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Process Management Suite

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Preface

Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite describes how to administer the components of Oracle SOA Suite and Oracle Business Process Management Suite, including:

- The SOA Infrastructure and SOA composite applications
- Composite components and service engines such as the BPEL service engine, BPMN Process service engine, Oracle Mediator service engine, human workflow service engine, and business rules service engine
- Oracle B2B, Oracle Adapters, Oracle Business Activity Monitoring, and Oracle User Messaging Service

Audience

This document is intended for administrators managing applications on an SOA platform.

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Related Documents

For more information, see the following Oracle resources:

- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*
- *Oracle Fusion Middleware User's Guide for Oracle B2B*
- *Oracle Fusion Middleware User's Guide for Oracle Business Activity Monitoring*
- *Oracle Fusion Middleware User's Guide for Technology Adapters*
- *Oracle Fusion Middleware User's Guide for Oracle Business Rules*
- *Oracle Fusion Middleware Language Reference Guide for Oracle Business Rules*
- *Oracle Fusion Middleware Modeling and Implementation Guide for Oracle Business Process Management*
- *Oracle BPEL Process Manager User's Guide*
- *Oracle Fusion Middleware Business Process Composer User's Guide for Oracle Business Process Management*

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.
<i>italic</i>	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 SOA Suite and Oracle Business Process Management Suite

This part describes Oracle SOA Suite and Oracle Business Process Management Suite.

This part includes the following chapter:

- [Chapter 1, "Introduction and Concepts"](#)

Introduction and Concepts

This chapter provides a brief introduction to Oracle Fusion Middleware, Oracle Service-Oriented Architecture (SOA) Suite, Oracle Business Process Management (BPM) Suite, and administration of Oracle SOA and BPM Suites from Oracle Enterprise Manager Fusion Middleware Control Console.

This chapter includes the following topics:

- [Section 1.1, "What Is Oracle Fusion Middleware?"](#)
- [Section 1.2, "What Is Oracle SOA Suite?"](#)
- [Section 1.3, "What Is Oracle Business Process Management Suite?"](#)
- [Section 1.4, "Administration of Oracle SOA Suite and Oracle BPM Suite"](#)

For more information about Oracle Enterprise Manager Fusion Middleware Control Console administrative tasks and Oracle Fusion Middleware concepts, see the following documents:

- *Oracle Fusion Middleware Administrator's Guide*
- *Oracle Fusion Middleware 2 Day Administration Guide*
- *Oracle Fusion Middleware Concepts*

1.1 What Is Oracle Fusion Middleware?

Oracle Fusion Middleware is a collection of standards-based software products that spans a range of tools and services: from Java EE and developer tools, to integration services, business intelligence, and collaboration. Oracle Fusion Middleware offers complete support for development, deployment, and management of applications.

1.2 What Is Oracle SOA Suite?

Oracle SOA Suite is a middleware component of Oracle Fusion Middleware. Oracle SOA Suite provides a complete set of service infrastructure components for designing, deploying, and managing SOA composite applications. Oracle SOA Suite enables services to be created, managed, and orchestrated into SOA composite applications. Composites enable you to easily assemble multiple technology components into one SOA composite application. Oracle SOA Suite plugs into heterogeneous IT infrastructures and enables enterprises to incrementally adopt SOA.

You can administer Oracle SOA Suite from Oracle Enterprise Manager Fusion Middleware Control Console. The following sections provide an overview of the components of Oracle SOA Suite:

- [Section 1.2.1, "Understanding the SOA Infrastructure Application"](#)
- [Section 1.2.2, "Understanding SOA Composite Applications"](#)
- [Section 1.2.3, "Understanding SOA Composite Application Instances"](#)
- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.5, "Understanding Binding Components"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)
- [Section 1.2.7, "Understanding the Service Infrastructure"](#)
- [Section 1.2.8, "Understanding the Contents of SOA Composite Applications"](#)

For introductory information about Oracle SOA Suite, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

1.2.1 Understanding the SOA Infrastructure Application

The SOA Infrastructure is a Java EE-compliant application running in Oracle WebLogic Server. The application manages composites and their life cycle, service engines, and binding components.

You deploy SOA composite applications designed in Oracle JDeveloper to a partition of your choice on the SOA Infrastructure. Partitions are separate sections of your SOA Infrastructure that enable you to logically group the composite applications for ease of management.

In the example shown in [Figure 1-1](#), many SOA composite applications are deployed to the SOA Infrastructure and are visible in Oracle Enterprise Manager Fusion Middleware Control Console.

From the SOA Infrastructure home page, you can perform administration tasks such as monitoring SOA composite applications, monitoring individual composite instances, and updating the state of SOA composite applications and individual composite instances. You can also perform corrective actions such as fault recovery.

Figure 1–1 SOA Composite Applications Deployed in the SOA Infrastructure

The following SOA composite revisions are currently deployed. To deploy a new composite revision, click Deploy. To perform additional tasks, select a composite and click the appropriate button.

Show only active composites

Search Composite

View	Start Up...	Activate ...	Set As Default ...	Deploy...	Undeploy...	Redeploy...			
Composite	Partition	Status	Mode	Instances	Faulted Instances	Last Modified Date			
Direct_Binding_Same [1.0]	default	↑	Active	1	0	Feb 17, 2010 11:25:11 PM			
HTTPProject [1.0]	default	↑	Active	0	0	Feb 17, 2010 9:58:29 PM			
✘ FaultFlow [1.0]	testPartition	↑	Active	0	0	Feb 17, 2010 8:13:21 PM			
POApprovalEventPublisher [1.0]	default	↑	Active	1	0	Feb 16, 2010 11:33:31 PM			
POApprovalEventSubscriber [1.0]	default	↑	Active	2	0	Feb 16, 2010 11:25:41 PM			
Pick_Prj1 [1.0]	default	↑	Active	1	0	Feb 15, 2010 2:49:30 AM			
SyncBPEL [1.1]	default	↑	Active	1	0	Feb 11, 2010 2:13:05 AM			
FODOrderProcessingComposite [20.0]	default	↑	Active	2	0	Feb 11, 2010 2:12:10 AM			
Assign2.0 [10.0]	default	↑	Active	81	0	Feb 10, 2010 5:36:59 PM			
RT_compensateScope_P_01 [1.0]	default	↑	Active	1	0	Feb 10, 2010 5:17:07 PM			
✘ TestEvent2.0 [1.0]	default	↑	Active	1	0	Feb 10, 2010 5:19:59 AM			
EvtntHdr2.0 [1.0]	default	↑	Active	1	0	Feb 10, 2010 5:19:11 AM			

You can click a specific SOA composite application in the **Composite** table to access its home page. Figure 1–2 shows the upper part of the home page for a SOA composite application. From the SOA composite application home page, you can perform administration tasks such as monitoring instances, recovering from faults, managing the state of application instances, and attaching policies. You can also perform a limited number of configuration tasks at the SOA composite application level, such as specifying the composite audit level and payload validation. These tasks are displayed as buttons at the top of the page.

Figure 1–2 SOA Composite Application Home Page (Upper Part)

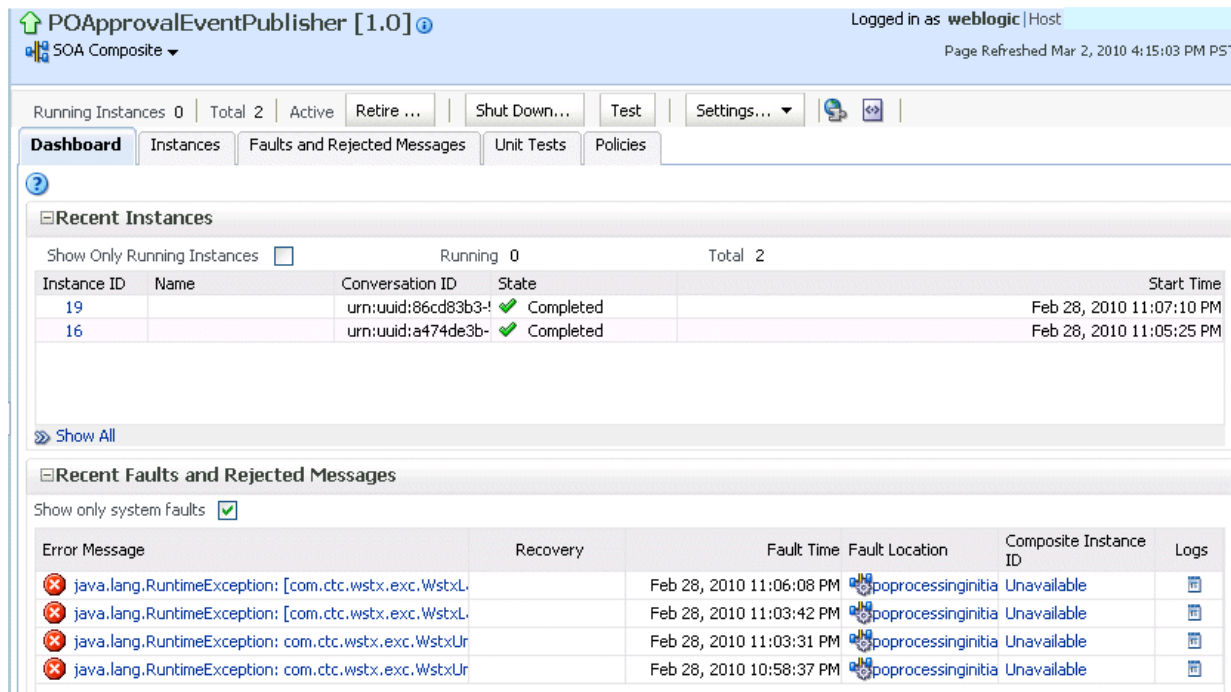
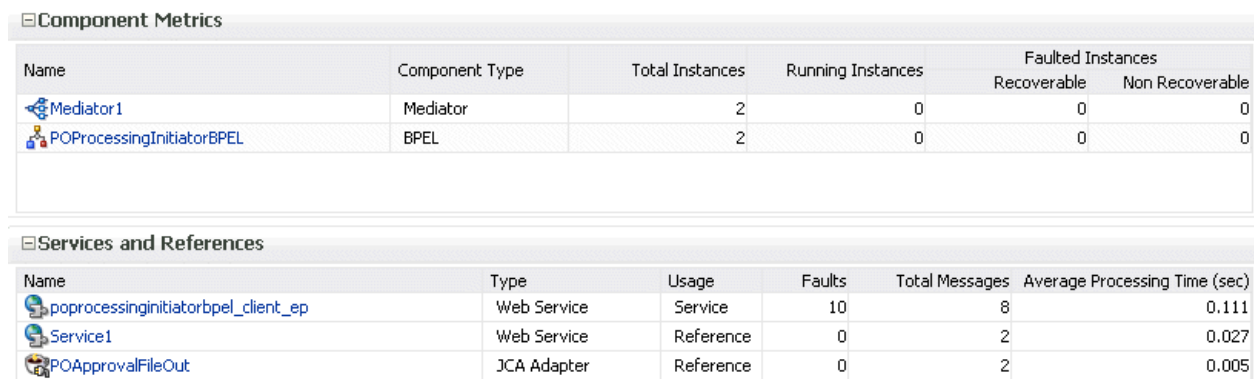


Figure 1–3 shows the lower part of the home page for this SOA composite application. The service components and service and reference binding components included in the composite are shown.

Figure 1–3 SOA Composite Application Home Page (Lower Part)



For more information, see the following sections:

- [Section 1.2.2, "Understanding SOA Composite Applications"](#)
- [Part III, "Administering the SOA Infrastructure"](#)

1.2.2 Understanding SOA Composite Applications

SOA composite applications such as those shown in the Deployed Composites page in Figure 1–1 consist of the following:

- Service components such as Oracle Mediator for routing, BPEL processes for orchestration, BPMN processes for orchestration (if Oracle BPM Suite is also installed), human tasks for workflow approvals, spring for integrating Java

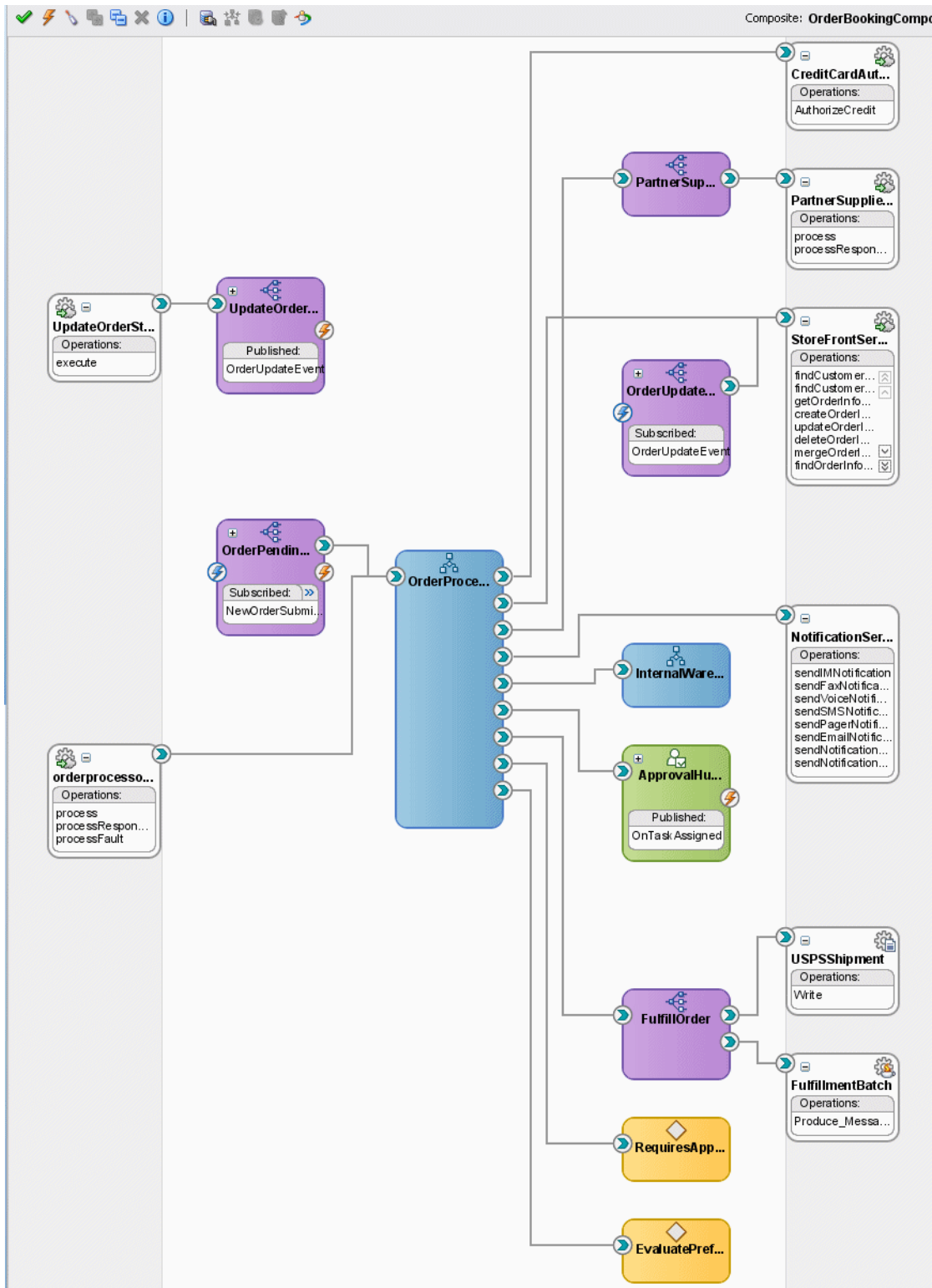
interfaces into SOA composite applications, and decision services for working with business rules

- Binding components (services and references) for connecting SOA composite applications to external services, applications, and technologies

These components are assembled into a single SOA composite application. Having the components assembled into one unit of deployment (the application) greatly simplifies the management and life cycle of SOA applications.

[Figure 1–4](#) provides an example of a SOA composite application in the SOA Composite Editor in Oracle JDeveloper. Service binding components (such as **orderprocessor_client_ep**) advertise their capabilities to external consumers. The service exposes a public interface of the SOA composite application (**OrderBookingComposite**) consisting of BPEL process, Oracle Mediator, human task, and decision service components. A wire connects the service to a specific component or reference in the composite. Reference binding components (such as **CreditCardAuthorizationService** and **PartnerSupplierService**) enable messages to be sent from the SOA composite application to external services. The service binding components, service components, and reference binding components are wired (connected) for communication.

Figure 1-4 SOA Composite Application



The service components and binding components included in a SOA composite application appear in the lower part of an application home page, as shown in Figure 1-3 and Figure 1-5. The example in Figure 1-5 shows two service components in the **Component Metrics** section and three binding components in the **Services and**

References section. You can click a specific service component or binding component to access its home page.

Figure 1–5 Service Components and Binding Components of a SOA Composite Application

Component Metrics						
Name	Component Type	Total Instances	Running Instances	Faulted Instances		
				Recoverable	Non Recoverable	
Mediator1	Mediator	2	0	0	0	
POProcessingInitiatorBPEL	BPEL	2	0	0	0	

Services and References						
Name	Type	Usage	Faults	Total Messages	Average Processing Time (sec)	
poprocessinginitiatorbpel_client_ep	Web Service	Service	10	8	0.111	
Service1	Web Service	Reference	0	2	0.027	
POApprovalFileOut	JCA Adapter	Reference	0	2	0.005	

For more information, see the following documentation:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.5, "Understanding Binding Components"](#)
- [Part IV, "Administering SOA Composite Applications"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

1.2.3 Understanding SOA Composite Application Instances

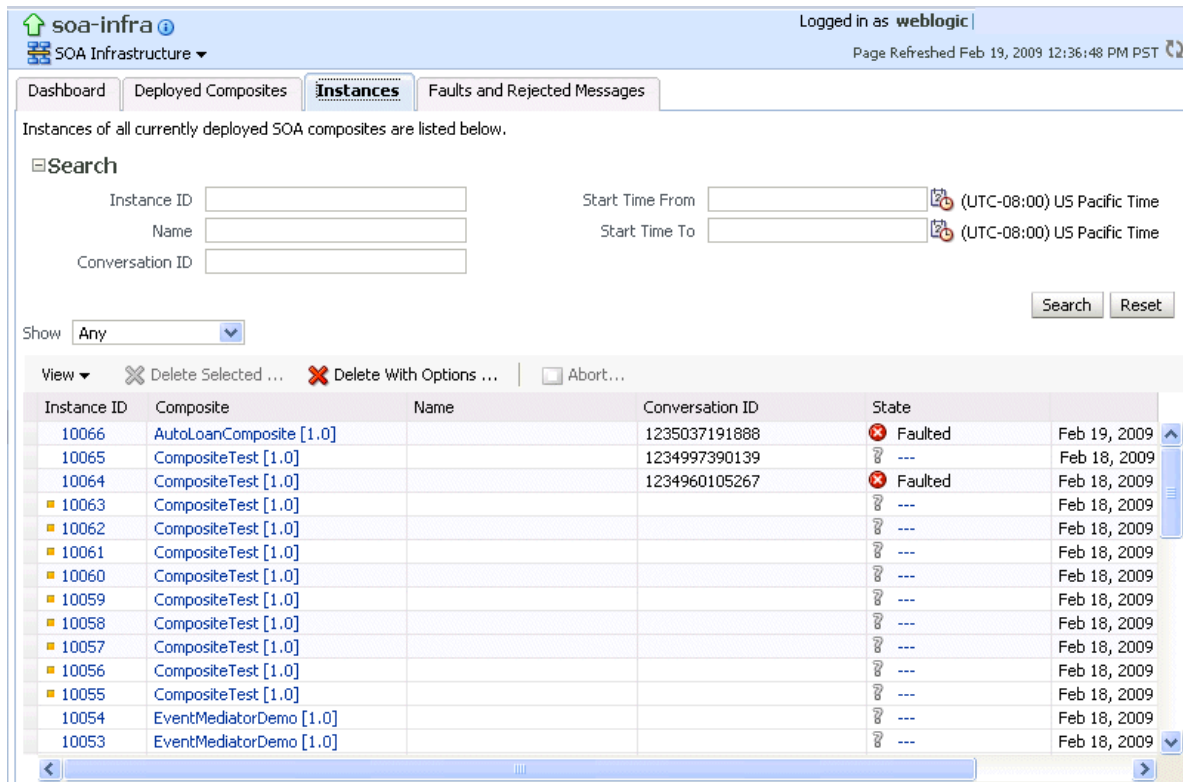
When a SOA composite application is invoked, a new composite instance is created. This instance is identified by a unique instance ID that displays in pages of Oracle Enterprise Manager Fusion Middleware Control Console. For example, [Figure 1–6](#) shows instance IDs displaying for the **AutoLoanComposite**, **CompositeTest**, and **EventMediatorDemo** SOA composite applications in the Instances page of the SOA Infrastructure. You can click these IDs to access more specific details about the state of SOA composite application instances. From the Instances page, you can also monitor the state of SOA composite application instances.

Instances that you create as unit tests from the Test Runs page are distinguished from those created automatically or created manually from the Test Web Service page by a little yellow box. This box displays to the left of the instance ID, as shown in [Figure 1–6](#). This box is visible in both the Instances page and in the **Recent Instances** table of the Dashboard page of the SOA Infrastructure and SOA composite application.

For some SOA composite applications, conversation IDs are also generated. Conversation IDs provide another method for distinctly identifying a set of generated instances. As shown in [Figure 1–6](#), conversation IDs do not automatically display for all instances. To see a conversation ID generated, perform one of the following tasks:

- Programmatically invoke the service and pass a unique ID through a WS-Addressing header (`messageId`).
- Create an instance using the Test Web Service page. The only exception to this is when the **Enable Stress Test** check box of the **Additional Test Options** section on the Test Web Service page is selected. In that case, a conversation ID is not created for the instance.

Figure 1–6 SOA Composite Application Instance IDs



For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Part IV, "Administering SOA Composite Applications"](#)
- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)

1.2.4 Understanding Service Components and Service Component Instances

SOA composite applications include service components. Service components are the basic building blocks of SOA composite applications. Service components implement a part of the overall business logic of the SOA composite application.

The following service components can be used in a SOA composite application:

- BPEL process — For process orchestration of synchronous and asynchronous processes
- BPMN process (if Oracle BPM Suite is installed) — For creating and modeling business processes using Business Process Management Notation and Modeling (BPMN)
- Oracle Mediator — For content transformation and routing events (messages) between service producers and consumers
- Human task — For modeling a human task (for example, manual order approval) that describes the tasks for users or groups to perform as part of an end-to-end business process flow
- Spring — For integrating Java interfaces into SOA composite applications

- Decision service — For making a decision or for processing based on business rules

From the service component home page in Oracle Enterprise Manager Fusion Middleware Control Console, you can perform administration tasks such as monitoring instances, recovering from faults, and attaching policies.

As described in [Section 1.2.3, "Understanding SOA Composite Application Instances,"](#) each application instance has its own instance ID. Each service component instance included in a SOA composite application instance also has its own instance ID that displays in Oracle Enterprise Manager Fusion Middleware Control Console.

[Figure 1-7](#) shows an instance ID (**workflow:200000**) displaying in the **Instance ID** column for the **VacationRequestTask** human task service component of the **VacationRequest** SOA composite application. You can monitor the state of that service component instance from the Instances page. You can also click this instance to access more specific details about the service component.

Figure 1-7 Service Component Instance IDs

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control Console interface for the **VacationRequestTask** service component. The page is titled "VacationRequestTask (Human Workflow Component)" and includes a search form and a table of instances.

Search Form:

- Instance ID:
- Start Time From: (UTC-08:00) US Pacific Time
- Start Time To: (UTC-08:00) US Pacific Time
- Modified Date From: (UTC-08:00) US Pacific Time
- Modified Date to: (UTC-08:00) US Pacific Time
- State:

Table:

Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200000	Completed	Feb 21, 2009 2:18:26 AM	Feb 21, 2009 2:18:26 AM	Logs

Note: Starting with this release, Oracle SOA Suite provides support for the spring service component. Note the following details about spring support in Oracle Enterprise Manager Fusion Middleware Control Console:

- There are no spring service engine management pages.
- A spring composite is displayed in the flow trace, but there is no audit trail for it.
- Spring composite metrics are shown in the composite application home page (for example, in the **Component Metrics** section of the Dashboard page).

For more information about administering service components, see the following sections:

- [Part V, "Administering BPEL Process Service Components and Engines"](#)
- [Part VI, "Administering Oracle Mediator Service Components and Engines"](#)
- [Part VII, "Administering Decision Service Components and Business Rules Service Engines"](#)

- [Part VIII, "Administering Human Task Service Components and Human Workflow Service Engines"](#)
- [Part XV, "Administering Oracle BPMN Process Service Components and Engines"](#)

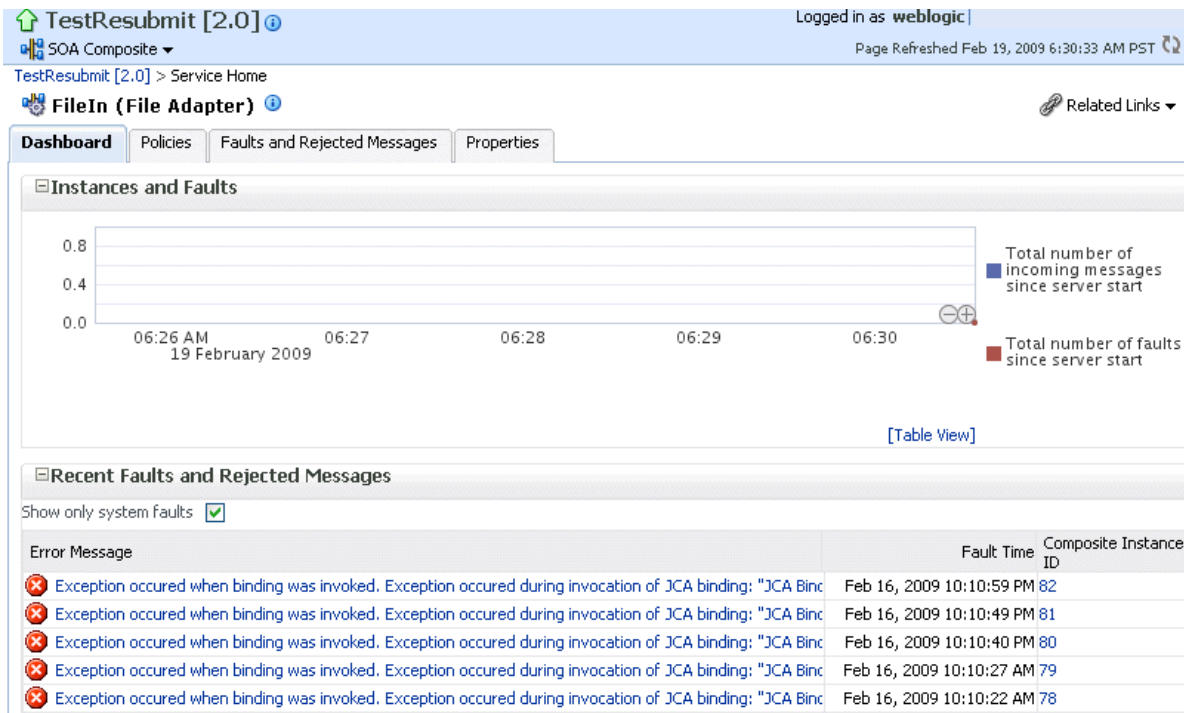
1.2.5 Understanding Binding Components

Binding components connect SOA composite applications to external services, applications, and technologies (such as messaging systems or databases). Binding components are organized into two groups:

- **Services** — Provide the outside world with an entry point to the SOA composite application. The WSDL file of the service advertises its capabilities to external applications. The service bindings define how a SOA composite service can be invoked (for example, through SOAP).
- **References** — Enable messages to be sent from the SOA composite application to external services (for example, the same functionality that partner links provide for BPEL processes, but at the higher SOA composite application level).

In Oracle Enterprise Manager Fusion Middleware Control Console, you can perform binding component administration tasks such as attaching policies, monitoring rejected messages, and setting binding component properties. [Figure 1–8](#) shows the home page of a service binding component (in this example, a JCA adapter).

Figure 1–8 Binding Components



For more information, see [Part XIV, "Administering Binding Components"](#).

1.2.6 Understanding Service Engines

The SOA Infrastructure includes a set of service engines (BPEL process, human workflow, decision service, Oracle mediator, and spring) that execute the business logic of their respective components within the SOA composite application (for

example, a BPEL process). If Oracle BPM Suite is installed, the SOA Infrastructure also includes the BPMN process service engine.

Figure 1–9 provides an example in Oracle Enterprise Manager Fusion Middleware Control Console of the BPEL process service engine. In this engine, the **Calling**, **LoanService**, and **CreditRatingService** BPEL process service components run. Note the multiple instance IDs for **LoanService** and **CreditRatingService**. The BPEL process service components are included in two separate SOA composite applications:

- **Calling** is included in the **Calling** SOA composite application.
- **LoanService** and **CreditRatingService** are included in the **CompositeTest** SOA composite application.

However, each BPEL process service component runs in the *same* BPEL process service engine. You can click the links on the page to see more details about each BPEL process service component instance, the service component itself, or the SOA composite application in which it is included.

Figure 1–9 Service Components Running in a Service Engine

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine) Related Links ▾

Dashboard | Statistics | **Instances** | Faults | Deployed Components | Recovery

Search

Instance ID:

Start Time From: (UTC-08:00) US Pacific Time

Start Time To: (UTC-08:00) US Pacific Time

Modified Date From: (UTC-08:00) US Pacific Time

Modified Date To: (UTC-08:00) US Pacific Time

State: ▾

Component:

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpel:49	Calling	Calling [1.0]	Completed	Mar 13, 2009 6:37:36 AM	Mar 13, 2009 6:37:37 AM	Logs
bpel:48	LoanService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:10 AM	Mar 13, 2009 6:36:11 AM	Logs
bpel:47	LoanService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:10 AM	Mar 13, 2009 6:36:10 AM	Logs
bpel:46	CreditRatingService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:09 AM	Mar 13, 2009 6:36:09 AM	Logs
bpel:45	LoanService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:09 AM	Logs
bpel:44	LoanService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:09 AM	Logs
bpel:43	CreditRatingService	CompositeTest [1.0]	Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:08 AM	Logs

In Oracle Enterprise Manager Fusion Middleware Control Console, you can perform service engine administration tasks such as monitoring instances, recovering from faults, manually recovering (BPEL) failed messages, and configuring properties specific to a service engine. These configuration properties impact all service components that execute in the service engine, no matter the SOA composite application in which the service components are included. The service engine pages also include engine-specific statistics and performance metrics.

For more information about administering service engines, see the following sections:

- [Part V, "Administering BPEL Process Service Components and Engines"](#)
- [Part VI, "Administering Oracle Mediator Service Components and Engines"](#)
- [Part VII, "Administering Decision Service Components and Business Rules Service Engines"](#)
- [Part VIII, "Administering Human Task Service Components and Human Workflow Service Engines"](#)
- [Part XV, "Administering Oracle BPMN Process Service Components and Engines"](#)

Note: Oracle Enterprise Manager Fusion Middleware Control Console does not include pages for managing the spring service engine.

1.2.7 Understanding the Service Infrastructure

The service infrastructure provides the internal message transport infrastructure for connecting components and enabling data flow. The service infrastructure is responsible for routing messages along the wire connections between services, service components, and references.

For more information, see the following sections:

- [Section 4.2, "Monitoring Processing Requests"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for details about wiring

1.2.8 Understanding the Contents of SOA Composite Applications

Your SOA composite application can consist of a variety of service components, binding components, and services that you administer from Oracle Enterprise Manager Fusion Middleware Control Console:

- BPEL processes
- BPMN processes (if Oracle BPM Suite is installed)
- Human workflows
- Oracle Mediator
- Decision services (Oracle Business Rules)
- Spring
- JCA Adapters
- HTTP binding
- EJB service
- Direct binding service
- Oracle Application Development Framework (ADF) Business Component service
- Oracle BAM
- Oracle B2B
- Business events
- Oracle User Messaging Service

For conceptual information about these service components, binding components, and services, see *Oracle Fusion Middleware Getting Started with Oracle SOA Suite* and *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

1.3 What Is Oracle Business Process Management Suite?

The Oracle BPM Suite provides an integrated environment for developing, administering, and using business applications centered around business processes.

The Oracle BPM Suite provides the following:

- Enables you to create process models based on standards with user-friendly applications. It enables collaboration between process developers and process analysts. Oracle BPM supports BPMN 2.0 and BPEL from modeling and implementation to run time and monitoring.
- Enables process analysts and process owners to customize business processes and Oracle Business Rules.
- Provides a web-based application for creating business processes, editing Oracle Business Rules, and task customization using predefined components.
- Expands business process management to include flexible, unstructured processes. It adds dynamic tasks and supports approval routing using declarative patterns and rules-driven flow determination.
- Enables collaboration by providing with Process Space, which drives productivity and innovation.
- Unifies different stages of the application development life cycle by addressing end-to-end requirements for developing process-based applications. The Oracle BPM Suite unifies the design, implementation, run time, and monitoring stages based on a service component architecture (SCA) infrastructure. This allows different personas to participate through all stages of the application life cycle.

The Oracle BPM Suite provides a seamless integration of all stages of the application development life cycle from design-time and implementation to runtime and application management.

The Oracle BPM Suite is layered on the Oracle SOA Suite and shares many of the same product components, including:

- Oracle Business Rules
- Human workflow
- Oracle adapter framework for integration

1.4 Administration of Oracle SOA Suite and Oracle BPM Suite

You can perform a variety of Oracle SOA Suite and Oracle BPM Suite administration (configuration, monitoring, and management) tasks from Oracle Enterprise Manager Fusion Middleware Control Console. This section provides an overview of these tasks:

- [Section 1.4.1, "Configuration of Oracle SOA Suite and Oracle BPM Suite"](#)
- [Section 1.4.2, "Monitoring of Oracle SOA Suite and Oracle BPM Suite"](#)
- [Section 1.4.3, "Management of Oracle SOA Suite and Oracle BPM Suite"](#)

The administrative tasks that you can perform are based on the roles to which you are mapped; each role corresponds to a different set of privileges. Certain users can be mapped to simple monitoring privileges (for instance view-only access), while other users can be granted full access, including the ability to update configurations, restart servers, and so on. For more information about roles in Oracle Enterprise Manager Fusion Middleware Control Console, see [Appendix C, "Oracle Enterprise Manager Roles."](#)

1.4.1 Configuration of Oracle SOA Suite and Oracle BPM Suite

You can perform Oracle SOA Suite and Oracle BPM Suite configuration tasks in Oracle Enterprise Manager Fusion Middleware Control Console. Configuration tasks consist

of setting properties such as audit levels and payload validation for your environment. Properties can be set at the following levels:

- SOA Infrastructure (impacting all SOA composite applications)
- Service engines (impacting all service components that execute in the engine, no matter the SOA composite application in which they are included)
- SOA composite application (impacting all service components that are included in that composite application)
- Oracle B2B bindings
- Service and reference binding components message header properties

In terms of order of precedence, inherited SOA composite application property settings (such as audit level settings and payload validation) take the highest precedence, followed by service engine settings, followed by SOA Infrastructure settings. However, most properties do not have this type of precedence to consider.

1.4.1.1 Understanding the Order of Precedence for Audit Level Settings

Audit tracking enables you to select the level of information to be collected by the message tracking infrastructure. Audit level tracking can be set at the following levels:

- BPEL process or BPMN process service component
- SOA composite application
- Service engine
- SOA Infrastructure

If you set audit tracking at multiple levels, it is important to understand which setting takes precedence. [Table 1-1](#) provides examples of the order of precedence for audit level settings.

Table 1-1 Examples of Order of Precedence

Component	Composite	Service Engine	SOA Infrastructure	Which Setting Takes Precedence?
No property	Off	Production	Development	Composite. The audit level is set to Off . The service engine and SOA Infrastructure audit levels do not take effect.
No property	Inherit	Development	Production	Service engine. The audit level is set to Development . The payload is shown in the assign activity. The SOA Infrastructure audit level does not take effect.
No property	Inherit	Inherit	Production	SOA Infrastructure. The audit level is set to Production .
No property	Inherit	Production/ Development /Off/Inherit	Off	The overall audit is not shown. The composite inherits the audit level from the SOA Infrastructure. The payload is shown in the assign activity based on the service engine audit level setting.

Table 1–1 (Cont.) Examples of Order of Precedence

Component	Composite	Service Engine	SOA Infrastructure	Which Setting Takes Precedence?
Development	Off	Production	Development	Composite. Since the composite audit level is set to Off , the overall audit is not shown. The service engine audit level is shown, but the Development setting for the component takes precedence. The payload is shown in the assign activity based on the component audit level setting of Development .
Inherit	Off	Production	Development	Composite. Since the composite audit level is set to Off , the overall audit is not shown. The service engine audit level is not shown because Off is inherited from the composite.

Notes:

- When the composite audit level is set to **Off**, there is no audit trail generated for this composite and all service engines used within the composite.
- When the composite audit level is set to **Inherit**, it always inherits the settings of the SOA Infrastructure.
- When the composite audit level is set to **Off**, the component inherits the service engine settings.

For more information, see the following sections:

- [Chapter 3, "Configuring the SOA Infrastructure"](#)
- [Section 10.1, "Configuring BPEL Process Service Engine Properties"](#)
- [Section 10.2, "Setting the Audit Level at the BPEL Process Service Component Level"](#)
- [Chapter 21, "Configuring Human Workflow Service Components and Engines"](#)
- [Chapter 36, "Configuring Service and Reference Binding Components"](#)
- [Section 39.2, "Configuring BPMN Process Service Engine Properties"](#)

1.4.2 Monitoring of Oracle SOA Suite and Oracle BPM Suite

You can perform Oracle SOA Suite and Oracle BPM Suite monitoring tasks in Oracle Enterprise Manager Fusion Middleware Control Console, including monitoring the following:

- Instances, faults, and rejected messages in the SOA Infrastructure, SOA composite applications, service components, service engines, and service and reference binding components

- Service engine, service infrastructure, and binding component processing request performance
- Service and reference binding component message processing totals and average processing times
- Audit trail and process flow behavior in service components. For BPMN processes, the entire BPMN process flow is displayed, and the path taken by the process instance is highlighted.
- Service engine request and thread states in BPEL processes, BPMN processes, and human workflows

1.4.3 Management of Oracle SOA Suite and Oracle BPM Suite

You can perform Oracle SOA Suite and Oracle BPM Suite management tasks in Oracle Enterprise Manager Fusion Middleware Control Console, including managing the following:

- Startup and shutdown of the SOA Infrastructure application
- Creation and deletion of partitions. Once you create partitions, you can deploy a composite to the appropriate partition. This enables you to logically group SOA composite applications into partitions. This is similar to the concept of domains in the 10.1.x releases of Oracle BPEL Process Manager.
- Composite state (activating, retiring, starting, stopping, and setting the default composite version)
- Deletion and termination (aborting) of composite instances
- Deployment, undeployment, and redeployment actions for SOA composite applications
- Export of a running SOA composite application to a JAR file.
- Manual initiation of SOA composite application test instances from the Test Web Service page
- Recovery from faults in SOA composite applications, service components, service engines, and business events
- Manual recovery of failed messages in BPEL processes
- Automated unit testing of SOA composite applications
- Attachment of policies to SOA composite applications, service components, and binding components
- Incoming and outgoing notification messages in human workflow
- Subscriptions to business events and testing of event publications

The following sections provide a more specific overview of several management tasks:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- [Section 1.4.3.2, "Understanding Policies"](#)
- [Section 1.4.3.3, "Understanding the Life Cycle State of SOA Composite Applications"](#)
- [Section 1.4.3.4, "Understanding SOA Composite Application Automated Testing"](#)
[Section 1.4.3.5, "Understanding Partitioning of the SOA Infrastructure"](#)

Note: Backup and recovery of Oracle SOA Suite is described in *Oracle Fusion Middleware Administrator's Guide*.

1.4.3.1 Understanding Fault Recovery

You can perform fault recovery actions on BPEL process, BPMN process, Oracle Mediator, human workflow, and business event subscription faults (which include database and component subscription faults) identified as recoverable in Oracle Enterprise Manager Fusion Middleware Control Console. The following types of fault recovery are supported:

- Recovery from individual faults, where you have access to the most granular recovery options specific to each type of fault
- Recovery from multiple (bulk) faults, where you select multiple faults for recovery

You can perform individual and bulk recovery actions on recoverable faults at the following levels:

- Faults occurring in all SOA composite applications in the SOA Infrastructure
- Faults occurring in an individual SOA composite application
- Faults occurring in service components
- Faults occurring in service engines
- Faults occurring in business events

You perform fault recovery on faults identified as recoverable in Oracle Enterprise Manager Fusion Middleware Control Console. For BPEL process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. A BPEL component fault can be recovered in only this case. If no fault policy is defined as part of the composite, then a recoverable BPEL process fault is not possible.

You define a fault recovery policy in the `fault-policies.xml` and `fault-bindings.xml` files outside of Oracle Enterprise Manager Fusion Middleware Control Console. These files are packaged with the SOA composite application that you deploy to the SOA Infrastructure and administer in Oracle Enterprise Manager Fusion Middleware Control Console.

Oracle Mediator and human workflow faults do not have the same behavior; they can create recoverable faults without any fault policy. For errors in human task service components or human workflow service engines, you perform fault recovery on faults identified as recoverable from the Oracle BPM Worklist.

The following types of faults can be displayed in Oracle Enterprise Manager Fusion Middleware Control Console:

- Business: Application-specific faults that are generated when there is a problem with the information being processed (for example, a social security number is not found in the database).
- System: Network errors or other types of errors such as a database server or a Web service being unreachable.
- Oracle Web Service Manager (OWSM): Errors on policies attached to SOA composite applications, service components, or binding components. Policies apply security to the delivery of messages.

Faults can also be classified as either of the following:

- Recoverable or nonrecoverable:
Only certain types of faults are identified as recoverable. [Table 1–2](#) provides examples of several recoverable and nonrecoverable faults.
- Rejected Messages:
A fault is classified as a rejected message based on where it occurs. If a fault occurs before entering a SOA composite, without generating a composite instance, it is classified as a rejected message. A system or a policy fault can be identified as a rejected message.

Table 1–2 Faults

Recoverable Faults	Nonrecoverable Faults
<ul style="list-style-type: none"> ■ Business faults and some specific system faults ■ Oracle Mediator input file path and output directory mismatch ■ An Oracle BPM Worklist user is not authorized to perform relevant (expected) actions 	<ul style="list-style-type: none"> ■ Rejected messages ■ Most system faults ■ Non-existent references ■ Service invocation failures ■ Policy faults

For more information on performing fault recovery, see the following sections:

- [Section 8.5, "Recovering from SOA Composite Application Faults at the SOA Infrastructure Level"](#)
- [Section 8.6, "Recovering from SOA Composite Application Faults in the Application Home Page"](#)
- [Section 12.1, "Recovering from BPEL Process Service Component Faults"](#)
- [Section 12.3, "Recovering from BPEL Process Service Engine Faults"](#)
- [Section 15.2, "Managing Mediator Faults"](#)
- [Section 23.2, "Recovering from Human Workflow Service Engine Faults"](#)
- [Section 23.4, "Recovering from Human Task Service Component Faults"](#)
- [Section 35.4, "Recovering from Business Event Faults"](#)
- [Section 41.1, "Recovering from BPMN Process Service Component Faults"](#)
- [Section 41.3, "Recovering from BPMN Process Service Engine Faults"](#)

1.4.3.2 Understanding Policies

You can attach and detach policies at the following levels in Oracle Enterprise Manager Fusion Middleware Control Console:

- SOA composite applications
- Service components
- Service and reference binding components

Policies apply security to the delivery of messages. Oracle Fusion Middleware uses a policy-based model to manage Web services. The following types of policies are supported:

- Security — Implements WS-Security 1.0 and 1.1 standards. They enforce authentication and authorization of users, identity propagation, and message protection (message integrity and message confidentiality).
- Reliable Messaging — Supports the WS-ReliableMessaging protocol, guaranteeing the end-to-end delivery of messages.
- Message Transmission Optimization Mechanism (MTOM) — Ensures that attachments are in MTOM format, a format for efficiently sending binary data to and from Web services.
- WS-Addressing — Verifies that SOAP messages include WS-Addressing headers in conformance with the WS-Addressing specification. Transport-level data is included in the XML message rather than relying on the network-level transport to convey this information.
- Management — Logs request, response, and fault messages to a message log. Management policies can include custom policies.

Policies are part of an enterprise policy framework that allows policies to be centrally created and managed.

For more information, see the following documentation:

- [Section 8.8, "Managing SOA Composite Application Policies"](#)
- [Section 12.2, "Managing BPEL Process Service Component Policies"](#)
- [Section 23.1, "Managing Human Task Service Component Policies"](#)
- [Section 38.1, "Managing Binding Component Policies"](#)
- [Section 41.2, "Managing BPMN Process Service Component Policies"](#)
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which policies to use for your environment

1.4.3.2.1 Understanding How Policies are Executed Policies are executed *before* a message reaches the component with the attached policy. This causes the error to display in the component preceding the component with the attached policy. For example:

- A policy attached to an Oracle Mediator service component is executed on the wire before the message is passed to the Oracle Mediator. This causes the fault to display in the service binding component instead of the Oracle Mediator.
- A policy attached to a human task service component is executed in the preceding BPEL process service component before the message is passed to the human task service component. This causes the fault to display in the BPEL process service component instead of the human task service component.
- A policy attached to a human task service component is executed inside the BPMN process in the human steps associated with the human service component before the message is passed to the human task service component. This causes the fault to display in the BPMN process service component instead of the human task service component.

To see the exact location of the policy error, view the audit trail.

1.4.3.3 Understanding the Life Cycle State of SOA Composite Applications

You can administer the entire life cycle state of deployed SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console. An application is automatically activated when you deploy it to the SOA Infrastructure. During

deployment, you can specify a specific revision number for the application. A revision is a specific deployed version of the application. You can deploy multiple revisions of an application, enabling all to run at the same time.

This is a key benefit of revisions. For example, you may have an older revision of an application running with one customer that is still valid. You then begin a partnership with a different customer that requires a slight modification to the design of the application. At some point, you plan to migrate the old customer to the newer revision of the application, but for now that is not necessary. Revisions enable you to run both applications.

The revision value is added to the application name in Oracle Enterprise Manager Fusion Middleware Control Console. For example, in [Figure 1–1](#) on page 1-3, revision 1.0 is the version for many deployed SOA composite applications. If a new request comes in for a specific composite application revision, that composite application revision is invoked. If a new request comes in without specifying a revision, the default revision is invoked. A small green dot distinguishes the default revision from other revisions.

You can perform the following life cycle administration tasks on a SOA composite application from Oracle Enterprise Manager Fusion Middleware Control Console:

- Create an instance.
- Stop and restart application revisions. An application revision is typically started instantly after deployment.
- Retire and activate application revisions. Application revisions are instantly activated upon deployment.
- Set an application as the default version.
- Deploy, undeploy, and redeploy application revisions.
- Delete specific instances of an application revision.

With the addition of Oracle SOA Governance tools for life cycle management, you can perform additional life cycle management tasks on a SOA composite application, or any component or service within the composite:

- Collect important information on each component in an Oracle Enterprise Repository to help producers, providers, consumers, or other participants in the lifecycle for better understanding. For example, you can show the relationships between previous and next versions.
- Associate a life cycle stage categorization to components or service endpoints (for example, build, test, staging, or production).
- Automatically advance and track components and service endpoints through various life cycle stages, automatically publishing them to an appropriate UDDI service registry for their life cycle stage.
- Manage their life cycle and associated approvals using repeatable processes.
- Manage their performance in production, and inform prospective consumers of services for better design-time decisions.

For more information about administering the life cycle states of a SOA composite application, see the following sections:

- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)
- [Section 8.2, "Managing the State of Deployed SOA Composite Applications"](#)

- [Section 8.3, "Monitoring and Deleting SOA Composite Application Instances from the Application Home Page"](#)
- [Section 8.4, "Monitoring and Deleting SOA Composite Application Instances at the SOA Infrastructure Level"](#)
- *Oracle Fusion Middleware User Guide for Oracle Enterprise Repository*
- *Oracle Fusion Middleware Integration Guide for Oracle Enterprise Repository*
- *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository*

1.4.3.4 Understanding SOA Composite Application Automated Testing

You can create, deploy, and run test cases that automate the testing of SOA composite applications. Test cases enable you to simulate the interaction between a SOA composite application and its references before deployment in a production environment. Test suites consist of a logical collection of one or more test cases. Each test case contains a set of commands to perform as the test instance is executed. The execution of a test suite is known as a test run. Each test corresponds to a single SOA composite application instance. Instances generated by the execution of these tests are distinguished as test instances by a little yellow box next to their instance ID, as shown in [Figure 1-6](#).

The test suite framework provides the following features:

- Uses emulations to simulate the behavior of components with which your SOA composite application interacts during execution. Instead of invoking a specific component, you can specify a response from the component.
- Uses assertions to validate data during process execution.

For information about designing test cases for SOA composite applications, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

1.4.3.5 Understanding Partitioning of the SOA Infrastructure

You can deploy SOA composite applications into separate sections of the SOA Infrastructure known as partitions. Deploying to partitions enables you to logically group SOA composites and perform bulk life cycle management tasks on large numbers of composites. Partitioning is similar to the concept of domains in the 10.1.x releases of Oracle BPEL Process Manager. However, note that you *cannot* perform specific configuration tasks on partitions, such as restricting login access to a specific partition or configuring partitions (such as configuring threading).

