA`	`RSA` key exchange

Table E–1 (Cont.) SSLCipher Suite Tags

Function	Tag	Meaning
Key exchange	kDHr	Diffie-Hellman key exchange with RSA key
Authentication	aNULL	No authentication
Authentication	aRSA	RSA authentication
Authentication	aDH	Diffie-Hellman authentication
Encryption	eNULL	No encryption
Encryption	DES	DES encoding
Encryption	3DES	Triple DES encoding
Encryption	RC4	RC4 encoding
Data Integrity	MD5	MD5 hash function
Data Integrity	SHA	SHA hash function
Data Integrity	SHA256	SHA256 hash function
Data Integrity	SHA384	SHA384 hash function
Aliases	TLSv1	All TLS version 1 ciphers
Aliases	TLSv1.1	All TLS version 1.1 ciphers
Aliases	TLSv1.2	All TLS version 1.2 ciphers
Aliases	LOW	All low strength ciphers (export and single DES)
Aliases	MEDIUM	All ciphers with 128-bit encryption
Aliases	HIGH	All ciphers using triple DES
Aliases	AES	All ciphers using AES encryption
Aliases	RSA	All ciphers using RSA key exchange
Aliases	DH	All ciphers using Diffie-Hellman key exchange

Note: All Export, anon, 40-bit, 50-bit, and 56-bit weak ciphers have been disabled in the Oracle HTTP Server 11.1.1.9.0 release

Table E–2 Cipher Suites Supported in Oracle Advanced Security

Cipher Suite	Authentication	Encryption	Data Integrity	TLSv1	TLSv1.1	TLSv1.2
SSL_RSA_WITH_RC4_128_MD5	RSA	RC4 (128)	MD5	Yes	Yes	Yes
SSL_RSA_WITH_RC4_128_SHA	RSA	RC4 (128)	SHA	Yes	Yes	Yes
SSL_RSA_WITH_3DES_EDE_CBC_SHA	RSA	3DES (168)	SHA	Yes	Yes	Yes
SSL_RSA_WITH_AES_128_CBC_SHA	RSA	AES (128)	SHA	Yes	Yes	Yes
SSL_RSA_WITH_AES_256_CBC_SHA	RSA	AES (256)	SHA	Yes	Yes	Yes
TLS_RSA_WITH_AES_128_CBC_SHA256	RSA	AES (128)	SHA256	No	No	Yes
TLS_RSA_WITH_AES_256_CBC_SHA256	RSA	AES (256)	SHA256	No	No	Yes
TLS_RSA_WITH_AES_128_GCM_SHA256	RSA	AES (128)	SHA256	No	No	Yes
TLS_RSA_WITH_AES_256_GCM_SHA384	RSA	AES (256)	SHA384	No	No	Yes

Table E–2 (Cont.) Cipher Suites Supported in Oracle Advanced Security

Cipher Suite	Authentication	Encryption	Data Integrity	TLSv1	TLSv1.1	TLSv1.2
TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA	ECDSA	AES (128)	SHA	Yes	Yes	Yes
TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA	ECDSA	AES (256)	SHA	Yes	Yes	Yes
TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256	ECDSA	AES (128)	SHA256	No	No	Yes
TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384	ECDSA	AES (256)	SHA384	No	No	Yes
TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256	ECDSA	AES (128)	SHA256	No	No	Yes
TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	ECDSA	AES (256)	SHA384	No	No	Yes

E.4.5 SSLEngine

Toggles the usage of the SSL Protocol Engine. This is usually used inside a `<VirtualHost>` section to enable SSL for a particular virtual host. By default, the SSL Protocol Engine is disabled for both the main server and all configured virtual hosts. Example 11–1 is an example for using SSLEngine directive. The default SSL is 4443 on UNIX and 443 on Windows.

Category	Value
Syntax	`SSLEngine on|off`
Example	`SSLEngine on`
Default	`off`

E.4.6 SSLFIPS

This directive toggles the usage of the SSL library `FIPS_mode` flag. It must be set in the global server context and should not be configured with conflicting settings (`SSLFIPS on` followed by `SSLFIPS off` or similar). The mode applies to all SSL library operations.

Category	Value
Syntax	`SSLFIPS ON | OFF`
Example	`SSLFIPS ON`
Default	`Off`

Configuring an SSLFIPS change requires that the `SSLFIPS on/off` directive be set globally in ssl.conf. Virtual level configuration is disabled in the SSLFIPS directive. Hence, setting SSLFIPS to virtual directive will result in an error.

The cipher suites supported in SSLFIPS mode are:

Table E–3 Cipher Suites Supported by SSLFIPS

Cipher Suite	Protocol
SSL_RSA_WITH_3DES_EDE_CBC_SHA	TLSv1.0 and greater

Table E–3 (Cont.) Cipher Suites Supported by SSLFIPS

Cipher Suite	Protocol
SSL_RSA_WITH_AES_128_CBC_SHA	TLSv1.0 and greater
SSL_RSA_WITH_AES_256_CBC_SHA	TLSv1.0 and greater
TLS_RSA_WITH_AES_128_CBC_SHA256	TLSv1.2
TLS_RSA_WITH_AES_256_CBC_SHA256	TLSv1.2
TLS_RSA_WITH_AES_128_GCM_SHA256	TLSv1.2
TLS_RSA_WITH_AES_256_GCM_SHA384	TLSv1.2
TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA	TLSv1.0 and greater
TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA	TLSv1.0 and greater
TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256	TLSv1.2
TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384	TLSv1.2
TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256	TLSv1.2
TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	TLSv1.2

Note:

- To use the TLS_ECDHE_ECDSA cipher suite, Oracle HTTP Server requires a wallet created with an ECC user certificate. The TLS_ECDHE_ECDSA cipher suite does not work with RSA certificates.
- To use the SSL_RSA/TLS_RSA cipher suite, Oracle HTTP Server requires a wallet created with an RSA user certificate. The SSL_RSA/TLS_RSA cipher suite does not work with ECC certificates.

  For more information on configuring ECC/RSA certificates in a wallet, see "Creating and Viewing Oracle Wallets with orapki" in *Administering Oracle Fusion Middleware*.

For instructions on how to implement these cipher suites and corresponding protocols, see Section E.4.4, "SSLCipherSuite" and Section E.4.12, "SSLProtocol".

For more information on SSL FIPS 140-2 Standard for Oracle HTTP Server 11.1.1.9, see My Oracle Support Knowledge Database Doc ID 2115681.1 at https://support.oracle.com/.

E.4.7 SSLLog

Specifies where the SSL engine log file will be written. (Error messages will also be duplicated to the standard Oracle HTTP Server log file specified by the ErrorLog directive.)

Place this file at a location where only root can write, so that it cannot be used for symlink attacks. If the filename does not begin with a slash (/), it is assumed to be relative to the ServerRoot. If the filename begins with a bar (|), then the string following the bar is expected to be a path to an executable program to which a reliable pipe can be established.

This directive should occur only once per virtual server configuration.

Category	Value
Syntax	`SSLLog` *`path/to/file`*
Example	`SSLLog`
Default	None

E.4.8 SSLLogLevel

Specifies the verbosity degree of the SSL engine log file. The degrees, or levels, are (in ascending order, where each level is included in the levels preceding it):

- `none`: No dedicated SSL logging is done. Messages of type 'error' are duplicated to the standard HTTP server log file specified by the `ErrorLog` directive.
- `error`: Only messages of the type 'error' (conditions that stop processing) are logged.
- `warn`: Messages that notify of non-fatal problems (conditions that do not stop processing) are logged.
- `info`: Messages that summarize major processing actions are logged.
- `trace`: Messages that summarize minor processing actions are logged.
- `debug`: Messages that summarize development and low-level I/O operations are logged.

Category	Value
Syntax	`SSLLogLevel none | error | warn | info | trace | debug`
Example	`SSLLogLevel error`
Default	None

E.4.9 SSLMutex

Type of semaphore (lock) for SSL engine's mutual exclusion of operations that have to be synchronized between Oracle HTTP Server processes. Accepted values are:

- `file`:path/to/mutex: Uses a file for locking. The process ID (PID) of the Oracle HTTP Server parent process is appended to the filename to ensure uniqueness. If the filename does not begin with a slash (/), it is assumed to be relative to `ServerRoot`. This setting is not available on Windows.
- `none`: Uses no mutex at all. Not recommended, because the mutex synchronizes the write access to the SSL session cache. If you do not configure a mutex, the session cache can become garbled.
- `pthread`: This directive tells the SSL Module to use Posix thread mutexes. It is only available if the underlying platform and Apache Portable Runtime (APR) supports it.
- `sem`: Uses an operating system semaphore to synchronize writes. On UNIX, it would be a Sys V IPC semaphore; on Windows, it is a Windows Mutex. This is the best choice, if the operating system supports it.

Category	Value
Syntax	`SSLMutex none | file  | pthread | sem`

Category	Value
Example	`SSLMutex file:/usr/local/apache/logs/ssl_mutex`
Default	`pthread`

Notes:

- In the Oracle HTTP Server default `ssl.conf` template file, `pthread` is defined as the default value for the SSLMutex directive for non-Windows platforms and `none` is defined as a default value for the Windows platform as follows:

```
<IfModule mpm_winnt_module>
   SSLMutex "none"
</IfModule>
<IfModule !mpm_winnt_module>
   SSLMutex pthread
</IfModule>
```

  As new Oracle HTTP Server instances are created for non-Windows platforms, the default value for SSLMutex will continue to be `pthread` unless you explicitly modify your configuration. If you comment out these lines in the `ssl.conf` file and no value is specified for SSLMutex in the Oracle HTTP Server configuration files, then Oracle HTTP Server will use `none` as the default value for SSLMutex.

- The `none` value for the SSLMutex directive is not recommended for non-Windows platforms, because it can create a garbled session cache and can lead to core dumps.

E.4.10 SSLOptions

Controls various runtime options on a per-directory basis. In general, if multiple options apply to a directory, the most comprehensive option is applied (options are not merged). However, if all of the options in an `SSLOptions` directive are preceded by a plus ('+') or minus ('-') symbol, then the options are merged. Options preceded by a plus are added to the options currently in force, and options preceded by a minus are removed from the options currently in force.

Accepted values are:

- `StdEnvVars`: Creates the standard set of CGI/SSI environment variables that are related to SSL. This is disabled by default because the extraction operation uses a lot of CPU time and usually has no application when serving static content. Typically, you only enable this for CGI/SSI requests.
- `ExportCertData`: Enables the following additional CGI/SSI variables:

  `SSL_SERVER_CERT`

  `SSL_CLIENT_CERT`

  `SSL_CLIENT_CERT_CHAIN_n` (where n= 0, 1, 2...)

  These variables contain the Privacy Enhanced Mail (PEM)-encoded X.509 certificates for the server and the client for the current HTTPS connection, and can be used by CGI scripts for deeper certificate checking. All other certificates of the

client certificate chain are provided. This option is "Off" by default because there is a performance cost associated with using it.

`SSL_CLIENT_CERT_CHAIN_n` variables are in the following order: `SSL_CLIENT_CERT_CHAIN_0` is the intermediate CA who signs `SSL_CLIENT_CERT`. `SSL_CLIENT_CERT_CHAIN_1` is the intermediate CA who signs `SSL_CLIENT_CERT_CHAIN_0`, and so forth, with `SSL_CLIENT_ROOT_CERT` as the root CA.

- `FakeBasicAuth`: Translates the subject distinguished name of the client X.509 certificate into an HTTP basic authorization user name. This means that the standard HTTP server authentication methods can be used for access control. Note that no password is obtained from the user; the string 'password' is substituted.
- `StrictRequire`: Denies access when, according to SSLRequireSSL or directives, access should be forbidden. Without `StrictRequire`, it is possible for a `'Satisfy any'` directive setting to override the `SSLRequire` or `SSLRequireSSL` directive, allowing access if the client passes the host restriction or supplies a valid user name and password.

  Thus, the combination of `SSLRequireSSL` or `SSLRequire` with `SSLOptions +StrictRequire` gives `mod_ossl` the ability to override a `'Satisfy any'` directive in all cases.
- `CompatEnvVars`: Exports obsolete environment variables for backward compatibility to Apache SSL 1.x, `mod_ssl` 2.0.x, Sioux 1.0, and Stronghold 2.x. Use this to provide compatibility to existing CGI scripts.
- `OptRenegotiate`: This enables optimized SSL connection renegotiation handling when SSL directives are used in a per-directory context.

Category	Value
Syntax	`SSLOptions [+-] StdEnvVars | ExportCertData | FakeBasicAuth | StrictRequire | CompatEnvVars | OptRenegotiate`
Example	`SSLOptions -StdEnvVars`
Default	None

E.4.11 SSLPassPhraseDialog

Type of pass phrase dialog for wallet access. `mod_ossl` asks the administrator for a pass phrase in order to access the wallet. Accepted if values are:

- `builtin`: when the server is started, `mod_ossl` prompts for a password for each wallet.