At least one partition is required for deploying SOA composite applications. A default partition named **default** is automatically included with Oracle SOA Suite.

Once you create a partition, you can perform the following tasks:

- Deploy SOA composite applications into the partition using Oracle Enterprise Manager Fusion Middleware Control Console, Oracle JDeveloper, WebLogic Scripting Tool (WLST) commands, or ant commands.
- Access the partition and its deployed composites through the navigation tree.
- Perform the following bulk life cycle management tasks on the composites in a specific partition:
 - Start all composites
 - Shut down all composites
 - Undeploy all composites

- Retire all composites
- Activate all composites
- List all composites

Note: Partitions are *not* associated with a particular state such as started, stopped, activated, or retired. Only the composites within the partition are associated with a particular state. Therefore, you *cannot* start, stop, activate, or retire a partition.

For more information, see [Section 8.10, "Grouping SOA Composite Applications into Partitions."](#)

1.5 Administration for Application Developers

If your role is that of an application developer, manage and test SOA composites using a combination of Oracle JDeveloper and Fusion Middleware Control. See the *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* to develop SOA composite applications with Oracle JDeveloper, and refer to the following sections to deploy, monitor, and initiate a test instance of the composite application with Oracle Enterprise Manager Fusion Middleware Control Console:

- [Chapter 5, "Deploying SOA Composite Applications"](#)
- [Chapter 7, "Monitoring SOA Composite Applications"](#)
- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)

To create and model business processes using Business Process Management Notation and Modeling (BPMN) within Oracle Business Process Management, see *Oracle Fusion Middleware Modeling and Implementation Guide for Oracle Business Process Management*.

Part II

Getting Started with Administration

This part describes how to navigate to Oracle SOA Suite and Oracle BPM Suite administration tasks in Oracle Enterprise Manager Fusion Middleware Control Console.

This part includes the following chapter:

- [Chapter 2, "Getting Started with Administering Oracle SOA Suite and Oracle BPM Suite"](#)

Getting Started with Administering Oracle SOA Suite and Oracle BPM Suite

This chapter describes how to access Oracle Enterprise Manager Fusion Middleware Control Console and SOA Infrastructure configuration, monitoring, and management tasks.

This chapter includes the following topics:

- [Section 2.1, "Logging into Oracle Enterprise Manager Fusion Middleware Control Console"](#)
- [Section 2.2, "Navigating to Oracle SOA Suite and Oracle BPM Suite Administration Tasks"](#)
- [Section 2.3, "Logging Out of Oracle Enterprise Manager Fusion Middleware Control Console"](#)

For more information about service engines, service components, binding components, and the SOA Infrastructure, see [Chapter 1, "Introduction and Concepts."](#)

2.1 Logging into Oracle Enterprise Manager Fusion Middleware Control Console

To log in to Oracle Enterprise Manager Fusion Middleware Control Console:

1. Use Internet Explorer 7, Mozilla Firefox 2.0.0.2, Safari 4.0, or Firefox 3.0.x to access the following URL:

```
http://host_name:port/em
```

where *host_name* is the name of the host on which Oracle Enterprise Manager Fusion Middleware Control Console is installed and *port* is a number that is dynamically set during installation. This port is typically 7001, but is the HTTP port associated with the Oracle HTTP Server. For environments in which the SSL port was enabled during configuration, the default port is 7002.

2. Enter `weblogic/password` and click **Login**.

where:

- `weblogic` is the default Oracle Enterprise Manager Fusion Middleware Control Console administrator user name (you can change this during installation)
- `password` is the password you entered during Oracle SOA Suite installation

The Accessibility Preference dialog appears the first time you log in. If you want, you can select to not display this option again.

3. Select an appropriate action and click **Continue**.

The farm home page is displayed. From there, you can navigate to Oracle SOA Suite and Oracle BPM Suite in several different ways, as described in the following sections.

For more information about installation, see *Oracle Fusion Middleware Installation Guide for Oracle SOA Suite*.

2.2 Navigating to Oracle SOA Suite and Oracle BPM Suite Administration Tasks

This section describes methods for navigating to Oracle SOA Suite and Oracle BPM Suite administration tasks in Oracle Enterprise Manager Fusion Middleware Control Console:

- [Section 2.2.1, "Navigating Through the SOA Infrastructure Home Page and Menu"](#)
- [Section 2.2.2, "Navigating Through the SOA Composite Application Home Page and Menu"](#)
- [Section 2.2.3, "Navigating Through the Partition Home Page and Menu"](#)
- [Section 2.2.4, "Navigating to Deployed Java EE Applications"](#)
- [Section 2.2.5, "Navigating to the Oracle WebLogic Server Administration Console and Other Pages"](#)
- [Section 2.2.6, "Navigating to the SOA Infrastructure or SOA Composite Application Home Page"](#)

Note: Note that the **Farm** menu always displays at the top of the navigator. As you expand the **SOA** folder in the navigator and click the links displayed beneath it, the **SOA Infrastructure** menu becomes available at the top of the page.

2.2.1 Navigating Through the SOA Infrastructure Home Page and Menu

You can navigate to Oracle SOA Suite and Oracle BPM Suite administration tasks through the SOA Infrastructure home page and menu. The SOA Infrastructure provides you with access to all deployed SOA composite applications, service engines, service components, business events, and other elements.

To navigate through the SOA Infrastructure home page and menu:

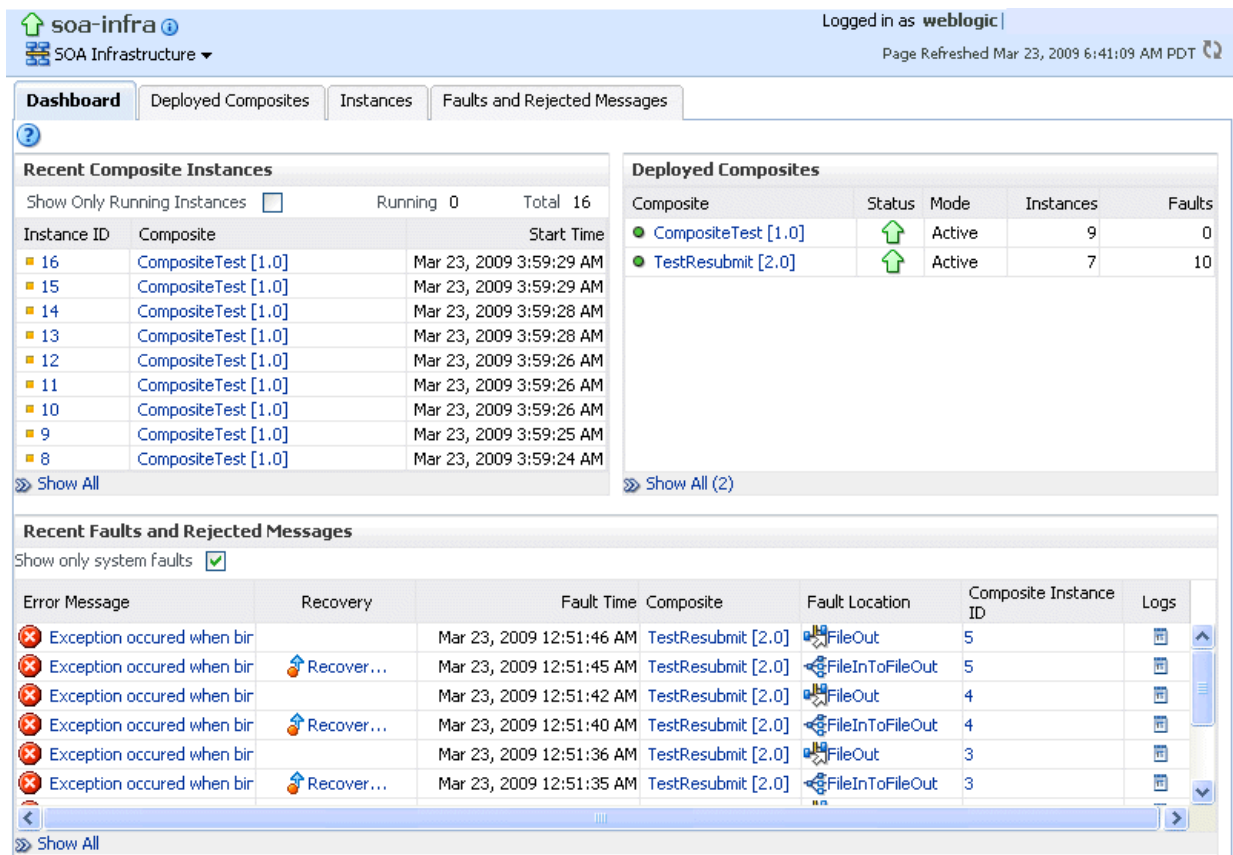
1. Expand **SOA > soa-infra** in the navigator.

This displays all SOA composite applications running in the SOA Infrastructure for that managed server. These composites are grouped into the partitions in which they are deployed.



2. Click **soa-infra**.

This displays the Dashboard page of the SOA Infrastructure. Click the help icon at the top of this page to access the Resource Center for the entire Oracle SOA Suite. The upper part of the page displays details about recently deployed SOA composite application instances, deployed composites, recent faults, and rejected messages. You can click a specific SOA composite application name or instance ID to access additional details. You can also click **Show All** at the bottom of each section to see more information about all items.



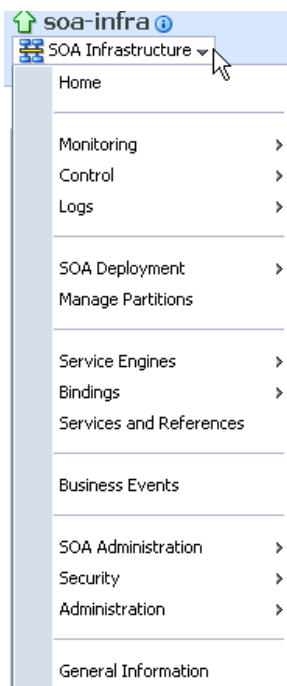
The lower part of the page displays details about the service engines provided by the SOA Infrastructure and a graphical representation of the number of instances

and faults for all SOA composite applications hosted in the SOA Infrastructure. You must expand these sections to see this information. Click a service engine name to access more specific details.

3. Note that the **SOA Infrastructure** menu appears below the **soa-infra** name at the top of the page.

Note: Depending upon your current location, the context of this menu changes to provide you with the administrative options most relevant to your current location. For example, when you are within the pages of a SOA composite application, the **SOA Composite** menu is displayed or when you are on the home page of a specific partition, the **SOA Partition** menu is displayed.

4. Select the **SOA Infrastructure** menu.



These administrative options enable you to perform the following tasks.

Option	Description
Home	<p>This option displays the following details of the SOA Infrastructure Dashboard page:</p> <ul style="list-style-type: none"> Recent SOA composite application instances. Deployed SOA composite details (status, instance, and fault counts). Recent faults and rejected messages in all SOA composite application instances, including whether the instance is recoverable. Number of components hosted by services engines and the faults in those components. Graphical representation of the number of instances and faults for all SOA composite applications hosted in the SOA Infrastructure. <p>For more information, see Section 4.1, "Monitoring SOA Infrastructure Recent Instances and Faults."</p>

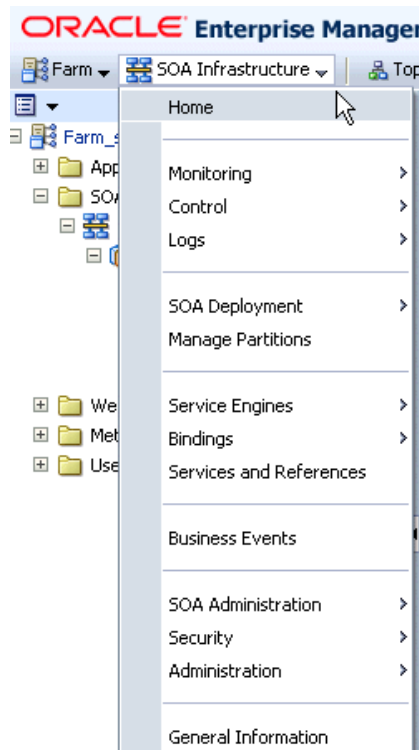
Option	Description
Monitoring	<p>This option displays the following details:</p> <ul style="list-style-type: none"> ■ A summary of performance statistics in the SOA infrastructure. ■ Request processing details that show the breakup of time spent in handshaking requests between the binding components, service infrastructure, and service engines. <p>For more information, see Section 4.2, "Monitoring Processing Requests."</p>
Control	<p>This option enables you to start or shut down the SOA Infrastructure.</p>
Logs	<p>This option enables you to view and configure the logging levels for run-time loggers.</p> <p>For more information, see Section 3.4, "Configuring Log Files."</p>
SOA Deployment	<p>This option enables you to deploy, undeploy, or redeploy SOA composite applications.</p> <p>For more information, see Section 5.1, "Deploying Applications."</p>
Manage Partitions	<p>This option enables you to logically group your SOA Infrastructure into separate sections known as partitions in which you deploy your SOA composite applications. This helps you to logically group composites so that you can perform bulk life cycle management tasks on large numbers of composites.</p> <p>For more information, see Section 1.4.3.5, "Understanding Partitioning of the SOA Infrastructure" and Section 8.10, "Grouping SOA Composite Applications into Partitions."</p>
Service Engines	<p>This option provides access to monitoring and management tasks for the BPEL process, Oracle BPMN, Oracle Mediator, human workflow, and business rules service engines.</p>
Bindings	<p>This option displays details about recently active document types and trading partners, and inbound and outbound endpoints for Oracle B2B.</p>
Services and References	<p>This option displays message processing metrics for service and reference binding components in all SOA composite applications.</p> <p>For more information, see Section 4.3, "Monitoring Service and Reference Binding Components in the SOA Infrastructure."</p>
Business Events	<p>This option displays available business events, current event subscribers, and fault details.</p> <p>For more information, see Chapter 35, "Managing Business Events."</p>

Option	Description
SOA Administration	<p>This option provides access to the following configuration tasks for the SOA Infrastructure and each service engine:</p> <ul style="list-style-type: none"> <p>■ Common Properties: For setting properties that impact the entire SOA Infrastructure, such as viewing and setting the SOA Infrastructure audit level, capturing the state of the SOA composite application instance, enabling the payload validation of incoming messages, specifying the callback server and server URLs, setting UDDI registry properties, viewing the data source JNDI locations, setting the nonfatal connection retry count, setting Web service binding properties, and optimizing the loading performance of pages.</p> <p>For more information, see Section 3.1, "Configuring SOA Infrastructure Properties."</p> <p>■ BPEL Properties: For setting the audit trail size, maximum document size for a variable, payload validation for incoming and outgoing messages, audit trail level, BPEL monitor and sensor disabling status, and dispatcher thread level for invoke message threads, system threads, and engine threads.</p> <p>For more information, see Section 10.1, "Configuring BPEL Process Service Engine Properties."</p> <p>■ BPMN Properties: For setting the audit trail size, maximum document size for a variable, payload validation for incoming and outgoing messages, audit trail level, and dispatcher thread level for invoke message threads, system threads, and engine threads.</p> <p>For more information, see Section 39.2, "Configuring BPMN Process Service Engine Properties"</p> <p>■ Mediator Properties: For setting the audit level, metrics level, number of parallel worker threads, number of maximum rows retrieved for parallel processing, parallel thread sleep values, error thread sleep values, container ID refresh time, and container ID lease timeout values.</p> <p>For more information, see Section 13.1, "Introduction to Configuring Oracle Mediator."</p> <p>■ Workflow Notification Properties: For setting the workflow service notification mode and actionable e-mail address value.</p> <p>For more information, see Section 21.1, "Configuring Human Workflow Notification Properties."</p> <p>■ Workflow Task Service Properties: For setting the actionable e-mail account, adding the worklist application URL, selecting the pushback assignee, adding portal realm mapping, and adding the task auto release configuration priority.</p> <p>For more information, see Section 21.2, "Configuring Human Workflow Task Service Properties."</p> <p>■ B2B Server Properties: For enabling Dynamic Monitoring Service (DMS) metrics.</p> <p>■ Cross References: For selecting cross-reference values.</p>
Security	<p>This option displays the following selections:</p> <ul style="list-style-type: none"> <p>■ Application Policies: For creating application policies that an application relies upon for controlling access to resources.</p> <p>■ Application Roles: For creating application roles for applications.</p> <p>For more information about application roles, see <i>Oracle Fusion Middleware Security Guide</i>.</p> <p>This option is available for all deployed Java EE applications, including the SOA Infrastructure (soa-infra) application. Note that these options do <i>not</i> configure security policies for SOA composites.</p> <p>For more information about attaching policies to composite applications, see Section 8.8, "Managing SOA Composite Application Policies."</p>

Option	Description
Administration	<p>This option displays the following selections:</p> <ul style="list-style-type: none"> ■ MDS Connections: For managing metadata service (MDS) connections. ■ TopLink Sessions: For managing cache for the TopLink persistence framework. ■ System MBean Browser: For advanced configuration of properties across applications and components. <p>For more information, see <i>Oracle Fusion Middleware Administrator's Guide</i> for instructions on using the System Mean Browser.</p> <p>In addition to configuring the System MBean Browser from Oracle Enterprise Manager Fusion Middleware Control Console, you also can invoke SOA configuration MBean operations with the Web Logic Scripting Tool (WLST). For information, see <i>Oracle Fusion Middleware Oracle WebLogic Scripting Tool</i>.</p> <p>Note: The System MBean Browser includes an MBean for Oracle BPMN, even if Oracle BPM Suite is not installed. If Oracle BPM Suite is not installed, this MBean cannot be used, and should be ignored. The presence of this MBean does not impact the runtime behavior of other Oracle SOA Suite components.</p>
General Information	<p>This option displays general details about the SOA Infrastructure, such as the Oracle Enterprise Manager Fusion Middleware Control Console version, Oracle home, and Oracle instance.</p>

5. Select a specific SOA composite application from the **soa-infra** list shown in Step 1.

The **SOA Infrastructure** menu is now displayed above the navigator, providing you with access to the same high-level administrative options, even when you are within the pages of a SOA composite application. This menu changes positions when you select a composite application.



6. Right-click **soa-infra** in the navigator. The menu that displays provides you with access to the same administrative options that appear in the **SOA Infrastructure** menu.

2.2.2 Navigating Through the SOA Composite Application Home Page and Menu

You can navigate directly to Oracle SOA Suite and Oracle BPM Suite administration tasks for a specific SOA composite application.

To navigate through the SOA composite application home page and menu:

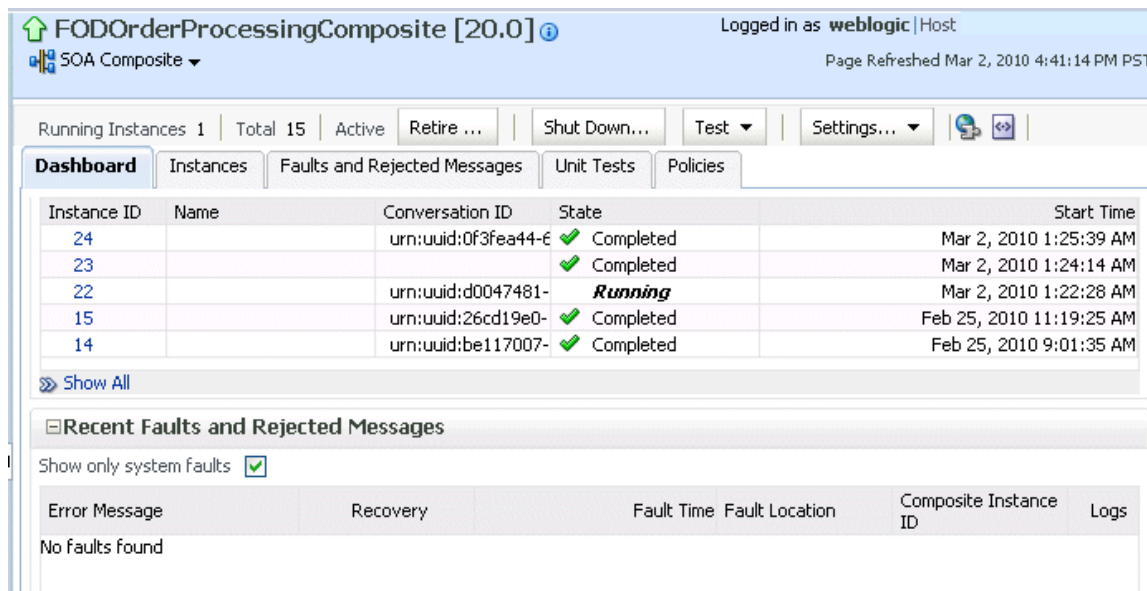
1. Expand **SOA > soa-infra** in the navigator.
2. Expand the partitions.

This displays all SOA composite applications running in the partitions of the SOA Infrastructure.



3. Select a specific SOA composite application.

This displays the home page for the selected SOA composite application. The upper part of the page displays details about recent instances and faults and rejected messages. This part of the page also provides you with access to important administrative and configuration tasks at the composite level.



4. Click **Show All** at the bottom of each section to see more of these items. You can also click links to access more details about a specific composite instance or fault.

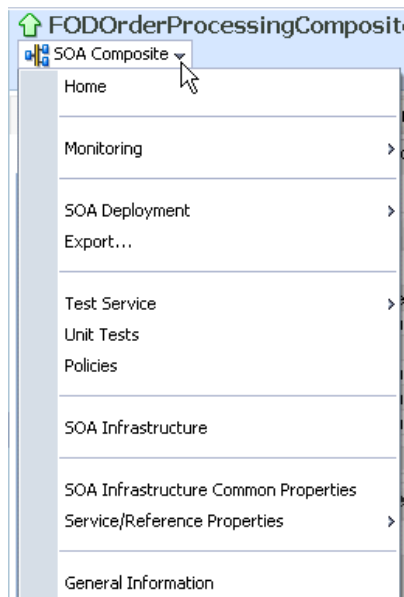
The lower part of the page displays details about the service components (in this example, Oracle Mediator, BPEL process, and human workflow) and binding components (services and references) included in the SOA composite application. You can click a specific service component or service or reference binding component in the **Name** column to access more specific details.

Component Metrics						
Name	Component Type	Total Instances	Running Instances	Faulted Instances		
				Recoverable	Non Recover	
ApprovalTask	Human Workflow	3	3	0		
OrderFulfillment	Mediator	12	0	0		
FODOrderProcess	BPEL	15	3	0		

Services and References							
Name	Type	Usage	Faults	Total Messages	Average Processing Time (sec)		
OrderFulfillment_ep	Web Service	Service	0	0	0.000		
client	Web Service	Service	0	17	0.104		
FedEx	JCA Adapter	Reference	0	5	0.005		
GetOrderInfo	JCA Adapter	Reference	0	17	0.358		
GetCustomerInfo	JCA Adapter	Reference	0	17	0.009		

When you are within the pages of a SOA composite application, the **SOA Composite** menu appears below the application name at the top of the page. This menu provides you with administrative options specific to the current composite application.

5. Select the **SOA Composite** menu.



These administrative options enable you to perform the following tasks.

Option	Description
Home	<p>This option displays the following details for the SOA composite application home page.</p> <ul style="list-style-type: none"> ■ Recent instances. ■ Recent faults and rejected messages, including whether the instance is recoverable. ■ Service components included in the SOA composite application. ■ Services and references included in the SOA composite application. <p>For more information, see Section 8.2, "Managing the State of Deployed SOA Composite Applications."</p>
Monitoring	<p>This option displays the performance summary statistics for the selected SOA composite application.</p>
SOA Deployment	<p>This option enables you to undeploy or redeploy this SOA composite application, or deploy another SOA composite application.</p> <p>For more information, see Section 5.1, "Deploying Applications."</p>
Export	<p>This option enables you to export a running SOA composite application to a JAR file.</p> <p>For more information, see Section 8.9, "Exporting a Running SOA Composite Application."</p>
Test Service	<p>This option enables you to manually initiate an instance of this deployed SOA composite application through the Test Web Service page.</p> <p>For more information, see Section 8.1, "Initiating a SOA Composite Application Test Instance."</p>
Unit Tests	<p>This option enables you to run test cases that simulate the interaction between the current SOA composite application and its Web service partners before deployment to a production environment. This generates test instances of the composite.</p> <p>For more information, see Section 8.7, "Automating the Testing of SOA Composite Applications."</p>
Policies	<p>This option enables you to view and attach or detach policies to or from the SOA composite application.</p> <p>For more information, see Section 8.8, "Managing SOA Composite Application Policies."</p>
SOA Infrastructure	<p>This option takes you to the SOA Infrastructure home page.</p>
SOA Infrastructure Common Properties	<p>This option enables you to view and set the audit level, capture the state of the SOA composite application instance, enable the payload validation of incoming messages, set UDDI registry properties, specify the callback server and server URLs, view the data source JNDI locations, set the nonfatal connection retry counts, set Web service binding properties, and optimize the loading performance of pages. The SOA composite application typically inherits the settings defined at the SOA Infrastructure level.</p> <p>For more information, see Section 3.1, "Configuring SOA Infrastructure Properties."</p>
Service/Reference Properties	<p>This option enables you to configure WSDL file properties for the service and reference binding components included in the SOA composite application.</p> <p>For more information, see Section 36.1, "Configuring Service and Reference Binding Component Properties."</p>
General Information	<p>This option displays general details about this SOA composite application, such as the Oracle Enterprise Manager Fusion Middleware Control Console version, Oracle home, Oracle instance, and partition in which the composite is deployed.</p>

6. Right-click the name of a SOA composite application in the navigator. A menu is displayed that provides you with access to the same administrative options that appear in the **SOA Composite** menu.

2.2.3 Navigating Through the Partition Home Page and Menu

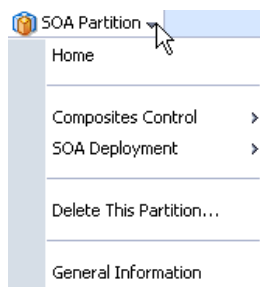
You can navigate to administrative tasks for a specific partition in the SOA Infrastructure.

To navigate through the partition home page and menu:

1. Expand **SOA > soa-infra** in the navigator.
2. Click a specific partition.



3. At the top of the page, select the **SOA Partition** menu.



These administrative options enable you to perform the following tasks.

Option	Description
Home	<p>This option displays the following details for the partition home page:</p> <ul style="list-style-type: none"> ■ SOA composite applications in this partition. ■ Status of the SOA composite applications in this partition (either Up (on) or Down (off)). ■ Mode of the SOA composite applications in this partition (active or retired). ■ Total number of instances and faulted instances of the SOA composite applications in this partition. ■ Time at which the SOA composite applications in this partition were last deployed, redeployed, or reconfigured.
Composites Control	<p>This option displays the following bulk life cycle management tasks:</p> <ul style="list-style-type: none"> ■ Start Up All: Invokes a dialog for starting all composites in this partition. ■ Shut Down All: Invokes a dialog for shutting down all composites in this partition. ■ Activate All: Invokes a dialog for activating all composites in this partition. ■ Retire All: Invokes a dialog for retiring all composites in this partition. <p>For information about these composite states, see Section 8.2.1, "Managing the State of All Applications at the SOA Infrastructure Level."</p>
SOA Deployment	<p>This option displays the following management tasks.</p> <ul style="list-style-type: none"> ■ Deploy To This Partition: Invokes the Deploy SOA Composite wizard for selecting a composite to deploy in this partition. ■ Undeploy All From This Partition: Invokes a dialog for undeploying all composites in this partition. ■ Redeploy: Invokes the Redeploy SOA Composite wizard to select composites to redeploy in this partition.

Option	Description
Delete This Partition	This option invokes a dialog to delete this partition. All composites in the partition are automatically undeployed before the partition is deleted.
General Information	This option displays general details about the partition such as the partition (target) name, the Oracle Fusion Middleware version, the Oracle Fusion Middleware home directory, domain home directory, host name, and deployed server.

4. Right-click the name of a partition in the navigator. A menu is displayed that provides you with access to the same administrative options that appear in the **SOA Partition** menu.

Note: You can also access the partition home page from the **Related Topics** menu on the home page of a SOA composite application.

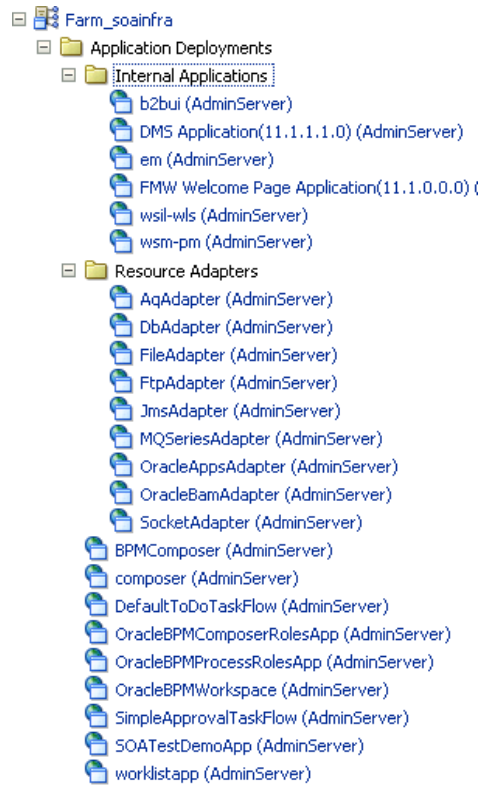
For information about partitions, see [Section 1.4.3.5, "Understanding Partitioning of the SOA Infrastructure"](#) and [Section 8.10, "Grouping SOA Composite Applications into Partitions."](#)

2.2.4 Navigating to Deployed Java EE Applications

You can navigate to deployed Java EE applications related to Oracle SOA Suite and (if installed) Oracle BPM Suite components. These applications are Java EE applications that represent the SOA system components, such as the technology adapters, Oracle B2B, Oracle BPM Worklist, and so on. You can deploy a Web service and see it listed here. You can also click individual applications (for example, the deployed Web service) and manage and test that you can deploy WAR and EAR files from here. If you have deployed your own Java EE applications, they also display here.

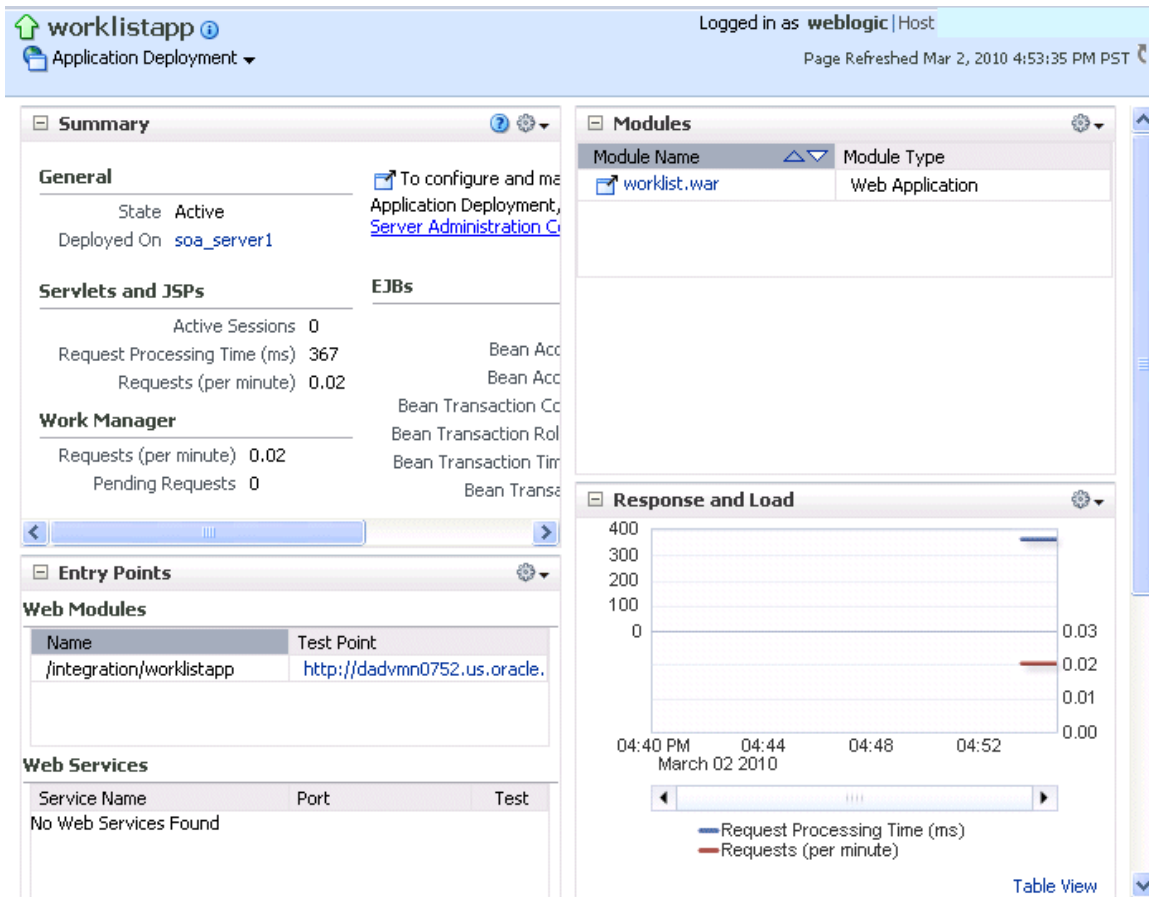
1. Expand **Application Deployments** in the navigator.
2. Expand **Internal Applications**.
3. Expand **Resource Adapters**.

A list of deployed Java EE applications related to Oracle SOA Suite and Oracle BPM Suite components appears.



Note that Oracle B2B (**b2bui**) appears in the **Internal Applications** folder, while Oracle BPM Worklist (**worklistapp**) appears in the top level **Application Deployments** folder.

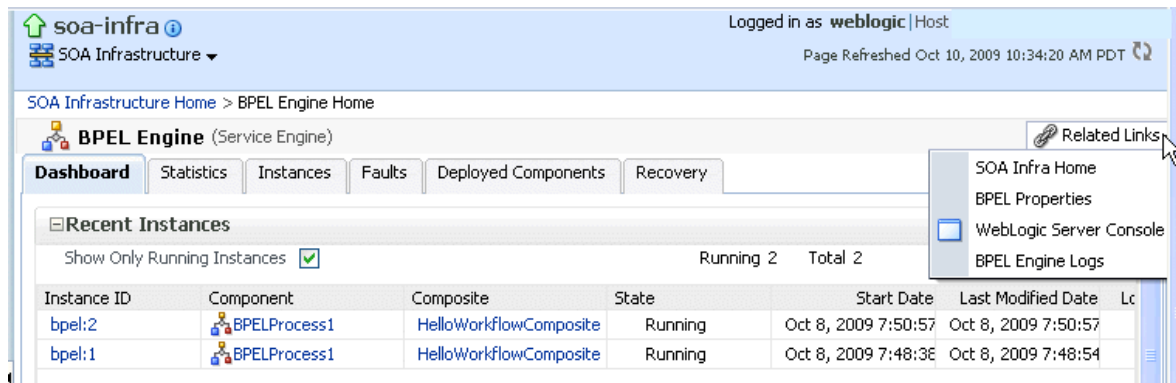
4. Click a specific application (for this example, **worklistapp** is selected).
The page displays details about application performance.



Note that while Oracle Enterprise Manager Fusion Middleware Control Console displays the URLs for all deployed modules, you cannot directly invoke them from this page.

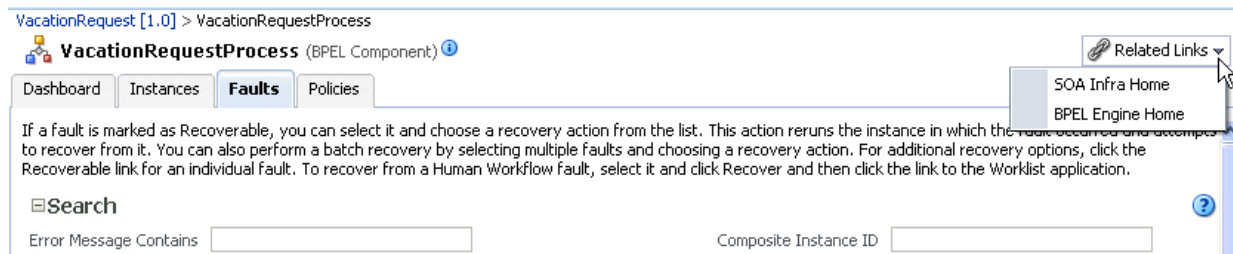
2.2.5 Navigating to the Oracle WebLogic Server Administration Console and Other Pages

Most pages in Oracle Enterprise Manager Fusion Middleware Control Console include a **Related Links** menu in the upper right corner. Depending upon your current location, the context of the menu changes to provide links to relevant pages. For example, when you are on the BPEL process service engine page, the **Related Links** menu provides links to the SOA Infrastructure home page, the BPEL process configuration properties page, the Oracle WebLogic Server Administration Console, and a page for service engine log files. Figure 2-1 provides details. You can also click **soa-infra** at the top of the BPEL service engine page to go directly to the SOA Infrastructure home page.

Figure 2–1 Related Links Menu for a SOA Composite Application


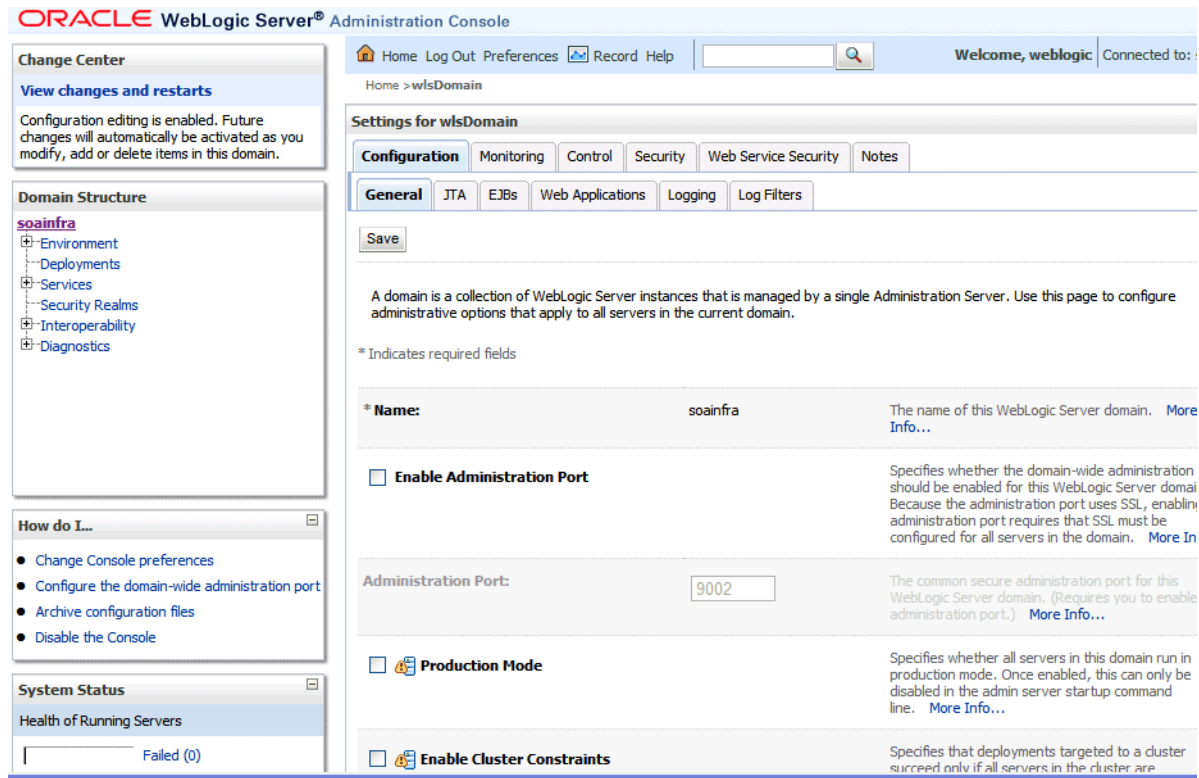
When you are on the page of a service component of a SOA composite application, several navigational menus and links are available:

- The **Related Links** menu provides links to the SOA Infrastructure home page and the applicable service engine home page. [Figure 2–2](#) provides details.
- Bread crumbs display in the upper left corner as you traverse further into a SOA composite application.
- Within any SOA composite application page (including the service component pages), links to the SOA Infrastructure pages also remain available through the **SOA Infrastructure** menu that displays next to the **Farm** menu above the navigator. For example, this enables you to go from the home page of a specific BPEL service component directly to the BPEL service engine configuration properties page.
- Names at the top of the page can be clicked to navigate to parent pages. For example, clicking the name of a composite at the very top of a service component page enables you to go to the composite that includes that component.

Figure 2–2 Related Links Menu for a Service Component of a SOA Composite Application


The service engines, SOA administration (such as the SOA Infrastructure Common Properties page), and business event pages all provide access to Oracle WebLogic Server Administration Console from the **Related Topics** list. Selecting **WebLogic Server Console** opens a new browser page and takes you to the login prompt for the Oracle WebLogic Server Administration Console. Your current page in Oracle Enterprise Manager Fusion Middleware Control Console is not lost. After logging in, the home page is displayed. [Figure 2–3](#) provides details.

Figure 2–3 Oracle WebLogic Server Administration Console



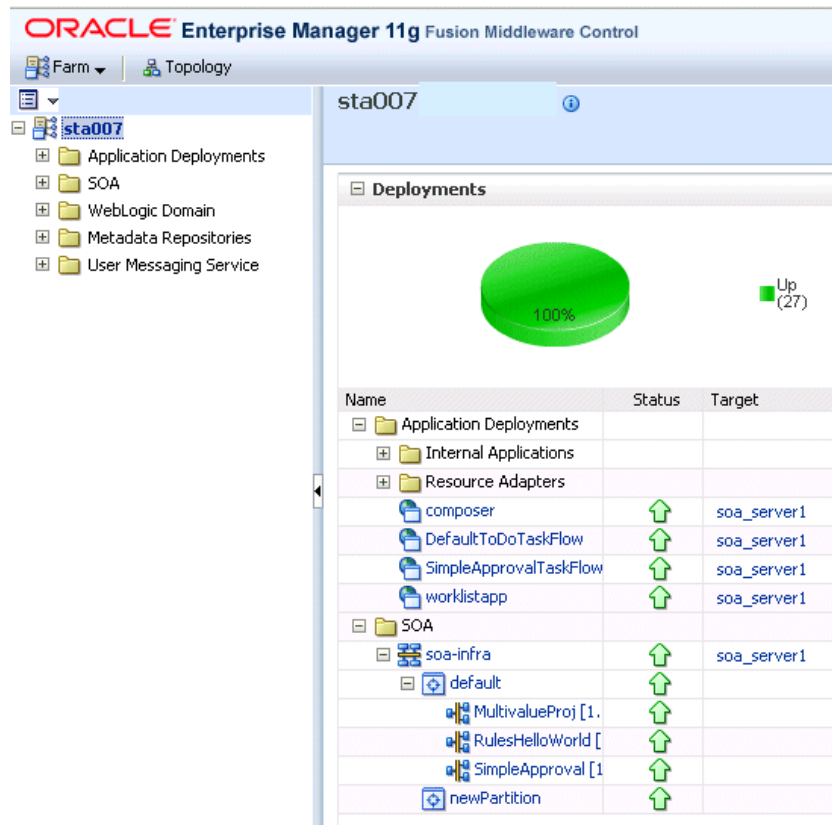
You can perform the following Oracle SOA Suite tasks from Oracle WebLogic Server Administration Console:

- Configure adapter connections for composite references
- Create and manage data sources utilized by adapters
- Create and manage JMS resources utilized by adapters
- Manage SOA Infrastructure data sources (for example, modifying connection pool settings)
- Administer security of human workflow users
- Manage Oracle WebLogic Server transaction (JTA) settings (for example, the transaction timeout value)
- Deploy human task user interfaces

2.2.6 Navigating to the SOA Infrastructure or SOA Composite Application Home Page

You can access the home page of the SOA Infrastructure, a specific SOA partition, or a specific SOA composite application from the Farm home page.

1. In the **Deployments** section of the Farm home page, click **soa-infra** or a specific SOA composite application (for example, **SimpleApproval**).



The home page for your selection is displayed.

2.3 Logging Out of Oracle Enterprise Manager Fusion Middleware Control Console

To log out of Oracle Enterprise Manager Fusion Middleware Control Console:

1. Note the following details about logging out.
 - If multiple windows are open (for example, the help window, topology viewer, and flow trace), logging out of any window logs you out of the entire application in all open windows.
 - If you log out with any unsaved configuration changes, you receive no warning message and your changes are lost.
2. In the upper right corner of any page, click the **Log Out** link.

Part III

Administering the SOA Infrastructure

This part describes how to administer the SOA Infrastructure.

This part includes the following chapters:

- [Chapter 3, "Configuring the SOA Infrastructure"](#)
- [Chapter 4, "Monitoring the SOA Infrastructure"](#)

Configuring the SOA Infrastructure

This chapter describes how to configure the properties of the SOA Infrastructure. These property settings can apply to all SOA composite applications running in the SOA Infrastructure.

This chapter includes the following topics:

- [Section 3.1, "Configuring SOA Infrastructure Properties"](#)
- [Section 3.2, "Stopping and Starting the SOA Infrastructure"](#)
- [Section 3.3, "Changing the SOA Infrastructure Server URL Property Port"](#)
- [Section 3.4, "Configuring Log Files"](#)
- [Section 3.5, "Changing the Driver Name to Support XA Drivers"](#)

For more information, see [Section 1.2.1, "Understanding the SOA Infrastructure Application."](#)

3.1 Configuring SOA Infrastructure Properties

You can configure the following properties for the SOA Infrastructure:

- Audit level
- Composite instance state to capture
- Payload validation
- Universal Description, Discovery, and Integration (UDDI) registry
- Callback server and server URLs
- Instance and fault count metrics retrieval
- Search criteria for the retrieval of recent instances and faults
- Java Naming and Directory Interface (JNDI) data source
- Web service binding properties

The properties set at this level impact all deployed SOA composite applications, except those composites for which you explicitly set different audit level values at the composite application or service engine levels.

Additional advanced properties for the SOA Infrastructure can be configured through the System MBean Browser. To access these properties from the **SOA Infrastructure** menu, select **Administration > System MBean Browser > Application Defined MBeans > oracle.as.soainfra.config**.

To configure SOA Infrastructure properties:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
<ol style="list-style-type: none"> 1. Select SOA Administration > Common Properties. 	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select SOA Administration > Common Properties. 	<ol style="list-style-type: none"> 1. Select SOA Infrastructure Common Properties.

The SOA Infrastructure Common Properties page displays the following properties.

Note: Some property fields are designated with an icon showing green and red arrows. If you change these properties, you must restart the SOA Infrastructure.

The screenshot shows the 'SOA Infrastructure Common Properties' configuration page. At the top, it indicates the user is logged in as 'weblogic' and the page was refreshed on Mar 16, 2010. The main content area is divided into several sections:

- Audit Level:** A dropdown menu is set to 'Production'. Below it are checkboxes for 'Capture Composite Instance State' (checked) and 'Payload Validation' (unchecked).
- UDDI Registry Properties:** Includes input fields for 'Inquiry URL', 'User', and 'Password'. A green and red arrow icon is next to the Inquiry URL field.
- Server URLs:** Includes input fields for 'Callback Server URL' and 'Server URL', both with green and red arrow icons.
- Display Data Counts:** Includes a checkbox for 'Disable fetching of instance and fault count metrics (improves related page load times)' (checked) and a checkbox for 'Set default search criteria to fetch recent instances and faults only within a recent duration (applies to lists of instances and faults)' (checked). A 'Duration Details' field is set to '1 days'.
- Advanced:** A section for advanced configuration properties.

A sidebar on the right titled 'Configuring the Common SOA Ir' provides detailed descriptions for the 'Audit Level' property:

- Audit Level:**
 - "Production" (default): Composite in collect payload details and BPEL eng (payload details for other BPEL activ production operations.
 - "Development": Allows both the cor it may impact the performance. This
 - "Off": No logging is performed. Com
- Capture Composite Instance S:** Turning this feature on will allow for impact the performance.
- Payload Validation:** Select to enable validation of incomi

Descriptions for the properties at the top of the page are provided in the following table.

Element	Description
Audit Level	<p>Select the level of information to be collected by the message tracking infrastructure. This information is collected in the instance data store (database) associated with the SOA Infrastructure. This setting has no impact on what gets written to log files.</p> <ul style="list-style-type: none"> ■ Off: No composite instance tracking and payload tracking information is collected. No more composite instances can be created. No logging is performed. Note that disabling logging and the display of instances in Oracle Enterprise Manager Fusion Middleware Control Console can result in a slight performance increase for processing instances. Instances are created, but are not displayed. ■ Development: Enables both composite instance tracking and payload detail tracking. However, this setting may impact performance. This level is useful largely for testing and debugging purposes. ■ Production: Composite instance tracking is collected, but the Oracle Mediator service engine does not collect payload details and the BPEL process service engine does not collect payload details for assign activities (payload details for other BPEL activities are collected). This level is optimal for most normal production operations.
Capture Composite Instance State	<p>Select to capture the SOA composite application instance state. Enabling this option may result in additional run time overhead during instance processing. This option provides for separate tracking of the running instances. All instances are captured as either running or not running. This information displays later in the State column of the composite instances tables for the SOA Infrastructure and SOA composite application, where:</p> <ul style="list-style-type: none"> ■ It shows the counts of running instances versus total instances ■ You can also limit the view to running instances only <p>Valid states are running, completed, faulted, recovery needed, stale, terminated, suspended, and state not available.</p> <p>The running and completed states are captured only if this check box is selected. Otherwise, the state is set to unknown. The conditional capturing of these states is done mainly to reduce the performance overhead on SOA Infrastructure run time.</p> <p>Note: If this property is disabled and you create a new instance of a SOA composite application, a new instance is created, but the instance does not display as running, faulted, stale, suspended, terminated, completed, or requiring recovery in the table of the Dashboard page of the composite application. This is because capturing the composite state of instances is a performance-intensive process.</p> <p>For example, if you enable this property and create an instance of a SOA composite application in the Test Web Service page, a new instance appears in the Dashboard page of the composite application. If you click Show Only Running Instances in the Dashboard page, the instance displays as running. If you then disable this property and create another instance of the same composite application, a new, running instance is created. However, if you then select Show Only Running Instances, the new instance is <i>not</i> listed in the table of running instances.</p> <p>In addition, to terminate a running instance, the instance must have a state (for example, running, faulted, suspended). This activates the Abort button on the Instances page of a SOA composite application. If this check box is not enabled before creating an instance, the Abort button is inactive, and you cannot terminate the instance.</p>

Element	Description
Payload Validation	Select to enable validation of incoming and outgoing messages. Nonschema-compliant payload data is intercepted and displayed as a fault.

2. Make changes appropriate to your environment.

The **UDDI Registry Properties** section displays the following properties. You can integrate SOA composite applications running in the SOA Infrastructure with the UDDI registry. The UDDI registry provides a standards-based foundation for locating published services and managing metadata about services (security, transport, or quality of service). You can browse and select published services that meet your needs.

The **User** and **Password** properties are applicable if the UDDI registry is secured. These are only used for the secure HTTP configuration of Oracle Service Registry (OSR). The **Inquiry URL** property is public.

Element	Description	Example
Inquiry URL	Enter the URL of the master registry you want to query. The URL must not refer to the slave registry itself. Otherwise, you can lose some data. The inquiry URL obtains full-standard UDDI version 3 structures. This is the same UDDI inquiry URL that you specified in the Create UDDI Registry Connection wizard.	<code>http://master.mycompany.com:8888/registry/uddi/inquiry</code>
User	Enter the registry inquiry user.	<code>admin</code>
Password	Enter the password for the master registry inquiry user.	Enter a password that utilizes good security practices.

For more information about the UDDI registry, visit the following URL:

<http://www.oracle.com/technology/tech/soa/uddi/index.html>

For information about setting the endpoint reference and service key, see [Section 36.1.3, "Changing the Endpoint Reference and Service Key for Oracle Service Registry Integration."](#)

3. Make changes appropriate to your environment.

The **Server URLs** section displays the following properties. If not explicitly set here, these values are determined at run time by querying the Oracle WebLogic Server cluster, the Web server, or the local server properties.

Element	Description
Callback Server URL	Enter the callback server URL. This URL is sent by the server as part of the invocation to a foreign service provider.

Element	Description
Server URL	<p>Enter the server URL. This URL is published as part of the SOAP address of a service in the concrete WSDL file.</p> <p>Note: In 10.1.x releases, you manually configured SOAP optimization with the <code>optSoapShortcut</code> property. For release 11g, SOAP optimization is automatically configured. Therefore, if you upgrade to 11g and are using the optimized shortcut approach in existing applications, note that optimized calls are activated only when the host name value (as referred to in the WSDL URL in the <code>composite.xml</code> file) matches the Server URL value. Either set both values to the host name (for example, myhost) or to the full domain name (for example, myhost.domain.com). If these values do not match, a regular SOAP call is performed instead of an optimized local call.</p>

Note: If you change the **Callback Server URL** and **Server URL** values (for example, when moving from a test to a production environment), you must restart Oracle WebLogic Server for the WSDLs to be regenerated.

4. Make changes appropriate to your environment.

The **Display Data Counts** section displays the following properties for improving the time it takes to load pages.

Note: Any changes to these properties impact all SOA farms associated with this Oracle Enterprise Manager instance.

Element	Description
Disable fetching of instance and fault count metrics	<p>Select to disable the display of instance and fault count metrics on the following pages:</p> <ul style="list-style-type: none"> ■ Dashboard pages of the SOA Infrastructure, SOA composite applications, service engines, and service components ■ Delete with Options: Instances dialog <p>Instead, these metrics are replaced with links that you click to retrieve the instance and fault count metrics when you need this information. This setting can improve the time it takes to load pages.</p> <p>If you click a link to retrieve instance and fault count metrics, and Oracle Enterprise Manager Fusion Middleware Control Console times out, increase the transaction timeout property. For more information, see Section B.2, "Optimizing the Loading of Pages with Instance and Faults Metrics."</p>

Element	Description
Set default search criteria to fetch recent instances and faults only within a recent duration (applies to lists of instances and faults)	<p>Select this checkbox and specify a time period during which to retrieve recent instances and faults for display on the following pages:</p> <ul style="list-style-type: none"> Dashboard pages and Instances pages of the SOA Infrastructure, SOA composite applications, service engines, and service components Dashboard pages of services and references Faults and Rejected Messages pages of the SOA Infrastructure, SOA composite applications, services, and references Faults pages of service engines and service components <p>The time period you specify appears by default in the Fault Time From field on faults pages on which you can search for faults and the Start Time From field on instances pages on which you can search for instances.</p> <p>When you select this checkbox and specify a time period, the Show All links change to Show More links on the Dashboard pages of the SOA Infrastructure, SOA composite applications, service engines, and service components.</p>

For additional details, see [Section 3.1.1, "Disabling Instance and Fault Count Metrics Retrieval with the System MBean Browser"](#) for changing this property from the System MBean Browser and [Section B.2, "Optimizing the Loading of Pages with Instance and Faults Metrics."](#)

5. Make changes appropriate to your environment.
6. Expand the **Advanced** section.

Advanced

Data Sources

Server Data Source JNDI	jdbc/SOALocalTxDataSource			Configure
Server Transaction Data Source JNDI	jdbc/SOADataSource			Configure

Nonfatal Connection Retry Count:

Web Service Binding Properties

Oracle SSL Ciphers:

Oracle Wallet Password:

Use chunking:

Chunk size:

[More SOA Infra Advanced Configuration Properties...](#)

The **Data Sources** section displays the following properties. A data source enables you to retrieve a connection to a database server.

Element	Description	Example
Server Data Source JNDI	Displays the JNDI location for the server data source. Click Configure to go to the data source configuration page of the Oracle WebLogic Server Administration Console. Global transaction support should be disabled for this data source.	jdbc/SOALocalTxDataSource
Server Transaction Data Source JNDI	Displays the JNDI location for the server transactional data source. Click Configure to go to the data source configuration page of the Oracle WebLogic Server Administration Console. You must configure the data source for global transactions.	jdbc/SOADataSource

Element	Description	Example
Nonfatal Connection Retry Count	Enter the maximum number of times a nonfatal connection error can be retried before failing. These type of errors occur for any connection error with the dehydration store (for example, Oracle Real Application Clusters failover, database shutdown, and so on).	10

7. Make changes appropriate to your environment.

The **Web Service Binding Properties** section displays the following options.

Element	Description	Example
Oracle SSL Ciphers	Enter the list of supported Oracle ciphers. A cipher suite is a set of algorithms that provide security for data transmissions. Before data can flow through an SSL connection, both sides of the connection must negotiate common algorithms to use.	SSL_RSA_WITH_RC4_128_MD5
Oracle Wallet Password	Enter the wallet password for the keystore.	Enter a password that utilizes good security practices.
Use Chunking	Select to enable chunking of data for SOAP over HTTP deliveries.	--
Chunk Size	Specify a chunk size. The value must be less than or equal to 999. The size is used for SOAP over HTTP deliveries and is specified in bytes.	500

8. Make changes appropriate to your environment.

9. Click **Apply**.

10. If you make changes and want to reset these properties to their previous values, click **Revert**.

11. To change advanced parameters, click **More SOA Infra Advanced Configuration Properties**. This opens the System MBean Browser. The properties that display include, but are not limited to, the following. Descriptions are provided for each property.

- **GlobalTxMaxRetry** — The maximum number of times an invocation exception can be retried.
- **GlobalTxRetryInterval** — The number of seconds between retries for an invocation exception.
- **HttpProxyAuthRealm** — The HTTP proxy authentication realm.
- **HttpProxyAuthType** — The HTTP proxy authentication type.
- **HttpProxyHost** — The HTTP proxy host.
- **HttpProxyPassword** — The password for HTTP proxies that require authentication.
- **HttpProxyPort** — The HTTP proxy port number.
- **HttpProxyUsername** — The user name for HTTP proxies that require authentication.

- **HttpServerURL** — The HTTP protocol URL published as part of the SOAP address of a process in the WSDL file.
- **HttpsServerURL** — The HTTPS protocol URL published as part of the SOAP address of a process in the WSDL file.
- **KeystoreLocation** — The path to the Oracle SOA Suite keystore.
- **UddiCacheLifetime** — The UDDI endpoint cache life span.

3.1.1 Disabling Instance and Fault Count Metrics Retrieval with the System MBean Browser

As described in [Section 3.1, "Configuring SOA Infrastructure Properties,"](#) you can disable the retrieval of instance and fault count metrics in the **Display Data Counts** section of the SOA Infrastructure Common Properties page.

You can also change this property through the System MBean Browser.

1. Select **Application Defined MBeans > emom.props > Server:AdminServer > Application: em > Properties > emoms.properties.**

Note that **emoms.properties** is *only* available for selection if you previously modified the **Disable fetching of instance and fault count metrics** option of the **Display Data Counts** section of the SOA Infrastructure Common Properties page.

2. In the **Name** column of the **Attributes** tab, click **Properties.**
3. In the **Value** column, expand **Element_20.**
4. In the **Element** column, enter `false` to disable metrics retrieval.
5. Click **Apply.**
6. Restart the SOA Infrastructure. Note that a restart is not required if you instead change the **Disable fetching of instance and fault count metrics** option through the **Display Data Counts** section of the SOA Infrastructure Common Properties page.

3.2 Stopping and Starting the SOA Infrastructure

You can stop and start the SOA Infrastructure for maintenance or for configuration restarts.

To start and stop the SOA Infrastructure:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Control.	1. Right-click soa-infra.
	2. Select Control.

1. To shut down the SOA Infrastructure, select **Shut Down.**
2. Click **OK** when prompted to shut down the SOA Infrastructure.
3. Wait for SOA Infrastructure shutdown to complete.
4. To start the SOA Infrastructure, select **Start Up.**

3.2.1 SOA Composite Application States and SOA Infrastructure Shutdown

SOA composite application states are not updated to indicate that they are down after SOA Infrastructure shutdown. If you attempt to access the composite, you receive an error message stating that composite details cannot be retrieved:

```
soa-infra runtime connection error An error happened while connecting to
soa-infra runtime at t3://152.61.150.106:8001/soa-infra.
```

This message may lead you to believe that another issue exists in the system. However, this is not the case.

These composite states display as up, or in some cases pending, because this metric indicates whether the composite is enabled, and is independent of whether the SOA Infrastructure is started. In addition, the composite is still active and can receive requests on other managed servers in a cluster.

3.2.2 Restarting the SOA Infrastructure Does Not Activate Endpoints When a Retired Composite is Activated

If a SOA composite application with adapter endpoints is in a retired state, the endpoints are not activated if you perform the following actions:

- Restart the SOA Infrastructure
- Activate the SOA composite application

This is because files, records, and so on are not picked up by the endpoint adapters. As a workaround, redeploy the SOA composite application after restarting the SOA Infrastructure.

3.2.3 SOA Infrastructure Startup Failure When `cwallet.sso` Includes the SOA Map

When `cwallet.sso` has the SOA map, you receive an error message similar to the following when attempting to start the SOA Infrastructure.

```
Caused By: java.security.UnrecoverableKeyException: Password verification
failed
    at
    sun.security.provider.JavaKeyStore.engineLoad(JavaKeyStore.java:769)
    at
    sun.security.provider.JavaKeyStore$JKS.engineLoad(JavaKeyStore.java:38)
    at java.security.KeyStore.load(KeyStore.java:1185)
    at oracle.j2ee.ws.saaj.util.SSLUtil.loadKeyStore(SSLUtil.java:73)
    at
    oracle.j2ee.ws.saaj.util.SSLUtil.getKeyManagerFactory(SSLUtil.java:88)
    at oracle.j2ee.ws.saaj.util.SSLUtil.getKeyManagers(SSLUtil.java:97)
    at
    oracle.j2ee.ws.saaj.util.SSLUtil.createSSLSocketFactory(SSLUtil.java:50)
    at
    oracle.integration.platform.common.SSLSocketFactoryManagerImpl.getSSLSocketFac
    tory(SSLSocketFactoryManagerImpl.java:58)
    at oracle.fabric.common.wsdl.WSDLManager.init(WSDLManager.java:356)
    at oracle.fabric.common.wsdl.WSDLManager.<init>(WSDLManager.java:101)
    at
    oracle.fabric.common.metadata.MetadataManagerImpl.getWSDLManager(MetadataManag
    erImpl.java:283)
    at
    oracle.fabric.composite.model.CompositeModel.getWSDLManager(CompositeM
```

Perform the following steps to resolve this issue.

1. Perform one of the following actions:
 - Delete the SOA map in `cwallet.sso`.
 - Remove `$(DOMAIN_HOME)/config/fmwconfig/default-keystore.jks`. Oracle Web Services Manager (OWSM) uses this file.
2. Restart the SOA Infrastructure.

3.3 Changing the SOA Infrastructure Server URL Property Port

In addition to the SOA Infrastructure Common Properties page, you can also change the SOA Infrastructure **ServerURL** property port in the System MBean Browser of Oracle Enterprise Manager Fusion Middleware Control Console.

When changing the port, note the following details:

- If the SOA Infrastructure and managed Oracle WebLogic Server port numbers are different, you receive a `ConnectException` error when trying to connect to the Oracle BPM Worklist. Ensure that these port numbers match.
- You *cannot* change the SOA Infrastructure port from the Oracle WebLogic Server Administration Console. Only the port for the managed Oracle WebLogic Server can be changed from the Oracle WebLogic Server Administration Console.

To change the SOA Infrastructure port:

1. From the **SOA Infrastructure** menu, select **Administration > System MBean Browser**.
2. Under **Application Defined MBeans**, expand **oracle.as.soainfra.config > Server: *server_soa* > SoaInfraConfig > soa-infra**.

where *server_soa* is the name of the server provided during post installation configuration. By default, this name is **soa_server1**.

3. In the **Name** column, click **ServerURL**.

The Attribute: ServerURL page appears.

The screenshot shows the SOA Infrastructure console interface. At the top, it indicates the user is logged in as 'weblogic' and the page was refreshed on Apr 24, 2009 at 5:21:03 PM PDT. The main area is titled 'System MBean Browser'. On the left, a tree view shows the hierarchy of MBeans, with 'soa-infra' selected under 'Server: soa_server1'. On the right, the 'Attribute: ServerURL' configuration is displayed. It includes the following details:

- MBean Name: oracle.as.soainfra.config:Location=soa_server1,name=soa-infra,type=SoaApplication=soa-infra
- Attribute Name: ServerURL
- Description: This URL is published as part of the SOAP address of a process in the WSDL hostname and port for this URL should be customized to match the hostnam system and the port of your HTTP gateway.
- Type: java.lang.String
- Readable / Writable: RW
- Value: myhost.us.oracle.com:8001/

4. In the **Value** field, change the port.
5. Click **Apply**.
6. Change the managed Oracle WebLogic Server port in the Oracle WebLogic Server Administration Console to the same value.

In environments in which a load balancer is used in front of an Oracle WebLogic Server cluster, the **ServerURL** property host and port can be different from the Oracle WebLogic Server server host and port. This is typical for enterprise deployment environments in which a load balancer distributes requests across the managed servers in the Oracle WebLogic Server cluster. For more details, see *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle SOA Suite*.

3.4 Configuring Log Files

Oracle SOA Suite components generate 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.

To configure log files:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Logs > Log Configuration .	1. Right-click soa-infra .
	2. Select Logs > Log Configuration .

The Log Configuration page displays the following details:

- A **View** list for selecting the type of loggers for which to view information:
 - **Persistent:** Loggers that become active when a component is started. Their configuration details are saved in a file and their log levels are persisted across component restarts.
 - **Active run time:** Loggers that are automatically created during run time and become active when a particular feature area is exercised (for example, **oracle.soa.b2b** or **oracle.soa.bpel**). Their log levels are not persisted across component restarts.
- A table that displays the logger name, Oracle Diagnostic Logging (ODL) level for setting the amount and type of information to write to a log file, the log file, and the log level state.

Log Configuration
Use this page to configure basic and advanced log configuration settings.

Log Levels | Log Files

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are loggers that are saved in a configuration file and become active when the component is started. The log levels for these loggers are persisted across component restarts. Runtime loggers are automatically created during runtime and become active when a particular feature area is exercised. For example, oracle.j2ee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime loggers are not persisted across component restarts.

Apply | Revert

View: Runtime Loggers

Search: All Categories

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File	Persistent Log Level State
oracle.bpm.analytics	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.integration.platform.blocks.cluster	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.integration.platform.blocks.deploy.coordinator	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.integration.platform.blocks.event.saq	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.adapter	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.b2b	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.bpel	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.mediator	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.services.common	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.services.identity	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.services.notification	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.services.rules	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	
oracle.soa.services.workflow	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	

Persist log level state across component restarts

2. Perform the following log file tasks on this page:
 - a. In the **Logger Name** column, expand a logger name. This action enables you to specify more specific logging levels within a component.
 - b. In the **Oracle Diagnostic Logging Level** columns, select the level and type of information to write to a log file.
 - c. In the **Log File** column, click a specific log file to create and edit log file configurations.

For more information about ODL log files and the level and type of logging information to write to a log file, see *Oracle Fusion Middleware Administrator's Guide*.

3. Click the **Log Files** tab.

This page enables you to create and edit log file configurations, including the log file in which the log messages are logged, the format of the log messages, the rotation policies used, and other parameters based on the log file configuration class.

Log Configuration

Use this page to configure basic and advanced log configuration settings.

Log Levels **Log Files**

Use this page to create and edit log file configurations. A log file configuration specifies the log file where the log messages will be logged to, the format of the log messages, the rotation policies used, as well as other parameters depending on the log file configuration class.

Create... Create Like... Edit Configuration... View Configuration...

Handler Name	Log Path	Log File Format	Rotation Policy
odl-handler	/scratch/sansrini/beahome/user_projects/domains/soainfra/ser	Oracle Diagnostics Logging - Text	Size Based
owsm-message-hand	/scratch/sansrini/beahome/user_projects/domains/soainfra/ser	Oracle Diagnostics Logging - Text	Size Based

For more information, see *Oracle Fusion Middleware Administrator's Guide*.

3.4.1 Configuring the Logging File Encoding Property

The `oracle-soa-handler` log handler property of the `soa-diagnostic.log` file has no encoding property specified in the `SOA_Domain/config/fmwconfig/servers/server_soa/logging.xml` file. Instead, the `soa-diagnostic.log` file is written in the operating system's default encoding format. This can cause the following problems:

- Non-ASCII error messages can become unreadable because logging information is written to `soa-diagnostic.log` in the server's default encoding format.
- On Windows operating systems, writing in the default encoding format can lead to non-ASCII data loss.

To avoid this problem, specify a value of UTF-8 for the `oracle-soa-handler` log handler property in the `logging.xml` file.

```
<?xml version='1.0'?>
<logging_configuration>
  <log_handlers>
    <log_handler name='wls-domain'
class='oracle.core.ojdl.weblogic.DomainLogHandler' level='WARNING' />
    <log_handler name='oracle-soa-handler'
class='oracle.core.ojdl.logging.ODLHandlerFactory'>
      <property name='path' value='c:\soa1210.1411\user_
projects\domains\soa\servers\server_soa\logs\soa-diagnostic.log' />
      <property name='maxFileSize' value='10485760' />
      <property name='maxLogSize' value='104857600' />
      <property name='supplementalAttributes' value='J2EE_APP.name,J2EE_
MODULE.name,WEBSERVICE.name,WEBSERVICE_PORT.name,composite_instance_id,component_
instance_id,composite_name,component_name' />
      <property name='encoding' value='UTF-8' />
    </log_handler>
  </log_handlers>
  ...

```

Log files are written with ODL. You can view the content of log files from Oracle Enterprise Manager Fusion Middleware Control Console.

For more information about logging, see *Oracle Fusion Middleware Administrator's Guide*.

3.5 Changing the Driver Name to Support XA Drivers

If your data sources require support for XA drivers, you must change the driver name on Oracle WebLogic Server. This is particularly true for environments in which BPEL processes assume XA is present when calling database adapters and JMS adapters.

Change the driver name through one of the following methods.

- Edit in Oracle WebLogic Server Administration Console.
 1. Log into Oracle WebLogic Server Administration Console.
 2. In the left pane, select **Domain Structure**.
 3. Select **Services > JDBC > Data Source > SOADDataSource > Connection Pool**.
 4. For the **Driver Class Name**, change the value to `oracle.jdbc.xa.client.OracleXADataSource`.
This provides support for the XA driver.
 5. Restart the server.

- Edit the `SOADDataSource-jdbc.xml` file.
 1. Open the `soaDataSource-jdbc.xml` file on Oracle WebLogic Server.
 2. Change the `SOADDataSource` driver name from `oracle.jdbc.OracleDriver` to `oracle.jdbc.xa.client.OracleXADataSource`.

```
<?xml version="1.0" encoding="UTF-8"?>
<jdbc-data-source
/. . .
. . .
/ <name>SOADDataSource</name>
<jdbc-driver-params>
  <url>jdbc:oracle:thin:@adc60086fems.us.oracle.com:1537:co0yd570</url>
  <driver-name>*oracle.jdbc.xa.client.OracleXADataSource*</driver-name>
<properties>
  <property>
    <name>user</name>
    <value>fusion_soainfra</value>
  </property>
</properties>
/ . . .
. . ./
</jdbc-driver-params>
/. . .
. . ./
</jdbc-data-source>
```

Monitoring the SOA Infrastructure

This chapter describes how to monitor the SOA Infrastructure. All SOA composite applications are deployed to the SOA Infrastructure.

This chapter includes the following topics:

- [Section 4.1, "Monitoring SOA Infrastructure Recent Instances and Faults"](#)
- [Section 4.2, "Monitoring Processing Requests"](#)
- [Section 4.3, "Monitoring Service and Reference Binding Components in the SOA Infrastructure"](#)

For more information, see [Section 1.2.1, "Understanding the SOA Infrastructure Application."](#)

4.1 Monitoring SOA Infrastructure Recent Instances and Faults

You can monitor the SOA composite applications deployed to the SOA Infrastructure.

To monitor SOA Infrastructure recent instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
1. Select Home .	1. Select soa-infra .	1. Select SOA Infrastructure .

The upper part of the SOA Infrastructure Dashboard page displays the following details:

- Recent SOA composite application instances, instance IDs, and starting times. By default, only running instances are shown.
- The status of deployed SOA composite applications and their revision numbers, the number of instances created for each application, and the number of faulted instances in each application. The total number of deployed composites also displays in parentheses next to the **Show All** link.
- Recent faults and rejected messages, including the error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application in which the fault occurred, the location of the fault (service binding component, service component, or reference binding component), the instance ID of the SOA composite application, and a link to log messages describing the fault or rejected message. You can recover from

faults identified as recoverable at the SOA Infrastructure, SOA composite application, service engine, and service component levels.

The screenshot displays the SOA Infrastructure web console interface. At the top, it shows the user is logged in as 'weblogic' and the page was refreshed on Mar 23, 2009 6:41:09 AM PDT. The main navigation tabs include Dashboard, Deployed Composites, Instances, and Faults and Rejected Messages. The 'Recent Composite Instances' section shows a table with columns for Instance ID, Composite, and Start Time, listing instances 8 through 16, all of type 'CompositeTest [1.0]'. The 'Deployed Composites' section shows a table with columns for Composite, Status, Mode, Instances, and Faults, listing 'CompositeTest [1.0]' and 'TestResubmit [2.0]'. The 'Recent Faults and Rejected Messages' section shows a table with columns for Error Message, Recovery, Fault Time, Composite, Fault Location, Composite Instance ID, and Logs, listing several 'Exception occurred when bir' errors for the 'TestResubmit [2.0]' composite.

2. In the **Recent Composite Instances** section, perform the following tasks:
 - a. In the **Instance ID** column, click a specific instance ID to show the message flow through the various service components and binding components.
 - b. In the **Composite** column, click a specific SOA composite application to access its home page.
 - c. Click **Show All** below the section to access the Instances page of the SOA Infrastructure.
3. In the **Deployed Composites** section, perform the following tasks:
 - a. In the **Composite** column, click a specific SOA composite application to access its home page.
 - b. Click **Show All** below the section to access the Deployed Composites page of the SOA Infrastructure.
4. In the **Recent Faults and Rejected Messages** section, perform the following tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - b. In the **Recovery** column, if a fault is identified as recoverable, click **Recover** to perform fault recovery.
 - c. In the **Composite** column, click a SOA composite application to access its home page.

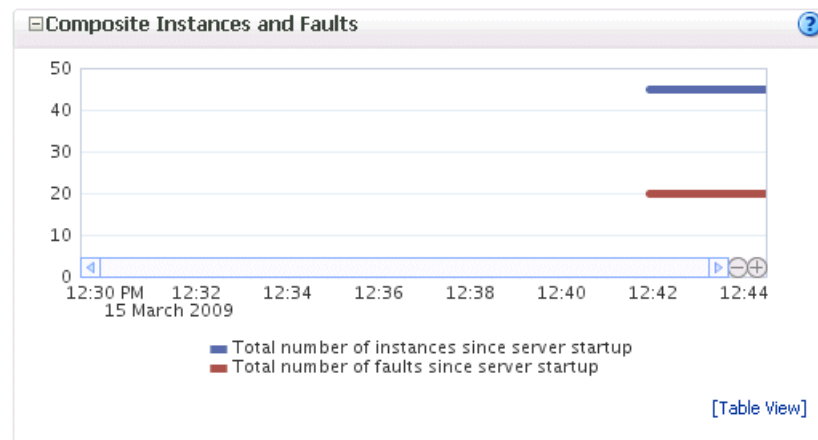
- d. In the **Fault Location** column, click a specific location to access the home page of the service, component, or reference in which the fault occurred.
- e. In the **Composite Instance ID** column, click a composite instance ID to access the flow trace of the message that contains that fault.
- f. In the **Logs** column, click a specific log to access the Log Messages page, with the search criteria prefiltered to display any log messages related to the fault.
- g. Click **Show All** below the section to access the Recent Faults and Rejected Messages page of the SOA Infrastructure.

The lower part of the SOA Infrastructure Dashboard page displays the following details:

- The number of service components running in the service engines (BPEL process, BPMN process (if Oracle BPM Suite is installed), Oracle Mediator, human workflow, business rules, and spring) and the number of faulted instances for each service engine.

Service Engines		
Name	Number of Components	Faults
BPEL Engine	3	0
BPMN Engine	5	0
Mediator Engine	0	0
Human Workflow Engine	10	0
Business Rules Engine	3	0
Spring Engine	0	0

- A graphical representation of the total number of instances and faults for all SOA composite applications since the SOA Infrastructure was last restarted.



5. In the **Name** column of the **Service Engines** section, click a specific service engine to access its home page.

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)
- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)

- *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files

4.2 Monitoring Processing Requests

You can monitor SOA Infrastructure processing requests. These are metrics for the message delivery between the service engines, service infrastructure, and binding components. Once a message is handed over to a service engine, the amount of time it takes to process that message (instance processing time) is *not* captured in these metrics.

To monitor processing requests:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Monitoring > Request Processing .	1. Right-click soa-infra .
	2. Select Monitoring > Request Processing .

The Request Processing page enables you to monitor the following details:

- The average request processing time for both synchronous and asynchronous messages, active requests, requests processed, and faulted requests in the service engines and service infrastructure.
- The average request processing time, requests processed, and errors occurring in service (inbound) and reference (outbound) binding components.

soa-infra | Logged in as **weblogic** | Host
 SOA Infrastructure | Page Refreshed Mar 2, 2010 5:06:38 PM PST

SOA Infrastructure Home > Request Processing

Service Engines
 Service engines are containers that host the business logic or processing rules of service components.

Name	Average Request Processing Time - Synchronous (ms)	Average Request Processing Time - Asynchronous (ms)	Active Requests	Requests Processed
BPEL Engine	27.000	39.800	0	61
Mediator Engine	0.000	150.400	0	20
Human Workflow	1,995.800	0.000	0	5
Business Rules En	276.647	0.000	0	17
Spring Engine	0.000	0.000	0	0

Service Infrastructure
 The Service Infrastructure internally connects components and enables data flow.

Name	Average Request Processing Time - Synchronous (ms)	Average Request Processing Time - Asynchronous (ms)	Active Requests	Requests Processed
Service Infrastructu	0.000	6.488	0.0	43.0

Binding Components
 Binding components make SOA composite applications accessible to the outside world.

Name	Average Request Processing Time (ms)	Requests Processed	Errors
Web Service (WS) Inbound	110.800	20.0	10
Web Service (WS) Outbound	27.000	2.0	0
Java EE Connector Architecture (JCA) Inbound	36.250	4.0	0
Java EE Connector Architecture (JCA) Outbound	141.885	52.0	2

2. In the **Service Engines** section, click a specific service engine (for example, **BPEL Engine**) to access details such as recent instances using this service engine, components using this service engine, and recent fault occurrences.

For more information, see the following sections:

- [Section 1.2.5, "Understanding Binding Components"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)
- [Section 1.2.7, "Understanding the Service Infrastructure"](#)

4.3 Monitoring Service and Reference Binding Components in the SOA Infrastructure

You can monitor all service and reference binding components used in all SOA composite applications deployed to the SOA Infrastructure. Services provide the outside world with an entry point to the SOA composite application. The WSDL file of the service advertises its capabilities to external applications. References enable messages to be sent from the SOA composite application to external services in the outside world.

To monitor service and reference binding components in the SOA Infrastructure:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Services and References .	1. Right-click soa-infra .
	2. Select Services and References .

The Services page displays details about the names and types of the services, the SOA composite applications in which the services are used, the total number of messages processed, the average processing time, and the number of faults occurring in the services.

soa-infra | SOA Infrastructure | Logged in as weblogic | Host | Page Refreshed Mar 2, 2010 5:08:47 PM PST

SOA Infrastructure Home > Interfaces

Services | References

Services provide the outside world with an entry point to the SOA composite application. The WSDL file of the service advertises its capabilities to external applications.

View

Service	Type	Composite	Total Messages	Average Processing Time (sec)	Faults
client	Web Service	ch11.2if [1.0]	0	0.000	0
client	Web Service	ch7.3assignProp [1.0]	0	0.000	0
client	Web Service	ch10.10exit [1.0]	0	0.000	0
client	Web Service	ch10.7wait [1.0]	0	0.000	0
client	Web Service	ch12.1scopeInit [1.0]	0	0.000	0
client	Web Service	ch12.4compensate2 [1.0]	0	0.000	0
client	Web Service	ch11.7forEachSeq [1.0]	0	0.000	0
client	Web Service	ch10.9javaExec [1.0]	0	0.000	0
client	Web Service	ch8.1cmplxTypeVar [1.0]	0	0.000	0
bpelprocess1_client_ep	Web Service	POApprovalEventSubscriber [1.0]	2	0.000	0
bpelprocess1_client_ep	Web Service	HTTPProject [1.0]	0	0.000	0
client	Web Service	ch8.4keepSrcElem [1.0]	0	0.000	0
client	Web Service	ch11.3while [1.0]	0	0.000	0
InBound	JCA Adapter	File_Med_File_Retry [1.0]	4	0.036	0
client	Web Service	ch10.4receiveElem [1.0]	0	0.000	0
client	Web Service	ch10.3invoke [1.0]	0	0.000	0
client	Web Service	ch8.1validate [1.0]	0	0.000	0

- In the **Service** column, click a specific service to access its home page.
- In the **Composite** column, click a specific SOA composite application to access its home page.
- Click the **References** tab.

The References page displays details about the names and types of the references, the SOA composite applications in which the references are used, the total number of messages processed, the average processing time, and the number of faults occurring in the references.

soa-infra | SOA Infrastructure | Logged in as weblogic | Host | Page Refreshed Mar 2, 2010 5:08:47 PM PST

SOA Infrastructure Home > Interfaces

Services | **References**

References enable messages to be sent from the SOA composite application to external services in the outside world.

View

Reference Service	Type	Composite	Total Messages	Average Processing Time (sec)	Faults
InvokeHttp	Web Service	HTTPProject [1.0]	0	0.000	0
FedEx	JCA Adapter	FODOrderProcessingComposite [2.0]	5	0.005	0
GetOrderInfo	JCA Adapter	FODOrderProcessingComposite [2.0]	17	0.358	0
GetCustomerInfo	JCA Adapter	FODOrderProcessingComposite [2.0]	17	0.009	0
Service1	Web Service	POApprovalEventPublisher [1.0]	2	0.027	0
OutBound	JCA Adapter	File_Med_File_Retry [1.0]	4	0.015	2
USPS	JCA Adapter	FODOrderProcessingComposite [2.0]	7	0.148	0
POApprovalFileOut	JCA Adapter	POApprovalEventPublisher [1.0]	2	0.005	0

5. In the **Reference** column, click a specific reference to access its home page.
6. In the **Composite** column, click a specific SOA composite application to access its home page.

For more information about services and references, [Section 1.2.5, "Understanding Binding Components."](#)

Part IV

Administering SOA Composite Applications

This part describes how to administer SOA composite applications.

This part includes the following chapters:

- [Chapter 5, "Deploying SOA Composite Applications"](#)
- [Chapter 6, "Securing SOA Composite Applications"](#)
- [Chapter 7, "Monitoring SOA Composite Applications"](#)
- [Chapter 8, "Managing SOA Composite Applications"](#)
- [Chapter 9, "Programmatically Managing SOA Composite Applications"](#)

Deploying SOA Composite Applications

This chapter describes how to deploy, redeploy, and undeploy a SOA composite application. To deploy from Oracle Enterprise Manager Fusion Middleware Control Console, you must first create a deployable archive in Oracle JDeveloper or through the `ant` or WebLogic Scripting Tool (WLST) command line tools. The archive can consist of a single SOA composite application revision in a JAR file or multiple composite application revisions (known as a SOA bundle) in a ZIP file.

This chapter includes the following topics:

- [Section 5.1, "Deploying Applications"](#)
- [Section 5.2, "Redeploying Applications"](#)
- [Section 5.3, "Undeploying Applications"](#)

For information on the following:

- Creating SOA composite application archives and configuration plans in which you define the URLs and property values to use for test, development, and production environments, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*
- For information on deploying with `ant` scripts, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*
- For information on deploying with WLST, see *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*

Note: If Oracle Enterprise Manager Fusion Middleware Control Console is run in a single sign-on (SSO)-enabled environment, you are again prompted to enter the user name and password credentials as part of the last step of the Deploy SOA Composite, Undeploy SOA Composite, and Redeploy SOA Composite wizards. This information is only requested once per Oracle Enterprise Manager Fusion Middleware Control Console session.

5.1 Deploying Applications

You can deploy SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console with the Deploy SOA Composite wizard. Use the Deploy SOA Composite wizard to deploy any of the following:

- A new SOA composite application for the first time
- A new revision (for example, 2.0) alongside an older revision (for example, 1.0) without impacting the latter. The revision deployed last becomes the new default

revision of that composite (unless you specify otherwise at a later step during deployment).

- A bundle (ZIP file) containing multiple SOA composite application revisions (for example, revisions 2.0, 3.0, and 4.0) of a SOA composite application that has different revisions currently deployed (for example, 1.0). This option enables you to deploy revisions 1.0, 2.0, 3.0, and 4.0 at the same time. The bundle can also contain revisions of different composites. There is no restriction that all revisions must be of the same composite application. There should not be any cross references between the composites in the same bundle. For example, composite A revision 1.0 should not reference Composite B revision 1.0.

Deployment extracts and activates the composite application in the SOA Infrastructure. Once an application is deployed, you can perform administration tasks, such as creating instances, configuring properties, monitoring performance, managing instances, and managing policies and faults.

Note: If you want to redeploy an *existing* revision of an application, do *not* use this wizard. Instead, use the Redeploy SOA Composite wizard.

To deploy applications:

1. Access the Deploy SOA Composite wizard through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Infrastructure Home Page...	From the SOA Composite Menu...
1. Select SOA Deployment > Deploy .	1. Right-click soa-infra . 2. Select SOA Deployment > Deploy .	1. Click the Deployed Composites tab. 2. Above the Composite table, click Deploy .	1. Select SOA Deployment > Deploy Another Composite .

Note: You can also access the Deploy SOA Composite wizard by selecting **Deploy to This Partition** from the **Deployment** dropdown list of the Manage Partitions page or home page of a specific partition, from the **SOA Partition** menu at the top of the home page of a specific partition, or by right-clicking a specific partition in the navigator.

The Select Archive page appears.

Select Archive ?

This wizard lets you create a runtime environment for SOA composite applications. Once this operation is performed, these applications can be administered using Oracle Enterprise Manager. SOA composites can be deployed.

Specify the archive or expanded directory and configuration plan to deploy a single revision of a SOA composite. Or specify a ZIP file and configuration plan to deploy multiple composite revisions.

Archive or Exploded Directory

You can deploy a Service archive (SAR) or a ZIP file containing one or more Service archives (SARs). You can also deploy an expanded archive directory that is present on the server on which Enterprise Manager is running. For each SOA composite is provided in its application package.

Archive is on the machine where this web browser is running.

Archive or exploded directory is on the server where Enterprise Manager is running.

Configuration Plan

The configuration plan is a file that contains the deployment settings for a SOA composite revision.

No external configuration plan is required.

Configuration plan is on the machine where this web browser is running.

Configuration plan is on the server where Enterprise Manager is running.

- In the **Archive or Exploded Directory** section, specify the archive of the SOA composite application to deploy. The archive contains the project files of the composite to be deployed (for example, **HelloWorld_rev1.0.jar** for a single archive or **OrderBooking_rev1.0.zip** for multiple archives). This information is required.
- In the **Configuration Plan** section, optionally specify the configuration plan to include with the archive. The configuration plan enables you to define the URL and property values to use in different environments. During process deployment, the configuration plan is used to search the SOA project for values that must be replaced to adapt the project to the next target environment.
- Click **Next**.

The Select Target page appears.

This page lists the Oracle SOA Suite managed server or cluster to which to deploy the SOA composite application archive.

- Select the partition into which to deploy this SOA composite application. Partitions enable you to logically group SOA composite applications into separate sections. Note that even if there is only one partition available, you must explicitly select it. Once deployed, a composite cannot be transferred to a different partition.

If you want to deploy to a partition that does not exist, exit the wizard and create the partition *before* deploying the composite. You create partitions in the Manage Partition page, accessible from the **SOA Infrastructure** menu.

If the server contains no partitions, you cannot deploy composite applications to that server. Also, if the server is not in a *running* state, you cannot deploy this archive. By default, a partition named **default** is automatically included with Oracle SOA Suite. You can delete the default partition.

Notes:

- A SOA composite application with the same name can be deployed to separate partitions. Each is deployed as a distinct, separate composite from the other.
 - You cannot deploy the same SOA composite application with a human workflow task into multiple partitions. For example, if the composite named **VacationRequest** includes **VacationRequestTask.task**, you cannot deploy this composite into a partition named **production** and a partition named **development**. Deploy this composite to only one partition.
-

If you invoke the Deploy SOA Composite wizard by selecting **Deploy to This Partition** from the **Deployment** dropdown list on the Manage Partitions page or home page of a specific partition, the partition to which to deploy is already selected. Therefore, the Select Target page is skipped.

6. Click **Next**.

The Confirmation page appears.

7. Review your selections.

8. Select whether to deploy the SOA composite application as the default revision. The default revision is instantiated when a new request comes in.

9. Click **Deploy**.

Processing messages are displayed.

At this point, the deployment operation cannot be canceled. Deployment continues even if the browser window is closed.

10. When deployment has completed, the home page of the newly deployed composite revision automatically displays. A confirmation message at the top of the page tells you that the composite has been successfully deployed. In the case of a bundle deployment, the Deployed Composites page of the SOA Infrastructure is displayed.

For information about creating configuration plans and deploying applications from Oracle JDeveloper, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

5.2 Redeploying Applications

You can redeploy SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console with the Redeploy SOA Composite wizard. Using the Redeploy SOA Composite wizard has the following consequences:

- A new version of a revision of a currently deployed SOA composite application is redeployed on the same deployment target (for example, old version 1.0 is redeployed as new version 1.0).
- If the older, currently deployed version of this revision has running instances, the state of those instances is changed to stale. The instance state is available in the instance listing, and you can access audit and flow trace details.

Notes:

- If you want to maintain multiple revisions of a deployed application (for example, revisions 1.0 and 2.0), do *not* use this wizard. Instead, use the Deploy SOA Composite wizard.
- Redeploying multiple SOA composite applications at once is not supported.

To redeploy applications:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Infrastructure Home Page...	From the SOA Composite Menu...
<ol style="list-style-type: none"> 1. Select SOA Deployment > Redeploy. The Select Composite page appears. 2. In the SOA Composite Deployments section, select the SOA composite application revision you want to redeploy, and click Next. 	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select SOA Deployment > Redeploy. The Select Composite page appears. 3. In the SOA Composite Deployments section, select the SOA composite application revision you want to redeploy, and click Next. 	<ol style="list-style-type: none"> 1. Click the Deployed Composites tab. 2. In the Composite table, select a specific SOA composite application. Only one application can be redeployed at a time. 3. Above the Composite table, click Redeploy. 	<ol style="list-style-type: none"> 1. Select SOA Deployment > Redeploy.

Note: You can also access the Redeploy SOA Composite wizard by right-clicking a partition and selecting **SOA Deployment > Redeploy**.

The Select Archive page appears.

2. In the **Archive or Exploded Directory** section, select the location of the SOA composite application revision you want to redeploy.
3. In the **Configuration Plan** section, optionally specify the configuration plan to include with the archive.
4. Click **Next**.

The Confirmation page appears.

5. Select whether to redeploy the SOA composite application as the default revision.
6. Click **Redeploy**.

Processing messages are displayed.

At this point, the deployment operation cannot be canceled. Deployment continues even if the browser window is closed.

7. When redeployment has completed, click **Close**.

When redeployment has completed, the home page of the newly redeployed composite revision is displayed. A confirmation message at the top of the page tells you that the composite has been successfully redeployed.

5.3 Undeploying Applications

You can undeploy SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console with the Undeploy SOA Composite wizard. Using the Undeploy SOA Composite wizard has the following consequences:

- You can no longer configure and monitor this revision of the application.
- You can no longer process instances of this revision of the application.
- The state of currently running instances is changed to stale and no new messages sent to this composite are processed.
- The instance state of the undeployed composite application is set to stale. The instance state is available in the instance listing, and you can access audit trail details. However, the flow trace is not available. If you click the **Flow** tab, a message is displayed indicating that the flow trace view is not available for undeployed composites.
- If you undeploy the default revision of the application (for example, 2.0), the next available revision of the application becomes the default (for example, 1.0).

Note: If you want to undeploy and then redeploy an existing revision of this application, do *not* use this wizard. Instead, use the Redeploy SOA Composite wizard. The Redeploy SOA Composite wizard enables you to redeploy an existing revision of a SOA composite application and remove (overwrite) the older, currently deployed version of the revision.

To undeploy applications:

Note: You can undeploy multiple SOA composite applications together if they are located in the same partition. For information, see [Section 8.10, "Grouping SOA Composite Applications into Partitions."](#)

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Infrastructure Home Page...	From the SOA Composite Menu...
<ol style="list-style-type: none"> 1. Select SOA Deployment >Undeploy. The Select Composite page appears. 2. In the SOA Composite Deployments section, select a specific SOA composite application to undeploy, and click Next. 	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select SOA Deployment > Undeploy. The Select Composite page appears. 3. In the SOA Composite Deployments section, select a specific SOA composite application to undeploy, and click Next. 	<ol style="list-style-type: none"> 1. Click the Deployed Composites tab. 2. In the Composite table, select a specific SOA composite application. Only one application can be undeployed at a time. 3. Above the Composite table, click Undeploy. 	<ol style="list-style-type: none"> 1. Select SOA Deployment > Undeploy.

Note: You can also access the Undeploy SOA Composite wizard through these additional partition options:

- Right-clicking a partition and selecting **SOA Deployment > Undeploy From This Partition**
 - Selecting **Deployment > Undeploy All From This Partition** on the partition home page
 - Selecting **Deployment > Undeploy All From This Partition** for the selected partition from the Manage Partitions page
-
-

The Confirmation page appears.

2. If you are satisfied, click **Undeploy**. Note that you are warned if you are about to undeploy the last remaining revision of a deployed composite application.

Processing messages are displayed.

At this point, the undeploy operation cannot be canceled. Undeployment continues even if the browser window is closed.

3. When undeployment has completed, the SOA Infrastructure Deployed Composites page automatically displays. A confirmation message at the top of the page tells you that the composite has been successfully undeployed.

Note: When a partition is deleted, all SOA composite applications in it are automatically undeployed. A message is displayed indicating that all the applications in that partition are to be undeployed.

Securing SOA Composite Applications

This chapter describes security procedures unique to SOA composite applications.

This chapter includes the following topics:

- [Section 6.1, "Introduction to Securing SOA Composite Applications"](#)
- [Section 6.2, "Configuring SOA Composite Applications for Two-Way SSL Communication"](#)
- [Section 6.3, "Invoking References in One-Way SSL Environments in Oracle JDeveloper"](#)
- [Section 6.4, "Configuring Oracle SOA Suite and Oracle HTTP Server for SSL Communication"](#)
- [Section 6.5, "Automatically Authenticating Oracle BPM Worklist Users in SAML SSO Environments"](#)
- [Section 6.6, "Automatically Authenticating Oracle BPM Worklist Users in Windows Native Authentication Environments"](#)
- [Section 6.7, "Automatically Authenticating Oracle Business Process Management Process Composer Users in Windows Native Authentication Environments"](#)
- [Section 6.8, "Listing Oracle Internet Directory as the First Authentication Provider"](#)
- [Section 6.9, "Switching from Non-SSL to SSL Configurations with Oracle BPM Worklist"](#)
- [Section 6.10, "Configuring Security for Human Workflow WSDL Files"](#)
- [Section 6.11, "Configuring SSL Between SOA Composite Application Instances and Oracle WebCache"](#)
- [Section 6.12, "Using a Custom Trust Store for One-Way SSL During Design Time"](#)
- [Section 6.13, "Enabling an Asynchronous Process Deployed to an SSL-Enabled, Managed Server to Invoke Another Asynchronous Process Over HTTP"](#)

Note: See the following sections for information on attaching and detaching policies:

- [Section 8.8, "Managing SOA Composite Application Policies"](#)
 - [Section 12.2, "Managing BPEL Process Service Component Policies"](#)
 - [Section 15.3, "Managing Mediator Policies"](#)
 - [Section 23.1, "Managing Human Task Service Component Policies"](#)
 - [Section 38.1, "Managing Binding Component Policies"](#)
-
-

6.1 Introduction to Securing SOA Composite Applications

This chapter describes security procedures unique to SOA composite applications. Most SOA composite application security procedures do not require SOA-unique steps and can be performed by following the documentation listed in [Table 6–1](#).

Table 6–1 Security Documentation

For Information On...	See The Following Guide...
Securing Oracle Fusion Middleware, including Oracle Single Sign-On (OSSO) configuration	<i>Oracle Fusion Middleware Security Guide</i>
Securing and administering Web services	<i>Oracle Fusion Middleware Security and Administrator's Guide for Web Services</i>
Understanding Oracle WebLogic Server security	<i>Oracle Fusion Middleware Understanding Security for Oracle WebLogic Server</i>
Securing an Oracle WebLogic Server production environment	<i>Oracle Fusion Middleware Securing a Production Environment for Oracle WebLogic Server</i>
Securing Oracle WebLogic Server	<i>Oracle Fusion Middleware Securing Oracle WebLogic Server</i>
Developing new security providers for use with Oracle WebLogic Server	<i>Oracle Fusion Middleware Developing Security Providers for Oracle WebLogic Server</i>
Securing Web service for Oracle WebLogic Server	<i>Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server</i>
Programming security for Oracle WebLogic Server	<i>Oracle Fusion Middleware Programming Security for Oracle WebLogic Server</i>

6.2 Configuring SOA Composite Applications for Two-Way SSL Communication

Oracle SOA Suite uses both the Oracle WebLogic Server and Sun secure socket layer (SSL) stacks for two-way SSL configurations.

- For the inbound Web service bindings, Oracle SOA Suite uses the Oracle WebLogic Server infrastructure and, therefore, the Oracle WebLogic Server libraries for SSL.
- For the outbound Web service bindings, Oracle SOA Suite uses JRF HttpClient and, therefore, the Sun JDK libraries for SSL.

Due to this difference, start Oracle WebLogic Server with the following JVM option.

1. Open the following file:
 - On UNIX operating systems, open `$MIDDLEWARE_HOME\user_projects\domains\domain_name\bin\setDomainEnv.sh`.
 - On Window operating systems, open `MIDDLEWARE_HOME/user_projects/domains/domain_name/bin/setDomainEnv.bat`.
2. Add the following lines in the `JAVA_OPTIONS` section, if the server is enabled for one-way SSL (server authorization only):

```
-Djavax.net.ssl.trustStore=your_truststore_location
```

For two-way SSL, the keystore information (location and password) is not required.