  This cannot be used when Oracle HTTP Server is managed by OPMN. No user interaction is allowed when Oracle HTTP Server is started by OPMN.
- `exec:`*`path/to/program`* - when the server is started, `mod_ossl` calls an external program configured for each wallet. This program is invoked with two arguments: servername:portnumber and `RSA` or `DSA`.

Category	Value
Syntax	`SSLPassPhraseDialog builtin | exec`
Example	`SSLPassPhraseDialog exec:`*`/usr/local/apache/sbin/pfilter`*
Default	`builtin`

E.4.12 SSLProtocol

Note: The SSLv2 protocol is no longer supported by Oracle HTTP Server. The SSLv3 protocol is supported for backwards compatibility, but because of security concerns, it is disabled out-of-the-box in the Oracle HTTP Server 11.1.1.9 release.

You can configure the SSLv3 protocol by explicitly entering `SSLv3` in the SSLProtocol directive. However, Oracle strongly discourages the use of SSLv3 and logs a warning message cautioning you about the use of an insecure protocol. The following ciphers can be used with an SSLv3 configuration:

- `SSL_RSA_WITH_RC4_128_MD5`
- `SSL_RSA_WITH_RC4_128_SHA`
- `SSL_RSA_WITH_3DES_EDE_CBC_SHA`
- `SSL_RSA_WITH_AES_128_CBC_SHA`
- `SSL_RSA_WITH_AES_128_CBC_SHA`

If you are upgrading from an earlier release of Oracle HTTP Server, the SSLv3 and/or SSLv2 security protocol might be a part of your configuration. Oracle strongly recommends that you disable any SSLv3 or SSLv2 configuration from Oracle HTTP Server. See Section 8.9, "Disable SSLv2 and SSLv3 Security Protocols."

Specifies SSL protocol(s) for `mod_ossl` to use when establishing the server environment. Clients can only connect with one of the specified protocols. Accepted values are:

- `TLSv1`
- `TLSv1.1`
- `TLSv1.2`
- `All`

You can specify multiple values as a space-delimited list. In the syntax, the "-" and "+" symbols have the following meaning:

- + : Adds the protocol to the list
- - : Removes the protocol from the list

In the current release, `All` is defined as `+TLSv1 +TLSv1.1 +TLSv1.2` (`SSLv2` is not supported and `SSLv3` is disabled out-of-the-box.)

Table E–2 lists the ciphers that are available for the TLSv1, TLSv1.1, and TLSv1.2 protocols.

In the current release, you can specify the value for this directive using the OpenSSL format. The `nzos*` formats have been deprecated and their use should be avoided.

Protocol Name	OpenSSL Format	nzos* Format (Deprecated)
TLS version 1.0	`TLSv1`	`nzos_Version_1_0`
TLS version 1.1	`TLSv1.1`	`nzos_Version_1_1`

Protocol Name	OpenSSL Format	nzos* Format (Deprecated)
TLS version 1.2	TLSv1.2	nzos_Version_1_2

Category	Value
Syntax	SSLProtocol [+-] TLSv1 | TLSv1.1 | TSLv1.2 | All
Example	SSLProtocol *+TLSv1 +TLSv1.1 +TLSv1.2*
Default	ALL

E.4.13 SSLProxyCipherSuite

Specifies the SSL cipher suite that the proxy can use during the SSL handshake. This directive uses a colon-separated cipher specification string to identify the cipher suite. Table E–1 shows the tags you can use in the string to describe the cipher suite you want. SSLCipherSuite accepts the following values:

- none: Adds the cipher to the list
- + : Adds the cipher to the list and places it in the correct location in the list
- - : Removes the cipher from the list (which can be added later)
- ! : Removes the cipher from the list permanently

Tags are joined with prefixes to form a cipher specification string. The SSLProxyCipherSuite directive uses the same tags as the SSLCipherSuite directive. For a list of supported suite tags, see Table E–1.

Category	Value
Example	SSLProxyCipherSuite ALL:!MD5 In this example, all ciphers are specified except MD5 strength ciphers.
Syntax	SSLProxyCipherSuite *cipher-spec*
Default	ALL:!ADH:+HIGH:+MEDIUM

The SSLProxyCipherSuite directive uses the same cipher suites as the SSLCipherSuite directive. For a list of the Cipher Suites supported in Oracle Advanced Security 12.1.3, see Table E–2.

E.4.14 SSLProxyEngine

Enables or disables the SSL/TLS protocol engine for proxy. SSLProxyEngine is usually used inside a <VirtualHost> section to enable SSL/TLS for proxy usage in a particular virtual host. By default, the SSL/TLS protocol engine is disabled for proxy both for the main server and all configured virtual hosts.

SSLProxyEngine should not be included in a virtual host that will be acting as a forward proxy (by using Proxy or ProxyRequest directives). SSLProxyEngine is not required to enable a forward proxy server to proxy SSL/TLS requests.

Category	Value
Syntax	SSLProxyEngine ON | OFF
Example	SSLProxyEngine on

Category	Value
Default	`Disable`

E.4.15 SSLProxyProtocol

Specifies SSL protocol(s) for `mod_ossl` to use when establishing a proxy connection in the server environment. Proxies can only connect with one of the specified protocols. Accepted values are:

- `TLSv1`
- `TLSv1.1`
- `TLSv1.2`
- `All`

You can specify multiple values as a space-delimited list. In the syntax for SSLProxyProtocol, the "-" and "+" symbols have the following meaning:

- + : Adds the protocol to the list
- - : Removes the protocol from the list

In the current release `All` is defined as `+TLSv1 +TLSv1.1 +TLSv1.2` (`SSLv2` is not supported and `SSLv3` is disabled out-of-the-box).

Category	Value
Syntax	`SSLProxyProtocol [+-] TLSv1 | TLSv1.1 | TLSv1.2 | All`
Example	`SSLProxyProtocol` *`+TLSv1 +TLSv1 +TLSv1.1`*
Default	`ALL`

E.4.16 SSLProxyWallet

Specifies the location of the wallet with its WRL, specified as a filepath, that a proxy connection must use.

Category	Value
Syntax	`SSLProxyWallet` *`file:path to wallet`*
Example	`SSLProxyWallet "${ORACLE_ INSTANCE}/config/fmwconfig/components/${COMPONENT_ TYPE}/instances/${COMPONENT_NAME}/keystores/proxy"`
Default	None

E.4.17 SSLRequire

Denies access unless an arbitrarily complex boolean expression is true.

Category	Value
Syntax	`SSLRequire` *`expression`* (see Understanding the Expression)
Example	`SSLRequire word ">=" word |word "ge" word`
Default	None

Understanding the Expression

The *expression* must match the following syntax (given as a BNF grammar notation):

```
expr ::= "true" | "false"
"!" expr
expr "&&" expr
expr "||" expr
"(" expr ")"

comp ::=word "==" word | word "eq" word
word "!=" word |word "ne" word
word "<" word |word "lt" word
word "<=" word |word "le" word
word ">" word |word "gt" word
word ">=" word |word "ge" word
word "=~" regex
word "!~" regex
wordlist ::= word
wordlist "," word

word ::= digit
cstring
variable
function

digit ::= [0-9]+

cstring ::= "..."

variable ::= "%{varname}"
```

Table E–4 and Table E–5 list standard and SSL variables. These are valid values for varname.

```
function ::= funcname "(" funcargs ")"
```

For `funcname`, the following function is available:

`file(`*`filename`*`)`

The file function takes one string argument, the filename, and expands to the contents of the file. This is useful for evaluating the file's contents against a regular expression.

Table E–4 lists the standard variables for SSLRequire varname.

Table E–4 Standard Variables for SSLRequire Varname

Standard Variables	Standard Variables	Standard Variables
HTTP_USER_AGENT	PATH_INFO	AUTH_TYPE
HTTP_REFERER	QUERY_STRING	SERVER_SOFTWARE
HTTP_COOKIE	REMOTE_HOST	API_VERSION
HTTP_FORWARDED	REMOTE_IDENT	TIME_YEAR
HTTP_HOST	IS_SUBREQ	TIME_MON
HTTP_PROXY_CONNECTION	DOCUMENT_ROOT	TIME_DAY
HTTP_ACCEPT	SERVER_ADMIN	TIME_HOUR
HTTP:headername	SERVER_NAME	TIME_MIN
THE_REQUEST	SERVER_PORT	TIME_SEC
REQUEST_METHOD	SERVER_PROTOCOL	TIME_WDAY

Table E–4 (Cont.) Standard Variables for SSLRequire Varname

Standard Variables	Standard Variables	Standard Variables
REQUEST_SCHEME	REMOTE_ADDR	TIME
REQUEST_URI	REMOTE_USER	ENV:variablename
REQUEST_FILENAME		

Table E–5 lists the SSL variables for SSLRequire varname.

Table E–5 SSL Variables for SSLRequire Varname

SSL Variables	SSL Variables	SSL Variables
HTTPS	SSL_PROTOCOL	SSL_CIPHER_ALGKEYSIZE
SSL_CIPHER	SSL_CIPHER_EXPORT	SSL_VERSION_INTERFACE
SSL_CIPHER_USEKEYSIZE	SSL_VERSION_LIBRARY	SSL_SESSION_ID
SSL_CLIENT_V_END	SSL_CLIENT_M_SERIAL	SSL_CLIENT_V_START
SSL_CLIENT_S_DN_ST	SSL_CLIENT_S_DN	SSL_CLIENT_S_DN_C
SSL_CLIENT_S_DN_CN	SSL_CLIENT_S_DN_O	SSL_CLIENT_S_DN_OU
SSL_CLIENT_S_DN_G	SSL_CLIENT_S_DN_T	SSL_CLIENT_S_DN_I
SSL_CLIENT_S_DN_UID	SSL_CLIENT_S_DN_S	SSL_CLIENT_S_DN_D
SSL_CLIENT_I_DN_C	SSL_CLIENT_S_DN_Email	SSL_CLIENT_I_DN
SSL_CLIENT_I_DN_O	SSL_CLIENT_I_DN_ST	SSL_CLIENT_I_DN_L
SSL_CLIENT_I_DN_T	SSL_CLIENT_I_DN_OU	SSL_CLIENT_I_DN_CN
SSL_CLIENT_I_DN_S	SSL_CLIENT_I_DN_I	SSL_CLIENT_I_DN_G
SSL_CLIENT_I_DN_Email	SSL_CLIENT_I_DN_D	SSL_CLIENT_I_DN_UID
SSL_CLIENT_CERT	SSL_CLIENT_CERT_CHAIN_n	SSL_CLIENT_ROOT_CERT
SSL_CLIENT_VERIFY	SSL_CLIENT_M_VERSION	SSL_SERVER_M_VERSION
SSL_SERVER_V_START	SSL_SERVER_V_END	SSL_SERVER_M_SERIAL
SSL_SERVER_S_DN_C	SSL_SERVERT_S_DN_ST	SSL_SERVER_S_DN
SSL_SERVER_S_DN_OU	SSL_SERVER_S_DN_CN	SSL_SERVER_S_DN_O
SSL_SERVER_S_DN_I	SSL_SERVER_S_DN_G	SSL_SERVER_S_DN_T
SSL_SERVER_S_DN_D	SSL_SERVER_S_DN_UID	SSL_SERVER_S_DN_S
SSL_SERVER_I_DN	SSL_SERVER_I_DN_C	SSL_SERVER_S_DN_Email
SSL_SERVER_I_DN_L	SSL_SERVER_I_DN_O	SSL_SERVER_I_DN_ST
SSL_SERVER_I_DN_CN	SSSL_SERVER_I_DN_T	SSL_SERVER_I_DN_OU
SSL_SERVER_I_DN_G	SSL_SERVER_I_DN_I	

E.4.18 SSLRequireSSL

Denies access to clients not using SSL. This is a useful directive for absolute protection of a SSL-enabled virtual host or directories in which configuration errors could create security vulnerabilities.

Category	Value
Syntax	`SSLRequireSSL`
Example	SSLRequireSSL
Default	None

E.4.19 SSLSessionCache

Specifies the global/interprocess session cache storage type. The cache provides an optional way to speed up parallel request processing. The accepted values are:

- `dc`:UNIX:/path/to/socket: This makes use of the distcache distributed session caching libraries. The argument should specify the location of the server or proxy to be used using the distcache address syntax; for example, UNIX:/path/to/socket specifies a UNIX domain socket (typically a local dc_client proxy); IP:server.example.com:9001 specifies an IP address.
- `none`: disables the global/interprocess session cache. Produces no impact on functionality, but makes a major difference in performance.
- `nonenotnull`: This disables any global/inter-process Session Cache. However it does force OpenSSL to send a non-null session ID to accommodate buggy clients that require one.
- `shmcb`:/path/to/datafile[bytes]: Uses a high-performance Shared Memory Cyclic Buffer (SHMCB) session cache to synchronize the local SSL memory caches of the server processes. The performance of `shmcb` is more uniform in all environments when compared to `shmht`. Note: in this shm setting, no log files are created under /path/to/datafile on local disk.
- `shmht`:/path/to/datafile[bytes]: Uses a high-performance hash table (`bytes` specifies approximate size) inside a shared memory segment in RAM, which is established by the `/path/to/datafile`. This hash table synchronizes the local SSL memory caches of the server processes. Note: in this shm setting, no log files are created under /path/to/datafile on local disk.

Category	Value
Syntax	`SSLSessionCache dc:UNIX:/path/to/socket | none |nonetonull | shmcb:/path/to/datafile[bytes] | shmht:/path/to/datafile[bytes]`
Examples	`SSLSessionCache shmht: /ORACLE_HOME/Apache/Apache/logs/ssl_scache(512000)` `SSLSessionCache shmcb: /ORACLE_HOME/Apache/Apache/logs/ssl_scache(512000)`
Default	`SSLSessionCache none`

E.4.20 SSLSessionCacheTimeout

Specifies the number of seconds before a SSL session in the session cache expires.

Category	Value
Syntax	`SSLSessionCacheTimeout seconds`
Example	`SSLSessionCacheTimeout 120`
Default	300

E.4.21 SSLVerifyClient

Specifies whether or not a client must present a certificate when connecting. The accepted values are:

- `none`: No client certificate is required
- `optional`: Client may present a valid certificate
- `require`: Client must present a valid certificate

Category	Value
Syntax	`SSLVerifyClient none | optional | require`
Example	`SSLVerifyClient optional`
Default	None

Note: The level `optional_no_ca` included with `mod_ssl` (in which the client can present a valid certificate, but it need not be verifiable) is not supported in `mod_ossl`.

E.4.22 SSLWallet

Specifies the location of the wallet with its WRL, specified as a filepath.

Category	Value
Syntax	`SSLWallet` *`file:path to wallet`*
Example	`SSLWallet` *`file:/etc/`*`ORACLE/WALLETS/`*`server`*
Default	None

E.4.23 SSLWalletPassword

Note: `SSLWalletPassword` has been deprecated. A warning message is generated in the Oracle HTTP Server log if this directive is used. For secure wallets, you should get a SSO wallet, with auto-login enabled, instead.

Specifies the Wallet password needed to access the wallet specified within the same context. You can choose either a cleartext wallet password or an obfuscated password. The obfuscated password is created with the command line tool `iasobf`. If you must use a regular wallet, Oracle recommends that you use the obfuscated password instead of a cleartext password. If no password is required do not set this directive.

Note: If you are using a wallet created with the Auto Login feature of Oracle Wallet Manager, do not set this directive because these wallets do not require passwords.

Category	Value
Syntax	`SSLWalletPassword` *`password`*

Category	Value
Example	`SSLWalletPassword myWalletPassword`
Default	None

E.5 mod_osso

Note: mod_osso is deprecated. You should use the Webgate plugin to achieve single sign on. For more information, see "Installing and Configuring Oracle HTTP Server 11g Webgate for OAM" in *Oracle® Fusion Middleware Installation Guide for Oracle Identity Management*.

mod_oddo accepts the following directives:

- OssoConfigFile
- OssoIdleTimeout
- OssoIgnoreUri
- OssoIpCheck
- OssoLegacyApp
- OssoProtectedOnly
- OssoRedirectByForm
- OssoSendCacheHeaders
- OssoHTTPOnly

E.5.1 OssoConfigFile

Specifies the path to `osso.conf`.

Category	Value
Syntax	`OssoConfigFile` *`path/to/`*`osso.conf`
Example	`OssoConfigFile OracleOHS_Home/ohs/conf/osso/osso.conf`
Default	None

E.5.2 OssoIdleTimeout

Specifies whether or not to enable cookie idle timeout.

Category	Value
Syntax	`OssoIdleTimeout ON | OFF`
Example	`OssoIdleTimeout OFF`
Default	OFF

E.5.3 OssoIgnoreUri

Identifies which URLs OHS should ignore.

- If ALL is specified, then all URLs are ignored.

- If querystring is specified, URLs matching the query string are ignored.

Category	Value
Syntax	`OssoIgnoreUri ALL | querystring` *string*

Example	`OssoIgnoreUri ALL`
	or
	`OssoIgnoreUri querystring foo=bar,bar=baz\`

Default	No URLs are ignored.

E.5.4 OssoIpCheck

When set to On, the directive enables a weak form of IP spoof checking. The incoming IP address is compared against the ClientIP header value.

Category	Value
Syntax	`OssoIpCheck ON | OFF`
Example	`OssoIpCheck ON`
Default	OFF

E.5.5 OssoLegacyApp

Specifies whether or not to enable URI authentication for the location where it was set. When On, URI authentication is enabled.

Category	Value
Syntax	`OssoLegacyApp ON | OFF`
Example	`OssoLegacyApp ON`
Default	OFF

E.5.6 OssoProtectedOnly

Specifies whether or not to create a cookie for an application that protects itself via dynamic sso directives. When ON this cookie is created.

Category	Value
Syntax	`OssoProtectedOnly ON | OFF`
Example	`OssoProtectedOnly ON`
Default	OFF

E.5.7 OssoRedirectByForm

Specifies whether or not to enable redirect by form. When On, the redirect is enabled.

Category	Value
Syntax	`OssoRedirectByForm ON | OFF`
Example	`OssoRedirectByForm ON`
Default	OFF

E.5.8 OssoSecureCookies

Specifies whether or not to enable secure cookies. When set to On, these cookies are enabled.

Category	Value
Syntax	`OssoSecureCookies ON | OFF`
Example	`OssoSecureCookies OFF`
Default	ON

E.5.9 OssoSendCacheHeaders

For statically protected pages, this directive specifies whether or not the following headers are sent:

- Pragma: no-cache
- Cache-Control: no-store
- Surrogate-Control: no-store
- Expires: Thu, 01 Jan 1970 12:00:00 GMT

Category	Value
Syntax	`OssoSendCacheHeaders ON | OFF`
Example	`OssoSendCacheHeaders OFF`
Default	ON

E.5.10 OssoHTTPOnly

Specifies whether or not to set HTTPOnly in the cookies created by the module. If ON, HTTPOnly is set.

Category	Value
Syntax	`OssoHttpOnly ON | OFF`
Example	`OssoHttpOnly OFF`
Default	ON

E.6 mod_plsql

The mod_plsql configuration parameters are described in these sections:

- Section E.6.1, "plsql.conf"
- Section E.6.2, "dads.conf"
- Section E.6.3, "cache.conf"

E.6.1 plsql.conf

The following parameters are used with the `plsql.conf` file:

- PlsqlDMSEnable
- PlsqlLogEnable

- PlsqlLogDirectory
- PlsqlIdleSessionCleanupInterval

E.6.1.1 PlsqlDMSEnable

Enables Dynamic Monitoring Service (DMS) for the mod_plsql module.

Category	Value
Syntax	`PlsqlDMSEnable On | Off`
Example	`PlsqlDMSEnable On`
Default	`On`

E.6.1.2 PlsqlLogEnable

Enables debug level logging for the mod_plsql module. Debug level logging is meant to be used for debugging purposes only.

When logging is enabled, Oracle HTTP Server log files are typically created in the *ORACLE_INSTANCE*/diagnostics/logs/OHS/config/OHS/*component_name* directory. However, the location specified in PlsqlLogDirectory determines the final location.

This parameter should be set to `Off` unless recommended by Oracle support to debug problems with the mod_plsql module.

To view more details about the internal processing of the mod_plsql module, set this directive to `On`. This causes the mod_plsql module to start logging every request that is processed. The log files are generated as specified by the PlsqlLogDirectory directive.

Category	Value
Syntax	`PlsqlLogEnable On | Off`
Example	`PlsqlLogEnable Off`
Default	`Off`

E.6.1.3 PlsqlLogDirectory

Specifies the directory where debug level logs are written.

Set the directory name of the location where log files should be generated when logging is enabled. To avoid possible confusion about the location of this directory, an absolute path is recommended.

On UNIX, this directory must have write permissions by the owner of the child `httpd` processes.

Category	Value
Syntax	`PlsqlLogDirectory` *directory*
Example	`PlsqlLogDirectory ORACLE_INSTANCE/diagnostics/logs/OHS/`*component_name*
Default	None

E.6.1.4 PlsqlIdleSessionCleanupInterval

Specifies the time (in minutes) in which the idle database sessions should be closed and cleaned by the mod_plsql module.

This directive is used in conjunction with connection pooling of database connections and sessions in the mod_plsql module. When a session is not used for the specified amount of time, it is closed and freed. This is done so that unused sessions can be cleaned, and the memory is freed on the database side.

Setting this time to a low number helps in faster cleanup of unused database sessions. If this number is too low, then this may adversely affect the performance benefits of connection pooling in the mod_plsql module.

If the number of open database sessions is not a concern, you can increase the value of this parameter for best performance. In such a case, if the site is accessed frequently enough that the idle session cleanup interval is never reached for a session, then the DAD configuration parameter PlsqlMaxRequestsPerSession can be modified so that it is guaranteed that a pooled database session gets recycled on a regular basis.

For most installations, the default value is adequate.

Category	Value
Syntax	`PlsqlIdleSessionCleanupInterval` *number*
Example	`PlsqlIdleSessionCleanupInterval 10`
Default	15 (minutes)

E.6.2 dads.conf

The `dads.conf` file contains the configuration parameters for the PL/SQL database access descriptor. (See Table E–1 for the file location.) A DAD is a set of values that specifies how the mod_plsql module connects to a database server to fulfill a HTTP request.

The following parameters are used with the `dads.conf` file:

- PlsqlAfterProcedure
- PlsqlAlwaysDescribeProcedure
- PlsqlAuthenticationMode
- PlsqlBeforeProcedure
- PlsqlBindBucketLengths
- PlsqlBindBucketWidths
- PlsqlCGIEnvironmentList
- PlsqlConnectionTimeout
- PlsqlConnectionValidation
- PlsqlConnectionValidation
- PlsqlDatabaseConnectString
- PlsqlDatabasePassword
- PlsqlDatabaseUserName
- PlsqlDefaultPage
- PlsqlDocumentPath
- PlsqlDocumentProcedure
- PlsqlDocumentTablename
- PlsqlErrorStyle
- PlsqlExclusionList
- PlsqlFetchBufferSize
- PlsqlInfoLogging
- PlsqlMaxRequestsPerSession
- PlsqlNLSLanguage
- PlsqlPathAlias
- PlsqlPathAliasProcedure
- PlsqlRequestValidationFunction
- PlsqlSessionCookieName
- PlsqlSessionStateManagement
- PlsqlTransferMode
- PlsqlUploadAsLongRaw

E.6.2.1 PlsqlAfterProcedure

Specifies the procedure to be invoked after calling the requested procedure. This enables you to put a hook point after the requested procedure is called. This is useful in doing SQL*Traces/SQL Profiles while debugging a problem with the requested procedure. This is also useful when you want to ensure that a specific call is made after running every procedure.

Category	Value
Syntax	`PlsqlAfterProcedure` *`string`*
Example	`PlsqlAfterProcedure portal.mypkg.myafterproc`
Default	None

Note: This parameter should only be used for debugging purposes. In addition, you could use this parameter to stop SQL trace/SQL profiling.

E.6.2.2 PlsqlAlwaysDescribeProcedure

Specifies whether the mod_plsql module should describe a procedure before trying to run it. If this is set to `On`, then the mod_plsql module will always describe a procedure before invoking it. Otherwise, the mod_plsql module will only describe a procedure when its internal heuristics have interpreted a parameter type incorrectly.

Category	Value
Syntax	`PlsqlAlwaysDescribeProcedure On | Off`
Example	`PlsqlAlwaysDescribeProcedure On`
Default	`Off`

Note: This parameter should only be used for debugging purposes.

E.6.2.3 PlsqlAuthenticationMode

Specifies the authentication mode to use for allow access through the DAD. The accepted values for PlsqlAuthenticationMode are Basic, SingleSignOn, GlobalOwa, CustomOwa, PerPackageOwa.

Category	Value
Syntax	`PlsqlAuthenticationMode Basic | SingleSignOn | GlobalOwa | CustomOwa | PerPackageOwa`
Example	`PlsqlAuthenticationMode CustomOwa`
Default	`Basic`

- `Basic` is the default mode and determines whether or not to ask for username and password if they are not provided with PlsqlDatabaseUsername and PlsqlDatabasePassword. This setting is required for WebDB 2.x applications. If the DAD is not using the Basic authentication, then you must include a valid username/password in the DAD configuration.

- `SingleSignOn` specifies that you want to use Single Sign-On server. This is required for DADs using Oracle9iAS Portal. As already stated the provided username and password need to be the one from your single signon server.
- `GlobalOwa`, `CustomOwa`, and `PerPackageOwa` are used only by very few PL/SQL applications. Custom authentication enables applications to authenticate users within the application itself, not at the database level.

  Authorization is performed by invoking a user-written authorization function. Custom authentication uses a static username/password that is stored in the DAD. It cannot be combined with dynamic username/password authentication. To enable custom authentication, set the level of authentication for PlsqlAuthenticationMode and implement the authorize function.