In addition, perform the following steps to enable two-way SSL for a SOA composite application to invoke another SOA composite application or another non-SOA application.

Note: Both the server and client are assumed to have been configured for SSL with mutual authentication.

1. On the client side, provide the keystore location.
 - a. From the **SOA Infrastructure** menu, select **SOA Administration > Common Properties**.
 - b. At the bottom of the page, click **More SOA Infra Advanced Configuration Properties**.
 - c. Click **KeystoreLocation**.
 - d. In the **Value** column, enter the keystore location.
 - e. Click **Apply**.
 - f. Click **Return**.
2. During design time in Oracle JDeveloper, update the reference section in the `composite.xml` file with the `oracle.soa.two.way.ssl.enabled` property.

```
<reference name="Service1"
  ui:wSDLLocation=". . .">
  <interface.wSDL interface=". . ."/>
  <binding.ws port=". . .">
    <property name="oracle.soa.two.way.ssl.enabled">true</property>
  </binding.ws>
</reference>
```

3. In Oracle Enterprise Manager Fusion Middleware Control Console, select **WebLogic Domain > domain_name**.
4. Right-click `domain_name` and select **Security > Credentials**.
5. Click **Create Map**.
6. In the **Map Name** field, enter a name (for example, `SOA`), and click **OK**.
7. Click **Create Key**.
8. Enter the following details.

Field	Description
Select Map	Select the map created in Step 6 (for this example, SOA).
Key	Enter the key name (<code>KeystorePassword</code> is the default).
Type	Select Password .
User Name	Enter the keystore user name (<code>KeystorePassword</code> is the default).
Password	Enter the password that you created for the keystore.

Note: When you set up SSL in Oracle WebLogic Server, a key alias is required. You must enter `mykey` as the alias value. This value is required.

9. Set the keystore location in Oracle Enterprise Manager Fusion Middleware Control Console. See Step 1 for instructions.
10. Modify the `composite.xml` syntax to use `https` and `sslport` to invoke a SOA composite application. For example, change the syntax shown in bold:

```
<?xml version="1.0" encoding="UTF-8" ?>
<!-- Generated by Oracle SOA Modeler version 1.0 at [4/1/09 11:01 PM]. -->
<composite name="InvokeEchoBPELSync"
revision="1.0"
label="2009-04-01_23-01-53_994"
mode="active"
state="on"
xmlns="http://xmlns.oracle.com/sca/1.0"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
xmlns:orawsp="http://schemas.oracle.com/ws/2006/01/policy"
xmlns:ui="http://xmlns.oracle.com/soa/designer/">
<import
namespace="http://xmlns.oracle.com/CustomApps/InvokeEchoBPELSync/BPELProcess1"
location="BPELProcess1.wsdl" importType="wsdl"/>
<import namespace="http://xmlns.oracle.com/CustomApps/EchoBPELSync/
BPELProcess1" location="http://hostname:port/soa-infra/services/default/EchoBPEL
Sync/BPELProcess1.wsdl"
importType="wsdl"/>
```

to use `https` and `sslport`:

```
location="https://hostname:sslport/soa-infra/services/default/EchoBPELSync
/BPELProcess1.wsdl"
```

6.3 Invoking References in One-Way SSL Environments in Oracle JDeveloper

When invoking a Web service as an external reference from a SOA composite application in one-way SSL environments, ensure that the certificate name (CN) and the host name of the server exactly match. This ensures a correct SSL handshake.

For example, if a Web service is named `adfbcb` and the certificate has a server name of `myhost05`, the following results in an SSL handshake exception.

```
<import namespace="/adfbcb1/common/"
```

```

    location="https://myhost05.us.oracle.com:8002/CustomApps-adfbc1-context-root/Ap
pModuleService?WSDL"
    importType="wsdl"/>
    <import namespace="/adfbc1/common/" location="Service1.wsdl"
    importType="wsdl"/>

```

If you switch the order of `import`, the SSL handshake passes.

```

<import namespace="/adfbc1/common/" location="Service1.wsdl"
    importType="wsdl"/>
    <import namespace="/adfbc1/common/"

    location="https://myhost05.us.oracle.com:8002/CustomApps-adfbc1-context-root/Ap
pModuleService?WSDL"
    importType="wsdl"/>

```

Note the following restrictions around this issue:

- There are no options for ignoring host name verification in Oracle JDeveloper as exist with the Oracle WebLogic Server Administration Console. This is because the SSL kit used by Oracle JDeveloper is different. Only the trust store can be configured from the command line. All other certificate arguments are not passed.
- In the WSDL file, `https://hostname` must match with that in the certificate, as described above. You cannot perform the same procedures as you can with a browser. For example, if the host name is `myhost05.us.oracle.com` in the certificate's CN, then you can use `myhost05`, `myhost05.us.oracle.com`, or the IP address from a browser. In Oracle JDeveloper, always use the same name as in the certificate (that is, `myhost05.us.oracle.com`).

6.4 Configuring Oracle SOA Suite and Oracle HTTP Server for SSL Communication

Follow these steps to configure SSL communication between Oracle SOA Suite and Oracle HTTP Server.

6.4.1 Configuring Oracle HTTP Server for SSL Communication

1. Update `mod_ssl.conf` with the `<Location /integration/services>` location directive.

```

LoadModule weblogic_module    ${ORACLE_HOME}/ohs/modules/mod_wl_ohs.so

<IfModule mod_weblogic.c>
    WebLogicHost host.domain.com
    WLLogFile <logdir>/ohs_ssl.log
    Debug ALL
    DebugConfigInfo ON
    SecureProxy ON
    MatchExpression *.jsp
    WLSslWallet <OHS_
HOME>/instances/instance1/config/OHS/ohs1/keystores/default
</IfModule>

<Location /soa-infra>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

```

```

<Location /b2bconsole>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /b2b>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /integration/worklistapp>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /integration/services>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /DefaultToDoTaskFlow>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /OracleBAM>
    WebLogicPort 9002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

<Location /OracleBAMWS>
>     WebLogicPort 9002
>     SetHandler weblogic-handler
>     ErrorPage http://host.domain.com:port/error.html
> </Location>

<Location /sdpmessaging/userprefs-ui/>
    WebLogicPort 8002
    SetHandler weblogic-handler
    ErrorPage http://host.domain.com:port/error.html
</Location>

```

2. Start the Oracle WebLogic Servers as described in [Section 6.2, "Configuring SOA Composite Applications for Two-Way SSL Communication."](#)

6.4.2 Configuring Certificates for Oracle Client, Oracle HTTP Server, Oracle WebLogic Server

1. Export the user certificate from the Oracle HTTP Server wallet.

```

orapki wallet export -wallet . -cert cert.txt -dn 'CN=\ "Self-Signed
Certificate for ohs1 \ ",OU=OAS,O=ORACLE,L=REDWOODSHORES,ST=CA,C=US'

```

2. Import the above certificate into the Oracle WebLogic Server truststore as a trusted certificate.

```
keytool -file cert.txt -importcert -trustcacerts -keystore DemoTrust.jks
```

3. Export the certificate from the Oracle WebLogic Server truststore.

```
keytool -keystore DemoTrust.jks -exportcert -alias wlscertgencab -rfc -file certgencab.crt
```

4. Import the above certificate to the Oracle HTTP Server wallet as a trusted certificate.

```
orapki wallet add -wallet . -trusted_cert -cert certgencab.crt -auto_login_only
```

5. Restart Oracle HTTP Server.

6. Restart the Oracle WebLogic Servers as described in [Section 6.2, "Configuring SOA Composite Applications for Two-Way SSL Communication."](#)

6.5 Automatically Authenticating Oracle BPM Worklist Users in SAML SSO Environments

In order to be automatically authenticated when accessing a second Oracle BPM Worklist from a first Oracle BPM Worklist in Security Assertion Markup Language (SAML) SSO environments, you must perform the following steps. Otherwise, you are prompted to log in again when you access the second Oracle BPM Worklist. In these environments, the first Oracle BPM Worklist is configured as the SAML identity provider and the second Oracle BPM Worklist that you are attempting to access is configured as the SAML service provider.

1. Add `/integration/worklistapp/*` as the redirect URL for `worklistapp` to the SAML service provider site's `SAML2IdentityAsserter` configuration as follows.
 - a. In the Oracle WebLogic Server Administration Console, select **Security Realms**.
 - b. Click the realms for the service providers.
 - c. Select the **Providers** tab, and then the **Authentication** subtab.
 - d. From the provider list, select the provider with the description **SAML 2.0 Identity Assertion Provider**.

If you do not see the SAML identity assertion provider configuration, follow the instructions in *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

- e. Select the **Management** tab.
- f. Under the **Management** tab, you can see a list of identity provider partners. These are hosts that have been configured as the SAML identity provider partners for this SAML identity service provider site. Remember that this configuration step is performed on the identity service provider site on which the worklist application is hosted.
- g. Select the identity provider site where you want the user to perform the initial login.
- h. Scroll down the page until you see the field **Redirect URIs**.
- i. Add `/integration/worklistapp/*` to the list.

After performing this step, you can log in to Oracle BPM Worklist at the SAML identity provider site through the regular URL of `/integration/worklistapp`. If necessary, you can then navigate to the URL `/integration/worklistapp/ssologin` at the SAML service provider site, where you gain access to Oracle BPM Worklist and are automatically authenticated.

For more information on `SAML2IdentityAsserter` and configuring SSO with Web browsers and HTTP clients, see *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

6.6 Automatically Authenticating Oracle BPM Worklist Users in Windows Native Authentication Environments

For Windows native authentication through Kerberos to work with Oracle BPM Worklist, you must use the `/integration/worklistapp/ssologin` protected URL. For example, after configuring Windows native authentication, you access Oracle BPM Worklist as follows:

```
http://host_name.domain_name:8001/integration/worklistapp/ssologin
```

For information on configuring SSO with Microsoft clients, see *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

6.7 Automatically Authenticating Oracle Business Process Management Process Composer Users in Windows Native Authentication Environments

For Windows native authentication through Kerberos to work with Oracle Business Process Management Process Composer, you must use the `bpm/composer/ssologin` protected URL. For example, after configuring Windows native authentication, you access Process Composer as follows:

```
http://host_name.domain_name:8001/bpm/composer/ssologin
```

For information on configuring SSO with Microsoft clients, see *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

6.8 Listing Oracle Internet Directory as the First Authentication Provider

The Oracle BPM Worklist and workflow services use Java Platform Security (JPS) and the User and Role API. For this reason, the Oracle Internet Directory authenticator must be the first provider listed when workflow is used with Oracle Internet Directory. If Oracle Internet Directory is not listed first (for example, it is listed below `DefaultAuthenticator`), login authentication fails.

For information about changing the order of authentication providers, see *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

6.9 Switching from Non-SSL to SSL Configurations with Oracle BPM Worklist

Switching from non-SSL to SSL configurations with Oracle BPM Worklist requires the **Frontend Host** and **Frontend HTTPS Port** fields to be set in Oracle WebLogic Server

Administration Console. Not doing so results in exception errors when you attempt to create to-do tasks.

1. Log in to Oracle WebLogic Server Administration Console.
2. In the **Environment** section, select **Servers**.
3. Select the name of the managed server (for example, `soa_server1`).
4. Select **Protocols**, then select **HTTP**.
5. In the **Frontend Host** field, enter the host name on which Oracle BPM Worklist is located.
6. In the **Frontend HTTPS Port** field, enter the SSL listener port.
7. Click **Save**.

6.10 Configuring Security for Human Workflow WSDL Files

If the WSDL files for human workflow services are not exposed to external consumers, then set the flag that exposes the WSDL to `false` for each of the services:

```
<expose-wsdl>false</expose-wsdl>
```

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle Web Services*.

6.11 Configuring SSL Between SOA Composite Application Instances and Oracle WebCache

The Test Web Service page, in an Oracle WebCache and Oracle HTTP Server environment, may require communication back through Oracle WebCache. Therefore, SSL must be configured between the SOA composite application instance and Oracle WebCache (that is, export the user certificate from the Oracle WebCache wallet and import it as a trusted certificate in the Oracle WebLogic Server truststore).

6.12 Using a Custom Trust Store for One-Way SSL During Design Time

To invoke a SOA composite application from another composite over HTTPS when using a custom trust store created with a tool such as `keytool` or `orapki`, perform the following actions in Oracle JDeveloper.

1. To fetch a WSDL file in the reference section, set the trust store information in **Tools > Preferences > Http Analyzer > HTTPS Setup > Client Trusted Certificate Keystore**.
2. During deployment to an SSL-enabled server, use the JSSE property at the command line:

```
jdev -J-Djavax.net.ssl.trustStore=your_trusted_location
```

6.13 Enabling an Asynchronous Process Deployed to an SSL-Enabled, Managed Server to Invoke Another Asynchronous Process Over HTTP

Assume you create the following environment:

- Asynchronous BPEL process A that invokes asynchronous BPEL process B

- Asynchronous BPEL process A is deployed to a one-way SSL enabled, managed server
- All WSDL reference and bindings use plain HTTP

At run time, the WSDL is looked for over HTTPS, and the callback message from asynchronous BPEL process B fails.

To resolve this issue, the `callbackServerURL` property must be passed at the reference binding level in the `composite.xml` file. This explicitly indicates the value of the callback URL for the given reference invocation. If the client composite is running in an SSL-managed server, then the callback defaults to SSL.

```
<reference name="Service1"
ui:wSDLLocation="http://localhost:8000/soa-infra/services/default/AsyncSecondBPELMTOM/BPELProcess1.wsdl">
  <interface.wsdl
    interface="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl.interface(BPELProcess1)"
    callbackInterface="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl.interface(BPELProcess1Callback)"/>
  <binding.ws
    port="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl.endpoint(bpelprocess1_client_ep/BPELProcess1_pt)"

    location="http://localhost:8000/soa-infra/services/default/AsyncSecondBPELMTOM/bpelprocess1_client_ep?WSDL">
      <wsp:PolicyReference URI="oracle/wss_username_token_client_policy"
        orawsp:category="security"
        orawsp:status="enabled"/>
      <wsp:PolicyReference URI="oracle/wsaddr_policy"
        orawsp:category="addressing"
        orawsp:status="enabled"/>
    .
    <property name="callbackServerURL">http://localhost:8000/</property>
    .
  </binding.ws>
  .
  <callback>
    <binding.ws
      port="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl.endpoint(bpelprocess1_client_ep/BPELProcess1Callback_pt)">
        <wsp:PolicyReference
          URI="oracle/wss_username_token_service_policy"
          orawsp:category="security"
          orawsp:status="enabled"/>
        </binding.ws>
      </callback>
    .
  </reference>
```

Monitoring SOA Composite Applications

This chapter describes how to monitor instances and faults in SOA composite applications.

This chapter includes the following topic:

- [Section 7.1, "Monitoring SOA Composite Application Recent Instances and Faults"](#)

For more information, see [Section 1.2.2, "Understanding SOA Composite Applications."](#)

7.1 Monitoring SOA Composite Application Recent Instances and Faults

You can monitor SOA composite application recent instances and faults from the SOA composite application Dashboard page. This page provides a high-level overview of the most recent state of the application.

To monitor SOA composite application recent instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Click **Dashboard** (if it is not already selected).

The upper part of the Dashboard page displays the following details:

- A summary of composite life cycle states at the top of the Dashboard page, such as the number of running instances, total instances, and mode of the composite (active or retired).
- Recent SOA composite application instances, including the instance ID, name, conversation ID, state (for example, faulted or completed), and start time.
- Recent faults and rejected messages, including the error message, whether or not you can recover from the fault, the time at which the fault occurred, the fault location (service, service component, or reference), the instance ID of the SOA composite application, and a link to log files describing the fault.

POApprovalEventPublisher [1.0] | Logged in as weblogic | Host | Page Refreshed Mar 2, 2010 5:15:42 PM PST

Running Instances 0 | Total 2 | Active | Retire ... | Shut Down... | Test | Settings... |

Dashboard | Instances | Faults and Rejected Messages | Unit Tests | Policies

Recent Instances

Show Only Running Instances | Running 0 | Total 2

Instance ID	Name	Conversation ID	State	Start Time
19		urn:uuid:86cd83b3-1	Completed	Feb 28, 2010 11:07:10 PM
16		urn:uuid:a474de3b-	Completed	Feb 28, 2010 11:05:25 PM

Show All

Recent Faults and Rejected Messages

Show only system faults

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
java.lang.RuntimeException		Feb 28, 2010 11:06:08 PM	poprocessinginitia	Unavailable	
java.lang.RuntimeException		Feb 28, 2010 11:03:42 PM	poprocessinginitia	Unavailable	
java.lang.RuntimeException		Feb 28, 2010 11:03:31 PM	poprocessinginitia	Unavailable	
java.lang.RuntimeException		Feb 28, 2010 10:58:37 PM	poprocessinginitia	Unavailable	

3. In the **Recent Instances** section, perform the following tasks:
 - a. In the **Instance ID** column, click a specific instance ID to receive all instance details (flow trace and individual component audit trails) about the composite application. This displays the faults in the continuous context of a message flow from instance to instance.



Note: If you disable the **Capture Composite Instance State** check box, the **Recent Instances** section does not show instances in need of fault recovery as running. However, these instances in need of recovery are still running and display in the **Recoverable** column of the **Component Metrics** section of this page, regardless of whether the instances state is captured or not.




- b. Click **Show All** below the section to access the Instances page of the SOA composite application.
4. In the **Recent Faults and Rejected Messages** section, perform the following tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - b. In the **Recovery** column, if a fault is identified as recoverable, click **Recover** to perform fault recovery at the component instance level.
 - c. In the **Fault Location** column, click a specific location to access the Dashboard page for the service, service component, or reference.
 - d. In the **Composite Instance ID** column, click a composite instance ID to access the flow trace of the message that contains the fault. This displays the faults in the continuous context of a message flow from instance to instance.

- e. In the **Logs** column, click a specific log to access the Log Messages page filtered for the specific faulted instance.
- f. Click **Show All** below the section to access the Recent Faults and Rejected Messages page of the SOA composite application.

The lower part of the Dashboard page displays the following details:

- The name and type of service components used in this SOA composite application, the number of running and total instances, and the number of recoverable and nonrecoverable faulted instances for each service component.
- The name and type of service (inbound) and reference (outbound) binding components used in this SOA composite application, the number of binding component faults, the total messages processed, and the average message processing time.

Component Metrics						
Name	Component Type	Total Instances	Running Instances	Faulted Instances		
				Recoverable	Non Recoverable	
 Mediator1	Mediator	2	0	0	0	
 POProcessingInitiatorE	BPEL	2	0	0	0	

Services and References						
Name	Type	Usage	Faults	Total Messages	Average Processing Time (sec)	
 poprocessinginitiatorbpel_client_ep	Web Service	Service	10	8	0.111	
 Service1	Web Service	Reference	0	2	0.027	
 POApprovalFileOut	JCA Adapter	Reference	0	2	0.005	

The **Faulted Instances** columns of the **Component Metrics** section count faults that are recoverable and nonrecoverable. Component instances associated with a recoverable fault are not considered faulted. These instances are considered to be running because they have not reached the end of the life cycle. These instances can be recovered through a recovery option such as retry, rethrow, abort, and so on. This count can differ from the **Recent Instances** section of this page and the Faults and Rejected Messages page, which list faults without making a distinction between recoverable and nonrecoverable.

5. In the **Name** column of the **Component Metrics** section, click a service component. This displays its home page for viewing specific details about instances, faults, and policies.
6. In the **Name** column of the **Services and References** section, click a service or reference. This displays its home page for viewing specific details about instances, faults, policies, rejected messages, and message header configuration properties.

Note: You can also go to the **Instances** tab and the **Faults and Rejected Messages** tab of the SOA Infrastructure to monitor instances and faults across all deployed composites, respectively. From there, you can click a specific composite for additional details.

For more information, see the following sections:

- [Section 1.2.3, "Understanding SOA Composite Application Instances"](#)

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.5, "Understanding Binding Components"](#)
- [Section 8.5, "Recovering from SOA Composite Application Faults at the SOA Infrastructure Level"](#)
- [Section 8.6, "Recovering from SOA Composite Application Faults in the Application Home Page"](#)
- *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files

Managing SOA Composite Applications

This chapter describes how to manage SOA composite applications, including initiating a test instance of an application; managing faults, policies, and instance states; and testing SOA composite applications.

This chapter includes the following topics:

- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)
- [Section 8.2, "Managing the State of Deployed SOA Composite Applications"](#)
- [Section 8.3, "Monitoring and Deleting SOA Composite Application Instances from the Application Home Page"](#)
- [Section 8.4, "Monitoring and Deleting SOA Composite Application Instances at the SOA Infrastructure Level"](#)
- [Section 8.5, "Recovering from SOA Composite Application Faults at the SOA Infrastructure Level"](#)
- [Section 8.6, "Recovering from SOA Composite Application Faults in the Application Home Page"](#)
- [Section 8.7, "Automating the Testing of SOA Composite Applications"](#)
- [Section 8.8, "Managing SOA Composite Application Policies"](#)
- [Section 8.9, "Exporting a Running SOA Composite Application"](#)
- [Section 8.10, "Grouping SOA Composite Applications into Partitions"](#)
- [Section 8.11, "Deleting Large Numbers of Instances with the Purge Script"](#)

Note: The procedures in this guide describe how to access Oracle Enterprise Manager Fusion Middleware Control Console pages from the **SOA Infrastructure** menu, **soa-infra** icon in the navigator, **SOA Composite** menu, and **SOA Partition** menu. You can also access many pages from the Farm home page. For more information, see [Section 2.2.6, "Navigating to the SOA Infrastructure or SOA Composite Application Home Page."](#)

8.1 Initiating a SOA Composite Application Test Instance

This section describes how to initiate a test instance of a deployed SOA composite application.

To initiate a SOA composite application test instance:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the Composite Menu...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 4. At the top of the page, click Test. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application. 2. At the top of the page, click Test. 	<ol style="list-style-type: none"> 1. Select Test Service > client.

Note: The **Test** button is disabled in the following situations:

- The SOA composite application revision is stopped or retired.
- There are no Web services available for the application. Only composites having services with Web service bindings can be tested from this page.

2. If the composite includes multiple services, the **Test** button has a drop-down list to select the service to test.

The Test Web Service page for initiating an instance appears.

This page provides many options for initiating an instance. At a minimum, you must specify the XML payload data to use in the **Input Arguments** section.

The WSDL file and endpoint URL are populated automatically based on the service you selected to test. The endpoint URL is derived from the WSDL and can be overridden to invoke that service at a different location. If the service selected has multiple ports, a drop-down list is displayed. Otherwise, the port of the current service is displayed.



3. Accept the default values for these fields or provide values appropriate to your test environment.

4. If you change the WSDL file, click **Parse WSDL** to reload the WSDL file.

If the WSDL URL does not contain the revision number, it is processed by the default composite application. For example, if there are two revisions of a

composite application named HelloWorld, then the following endpoints are exposed by them:

- `http://host:port/soa-infra/services/default/HelloWorld!1.0/client`
- `http://host:port/soa-infra/services/default/HelloWorld!2.0/client`

However, if the WSDL specified for Web service invocation does not contain the revision details (for example, `http://host:port/soa-infra/services/default/HelloWorld/client`), it is processed by the composite revision that is set as default.

5. If you want to edit the endpoint URL, click **Edit Endpoint URL** and make appropriate changes.

The lower part of the Test Web Service page consists of the **Request** tab. This tab enables you to specify security, quality of service, HTTP transport, stress testing options, and XML input arguments:

Request

Response

Security

WSS Username Token
 HTTP Basic Auth
 Custom Policy
 None

Quality of Service

WS-RM WSDL Default None Custom
 MTOM WSDL Default None Custom

Policy URI
Policy URI

WS-Addressing WSDL Default None Custom

Policy URI

HTTP Transport Options

Enable SOAP Action

SOAP Action

Additional Test Options

Enable Stress Test

Concurrent Threads

Loops per Thread

Delay in Milliseconds

Input Arguments

Tree View

Name	Type	Value
* customerName	string	<input type="text"/>
* customerAge	int	<input type="text"/>
* customerAnnualIncome	double	<input type="text"/>
* city	string	<input type="text"/>

The **Security** section includes the following fields for passing security properties with messages.

Field	Description
WSS Username Token	Inserts a WS-Security SOAP header. The Username field is required, and the Password field is optional.

Field	Description
Http Basic Auth	Inserts the username and password credentials in the HTTP transport header. Both the Username and Password fields are required.
Custom Policy	Uses a custom policy to authenticate the user (specifies the URI for the custom policy). The Username and Password fields are optional.
None	Select to not specify security credentials. This is the default selection.

6. Accept the default values for these fields or provide values appropriate to your test environment.

The **Quality of Service** section includes the following fields. Oracle Fusion Middleware uses a policy-based model to manage Web services. A policy applies behavior requirements to the delivery of messages. For additional details about using the Test Web Service page, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.

Field	Description
WS-RM	<p>Select one of the following options for testing WS-Reliable Messaging (RM) protocol policies. Reliable messaging policies support this protocol, which guarantees the end-to-end delivery of messages.</p> <ul style="list-style-type: none"> ▪ WSDL Default: Executes the default behavior of the WSDL. For example, if the WSDL contains a reference to a WS-RM policy, then the policy is enforced. If the WSDL does not contain a reference to a WS-RM policy, then reliable messaging is not tested. ▪ None: No policy for WS-RM is tested even if the WSDL contains a reference to a policy. ▪ Custom: Enforces a custom policy. Specify the URI of the custom policy in the Policy URI field. If a WS-RM policy is referenced in the WSDL, it is ignored, and the policy specified in the Policy URI field is used instead.
MTOM	<p>Select one of the following options for testing Message Transmission Optimization Mechanism (MTOM) policies. MTOM policies ensure that attachments are in MTOM format, a format for efficiently sending binary data to and from Web services.</p> <ul style="list-style-type: none"> ▪ WSDL Default: Executes the default behavior of the WSDL. For example, if the WSDL contains a reference to an MTOM policy, then the policy is enforced. If the WSDL does not contain a reference to an MTOM policy, then MTOM is not tested. ▪ None: No policy for MTOM is tested, even if the WSDL contains a reference to a policy. ▪ Custom: Enforces a custom policy. Specify the URI of the custom policy in the Policy URI field. If an MTOM policy is referenced in the WSDL, it is ignored, and the policy specified in the Policy URI field is used instead.

Field	Description
WS-Addressing	<p>Select one of the following options for testing WS addressing policies. WS addressing policies verify that SOAP messages include WS-Addressing headers in conformance with the WS-Addressing specification.</p> <ul style="list-style-type: none"> ▪ WSDL Default: Executes the default behavior of the WSDL. For example, if the WSDL contains a reference to a WS-Addressing policy, then the policy is enforced. If the WSDL does not contain a reference to a WS-Addressing policy, then WS-Addressing is not tested. ▪ None: No policy for WS-Addressing is tested even if the WSDL contains a reference to a policy. ▪ Custom: Enforces a custom policy. Specify the URI of the custom policy in the Policy URI field. If a WS-Addressing policy is referenced in the WSDL, it is ignored, and the policy specified in the Policy URI field is used instead.

7. Accept the default values for these fields or provide values appropriate to your test environment.

The **HTTP Transport Options** section includes the following fields.

Field	Description
Enable SOAP Action	Specifies whether the WSDL <code>soap:operation</code> has a <code>soapAction</code> attribute. This flag is enabled if a <code>soapAction</code> attribute exists. If you do not want to send a request with the SOAP action HTTP header, then clear the check box.
SOAP Action	Displays the <code>soapAction</code> attribute of the WSDL <code>soap:operation</code> , if one exists. You may specify a different SOAP action in this text box.

8. Accept the default values for these fields or provide values appropriate to your test environment.

The **Additional Test Options** section includes the following fields. This section provides a simple stress test that simultaneously invokes multiple instances.

Note: This is *not* a real stress test tool. Therefore, do not enter huge values for both concurrent threads and the number of times to invoke the operation. Doing so can result in errors.

Field	Description
Enable Stress Test	Click Enable to create a simple stress test. With this enabled, no conversation ID is displayed.
Concurrent Threads	Enter the number of concurrent threads on which the invocations should be sent. The default is 5 threads.
Loops per Thread	Enter the number of times to invoke the operation. The default is 10 times.
Delay in Milliseconds	Specify the delay of milliseconds to wait between operation invocations. The default is 1000 milliseconds (1 second).

9. Accept the default values for these fields or provide values appropriate to your test environment.

The **Input Arguments** section includes the following options for entering XML payload data.

Field	Description
Tree View	Displays a graphical interface of text fields in which to enter information. This option automatically generates the required headers and XML structure.
XML View	Displays the XML file format for inserting values. You can paste the raw XML payload of your message into this field.

Note: If you are using Oracle Enterprise Manager Grid Control Console, you can save the payload you enter. This feature is not available with Oracle Enterprise Manager Fusion Middleware Control Console.

10. Click **Test Web Service**.

The test results appear in the **Response** tab upon completion.

The screenshot shows the Oracle Enterprise Manager console interface. At the top, there are two tabs: 'Request' and 'Response', with 'Response' selected. Below the tabs, the test status is 'Passed' and the response time is '5473 ms'. There is a 'Tree View' dropdown menu. Below that, there is a link to 'Launch Message Flow Trace'. A table displays the message flow trace with the following data:

Name	Type	Value
payload	payload	
result	string	Hello Joe

Note: The **Response** tab does not display payload data if you are performing a stress test or are testing an asynchronous service.

- Click **Launch Message Flow Trace** to access the flow trace of the instance.
- To return to the composite home page, click the name of the composite that appears at the top of the page or select **Home** from the composite target menu.
- Return to the Dashboard page of the SOA composite application.

The **Recent Instances** table lists recent SOA composite application instances. Each created instance has its own unique ID.

For more information, see the following sections:

- Section 1.2.3, "Understanding SOA Composite Application Instances" for conceptual details about instances
- Section 1.4.3.2, "Understanding Policies" for an overview of policies
- Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for specific details about policies and testing Web services from the Test Web Service page

8.2 Managing the State of Deployed SOA Composite Applications

You can manage the life cycle state of deployed SOA composite applications from either of two pages:

- From the Deployed Composites page of the SOA Infrastructure, which lists all SOA composite applications deployed to the SOA Infrastructure
- From the application home page of a specific SOA composite application (all tabs)

The management tasks that you can perform are based on the page you are on. [Table 8-1](#) provides details.

Table 8-1 Application State Actions

Action	Perform in the Deployed Composites Page of the SOA Infrastructure?	Perform on the Application Home Page (All Tabs)?
Shut Down and Start Up	Yes	Yes
Retire and Activate	Yes	Yes
Set as Default	Yes	<ul style="list-style-type: none"> ■ No: If only one version of the composite application is set as the default. ■ Yes: If there are multiple versions of the same composite application, this option is visible for all other versions of the same composite expect the one that is the default.
Deploy	Yes	Yes (through the Composite menu by selecting SOA Deployment > Deploy Another Composite)
Undeploy	Yes	Yes (through the Composite menu by selecting SOA Deployment > Undeploy)
Redeploy	Yes	Yes (through the Composite menu by selecting SOA Deployment > Redeploy)
Test	No	Yes
Composite Audit Level	No	Yes
Payload Validation	No	Yes
Enable/Disable BPEL Sensors	No	Yes
Show WSDL and Endpoint URI (icon)	No	Yes
Show XML Definition (icon)	No	Yes

See the following section based on the action you want to perform:

- [Section 8.2.1, "Managing the State of All Applications at the SOA Infrastructure Level"](#)
- [Section 8.2.2, "Managing the State of an Application from the SOA Composite Application Home Page"](#)

For more information, see [Section 1.2.2, "Understanding SOA Composite Applications."](#)

8.2.1 Managing the State of All Applications at the SOA Infrastructure Level

You can manage the state of *all* SOA composite applications from the Deployed Composites page at the SOA Infrastructure level.

To manage the state of all applications at the SOA Infrastructure level:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
1. Select Home .	1. Click soa-infra .	1. Select SOA Infrastructure .

2. Click the **Deployed Composites** tab.

The Deployed Composites page displays the following details:

- A utility for searching for a specific SOA composite application by specifying a full or partial composite name and clicking **Search**.
- A list of all SOA composite applications deployed in the SOA Infrastructure, including the partition in which they are deployed, current mode (active or retired), number of instances, number of faulted instances, and last modification date (deployment time, redeployment time, or any composite configuration change). The green dot to the left of the name indicates that this is the default revision of the application.

The screenshot shows the 'Deployed Composites' page in the SOA Infrastructure console. At the top, there's a navigation bar with 'Dashboard', 'Deployed Composites' (selected), 'Instances', and 'Faults and Rejected Messages'. Below the navigation, there's a search section with a 'Search' button and a 'Reset' button. The main content area contains a table of deployed composites.

Composite	Partition	Status	Mode	Instances	Faulted Instances	Last Modified Date
SimpleIntSensor [1.0]	samuel-eto	Active	Active	1	0	Jan 11, 2010 10:58:56 PM
MultivalueProj [1.0]	samplePartition	Active	Active	0	0	Jan 11, 2010 9:06:23 AM

Note: To always see the latest details about deployed SOA composite applications, click the **Refresh** icon in the upper right corner or navigate away from this page and return to it.

- Click **Deploy** to deploy a new application. For all other options listed above the **Composite** section, first select the composite application by clicking the column to the left of the name, then select a specific option to perform.



The following table describes the available options.

Action	Description
Shut Down	<p>Shuts down a running SOA composite application revision. Any request (initiating or a callback) to the composite is rejected if the composite is shut down.</p> <p>Note: The behavior differs based on which binding component is used. For example, if it is a Web service request, it is rejected back to the caller. A JCA adapter binding component may do something else in this case (for example, put the request in a rejected table).</p> <p>This option displays when the composite application has been started.</p>
Start Up	<p>Restarts a composite application revision that was shut down. This action enables new requests to be processed (and not be rejected). No recovery of messages occurs.</p> <p>This option displays when the composite application has been stopped.</p>
Retire	<p>Retires the selected composite revision. If the process life cycle is retired, you cannot create a new instance. Existing instances are allowed to complete normally.</p> <p>An initiating request to the composite application is rejected back to the client. The behavior of different binding components during rejection is as described above for the shut down option.</p> <p>A callback to an initiated composite application instance is delivered properly.</p> <p>This option displays when the composite application is active.</p>
Activate	<p>Activates the retired composite application revision. Note the following behavior with this option:</p> <ul style="list-style-type: none"> All composite applications are automatically active when deployed. Other revisions of a newly deployed composite application remain active (that is, they are not automatically retired). If you want, you must explicitly retire them. <p>This option displays when the application is retired.</p>
Set As Default	<p>Sets the selected composite application revision to be the default. Default revisions are indicated by a green dot in the Composite table. If a new request comes in for a specific composite application revision, that composite application revision is invoked. If a new request comes in without specifying a revision, the default revision is invoked. The default revision does not change when a composite application is retired. The default revision is changed automatically when a default composite application revision is undeployed.</p> <p>The default composite revision also changes automatically when you redeploy a composite. The newly redeployed revision automatically becomes the default revision, unless at the time of redeployment you specify to keep the previous default revision unchanged.</p> <p>Note that inbound adapters are only activated on the default revision.</p>

Action	Description
Deploy	<p>Deploys a revision. Deployment activates the composite application in the SOA Infrastructure. Use this selection when you want to deploy:</p> <ul style="list-style-type: none"> ■ A new SOA composite application for the first time ■ A new revision (for example, 2.0) of a SOA composite application that has a different revision that is currently deployed (for example, 1.0). This option enables both revisions 1.0 and 2.0 to be deployed at the same time. <p>If you specify a revision that exists, you receive an error. You must change this revision outside of the Deploy SOA Composite wizard.</p> <p>For more information, see Section 5.1, "Deploying Applications" and Section 8.10, "Grouping SOA Composite Applications into Partitions."</p>
Undeploy	<p>Undeploys the selected composite application revision. The consequences of this action are as follows:</p> <ul style="list-style-type: none"> ■ You can no longer configure and monitor this revision of the composite application. ■ You can no longer process instances of this revision of the composite application. ■ You cannot view previously completed processes. ■ The state of currently running instances is changed to stale and no new messages sent to this composite are processed. ■ If you undeploy the default revision of the composite application (for example, 2.0), the next available revision of the composite application becomes the default (for example, 1.0). <p>Note: Undeploying multiple SOA composite applications at the same time is supported if they are in the same partition.</p> <p>For more information, see Section 5.3, "Undeploying Applications" and Section 8.10, "Grouping SOA Composite Applications into Partitions."</p>
Redeploy	<p>Redeploys an existing revision of a SOA composite application. The consequences of this action are as follows:</p> <ul style="list-style-type: none"> ■ A new version of a revision of a currently deployed SOA composite application is redeployed (for example, old version 1.0 is redeployed as new version 1.0). ■ The older, currently-deployed version of this revision is removed (overwritten). ■ If the older, currently-deployed version of this revision has running instances, the state of those instances is changed to stale. <p>For more information, see Section 5.2, "Redeploying Applications."</p>

For more information, see [Section 1.4.3.3, "Understanding the Life Cycle State of SOA Composite Applications."](#)

8.2.2 Managing the State of an Application from the SOA Composite Application Home Page

You can manage the state of an individual SOA composite application from the application's home page.

To manage the state of an application from the SOA composite application home page:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. Select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.

The Dashboard of the selected SOA composite application is displayed (for this example, **POApprovalEventPublisher**).

The screenshot shows the dashboard for the SOA composite application **POApprovalEventPublisher [1.0]**. The user is logged in as **weblogic** | Host. The page was refreshed on Mar 2, 2010 5:15:42 PM PST. The dashboard includes a navigation bar with tabs for **Dashboard**, **Instances**, **Faults and Rejected Messages**, **Unit Tests**, and **Policies**. The **Dashboard** tab is active, displaying the **Recent Instances** section. This section shows a table of instances with columns for Instance ID, Name, Conversation ID, State, and Start Time. Two instances are listed, both with a state of **Completed**. Below the table is a **Show All** link. The **Recent Faults and Rejected Messages** section is also visible, showing a table of error messages with columns for Error Message, Recovery, Fault Time, Fault Location, Composite Instance ID, and Logs. Four error messages are listed, all with a state of **Unavailable**.

Note: The **Total** field of the **Recent Instances** section sometimes does not display the correct number of total instances despite instances having completed successfully. In these cases, click the **Refresh** icon in the upper right corner to view the actual number of total instances.

2. From the list of options at the top of the page, select a specific action to perform. These options also display at the top of the **Instances**, **Faults and Rejected Messages**, **Unit Tests**, and **Policies** pages of the SOA composite application.

Action	Description
Shut Down	See the table under Step 3 on page 8-9 for a description of this option.
Start Up	See the table under Step 3 on page 8-9 for a description of this option.
Retire	See the table under Step 3 on page 8-9 for a description of this option.
Activate	See the table under Step 3 on page 8-9 for a description of this option.

Action	Description
Test	<p>Enables you to initiate a test instance from the Test Web Service page.</p> <p>Note: This button is disabled when the SOA composite application is stopped or retired. This is because you cannot create an instance for a stopped or retired application. This button is also disabled when there are no Web services available for the application. Only composites having services with Web service bindings can be tested from this page.</p> <p>For more information, see Section 8.1, "Initiating a SOA Composite Application Test Instance."</p>
Settings: Composite Audit Level	<p>Sets the level of audit tracking to perform at the SOA composite application level. This setting <i>can</i> override the audit level defined at the SOA Infrastructure level. By default, the value is Inherit, which does not override the SOA Infrastructure level setting.</p> <p>If you select to set the audit tracking level, the following options are available:</p> <ul style="list-style-type: none"> ■ Inherit: Logging matches the SOA Infrastructure audit level that you set on the SOA Infrastructure Common Properties page. This is the default setting. ■ Production: Minimal information for SOA composite application instances is collected. For example, the BPEL process and Oracle Mediator service engines do not capture the payload. Therefore, the payload details are not available in the flow audit trails. The BPEL service engine collects payload details for all activities except assign activities. This level is optimal for most normal operations and testing. ■ Development: Complete information for SOA composite application instances is collected. This option allows both composite instance tracking and payload tracking. This setting may impact performance because the payload is stored at each step in the message flow. This setting is useful for debugging purposes. ■ Off: No logging is performed. Composite instance tracking information and payload tracking information are not collected. <p>Setting audit level tracking at the SOA composite application level overrides the same tracking set at the SOA Infrastructure level. By default, the settings are the same at the SOA composite application and SOA Infrastructure levels. SOA composite application settings are automatically changed when the global SOA Infrastructure settings are changed. By choosing any other setting at the SOA composite application level, you are overriding the inherited settings.</p> <p>One form of overriding is when you explicitly select the same local composite value that happens to be the current global value. If the SOA Infrastructure setting is then changed, this specific composite does not inherit the new value. For example, assume the SOA Infrastructure setting is Off. Therefore, all composites have their audit tracking set to Off. Then, you explicitly set composite XYZ to Off. Then, go to the SOA Infrastructure and change the setting to Production. The tracking levels for all composites are now Production; except for XYZ, which is still set to Off.</p> <p>Note the following impact of instance tracking changes on message flows that span several SOA composite applications. For example, a composite invoking another composite through a reference binding component or an event published in one composite and subscribed to in another composite.</p> <ul style="list-style-type: none"> ■ If an intermediate composite has disabled instance tracking, then a single message flow across multiple composite instances appears as separate, unconnected flows. For example, assume a message flows through composites C1, C2, and C3. C1 and C3 have enabled instance tracking, while C2 has disabled it. Two separate flows for C1 and C3 display in Oracle Enterprise Manager. ■ Sources or targets of events or messages may not display. For example, assume you have two composites: C1 and C2. If C1 has disabled instance tracking, the flow trace does not display the origin of message flow and makes it appear as if C2 was directly invoked.

Action	Description
Settings: Payload Validation	<p>Validates the XML schema-based payload at the inbound and outbound points of the composite revision. If you enable payload validation and there is an invalid payload (that does not follow the schema), a fault is generated for that message.</p> <p>The exception to this is the response message of a synchronous service. That message is not validated, even with payload validation enabled. Note that the inbound message is still validated; only the outbound message is not.</p>
Settings: Enable/Disable BPEL Monitors and Sensors	<p>Select an option to invoke a confirmation dialog that displays the current status of the sensors.</p> <ul style="list-style-type: none"> ■ Disable: Select to disable BPEL sensors for all BPEL components in this SOA composite application. ■ Enable: Select to enable BPEL sensors for all BPEL components in this SOA composite application. <p>The Enable/Disable BPEL Sensors selection only displays for composites that have a BPEL service component, regardless of whether that component includes sensors.</p> <p>Note that when BPEL sensors are disabled at the service engine level, you cannot enable or disable BPEL sensors at the SOA composite application level. You can enable or disable BPEL monitors and sensors at the service engine level in the BPEL Service Engine Properties page.</p> <p>For more information, see Section 10.1, "Configuring BPEL Process Service Engine Properties."</p>
Show WSDL and endpoint URI (icon)	Click to display the endpoint addresses and WSDLs of all external services for this SOA composite application.
Show Composite XML Definition (... icon)	Click to show the XML definition of the SOA composite application.

For more information, see the following sections:

- [Section 1.4.3.3, "Understanding the Life Cycle State of SOA Composite Applications"](#)
- [Section 3.1, "Configuring SOA Infrastructure Properties"](#)

8.2.3 Starting and Stopping a Managed Oracle WebLogic Server

If you start and stop a managed Oracle WebLogic Server on which the SOA Infrastructure is deployed in the middle of BPEL processing in a SOA composite application, note the following issues:

- For synchronous BPEL processes

The whole scenario is synchronous and the instances that are in a running state (after server restart) are pending in the BPEL wait activity. Therefore, the flow thread ends with the server (while sleeping in the wait activity). When the server is restarted, the same instance is not restarted because the flow is synchronous. Therefore, these instances always remain in a running state because no processing can happen on them after server restart.
- For asynchronous BPEL process

If server shutdown occurred in the middle of a BPEL invoke activity, the messages received by BPEL are not handled. BPEL does not automatically recover these messages during restart; they must be recovered manually using Facade API calls.

8.3 Monitoring and Deleting SOA Composite Application Instances from the Application Home Page

Section 8.2, "Managing the State of Deployed SOA Composite Applications" describes how to manage the life cycle state of SOA composite applications. You can also monitor and delete specific SOA composite application instances from the Instances page of the application home page.

To monitor and delete SOA composite application instances from the application home page:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. Select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Click the **Instances** tab.

The Instances page displays the following details:

- A utility for searching for a specific instance by specifying a criteria and clicking **Search**.
- SOA composite application instance ID, name, conversation ID, most recent known state of each instance since the last data refresh of the page (for example, completed successfully, running, unknown, and so on), instance start time, and a log file describing any faults. A unique instance ID is created whenever a new instance of a SOA composite application is initiated either automatically by an external consumer of the application or manually by an administrator from the Test Web Service page.

If a ? icon is displayed, the **Capture Composite Instance State** check box was not enabled on the SOA Infrastructure Common Properties dialog. Therefore, the instance state was not evaluated. Determining the composite instance state requires evaluating the states of the underlying component, Therefore, this can be disabled to improve performance.

POApprovalEventPublisher [1.0] Logged in as weblogic | Host
Page Refreshed Mar 2, 2010 5:15:42 PM PST

Running Instances: 0 | Total: 2 | Active: [Retire ...] [Shut Down...] [Test] [Settings...]

Dashboard | **Instances** | Faults and Rejected Messages | Unit Tests | Policies

Instances of this SOA composite are listed below. There may be more instances in the database than shown in this page. Also when composite audit tracking is disabled, component instances may be created within the composite without its own instances. Click Delete with Options to purge the instances from the database.

Search

Instance ID:
 Name:
 Conversation ID:
 Start Time From: (UTC-08:00) US Pacific Time
 Start Time To: (UTC-08:00) US Pacific Time

Show:

View: Delete Selected ... Delete With Options ... Abort...

Instance ID	Name	Conversation ID	State	Start Time	Logs
19		urn:uuid:86cd83b3-!	Completed	Feb 28, 2010 11:07:10 PM	
16		urn:uuid:a474de3b-	Completed	Feb 28, 2010 11:05:25 PM	

Note: It is possible to generate orphaned service component instances. These instances are generated without any associated composite application instances. The orphaned component instances are generated under the following circumstances:

- The SOA Infrastructure audit level is set to **Off** or the composite audit level is set to **Off**. Even in such cases, the BPEL process service engine can generate instance data for the service components that are included in the SOA composite application.
- The SOA Infrastructure audit level is set to **Off**. However, the BPEL process or Oracle Mediator service engine audit level is set to a value other than **Off**.
- All the audit levels are set to **Off**, but some faults are generated in one of the service engines. In these cases, the component instance gets generated.

To delete orphaned instances or large numbers of instances, use the PL/SQL purge script described in [Section 8.11, "Deleting Large Numbers of Instances with the Purge Script."](#) Selecting the **Delete All Instance** options in the **Delete with Options** dialog also deletes orphaned component instances. However, this method is not recommended for deleting large numbers of instances (for example, thousands), as the operation times out.

If composite sensors are included in your SOA composite application, the Instances tab has the following differences:

- The **Add Fields** button appears next to **Search** and **Reset** in the search utility. This button enables you to add sensor values to your search criteria.
- A **Composite Sensors** column appears in the **Instances** table. Click the sensor icon in that column to display the details about sensor values available in a given instance of the composite.

- From the **Add Fields** list, select composite sensors to add to the search criteria. In this example, four have been selected (**CustomerDetails**, **NameSensor**, **Datesensor**, and **Yearsensor**).
- Input specific values by which each sensor searches. Only the composite instances in which the sensor values match your specified criteria are returned.

The screenshot shows the Oracle SOA Composite Application Home Page for 'SimpleIntSensor [2.0]'. The page is logged in as 'weblogic' and shows 'Running Instances 0 | Total 1 | Active'. The 'Instances' tab is selected, displaying a search interface. The search criteria include:

- Instance ID: [Empty]
- Name: [Empty]
- Conversation ID: [Empty]
- Start Time From: [Empty] (UTC-08:00) US Pacific Time
- Start Time To: [Empty] (UTC-08:00) US Pacific Time
- CustomerDetails: Like [Empty] (Remove icon)
- NameSensor: Equals [Empty] (Remove icon)
- Datesensor: Equals [Empty] (UTC-08:00) US Pacific Time (Remove icon)
- Yearsensor: Equals [Empty] (Remove icon)

Buttons for Search, Reset, and Add Fields are visible. Below the search criteria, there is a table of instances:

Instance ID	Name	Conversation ID	State	Composite Sensors	Start Time	Logs
48			Completed	(Remove icon)	Mar 18, 2009 6:55:13 AM	(Log icon)

- Click **Reset** to remove all composite sensor fields from the search criteria or click the **Remove** icon to the right of the field to remove an individual sensor.
- Select a specific instance to delete by clicking a row in the **Instances** table. To select multiple instances, press Ctrl-Click or Shift-Click for the rows you want to select.
- Select a specific action to perform.

Action	Description
Delete Selected	Deletes the selected instance. After deleting an instance, instance details are no longer available for review.