You should also be aware of the following:

- If the DAD is not using the Basic authentication, then you must include a valid username/password in the DAD configuration. For the Basic mode, to perform dynamic authentication, the DAD username/password parameters must be omitted.
- The SingleSignOn mode is supported only for Oracle Fusion Middleware releases, and is used by Oracle Portal and Oracle Single Sign-On. Most customer applications use Basic authentication. Custom authentication modes (GlobalOwa, CustomOwa, and PerPackageOwa) are used by very few PL/SQL applications.

E.6.2.4 PlsqlBeforeProcedure

Specifies the procedure to be invoked before calling the requested procedure. This enables you to put a hook point before the requested procedure is called. This is useful in doing SQL*Traces/SQL Profiles while debugging a problem with the requested procedure. This is also useful when you want to ensure that a specific call be made before running every procedure.

Category	Value
Syntax	`PlsqlBeforeProcedure` *`string`*
Example	`PlsqlBeforeProcedure portal.mypkg.mybeforeproc`
Default	None

> **Note:** This parameter should only be used for debugging purposes. In addition, you could use this parameter to start SQL Trace/SQL Profiling.

E.6.2.5 PlsqlBindBucketLengths

> **Note:** This configuration property is rarely ever changed, and system defaults suffice in almost all cases.

Specifies the rounding size to use while binding the number of elements in a collection bind. While executing PL/SQL statements, the Oracle database maintains a cache of PL/SQL statements in the shared SQL area, and attempts to reuse the cached statement if the same statement is run again. Oracle's matching criteria requires that the statement texts be identical, and that the bind variable data types match.

Unfortunately, the type match for strings is sensitive to the exact byte size specified, and for collection bindings is also sensitive to the number of elements in the collection. Since the mod_plsql module binds statements dynamically, the odds of hitting the shared cache are low, and it may fill up with near-duplicates and lead to contention for the latch on the shared area. This parameter reduces that effect by bucketing bind lengths to the nearest level.

All numbers specified should be in ascending order. After the last specified size, subsequent bucket sizes will be assumed to be twice the last one.

Category	Value
Syntax	`PlsqlBindBucketLengths` *`number multiline`*

Example	`PlsqlBindBucketLengths 4`
	`PlsqlBindBucketLengths 25`
	`PlsqlBindBucketLengths 125`

Default	4,20,100,400

- This parameter is relevant only if you are using procedures with array parameters, and passing varying number of parameters to the procedure.
- The default should be sufficient for most PL/SQL applications.
- To see if this parameter needs to be changed, check the number of versions of a SQL statement in the SQL area.
- After the higher configured value, mod_plsql starts auto-generating bucket sizes of larger values by doubling the last value, as needed. Therefore, after 400, the next bucket value becomes 800, then 1600, and so on.
- Consider using flexible parameter passing to reduce the problem.

E.6.2.6 PlsqlBindBucketWidths

Note: This configuration property is rarely ever changed, and system defaults suffice in almost all cases.

Specifies the rounding size to use while binding the number of elements in a collection bind. While executing PL/SQL statements, the Oracle database maintains a cache of PL/SQL statements in the shared SQL area, and attempts to reuse the cached statement if the same statement is run again. Oracle's matching criteria requires that the statement texts be identical, and that the bind variable data types match. Unfortunately, the type match for strings is sensitive to the exact byte size specified, and for collection bindings is also sensitive to the number of elements in the collection. Since the mod_plsql module binds statements dynamically, the odds of hitting the shared cache are low, and it may fill up with near-duplicates and lead to contention for the latch on the shared area. This parameter reduces that effect by bucketing bind widths to the nearest level.

All numbers specified should be in ascending order. After the last specified size, subsequent bucket sizes will be assumed to be twice the last one.

The last bucket width must be equal to or less than 4000. This is due to the restriction imposed by OCI where array bind widths cannot be greater than 4000.

Category	Value
Syntax	`PlsqlBindBucketWidths` *`number multiline`*

Example	`PlsqlBindBucketWidths 40`
	`PlsqlBindBucketWidths 400`
	`PlsqlBindBucketWidths 2000`

Default	`32,128,1450,2048,4000`

- This parameter is relevant only if you are using procedures with array parameters, and passing varying number of parameters to the procedure.
- The default should be sufficient for most PL/SQL applications.
- To see if this parameter needs to be changed, check the number of versions of a SQL statement in the SQL area.
- After the higher configured value, mod_plsql starts auto-generating bucket sizes of larger values by doubling the last value, as needed. Therefore, after 400, the next bucket value becomes 800, then 1600, and so on.
- Consider using flexible parameter passing to reduce the problem.

E.6.2.7 PlsqlCGIEnvironmentList

Specifies overrides and additions of CGI environment variables to the default set of environment variables passed to a PL/SQL procedure. This is a multi-line directive of name-value pairs to be added, overridden or removed. You can only specify one environment variable for each directive.

You can add CGI environment variables from the Oracle HTTP Server environment by specifying the variable name. To remove a CGI environment variable, set it equal to blank. To add your own name-value pair, use the syntax myname=myvalue.

Category	Value
Syntax	`PlsqlCGIEnvironmentList string` *`multiline`*
Default	None

Example	■ To add a new environment variable from the Oracle HTTP Server environment:
	`PlsqlCGIEnvironmentList DOCUMENT_ROOT`
	■ To remove an environment variable:
	`PlsqlCGIEnvironmentList MYENVAR2=`
	■ To override from the Oracle HTTP Server environment:
	`PlsqlCGIEnvironmentList REQUEST_PROTOCOL=HTTPS`
	■ To add your own environment variable:
	`PlsqlCGIEnvironmentList MY_VARNAME=MY_VALUE`

- Environment variables added here are available in the PL/SQL application through the function `owa_util.get_cgi_env`.

E.6.2.8 PlsqlConnectionTimeout

Specifies the timeout in milliseconds for testing a connection pool in the mod_plsql module.

Category	Value
Syntax	`PlsqlConnectionTimeout` *number*
Example	`PlsqlConnectionTimeout 5000`
Default	10000 (milliseconds)

When PlsqlConnectionValidation is set to `Automatic` or `AlwaysValidate`, the mod_plsql module attempts to test pooled database connections. This parameter specifies the maximum time the mod_plsql module should wait for the test request to complete before it assumes that the connection is not usable.

E.6.2.9 PlsqlConnectionValidation

Specifies the mechanism the mod_plsql module should use to detect terminated connections in its connection pool.

> **Note:** This configuration property is rarely ever changed, and system defaults suffice in almost all cases.

For performance reasons, the mod_plsql module pools database connections. If a database instance goes down, and the mod_plsql module was maintaining a pool of connections to the instance, then each pooled database connection results in an error when it is next used to service a request. This can be a concern in high availability configurations such as RAC where even if one node goes down, other nodes servicing the database might have been able to service the request successfully. The mod_plsql module provides for a mechanism whereby it can self-correct after it detects a failure that could be caused by a database node going down. This mechanism to self-correct is controlled by the parameter PlsqlConnectionValidation.

The following are the valid values for PlsqlConnectionValidation:

- `Automatic`: The mod_plsql module tests all pooled database connections which were created prior to the detection of a failure that could mean an instance failure.
- `ThrowAwayOnFailure`: The mod_plsql module throws away all pooled database connections which were created prior to the detection of a failure that could mean an instance failure.
- `AlwaysValidate`: The mod_plsql module always tests all pooled database connections which were created prior to issuing a request. Since this option has an associated performance overhead for each request, this should be used with caution.
- `NeverValidate`: The mod_plsql module never pings any pooled database connection.

Category	Value
Syntax	`PlsqlConnectionValidation Automatic | ThrowAwayOnFailure | AlwaysValidate | NeverValidate`
Example	`PlsqlConnectionValidation ThrowAwayOnFailure`
Default	`Automatic`

When the mod_plsql module encounters one of the following errors, it assumes that the database may have been down.

- 00443 — background process <string> did not start
- 00444 — background process <string> failed while starting
- 00445 — background process did not start after <x> seconds
- 00447 — fatal error in background processes
- 00448 — normal completion of background process
- 00449 — background process <string> unexpectedly terminated with error
- 00470 — LGWR process terminated with error
- 00471 — DBWR process terminated with error
- 00472 — PMON process terminated with error
- 00473 — ARCH process terminated with error
- 00474 — SMON process terminated with error
- 00475 — TRWR process terminated with error
- 00476 — RECO process terminated with error
- 00480 — LCK* process terminated with error
- 00481 — LMON process terminated with error
- 00482 — LMD* process terminated with error
- 00484 — LMS* process terminated with error
- 00485 — DIAG process terminated with error
- 01014 — ORACLE shutdown in progress
- 01033 — ORACLE initialization or shutdown in progress
- 01034 — ORACLE not available
- 01041 — internal error. hostdef extension doesn't exist
- 01077 — background process initialization failure
- 01089 — immediate shutdown in progress- no operations permitted
- 01090 — shutdown in progress- connection is not permitted
- 01091 — failure during startup force
- 01092 — ORACLE instance terminated. Disconnection forced
- 03106 — fatal two-task communication protocol error
- 03113 — end-of-file on communication channel
- 03114 — not connected to ORACLE
- 12570 — TNS: packet reader failure
- 12571 — TNS: packet writer failure

E.6.2.10 PlsqlDatabaseConnectString

Specifies the connection to an Oracle database.

Category	Value
Syntax	`PlsqlDatabaseConnectString` *`string`* `{ServiceNameFormat | SIDFormat | TNSFormat | NetServiceNameFormat}` The *string* parameter depends on the second argument: ■ If the second argument is `ServiceNameFormat`, *string* is *`HOST:PORT:SERVICE_NAME`*, where *`HOST`* is the host name running the database, *`PORT`* is the port number the TNS listener is listening at, and *`SERVICE_NAME`* is the database service name. An IPv6 address can be specified using the format *[IPv6_ADDRESS]:PORT:SERVICE_NAME*. ■ If the second argument is `SIDFormat`, *string* is *HOST:PORT:SID* where *`HOST`* is the host name running the database, *`PORT`* is the port number the TNS listener is listening at, and *`SID`* is the database SID. An IPv6 address can be specified using the format *[IPv6_ADDRESS]:PORT:SID*. ■ If the second argument is `TNSFormat`, *string* is a valid TNS alias that can be resolved using Net8 utilities like tnsping and SQL*Plus. ■ If the second argument is `NetServiceNameFormat`, *string* is a valid net service name that can be resolved to a connect descriptor. A connect descriptor is a specially formatted description of the destination for a network connection. A connect descriptor contains destination service and network route information. If the format argument is not specified, then the mod_plsql module assumes the *string* is either in the HOST:PORT:SID format, or resolvable by Net8. The differentiation between the two is made by the presence of the colon in the specified string. It is recommended that newer DADs do not use the `SIDFormat` syntax. This exists only for backward compatibility reasons. Use the new two argument format for newly created DADs.
Example	■ `PlsqlDatabaseConnectString example.com:1521:myhost.iasdb.inst ServiceNameFormat` ■ `PlsqlDatabaseConnectString [2001:DB8:f1ff:f1ff]:1521:myhost.iasdb.inst ServiceNameFormat` ■ `PlsqlDatabaseConnectString example.com:1521:iasdb SIDFormat` ■ `PlsqlDatabaseConnectString [2001:DB8:ff1ff:f1ff]:1521:iasdb SIDFormat` ■ `PlsqlDatabaseConnectString myhost_tns TNSFormat` ■ `PlsqlDatabaseConnectString cn=oracle,cn=iasdb NetServiceNameFormat` ■ `PlsqlDatabaseConnectString (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=`*`example.com`*`)(Port=1521))(CONNECT_DATA=(SID=iasdb))) TNSFormat` ■ `PlsqlDatabaseConnectString myhost_tns` ■ `PlsqlDatabaseConnectString example.com:1521:iasdb`
Default	None

- If the database is running in the same Oracle home, or the environment variable TWO_TASK is set, then this parameter need not be specified.
- If the database is running in a separate Oracle home, then this parameter is mandatory.
- If you have problems connecting to the database:
  - Check the username and password information in the DAD.

- Make sure that you run tnsping db_connect_string, and commands such as:

  ```
  sqlplus DADUsername/DADPassword@db_connect_string
  ```

- Ensure that TNS_ADMIN is configured properly.
- Verify that the HOST:PORT:SERVICE_NAME format works correctly.
- Ensure that the TNS listener and database are up and running.
- Ensure that you can ping the host from this machine.

- From a the mod_plsql module perspective, `TNSFormat` and `NetServiceNameFormat` are synonymous and denote connect descriptors that are resolved by Net8. The `TNSFormat` is provided as a convenience so that end-users use this to signify that the name resolution happens through the local tnsnames.ora. For situations where the resolution is through an LDAP lookup as configured in sqlnet.ora, it is recommended that the format specifier of `NetServiceNameFormat` be used.

  If your database supports high availability, for example, Oracle Real Application Clusters database, it is highly recommended that you use the `NetServiceNameFormat` such that the resolution for the net service name is through LDAP. This enables you to add or remove RAC nodes accessible through the mod_plsql module by changing Oracle Internet Directory with the new or deleted node information. In such situations, hard-coding database listener HOST:PORT information in dads.conf or in the local `tnsnames.ora` is not recommended.

E.6.2.11 PlsqlDatabasePassword

Specifies the password to use to log in to the database.

Category	Value
Syntax	`PlsqlDatabasePassword` *`string`*
Example	`PlsqlDatabasePassword tiger`
Default	None

- This is a mandatory parameter, except for a DAD that sets PlsqlAuthenticationMode to Basic and uses dynamic authentication.
- For DADs using SingleSignOn authentication, this parameter uses the name of the schema owner.

After making manual configuration changes to DAD passwords, you should obfuscate the DAD passwords by running the `dadTool.pl` script, located in `ORACLE_HOME/bin`.

To obfuscate DAD passwords:

1. If necessary, change the user to the Oracle software owner user, typically `oracle`, using the following command:

   ```
   $ su - oracle
   ```

2. Set the *`ORACLE_HOME`* environment variable to specify the path to the Oracle home directory for the current release, and set the PATH environment variable to include the directory containing the Perl executable and the location of the `dadTool.pl` script.

   Bourne, Bash, or Korn shell:

   ```
   $ ORACLE_HOME=new_ORACLE_HOME_path;export ORACLE_HOME
   $ PATH=ORACLE_HOME/bin:ORACLE_HOME/perl/bin:$PATH;export PATH
   ```

C or tcsh shell:

```
% setenv ORACLE_HOME new_ORACLE_HOME_PATH
% setenv PATH ORACLE_HOME/bin:ORACLE_HOME/perl/bin:PATH
```

On Microsoft Windows, set the PATH and PERL5LIB environment variable:

```
set PATH=ORACLE_HOME\bin;ORACLE_HOME\perl\bin;%PATH%
set PERL5LIB=ORACLE_HOME\perl\lib
```

3. On UNIX platforms, set the shared library path environment variable.

   Include the `ORACLE_HOME/lib` or `lib32` directory in your shared library path. Table E–6 shows the appropriate directory and environment variable for each platform.

Table E–6 Shared Library Path Environment Variable

Platform	Environment Variable	Include Directory
AIX Based Systems	LIBPATH	ORACLE_HOME/lib
HP-UX PA-RISC	SHLIB_PATH	ORACLE_HOME/lib
Solaris Operating System	LD_LIBRARY_PATH	ORACLE_HOME/lib32
Other UNIX platforms, including Linux and HP Tru64 UNIX	LD_LIBRARY_PATH	ORACLE_HOME/lib

For example, on HP-UX PA-RISC systems, set the SHLIB_PATH environment to include the `ORACLE_HOME/lib` directory:

```
$SHLIB_PATH=$ORACLE_HOME/lib:$SHLIB_PATH;export SHLIB_PATH
```

4. Change directory to the mod_plsql configuration directory for the current release of Oracle HTTP Server:

   ```
   cd ORACLE_HOME/bin
   ```

5. Invoke the following Perl script to obfuscate DAD password:

   ```
   perl dadTool.pl -f dadfilename
   ```

   where *dadfilename* is the filename for `dads.conf`, which includes the full path to the DAD file.

   For example:

   ```
   perl dadTool.pl -f /u01/app/oracle/as11gr1/ORACLE_
   INSTANCE/config/OHS/component_name/mod_plsql/dads.conf
   ```

E.6.2.12 PlsqlDatabaseUserName

Specifies the username to use to log in to the database.

Category	Value
Syntax	`PlsqlDatabaseUsername string`
Example	`PlsqlDatabaseUsername scott`
Default	None

- This is a mandatory parameter, except for a DAD that sets PlsqlAuthenticationMode to Basic and uses dynamic authentication.

- For DADs using SingleSignOn authentication, this parameter is the name of the schema owner.

E.6.2.13 PlsqlDefaultPage

Specifies the default procedure to call if none is specified in the URL.

Category	Value
Syntax	`PlsqlDefaultPage` *`string`*
Example	`PlsqlDefaultPage myschema.mypackage.home`
Default	None

You can also use Oracle HTTP Server Rewrite rules to achieve the same effect as you get by setting this configuration parameter.

E.6.2.14 PlsqlDocumentPath

Specifies a virtual path in the URL that initiates document download from the document table. For example, if this parameter is set to `docs`, then the following URLs will start the document downloading process for URLs of the format:

```
/pls/dad/docs
/pls/plsqlapp/docs
```

Category	Value
Syntax	`PlsqlDocumentPath` *`string`*
Example	`PlsqlDocumentPath docs`
Default	`docs`

Omit this parameter for applications that do not perform document uploads or downloads.

E.6.2.15 PlsqlDocumentProcedure

Specifies the procedure to call when a document download is initiated. This procedure is called to process the download.

Category	Value
Syntax	`PlsqlDocumentProcedure` *`string`*
Example	`PlsqlDocumentProcedure portal.wwdoc_process.process_download`
Default	None

Omit this parameter for applications that do not perform document uploads or downloads.

E.6.2.16 PlsqlDocumentTablename

Specifies the table in the database to which all documents are uploaded.

Category	Value
Syntax	`PlsqlDocumentTablename` *`string`*
Example	`PlsqlDocumentTablename myschema.document_table`
Default	None

Omit this parameter for applications that do not perform document uploads or downloads.

E.6.2.17 PlsqlErrorStyle

Specifies the error reporting mode for mod_plsql errors.

Category	Value

Syntax	`PlsqlErrorStyle {ApacheStyle | ModplsqlStyle | DebugStyle}`
	■ `ApacheStyle`: The mod_plsql module indicates to Oracle HTTP Server the HTTP error that was encountered. Oracle HTTP Server then generates the error page. This can be used with the Oracle HTTP Server `ErrorDocument` directive to produce customized error messages.
	■ `ModplsqlStyle`: The mod_plsql module generates the error pages, usually a short message indicating the PL/SQL error encountered and PL/SQL exception stack, if any. For example:
	`scott.foo PROCEDURE NOT FOUND`
	■ `DebugStyle`: This mode provides more details than `ModplsqlStyle`. The mod_plsql module provides more details about the URL and parameters, and also produces server configuration information. This mode is for debugging purposes only. Do not use this in a production system, since displaying internal server variables could be a security risk.

Example	`PlsqlErrorStyle ModplsqlStyle`
Default	`ApacheStyle`

E.6.2.18 PlsqlExclusionList

Specifies a pattern for procedures, packages, or schema names which are forbidden to be directly run from a browser. This is a multi-line directive in which each pattern is on a separate line. The pattern is not case sensitive and can accept a wildcard such as an asterisk (*). The default patterns disallowed from direct URL access are as follows:

- sys.*
- dbms_*
- utl_*
- owa_util*
- owa.*
- htp.*
- htf.*
- wpg_docload.*

Setting this directive to `#NONE#` will disable all protection. This is strongly discouraged for an active site and should not be done. It may be used for debugging purposes.

If this parameter is overridden, the defaults still apply, which means that you do not have to explicitly add the default list to the list of excluded patterns.

Category	Value
Syntax	`PlsqlExclusionList {string | "#NONE#" multiline}`

Example	`PlsqlExclusionList myschema.private.*`
	`PlsqlExclusionList myschema.private1.*`
	will disallow access to URLs which contain one of:
	`sys.*, dbms_*, utl_*, owa_util*, owa.*, htp.*, htf.*, wpg_docload.*, myschema.private.*, myschema.private1.*`
	`PlsqlExclusionList "#NONE#"`
	will disable all protection. Its use is strongly discouraged for an active site.

Default	sys.* dbms_* utl_* owa_util* owa.* htp.* htf.* wpg_docload.*

- In addition to the patterns specified with this parameter, the mod_plsql module disallows any procedure name which contains the following special characters:
  - tabs
  - new lines
  - carriage-return
  - single quotation mark
  - reverse slash
  - form feed
  - left parenthesis
  - right parenthesis
  - space

  This cannot be changed.

E.6.2.19 PlsqlFetchBufferSize

Specifies the number of rows of content to fetch from the database for each trip, using either owa_util.get_page or owa_util.get_page_raw.

By default, the mod_plsql module attempts to fetch 200 response lines of output where each line is of 255 bytes. In situations where the response bytes are single-bytes, the response buffer is populated to the maximum and can pack 255*200=51000 bytes for each round trip. For responses containing multi-byte data, the byte packing for each

row could be less than ideal resulting in lesser bytes getting transferred for each round trip. If your application generates large pages frequently and the response does not fit in one round trip, then consider setting this parameter higher. The memory usage for the mod_plsql module will increase.

Category	Value
Syntax	`PlsqlFetchBufferSize` *number*
Example	`PlsqlFetchBufferSize 256`
Default	200

- This parameter is changed only for performance reasons. The minimum value for this parameter is 28, but it is seldom reduced.
- Change this parameter only under the following circumstances:
  - The average response page is large and you want to reduce the number of round-trips the mod_plsql module makes to the database to fetch the response.
  - The character set in use is multi-byte, and you want to compensate for the problem of get_page or get_page_raw fetching fewer bytes for each row. Calculations in the PL/SQL Web ToolKit are character-based and in the case of multi-byte characters, OWA packages assume a worst-case character byte size and do not attempt to pack each row to its maximum.

E.6.2.20 PlsqlInfoLogging

Specifies what mode the mod_plsql module should use to do extra performance logging.

InfoDebug mode: This logs more information to the Apache's error_log. This is used in conjunction with Apache's info logging level. If the Apache's logging level is not at least set to this high, this setting will be ignored.

Category	Value
Syntax	`PlsqlInfoLogging` *InfoDebug*
Example	`PlsqlInfoLogging InfoDebug`
Default	Empty

The logging setting is useful for debugging problems in your PL/SQL application.

E.6.2.21 PlsqlMaxRequestsPerSession

Specifies the maximum number of requests a pooled database connection should service before it is closed and re-opened.

Category	Value
Syntax	`PlsqlMaxRequestsPerSession` *number*
Example	`PlsqlMaxRequestsPerSession 500`
Default	1000

- This parameter helps relieve memory and resource problems that may occur due to prolonged session reuse by a PL/SQL application.
- This parameter should not need to be changed. The default is sufficient in most cases.
- Setting this parameter to a low number can degrade performance. A case for a lower value might be an infrequently-used DAD whose performance is not a concern, and for which limiting the number of requests provides some benefit.

E.6.2.22 PlsqlNLSLanguage

Specifies the NLS_LANG variable for this DAD. This parameter overrides the NLS_LANG environment variable. When this parameter is set, the PL/SQL Gateway uses the specified NLS_LANG to connect to the database. Once connected, an alter session command is issued to switch to the specified language and territory. If the middle tier character set matches that of the database, then no alter session call is issued by the mod_plsql module.

Category	Value
Syntax	`PlsqlNLSLanguage` *`string`*
Example	`PlsqlNLSLanguage America_America.UTF8`
Default	None

- Most applications have PlsqlTransferMode set to CHAR which means that the character set in PlsqlNLSLanguage needs to match the character set of the database. In one special case, where the database and the mod_plsql module are both using fixed-size character sets, and the character set width matches, the character set can be different. The response character set is always the mod_plsql module character set.
- If PlsqlTransferMode is set to RAW, then this parameter can be ignored.

E.6.2.23 PlsqlPathAlias

Specifies a virtual path alias to map to a procedure call. This is application-specific. This directive is used with PlsqlPathAliasProcedure.

Category	Value
Syntax	`PlsqlPathAlias` *`string`*
Example	`PlsqlPathAlias url`
Default	None

For applications that do not use path aliasing, this parameter may be omitted.

E.6.2.24 PlsqlPathAliasProcedure

Specifies the procedure to call when the virtual path in the URL matches the path alias as configured by PlsqlPathAlias.

Category	Value
Syntax	`PlsqlPathAliasProcedure` *`string`*

Category	Value
Example	`PlsqlPathAliasProcedure portal.wwpth_api_alias.process_download`
Default	None

For applications that do not use path aliasing, this parameter may be omitted.

E.6.2.25 PlsqlRequestValidationFunction

Specifies an application-defined PL/SQL function which gives you the opportunity to allow and disallow further processing of the requested procedure. This is useful in implementing tight security for your PL/SQL application by blocking out package and procedure calls that should not be allowed to run from a DAD.

The function defined by this parameter must have the following prototype:

```
boolean function_name (procedure_name IN varchar2)
```

The *procedure_name* parameter will contain the name of the procedure that the request is trying to run.