Action	Description
Delete with Options	<p>Prompts you to first specify a criteria for deleting the selected instance directly from the database:</p> <ul style="list-style-type: none"> ■ Common Delete Options: Select a preset range of instances to delete from a list (for example, older than 24 hours). ■ Delete All Instances Of This Composite: Select to delete all instances of the composite. This option deletes the rejected messages associated and all component, service, and reference instances associated with the composite, including those not associated with any composite instance ID. <p>Note: If this composite has thousands of instances to delete, do not use this option. Instead, use the purge script described in Section 8.11, "Deleting Large Numbers of Instances with the Purge Script."</p> <ul style="list-style-type: none"> ■ Delete All Instances That Match These Criteria: Specify a criteria for deleting instances, including the instance ID, conversation ID, start and stop times, and instance state. <p>Any selections you may have made in the Instances page (such as specifying and executing a search criteria) are ignored for this operation.</p>
Abort	Terminates the selected instance. However, instance details are still available for review.

8. From the **View** list, select **Columns > Partition** to display the partition in which the instance of the SOA composite application revision is contained.
9. In the **Instances** table, perform the following additional tasks:
 - a. In the **Instance ID** column, click a specific instance ID to show the message flow through the various service components and binding components. If an instance ID is listed as unavailable, you can click the **Unavailable** link for details.
 - b. In the **State** column, if an instance state is marked as **Unknown**, click it to display more details.
 - c. If the **Composite Sensors** column is available, click a sensor icon to display details about composite sensors included in the instance, such as name, location, and value.
 - d. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

Note: Multiple revisions of a SOA composite application that includes inbound JCA adapters are displayed as running. However, only the most recent revision (the default version) is considered active. All previous revisions are not considered active. This is because for inbound JCA adapters, there can only be one active revision of a SOA composite application at any time. The JCA adapter endpoints in all previous revisions are de-activated.

For more information, see the following sections:

- [Section 1.2.3, "Understanding SOA Composite Application Instances"](#)
- [Section 1.4.3.3, "Understanding the Life Cycle State of SOA Composite Applications"](#)

- [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#)
- *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files

8.3.1 Mismatch Between the Number of SOA Composite Application Instances and Service Component Instances

The number of SOA composite application instances may not always match the number of service component instances displaying in Oracle Enterprise Manager Fusion Middleware Control Console.

A SOA composite application instance is first created when the composite is invoked. When the service components within the composite receive a subsequent invocation, a corresponding service component instance is created that refers to the composite instance ID previously created.

There can be scenarios under which the composite instance is created, but the underlining service component instance is not created. For example:

- The composite instance is created, but the invocation has not yet reached the service component due to a system failure.
- The composite instance is created, but the invocation fails payload validation and is rejected. In this case, invocation does not reach the underlining service components.

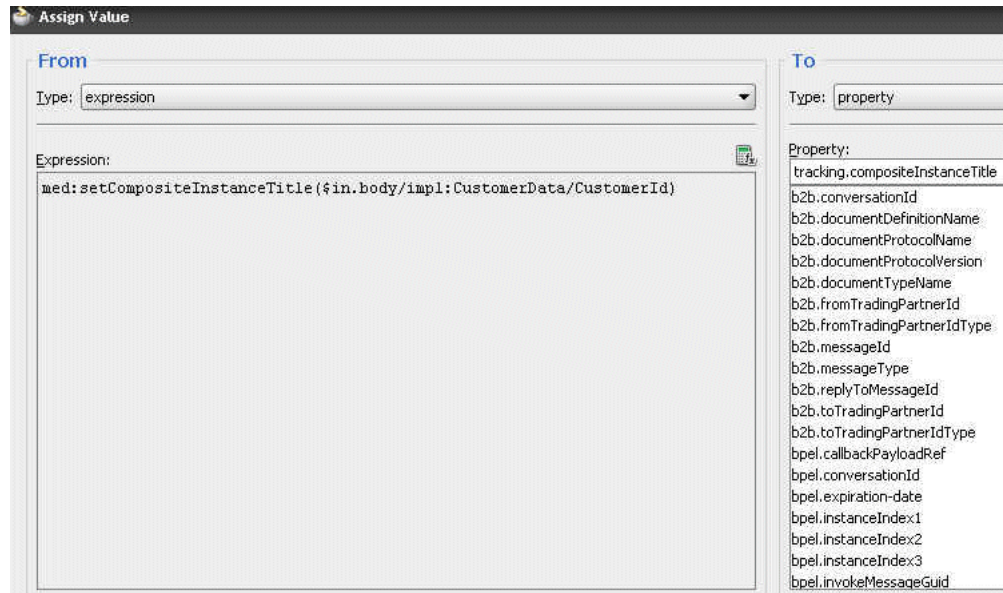
You can also have orphaned service component instances for which no SOA composite application instance has been created.

8.3.2 Setting the Composite Instance Name at Design Time

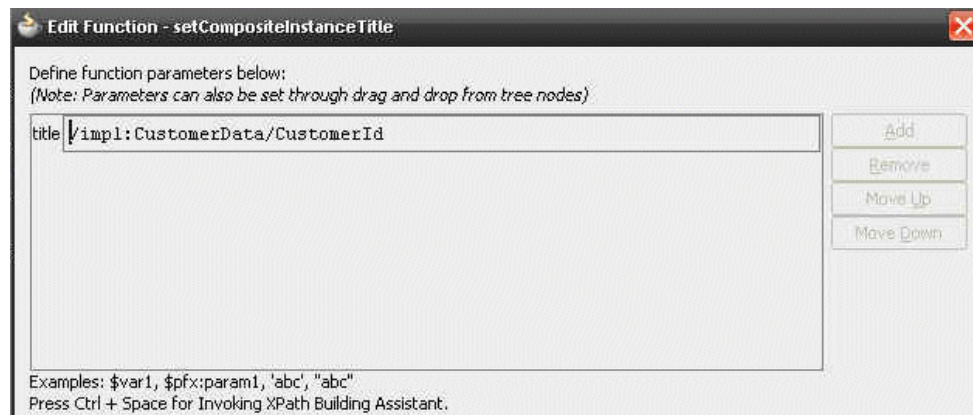
You can set the instance name of a SOA composite application during design time in Oracle Mediator and Oracle BPEL Process Manager. The instance name appears as a **Name** column on the Instances page of a SOA composite application. When you specify a search criteria on the Instances page of a SOA composite application or the SOA Infrastructure, you can specify this name in the **Name** field.

8.3.2.1 Setting the Composite Instance Name in Oracle Mediator

1. Set the composite instance name through one of the following options:
 - Use the **setCompositeInstanceTitle(title)** XPath expression function as the source and **tracking.compositeInstanceTitle** as the target property name in the Assign Value dialog.



- Use the `setCompositeInstanceTitle(title)` XPath expression function in the XSLT Mapper.



8.3.2.2 Setting the Composite Instance Name in a BPEL Process

1. Use the Java BPEL `exec` extension `bpelx:exec`. This extension includes the built-in method `setCompositeInstanceTitle(String title)` for setting the instance name.

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

8.4 Monitoring and Deleting SOA Composite Application Instances at the SOA Infrastructure Level

Section 8.2, "Managing the State of Deployed SOA Composite Applications" described how to manage the life cycle state of all instances of a specific SOA composite application. You can also monitor and delete any number of instances *across* all deployed SOA composite applications from the Instances page of the SOA Infrastructure home page. This page lists all SOA composite application instances deployed to the SOA Infrastructure.

To monitor and delete SOA composite application instances at the SOA infrastructure level:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
1. Select Home .	1. Click soa-infra .	1. Select SOA infrastructure .

2. Click the **Instances** tab.

The Instances page displays the following details:

- A utility for searching for a specific instance by specifying a criteria and clicking **Search**.
- All SOA composite application instances in the SOA Infrastructure, including instance and conversation IDs, composite name and revision, SOA composite application instance state, and instance start time.

Instances of all currently deployed SOA composites are listed below.

Search

Instance ID: Start Time From: (UTC-08:00) US Pacific Time
 Name: Start Time To: (UTC-08:00) US Pacific Time
 Conversation ID:

Search Reset

Show: **Any**

Instance ID	Composite	Name	Conversation ID	State	
30011	HelloWorld [1.0]		1235271822920	Completed	Feb 21, 2009
30010	VacationRequest [1.0]		1235211437505	Completed	Feb 21, 2009
30009	CompositeTest [1.0]			Completed	Feb 21, 2009
30008	CompositeTest [1.0]			Completed	Feb 21, 2009
30007	CompositeTest [1.0]			Completed	Feb 21, 2009
30006	CompositeTest [1.0]			Completed	Feb 21, 2009
30005	CompositeTest [1.0]			Completed	Feb 21, 2009
30004	CompositeTest [1.0]			Completed	Feb 21, 2009
30003	CompositeTest [1.0]			Completed	Feb 21, 2009
30002	CompositeTest [1.0]			Completed	Feb 21, 2009
30001	CompositeTest [1.0]			Completed	Feb 21, 2009
20025	RecoveryUnitTest [1.0]		1235125719800	Faulted	Feb 20, 2009
20024	VacationRequest [1.0]		1235124080921	Faulted	Feb 20, 2009
20023	SimpleWorkflowComposite [1.0]		1235123263388	Faulted	Feb 20, 2009

You can also terminate and delete instances from this page.

3. Select a specific instance by clicking a row in the **Instances** table. To select multiple instances, press Ctrl-Click or Shift-Click for the rows you want to select.
4. Select a specific action to perform.

Action	Description
Delete Selected	Deletes the selected instance.

Action	Description
Delete with Options	<p>Prompts you to first specify a criteria for deleting the selected instance directly from the database.</p> <ul style="list-style-type: none"> ▪ Common Delete Options: Select a preset range of instances to delete from a list (for example, older than 24 hours). ▪ Delete All Instances That Match These Criteria: Specify a criteria for deleting instances, including the instance ID, conversation ID, start and stop times, and instance state <p>Any instance state selections you made at the top of the Instances page are ignored for this operation.</p> <p>Notes:</p> <ul style="list-style-type: none"> ▪ If this composite has thousands of instances to delete, do not use this option. Instead, use the purge script described in Section 8.11, "Deleting Large Numbers of Instances with the Purge Script." ▪ If you delete an instance with faults, those faults no longer display in the Faults and Rejected Messages page.
Abort	<p>Terminates the selected instance. However, instance details are still available for review.</p> <p>Note: If you delete an instance with faults, those faults no longer display in the Faults and Rejected Messages page. In addition, if a terminated instance (shown as aborted) had a fault, it is not added to the fault count.</p>

5. From the **View** list, select **Columns > Partition** to display the partition in which the instance of the SOA composite application revision is contained.
6. In the **Instance ID** column, click a specific instance ID to show the message flow through the various service components and binding components. If the instance ID is unavailable, the message flow cannot be accessed. However, you can still click the link for details.
7. In the **Composite** column, click a specific SOA composite application to access its home page.
8. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

8.5 Recovering from SOA Composite Application Faults at the SOA Infrastructure Level

You can monitor and perform individual and bulk fault recoveries for BPEL process and Oracle Mediator service components across any number of your SOA composite applications. For BPEL process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault. Examples of performing both individual and bulk recovery are provided in this section. Human task service component or human workflow service engine faults are recovered from the Oracle BPM Worklist.

To recover from SOA composite application faults at the SOA Infrastructure level:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
1. Select Home .	1. Click soa-infra .	1. Select SOA infrastructure .

2. Click the **Faults and Rejected Messages** tab.

The Faults and Rejected Messages page displays the following details for all SOA composite application faults:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults and rejected messages, including the error message, whether you can recover from the fault, the time of the fault, if the fault message is classified as a rejected message (if so, a check mark is displayed), the SOA composite application in which the fault occurred, the fault location, the instance ID, and a link to log files describing the fault.

This page lists faults from across all SOA composites that are currently deployed. If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This action reruns the instance in which the fault occurred and attempts to recover from it. You can also perform a batch recovery by selecting multiple faults and choosing a recovery action. For additional recovery options, click the Recoverable link for an individual fault. To recover from a Human Workflow fault, select it and click Recover and then click the link to the Worklist application.

Search ?

Error Message Contains Composite Instance ID

Fault ID Composite Name

Fault Time From (UTC-08:00) US Pacific Time

Fault Time To (UTC-08:00) US Pacific Time

Search Reset

Show only recoverable faults Fault Type **All Faults**

Error Message	Recovery	Fault Time	Rejected Message	Composite	Fault Location	Composite Instance ID	Logs
Exception occurred when bind		Aug 3, 2009 7:55:04 AM		TestResubmit [2.0]	FileOut	30	
Exception occurred when bind		Aug 3, 2009 7:58:36 AM		TestResubmit [2.0]	FileOut	29	
Exception occurred when bind		Aug 3, 2009 7:58:30 AM		TestResubmit [2.0]	FileOut	28	
Exception occurred when bind		Aug 3, 2009 7:58:26 AM		TestResubmit [2.0]	FileOut	27	
Exception occurred when bind		Aug 3, 2009 7:58:20 AM		TestResubmit [2.0]	FileOut	16	
Exception occurred when bind		Aug 3, 2009 7:55:10 AM		TestResubmit [2.0]	FileOut	15	
Exception occurred when bind		Aug 3, 2009 7:55:04 AM		TestResubmit [2.0]	FileOut	14	
Exception occurred when bind		Aug 3, 2009 7:55:00 AM		TestResubmit [2.0]	FileOut	13	
Exception occurred when bind		Aug 3, 2009 7:54:54 AM		TestResubmit [2.0]	FileOut	13	

Note: You cannot search for human workflow error messages by entering details in the **Error Message Contains** field because these faults are not persisted in the dehydration store.

Faults identified as recoverable can be recovered.

3. Select faults for recovery using one of the following options. Note that fault recovery selection at the SOA Infrastructure level matches the SOA composite application level and BPEL process and Oracle Mediator service component levels.

For...	Then...
Single fault recovery	<p>There are three options from which to choose for single-fault recovery:</p> <ol style="list-style-type: none"> 1. Click the row of the fault that has been identified as recoverable. With the row highlighted, select a specific action from the Recovery Action list, as described in Step 4. 2. In the Recovery column, click the Recover link to access the Faults page of the instance audit trail to perform fault recovery. 3. In the Error Message column, click the message of a fault that has been identified as recoverable. This displays complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. A Recover Now option displays for recoverable faults. Click Recover Now to access the Faults page of the instance audit trail to perform fault recovery.
Bulk fault recovery	<p>There are two options from which to choose for bulk-fault recovery:</p> <ol style="list-style-type: none"> 1. Use Shift+Click or Control+Click to select specific faults in the rows. or 2. From the Select menu, choose Select All Recoverable. Then use Shift+Click or Control+Click to deselect the faults to <i>not</i> include in the recovery operation. Then: 3. Select an action from the Recovery Action list, as described in Step 4. Note: Only the actions applicable to all selected faults are available.
Recovery of all faults	<ol style="list-style-type: none"> 1. From the Select menu, choose Select All Recoverable. 2. Select an action from the Recovery Action list, as described in Step 4. Note: Only the actions applicable to all selected faults are available.

4. Select an action from the **Recovery Action** list.

Action	Description	Action is Available for...
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.	BPEL process and Oracle Mediator
Abort	Terminates the entire instance.	BPEL process and Oracle Mediator
Replay	Replays the entire scope again in which the fault occurred.	BPEL process
Rethrow	Rethrows the current fault. BPEL fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.	BPEL process
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).	BPEL process

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

5. If you want to delete rejected messages, click **Delete Rejected Messages**.

This displays the Delete: Rejected Messages dialog for specifying a criteria for deleting rejected messages of all the composites directly from the database.

6. Specify a criteria and click **Delete**.
7. If you want to perform a bulk recovery of messages, click **Recover with Options**.

This displays the Recover with Options dialog for specifying a criteria for recovering BPEL and Oracle Mediator messages of all composites directly from the database. Human workflow messages can be recovered manually from Oracle BPM Worklist. Business event and business rule messages cannot be recovered.

Specify the criteria for selecting and recovering faults directly from the database. Any selections you may have made in the Faults and Rejected Messages page will be ignored for this operation. This operation will not recover any Human Workflow faults; you can recover these faults using the Worklist application.

Common Recovery Action

Common Recovery Options

Preset Batches

Recover All

This will recover all recoverable faults of all the composites using the common recovery action specified above.

Recover All Recoverable Faults that Match These Criteria

Fault Time From (UTC-08:00) US Pacific Time

Fault Time To (UTC-08:00) US Pacific Time

Error Message Contains

8. Specify a criteria. **Retry** and **Abort** are the only recovery actions permitted.

Note: For bulk fault recovery at the SOA Infrastructure level, a check of the state of composites cannot be performed. If the state of a composite is set to off, a recovery of its faults cannot be performed. However, no error or warning message is displayed. Upon submission of the bulk fault recovery request, the server checks if the originating composite's state is set to off. That fact is then noted in the log, and the fault is skipped.

You are also not notified when a fault has been skipped during recovery for any other reason (for example, an unsupported service engine, an unrecoverable fault, and so on).

9. Click **Recover**. Depending upon the number of messages, recovery can take some time.
10. Perform the following additional tasks from within the faults table:
- From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - In the **Composite** column, click a specific SOA composite application to access its home page.
 - In the **Fault Location** column, click a specific location to access the faults page for the location of the fault. The location can be a service, service component, or reference.
 - In the **Composite Instance ID** column, click a specific ID to access the flow trace of the instance.
 - In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

11. See the following sections for examples of single and bulk fault recovery with BPEL processes and Oracle Mediator.

- [Section 8.5.1, "Examples of Fault Recovery for BPEL Processes"](#)
- [Section 8.5.2, "Examples of Fault Recovery for BPMN Processes"](#)
- [Section 8.5.3, "Examples of Fault Recovery for Oracle Mediator"](#)

For more information about concepts and instructions on designing a fault policy, see the following documentation:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

8.5.1 Examples of Fault Recovery for BPEL Processes

This section provides examples of how to define a fault policy that enables human intervention on a BPEL process fault and perform single and bulk fault recovery on a BPEL process service component.

- [Section 8.5.1.1, "Example: Single Fault Recovery for BPEL Processes"](#)
- [Section 8.5.1.2, "Example: Bulk Fault Recovery for BPEL Processes"](#)

In this example, you define a fault policy specifying that a fault be manually recovered through human intervention. If an invalid social security number is submitted from a loan broker BPEL process to a credit rating service, the credit rating service returns a negative credit fault. This human intervention action is defined with the `ora-human-intervention` action in the `fault-policies.xml` file. Without fault policies, BPEL instances do not generate recoverable faults (instead they are nonrecoverable); the `ora-human-intervention` action makes the fault recoverable.

```
<faultPolicies xmlns="http://schemas.oracle.com/bpel/faultpolicy">
<faultPolicy version="2.0.1"
  id="CRM_ServiceFaults"
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://schemas.oracle.com/bpel/faultpolicy"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Conditions>
    <faultName xmlns:credit="http://services.otn.com"
      name="credit:NegativeCredit">
      <!-- we get this fault when SSN starts with 0-->
      <condition>
        <test>$fault.payload="Bankruptcy Report"</test>
        <action ref="ora-human-intervention"/>
      </condition>
    </faultName>
  </Conditions>
</faultPolicy>
</faultPolicies>
```

The `fault-bindings.xml` file associates the fault policies defined in the `fault-policies.xml` with the `CRM_ServiceFaults` composite.

```
<faultPolicyBindings version="2.0.1"
  xmlns="http://schemas.oracle.com/bpel/faultpolicy"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <composite faultPolicy="CRM_ServiceFaults"/>
</faultPolicyBindings>
```


Since human intervention is defined as an action, you perform BPEL process fault recovery in Oracle Enterprise Manager Fusion Middleware Control Console.

For more information about creating and designing `fault-policies.xml` and `fault-bindings.xml` files, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for specific details.

8.5.1.1 Example: Single Fault Recovery for BPEL Processes

This example assumes the following:

- An instance was initiated on the Test Web Service page shown in [Section 8.1, "Initiating a SOA Composite Application Test Instance."](#)
- An invalid social security number that begins with 0 was entered.

To perform single fault recovery for BPEL processes:

1. From the **SOA Infrastructure** menu, select **Home**.
2. Click the **Faults and Rejected Messages** tab.
3. In the faults table, locate the fault that has been identified as recoverable. You can use the search utility to locate the specific fault.
4. In the **Recovery** column, click **Recover**. If you first want to see details about the fault, click the error message. Then, click **Recover Now**.

The Faults page for that BPEL process instance is displayed.

5. In the Recovery column, click **Recoverable**.

The page refreshes to display the fault recovery section at the bottom of the page.

Choose one of the available recovery options, modify the variable information as appropriate, and click "Recover".

Recovery Action	Retry	After Successful Retry	None
Variable	▼		
Value			

6. From the **Recovery Action** list, select **Retry**.
7. Select **None** from the **Chain Action Upon Successful Retry** list. This list enables you to select Java callout recovery actions. For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.
8. Select a variable from the **Variable** list. The content of this variable displays in the **Value** field. For this example, the variable **crInput** is selected. This variable is used in an invoke activity and contains an incorrect social security number value.
9. Enter the correct value in the **Value** field. For this example, the social security number is edited to begin with 1:

```
<ssn xmlns="http://service.otn.com">123456789</ssn>
```

10. Click **Set Value**, and click **Yes** when prompted to continue.
11. Click **Recover** to recover from the fault, then click **Yes** when prompted to continue.
The page refreshes to indicate that no faults occurred.

8.5.1.2 Example: Bulk Fault Recovery for BPEL Processes

For the social security number example, selecting **Retry** is not an option for performing a bulk recovery, since the value for the social security number is incorrect and requires correction. An example of performing a bulk recovery with the **Retry** option is if the social security number is correct, but the system providing the credit rating service was temporarily unavailable and caused a composite reference fault. This prevents the messages from being delivered. Once the credit rating service is available again, selecting **Retry** re-attempts the invocation to the credit rating service through the composite reference.

To perform bulk fault recovery for BPEL processes:

1. Perform Steps 1 through 2 of [Section 8.5.1.1, "Example: Single Fault Recovery for BPEL Processes."](#)
2. In the search utility, enter a criteria based on known fault parameters (for example, the time range, composite name, component type (BPEL process), and so on).
3. If the search returns too many results, limit it by selecting the **Show only recoverable faults** check box.
4. From the Select list, choose **Select All Recoverable**.
5. From the **Recovery Action** list, select **Abort**.

All selected faults are manually terminated.

8.5.2 Examples of Fault Recovery for BPMN Processes

This section provides examples of how to define a fault policy that enables human intervention on a BPMN process fault and perform single and bulk fault recovery on a BPMN process service component.

Note: When a multi-instance process has met the conditions for its completion, it raises a nonrecoverable system fault (to cancel remaining instances). Although this fault appears in the Oracle Enterprise Manager Fusion Middleware Control Console, you do not need to take any action. It appears simply to notify you that the multi-instance process was finalized because the condition was completed.

- [Section 8.5.2.1, "Example: Single Fault Recovery for BPMN Processes"](#)
- [Section 8.5.2.2, "Example: Bulk Fault Recovery for BPMN Processes"](#)

In this example, you define a fault policy specifying that a fault be manually recovered through human intervention. If an invalid social security number is submitted from a loan broker BPMN process to a credit rating service, the credit rating service returns a negative credit fault. This human intervention action is defined with the `ora-human-intervention` action in the `fault-policies.xml` file. Without fault policies, BPMN instances do not generate recoverable faults (instead they are nonrecoverable); the `ora-human-intervention` action makes the fault recoverable.

```
<faultPolicies xmlns="http://schemas.oracle.com/bpmn/faultpolicy">
```

```

<faultPolicy version="2.0.1"
  id="CRM_ServiceFaults"
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://schemas.oracle.com/bpmn/faultpolicy"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Conditions>
    <faultName xmlns:credit="http://services.otn.com"
      name="credit:NegativeCredit">
      <!-- we get this fault when SSN starts with 0-->
      <condition>
        <test>$fault.payload="Bankruptcy Report"</test>
        <action ref="ora-human-intervention"/>
      </condition>
    </faultName>
  </Conditions>
</faultPolicy>
</faultPolicies>

```

The `fault-bindings.xml` file associates the fault policies defined in the `fault-policies.xml` file with the `CRM_ServiceFaults` composite.

```

<faultPolicyBindings version="2.0.1"
  xmlns="http://schemas.oracle.com/bpmn/faultpolicy"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <composite faultPolicy="CRM_ServiceFaults" />
</faultPolicyBindings>

```

Since human intervention is defined as an action, you perform BPMN process fault recovery in Oracle Enterprise Manager Fusion Middleware Control Console.

For more information about creating and designing `fault-policies.xml` and `fault-bindings.xml` files, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for specific details.

8.5.2.1 Example: Single Fault Recovery for BPMN Processes

This example assumes the following:

- An instance was initiated on the Test Web Service page shown in [Section 8.1, "Initiating a SOA Composite Application Test Instance."](#)
- An invalid social security number that begins with 0 was entered.

To perform single fault recovery for BPMN processes:

1. From the **SOA Infrastructure** menu, select **Home**.
2. Click the **Faults and Rejected Messages** tab.
3. In the faults table, locate the fault that has been identified as recoverable. You can use the search utility to locate the specific fault.
4. In the **Recovery** column, click **Recover**. If you first want to see details about the fault, click the error message. Then, click **Recover Now**.

The Faults page for that BPMN process instance is displayed.

5. In the Recovery column, click **Recoverable**.

The page refreshes to display the fault recovery section at the bottom of the page.

Choose one of the available recovery options, modify the variable information as appropriate, and click "Recover".

Recovery Action After Successful Retry

Variable

Value

6. From the **Recovery Action** list, select **Retry**.
7. Select **None** from the **Chain Action Upon Successful Retry** list. This list enables you to select Java callout recovery actions. For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.
8. Select a variable from the **Variable** list. The content of this variable displays in the **Value** field. For this example, the variable **crInput** is selected. This variable is used in an invoke activity and contains an incorrect social security number value.
9. Enter the correct value in the **Value** field. For this example, the social security number is edited to begin with 1:

```
<ssn xmlns="http://service.otn.com">123456789</ssn>
```

10. Click **Set Value**, and click **Yes** when prompted to continue.
11. Click **Recover** to recover from the fault, then click **Yes** when prompted to continue.
The page refreshes to indicate that no faults occurred.

8.5.2.2 Example: Bulk Fault Recovery for BPMN Processes

For the social security number example, selecting **Retry** is not an option for performing a bulk recovery, since the value for the social security number is incorrect and requires correction. An example of performing a bulk recovery with the **Retry** option is if the social security number is correct, but the system providing the credit rating service was temporarily unavailable and caused a composite reference fault. This prevents the messages from being delivered. Once the credit rating service is available again, selecting **Retry** re-attempts the invocation to the credit rating service through the composite reference.

To perform bulk fault recovery for BPMN processes:

1. Perform Steps 1 through 2 of [Section 8.5.1.1, "Example: Single Fault Recovery for BPEL Processes."](#)
2. In the search utility, enter a criteria based on known fault parameters (for example, the time range, composite name, component type (BPMN process), and so on).
3. If the search returns too many results, limit it by selecting the **Show only recoverable faults** check box.
4. From the Select list, choose **Select All Recoverable**.
5. From the **Recovery Action** list, select **Abort**.
All selected faults are manually terminated.

8.5.3 Examples of Fault Recovery for Oracle Mediator

This section provides an example of how to perform single and bulk fault recovery on an Oracle Mediator service component.

- [Section 8.5.3.1, "Example: Single Fault Recovery for Oracle Mediator"](#)
- [Section 8.5.3.2, "Example: Bulk Fault Recovery for Oracle Mediator"](#)

In this example, an inbound Siebel adapter service binding component submits a payload message to Oracle Mediator for transformation. The processed payload message is then delivered to an outbound file adapter reference binding component. However, the outbound directory into which to write the payload message is not configured with write permissions. This causes a fault to occur. The fault policy defined during design time specifies that the fault be manually recovered through human intervention. Note that three retries are attempted, as defined with the `retryCount` attribute. The condition and action are defined as follows in the `fault-policies.xml` file.

Recoverable Oracle Mediator faults do not require a fault policy (though it is one way to make faults recoverable, as described through an `ora-human-intervention` action). Any parallel routing rule that receives a remote fault from the outbound endpoint also creates a recoverable fault (in this specific example, the fault policy is not required if the Oracle Mediator uses a parallel routing rule to invoke the outbound file adapter).

```
<faultPolicies xmlns="http://schemas.oracle.com/bpel/faultpolicy">
<faultPolicy version="2.0.1"
  id="ConnectionFaults"
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://schemas.oracle.com/bpel/faultpolicy"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Conditions>
    <faultName xmlns:medns="http://schemas.oracle.com/mediator/faults"
      name="medns:mediatorFault">
      <condition>
        <test>contains($fault.mediatorErrorCode, "TYPE_FATAL_
          MESH")</test>
        <action ref="ora-retry"/>
      </condition>
    </faultName>
  </Conditions>
  . . .
  . . .
  <Action id="ora-retry">
    <retry>
      <retryCount>3</retryCount>
      <retryInterval>5</retryInterval>
      <retryFailureAction ref="ora-human-intervention"/>
      <retrySuccessAction ref="ora-terminate"/>
    </retry>
  </Action>
</Actions>
</faultPolicy>
</faultPolicies>
```

Note that processing is set to retry 3 times before terminating.

The fault policies are associated with the `ConnectionFaults` composite in the `fault-bindings.xml` file:

```
<faultPolicyBindings version="2.0.1" xmlns="http://schemas.oracle.com/bpel/fault
policy" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <composite faultPolicy="ConnectionFaults"/>
</faultPolicyBindings>
```

8.5.3.1 Example: Single Fault Recovery for Oracle Mediator

For this example, the `sap` output directory is made read-only. An inbound file adapter retrieves the `sender.xml` file from the `siebel` directory and the message is routed through Oracle Mediator to an outbound file adapter reference for placing a file in the `sap` directory.

To perform single fault recovery for Oracle Mediator:

1. Change the directory permissions at the operating system command prompt.

```
chmod 000 sap
cp sender.xml siebel/
```

2. From the **SOA Infrastructure** menu, select **Home**.
3. Click the **Faults and Rejected Messages** tab.

Note that three faults appear, based on three retries being attempted. In this case, you see three retries only because the fault policy on the Oracle Mediator interaction with the outbound file adapter defines three retries. Without the fault policy, there is only one fault (no automated retries).

4. Click the specific instance ID in the **Composite Instance ID** column.

The Flow Trace appears. The faults table at the top of the page displays the fault messages. If you want to see where the faulted Oracle Mediator instance is located in the overall message flow, select the fault in the faults table. This highlights the associated instance in the trace table. You can then click the instance to access its audit trail to see more details about the faulted flow.

Note: Steps 4 through 10 represent one way to recover this single fault. The fault can also be recovered directly from the Oracle Mediator faults page through the **Recovery Action** list.

5. Locate the Oracle Mediator component instance fault you want to recover in the **Faults** table and click **Recover** in the **Recovery** column.

6. Select **Sender** from the **Payload Part** list.

The payload is automatically displayed in the **Payload** field. If necessary, payload modifications can be performed in this field. For this example, payload modification is not necessary.

7. Change the `sap` directory to be writable at the operating system command prompt.

```
chmod 777 sap
```

8. Return to the **Faults** tab and click the **Refresh** icon in the upper right corner of the page.

9. Click **Retry**.

10. Click **Yes** when prompted to resubmit the selected fault for recovery.

The page refreshes to indicate that no faults occurred.

11. Click the Audit Trail tab.

The final message indicates that manual recovery was successful and the message payload was written to the `sap` directory.

onMessage	26-Jul-07 12:00:49 EDT	Input payload received
onCase "SAP.Write"	26-Jul-07 12:00:49 EDT	Transformed message part "Receiver" using "xsl/Sender_To_Receiver.xsl"
	26-Jul-07 12:00:50 EDT	Error during invoking 1-way operation "Write" on target service "SAP"
	26-Jul-07 12:00:56 EDT	Retry no. 1 for case "SAP.Write"
	26-Jul-07 12:00:57 EDT	Transformed message part "Receiver" using "xsl/Sender_To_Receiver.xsl"
	26-Jul-07 12:00:57 EDT	Error during invoking 1-way operation "Write" on target service "SAP"
	26-Jul-07 12:01:03 EDT	Retry no. 2 for case "SAP.Write"
	26-Jul-07 12:01:04 EDT	Transformed message part "Receiver" using "xsl/Sender_To_Receiver.xsl"
	26-Jul-07 12:01:04 EDT	Error during invoking 1-way operation "Write" on target service "SAP"
	26-Jul-07 12:01:09 EDT	Retry no. 3 for case "SAP.Write"
	26-Jul-07 12:01:09 EDT	Transformed message part "Receiver" using "xsl/Sender_To_Receiver.xsl"
	26-Jul-07 12:01:09 EDT	Error during invoking 1-way operation "Write" on target service "SAP"
	26-Jul-07 12:04:24 EDT	Recovering manually...
	26-Jul-07 12:04:25 EDT	Transformed message part "Receiver" using "xsl/Sender_To_Receiver.xsl"
	26-Jul-07 12:04:25 EDT	Invoked 1-way operation "Write" on target service "SAP"

8.5.3.2 Example: Bulk Fault Recovery for Oracle Mediator

Assume the `sap` directory to which to write the `sender.xml` payload message is again configured with read-only permissions at the operating system command prompt. Three copies of the `sender.xml` file are placed in the `siebel` directory of the inbound Siebel adapter service binding component. This creates three instances.

```
chmod 000 sap
cp sender.xml siebel/
cp sender.xml siebel/
cp sender.xml siebel/
```

To perform bulk fault recovery for Oracle Mediator:

1. Change the `sap` directory to be writable.
2. From the **SOA Infrastructure** menu, select **Home**.
3. Click the **Faults and Rejected Messages** tab.
4. In the search utility, enter a criteria based on known fault parameters (for example, the time range, composite name, and so on).
5. If the search returns too many results, limit it by selecting the **Show only recoverable faults** check box.
6. Change the `sap` directory to be writable at the operating system command prompt.

```
chmod 777 sap
```

7. Select all the faults to be recovered.
8. Select **Retry** from the **Recovery Action** list.

9. Select **Yes** when prompted to perform fault recovery.
10. Click the **Audit Trail** tab.

The final message indicates that manual recovery was successful and the message payload was successfully written to the `sap` directory.

8.6 Recovering from SOA Composite Application Faults in the Application Home Page

You can monitor and perform individual and bulk fault recoveries in your SOA composite application. For BPEL process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault. Human workflow faults can also be recovered, but not directly from Oracle Enterprise Manager Fusion Middleware Control Console. Instead, the audit trail provides a link to the Oracle BPM Worklist, from which the fault can be addressed.

To recover from SOA composite application faults in the application home page:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select Deployed Composites. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Click the **Faults and Rejected Messages** tab.

The **Faults and Rejected Messages** page displays the following details for the selected SOA composite application:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults and rejected messages in SOA composite application instances, including the error message, whether you can recover from the fault, the time of the fault, if the fault message is classified as a rejected message (if so, a check mark is displayed), the fault location, the composite instance ID, and links to log files that describe the fault.

FaultFlow [1.0] SOA Composite Logged in as weblogic Page Refreshed Aug 25, 2009 3:03:26 PM PDT

Running Instances 1 | Total 5 | Active Retire ... Shut Down... Test Settings...

Dashboard | Instances | **Faults and Rejected Messages** | Unit Tests | Policies

Worklist application.

Search ?

Error Message Contains Composite Instance ID

Fault ID

Fault Time From (UTC-08:00) US Pacific Time

Fault Time To (UTC-08:00) US Pacific Time

Search Reset

Show only recoverable faults Fault Type All Faults

Select View Recovery Actions Delete Rejected Messages... Recover With Options...

Error Message	Recovery	Fault Time	Rejected Message	Fault Location	Composite Instance ID	Logs
<faultType>1</faultType>	Recover...	Aug 21, 2009 12:03:08 AM		FaultFlow	20076	
<faultType>1</faultType>	Recover...	Aug 19, 2009 4:12:00 AM		FaultFlow	10002	
<faultType>1</faultType>	Recover...	Aug 19, 2009 4:11:50 AM		FaultFlow	10001	

Note: You cannot search for human workflow error messages by entering details in the **Error Message Contains** field because these faults are not persisted in the dehydration store.

Faults identified as recoverable can be recovered.

3. Select faults for recovery. As with fault recovery at the SOA Infrastructure level and BPEL process and Oracle Mediator service component levels, you can perform single fault recovery, bulk fault recovery, and recovery of all faults. See Step 3 of [Section 8.5, "Recovering from SOA Composite Application Faults at the SOA Infrastructure Level"](#) for instructions on selecting faults to perform these types of recovery.
4. Select an action from the **Recovery Action** list.

Action	Description	Action is Available for...
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.	BPEL process and Oracle Mediator
Abort	Terminates the entire instance.	BPEL process and Oracle Mediator
Replay	Replays the entire scope again in which the fault occurred.	BPEL process

Action	Description	Action is Available for...
Rethrow	Rethrows the current fault. BPEL fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.	BPEL process
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).	BPEL process

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

- If you want to delete rejected messages, click **Delete Rejected Messages**. This displays the Delete: Rejected Messages dialog for specifying a criteria for deleting rejected messages of the current composite directly from the database.

Delete : Rejected Messages ✖

Specify the criteria for selecting and deleting rejected messages directly from the database. Any selections you may have made in the Faults and Rejected Messages page will be ignored for this operation. To delete a fault, delete the associated composite instance from the Instances page.

Common Delete Options

Preset Batches Older than 24 Hours ▾

Delete All

This will delete rejected messages of all the composites.

Delete All Rejected Messages That Match These Criteria

Start Time From (UTC-08:00) US Pacific Time

Start Time To (UTC-08:00) US Pacific Time

Delete
Cancel

- If you want to perform a bulk recovery of messages, click **Recover with Options**. This displays the Recover with Options dialog for specifying a criteria for recovering BPEL and mediator messages of the current composite directly from the database. Human workflow messages can be recovered manually from Oracle BPM Worklist. Business event and business rule messages cannot be recovered.

Specify the criteria for selecting and recovering faults directly from the database. Any selections you may have made in the Faults and Rejected Messages page will be ignored for this operation. This operation will not recover any Human Workflow faults; you can recover these faults using the Worklist application.

Common Recovery Action

Common Recovery Options

Preset Batches

Recover All

This will recover all recoverable faults of all the composites using the common recovery action specified above.

Recover All Recoverable Faults that Match These Criteria

Fault Time From (UTC-08:00) US Pacific Time

Fault Time To (UTC-08:00) US Pacific Time

Error Message Contains

7. Specify a criteria. **Retry** and **Abort** are the only recovery actions permitted.

Note: For bulk fault recovery at the SOA composite application level, a check of the state of the composite is performed. If the state of the composite is set to off, a message is displayed warning you that a recovery cannot be performed.

You are not notified when a fault has been skipped during recovery for any reason (for example, an unsupported service engine, an unrecoverable fault, and so on).

8. Click **Recover**. Depending upon the number of messages, recovery can take some time.
9. Perform the following additional monitoring tasks from within the faults table:
 - a. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - b. In the **Fault Location** column, click a specific location to access the faults page for the location of the fault. The location can be a service, component, or reference.
 - c. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.
 - d. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- [Section 8.5.1, "Examples of Fault Recovery for BPEL Processes"](#)
- [Section 8.5.3, "Examples of Fault Recovery for Oracle Mediator"](#)

8.7 Automating the Testing of SOA Composite Applications

You can create, deploy, and run test cases that automate the testing of SOA composite applications. Test cases enable you to simulate the interaction between a SOA composite application and its Web service partners before deployment in a production environment. This helps to ensure that a process interacts with Web service partners as expected by the time it is ready for deployment to a production environment. You create test cases in Oracle JDeveloper and include them in a SOA composite application that is then deployed and administered from Oracle Enterprise Manager Fusion Middleware Control Console.

To test SOA composite applications:

Note: Before testing SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for instructions on creating test cases.

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
<ol style="list-style-type: none"> 1. Select Home. 2. Select Deployed Composites. 3. In the Composite section, select a specific SOA composite application. 4. Click the Unit Tests tab. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application. 2. Click the Unit Tests tab. 	<ol style="list-style-type: none"> 1. Select Unit Test.

The test cases that display were designed in Oracle JDeveloper and included in a deployed SOA composite application.

2. Select the entire test suite or individual tests of a suite to run, and click **Execute**.

The screenshot shows the 'FabricTestSimple [1.0]' web application interface. At the top, it indicates the user is logged in as 'weblogic' and the page was refreshed on Feb 13, 2009 at 7:53:04 AM PST. The main navigation bar includes 'Dashboard', 'Instances', 'Faults and Rejected Messages', 'Unit Tests' (which is highlighted), and 'Policies'. Below this, there are sub-tabs for 'Test Cases' and 'Test Runs'. The 'Test Cases' section contains an instruction: 'Select one or more test cases to run and click Execute. Test cases enable you to simulate the interactions between a composite and its web service partners in a test environment.' An 'Execute' button is located to the right of this instruction. Below the instruction is a table with three columns: 'Name', 'Description', and 'Select'. The table lists several test cases, including folders 'SimpleAssertions' and 'SimpleEmulations', and files like 'assert.xml', 'EmulateAyncProcess.xml', 'EmulateSyncProcess.xml', and 'multiple-emulations.xml'. Each row has a checkbox in the 'Select' column.

You are prompted to create a test.

3. Enter the following values, and click **OK**.

Field	Description
Test Run Name	Enter a name for the test instance. When testing is complete, report details are captured under this name.
Timeout	Enter a value in seconds in which to complete this test. If the test does not complete within this time limit, then testing is terminated.
Number of Concurrent Test Instances	Enter the number of test instances to create.

The Test Runs page automatically displays for tracking the running tests.

The Test Runs page enables you to track running test cases and view test results. Test suites consist of a logical collection of one or more test cases. Each test case contains a set of commands to perform as the test instance is executed. The execution of a test suite is known as a test run.

The screenshot shows the Oracle SOA Suite Test Cases interface. At the top, it displays 'FabricTestSimple [1.0]' and 'Logged in as weblogic'. Below this, there are navigation tabs: Dashboard, Instances, Faults and Rejected Messages, Unit Tests (selected), and Policies. Under 'Unit Tests', there are sub-tabs: Test Cases and Test Runs (selected). A search section allows filtering by Test Run Name, Test Run ID, Composite Instance ID, Start Time, and End Time. Below the search is a table of test runs:

Test Run Name	Test Run ID	Start Time	End Time	Status	Success Rate
test-safari	99559a2a5e...	Feb 12, 2009 1:45:35 AM	Feb 12, 2009 1:45:35 AM	✓ Passed	100% (of 1 tests, 0 failed, all)
test2	99559a2a5e...	Feb 9, 2009 2:07:36 AM	Feb 9, 2009 2:07:39 AM	✓ Passed	100% (of 4 tests, 0 failed, all)
test1	99559a2a5e...	Feb 9, 2009 2:05:53 AM	Feb 9, 2009 2:05:54 AM	✓ Passed	100% (of 4 tests, 0 failed, all)

Below the table, there is a section titled 'Results of Test Run : test-safari (Test Run ID : 99559a2a5a7c1ade:-3fac659e:11f59722109:-7d20)'. It shows a summary: Total 1, Running 0, Passed 1, Failed 0, Unknown 0, Success Rate 100%. Below this is a table of test suites and test cases:

Test suites and test cases	Status
SimpleAssertions	
assert.xml	✓ Passed

- In the **Test Run Name** column, click a specific test run to display details in the **Results of Test Run** section. If you want to create more test runs, you can switch back to the Test Cases page at any time.

The **Results of Test Run** section displays details about the executed test run, such as a test summary and the success rate. Click the **Help** icon for additional details.

- View assertion details at the bottom of the page. Assertions enable you to verify variable data or process flow.

Assertion details for SimpleAssertions

Show failures only

Composite Instance	Location	Type	Status	Expected Value	Actual Value	Description	Error Message
166	client	Wire	✓ True	123123123	123123123	Simple string assertior	

- Click a composite instance number to view specific test details.

The composite instances created by executing unit test runs display with a yellow square next to the instance ID in the Instances page of a SOA composite application and in the **Recent Instances** tables of the SOA Infrastructure and SOA composite application. This yellow box distinguishes these instances from test instances created on the Test Web Service page or automatically created by external consumers of the application.

For more information, see the following documentation:

- [Section 1.4.3.4, "Understanding SOA Composite Application Automated Testing"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for instructions on creating test cases in Oracle JDeveloper

8.8 Managing SOA Composite Application Policies

You can attach or detach security policies to and from currently deployed SOA composite applications. Policies apply security to the delivery of messages.

Note: Before attaching policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use in your environment.

To manage SOA composite application policies:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
<ol style="list-style-type: none"> 1. Select Home. 2. Select Deployed Composites. 3. In the Composite section, select a specific SOA composite application. 4. Click the Policies tab. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application. 2. Click the Policies tab. 	<ol style="list-style-type: none"> 1. Select Policies.

The Policies page enables you to attach and detach policies to and from BPEL process service components. The policies table displays the attached policy name, the component to which the policy is attached, the policy reference status (enabled or disabled) that you can toggle, the category (Management, Reliable Messaging, MTOM Attachment, Security, or WS Addressing), the violations, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.

AutoLoanComposite [1.0] | Logged in as weblogic | Page Refreshed Feb 18, 2009 3:05:41 PM PST

Running Instances 0 | Total 0 | Active | Retire ... | Shut Down... | Test | Settings... | Related Links

Dashboard | Instances | Faults and Rejected Messages | Unit Tests | **Policies**

You can view and modify the policies attached to the web service binding components and service components of this SOA composite application. Click 'Attach/Detach To' to view and update the policies.

View ▾ Attach/Detach To ▾

Policy Name	Attached To	Policy Reference Status	Category	Total Violations	Authentication
oracle/log_policy	CreditRatingRules	Disable	Management	0	N/A
oracle/log_policy	AutoLoanProcess	Disable	Management	0	N/A
oracle/log_policy	LoanApproval	Disable	Management	0	N/A
oracle/log_policy	LoanAdvisorRules	Disable	Management	0	N/A
oracle/log_policy	client	Disable	Management	0	N/A

2. Click **Attach/Detach To**.

If multiple services or components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

3. Select the component to which to attach or detach a policy.

View ▾ Attach/Detach To ▾

Policy Name

- CreditRatingRules
- AutoLoanProcess
- LoanApproval
- LoanAdvisorRules
- client

Attached To

This invokes a dialog for attaching or detaching policies.

Currently attached policies appear in the **Attached Policies** section. Additional policies available for attachment appear in the **Available Policies** section.

Attach/Detach Policies(AutoLoanComposite/1.0/Service/client/WSBinding) OK Validate Cancel

Attached Policies

Policy Name	Category	Enabled	Description	View Full Description
oracle/log_policy	Management	✓	This policy causes the req...	

▲ Attach ▼ Detach

Available Policies

Search Policy Category

Policy Name	Category	Enabled	Description	View Full Description
oracle/wsaddr_policy	WS-Addressin	✓	This policy causes the pla...	
oracle/wsmtom_policy	MTOM Attachr	✓	This Message Transmission ...	
oracle/binding_authorization_denyall_policy	Security	✓	This policy is a special c...	
oracle/binding_authorization_permitall_policy	Security	✓	This policy is a special c...	
oracle/binding_permission_authorization_policy	Security	✓	This policy is a special c...	
oracle/wss10_message_protection_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_saml_hok_token_with_message_protection_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_saml_token_service_policy	Security	✓	This policy authenticates ...	
oracle/wss10_saml_token_with_message_integrity_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_saml_token_with_message_protection_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_saml_token_with_message_protection_ski_basic256_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_username_id_propagation_with_msg_protection_service_policy	Security	✓	This policy enforces messa...	
oracle/wss10_username_token_with_message_protection_service_policy	Security	✓	This policy enforces messa...	

4. Select policies to attach that are appropriate to your environment.
5. Click **Attach**.

The attached policy appears in the **Attached Policies** section.

Attach/Detach Policies(AutoLoanComposite/1.0/Service/client/WSBinding) OK Validate Cancel

Attached Policies

Policy Name	Category	Enabled	Description	View Full Description
oracle/log_policy	Management	✓	This policy causes the req...	
oracle/wss10_saml_token_service_policy	Security	✓	This policy authenticates ...	

6. Attach additional policies as needed.
7. When you are finished attaching policies, click **Validate**.
8. If an error message appears, make the necessary corrections until you no longer have any validation errors.
9. Click **OK**.

The attached policy displays in the policies table.

FaultFlow [1.0] | Logged in as weblogic | Page Refreshed Apr 28, 2009 6:45:35 AM PDT

Running Instances 0 | Total 10 | Active | Retire ... | Shut Down... | Test | Settings... | Related Links

Dashboard | Instances | Faults and Rejected Messages | Unit Tests | **Policies**

You can view and manage the list of policies attached to the web service bindings and components of this SOA composite application. Click 'Attach To/Detach From' to update the list of attached policies.

View ▾ | Attach To/Detach From ▾

Policy Name	Attached To	Policy Reference Status	Category	Total Violations	Authenticati
oracle/log_policy	FaultFlow	Enable	Management	0	N
oracle/log_policy	CreditRatingService	Disable	Management	0	N

For more information about policies, see the following documentation:

- [Section 1.4.3.2, "Understanding Policies"](#)
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use for your environment

8.8.1 WS-RM Sessions

Multiple requests from Oracle SOA Suite in a single WS-RM session are not currently supported. Each request is in an individual WS-RM session.

8.8.2 Policy Attachments and Local Optimization in Composite-to-Composite Invocations

OWSM supports an Oracle SOA Suite local optimization feature for composite-to-composite invocations in which the reference of one composite specifies a Web service binding to a second composite. Local optimization enables you to bypass the HTTP stack and SOAP/normalized message conversions during run time. Local optimization is not used if the composites are in different containers. If a policy is attached to the Web service binding, the policy may not be invoked if local optimization is used.