For example, if all the PL/SQL application procedures callable from a browser are inside the package mypkg, then an implementation of this function can be as follows:

```
boolean my_validation_check (procedure_name varchar2)
is
begin
  if (upper (procedure_name) like upper ('myschema.mypkg%')) then
    return TRUE
  else
    return FALSE
  end if;
end;
```

Category	Value
Syntax	`PlsqlRequestValidationFunction` *string*
Example	`PlsqlRequestValidationFunction myschema.mypkg.my_validation_check`
Default	none

- By default, the mod_plsql module already disallows direct URL access to certain schemas and packages. For more information, refer to PlsqlExclusionList.
- It is highly recommended that you provide an implementation for this function such that it only allows requests that belong to your application, and are callable from a browser.
- Since this function will be called for every request, be sure to make this function as optimized as possible. Suggested recommendations are:
  - Name your PL/SQL packages in a fashion such that the implementation of this function can be similar to the previous example.
  - If your implementation performs a table lookup to determine what packages and procedures should be allowed, then performance can be improved if you pin the cursor in the shared pool.

E.6.2.26 PlsqlSessionCookieName

Specifies the cookie name when PlsqlAuthenticationMode is set to SingleSignOn. This parameter is supported only for Oracle Fusion Middleware releases, and is used by Oracle Portal and Oracle Single Sign-On.

Category	Value
Syntax	`PlsqlSessionCookieName` *`cookie_name`*
Example	`PlsqlSessionCookieName mycookie`
Default	Same as DAD name

- For DADs not using SingleSignOn authentication, this parameter can be omitted. In most other cases, the session cookie name should be omitted (and this parameter automatically defaults to the DAD name).
- A session cookie name must be specified only for Oracle Portal instances that need to participate in a distributed Oracle Portal environment. For those Oracle Portal nodes you want to seamlessly participate as a federated cluster, ensure that the session cookie name for all the participating nodes is the same.
- Independent Oracle Portal nodes need to use distinct session cookie names.

E.6.2.27 PlsqlSessionStateManagement

Specifies how package and session state should be cleaned up at the end of each the mod_plsql request.

- `StatelessWithResetPackageState` causes the mod_plsql module to call `dbms_session.reset_package_state` at the end of each mod_plsql request. This is the default.
- `StatelessWithPreservePackageState` causes the mod_plsql module to call `htp.init` at the end of each mod_plsql request. This cleans up the state of session variables in the PL/SQL Web ToolKit. The PL/SQL application is responsible for cleaning up its own session state. Failure to do so causes erratic behavior, in which a request starts recognizing or manipulating state modified in previous requests.
- `StatelessWithFastResetPackageState` causes the mod_plsql module to call `dbms_session.modify_package_state(dbms_session.reinitialize)` at the end of each mod_plsql request. This API is faster than the mode of `StatelessWithResetPackageState`, and avoids some latch contention issues, but exists only in Oracle database releases 8.1.7.2 and later. This mode uses slightly more memory than the default mode.

Category	Value
Syntax	`PlsqlSessionStateManagement {StatelessWithResetPackageState | StatelessWithFastResetPackageState | StatelessWithPreservePackageState}`
Example	`PlsqlSessionStateManagement StatelessWithPreservePackageState`
Default	`StatelessWithResetPackageState`

- The earlier values of stateful=no or stateful=STATELESS_RESET corresponds to `StatelessWithResetPackageState`.

- The earlier value of stateful=STATELESS_FAST_RESET corresponds to `StatelessWithFastResetPackageState`.
- The earlier value of stateful=STATELESS_PRESERVE corresponds to `StatelessWithPreservePackageState`.

The mod_plsql module does not support stateful mode of operation. To allow PL/SQL applications stateful behavior, save the state in cookies and/or in the database.

E.6.2.28 PlsqlTransferMode

Specifies the transfer mode for data from the database back to the mod_plsql module. Most applications use the default value of `CHAR`.

Category	Value
Syntax	`PlsqlTransferMode {CHAR | RAW}`
Example	`PlsqlTransferMode CHAR`
Default	`CHAR`

This parameter only needs to be changed to enable sending back responses in different character sets from the same DAD. In such a case, the `CHAR` mode is useless, since it always converts the response data from the database character set to the mod_plsql character set.

E.6.2.29 PlsqlUploadAsLongRaw

Specifies the file extensions to be uploaded as LONGRAW data type, as opposed to using the default BLOB data type. The default can be overridden by specifying multi-line directives of file extensions for field. A value of asterisk (`*`) in this field causes all documents to be uploaded as LONGRAW.

Category	Value
Syntax	`PlsqlUploadAsLongRaw` *`string multiline`*
Example	`PlsqlUploadAsLongRaw jpg` `PlsqlUploadAsLongRaw gif`
Default	None

For applications that do not upload or download documents, this parameter may be omitted.

E.6.3 cache.conf

The `cache.conf` file contains the configuration settings for the file system caching functionality implemented in the mod_plsql module. This configuration file is relevant only if PL/SQL applications use the `OWA_CACHE` package to cache dynamically generated content in the file system.

The following parameters are specified in the `cache.conf` file:

- PlsqlCacheCleanupTime
- PlsqlCacheDirectory
- PlsqlCacheEnable

- PlsqlCacheMaxAge
- PlsqlCacheMaxSize
- PlsqlCacheTotalSize

E.6.3.1 PlsqlCacheCleanupTime

Specifies the time to start the cleanup of the cache storage.

This setting defines the exact day and time in which cleanup should occur. The frequency can be set as daily, weekly, and monthly.

- To define daily frequency, the keyword `Everyday` is used. The cleanup starts every day at the time defined. For example, `Everyday 2:00` causes the cleanup to happen everyday at 2:00 a.m. (local time).
- To define weekly frequency, the days of the week, (`Sunday`, `Monday`, `Tuesday`, `Wednesday`, `Thursday`, `Friday`, `Saturday`) are used. For example, `Wednesday 15:30` causes the cleanup to happen every Wednesday at 3:30 p.m. (local time).
- To define monthly frequency, the keyword `Everymonth` is used. The cleanup starts on the Saturday of the month at the time defined. For example, Saturday Everymonth 23:00 causes the cleanup to happen the first Saturday of every month at 11:00 p.m. (local time).

Category	Value
Syntax	`PlsqlCacheCleanupTime {Sunday-Saturday | Everyday | Everymonth} {hh:mm}`
Example	`PlsqlCacheCleanupTime Monday 20:00`
Default	Saturday 23:00

E.6.3.2 PlsqlCacheDirectory

Specifies the directory where cache files are written out by the mod_plsql module. This directory must exist or Oracle HTTP Server will not start.

On UNIX, this directory must have write permissions by the owner of the child httpd processes.

Category	Value
Syntax	`PlsqlCacheDirectory` *directory*
Example	`PlsqlCacheDirectory` *ORACLE_INSTANCE*`/OHS/`*component_name*
Default	none

E.6.3.3 PlsqlCacheEnable

Enables mod_plsql caching.

Category	Value
Syntax	`PlsqlCacheEnable {On | Off}`
Example	`PlsqlCacheEnable On`
Default	`Off`

If an application does not make use of the `OWA_CACHE` package in the PL/SQL Web Toolkit, then you can choose to disable caching. In such situations, there will be a minor performance benefit.

E.6.3.4 PlsqlCacheMaxAge

Specifies the maximum time, in days, a cache file can reside in a file system cache, after which the cached file will be removed for cache maintenance.

This setting is to ensure that the cache system does not contain old content. This setting removes old cache files and makes space for new ones.

Category	Value
Syntax	`PlsqlCacheMaxAge` *number*
Example	`PlsqlCacheMaxAge 20`
Default	30 (days)

E.6.3.5 PlsqlCacheMaxSize

Specifies the maximum possible size of a cache file.

This setting prevents the case in which one file can fill up the entire cache. In general, it is recommended that this be set to about 1-3 percent of the total cache size, which is specified by PlsqlCacheTotalSize.

Category	Value
Syntax	`PlsqlCacheMaxSize` *number*
Example	`PlsqlCacheMaxSize 1048576`
Default	1048576

E.6.3.6 PlsqlCacheTotalSize

Specifies the total size of the cache directory. The default is 20 MB.

This setting limits the amount of space the cache is allowed to use. Both PL/SQL cache and Session Cookie cache share this cache space. This setting is not a hard limit. It might exceed the limit temporarily during normal processing. This is normal behavior.

The cleanup algorithm uses this setting to determine how much to reduce the cache files. Therefore, the real space limit is the physical storage's available size.

This parameter takes bytes as values:

- 1 megabytes = 1048576 bytes
- 10 megabytes = 10485760 bytes

Category	Value
Syntax	`PlsqlCacheTotalSize` *number*
Example	`PlsqlCacheTotalSize 20971520`
Default	20971520 (bytes)

E.7 mod_wl_ohs

mod_wl_ohs accepts the following directives:

- ConnectRetrySecs
- ConnectTimeoutSecs
- Debug
- DebugConfigInfo
- DefaultFileName
- DynamicServerList
- ErrorPage
- FileCaching
- Idempotent
- KeepAliveEnabled
- KeepAliveSecs
- MatchExpression
- MaxPostSize
- MaxSkipTime
- PathPrepend
- PathTrim
- QueryFromRequest
- WebLogicCluster
- WebLogicHost
- WebLogicPort
- WebLogicSSLVersion
- WLCookieName
- WLDNSRefreshInterval
- WLExcludePathOrMimeType
- WLForwardUriUnparsed
- WLIOTimeoutSecs
- WLLocalIP
- WLLogFile
- WLProxyPassThrough
- WLProxySSL
- WLProxySSLPassThrough
- WLServerInitiatedFailover
- WLSocketTimeoutSecs
- WLSRequest
- WLTempDir

Note: mod_wl_ohs directives are the same as those accepted by mod_wl.

E.7.1 ConnectRetrySecs

Interval in seconds that the plug-in should sleep between attempts to connect to the WebLogic Server host (or all of the servers in a cluster). Make this number less than the ConnectTimeoutSecs. The number of times the plug-in tries to connect before returning an HTTP 503/Service Unavailable response to the client is calculated by dividing ConnectTimeoutSecs by ConnectRetrySecs.

To specify no retries, set ConnectRetrySecs equal to ConnectTimeoutSecs. However, the plug-in attempts to connect at least twice.

You can customize the error response by using the ErrorPage directive.

Category	Value
Syntax	`ConnectRetrySecs` *secs*
Example	`ConnectRetrySecs 10`
Default	2

E.7.2 ConnectTimeoutSecs

Maximum time in seconds that the plug-in should attempt to connect to the WebLogic Server host. Make the value greater than ConnectRetrySecs. If ConnectTimeoutSecs

expires without a successful connection, even after the appropriate retries (see ConnectRetrySecs), an HTTP 503/Service Unavailable response is sent to the client.

You can customize the error response by using the ErrorPage directive.

Category	Value
Syntax	ConnectTimeoutSecs secs
Example	ConnectTimeoutSecs 120
Default	10

E.7.3 Debug

Sets the type of logging performed for debugging operations. The debugging information is written to the /tmp/wlproxy.log file on UNIX systems and c:\TEMP\wlproxy.log on Windows NT/2000 systems.

Override this location and filename by setting the WLLogFile parameter to a different directory and file. (See the WLTempDir parameter for an additional way to change this location.)

Ensure that the tmp or TEMP directory has write permission assigned to the user who is logged in to the server. Set any of the following logging options (HFC,HTW,HFW, and HTC options may be set in combination by entering them separated by commas, for example "HFC,HTW"):

- ON - The plug-in logs informational and error messages.
- OFF - No debugging information is logged.
- HFC - The plug-in logs headers from the client, informational, and error messages.
- HTW - The plug-in logs headers sent to WebLogic Server, and informational and error messages.
- HFW - The plug-in logs headers sent from WebLogic Server, and informational and error messages.
- HTC - The plug-in logs headers sent to the client, informational messages, and error messages.
- ERR - Prints only the Error messages in the plug-in.
- ALL - The plug-in logs headers sent to and from the client, headers sent to and from WebLogic Server, information messages, and error messages.

Category	Value
Syntax	`Debug ON | OFF | HFC | HTW | HFW | HTC | ERR | ALL`
Example	`Debug HFC,HTW,HTC`
Default	OFF

E.7.4 DebugConfigInfo

Enables the special query parameter "__WebLogicBridgeConfig". Use it to get details about configuration parameters from the plug-in.

For example, if you enable "__WebLogicBridgeConfig" by setting DebugConfigInfo and then send a request that includes the query string ?__WebLogicBridgeConfig, then the plug-in gathers the configuration information and run-time statistics and returns

the information to the browser. The plug-in does not connect to WebLogic Server in this case.

This parameter is strictly for debugging and the format of the output message can change with releases. For security purposes, keep this parameter turned OFF in production systems.

Category	Value
Syntax	`DebugConfigInfo OFF | ON`
Example	`DebugConfigInfo ON`
Default	OFF

E.7.5 DefaultFileName

Sets the default welcome page of the Web Application in WebLogic Server to which requests are being proxied.

If the URI is "/" then the plug-in performs the following steps:

1. Trims the path specified with the PathTrim parameter.
2. Appends the value of DefaultFileName.
3. Prepends the value specified with PathPrepend.

This procedure prevents redirects from WebLogic Server. For example, If the DefaultFileName is set to welcome.html, an HTTP request like "http://somehost/weblogic" becomes "http://somehost/weblogic/welcome.html". For this parameter to function, the same file must be specified as a welcome file in all the Web Applications to which requests are directed. For more information, see Configuring Welcome Pages.