By default, an OWSM security policy includes a `local-optimization` property that identifies if the policy supports local optimization. You can view the setting for a policy in Oracle Enterprise Manager Fusion Middleware Control Console.

1. In the application navigator, expand the **WebLogic Domain** folder.
2. Right-click **WLS_SOAWC**, and select **Web Services > Policies**.
3. Select a policy and click **Export to File**.
4. Open the file with a text editor and search for `local-optimization` to identify the value. This property supports the following values:
 - `on`: Local optimization is used in the attached policy, and the policy is not applied at run time.
 - `off`: Local optimization is not used in the attached policy, and the policy is applied at run time.
 - `check-identity`: If a JAAS subject exists in the current thread, local optimization is used. Otherwise, local optimization is not used.

For information on the default local optimization settings for security policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.

You can override the local optimization setting for a policy by adding the `oracle.webservices.local.optimization` property in the binding section of the `composite.xml` file. The following values are supported:

- `true` (default value): Local optimization is used, and the policy is applied if it is applicable to optimized calls (details are defined in the individual policy file).
- `false`: Local optimization is not used, regardless of the default setting for the `local-optimization` property at the OWSM policy level. This setting forces the policy to be applied.

For example, the following setting of `false` causes `oracle/wss_username_token_client_policy` to be applied.

```
<binding.ws
port="http://xmlns.oracle.com/CalledBPELProcessApp_
jws/CalledBPELProcess/CalledBPELProcess#wsdl.endpoint(calledbpelprocess_client_
ep/CalledBPELProcess_pt) "

location="http://sta00634.us.oracle.com:8001/soa-infra/services/default/CalledBPEL
Process!1.0/calledbpelprocess_client_ep?WSDL">
  <wsp:PolicyReference URI="oracle/wss_username_token_client_policy"
    orawsp:category="security"
    orawsp:status="enabled"/>
  <wsp:PolicyReference URI="oracle/log_policy"
    orawsp:category="management"
    orawsp:status="enabled"/>
  <property
name="oracle.webservices.local.optimization">false</property>
</binding.ws>
```

8.9 Exporting a Running SOA Composite Application

You can export the contents of a running SOA composite application to an archive JAR file. The file can include some or all of the following data:

- The original design-time composite.
- Postdeployment changes in the rules dictionary and domain value maps (DVMs).
- Postdeployment property changes such as binding component properties, composite properties such as audit level settings and payload validation status, and policy attachments.

Notes:

- SOA composite application exporting is currently only allowed at the individual SOA composite level.
 - Shared metadata is not exported as part of the composite export SAR (SOA archive).
-
-

To export a running SOA composite application:

1. Go to the home page of the SOA composite application to export.
2. From the **SOA Composite** menu, select **Export**.

The Export Composite page appears.

Export Composite

This page provides different options for exporting a snapshot of a running composite. This is useful, for example, when you want to replicate the same deployment on a different deployment target. This operation will have no effect on your currently running composite.

You have chosen to export the following composite revision.

Composite Name FODOrderProcessingComposite

Composite Revision 20.0

Current Deployment Target /Farm_soainfra/soainfra/soa_server1/default

Option 1: Export with all post-deploy changes

This option will generate a composite archive file containing the original, design-time definitions of the composite; as well as all post-deployment information listed in Option 2 and 3.

Option 2: Export with runtime/metadata changes only

The composite archive file will include the original composite plus such post-deployment changes as task definitions, rule changes, etc..

Option 3: Export with property changes only

The composite archive file will include the original composite plus any post-deployment property changes, such as binding properties or policy settings.

Option 4: Export with no post-deploy changes

This option will generate a composite archive file containing only the pre-deployment, design-time definitions of the composite. Any property settings you may have made on a running composite, or any runtime metadata, will be ignored in the export operation.

SAR File

A composite archive (SAR) file will be generated with a standard name, shown below. Alternatively, you can specify your own name for the file. The file is first exported to the server where Enterprise Manager is running. When the export operation completes, you will be asked to specify a directory to save the file locally on the machine where this web browser is running. When downloading completes, click Done.

Export With Default: Archive Name sca_FODOrderProcessingComposite_rev20.0.jar

Specify Custom Extension Text-EXAMPLE: sca_FODOrderProcessingComposite_rev20.0-MyText.jar

3. Select an option.
 - **Option 1:** Generates an archive file containing the original design-time composite and the postdeployment details described in **Option 2** and **Option 3**.
 - **Option 2:** Includes the original design-time composite and postdeployment changes in the rules dictionary and DVMs.
 - **Option 3:** Includes the original design-time composite and postdeployment property changes such as binding component properties, composite properties such as audit level settings and payload validation status, and policy attachments.
 - **Option 4:** Generates an archive file containing only the original design-time composite. Options 2 and 3 are not included.
4. If you want to append an additional name to the existing file, select **Specify Custom Extension Text**. For example, entering **MyText** to a file named `sca_OrderBookingComposite_rev1.0.jar` names the exported file as `sca_OrderBookingComposite_rev1.0-MyText.jar`.
5. Click **Export**.
The Processing: Export Composite dialog displays the progress of archive file generation. When generation completes, you are prompted to save the file.
6. Click **Save File**.

A dialog appears for either opening or saving the file to a directory on your local host.

Note: It is important that you click the **Save File** button. Do not simply close this dialog. Although the composite is exported, you cannot retrieve the actual exported file.

7. Specify the local directory in which to save the JAR file.
8. In the upper right of the Processing: Export Composite dialog, click the x icon to close the dialog.
9. On the Export Composite page, note that the Cancel button has changed to **Done**.
10. Click **Done**.

The Export Composite is closed and you are returned to the SOA composite application home page.

8.10 Grouping SOA Composite Applications into Partitions

You can deploy SOA composite applications into separate sections of the SOA Infrastructure known as partitions. Deploying to partitions enables you to logically group SOA composites and perform bulk life cycle management tasks on all SOA composite applications within a specific partition. Partitions are similar to the domain feature that was part of 10.1.x releases of Oracle BPEL Process Manager. However, note that you *cannot* perform specific configuration tasks on partitions, such as restricting login access to a specific partition or configuring partitions (such as configuring threading).

At least one partition is required for deploying SOA composite applications. A default partition named **default** is automatically included with Oracle SOA Suite.

You can manage partitioning from either of two pages:

- From the Manage Partitions page of the SOA Infrastructure, which lets you create partitions, delete partitions, and perform bulk life cycle management tasks on all SOA composite applications in a specific partition
- From the partition home page, which also enables you to perform bulk life cycle management tasks on all SOA composite applications in a specific partition

Note: If SOA composite applications using the same inbound resource are deployed to different partitions, it cannot be guaranteed which partition picks up the message for processing.

For example, assume you are using the file adapter and `/home/Directory1` is the inbound directory for the composite **SOAComposite1**. If this composite is deployed to both **Partition1** and **Partition2**, when a file is placed in `/home/Directory1`, either the composite in **Partition1** or **Partition2** may pick up the file.

With the socket adapter, however, there is a limitation that does not permit you to deploy any composite that uses the same inbound port. In that case, an exception is thrown indicating that the inbound port is already in use.

Table 8–2 provides more specific details on the tasks you can perform from both pages.

Table 8–2 Partition Management Actions

Action	Perform on the Manage Partitions Page?	Perform on the Partition Home Page?
Create a partition	Yes	No
Delete a partition	Yes	Yes. Select the SOA Partition menu, then select Delete This Partition . Note: You can also delete a partition by right-clicking it in the navigator and selecting Delete This Partition .
Perform bulk life cycle management tasks on all composites deployed to a specific partition:	Yes	Yes
<ul style="list-style-type: none"> ■ Start all ■ Shut down all ■ Retire all ■ Activate all ■ Undeploy all 		

Note: Partitions are *not* associated with a particular state such as started, stopped, activated, or retired. Only the composites within the partition are associated with a particular state. Therefore, you *cannot* start, stop, activate, or retire a partition.

See the following section based on the tasks you want to perform:

- [Section 8.10.1, "Creating and Deleting Partitions"](#)
- [Section 8.10.2, "Performing Bulk Life Cycle Management Tasks on Composites in Partitions"](#)

For more information about partitions, see [Section 1.4.3.5, "Understanding Partitioning of the SOA Infrastructure."](#)

8.10.1 Creating and Deleting Partitions

You can create and delete partitions on the Manage Partitions page. A default partition named **default** is automatically included with Oracle SOA Suite. You can delete the **default** partition. Note that you cannot rename existing partitions; only creation and deletion of partitions is supported.

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the Home Page of a Specific Partition...
1. Select Manage Partitions .	1. From the Related Links list of a specific partition, select Manage Partitions .

The Manage Partitions page displays the following details:

- The name of each partition, the number of active and retired SOA composite application revisions in each partition, the name of the composites contained in each partition (under the **View** link), and the total number of running and faulted instances in each partition.
- A utility for searching for a specific partition. Enter a full or partial partition name and click the **Search** icon or press the **Return** key. The search is not case-sensitive.

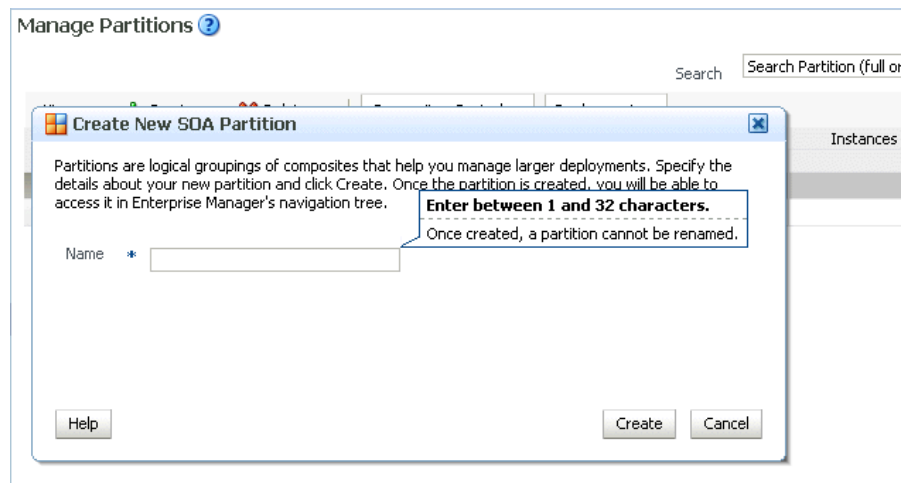
Manage Partitions ?

Search

SOA Partition	Composites			View	Instances	
	Active	Retired			Total	Faulted
default	1	0		8	0	
MyPartition_1	0	0		7	0	

2. To add a partition, click **Create**.

The Create New SOA Partition dialog is displayed.



- a. In the **Name** field, enter a partition name, and click **Create**.

Note: The name must conform to the following conventions:

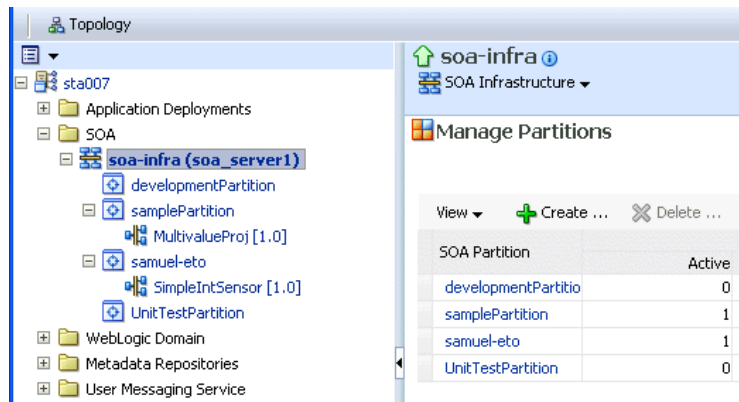
- ASCII letters and numbers are permitted.
- Underscores (_) are permitted.
- Hyphens (-) are permitted (except as the first character).
- Non-ASCII letters are permitted.
- Spaces are *not* permitted.

Examples of valid names are `mypartition`, `partition2`, `dept-a`, `customer_services`, and `22`. Examples of invalid names are `-part2`, `/partition`, and null or empty names.

You cannot rename an existing partition or later transfer the composite applications you deployed to it to a different partition.

The new partition is displayed in both the navigator under **soa-infra** and the **SOA Partition** column of the Manage Partitions page. You can now deploy composites to this partition by selecting **Deploy to This Partition** from the **Deployment** dropdown list or right-clicking a specific partition in the navigator and click **Deploy to This Partition**.

When a composite is deployed to a partition, it is displayed beneath the partition in the navigator. Once deployed, a composite cannot be transferred to a different partition.

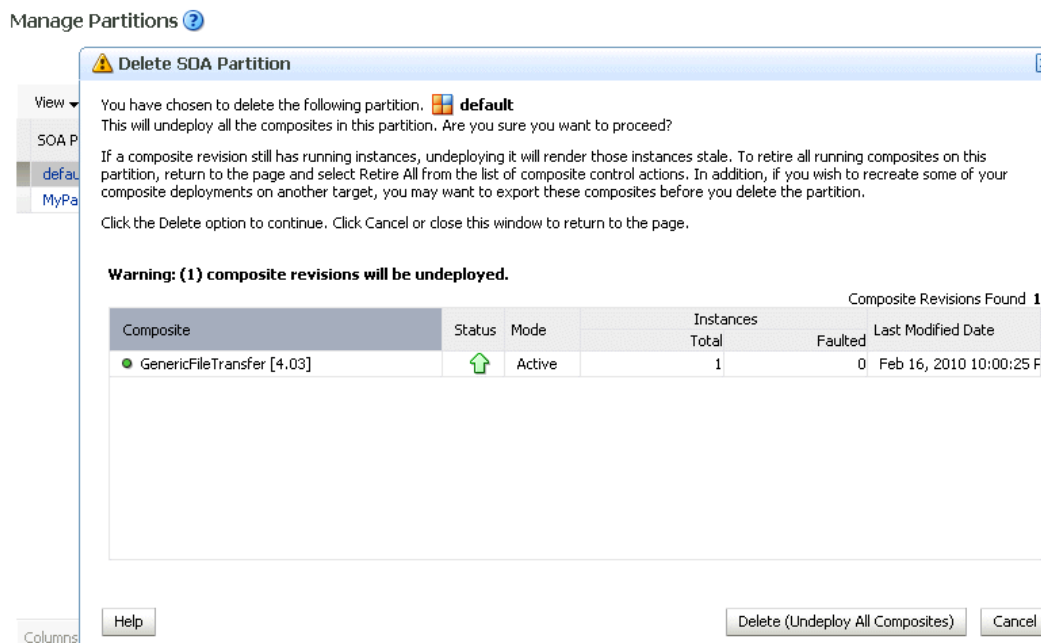


3. To delete a partition, select a specific partition and click **Delete**. Note that you can also right-click a specific partition in the navigator and click **Delete This Partition**.

The Delete SOA Partition dialog is displayed. Note the following:

- If you want to recreate some of your composite deployments in another partition, you can export those composites to a JAR file *before* you delete this partition.
- Before deleting the selected partition, all SOA composite application revisions in the partition are undeployed. The states of all undeployed instances of these revisions become stale.

Note: You must have at least one partition. If you delete all partitions, you cannot deploy a SOA composite application.



a. Click **Delete (Undeploy All Composites)**.

All composites that were deployed in the partition are undeployed and no longer appear in the navigator. The partition is then deleted from both the navigator under **soa-infra** and the **SOA Partition** column of the Manage Partitions page.

For information about performing bulk life cycle management tasks from the **Composites Control** and **Deployment** lists, see [Section 8.10.2, "Performing Bulk Life Cycle Management Tasks on Composites in Partitions."](#)

You can also create partitions with the WebLogic Scripting Tool (WLST) and `ant` commands. For information, see *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference* and *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

8.10.2 Performing Bulk Life Cycle Management Tasks on Composites in Partitions

You can perform bulk life cycle management tasks on all SOA composite applications in a specific partition on the Manage Partitions page, on the home page of a specific partition, and from the menu that displays when you right-click a partition in the navigator.

Bulk life cycle management tasks impact not one, but many, composites at once. If a composite has running instances and a life cycle changing operation is performed on the composite, the instances may not complete. For information about how different life cycle operations impact the composite instances, see Step 3 of [Section 8.2.1, "Managing the State of All Applications at the SOA Infrastructure Level."](#)

To perform bulk life cycle management tasks on all SOA composite applications in a specific partition:

1. Access either page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Manage Partitions**.

From the SOA Folder in the Navigator...

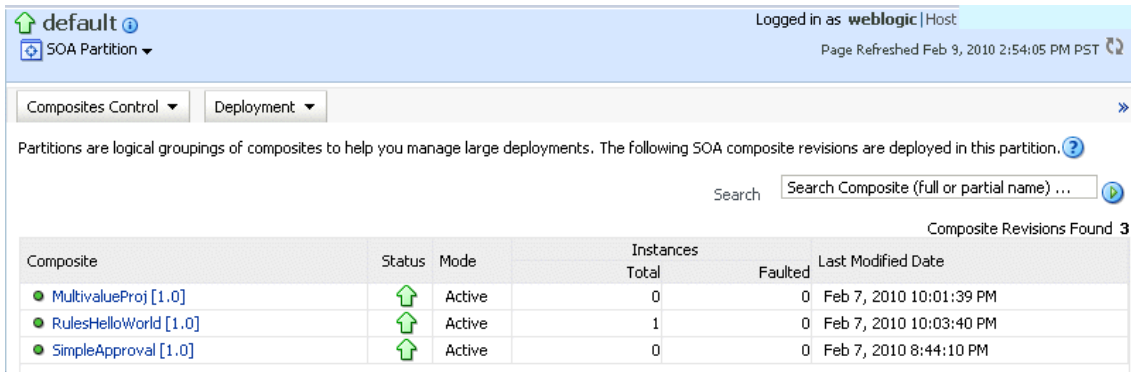
1. Under **soa-infra**, select a specific partition.

Note: As a shortcut, you can also right-click a specific partition in the navigator to display a menu for selecting the bulk life cycle management actions described in this section. For more information about this menu, see Step 3 of [Section 2.2.3, "Navigating Through the Partition Home Page and Menu."](#)

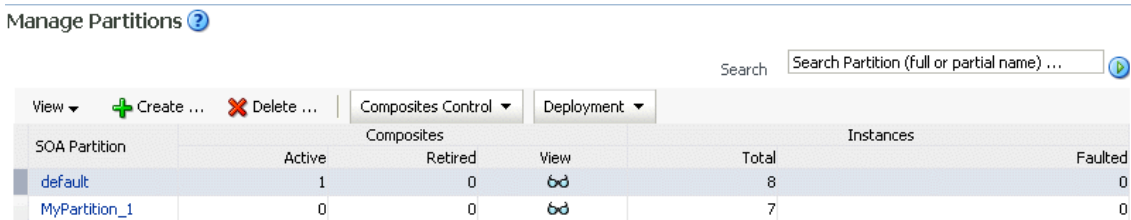
Two dropdown lists that display on either page enable you to perform bulk life cycle management actions:

- **Composites Control** list
- **Deployment** list

On the home page of a specific partition, these lists display at the top of the page.

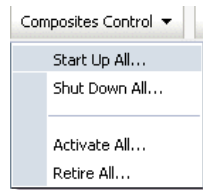


On the Manage Partitions page, these lists display above the **SOA Partition** table:



Note: You can also select to deploy composites to a partition and perform bulk life cycle management tasks by selecting the **SOA Partition** menu at the top of the partition home page.

2. To perform one of the following bulk life cycle management tasks for all SOA composite applications contained in the selected partition, select the **Composites Control** list:
 - Start all composites.
 - Shut down all composites.
 - Activate all composites.
 - Retire all composites.

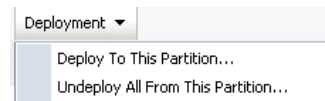


- a. Select an operation to perform.

A dialog is displayed that prompts you to confirm your selection. When the operation completes, a confirmation message displays at the top of the page.

3. To perform one of the following management tasks, select the **Deployment** list:
 - Specify a composite to deploy to this partition. This selection invokes the Deploy SOA Composite wizard where you specify a composite revision to deploy.
 - Undeploy all composites in this partition.

A dialog is displayed that prompts you to confirm your selection. When the operation completes, a confirmation message displays at the top of the page.



8.11 Deleting Large Numbers of Instances with the Purge Script

Deleting thousands of instances with the **Delete with Options** button on the Instances page of a SOA composite application in Oracle Enterprise Manager Fusion Middleware Control Console takes time and may result in a transaction timeout. Instead, use the `purge_soainfra_oracle.sql` PL/SQL script for instance and rejected message deletion. The PL/SQL procedures in this script are populated into the database when you run the Repository Creation Utility during Oracle SOA Suite schema creation.

The following sections provide examples of how to use the PL/SQL procedures that are a part of this script.

Note: The `purge_soainfra_oracle.sql` PL/SQL script cannot be used on a SQL Server database.

8.11.1 Selectively Deleting Instances Using a Filter Criteria

Use the instance filter to selectively delete instances.

```
create or replace type instance_filter as object
(
  composite_partition_name varchar2(200),
  composite_name           varchar2(200),
  composite_revision       varchar2(20),
  state                    integer,
  min_created_date         timestamp,
  max_created_date         timestamp,
);
```

- `composite_partition_name`: The name of the composite partition. If not specified, the default partition is taken as the default value.
- `composite_name`: The name of the SOA composite application, such as `OrderBooking`.
- `composite_revision`: The revision of the composite, such as `1.0`.
- `state`: The state of the instance. The following state values are possible:

```
STATE_RUNNING constant integer := 0;
STATE_RECOVERY_REQUIRED constant integer := 1;
STATE_COMPLETED_SUCCESSFULLY constant integer := 2;
STATE_FAULTED constant integer := 3;
STATE_TERMINATED_BY_USER constant integer := 4;
STATE_SUSPENDED constant integer := 5;
STATE_STALE constant integer := 6;
STATE_UNKNOWN constant integer := 32;
```
- `min_created_date`: The minimum date range.
- `max_created_date`: The maximum date range.

8.11.2 Procedures For Deleting Instances

This section describes the procedures available for deleting composite instances, rejected messages, and orphaned instances.

8.11.2.1 Deleting a Single Instance

This procedure deletes a single composite instance with the given composite instance ID. All dependent records associated with this composite instance are deleted.

```
FABRIC.DELETE_COMPOSITE_INSTANCE(A_COMPOSITE_INSTANCE_ID IN INTEGER)
```

The following example deletes the composite instance with the ID of 100.

```
EXEC FABRIC.DELETE_COMPOSITE_INSTANCE(100);
```

8.11.2.2 Deleting All Instances Using a Filter Criteria

This procedure deletes all composite instances matching the specified filter criteria.

```
FABRIC.DELETE_COMPOSITE_INSTANCES(FILTER IN INSTANCE_FILTER,
    MAX_INSTANCES IN INTEGER,
    PURGE_PARTITIONED_DATA IN BOOLEAN DEFAULT TRUE) RETURN INTEGER;
```

- `FILTER`: The filter for selectively deleting the composite instances.
- `MAX_INSTANCES`: The maximum number of instances to delete per invocation. If the value `MAX_INSTANCES` is 100 and the total number of instances matching the specified filter is 200, the invocation of this procedure causes only 100 instances to be deleted.
- `PURGE_PARTITIONED_DATA`: Indicates whether the records from the partitioned table must be deleted.

The following example deletes the first 100 composite instances matching the specified filter.

```
DECLARE
    FILTER INSTANCE_FILTER := INSTANCE_FILTER();

    MAX_INSTANCES NUMBER;
```

```

DELETED_INSTANCES NUMBER;
PURGE_PARTITIONED_DATA BOOLEAN := TRUE;
BEGIN

FILTER.COMPOSITE_PARTITION_NAME:='default';
FILTER.COMPOSITE_NAME := 'OrderBookingComposite';
FILTER.COMPOSITE_REVISION := '1.0';

FILTER.STATE := fabric.STATE_TERMINATED_BY_USER;

FILTER.MIN_CREATED_DATE := to_timestamp('2009-07-01','YYYY-MM-DD');
FILTER.MAX_CREATED_DATE := to_timestamp('2009-08-24','YYYY-MM-DD');
MAX_INSTANCES := 100;

DELETED_INSTANCES := FABRIC.DELETE_COMPOSITE_INSTANCES (
  FILTER => FILTER,
  MAX_INSTANCES => MAX_INSTANCES,
  PURGE_PARTITIONED_DATA => PURGE_PARTITIONED_DATA
);

END;
/

```

8.11.2.3 Deleting All Rejected Messages Using a Filter Criteria

This procedure deletes all rejected messages matching the specified filter criteria.

```

FABRIC.DELETE_REJECTED_MESSAGES(FILTER IN INSTANCE_FILTER,
  MAX_INSTANCES IN INTEGER,
  PURGE_PARTITIONED_DATA IN BOOLEAN DEFAULT TRUE) RETURN INTEGER;

```

- **FILTER:** The filter for selectively deleting the rejected messages.
- **MAX_INSTANCES:** The maximum number of instances to be deleted per invocation. If the value **MAX_INSTANCES** is 100 and the total number of instances matching the specified filter is 200, the invocation of this procedure causes only 100 instances to be deleted.
- **PURGE_PARTITIONED_DATA:** Indicates whether the records from the partitioned table must be deleted.

The following example deletes the first 100 rejected messages matching the specified filter.

```

DECLARE

FILTER INSTANCE_FILTER := INSTANCE_FILTER();

MAX_INSTANCES NUMBER;
DELETED_INSTANCES NUMBER;
BEGIN

FILTER.COMPOSITE_PARTITION_NAME:='default';
FILTER.COMPOSITE_NAME := 'OrderBookingComposite';
FILTER.COMPOSITE_REVISION := '1.0';

FILTER.MIN_CREATED_DATE := to_timestamp('2009-07-01','YYYY-MM-DD');
FILTER.MAX_CREATED_DATE := to_timestamp('2009-08-24','YYYY-MM-DD');
MAX_INSTANCES := 100;

DELETED_INSTANCES := FABRIC.DELETE_REJECTED_MESSAGES (
  FILTER => NULL,

```

```

        MAX_INSTANCES => MAX_INSTANCES
    );

END;
/

```

8.11.2.4 Deleting the Component Instances Created when Global Instance Tracking is Disabled

This procedure is primarily used to delete the component instances created when global instance tracking is disabled. Orphaned instances are not associated with the composite instance ID.

```

FABRIC.DELETE_ORPHANED_INSTANCES(FILTER IN INSTANCE_FILTER,
    MAX_INSTANCES IN INTEGER,
    PURGE_PARTITIONED_DATA IN BOOLEAN DEFAULT TRUE) RETURN INTEGER;

```

- **FILTER:** The filter for selectively deleting the orphaned instances.
- **MAX_INSTANCES:** The maximum number of instances to be deleted per invocation. If the value `MAX_INSTANCES` is 100 and the total number of instances matching the specified filter is 200, the invocation of this procedure causes only 100 instances to be deleted.
- **PURGE_PARTITIONED_DATA:** Indicates whether the records from the partitioned table must be deleted.

The following example deletes multiple orphaned instances based on the specified filter.

```

DECLARE

    FILTER INSTANCE_FILTER := INSTANCE_FILTER();
    MAX_INSTANCES NUMBER;
    DELETED_INSTANCES NUMBER;
BEGIN

    FILTER.COMPOSITE_PARTITION_NAME := 'default';
    FILTER.COMPOSITE_NAME := 'OrderBookingComposite';
    FILTER.COMPOSITE_REVISION := '1.0';

    FILTER.STATE := fabric.STATE_COMPLETED_SUCCESSFULLY;
    FILTER.MIN_CREATED_DATE := to_timestamp('2009-07-01', 'YYYY-MM-DD');
    FILTER.MAX_CREATED_DATE := to_timestamp('2009-08-24', 'YYYY-MM-DD');
    MAX_INSTANCES := 100;

    DELETED_INSTANCES := FABRIC.DELETE_ORPHANED_INSTANCES (
        FILTER => FILTER,
        MAX_INSTANCES => MAX_INSTANCES
    );

END;
/

```

8.11.2.5 Deleting Composite Instances, Rejected Messages, and Orphaned Instances

This procedure internally invokes the procedures for deleting composite instances, rejected messages, and orphaned instances. This procedure is convenient for deleting all composite instances, rejected messages, and orphaned instances in a single invocation.

```
FABRIC.DELETE_ALL(FILTER IN INSTANCE_FILTER,  
                 MAX_INSTANCES IN INTEGER,  
                 PURGE_PARTITIONED_DATA IN BOOLEAN DEFAULT TRUE) RETURN INTEGER;
```

The following example deletes composite instances, rejected messages, and orphaned instances based on the specified filter.

```
DECLARE  
  FILTER INSTANCE_FILTER := INSTANCE_FILTER();  
  MAX_INSTANCES NUMBER;  
  DELETED_INSTANCES NUMBER;  
BEGIN  
  
  FILTER.COMPOSITE_PARTITION_NAME := 'default';  
  FILTER.COMPOSITE_NAME := 'OrderBookingComposite';  
  FILTER.COMPOSITE_REVISION := '1.0';  
  
  FILTER.STATE := fabric.STATE_COMPLETED_SUCCESSFULLY;  
  
  FILTER.MIN_CREATED_DATE := to_timestamp('2009-07-01', 'YYYY-MM-DD');  
  FILTER.MAX_CREATED_DATE := to_timestamp('2009-08-24', 'YYYY-MM-DD');  
  MAX_INSTANCES := 100;  
  
  DELETED_INSTANCES := FABRIC.DELETE_ALL(  
    FILTER => FILTER,  
    MAX_INSTANCES => MAX_INSTANCES  
  );  
  
END;  
/
```

Programmatically Managing SOA Composite Applications

This chapter provides an overview of the Facades API for programmatically managing SOA composite applications.

This chapter includes the following topics:

- [Section 9.1, "Introduction to Programmatically Managing SOA Composite Applications"](#)
- [Section 9.2, "Facades API Interfaces"](#)
- [Section 9.3, "Facades API Examples"](#)

9.1 Introduction to Programmatically Managing SOA Composite Applications

You can programmatically manage your SOA composite applications during runtime with the Facades API. The Facades API is part of Oracle SOA Suite's Infrastructure Management Java API. The Facades API exposes operations and attributes of composites, components, services, references and so on. The Facades API provides an alternative to managing composites with Oracle Enterprise Manager Fusion Middleware Control Console.

The `oracle.soa.management.facade.Locator` interface exposes a method interface as an entry point for Facades API clients.

For more information about the Facades API, see *Oracle Fusion Middleware Infrastructure Management Java API Reference for Oracle SOA Suite*.

Note: The Infrastructure Management Java API also includes the direct binding invocation API for inbound invocation of SOA composite applications and outbound invocations of Oracle Service Bus (OSB) or another SOA composite application. For information on using the direct binding invocation API, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

9.2 Facades API Interfaces

[Table 9-1](#) provides an overview of the Facades API interfaces.

Table 9–1 Facades API Interfaces

Interface	Description
ActivityInstance	Retrieves the instance ID (key) of the instance to which this activity belongs, the component name, the creation date of the activity, the expiration date of the current activity, and so on.
AsynchronousJob	Retrieves details about asynchronous job types.
AsynchronousResult	Retrieves the results of asynchronous processes.
Binding	Retrieves binding details such as URI, type, and subtype.
BindingComponent	Retrieves the binding type and the list of faults specified by the given fault filter.
BusinessEventInfo	Retrieves business event details such as the consistency level, filter type, local name, namespace URI, and prefix.
Component	Retrieves component details such as distinguished name (DN); active, faulted, and total instances; deployment time; and so on.
ComponentInstance	Retrieves component instance details such as the audit trail, component instance state (for example, successfully completed, faulted, or running), conversation ID, creation date, and so on).
Composite	Retrieves composite details such as the distinguished name (DN); active, faulted, and total instances; deployment time; and so on.
CompositeInstance	Retrieves the composite instance state (for example, successfully completed, faulted, running, and so on).
EventBridge	Retrieves the event bridge type and the list of faults specified by the given fault filter.
Fault	Retrieves fault details such as the binding type if the fault occurred in a binding component, the component instance ID, the name of the component in which the fault occurred, the time at which the fault was generated, the engine type if the fault occurred in a service engine, and so on.
FaultRecoveryActionTypeConstants	Provides action types such as aborting instances, marking a faulted activity as complete, storing the rejected message in a file, marking a faulted activity to be recovered, retrying an activity, and so on.
FaultRecoveryResult	Retrieves faults, errors, recoverable faults, nonrecoverable faults, and so on.
FaultRecoveryServiceEngine	Provides the fault recovery service engine.
ImportInfo	Retrieves the location of the imported resource and the import type.
InterfaceType	Retrieves the callback interface and interface properties.
Locator	Exposes a method interface as an entry point for Facades API clients.
Message	Retrieves message details such as the component name, composite DN, content of the message, conversation ID, message storage location, message recoverable state, and so on.
Partition	Performs partitioning life cycle management tasks such as starting, stopping, activating, and retiring all the composites in a partition.

Table 9–1 (Cont.) Facades API Interfaces

Interface	Description
Property	Retrieves property details such as the default value, name, override attribute value of the property, property value source, and so on.
Reference	Retrieves reference details such as the WSDL URL for the target service, properties for the reference, reference name, reference bindings, and so on.
ReferenceInstance	Retrieves the type of the binding, DN of the composite, composite instance ID, time of instance creation, and so on.
ServerManager	Gets and creates partitions.
Service	Retrieves service details such as bindings, composite DN, interface type, name, multiplicity, and so on.
ServiceEngine	Retrieves the list of deployed components in the service engine, engine type, and list of faults specified by the given fault filter.
ServiceInstance	Retrieves service instance details such as the type of the binding, DN of the composite, composite instance ID, time of creation, and so on.
WebServiceBinding	Retrieves the default address URI, endpoint address URI, port, transport type, and so on.
WebServiceBindingPort	Retrieves the port name, port URI, service name, and so on.
WireInfo	Retrieves the wire reference, wire service, source URI, and target URI.
WSDLInterfaceBinding	Retrieves the WSDL URL.

9.3 Facades API Examples

This section provides several examples of using the Facades API to perform composite management.

9.3.1 Retrieving the State of a Composite

You can retrieve the state of a composite with the Facades API.

There are two parts to the state of a composite:

- active | retired:

This setting decides whether new instances can be created (active) or old ones are allowed to finish without new ones being allowed to be created (retired). This is referred to as composite *mode*.

- on | off:

This setting is the composite state and overrides the active or retired composite modes in either allowing call access (invoke/callback) to the composite revision (on) or not allowing call access (off). This is referred to as composite *state*.

From `oracle.soa.management.facade.Locator`, use the following code:

```
getComposite(CompositeDN)
```

This gets you to the composite (an implementation of `oracle.soa.management.facade.Composite`).

To retrieve the mode and the state, use the API and the implementation:

```

System.out.println("Mode: " + composite.getMode() + " state: " +
    ((oracle.soa.management.internal.facade.CompositeImpl)composite).getState());

```

This action returns data similar to the following:

```
Mode: active state: on
```

9.3.2 Finding Instances

You can find instances with the Facades API.

Use the `Locator` interface to find a `Composite` (`locator.lookupComposite(compositeDN);`), and invoke it through a `DeliveryService`.

Then use the API to find its instances and get information (for example, the instance ID, which components were executed, and so on)

```

Composite composite =
    locator.lookupComposite("default/OrderBookingComposite!1.0");
/*
 * retrieve instances, we are already on a composite, no need to set the
 * DN
 */
CompositeInstanceFilter filter = new CompositeInstanceFilter();
    filter.setMinCreationDate(
        new java.util.Date((System.currentTimeMillis() - 20000));
// get composite instances by filter ..
List obInstances = composite.getInstances(filter);
// for each of the returned composite instances..
for (CompositeInstance instance : obInstances)
{
System.out.println(" DN: " + instance.getCompositeDN() +
"Instance: " + instance.getId() +
" creation-date: " + instance.getCreationDate() +
" state (" + instance.getState() + "): " +
getStateAsString(instance.getState()));

// setup a component filter
ComponentInstanceFilter cInstanceFilter =
new ComponentInstanceFilter ();

// get child component instances ..
List childComponentInstances =
instance.getChildComponentInstances(cInstanceFilter);

// for each child component instance (e.g. a bpel process)
for (ComponentInstance cInstance : childComponentInstances)
{
System.out.println(" -> componentinstance: " +
cInstance.getComponentName() + " type: " +
cInstance.getServiceEngine().getEngineType()+
" state: " +
getStateAsString(cInstance.getState()));
}

// retrieve composite sensors
List sensorData = instance.getSensorData();
for (SensorData data : sensorData)
{

```

```

System.out.println(" -> Sensor: " + data.getSensor().getName() +
" data: " + data.getData());
}
}

```

To make the composite and component states readable, use the following conversion method:

```

private String getStateAsString (int state)
{
    // note that this is dependent on wheter the composite state is
    // captured or not

    if (state == CompositeInstance.STATE_COMPLETED_SUCCESSFULLY)
        return ("success");
    else if (state == CompositeInstance.STATE_FAULTED)
        return ("faulted");
    else if (state == CompositeInstance.STATE_RECOVERY_REQUIRED)
        return ("recovery required");
    else if (state == CompositeInstance.STATE_RUNNING)
        return ("running");
    else if (state == CompositeInstance.STATE_STALE)
        return ("stale");
    else
        return ("unknown");
}

```

For example, this code when executed against the Fusion Order Demo `BamOrderBookingComposite`, returns the following data:

```

DN: default/BamOrderBookingComposite!1.0Instance: 40103 creation-date: Thu Jul 30
12:31:24 PDT 2009 state (-1): unknown
-> componentinstance: EvaluatePreferredSupplierRule type: decision state:
success
-> componentinstance: FulfillOrder type: mediator state: success
-> componentinstance: InternalWarehouseService type: bpel state: unknown
-> componentinstance: OrderProcessor type: bpel state: unknown
-> componentinstance: RequiresApprovalRule type: decision state: success
-> componentinstance: PartnerSupplierMediator type: mediator state: success
-> Sensor: CreditCardAuthResultSensor data: APPROVED
-> Sensor: OrderBookingCompositeProcessorResult data: 900
-> Sensor: OrderProcessingStart data: Order 900

```

If you do not want to start searching for the APIs and packages, all classes used are in the following:

- `oracle.fabric.common.*`
- `oracle.soa.management.facade.*`
- `oracle.soa.management.util.*`

Part V

Administering BPEL Process Service Components and Engines

This part describes how to administer BPEL process service components and engines.

This part includes the following chapters:

- [Chapter 10, "Configuring BPEL Process Service Components and Engines"](#)
- [Chapter 11, "Monitoring BPEL Process Service Components and Engines"](#)
- [Chapter 12, "Managing BPEL Process Service Components and Engines"](#)

Configuring BPEL Process Service Components and Engines

This chapter describes how to configure BPEL process service components and service engines.

This chapter includes the following topics:

- [Section 10.1, "Configuring BPEL Process Service Engine Properties"](#)
- [Section 10.2, "Setting the Audit Level at the BPEL Process Service Component Level"](#)

10.1 Configuring BPEL Process Service Engine Properties

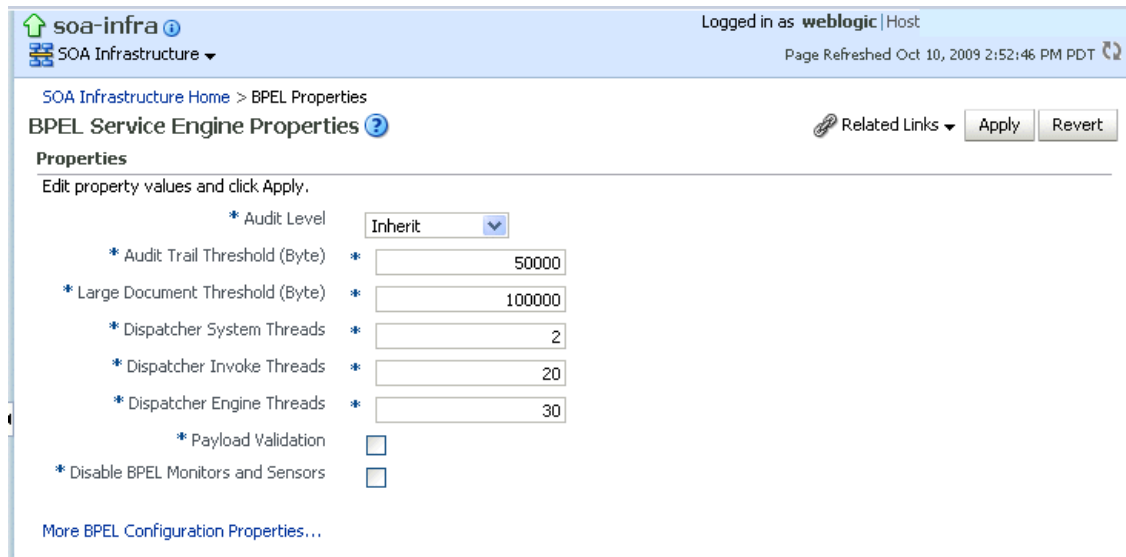
You can configure BPEL process service engine properties. The properties are used by the BPEL process service engine during processing of BPEL service components.

To configure BPEL process service engine properties:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select SOA Administration > BPEL Properties. 	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select SOA Administration > BPEL Properties.

The BPEL Service Engine Properties page displays properties for setting audit trail and large document thresholds, setting dispatcher thread properties, validating payload schema, and setting the audit trail level.



2. Make changes to the service engine properties that are appropriate to your environment.

Property	Description
Audit Level	<p>Select one of the following options:</p> <ul style="list-style-type: none"> ■ Off: Composite instance tracking and payload tracking information is not collected. ■ Inherit: Logging equals the SOA Infrastructure audit level. This setting enables the BPEL audit level to automatically change when the global setting is changed. Setting a different audit level tracking in this page overrides the tracking set at the SOA Infrastructure level. ■ Minimal: The BPEL service engine does not capture any audit details. Therefore, they are not available in the flow audit trails. All other events are logged. ■ Production: The BPEL service engine does not capture the payload. The payload details are not available in the flow audit trails. Payload details for other BPEL activities are collected, except for assign activities. This level is optimal for most normal operations and testing. ■ Development: Allows both composite instance tracking and payload tracking. All events are logged. However, it may impact performance. This level is useful mostly for debugging purposes.
Audit Trail Threshold	Enter the maximum size in bytes of an instance audit trail before it is chunked and saved in a dehydration store table separate from the audit trail. If the threshold is exceeded, the View XML link is shown in the audit trail instead of the payload.
Large Document Threshold	Enter the maximum size of a generated document within a BPEL process component instance before it is stored in a separate table in the dehydration store.
Dispatcher System Threads	<p>Specify the total number of threads allocated to process system dispatcher messages. System dispatcher messages are general clean-up tasks that are typically processed quickly by the server (for example, releasing stateful message beans back to the pool). Typically, only a small number of threads are required to handle the number of system dispatch messages generated during run time.</p> <p>The default value is 2 threads. Any value less than 1 thread is changed to the default.</p>

Property	Description
Dispatcher Invoke Threads	<p>Specify the total number of threads allocated to process invocation dispatcher messages. Invocation dispatcher messages are generated for each payload received and are meant to instantiate a new instance. If the majority of requests processed by the engine are instance invocations (as opposed to instance callbacks), greater performance may be achieved by increasing the number of invocation threads. Higher thread counts may cause greater CPU utilization due to higher context switching costs.</p> <p>The default value is 20 threads. Any value less than 1 thread is changed to the default.</p>
Dispatcher Engine Threads	<p>Specify the total number of threads allocated to process engine dispatcher messages. Engine dispatcher messages are generated whenever an activity must be processed asynchronously. If the majority of processes deployed are durable with a large number of dehydration points (midprocess receive, onMessage, onAlarm, and wait activities), greater performance may be achieved by increasing the number of engine threads. Note that higher thread counts can cause greater CPU utilization due to higher context switching costs.</p> <p>The default value is 30 threads. Any value less than 1 thread is changed to the default.</p>
Payload Validation	<p>Select to enable validation of inbound and outbound messages. Nonschema-compliant payload data is intercepted and displayed as a fault.</p> <p>Note: This setting is independent of the SOA composite application and SOA Infrastructure payload validation level settings. If payload validation is enabled at both the service engine and SOA Infrastructure levels, data is checked twice: once when it enters the SOA Infrastructure, and again when it enters the service engine.</p>
Disable BPEL Monitors and Sensors	<p>Select this check box to disable all BPEL monitors and sensors defined for all BPEL components across all deployed SOA composite applications.</p>

3. Click **Apply**.

- If you want to configure advanced BPEL properties in the System MBean Browser, click **More BPEL Configuration Properties**. Properties that display include, but are not limited to, the following. Descriptions are provided for each property.
 - BpelcClasspath** — The extra BPEL class path to include when compiling BPEL-generated Java sources.
 - DisableAsserts** — Disables the execution of assertions in BPEL, including the `bpelx:assert` activity.
 - DisableSensors** — Disables all calls to sensors.
 - ExpirationMaxRetry** — The maximum number of times a failed expiration call (wait/onAlarm) is retried before failing.
 - ExpirationRetryDelay** — The delay between expiration retries.
 - InstanceKeyBlockSize** — The size of the block of instance IDs to allocate from the dehydration store during each fetch.
 - MaximumNumberOfInvokeMessagesInCache** — The number of invoke messages stored in in-memory cache.
 - OneWayDeliveryPolicy** — Changes whether one-way invocation messages are delivered.
 - StatsLastN** — The size of the most recently processed request list.

- **SyncMaxWaitTime** — The maximum time a request and response operation takes before timing out.
5. Make changes appropriate to your environment.

10.2 Setting the Audit Level at the BPEL Process Service Component Level

You can set the audit level for a BPEL process service component. This setting takes precedence over audit level settings at the SOA Infrastructure, service engine, and SOA composite application levels. The service component level setting is only available for BPEL processes and is *not* supported for the mediator, human workflow, and business rule service components.

There are two ways to set the audit level for BPEL process service components. Supported values are **Off**, **Minimal**, **Inherit**, **Development**, and **Production**.

- In the System MBean Browser of Oracle Enterprise Manager Fusion Middleware Control Console:
 1. In the navigation tree, expand the **SOA** folder.
 2. Right-click **soa-infra**, and select **Administration > System MBean Browser**.
 3. Select **Application Defined MBeans > oracle.soa.config > Server: server_name > SCAComposite > Composite_Name > SCAComposite.SCAComponent > BPEL_Service_Component > Properties**.
 4. Click the **Add** icon.
 5. Expand the **Element_number** folder.
 6. From the **many** list, select **false**.
 7. In the **name** field, enter `bpel.config.auditlevel`.
 8. In the **value** field, enter a value.
 9. Click **Apply**.
- In Oracle JDeveloper:
 1. Set the `bpel.config.auditLevel` property to an appropriate value in the `composite.xml` file of your SOA project.

```
<component name="BPELProcess">
  <implementation.bpel src="BPELProcess.bpel" />
  <property name="bpel.config.auditLevel">Off</property>
</component>
```

For more information about audit levels, see [Section 1.4.1.1, "Understanding the Order of Precedence for Audit Level Settings."](#)

Monitoring BPEL Process Service Components and Engines

This chapter describes how to monitor BPEL process service components and service engines.

This chapter includes the following topics:

- [Section 11.1, "Viewing the Audit Trail and Process Flow of a BPEL Process Service Component"](#)
- [Section 11.2, "Monitoring BPEL Process Service Component Instances and Faults"](#)
- [Section 11.3, "Monitoring BPEL Process Service Component Instances"](#)
- [Section 11.4, "Monitoring Sensor Data and Values in BPEL Process Service Components"](#)
- [Section 11.5, "Monitoring BPEL Process Service Engine Instances and Faults"](#)
- [Section 11.6, "Monitoring BPEL Process Service Engine Request and Thread Statistics"](#)
- [Section 11.7, "Monitoring BPEL Process Service Engine Instances"](#)
- [Section 11.8, "Monitoring Deployed BPEL Processes in the Service Engine"](#)

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)

11.1 Viewing the Audit Trail and Process Flow of a BPEL Process Service Component

This section describes how to view the audit trail and process flow of a BPEL process service component in a SOA composite application instance.

Note: This section assumes a SOA composite application instance has been initiated. If not, see [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#) for instructions.

To view the audit trail and process flow of a BPEL process service component:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Home .	1. Under soa-infra , select a specific SOA composite application.
2. Select the Deployed Composites tab.	
3. In the Composite section, select a specific SOA composite application.	

The Dashboard page for the selected composite application appears.

2. Use one of the following methods to select an instance of the application:
 - For recent instances of this application, click the instance number of an instance in the **Instance ID** column of the **Recent Instances** section.
 - For all instances of this application, click the **Instances** tab, then click a specific instance in the **Instance ID** list.

The Flow Trace page displays the following details:

- The **Faults** section shows the faults occurring in the services, service components, and references that comprise the SOA composite application. Sensors enable you to monitor BPEL process activities, variables, and faults during run time. Selecting a fault highlights the row in the **Trace** section in which the fault occurred. Closing the fault clears the selection in the **Trace** section.
- The **Sensors** section displays details about composite sensors included in the service and reference binding components of the SOA composite application. The total number of sensors is shown in the section header. Composite sensors can be added to service and reference binding components during design time in Oracle JDeveloper. You cannot add composite sensors to service components. Selecting a composite sensor in this section highlights the service or reference in the **Trace** section in which composite sensor data was collected. Closing the sensor clears the selection in the **Trace** section.

Note: Expand the **Faults** or **Sensors** sections one at a time. The fault or sensor information only displays for viewing in this way.

- The **Trace** section shows the sequence of the message flow through the services, service components, and references that comprise the SOA composite application.

The flow trace is a run-time trail of a message flow identified by an execution context ID (ECID) that displays in the upper right corner of the page. An ECID enables you to track a message flow that crosses instances of different composites. The flow trace lists all services, references, components across composites participating in the flow.

Flow Trace ⓘ
This page shows the flow of the message through various composite and component instances. ⓘ

ECID: **000015UCUSIF4E8JwiYBV11BZDPD0000**
Started: **Mar 2, 2010 1:25:39 AM**

Faults (0)

Faults
Select a fault to locate it in the trace view.

Error Message	Recovery	Fault Time	Fault Location	Composite Instance
No faults found				

Sensors (0)

Trace
Click a component instance to see its detailed audit trail.
Show Instance IDs:

Instance	Type	Usage	State	Time	Composite Instance
client	Web Service	Service	Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
FODOrderProcessingProcess	BPEL Component		Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
GetOrderInfo	JCA Adapter	Reference	Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
GetCustomerInfo	JCA Adapter	Reference	Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
DiscountDictionary	Decision Service Component		Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
OrderFulfillment	Mediator Component		Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c
FedEx	JCA Adapter	Reference	Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessingComposite c

For the flow example in the **Trace** section, the service binding component, Oracle Mediator service component, and reference binding component involved in the flow have successfully received and processed messages.

Note the following restrictions with ECIDs:

- A separate ECID displays for each instance of a composite application and not for the composite level ECID that can track the complete flow of any instances for the composite application.
 - To get complete flow information, you must find the composite level ECID in the log files. Use that value to get all information for a particular composite and therefore all its executed instances.
 - ECIDs are not propagated through business events. This can limit the amount of logging information that is collected. For example, if you publish an event that is subscribed to in the same composite application, limited logging information is available.
3. Select a fault in the **Faults** section.
This highlights the row in the **Trace** section in which the fault occurred.
 4. Close the fault to clear the selection in the **Trace** section.
 5. Expand the **Sensors** section to display composite sensors.

Flow Trace ⓘ
This page shows the flow of the message through various composite and component instances. ⓘ

ECID: **000010PrKYrD0jQ6ub6EUH19i_eE00002t:4**
Started: **Mar 18, 2009 6:55:13 AM**

Faults (0)

Sensors (3)

Sensors
Select a sensor to locate it in the trace view below.

Composite Instance	Name	Value	Location	Action
48	CustomerDetails	View XML...	Mediator1_ep	execute
48	NameSensor	Test	Mediator1_ep	execute
48	Yearsensor	2009	Mediator1_ep	execute

6. Select a sensor in the **Sensors** section.

This highlights the row in the **Trace** section in which the composite sensor data was collected.

- In the **Instance** column of the **Trace** section, click a specific BPEL process service component instance. Service component instances can be accessed from this section; services and references cannot be accessed.

The Instance page appears.

Flow Trace > Instance of FODOrderProcessingProcess Data Refreshed Mar 2, 2010 5:50:29 P

Instance of FODOrderProcessingProcess Instance ID **bpel:26**
Started **Mar 2, 2010 1:25:39 AM**

This page shows BPEL process instance details. Current Audit Level: production i View F

Audit Trail | Flow | Sensor Values | Faults

Expand a payload node to view the details.

- <<process>>
- <<sequence>>
- receiveInput
 - Mar 2, 2010 1:25:39 AM Received "inputVariable" call from partner "client"
[View XML Document](#)
 - <<scope name=GetOrderInfo>>
 - <<sequence>>
 - AssignOrderID
 - Mar 2, 2010 1:25:39 AM Updated variable "GetOrderInfo_GetOrderInfoSelect_InputVariable"
 - Mar 2, 2010 1:25:39 AM Completed assign
 - GetOrderInfo (pending)
 - Mar 2, 2010 1:25:39 AM Invoked 2-way operation "GetOrderInfoSelect" on partner "GetOrderInfo".
 - <payload>
 - <<scope name=GetCustomerInfo>>
 - <<sequence>>
 - AssignCustID
 - Mar 2, 2010 1:25:39 AM Updated variable "GetCustomerInfo_GetCustomerInfoSelect_InputVariable"
 - Mar 2, 2010 1:25:39 AM Completed assign
 - GetCustomerInfo (pending)
 - Mar 2, 2010 1:25:39 AM Invoked 2-way operation "GetCustomerInfoSelect" on partner "GetCustomerInfo".
 - <payload>
 - <<scope name=CheckDiscountandShipping>>
 - <<sequence>>
 - AssignPrice
 - Mar 2, 2010 1:25:39 AM Updated variable "discountAndShipping"
 - Mar 2, 2010 1:25:39 AM Updated variable "discountAndShipping"

Use these four pages to view the audit trail, flow, sensor values, and faults of a BPEL process service component instance. The following links provide additional details about the instance:

- Flow Trace link:** Click the breadcrumbs in the upper left corner of the page to access the flow trace for the ECID (composite instance) that contains this BPEL component instance.
- Information icon:** Click the information icon to the right of the name of the BPEL component (in the page title) to see biographical information about this BPEL instance. This information includes a summary of the instance, including instance ID, ECID, instance startup time or last modification time, instance state (for example, running), and number of faults.

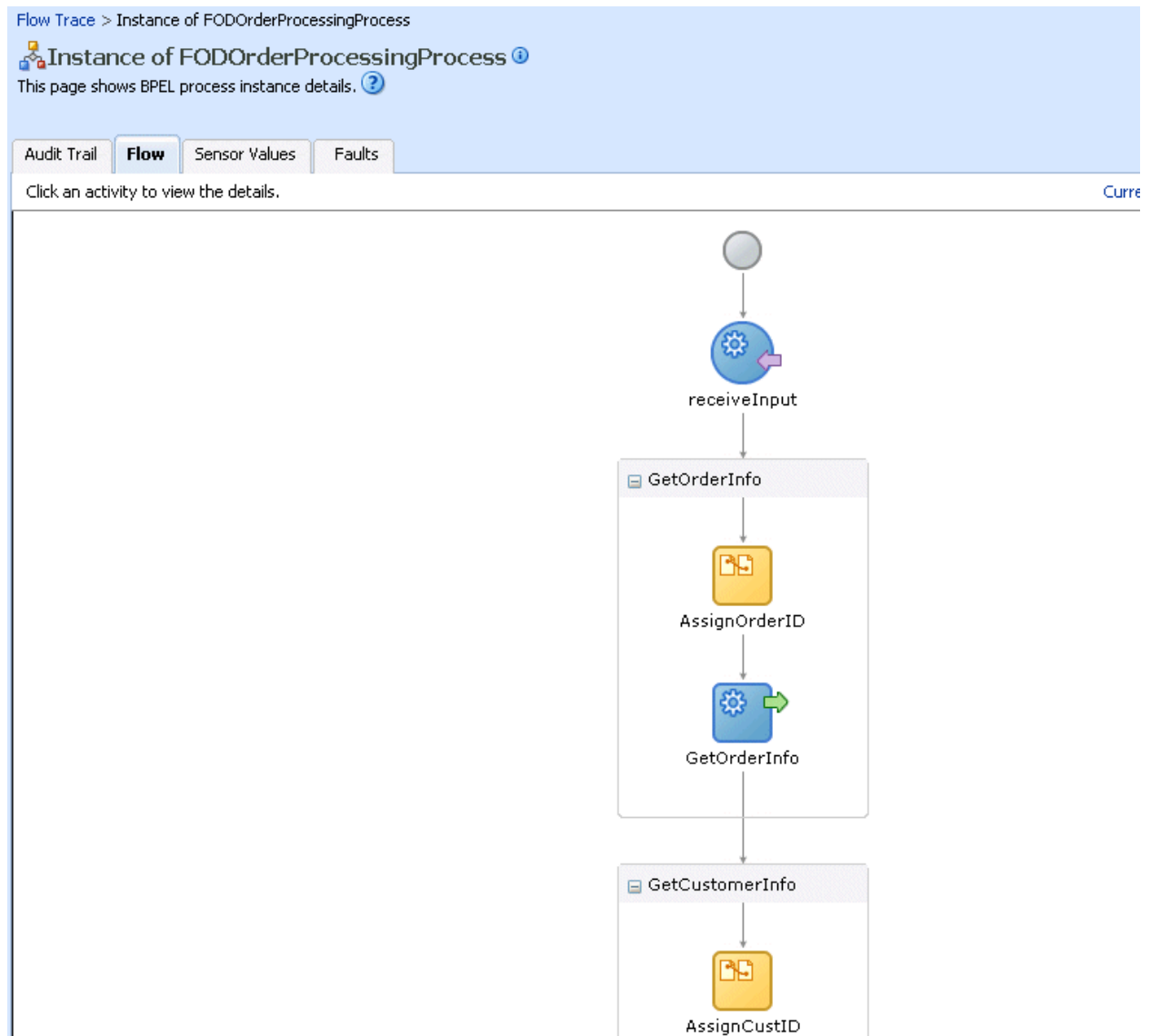
This icon only displays on the Audit Trail pages of BPEL processes and Oracle Mediators, and not on the pages of human tasks and business rules.

- Audit Level Settings:** Click to display information details, such as the audit level used by this instance.
- View Raw XML:** Click to display the raw XML of the audit trail.

The **Audit Trail** tab displays execution details about the activities in the BPEL process.

8. Scroll through the audit trail to check for errors and expand the payload links to view their contents at a given point in the flow. This audit trail shows a fault in a BPEL process activity.
9. Click the **Flow** tab.

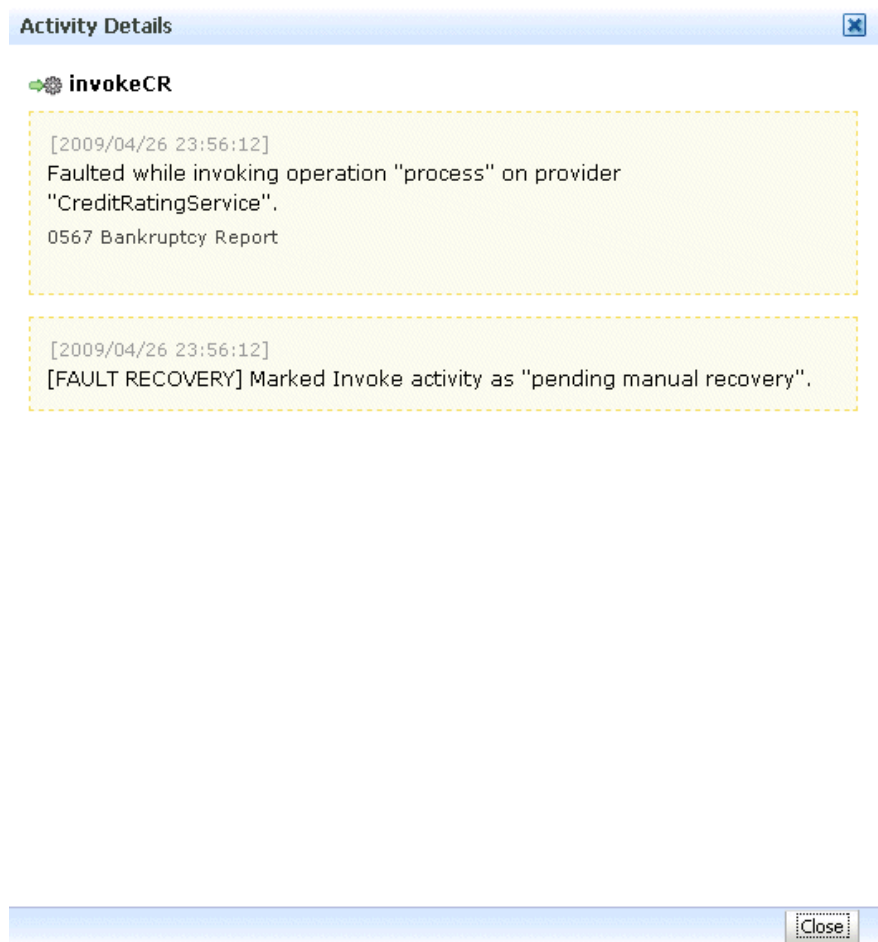
A flow diagram of the BPEL process activities appears. This flow diagram shows a fault highlighted in a BPEL process activity.



10. Click an activity to view the flow of the payload through the process.

Note: If using Internet Explorer, you can click **Copy details to clipboard** to copy the activity details to the clipboard. If using Mozilla Firefox, this link does not appear. Instead, you must manually select the text and copy and paste it to a file.

11. Scroll through the flow diagram to check for errors and click the highlighted activity to view error messages.



12. Close the window.

13. Click the **Faults** tab.

This tab shows the error message, whether you can recover from the fault, the time at which the fault occurred, and the activity in which the fault occurred. This page displays the faults in the BPEL component instance (but not the faults that occurred in a service or reference binding component).

You can recover from instance faults identified as recoverable. This page lists all instance faults, recoverable or not. The component instance faults that occurred in a service or reference are not listed here.

This page enables you to target individual faults from which to recover, and provides a degree of fault recovery granularity not available on other pages.

Flow Trace > Instance of FaultFlow Data Refreshed

Instance of FaultFlow Instance ID

This page shows BPEL process instance details. Started

Audit Trail | Flow | Sensor Values | **Faults**

This page lists all faults that have occurred in this component instance. If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This and attempts to recover the fault.

Error Message	Recovery	Fault Time	Activity
<faultType>1</faultType><Negative>	Recoverable	Apr 26, 2009 11:56:12 PM	invokeCR

However, you cannot perform bulk fault recoveries on this page. To perform bulk fault recovery, use one of the following pages:

- Faults and Rejected Messages page of a specific SOA composite application or of the SOA Infrastructure
 - Faults page of the BPEL process service engine or of a specific BPEL process service component
14. Select a fault for recovery that has been identified as recoverable through one of the following methods. The page refreshes to display a fault recovery section at the bottom of the page.
 - If you click a fault in the **Error Message** column, a popup message displays details about the fault, including the fault ID, fault time, fault location, fault type, and complete error message text. If the fault is identified as recoverable, a **Recover Now** button displays that you can click.
 - You click a fault identified as recoverable in the **Recovery** column.
 15. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance with an option to provide a retry success action. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.
Rethrow	Rethrows the current fault. BPEL fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

Your selection causes additional fields to appear. For example, the following fields display if you select **Rethrow**.

Recover Fault: default/FaultFlow!1.0*c9b27cb0-d239-4290-a85e-a81660476134/FaultFlow/10-BpInv0-BpSwt0.10

Choose one of the available recovery options, modify the variable information as appropriate, and click "Recover".

Recovery Action After Successful Retry

Variable

Value

16. Use the **After Successful Retry** list to select defined actions to invoke after a successful retry. If you select a variable in the **Variable** list, you can edit the value in the **Value** text box.
17. Click the **Back** button of your browser to exit the flow diagram.

11.2 Monitoring BPEL Process Service Component Instances and Faults

You can monitor BPEL process service component recent instances and faults. Each service component in a SOA composite application has its own instance ID. These IDs are different from the overall instance ID of the SOA composite application of which each service component is a part.

To monitor BPEL process service component instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. In the **Component Metrics** section, select the BPEL process service component.
3. Click **Dashboard**.

The upper part of the Dashboard page displays the following details:

- Recent instances of the BPEL process service component, including the instance ID, the state of the instance (for example, completed successfully or faulted), the start time, the last modification time, and logs describing the instance.
- Recent faults in the BPEL process service component, including the error message, whether you can recover from the fault, the time at which the fault occurred, the instance ID of the BPEL service component, the BPEL activity in which the fault occurred, and logs describing the fault.
- The average processing time for each activity in the BPEL process service component.

[FaultFlow \[1.0\]](#) Logged in as **weblogic**
 SOA Composite Page Refreshed Feb 20, 2009 6:34:41 PM PST
 FaultFlow [1.0] > FaultFlow
FaultFlow (BPEL Component) Related Links

Dashboard | Instances | **Faults** | Policies

Recent Instances
 Show Only Running Instances
Running 199 Total 200

Instance ID	State	Start Date	Last Modified Date	Logs
bpel:518	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:514	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:05 AM	
bpel:511	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:510	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:04 AM	
bpel:508	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:07 AM	

[Show All](#)

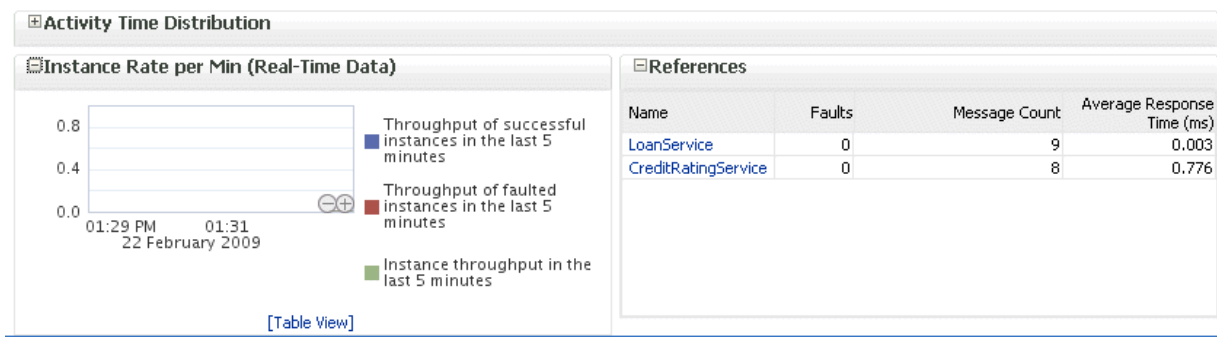
Recent Faults
 Show only system faults

Error Message	Recovery	Fault Time	Component Instance ID	Activity	Logs
No faults found					

4. In the **Recent Instances** section, perform the following tasks:
 - a. In the **Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.
 - b. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - c. Click **Show All** below the section to access the Instances page of the service component.
5. In the **Recent Faults** section, perform the following tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.
 - c. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - d. Click **Show All** below the section to access the Faults page of the service component.

The lower part of the Dashboard page displays the following details:

- A graphical representation of the number of successful, faulted, and incoming (pending) instances of the BPEL process service component over a specific time range.
- The number of faults and message processed by any reference binding component with which this BPEL process service component communicated.



For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances"](#) and *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files.

11.3 Monitoring BPEL Process Service Component Instances

You can monitor BPEL process service component instances. Each service component has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this service component is a part.

To monitor BPEL process service component instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the BPEL process service component in the **Component Metrics** section.
3. Click **Instances**.

The Instances page displays the following details:

- A utility for searching for a specific BPEL service component instance by specifying a criteria and clicking **Search**.
- BPEL process service component instances, including the instance ID, instance state (for example, completed or faulted), instance start time, last instance modification time, and log files describing the instance.

FaultFlow [1.0] SOA Composite Logged in as weblogic Page Refreshed Apr 27, 2009 7:56:19 AM PDT

FaultFlow [1.0] > FaultFlow Related Links

FaultFlow (BPEL Component)

Dashboard **Instances** Faults Policies

Search

Instance ID Modified Date To (UTC-08:00) US Pacific Time

Start Time From (UTC-08:00) US Pacific Time State

Start Time To (UTC-08:00) US Pacific Time

Modified Date From (UTC-08:00) US Pacific Time

View

Instance ID	State	Start Date	Last Modified Date	Logs
bpel:10	Running	Apr 26, 2009 11:56:09 PM	Apr 26, 2009 11:56:13 PM	
bpel:9	Running	Apr 26, 2009 11:56:09 PM	Apr 26, 2009 11:56:13 PM	
bpel:8	Terminated	Apr 26, 2009 11:56:09 PM	Apr 27, 2009 3:44:42 AM	
bpel:7	Running	Apr 26, 2009 11:56:08 PM	Apr 26, 2009 11:56:13 PM	
bpel:6	Running	Apr 26, 2009 11:56:08 PM	Apr 26, 2009 11:56:13 PM	
bpel:5	Running	Apr 26, 2009 11:56:07 PM	Apr 26, 2009 11:56:12 PM	
bpel:4	Running	Apr 26, 2009 11:56:06 PM	Apr 26, 2009 11:56:12 PM	
bpel:3	Running	Apr 26, 2009 11:56:05 PM	Apr 26, 2009 11:56:13 PM	
bpel:1	Running	Apr 26, 2009 11:56:05 PM	Apr 26, 2009 11:56:12 PM	
bpel:2	Running	Apr 26, 2009 11:56:05 PM	Apr 26, 2009 11:56:12 PM	

- In the **Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.
- In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances."](#)

11.4 Monitoring Sensor Data and Values in BPEL Process Service Components

You can view the fault, activity, and variable sensor data of a BPEL process service component. You design sensors in BPEL processes and trackable fields in Oracle JDeveloper. Sensors enable you to monitor BPEL process activities, variables, and faults during run time.

To monitor sensor data and values in BPEL process service components:

- Access this page through one of the following options:

From the SOA Infrastructure Menu...

- Select **Home**.
- Select the **Deployed Composites** tab.
- In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

- Under **soa-infra**, select a specific SOA composite application.

- Use one of the following methods to select an instance of the application:
 - For recent instances of this application, click the instance number of an instance in the **Instance ID** column of the **Recent Instances** section.

- For all instances of this application, click the **Instances** tab, then click a specific instance in the **Instance ID** column.

The Flow Trace page appears.

3. Click a specific BPEL process service component in the **Instance** column of the **Trace** section.
4. Click the **Sensor Values** tab.
5. Select a sensor to view details.

If you created JMS sensors in your BPEL process, JMS sensor values do not display in Oracle Enterprise Manager Fusion Middleware Control Console. Only sensor values in which the sensor action is to store the values in the database appear (for example, database sensor values).

The screenshot shows the 'Sensor Values' tab for a BPEL process instance named 'Instance of FaultFlow'. The page header indicates the instance ID is 'bpel:10' and it started on 'Apr 26, 20'. The 'Sensor Values' tab is selected, and the page shows three sections: 'Activity Sensors', 'Variable Sensors', and 'Fault Sensors'. The 'Activity Sensors' section is empty, showing 'No sensor data available.' The 'Variable Sensors' section contains one entry: 'VariableSensor' with the variable '\$counter'. The 'Fault Sensors' section is empty, showing 'No sensor data available.' Below the sections is a table with columns 'Sensor' and 'Type'.

Sensor	Type
VariableSensor	\$counter

For more information about sensors, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

11.5 Monitoring BPEL Process Service Engine Instances and Faults

You can monitor instances and faults of all BPEL process service components running in the BPEL process service engine. These BPEL process service components can be part of separate SOA composite applications.

To monitor BPEL process service engine instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Service Engines > BPEL**.

From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
2. Select **Service Engines > BPEL**.

2. Click **Dashboard**.

The upper part of the Dashboard page displays recent instances of all BPEL process service components running in the BPEL process service engine, including the instance ID of the service component, the service component name, the SOA composite application of which the service component is a part, the state of the instance (for example, completed successfully or faulted), the instance start time, the last modification time, and logs describing the instance.

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine)

Dashboard | Statistics | Instances | Faults | Deployed Components | Recovery

Recent Instances

Show Only Running Instances

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpel:518	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:514	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:05 AM	
bpel:511	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:510	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:04 AM	
bpel:508	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:07 AM	

Running 199 Total 854

[Show All](#)

3. In the **Recent Instances** section, perform the following monitoring tasks:
 - a. In the **Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.
 - b. In the **Component** column, click a specific service component to access its home page.
 - c. In the **Composite** column, click a specific SOA composite application to access its home page.
 - d. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - e. Click **Show All** below the section to access the Instances page of the service engine.

The lower part of the Dashboard page displays the following details:

- The service components running in the service engine, the SOA composite applications of the service components, the state of the applications (for example, running), and the total, running, and faulted instances in the service engine.
- The recent faults in the service engine, including the error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application in which the fault occurred, the service component, the instance ID of the service component, the activity in which the fault occurred, and log files describing the fault.

soa-infra SOA Infrastructure Logged in as weblogic Page Refreshed Feb 22, 2009 1:41:06 PM PST

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine) [Related Link](#)

Dashboard | Statistics | Instances | Faults | Deployed Components | Recovery

Instance ID	Component	Version	Status	Start Time	End Time	Actions
bpel:511	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:510	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:04 AM	
bpel:508	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:07 AM	

[Show All](#)

Components

Name	Composite	Status	Total Instances	Running Instances	Faulted Instance Non Recoverable
VacationRequestProcess	VacationRequest [1.0]		2	0	1
AmericanLoan	FaultFlow [1.0]		1	0	0
UnitedLoan	FaultFlow [1.0]		1	0	0
CreditRatingService	FaultFlow [1.0]		361	0	0
FaultFlow	FaultFlow [1.0]		200	199	0

[Show All](#)

Recent Faults

Show only system faults

Recovery	Fault Time	Composite	Component	Component Instance ID	Activity	Logs
</faultType>	Feb 20, 2009 2:29:17 AM	RecoveryUnitTest [1.0]	RecoveryFlow	bpel:20042		
</faultType>	Feb 20, 2009 2:03:29 AM	VacationRequest [1.0]	VacationRequestP	bpel:20041		
</faultType>	Feb 20, 2009 1:48:12 AM	SimpleWorkflowComp	SimpleWorkflowPr	bpel:20040		
</faultType>	Feb 20, 2009 1:44:04 AM	CompositeTest [1.0]	LoanBroker	bpel:20039		
</faultType>	Feb 20, 2009 1:44:04 AM	CompositeTest [1.0]	LoanBroker	bpel:20038		

4. In the **Components** section, perform the following tasks:
 - a. In the **Name** column, click a specific service component to access its home page.
 - b. In the **Composite** column, click a specific SOA composite application to access its home page.
 - c. Click **Show All** below the section to access the Deployed Components page of the service engine.
5. In the **Recent Faults** section, perform the following tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.
 - c. In the **Composite** column, click a specific SOA composite application to access its home page.
 - d. In the **Component** column, click a specific service component to access its home page.
 - e. In the **Component Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.

- f. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that fault.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances."](#)

11.6 Monitoring BPEL Process Service Engine Request and Thread Statistics

You can monitor request and thread statistics for all BPEL process service components running in the service engine.

To monitor BPEL process service engine request and thread statistics:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Service Engines > BPEL**.

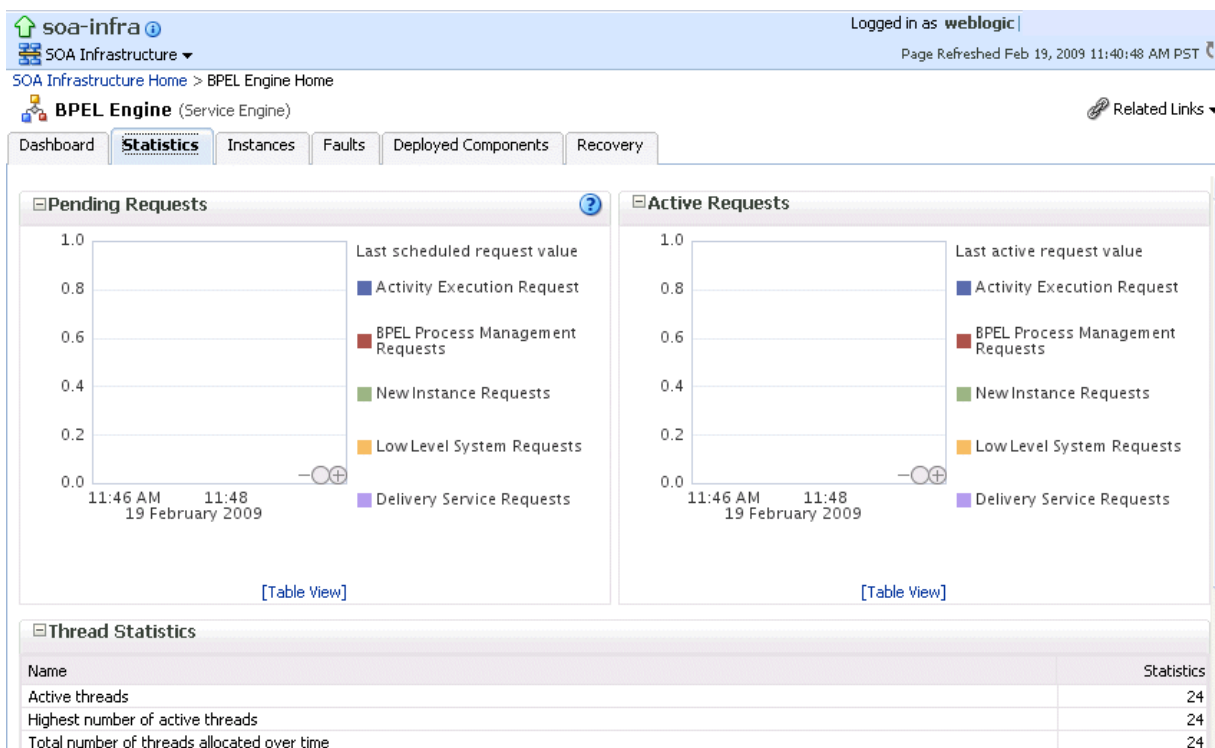
From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
2. Select **Service Engines > BPEL**.

2. Click **Statistics**.

The upper part of the Statistics page displays the following details. Click the **Help** icon for additional details.

- Pending requests in the service engine
- Active requests in the service engine
- Thread statistics for the service engine



The lower part of the Statistics page displays details about the count and minimum, maximum, and average request processing times.

Request Breakdown				
Name	Count	Min Request Processing Time (ms)	Max Request Processing Time (ms)	Avg Request Processing Time (ms)
eng-composite-request	407	4.000	23,021.000	682.470
eng-single-request	620	0.000	23,021.000	553.500
load-workitem	212	2.000	435.000	34.910
load-wi-datasource	212	-1.000	27.000	1.200
eng-callback	212	0.000	408.000	31.950
initiate-correlation-set	161	-1.000	22.000	1.210
update-audit-trail	1	-1.000	-1.000	-1.000
eng-until	160	-1.000	1.000	0.040
sensor-send-activity-data	51	0.000	0.000	0.000
sensor-send-variable-data	52	0.000	0.000	0.000

11.7 Monitoring BPEL Process Service Engine Instances

You can monitor all BPEL process service component instances running in the service engine. These BPEL process service components can be part of separate SOA composite applications.

To monitor BPEL process service engine instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPEL .	1. Right-click soa-infra .
	2. Select Service Engines > BPEL .

2. Click **Instances**.

The Instances page displays the following details:

- A utility for searching for a specific instance by specifying a criteria and clicking **Search**.
- Instances, including the instance ID of the service component, the service component name, the SOA composite application name, the state of the instance (for example, completed successfully, running, or faulted), the instance start time, the last modification time, and log files describing the instance.

soa-infra SOA Infrastructure Logged in as weblogic Page Refreshed Apr 27, 2009 7:44:43 AM PDT

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine) Related Links

Dashboard **Statistics** **Instances** Faults Deployed Components Recovery

Search

Instance ID Modified Date To (UTC-08:00) US Pacific Time

Start Time From (UTC-08:00) US Pacific Time State

Start Time To (UTC-08:00) US Pacific Time Component

Modified Date From (UTC-08:00) US Pacific Time

View

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpel:10003	rc2Process	rc2 [1.0]	Running	Apr 24, 2009 3:34:38 PM	Apr 24, 2009 3:34:39 F	
bpel:10002	rc2Process	rc2 [1.0]	Completed	Apr 24, 2009 3:28:13 PM	Apr 24, 2009 3:31:52 F	
bpel:10001	rc2Process	rc2 [1.0]	Running	Apr 24, 2009 3:23:06 PM	Apr 24, 2009 3:24:03 F	
bpel:11	BPEL1	testall [4.0]	Running	Apr 21, 2009 2:02:24 PM	Apr 21, 2009 2:02:26 F	
bpel:10	SalesQuote	SalesQuoteComposite [1.0]	Terminated	Apr 21, 2009 10:50:27 AM	Apr 25, 2009 11:14:35	
bpel:9	DocumentReviewProce	DocumentReviewComposi	Completed	Apr 20, 2009 11:51:13 AM	Apr 20, 2009 11:58:26	
bpel:8	BPEL1	testall [3.0]	Running	Apr 16, 2009 3:26:52 PM	Apr 16, 2009 3:26:55 F	
bpel:7	BPEL1	testall [3.0]	Stale	Apr 16, 2009 3:22:37 PM	Apr 16, 2009 3:22:40 F	
bpel:6	BPEL1	testall [2.0]	Stale	Apr 16, 2009 3:10:18 PM	Apr 16, 2009 3:10:37 F	
bpel:5	BPEL1	testall [2.0]	Stale	Apr 16, 2009 2:56:01 PM	Apr 16, 2009 2:56:04 F	
bpel:4	BPELProcess1	Project1 [1.0]	Completed	Apr 16, 2009 1:57:05 PM	Apr 16, 2009 2:57:06 F	
bpel:3	BPELProcess1	Project1 [2.0]	Completed	Apr 16, 2009 11:28:00 AM	Apr 16, 2009 12:28:01	

3. In the **Instances** section, perform the following monitoring tasks:

- In the **Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.
- In the **Component** column, click a specific service component to access its home page.
- In the **Composite** column, click a specific SOA composite application to access its home page.
- In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances."](#)

11.8 Monitoring Deployed BPEL Processes in the Service Engine

You can monitor all deployed SOA composite applications with BPEL process service components running in the service engine.

To monitor deployed BPEL processes in service engines:

- Access this page through one of the following options:

From the SOA Infrastructure Menu...

- Select **Service Engines > BPEL**.

From the SOA Folder in the Navigator...

- Right-click **soa-infra**.
- Select **Service Engines > BPEL**.

2. Click **Deployed Components**.

The Deployed Components page displays the following details:

- A utility for searching for a specific deployed SOA composite application by specifying a criteria and clicking **Search**.
- Details about deployed SOA composite applications with BPEL process service components running in this service engine, including the service component name, the SOA composite application, the current status, and the total, running, and faulted instances in the service engine.

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine)

Dashboard | Statistics | Instances | Faults | **Deployed Components** | Recovery

Search

Name:

Composite Name:

Search Reset

View

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Non Recoverable	Recoverable
LoanService	FabricTestSimple [1.0]	↑	13	0	0	0
LoanBroker	FabricTestSimple [1.0]	↑	27	0	0	0
CreditRatingService	FabricTestSimple [1.0]	↑	13	0	0	0
FODOrderProcessingProcess	FODOrderProcessing	↑	2	0	2	0
AmericanLoan	FaultFlow [1.0]	↑	1	0	0	0
UnitedLoan	FaultFlow [1.0]	↑	1	0	0	0
CreditRatingService	FaultFlow [1.0]	↑	361	0	0	0
FaultFlow	FaultFlow [1.0]	↑	200	199	0	0
LoanService	CompositeTest [1.0]	↑	80	0	0	0
LoanBroker	CompositeTest [1.0]	↑	81	0	1	0
CreditRatingService	CompositeTest [1.0]	↑	73	0	0	0
RecoveryFlow	RecoveryUnitTest [1.0]	↑	1	0	1	0

3. In the **Name** column, click a specific service component to access its home page.
4. In the **Composite** column, click a specific SOA composite application to access its home page.

Managing BPEL Process Service Components and Engines

This chapter describes how to manage BPEL process service components and service engines.

This chapter includes the following topics:

- [Section 12.1, "Recovering from BPEL Process Service Component Faults"](#)
- [Section 12.2, "Managing BPEL Process Service Component Policies"](#)
- [Section 12.3, "Recovering from BPEL Process Service Engine Faults"](#)
- [Section 12.4, "Performing BPEL Process Service Engine Message Recovery"](#)
- [Section 12.5, "Disabling BPEL Monitors and Sensors"](#)

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)

12.1 Recovering from BPEL Process Service Component Faults

You can monitor and perform individual and bulk fault recoveries for BPEL process service components that are identified as recoverable. For BPEL process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault.

To recover from BPEL process service component faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.

-
2. Select the BPEL process service component in the **Component Metrics** section.
 3. Click **Faults**.

The Faults page displays the following details:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the service component, including the fault ID, error message, whether you can recover from the fault, time at which the fault occurred, service component instance ID, activity in which the fault occurred, and a link to a log file describing the fault.

Logged in as **weblogic** | Page Refreshed Apr 27, 2009 7:56:19 AM PDT

FaultFlow [1.0] > FaultFlow

FaultFlow (BPEL Component)

Dashboard | Instances | **Faults** | Policies

If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This action reruns the instance in which the fault occurred and attempt to recover from it. You can also perform a batch recovery by selecting multiple faults and choosing a recovery action. For additional recovery options, click the Recoverable link for an individual fault. To recover from a Human Workflow fault, select it and click Recover and then click the link to the Worklist application.

Search

Error Message Contains Composite Instance ID
 Fault ID Component Instance ID
 Fault Time From (UTC-08:00) US Pacific Time
 Fault Time To (UTC-08:00) US Pacific Time

Show only recoverable faults Fault Type **All Faults**

Error Message	Recovery	Fault Time	Component Instance ID	Activity	Logs
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:13 PM	bpel:3	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:13 PM	bpel:7	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:13 PM	bpel:6	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:13 PM	bpel:9	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:12 PM	bpel:10	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:12 PM	bpel:2	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:12 PM	bpel:1	invokeCR	
<faultType>1</faultType><NegativeCredit xmlns="http://se	Recover...	Apr 26, 2009 11:56:12 PM	bpel:5	invokeCR	

BPEL process service component faults identified as recoverable can be recovered.

4. Select faults for recovery using one of the following methods. Note that fault recovery selection at the BPEL process service component level equals the SOA Infrastructure level, SOA composite application level, and Oracle Mediator service component level.

For...	Then...
Single fault recovery	<p>There are three options from which to choose for single-fault recovery:</p> <ol style="list-style-type: none"> 1. Click the row of the fault that has been identified as recoverable. With the row highlighted, select a specific action from the Recovery Action list, as described in Step 5. 2. In the Recovery column, click the Recover link to access the Faults page of the instance audit trail to perform fault recovery. 3. In the Error Message column, click the message of a fault that has been identified as recoverable. This displays complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. A Recover Now option displays for recoverable faults. Click Recover Now to access the Faults page of the instance audit trail to perform fault recovery.
Bulk fault recovery	<p>There are two options from which to choose for bulk-fault recovery:</p> <ol style="list-style-type: none"> 1. Use Shift+Click or Control+Click to select specific faults in the rows. or 2. From the Select menu, choose Select All Recoverable. Then use Shift+Click or Control+Click to deselect the faults to <i>not</i> include in the recovery operation. Then: 3. Select an action from the Recovery Action list, as described in Step 5. Note: Only the actions applicable to all selected faults are available.
Recovery of all faults	<ol style="list-style-type: none"> 1. From the Select menu, choose Select All Recoverable. 2. Select an action from the Recovery Action list, as described in Step 5. Note: Only the actions applicable to all selected faults are available.

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

5. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.
Rethrow	Rethrows the current fault. BPEL fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

6. Perform the following additional monitoring tasks from within the faults table:

- a. Click the **Show only recoverable faults** check box to display only faults from which you can recover.
- b. From the **Fault Type** list, select to display all faults, system faults, business faults, or Oracle Web Service Manager (OWSM) faults in the faults table. Click the **Help** icon for a description of these fault types.
- c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
- d. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.
- e. In the **Logs** column, click a link to access the Log Messages page with filtered messages specific to that instance.

For more information, see the following documentation:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- [Section 8.5.1, "Examples of Fault Recovery for BPEL Processes"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*
- *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files

12.2 Managing BPEL Process Service Component Policies

You can attach and detach policies to and from BPEL process service components in currently deployed SOA composite applications. Policies apply security to the delivery of messages. Oracle Fusion Middleware uses a policy-based model to manage Web services.

Note: Before attaching policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use in your environment.

To manage BPEL process service component policies:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the BPEL process service component in the **Component Metrics** section.
3. Click **Policies**.

The Policies page enables you to attach and detach policies to and from BPEL process service components. The policies table displays the attached policy name, the policy reference status (enabled or disabled) that you can toggle, the category (Management, Reliable Messaging, MTOM Attachment, Security, or WS

Addressing), the violations, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.

The screenshot shows the Oracle Fusion Middleware console interface. At the top, it indicates the user is logged in as 'weblogic' and the page was refreshed on Apr 27, 2009 at 8:41:16 AM PDT. The breadcrumb trail is 'FaultFlow [1.0] > FaultFlow'. The main heading is 'FaultFlow (BPEL Component)'. Below this, there are tabs for 'Dashboard', 'Instances', 'Faults', and 'Policies'. A message states: 'You can view and modify the policies attached to this component. Click on 'Attach/Detach' to invoke the attachment UI and view/update the policies.' Below the message, there is a 'View' dropdown menu and an 'Attach/Detach' button. The main content is a table with the following data:

Policy Name	Policy Reference Status	Category	Total Violations	Security Violations		
				Authentication	Authorization	Co
oracle/log_policy	Disable	Management	0	N/A	N/A	

4. Click **Attach/Detach**.

If multiple components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

5. Select the service or component to which to attach or detach a policy.

This invokes a dialog for attaching or detaching policies.

Policies currently attached appear in the **Attached Policies** section. Additional policies available for attachment appear in the **Available Policies** section.

6. Select to attach policies appropriate to your environment.

7. Click **Attach**.

8. When you are finished attaching policies, click **Validate**.

9. If an error message appears, make the necessary corrections until you no longer have any validation errors.

10. Click **OK**.

The attached policy displays in the policies table.

For more information, see the following documentation:

- [Section 1.4.3.2, "Understanding Policies"](#)
- [Section 8.8, "Managing SOA Composite Application Policies"](#) for the dialogs that display during policy attachment
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use for your environment

12.3 Recovering from BPEL Process Service Engine Faults

You can monitor and perform individual and bulk recoveries of faults occurring in BPEL process service engines that are identified as recoverable. All BPEL process service component faults, regardless of the SOA composite application instance of which they are a part, can be viewed in the BPEL process service engine. For BPEL process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the

action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault.

To recover from BPEL process service engine faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPEL .	1. Right-click soa-infra .
	2. Select Service Engines > BPEL .

2. Click **Faults**.

The Faults page displays the following details:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the service engine, including the fault ID, error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application and service component in which the fault occurred, and the service component instance ID.

The screenshot shows the 'Faults' page in the SOA Infrastructure console. At the top, it indicates 'Logged in as weblogic' and 'Page Refreshed Feb 20, 2009 10:07:01 AM PST'. The breadcrumb trail is 'SOA Infrastructure Home > BPEL Engine Home'. The page title is 'BPEL Engine (Service Engine)'. There are tabs for 'Dashboard', 'Statistics', 'Instances', 'Faults' (selected), 'Deployed Components', and 'Recovery'. Below the tabs is a search utility with the following fields: 'Error Message Contains', 'Fault ID', 'Composite Instance ID', 'Component Instance ID', 'Fault Time from' (with a calendar icon and '(UTC-08:00) US Pacific Time'), and 'Fault Time to' (with a calendar icon and '(UTC-08:00) US Pacific Time'). There are 'Search' and 'Reset' buttons. Below the search utility, there is a checkbox for 'Show only recoverable faults' (unchecked) and a dropdown for 'Fault Type' set to 'All Faults'. At the bottom, there is a table with columns: 'Error Message', 'Recovery', 'Fault Time', 'Composite', 'Component', and 'Component Instance ID'. The table contains six rows of fault data, all marked as recoverable (indicated by a red 'x' icon in the first column).

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID
<faultType>0</faultType>		Feb 20, 2009 2:29:17 AM	RecoveryUnitTest [1.0]	RecoveryFlow	bpel:20042
<faultType>0</faultType>		Feb 20, 2009 2:03:29 AM	VacationRequest [1.0]	VacationRequestP	bpel:20041
<faultType>0</faultType>		Feb 20, 2009 1:48:12 AM	SimpleWorkflowComp	SimpleWorkflowPri	bpel:20040
<faultType>0</faultType>		Feb 20, 2009 1:44:04 AM	CompositeTest [1.0]	LoanBroker	bpel:20039
<faultType>0</faultType>		Feb 20, 2009 1:44:04 AM	CompositeTest [1.0]	LoanBroker	bpel:20038
<faultType>0</faultType>		Feb 20, 2009 1:44:04 AM	CompositeTest [1.0]	LoanBroker	bpel:20037

BPEL process service engine faults identified as recoverable can be recovered.

3. Select faults for recovery using one of the following options. As with fault recovery at the SOA Infrastructure level, SOA composite application level, and Oracle Mediator service component level, you can perform single fault recovery, bulk fault recovery, and recovery of all faults. See Step 4 of [Section 12.1, "Recovering from BPEL Process Service Component Faults"](#) for instructions on selecting faults to perform these types of recovery.

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

4. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance with an option to provide a retry success action. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.
Rethrow	Rethrows the current fault. BPEL fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

5. Perform the following additional monitoring tasks from within the faults table:
 - a. Click the **Show only recoverable faults** check box to only display faults from which you can recover.
 - b. From the **Fault Type** list, select to display all faults, system faults, business faults, or OWSM faults in the faults table. Click the **Help** icon for a description of these fault types.
 - c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - d. In the **Composite** column, click a specific SOA composite application to access its home page.
 - e. In the **Component** column, click a specific service component to access its home page.
 - f. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.

For more information, see the following sections:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#) for conceptual details about faults
- [Section 8.5.1, "Examples of Fault Recovery for BPEL Processes"](#)

12.4 Performing BPEL Process Service Engine Message Recovery

You can perform a manual recovery of undelivered invoke or callback messages due to a transaction rollback in the process instance. Recovery of invoke messages applies to asynchronous BPEL processes only. Synchronous BPEL processes return an error to the

calling client and are not recoverable from this page. Recoverable activities are activities that failed and can be recovered. For example, if you are using the file adapter to initiate an asynchronous BPEL process and your system crashes while the instance is processing, you can manually perform recovery when the server restarts to ensure that all message records are recovered.

To perform BPEL process service engine message recovery:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPEL .	1. Right-click soa-infra .
	2. Select Service Engines > BPEL .

2. Click **Recovery**.

The Recovery page displays the following details:

- A utility for searching for a specific message failure by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Message failure in the service engine, including the conversation ID, whether you can recover from the message failure, the service component and composite application in which the failure occurred, and the time at which the fault occurred.

soa-infra | SOA Infrastructure | Logged in as weblogic | Page Refreshed Feb 20, 2009 12:43:15 PM PST

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine) | Related Links

Dashboard | Statistics | Instances | Faults | Deployed Components | **Recovery**

If a message is marked as Recoverable, you can recover or cancel it. You can recover or cancel multiple messages in a batch. Select the messages you want to recover or cancel and click the appropriate button.

Search

Type: Invoke | Composite: | Duration: All times | Component: | Message State: Undelivered

Search | Reset

Conversation ID	Recover...	Component	Composite	Time
1235037191888	Recover...	AutoLoanProcess	AutoLoanComposite [1.0]	Feb 19, 2009 2:16:44 AM
1234784124960	Recover...	RecoveryFlow	RecoveryUnitTest [1.0]	Feb 16, 2009 3:35:44 AM

3. Select a fault in the table.
4. Select one of the following options:

Action	Description
Recover	Retries the message in which the fault occurred. If an asynchronous BPEL process encounters a transaction rollback scenario because of any underlying exception error, it rolls back to the last dehydration activity. If this is a new instance, and a receive activity was the first dehydration activity, the BPEL process service engine creates a recoverable invoke. When you click Recover to recover the invoke, the service engine creates a new instance. This instance may run to completion with no exception error. However, you continue to see the older instance identified as faulted.
Mark Cancelled	Marks the message so it is never delivered.

Once a message is submitted for recovery, the BPEL process service engine may take time to complete the action. This typically takes less than several seconds. During this time, the message remains visible in the Recovery page. Duplicate attempts to recover the same message in that period are ignored. Refresh the page every few seconds to receive the latest recovery status.

Note: If you define a fault policy in a BPEL process with an `ora-retry` action and a fault occurs, the BPEL process attempts to recover from the fault the number of times you specified with the `retryCount` parameter. After this, the process continues to be in a running state. The status of an activity in the process that has not completed (such as an invoke or receive) shows as pending a manual recovery. This is the expected behavior.

12.5 Disabling BPEL Monitors and Sensors

By default, BPEL sensors defined in SOA composite applications are enabled. You can disable all BPEL sensors (variable, fault, and activity) at the following levels:

- At the BPEL service engine level (defined for all the BPEL components across all deployed SOA composite applications).
- At the SOA composite application level (applies to all BPEL sensors defined for all BPEL components that comprise the composite). The service engine level setting takes precedence when sensors are disabled (that is, the composite level setting for enabling and disabling BPEL sensors has no impact if the global service engine level setting is disabled). If the global service engine level setting is enabled (the default setting), you can enable or disable BPEL sensors at the composite level.

You can also disable BPEL monitors, which are used to capture BPEL process metrics that are sent to Oracle BAM Server, and then used for analysis and graphic display.

Disabling sensors means that sensor values are not captured during run time. This results in the values not being displayed in the Sensor Values page of the BPEL audit trail.

You cannot enable or disable BPEL sensors at the service component level.