> **Apache users:** If you are using Stronghold or Raven versions, define this parameter inside of a Location block, and not in an IfModule block.Oracle

Category	Value
Syntax	`DefaultFileName "http://path/to/file"`
Example	`DefaultFileName "http://somehost/weblogic"`
Default	none

E.7.6 DynamicServerList

When set to OFF, the plug-in ignores the dynamic cluster list used for load balancing requests proxied from the plug-in and only uses the static list specified with the WebLogicCluster parameter. Normally this parameter should remain set to ON.

There are some implications for setting this parameter to OFF:

- If one or more servers in the static list fails, the plug-in could waste time trying to connect to a dead server, resulting in decreased performance.
- If you add a new server to the cluster, the plug-in cannot proxy requests to the new server unless you redefine this parameter. WebLogic Server automatically adds new servers to the dynamic server list when they become part of the cluster.

Category	Value
Syntax	`DynamicServerList ON | OFF`
Example	`DynamicServerList OFF`
Default	ON

E.7.7 ErrorPage

Sets the error page that appears whenever your Web server is unable to forward requests to WebLogic Server. You can create your own error page. The plug-in redirects to an error page when the back-end server returns an HTTP 503/Service Unavailable response and there are no servers for failover.

Category	Value
Syntax	`ErrorPage`
Example	`ErrorPage`
Default	none

E.7.8 FileCaching

Specifies whether or not file caching is enabled. When set to ON, and the size of the POST data in a request is greater than 2048 bytes, the POST data is first read into a temporary file on disk and then forwarded to the WebLogic Server in chunks of 8192 bytes. This preserves the POST data during failover, allowing all necessary data to be repeated to the secondary if the primary goes down.

Note that when FileCaching is ON, any client that tracks the progress of the POST will see that the transfer has completed even though the data is still being transferred between the WebServer and WebLogic. So, if you want the progress bar displayed by a browser during the upload to reflect when the data is actually available on the WebLogic Server, you might not want to have FileCaching ON.

When set to OFF and the size of the POST data in a request is greater than 2048 bytes, the reading of the POST data is postponed until a WebLogic Server cluster member is identified to serve the request. Then the plug-in reads and immediately sends the POST data to the WebLogic Server in chunks of 8192 bytes.

Note that turning FileCaching OFF limits failover. If the WebLogic Server primary server goes down while processing the request, the POST data already sent to the primary cannot be repeated to the secondary.

Finally, regardless of how FileCaching is set, if the size of the POST data is 2048 bytes or less the plug-in will read the data into memory and use it if needed during failover to repeat to the secondary.

Category	Value
Syntax	`FileCaching ON | OFF`
Example	`FileCaching OFF`
Default	ON

E.7.9 Idempotent

Specifies whether or not plug-ins fail over.

- When set to ON and if the servers do not respond within WLIOTimeoutSecs, the plug-ins fail over if the method is idempotent.
- The plug-ins also fail over if Idempotent is set to ON and the servers respond with an error such as READ_ERROR_FROM_SERVER.
- If set to OFF the plug-ins do not fail over. If you are using the Apache HTTP Server you can set this parameter differently for different URLs or MIME types.

Category	Value
Syntax	`Idempotent ON | OFF`
Example	`Idempotent OFF`
Default	ON

E.7.10 KeepAliveEnabled

Enables pooling of connections between the plug-in and WebLogic Server.

If you are using Apache prefork mpm, Apache web server might crash. Turn KeepAliveEnabled to OFF when using prefork mpm or use worker mpm in Apache.

Category	Value
Syntax	`KeepAliveEnabled ON(TRUE) | OFF`(FALSE)
Example	`KeepAliveEnabled OFF`
Default	ON(TRUE)

E.7.11 KeepAliveSecs

Specifies how long to maintain an inactive connection between the plug-in and WebLogic Server. Once the time set here has elapsed, the connection is closed. You must set KeepAliveEnabled to true (ON when using the Apache HTTP Server) for this parameter to be effective.

The value of this parameter must be less than or equal to the value of the Duration field set in the Administration Console on the Server/HTTP tab, or the value set on the server Mbean with the KeepAliveSecs attribute.

Category	Value
Syntax	`KeepAliveSecs` *secs*
Example	`KeepAliveSecs 120`
Default	20

E.7.12 MatchExpression

Specifies the filename pattern to use when proxying. This directive is entered inside of an IfModule block. For example, if you wanted to proxy by MIME type, you would use MatchExpression as shown here:

```
<IfModule weblogic_module>
 MatchExpression *.jsp
 WebLogicHost=myHost|paramName=value
</IfModule>
```

Or, if you wanted to proxy by path, you would use MatchExpression like this:

```
<IfModule weblogic_module>
 MatchExpression /weblogic
 WebLogicHost=myHost|paramName=value
</IfModule>
```

You can define a new parameter for MatchExpression by using the following syntax:

```
MatchExpression *.jsp PathPrepend=/test PathTrim=/foo
```

Category	Value
Syntax	`MatchExpression` *expression*
Example	`MatchExpression /weblogic`
Default	none

E.7.13 MaxPostSize

Maximum allowable size of POST data, in bytes. If the content-length exceeds MaxPostSize, the plug-in returns an error message. If set to -1, the size of POST data is not checked. This is useful for preventing denial-of-service attacks that attempt to overload the server with POST data.

Category	Value
Syntax	`MaxPostSize` *nn*
Example	`MaxPostSize 64`
Default	-1

E.7.14 MaxSkipTime

If a WebLogic Server listed in either the WebLogicCluster parameter or a dynamic cluster list returned from WebLogic Server fails, the failed server is marked as “bad” and the plug-in attempts to connect to the next server in the list.

MaxSkipTime sets the amount of time after which the plug-in will retry the server marked as “bad.” The plug-in attempts to connect to a new server in the list each time a unique request is received (that is, a request without a cookie).

Category	Value
Syntax	`MaxSkipTime` *sec*
Example	`MaxSkipTime 120`
Default	10

E.7.15 PathPrepend

Specifies the path that the plug-in prepends to the {PATH} portion of the original URL, after PathTrim is trimmed and before the request is forwarded to WebLogic Server.

Note that if you need to append File Name, use DefaultFileName parameter instead of PathPrepend.

Category	Value
Syntax	`PathPrepend [PROTOCOL]://[HOSTNAME]:{PORT}/{PATH}/{FILENAME};{PATH_PARAMS}/{QUERY_STRING]`
Example	`PathPrepend http://myHost:1234/myPath/myfile;`
Default	null

E.7.16 PathTrim

PathTrim specifies the string trimmed by the plug-in from the {PATH}/{FILENAME} portion of the original URL, before the request is forwarded to WebLogic Server. For example, if this URL:

http://myWeb.server.com/weblogic/foo

is passed to the plug-in for parsing and if PathTrim has been set to strip off /weblogic before handing the URL to WebLogic Server, the URL forwarded to WebLogic Server is:

http://myWeb.server.com:7001/foo

Note that if you are newly converting an existing third-party server to proxy requests to WebLogic Server using the plug-in, you will need to change application paths to /foo to include weblogic/foo. You can use PathTrim and PathPrepend in combination to change this path.

Category	Value
Syntax	`PathTrim [PROTOCOL]://[HOSTNAME]:{PORT}/{PATH}/{FILENAME};{PATH_PARAMS}/{QUERY_STRING}`
Example	`PathTrim http://myWeb.server.com/weblogic/foo`
Default	null

E.7.17 QueryFromRequest

When set to ON, specifies that the Apache HTTP Server use

```
(request_rec *)r->the_ request
```

to pass the query string to WebLogic Server. (For more information, see the Apache documentation.) This behavior is useful when a Netscape version 4.x browser makes requests that contain spaces in the query string.

When set to OFF, the Apache HTTP Server uses (request_rec *)r->args to pass the query string to WebLogic Server.

Category	Value
Syntax	`QueryFromRequest ON | OFF`
Example	`QueryFromRequest ON`
Default	OFF

E.7.18 WebLogicCluster

Specifies the list of WebLogic Servers that can be used for load balancing. The server or cluster list is a list of host:port entries. If a mixed set of clusters and single servers is specified, the dynamic list returned for this parameter will return only the clustered servers. This derivative is required to proxy a list of clustered back-end servers or to perform load balancing among non-clustered managed server instances.

If you are using SSL between the plug-in and WebLogic Server, set the port number to the SSL listen port and set the SecureProxy parameter to ON.

The plug-in does a simple round-robin between all available servers. The server list specified in this property is a starting point for the dynamic server list that the server and plug-in maintain. WebLogic Server and the plug-in work together to update the server list automatically with new, failed, and recovered cluster members.

You can disable the use of the dynamic cluster list by setting the DynamicServerList parameter to OFF.

The plug-in directs HTTP requests containing a cookie, URL-encoded session, or a session stored in the POST data to the server in the cluster that originally created the cookie.

Category	Value
Syntax	The syntax for specifying the value of this parameter varies depending on the web server for which you are configuring the plug-in, as described in *Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*. For more information, see the following: ■ Chapter 2, "Configuring the mod_wl_ohs Plug-In for Oracle HTTP Server" ■ Chapter 3, "Installing and Configuring the Oracle iPlanet Web Server Plug-In" ■ Chapter 4, "Installing and Configuring the Apache HTTP Server Plug-In" ■ Chapter 5, "Installing and Configuring the Microsoft IIS Plug-In"
Example	`WebLogicCluster w1s1.com:7001,w1s2.com:7001,w1s3.com:7001`
Default	none

E.7.19 WebLogicHost

Specifies the WebLogic Server host (or virtual host name as defined in WebLogic Server) to which HTTP requests should be forwarded. If you are using a WebLogic cluster, use the WebLogicCluster parameter instead of WebLogicHost. This directive is required when proxying to a single WebLogic Server.

Category	Value
Syntax	`WebLogicHost` *`hostname`*
Example	`WebLogicHost myHost`
Default	none

E.7.20 WebLogicPort

Specifies the port at which the WebLogic Server host is listening for connection requests from the plug-in (or from other servers). This directive is required when proxying to a single WebLogic Server.

- If you are using SSL between the plug-in and WebLogic Server, set this parameter to the SSL listen port and set the SecureProxy parameter to ON.
- If you are using a WebLogic Cluster, use the WebLogicCluster parameter instead of WebLogicPort.

Category	Value
Syntax	`WebLogicPort` *portNo*
Example	`WebLogicPort 1234`
Default	none

E.7.21 WebLogicSSLVersion

Note: Because of security concerns, the SSLv3 security protocol is disabled out-of-the-box in the Oracle HTTP Server 11.1.1.9 release. The SSLv2 and SSLV3 protocols are no longer supported by Oracle HTTP Server.

If you are upgrading from an earlier release of Oracle HTTP Server, the SSLv3 and/or SSLv2 security protocol might be a part of your configuration. Oracle strongly recommends that you disable any SSLv3 or SSLv2 configuration from Oracle HTTP Server. See Section 8.9, "Disable SSLv2 and SSLv3 Security Protocols."

Selects the SSL protocol version to use for communication between the plug-in and the WebLogic Server. The following values are accepted:

- TLSv1
- TLSv1.1
- TLSv1.2

You can specify multiple values as a space-delimited list.

The SSL protocol version chosen is used for all the connections from the plug-in to WebLogic Server. Hence define this parameter at the global scope.

In the current release, you can specify the value for this directive using OpenSSL format. The `nzos*` formats have been deprecated and their use should be avoided.

Protocol Name	OpenSSL Format	nzos* Format (Deprecated)
TLS version 1.0	TLSv1	nzos_Version_1_0
TLS version 1.1	TLSv1.1	nzos_Version_1_1
TLS version 1.2	TLSv1.2	nzos_Version_1_2

Category	Value
Syntax	`WebLogicSSLVersion` *versionNumber*
Example	`WebLogicSSLVersion TLSv1 TLSv1.1`
Default	If not configured, the best protocol supported by both the plug-in and WebLogic Server is used.

E.7.22 WLCookieName

Note: WLCookieName replaces CookieName, which is deprecated.

If you change the name of the WebLogic Server session cookie in the WebLogic Server Web application, then you must change this parameter in the plug-in to the same value. The name of the WebLogic session cookie is set in the WebLogic-specific deployment descriptor, in the `<session-descriptor>` element.

Category	Value
Syntax	`WLCookieName` *`cookieName`*
Example	WLCookieName
Default	JSESSIONID

E.7.23 WLDNSRefreshInterval

If defined in the proxy configuration, this directive specifies the interval duration, in seconds, at which WebLogic Server refreshes DNS name to IP mapping for a server. This can be used in the event that a WebLogic Server instance is migrated to a different IP address, but the DNS name for that server's IP remains the same. In this case, at the specified refresh interval the bi-directional DNS-to-IP mapping will be updated.

Category	Value
Syntax	`WLDNSRefreshInterval` *`nn`*
Example	WLDNSRefreshInterval 10
Default	Lookup once, during startup

E.7.24 WLExcludePathOrMimeType

This parameter allows you exclude certain requests from proxying.

This parameter can be defined locally at the Location tag level as well as globally. When the property is defined locally, it does not override the global property but defines a union of the two parameters.

Category	Value
Syntax	`WLExcludePathOrMimeType` *`value`*
Example	WLExcludePathOrMimeType
Default	none

E.7.25 WLForwardUriUnparsed

When set to ON, the WLS plug-in will forward the original URI from the client to WebLogic Server. When set to OFF (default), the URI sent to WebLogic Server is subject to modification by mod_rewrite or other web server plug-in modules.

Category	Value
Syntax	`WLForwardUriUnparsed ON | OFF`

Category	Value
Example	`WLForwardUriUnparsed ON`
Default	OFF

E.7.26 WLIOTimeoutSecs

Note: WLIOTimeoutSecs is the new name for HungServerRecoverSecs.

Defines the amount of time the plug-in waits for a response to a request from WebLogic Server. The plug-in waits for WLIOTimeoutSecs for the server to respond and then declares that server dead, and fails over to the next server. The value should be set to a very large value. If the value is less than the time the servlets take to process, then you may see unexpected results.

- Minimum value: 10
- Maximum value: Unlimited

Category	Value
Syntax	`WLIOTimeoutSecs` *nn*
Example	`WLIOTimeoutSecs 128`
Default	300

E.7.27 WLLocalIP

Defines the IP address (on the plug-in's system) to which to bind when the plug-in connects to a WebLogic Server instance running on a multihomed machine.

If WLLocalIP is not set, the TCP/IP stack will choose the source IP address.

Category	Value
Syntax	`WLLocalIP` *ipAddress*
Example	`WLLocalIP 1001.1111.1234.4567`
Default	none

E.7.28 WLLogFile

Specifies path and file name for the log file that is generated when the Debug parameter is set to ON. You must create this directory before setting this parameter.

Category	Value
Syntax	`WLLogFile` *path/to/file.ext*
Example	`WLLogFile http://myFolder/mySubfolder/myLogfile.log`
Default	

E.7.29 WLProxyPassThrough

If you have a chained proxy setup, where a proxy plug-in or HttpClusterServlet is running behind some other proxy or load balancer, you must explicitly enable the WLProxyPassThrough parameter. This parameter allows the header to be passed through the chain of proxies.

Category	Value
Syntax	`WLProxyPassThrough ON | OFF`
Example	*`WLProxyPassThrough ON`*
Default	OFF

E.7.30 WLProxySSL

Specifies whether or not to maintain SSL communication between the plug-in and WebLogic Server when the following conditions exist:

- An HTTP client request specifies the HTTPS protocol.
- The request is passed through one or more proxy servers (including the WebLogic Server proxy plug-ins).
- The connection between the plug-in and WebLogic Server uses the HTTP protocol.
- When WLProxySSL is set to ON, the location header returned to the client from WebLogic Server specifies the HTTPS protocol.

Category	Value
Syntax	`WLProxySSL ON | OFF`
Example	`WLProxySSL ON`
Default	OFF

E.7.31 WLProxySSLPassThrough

If a load balancer or other software deployed in front of the web server and plug-in is the SSL termination point, and that product sets the WL-Proxy-SSL request header to true or false based on whether or not the client connected to it over SSL, set WLProxySSLPassThrough to ON so that the use of SSL is passed on to the Oracle WebLogic Server.

If the SSL termination point is in the web server where the plug-in operates, or the load balancer does not set WL-Proxy-SSL, set WLProxySSLPassThrough to OFF (default).

Category	Value
Syntax	`WLProxySSLPassThrough ON | OFF`
Example	`WLProxySSLPassThrough ON`
Default	OFF

E.7.32 WLServerInitiatedFailover

Specifies whether or not a 503 error response from Oracle WebLogic Server triggers a failover to another server. Normally, the plug-in will attempt to failover to another

server when a 503 error response is received. When WLServerInitiatedFailover is set to OFF, the 503 error response will be returned to the client immediately.

Category	Value
Syntax	`WLServerInitiatedFailover ON | OFF`
Example	`WLServerInitiatedFailover OFF`
Default	ON

E.7.33 WLSocketTimeoutSecs

Sets the timeout, in seconds, for the socket while connecting. See ConnectTimeoutSecs and ConnectRetrySecs for additional details. This value must be greater than 0

Category	Value
Syntax	`WLSocketTimeoutSecs` *nn*
Example	`WLSocketTimeoutSecs 10`
Default	2

E.7.34 WLSRequest

This is an alternative to the SetHandler weblogic-handler mechanism of identifying requests to be forwarded to Oracle WebLogic Server. For example,

```
<Location /weblogic>
 WLSRequest ON
 PathTrim /weblogic
</Location>
```

The use of WLSRequest ON instead of SetHandler weblogic-handler has the following advantages:

- Lower web server processing overhead in general
- Resolves substantial performance degradation when the web server DocumentRoot is on a slow file system
- Resolves 403 errors for URIs which cannot be mapped to the file system due to the file system length restrictions

Category	Value
Syntax	`WLSRequest ON | OFF`
Example	`WLSRequest ON`
Default	OFF

E.7.35 WLTempDir

Specifies:

- The directory where a wlproxy.log will be created. If the location fails, the Plug-In resorts to creating the log file under C:/temp in Windows and /tmp in all Unix platforms.
- The location of the _wl_proxy directory for POST data files.

When both WLTempDir and WLLogFile are set, WLLogFile will override as to the location of wlproxy.log. WLTempDir will still determine the location of _wl_proxy directory.

Category	Value
Syntax	`WLTempDir` *`dirNamee`*
Example	`WLTempDir MyLogDir`
Default	See the Debug parameter.

Glossary

Apache

Apache HTTP Server is an open source web server originally derived from the National Center for Supercomputing Applications (NCSA).

authentication

The process of verifying the identity of a user, device, or other entity in a host system, often as a prerequisite to granting access to resources in a system. A recipient of an authenticated message can be certain of the message's origin (its sender). Authentication is presumed to preclude the possibility that another party has impersonated the sender.

availability

The percentage or amount of scheduled time that a computing system provides application service.

certificate

Also called a **digital certificate**. An ITU x.509 v3 standard data structure that securely binds an identity to a public key.

A certificate is created when an entity's public key is signed by a trusted identity, a **certificate authority** The certificate ensures that the entity's information is correct and that the public key actually belongs to that entity.

A certificate contains the entity's name, identifying information, and public key. It is also likely to contain a serial number, expiration date, and information about the rights, uses, and privileges associated with the certificate. It also contains information about the certificate authority that issued it.

certificate authority

A trusted third party that certifies that other entities—users, databases, administrators, clients, servers—are who they say they are. When it certifies a user, the certificate authority first seeks verification that the user is not on the certificate revocation list (CRL), then verifies the user's identity and grants a certificate, signing it with the certificate authority's private key. The certificate authority has its own certificate and public key which it publishes. Servers and clients use these to verify signatures the certificate authority has made. A certificate authority might be an external company that offers certificate services, or an internal organization such as a corporate MIS department.

CGI

Common Gateway Interface (CGI) is the industry-standard technique for transferring information between a Web server and any program designed to accept and return data that conforms to the CGI specifications.

ciphertext

Data that has been encrypted. Ciphertext is unreadable until it has been converted to plain text (decrypted) with a key. See **decryption**.

cleartext

See **plaintext**.

cryptography

The art of protecting information by transforming it (encrypting) into an unreadable format. See **encryption**.

DAD

See **database access descriptor**.

database access descriptor

A database access descriptor (DAD) is a set of values that specify how an application connects to an Oracle database to fulfill an HTTP request. The information in the DAD includes the username (which also specifies the schema and the privileges), password, connect-string, error log file, standard error message, and national language support (NLS) parameters such as NLS language, NLS date format, NLS date language, and NLS currency.

decryption

The process of converting the contents of an encrypted message (**ciphertext**) back into its original readable format (**plaintext**).

digital certificate

See **certificate**.

digital wallet

See **wallet**.

encryption

The process of converting a message thereby rendering it unreadable to any but the intended recipient. Encryption is performed by converting data into code that cannot be understood by unauthorized people or systems. There are two main types of encryption: **public-key encryption** (also known as asymmetric-key encryption) and symmetric-key encryption.

entry

In the context of a directory service, entries are the building blocks of a directory. An entry is a collection of information about an object in the directory. Each entry is composed of a set of attributes that describe one particular trait of the object. For example, if a directory entry describes a person, that entry can have attributes such as first name, last name, telephone number, or e-mail address.

failover

The ability to reconfigure a computing system to utilize an alternate active component when a similar component fails.

Fusion Middleware Control

See **Oracle Enterprise Manager Fusion Middleware Control**.

HTTP

See **Hypertext Transfer Protocol**.

Hypertext Transfer Protocol

Hypertext Transfer Protocol (HTTP) is the underlying format used by the Web to format and transmit messages and determine what actions Web servers and browsers should take in response to various commands. HTTP is the protocol used between Oracle Fusion Middleware and clients.

LDAP

See **Lightweight Directory Access Protocol**.

Lightweight Directory Access Protocol

A standard, extensible directory access protocol. It is a common language that LDAP clients and servers use to communicate. The framework of design conventions supporting industry-standard directory products, such as the Oracle Internet Directory.

modules

Modules extend the basic functionality of a Web server, and support integration between Oracle HTTP Server and other Oracle Fusion Middleware components.

Oracle Enterprise Manager Fusion Middleware Control

Oracle Enterprise Manager Fusion Middleware Control (Fusion Middleware Control) provides Web-based management tools designed specifically for Oracle Fusion Middleware. Using Fusion Middleware Control, you can monitor and configure the components of your application server, such as deploy applications, manage security, and create and manage Oracle Fusion Middleware clusters.

PEM

Privacy-enhanced Electronic Mail. An **encryption** technique that provides encryption, authentication, message integrity, and key management.

PL/SQL

PL/SQL is the Oracle proprietary extension to the SQL language. PL/SQL adds procedural and other constructs to SQL that make it suitable for writing applications.

plaintext

Also called cleartext. Unencrypted data in ASCII format.

plug-in

A module that adds a specific feature or service to a larger system. For example, Oracle WebLogic Server Proxy Plug-In or Oracle SSO Plug-in.

port

A port is a number that TCP uses to route transmitted data to and from a particular program.

private key

In **public-key cryptography**, this key is the secret key. It is primarily used for decryption but is also used for encryption with digital signatures. See **public/private key pair**.

proxy server

A proxy server typically resides on a network firewall and allows clients behind the firewall to access Web resources. All requests from clients go to the proxy server rather than directly to the destination server. The proxy server forwards the request to the destination server and passes the received information back to the client. The proxy server channels all Web traffic at a site through a single, secure port; this allows an organization to create a secure firewall by preventing Internet access to internal systems, while allowing Web access.

public key

In **public-key cryptography**, this key is made public to all. It is primarily used for encryption but can be used for verifying signatures. See **public/private key pair**.

public-key cryptography

Encryption method that uses two different random numbers (keys). See **public key** and **public-key encryption**.

public-key encryption

The process where the sender of a message encrypts the message with the public key of the recipient. Upon delivery, the message is decrypted by the recipient using its private key.

public/private key pair

A set of two numbers used for **encryption** and **decryption**, where one is called the **private key** and the other is called the **public key**. Public keys are typically made widely available, while private keys are held by their respective owners. Though mathematically related, it is generally viewed as computationally infeasible to derive the private key from the public key. Public and private keys are used only with asymmetric encryption algorithms, also called **public-key encryption** algorithms, or public-key cryptosystems. Data encrypted with either a public key or a private key from a key pair can be decrypted with its associated key from the key-pair. However, data encrypted with a public key cannot be decrypted with the same public key, and data encrypted with a private key cannot be decrypted with the same private key.

RSA

A **public-key encryption** technology developed by RSA Data Security. The RSA algorithm is based on the fact that it is laborious to factor very large numbers. This makes it mathematically unfeasible, because of the computing power and time required to decode an RSA key.

scalability

A measure of how well the software or hardware product is able to adapt to future business needs.

Secure Sockets Layer

Secure Sockets Layer (SSL) is a standard for the secure transmission of documents over the Internet using HTTPS (secure HTTP). SSL uses digital signatures to ensure that transmitted data is not tampered with.

single sign-on

Single sign-on enables a you to authenticate once, combined with strong authentication occurring transparently in subsequent connections to other databases or applications. It lets you access multiple accounts and applications with a single password, entered during a single connection.

SSL

See **Secure Sockets Layer**.

wallet

Also called a digital wallet. A wallet is a data structure used to store and manage security credentials for an individual entity. It implements the storage and retrieval of credentials for use with various cryptographic services. A **Wallet Resource Locator** (WRL) provides the necessary information to locate the wallet.

Wallet Resource Locator

A wallet resource locator (WRL) provides all necessary information to locate a wallet. It is a path to an operating system directory that contains a wallet.

WRL

See **Wallet Resource Locator**.

X.509

A standard for creating digital certificates.

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