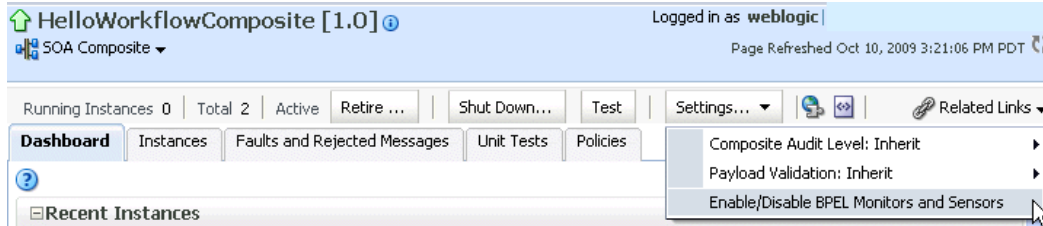
To disable BPEL monitors and sensors at the service engine level:

1. Access the BPEL Service Engine Properties page by following the steps in [Section 10.1, "Configuring BPEL Process Service Engine Properties."](#)
2. Select the **Disable BPEL Monitors and Sensors** check box. This action enables the BPEL engine to disable all calls to sensors.

3. Click **Apply**.

To disable BPEL monitors and sensors at the SOA composite application level:

1. Go to the home page of the SOA composite application in which you want to disable monitors and sensors.
2. From the **Settings** menu, select **Enable/Disable BPEL Monitors and Sensors**. This selection only displays for composites that have a BPEL service component, regardless of whether that component includes sensors.



3. If sensors are enabled at the BPEL process service engine level, the current setting for sensors at the SOA composite application level indicates which confirmation message displays next.
 - a. If monitors and sensors are enabled at the composite level, you are prompted to confirm to disable all BPEL monitors and sensors defined for all BPEL components that comprise the selected composite.
 - b. If monitors and sensors are disabled at the composite level, you are prompted to confirm to enable all BPEL monitors and sensors defined for all BPEL components that comprise the selected composite.
4. If monitors and sensors are disabled at the BPEL process service engine level, then an inline message is displayed indicating that you cannot modify the monitor and sensor values. The current setting for monitors and sensors at the composite level is not shown in this case.

For more information about BPEL monitors, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

Part VI

Administering Oracle Mediator Service Components and Engines

This part describes how to administer Oracle Mediator service components and engines.

This part includes the following chapters:

- [Chapter 13, "Configuring Oracle Mediator Service Components and Engines"](#)
- [Chapter 14, "Monitoring Oracle Mediator Service Components and Engines"](#)
- [Chapter 15, "Managing Oracle Mediator Service Components and Engines"](#)
- [Chapter 16, "Resequencing Messages"](#)
- [Chapter 17, "Managing Cross-References"](#)

Configuring Oracle Mediator Service Components and Engines

This chapter describes how to configure Oracle Mediator (Mediator) service components and service engines.

This chapter includes the following topics:

- [Section 13.1, "Introduction to Configuring Oracle Mediator"](#)
- [Section 13.2, "Configuring Audit-Level Flags"](#)
- [Section 13.3, "Configuring Metrics-Level Flag"](#)
- [Section 13.4, "Configuring Parameters for Parallel Infrastructure"](#)
- [Section 13.5, "Configuring Parameters for Error/Retry Infrastructure"](#)
- [Section 13.6, "Configuring Parameters for Heartbeat Framework"](#)

13.1 Introduction to Configuring Oracle Mediator

You can configure the properties of Mediator Service Engine by setting the parameters mentioned in this chapter. These parameters can be set in the following ways:

- By setting the values of the parameters in the Mediator Service Engine Properties page:

SOA Infrastructure Home > Mediator Properties

Mediator Service Engine Properties

Properties

Edit property values and click Apply to save the changes.

Audit Level	<input type="text"/>
Metrics Level	<input type="text"/>
Parallel Worker Threads	<input type="text"/>
Parallel Maximum Rows Retrieved	<input type="text"/>
Parallel Locker Thread Sleep(sec)	<input type="text"/>
Error Locker Thread Sleep(sec)	<input type="text"/>
Parameters	<input type="text"/>
Container ID Refresh Time(sec)	<input type="text"/>
Container ID Lease Timeout(sec)	<input type="text"/>

Perform the following steps to display the Mediator Service Engine Properties page:

1. Open the SOA Infrastructure Home page.
 2. From the **SOA Infrastructure** menu, select **SOA Administration** and then **Mediator Properties**.
- By setting the values of the parameters in an MBean browser:

Perform the following steps to set the values in an MBean browser:

1. From the **SOA Infrastructure** menu, select **Administration** and then **System MBean Browser**
The System MBean Browser page is displayed.
2. Expand the node **oracle.as.soainfra.config** in the left pane (below the page title).
The **Server:soa_server1** node is displayed.
3. Expand the **Server:soa_server1** node.
The **MediatorConfig** node is displayed.
4. Expand the **MediatorConfig** node.
The **mediator** MBean is displayed.
5. Click the **mediator** MBean.
The properties of the MBean are displayed on the right pane.
6. Change the value of the properties and click **Apply**.

Note: You do not need to restart the server for changing these properties.

13.2 Configuring Audit-Level Flags

You can configure the Mediator-specific `auditLevel` flag for audit levels. The value of this flag overrides the value of the global SOA infrastructure audit-level flag. The possible values of this flag are:

- `Off` - Switches off auditing of Mediator. Composite instance tracking and payload tracking information are not collected.
- `Inherit` - Level of audit is the same as the SOA infrastructure. This setting enables the Mediator audit level to automatically change, when the global setting is changed. Setting a different audit level tracking, for this page, overrides the tracking set at the SOA Infrastructure level.
- `Production` - All events are logged. All audit details, except the details of assign activities, are logged. Instance tracking information is collected, but payload details are not captured and these details are not available in the flow audit trails. This level is optimal for most typical operations and testing.
- `Development` - All events and all audit details are logged. In addition, payload details are captured and are available in the flow audit trails. This level is useful for debugging purposes, but may impact performance.

The default value of this flag is `Inherit`.

Note: Audit levels were known as instance tracking levels in the Oracle Application Server 10g releases.

13.3 Configuring Metrics-Level Flag

You can set the Mediator-specific flag `metricsLevel` for configuring the Dynamic Monitoring Service (DMS) metrics level. DMS metrics are used to measure the performance of application components. The possible values of this flag are:

- `Enabled` - Enables DMS metrics tracking
- `Disabled` - Disables DMS metrics tracking

13.4 Configuring Parameters for Parallel Infrastructure

You can configure the parallel infrastructure by setting the following parameters:

- `ParallelWorkerThreadCount` - Specifies the number of parallel dispatchers for message processing. Increase this parameter to increase the number of outbound threads for parallel processing.
- `ParallelMaxRowsRetrieved` - Specifies the number of rows retrieved per iteration for parallel processing. You can set the value of this parameter to 50 to 100 times of the `ParallelWorkerThreadCount` parameter, depending on the memory consumption limit.

Note: A large value for the `ParallelMaxRowsRetrieved` parameter can result in memory exhaustion.

- `ParallelLockerThreadSleep` - Specifies the idle time between two successive iterations for retrieving rows, when there is no message for parallel processing. The time is measured in seconds.

13.5 Configuring Parameters for Error/Retry Infrastructure

You can configure the error/retry infrastructure by setting the following parameter:

- `ErrorLockerThreadSleep` - Specifies the idle time between two successive iterations for retrieving errored out messages, when there is no errored out message from parallel processing. The time is measured in seconds.

13.6 Configuring Parameters for Heartbeat Framework

The heartbeat infrastructure is a part of the Mediator Service Engine and is used to detect the absence of a Mediator Service Engine instance due to failure or shutdown of a node. The heartbeat infrastructure creates a unique identifier for each instance of the Mediator Service Engine and performs the necessary house-keeping tasks, if a Mediator Service Engine fails. The heartbeat infrastructure consists of a heartbeat thread. The heartbeat thread periodically updates the time stamp associated with each Mediator Service Engine's unique identifier. By updating the time stamp associated with it, a Mediator Service Engine announces its presence to the other Mediator Service Engines. The heartbeat thread also checks if there are unique identifiers that have not been updated for a particular period of time. You can configure the heartbeat Framework by setting the following parameters:

- `ContainerIdLeaseRefresh` - Specifies the time interval at which the heartbeat thread periodically updates the time stamp associated with each Mediator Service Engine's unique identifier.

Note:

- The default value of the `ContainerIdLeaseRefresh` parameter is 60 seconds.
- In case of unplanned outages, you must wait as much time as specified as the `ContainerIdLeaseRefresh` interval, after restarting the server. The server requires this much time to complete the instances still in the running state.

- `ContainerIdLeaseTimeout` - Specifies the time interval at which the heartbeat thread periodically checks if there are unique identifiers that have not been updated for a particular period of time.

By configuring these parameters, you can specify the period used by the heartbeat thread to detect the failure of a Mediator Service Engine.

Note:

- The default value of the `ContainerIdLeaseRefresh` parameter is 60 seconds.
 - In case of unplanned outages, you must wait as much time as specified as the `ContainerIdLeaseRefresh` interval, after restarting the server. The server needs this much time to complete the instances still in the running state.
-
-

Monitoring Oracle Mediator Service Components and Engines

This chapter describes how to monitor Oracle Mediator (Mediator) service components and engines.

This chapter includes the following topics:

- [Section 14.1, "Monitoring Mediator Service Components"](#)
- [Section 14.2, "Monitoring Mediator Service Engine"](#)

14.1 Monitoring Mediator Service Components

This section describes how to monitor Mediator components. It contains the following topics:

- [Section 14.1.1, "Monitoring Instance Statistics"](#)
- [Section 14.1.2, "Monitoring Routing Statistics"](#)

14.1.1 Monitoring Instance Statistics

You can use the Dashboard tab of the Mediator Component Home page to view the instance summary, recent instances list, and instance per minute data.

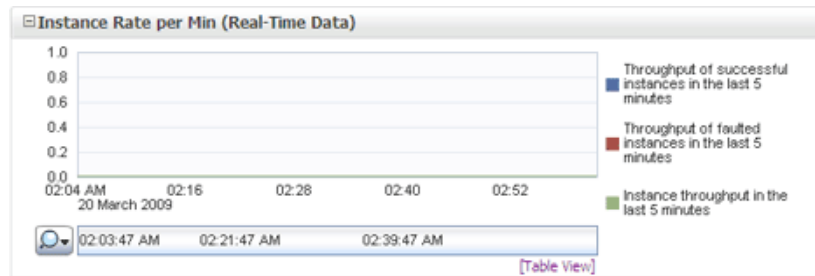
To view the instance statistics of a Mediator component:

1. Open the Mediator Component Home page.
2. Click **Dashboard**.
3. View the Recent Instances and Instance Rate Per Min sections.

Note: To view the Instance Rate Per Min section, you may have to expand the panel by clicking on the plus (+) icon appearing to the left of the section title.

Recent Instances						
Show Only Running Instances <input checked="" type="checkbox"/>		Running	0	Total	25	
Instance ID	State	Start Date	Last Modified Date	Source	Logs	
mediator:7C59A7...	Recovery Needed	Mar 13, 2009 6:3...	Mar 18, 2009 10:16:21 PM	Read	Logs	
mediator:79651F...	Recovery Needed	Mar 13, 2009 6:3...	Mar 18, 2009 10:16:21 PM	Read	Logs	
mediator:7646C8...	Recovery Needed	Mar 13, 2009 6:3...	Mar 18, 2009 10:16:21 PM	Read	Logs	
mediator:734B80...	Recovery Needed	Mar 13, 2009 6:3...	Mar 18, 2009 10:16:21 PM	Read	Logs	

Show All



14.1.1.1 About the Instance Information Sections in the Dashboard Tab

This section describes the instance information sections in the Dashboard tab.

Recent Instances

The Recent Instances section provides the following information about the recent Mediator component instances:

- Instance ID - The unique instance ID of a specific Mediator component instance.
 - State - The state of the specific Mediator component instance. It has the following values: *Stale*, *Terminated by user*, *Faulted*, *Suspended*, *Completed successfully*, *Recovery required*, and *Running*.
 - *Stale* - Composite, for which this Mediator instance was created, is undeployed.
 - *Terminated by User* - The instance was aborted manually through Enterprise Manager, or automatically by a fault policy.
 - *Faulted* - Instance is faulted and cannot be recovered.
 - *Completed successfully* - Everything is fine with this instance and it ran successfully.
 - *Recovery required* - Instance is faulted and can be recovered through Oracle Enterprise Manager manually.

For more information about recovering a fault, refer to [Section 15.2, "Managing Mediator Faults"](#).

 - *Running* - One or more routing rules of the Mediator component are still running.
- Start Date - The date when the specific Mediator component instance was started.
- Last Modified Date - The date when the specific Mediator component instance was modified for the last time.
- Source - The operation or event that triggered the Mediator component.
- Logs - The location of the Log file that has the log message related to the Mediator component instance.

This section provides information only about recent instances. To view all instances of a component, click **Instances** or **Show All** on Dashboard tab to navigate to the Instances tab. To view only those instances that are in running state, select **Show Only Running Instances**.

The Instances tab of the Mediator Component Home page enables you to search for a Mediator Component instance or view a Mediator Component instance based on the criteria specified.

The screenshot shows the SOA Composite console for the 'FileInToFileOut' Mediator Component. The 'Instances' tab is active, displaying a search form and a table of instances. The search form includes fields for Instance ID, Start Time From, Start Time To, Modified Date From, Modified Date To, and State. The table below shows 10 instances, all with a 'Recovery Needed' state and a 'Read' source.

Instance ID	State	Start Date	Last Modified Date	Source	Logs
mediator:7C59A7...	Recovery Needed	13 Mar, 2009 6:33:06 AM	13 Mar, 2009 6:33:08 AM	Read	
mediator:79651F...	Recovery Needed	13 Mar, 2009 6:33:01 AM	13 Mar, 2009 6:33:01 AM	Read	
mediator:7646C8...	Recovery Needed	13 Mar, 2009 6:32:56 AM	13 Mar, 2009 6:32:57 AM	Read	
mediator:734BB0...	Recovery Needed	13 Mar, 2009 6:32:51 AM	13 Mar, 2009 6:32:51 AM	Read	
mediator:70530A...	Recovery Needed	13 Mar, 2009 6:32:46 AM	13 Mar, 2009 6:32:47 AM	Read	
mediator:4F7D95...	Recovery Needed	13 Mar, 2009 6:31:51 AM	13 Mar, 2009 6:31:53 AM	Read	
mediator:4C80A9...	Recovery Needed	13 Mar, 2009 6:31:46 AM	13 Mar, 2009 6:31:47 AM	Read	
mediator:49803A...	Recovery Needed	13 Mar, 2009 6:31:41 AM	13 Mar, 2009 6:31:43 AM	Read	
mediator:4681EE...	Recovery Needed	13 Mar, 2009 6:31:36 AM	13 Mar, 2009 6:31:37 AM	Read	

Recent Faults

The Recent Faults section provides the following information about the recent faults that occurred while executing the Mediator component:

- Error Message - The detailed error message associated with the faulted instance.
- Recovery - Identifies whether the fault is recoverable or not. If a fault is marked as recoverable, you can select it and choose a recovery action from the Recovery Actions list. You can also click **Recover** for that fault to access more recovery options at the component instance level.
- Fault Time - The time when the specific fault occurred in the specific Mediator component instance.
- Component Instance ID - The unique instance ID of a specific Mediator component instance.
- Case - The routing source case, where the fault occurred.
- Logs - The log location that has the log message related to the fault. Click this link to find more details about the fault and potential causes of the fault.

This section provides information only about recent faults. To view all faults of a component, click **Faults** or **Show All** on Dashboard tab to navigate to the Faults tab. If you want to view only the faults caused by a system error, then click **Show only system faults**. System faults are related to system failure issues, such as a database or network being inaccessible.

The Faults tab of the Mediator Component Home page enables you to search for faults based on the specified criteria and to recover or abort multiple faults.

The screenshot displays the 'Faults' tab for a Mediator Component named 'FileInToFileOut'. It includes search filters for Error Message, Fault ID, and Fault Time. Below the filters is a table of faults with columns for Error Message, Recovery, Fault Time, Component Instance ID, Case, and Logs. The table contains 10 rows of fault data, all with the same error message: 'Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...'.

Error Message	Recovery	Fault Time	Component Instance ID	Case	Logs
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:33:06 AM	mediator:7C59A7...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:33:01 AM	mediator:7965IF...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:32:56 AM	mediator:7646C8...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:32:51 AM	mediator:7348B0...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:32:46 AM	mediator:70530A...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:31:51 AM	mediator:4F7D95...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:31:46 AM	mediator:4C80A9...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:31:41 AM	mediator:49803A...	FileOut....	
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: 'JCA Bind...	Recover...	13 Mar, 2009 6:31:36 AM	mediator:4681EE...	FileOut....	

For more details about the information available on Faults tab, refer to [Section 15.2, "Managing Mediator Faults"](#).

Routing Statistics

Routing Statistics section enables you to view the routing data of a source operation or subscribed event. For more information, refer to [Section 14.1.2, "Monitoring Routing Statistics"](#).

Instance Rate Per Min Section

The Instance Rate per Min (Realtime Data) section provides information about the execution rate of the Mediator instances per minute. This section displays a graph that shows real-time data for successful, faulted, and incoming instances in the last five minutes.

You can have a tabular view of the instance rate for last five minutes by clicking **Table View**.

References

The References section provides information about the references used by the Mediator component and any recent faults:

- Name - The name of the references associated with the Mediator component.
- Faults - The number of faults for this reference.
- Message Count - Total number of times this reference was invoked.
- Average Response Time - The average Processing time in milliseconds for the reference.

14.1.2 Monitoring Routing Statistics

You can use the Routing Statistics section of the Dashboard tab in the Mediator Component Home page to view the routing data of a source operation or subscribed event.

To view the routing statistics of a Mediator component:

1. Open the Mediator Component Home page.

2. Click **Dashboard**.
3. In the **Routing Statistics** section, select a routing source from the **Select Route Source** list.

Routing Statistics
Select a source operation or a subscribed event and view statistics for its target routes
Select Route Source: **Read (Operation)**

Number of Successfully Processed Messages	25	Average Processing Time for Successful Messages	0.050 msec.
Number of Faulted Messages	0	Average Processing Time for Faulted Messages	0.000 msec.
Number of Incoming Messages	25		

Route Target

4. Expand the **Route Target** table.

Routing Statistics
Select a source operation or a subscribed event and view statistics for its target routes
Select Route Source: **Read (Operation)**

Number of Successfully Processed Messages	7	Average Processing Time for Successful Messages	0.340 msec.
Number of Faulted Messages	0	Average Processing Time for Faulted Messages	0.000 msec.
Number of Incoming Messages	7		

Route Target

Name	Error	Average Processing Time (ms)		Average Invocation Time
		Success	Failure	
FileOut.Write	5	0.175	0.317	

Instance Rate per Min (Real-Time Data) **References**

5. View the routing statistics for all targets in the Route Target table.

The Route Target section under the Routing Statistics section enables you to view statistics of the target routes of the Mediator component. This section provides the following information about a Mediator component instance:

- Name - The name of the Route Target of the Mediator component.
- Error - The number of errors that occurred during routing.
- Average Processing Time - The average processing time for the instances of the specific Mediator component. This field has two subfields, Success and Failure. The Success subfield shows the average processing time for the instances of the specific Mediator component that executed successfully. The Failure subfield shows the average processing time for the instances of the specific Mediator component that failed to execute successfully.
- Average Invocation Time - The average Invocation Time for the instances of the specific Mediator Component.

14.1.2.1 What You May Need to Know About Monitoring Routing Statistics

The Routing Statistics section provides the following information about the routing source and its various targets:

- Number of successfully processed messages
- Average processing time for successful messages
- Number of faulted messages
- Average processing time for faulted messages
- Number of incoming messages

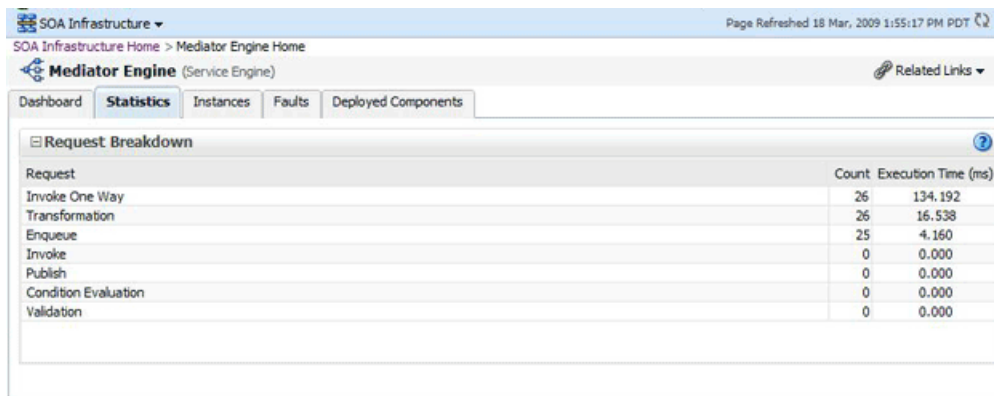
14.2 Monitoring Mediator Service Engine

You can assess the efficiency level of the Mediator Service Engine by monitoring the request breakdown statistics.

14.2.1 Monitoring Request Breakdown Statistics

To view the request breakdown statistics of the currently deployed Mediator components:

1. Open the SOA Infrastructure Home page.
2. From the **SOA Infrastructure** menu, select **Service Engines** and then **Mediator**.
The Mediator Service Engine Home page is displayed.
3. Click the **Statistics** tab.
4. View the Request Breakdown statistics.



The screenshot shows the SOA Infrastructure Mediator Engine Statistics page. The 'Request Breakdown' section is expanded, displaying a table with the following data:

Request	Count	Execution Time (ms)
Invoke One Way	26	134.192
Transformation	26	16.538
Enqueue	25	4.160
Invoke	0	0.000
Publish	0	0.000
Condition Evaluation	0	0.000
Validation	0	0.000

14.2.1.1 What You May Need to Know About Request Breakdown Statistics

The Request Breakdown section provides information about the count and the average time taken for processing the following actions:

- Invoke One Way - One-way invocations from Mediator Service Engine.
- Transformation - Transforming messages in Mediator Service Engine.
- Enqueue - Dehydrating messages for parallel routing rules.

Note: Dehydrating of messages means storing the incoming messages in database for parallel routing rules, so that they can be processed later by worker threads.

- Invoke - Request-response invocations from Mediator Service Engine.
- Publish - Publishing events from Mediator Service Engine.
- Condition Evaluation - Filter conditions evaluation by Mediator.
- Validation - Message validations by Mediator Service Engine.

Managing Oracle Mediator Service Components and Engines

This chapter describes how to manage Oracle Mediator (Mediator) service components and engines.

This chapter includes the following topics:

- [Section 15.1, "Viewing the Deployed Mediator Service Components"](#)
- [Section 15.2, "Managing Mediator Faults"](#)
- [Section 15.3, "Managing Mediator Policies"](#)

15.1 Viewing the Deployed Mediator Service Components

The Deployed Components tab of the Mediator Service Engine Home page enables to search for the Mediator Components of a composite application or view the Mediator Components of a composite application, based on the criteria specified.

To manage deployed Mediator service components:

1. Open the SOA Infrastructure Home page.
2. From the **SOA Infrastructure** menu, select **Service Engines** and then **Mediator**.
3. Click **Deployed Components**.
4. View details about all Mediator service components currently deployed in SOA composite applications.
5. Use the **Search** section to search for and display specific deployed Mediator service components.

SOA Infrastructure Home > Mediator Engine Home
Mediator Engine (Service Engine) Related Links

Dashboard | Statistics | Instances | Faults | **Deployed Components**

Search
 Name:
 Composite Name:
 Search Reset

View

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
Mediator 1	SimpleIntSensor [2.0]		1	0	0	0
FileInToFileOut	TestResubmit [2.0]		25	0	20	0

15.1.1 What You May Need to Know About the Information in the Deployed Components Tab

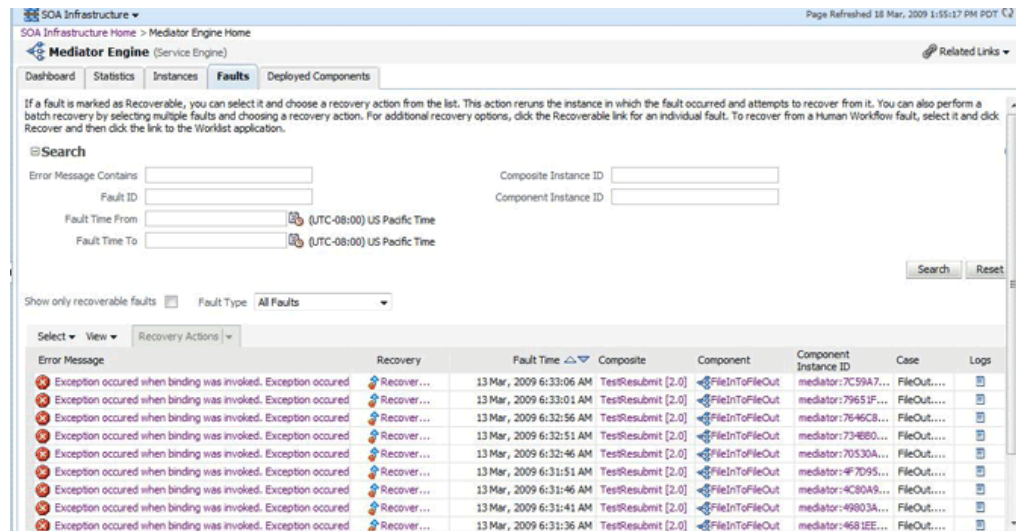
The Deployed Components tab of the Mediator Service Engine Home page provides the following information about deployed components:

- Name - The name of the component. You can click the component name to access its home page.
- Composite - The name of the composite application. You can click the composite name to access its home page.
- Status - The status of the component, whether it is up or down.
- Total Instances - The number of total instances.
- Running Instances - The number of running instances.
- Recoverable Instances - The number of recoverable instances.
- Non Recoverable Instances - The number of nonrecoverable instances.

15.2 Managing Mediator Faults

To manage Mediator faults:

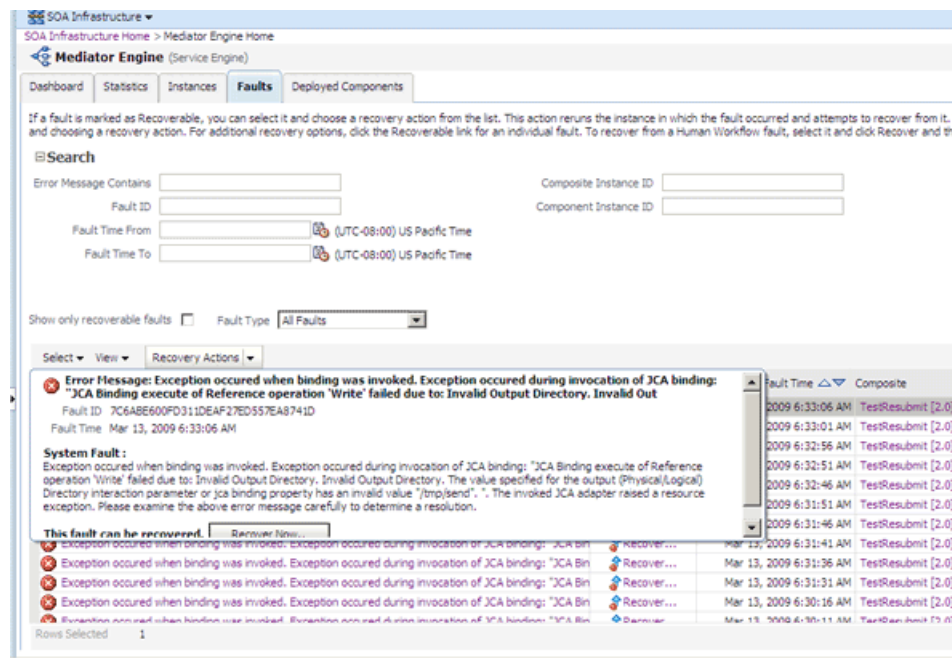
1. Open the SOA Infrastructure Home page.
2. From the **SOA Infrastructure** menu, select **Service Engines** and then **Mediator**.
3. Click **Faults**.
4. View details about all faults in Mediator service components.



5. Use the **Search** section to search for and display specific faults in Mediator service components. If you do not specify a search criterion, all faults are displayed in the Faults table. Specify a search criterion and click Search to see the updated results.
6. If a fault is marked as recoverable, you can select it and choose a recovery action from the Recovery Actions list.

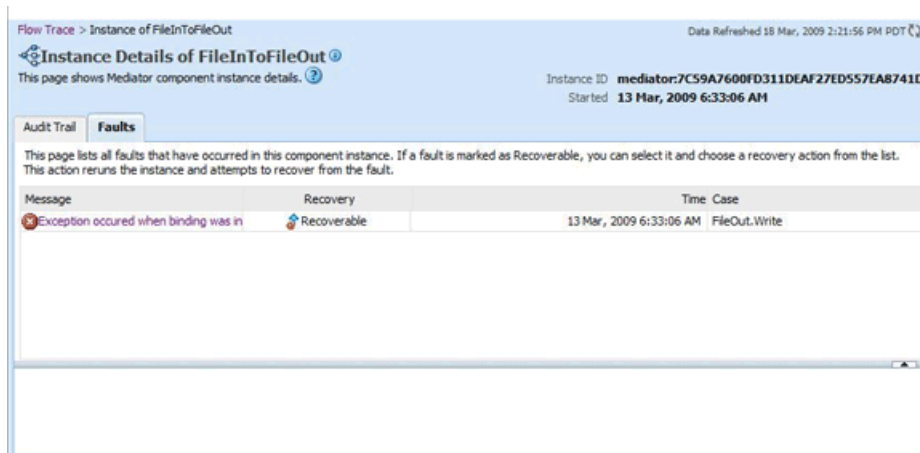
You can also recover multiple faults as a batch. To select multiple faults, press **Shift+Click** or **Control+Click** on the rows in the Faults table. Then, select a recovery action from the Recovery Actions list. Note that in this case, only the common actions applicable to all selected faults are available.

7. Click **Error Message** and then **Recover Now...**

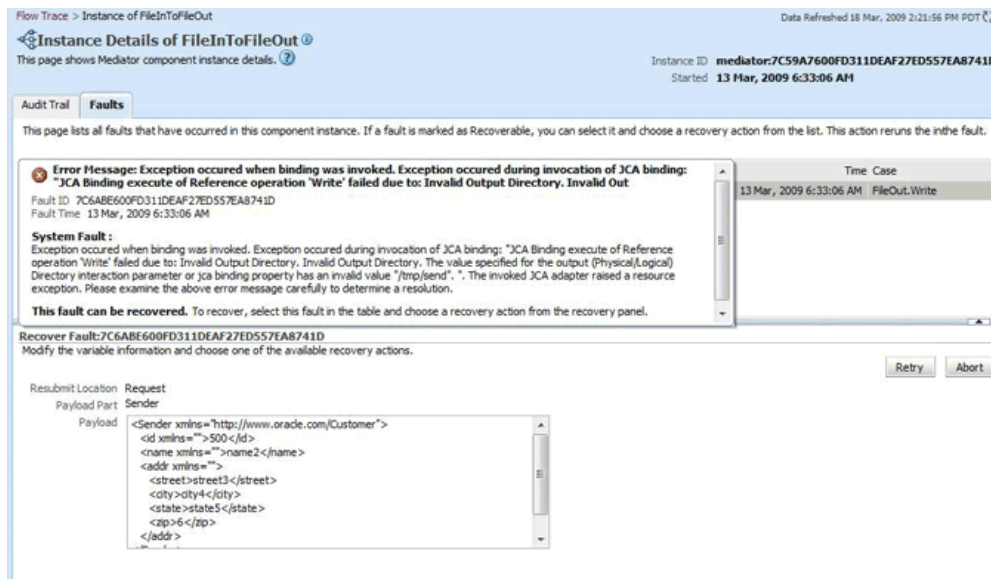


The Faults tab of the Mediator Instance Details page of the specific Mediator component instance, where the fault occurred, is displayed.

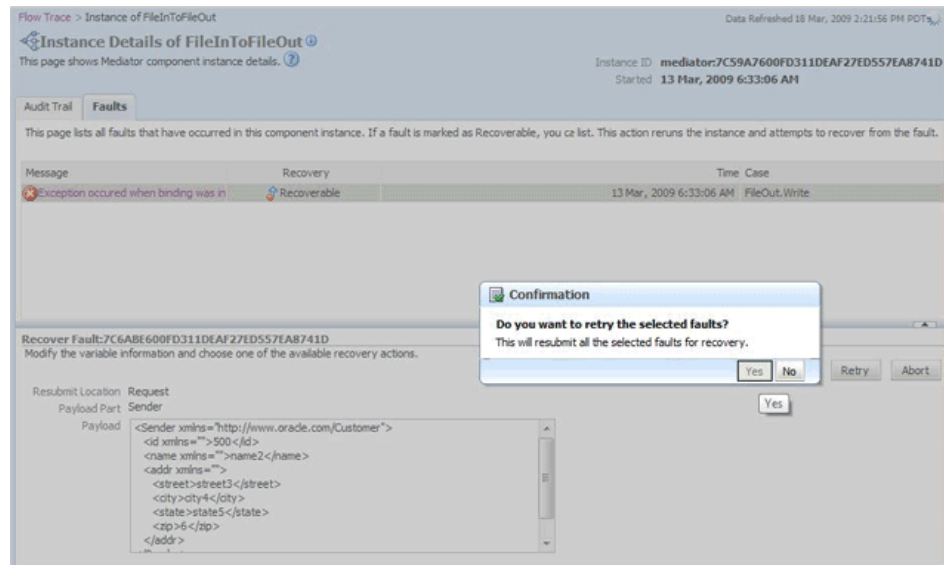
This page can also be displayed by clicking **Recovery** column of a fault.



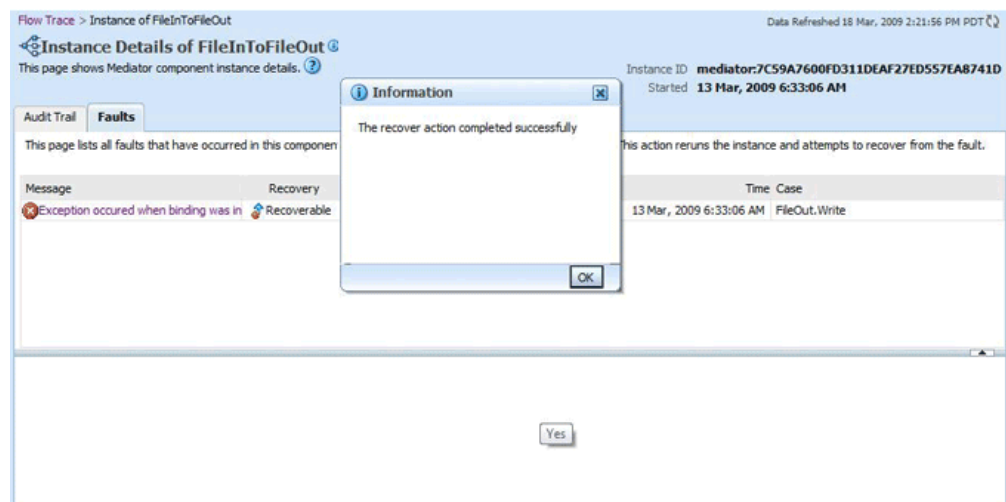
8. Select the fault by clicking Message. The details of the fault are displayed in the lower pane.



9. Click Retry or Abort based on your need.
10. To confirm your action, click **Yes** on the Confirmation dialog as shown in the following figure:



You will get the following Information dialog that displays the status of the recovery action.



15.2.1 What You May Need to Know About the Information in the Faults Tab

The Faults tab of the Mediator Service Engine Home page requires the following information about faults to perform a search:

- Error Message Contains - A complete or partial error message.
- Fault ID - The automatically generated fault ID that uniquely identifies a fault.
- Fault Time from - The date at which to begin the search for faults.
- Fault Time to - The date at which to end the search for faults.
- Composite Instance ID - The exact ID of the instance in which the SOA composite application fault occurred.
- Component Instance ID - The exact ID of the component instance.

You can customize the display of searched faults by specifying the following options:

- Show Only Recoverable Faults - Enables you to view only those faults, on which you can perform recovery actions.
- Fault Type - Type of the fault. A fault can be of the following types:
 - Business faults - These faults are application-specific faults that are generated when there is a problem with the information being processed. For example, when a social security number is not found in the database.
 - System faults - These faults are related to system failure issues, such as a database or network being inaccessible.
 - Oracle Web Services Manager (OWSM) policy faults - These faults are generated during failure of an attached policy.

The Faults tab of the Mediator Service Engine Home page provides the following information about faults:

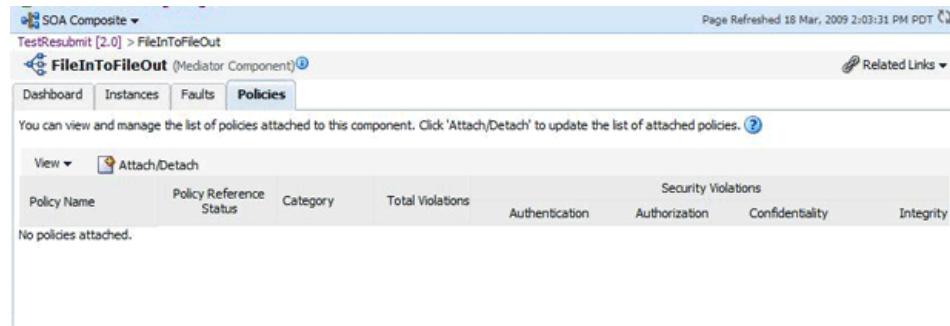
- Fault ID - The ID of the fault. This number is automatically generated and uniquely identifies a fault. This column does not automatically display in this table. To display this column, select **Columns**, then **Fault ID** from the View menu. The fault ID also displays when you click an error message.
- Error Message - The error messages of faults occurring in the service engine. You can click an error message to display complete information about the fault.
- Recovery - Identifies if a specific fault is recoverable. If a fault is marked as recoverable, you can select it and choose a recovery action from the Recovery Actions list.
- Fault Time - The time at which the fault occurred.
- Composite - The SOA composite application in which the fault occurred. You can click this link to access the composite home page.
- Component - The Mediator service component in which the fault occurred. You can click this link to access the component home page.
- Component Instance ID - The instance ID of the service component in which the fault occurred.
- Case - Specifies whether the fault is a business fault, a system fault, or an error.
- Logs - You can click this link to access log files describing the fault.

15.3 Managing Mediator Policies

Oracle Fusion Middleware uses a policy-based model to manage Web services. Policies apply behavioral requirements to the delivery of messages.

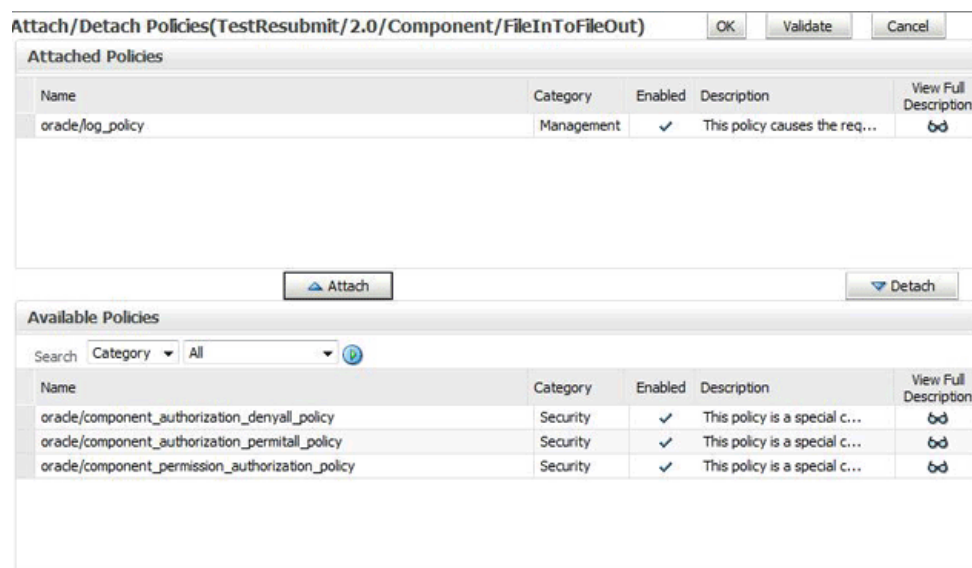
To manage Mediator policies:

1. Open the Mediator Component Home page.
2. Click **Policies**.
3. View the policies attached to a Mediator component.



- Click Attach/Detach to attach or detach a policy.

The Attach/Detach Policies page is displayed. All the attached policies are displayed in the upper pane and all the policies available to be attached are displayed in the lower pane.



- Click a policy in the lower pane to select it and click **Attach** to attach it to the Mediator component. Click a policy in the upper pane to select it and click **Detach** to detach it from the Mediator component.

15.3.1 What You May Need to Know About the Information in the Policies Tab

The Policies tab of the Mediator Component Home page provides the following information about a Mediator component instance:

- Policy Name - The name of the policy.
- Policy Reference Status - The policy status. It can be either enabled or disabled. Disabling a policy temporarily turns it off without detaching it.
- Category - The category of the policy. It has the following values: Management, Reliable Messaging, MTOM Attachments, Security, and WS Addressing.
- Total Violations - The total number of violations since the SOA Infrastructure was restarted.
- Security Violation - The number of violations in each category. Category can have the following values: Authentication, Authorization, Confidentiality, and Integrity.

Resequencing Messages

A Resequencer is used to rearrange a stream of related but out-of-sequence messages back into order. It sequences the incoming messages that arrive in a random order and then send them to the target services in an orderly manner.

For more information about Resequencers, refer to Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite.

This chapter includes the following topics:

- [Section 16.1, "Configuring Resequenced Messages"](#)
- [Section 16.2, "Monitoring Resequenced Messages"](#)

16.1 Configuring Resequenced Messages

For resequencing messages, you must perform the following tasks:

- Configure the worker thread count
- Configure the maximum number of groups that can be locked by a thread
- Configure the sleep interval and the maximum number of messages retrieved in one iteration

You can achieve this by setting the value of the following properties in the Mediator Service Engine Properties page:

- `ResequencerWorkerThreadCount`
- `ResequencerMaxGroupsLocked`
- `ResequencerMaxMessagesRetrieved`
- `ResequencerLockerThreadSleep`

You can also configure these properties by setting the values of the parameters in an MBean browser. For more information, see [Chapter 13, "Configuring Oracle Mediator Service Components and Engines"](#).

16.2 Monitoring Resequenced Messages

You can monitor the resequenced messages from the following pages:

- [Section 16.2.1, "Mediator Component Home Page"](#)
- [Section 16.2.2, "Mediator Instance Window"](#)

16.2.1 Mediator Component Home Page

You can use the following tabs of the Mediator Component Home page for monitoring resequenced messages:

- [Section 16.2.1.1, "Dashboard Tab"](#)
- [Section 16.2.1.2, "Instances Tab"](#)
- [Section 16.2.1.3, "Faults Tab"](#)

16.2.1.1 Dashboard Tab

The Dashboard tab of the Mediator Component Home page has one additional column, **Group**, in the Recent Instances and Recent Faults tables. This field contains the group ID of the resequenced messages. If you click the group ID for a row, then a message window pops up with details of the group. For more information on this message window, refer to [Section 16.2.1.4, "Mediator Resequencing Group Dialog"](#) and for more information on the Dashboard tab, refer to [Section 14.1.1, "Monitoring Instance Statistics"](#).

16.2.1.2 Instances Tab

The Instances tab of the Mediator Component Home page provides an additional field, **Resequencing Group**, to search for a Mediator Component instance, while specifying a search criterion. The Instances table that displays information of Mediator component instances that match the search criteria, provides one additional column, **Group**. This field contains the group ID of the resequenced messages. If you click the group ID for a row, then a message window pops up with details of the group. For more information on this message window, refer to [Section 16.2.1.4, "Mediator Resequencing Group Dialog"](#) and for more information on the Instances tab, refer to [Section 14.1.1, "Monitoring Instance Statistics"](#).

The screenshot shows the 'Instances' tab of the Mediator Component Home page. The search interface includes the following fields:

- Instance ID:
- Start Time From: (UTC-08:00) US Pacific Time
- Start Time To: (UTC-08:00) US Pacific Time
- Modified Date From: (UTC-08:00) US Pacific Time
- Modified Date To: (UTC-08:00) US Pacific Time
- State:
- Resequencing Group:

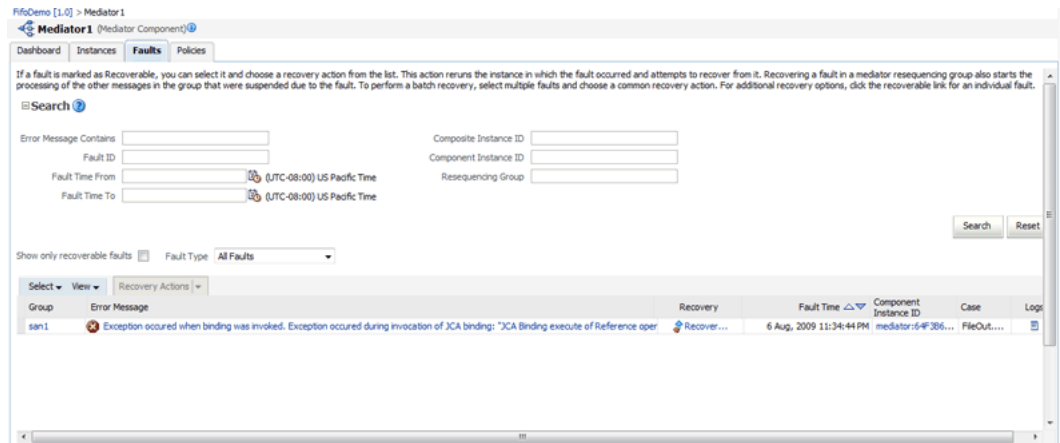
Below the search fields is a table with the following columns: Group, Instance ID, State, Start Date, Last Modified Date, Source, and Logs. The table contains the following data:

Group	Instance ID	State	Start Date	Last Modified Date	Source	Logs
san4	mediator:850930...	Completed	6 Aug, 2009 11:35:39 PM	7 Aug, 2009 4:55:25 AM	execute	
san3	mediator:80DE9F...	Completed	6 Aug, 2009 11:35:31 PM	8 Aug, 2009 1:22:24 AM	execute	
san2	mediator:7CB7B2...	Terminated	6 Aug, 2009 11:35:24 PM	6 Aug, 2009 11:35:34 PM	execute	
san1	mediator:64F3B6...	Recovery Needed	6 Aug, 2009 11:34:44 PM	6 Aug, 2009 11:34:54 PM	execute	
grp1	mediator:6FAD12...	Completed	6 Aug, 2009 12:12:01 AM	6 Aug, 2009 12:17:19 AM	execute	
grp1	mediator:6C3A33...	Completed	6 Aug, 2009 12:11:55 AM	6 Aug, 2009 12:17:19 AM	execute	
grp1	mediator:402D31...	Completed	6 Aug, 2009 12:10:41 AM	6 Aug, 2009 12:10:48 AM	execute	
grp1	mediator:3CBEBE...	Completed	6 Aug, 2009 12:10:35 AM	6 Aug, 2009 12:10:38 AM	execute	
grp1	mediator:2FEF7A...	Completed	6 Aug, 2009 12:10:14 AM	6 Aug, 2009 12:10:20 AM	execute	

16.2.1.3 Faults Tab

The Faults tab of the Mediator Component Home page provides an additional field, **Resequencing Group**, to search for a Mediator Component instance, while specifying a search criterion. The Faults table that displays information of Mediator component instances that match the search criteria, provides one additional column, **Group**. This field contains the group ID of the resequenced messages. If you click the group ID for a row, then a message window pops up with details of the group. For more

information on this message window, refer to [Section 16.2.1.4, "Mediator Resequencing Group Dialog"](#) and for more information on the Faults tab, refer to [Section 15.2, "Managing Mediator Faults"](#).



16.2.1.4 Mediator Resequencing Group Dialog

This section provides information about the Mediator Resequencing Group dialog. If all the messages in a group are processed without any fault or time out interval, then the Resequencing Group dialog displays that the group is working.

View	Mediator Resequencing Group: FedEx1		
Group	Message ID	Status	Time
	mediator:14F6C910E	Running	Jun 16, 2009 2:31:41 PM
	mediator:BF210FA0E	Running	Jun 16, 2009 2:29:17 PM
FedEx1	mediator:14F6C910E	Running	Jun 15, 2009 3:25:50 PM
FedEx1	mediator:BF210FA0E	Running	Jun 15, 2009 3:25:48 PM
FedEx1	mediator:7B4A3DE0E	Running	Jun 15, 2009 3:21:15 PM
FedEx1	mediator:79A4CB40E	Completed	Jun 15, 2009 1:16:04 PM
UPS3	mediator:D7270BD0E	Suspended	Jun 10, 2009 11:27:56 AM
UPS3	mediator:59F4C8C0E	Suspended	Jun 10, 2009 11:27:40 AM

The Mediator Resequencing Group dialog provides the following details about a group:

- Specifies whether the group is timed-out or faulted
- Identifies the blocking message in the group
- Identifies the next message to be processed after the group is unlocked
- Shows the time after which the processing of the messages in the group stopped
- Provides the instruction text to unlock the group

When processing of messages in a group is suspended due to a fault or a timeout, the Resequencing Group dialog provides information about the suspended group. The processing of messages in a group may be suspended for the following two reasons:

- [Group Is Faulted](#)
- [Group Is Timed-out](#)
- [Group Is Faulted Due to a System Error](#)

Group Is Faulted

A group is in the faulted state when one of its messages throws an error while it is processed. The following information is displayed for a faulted group:

- The sequence ID of the faulted message
- The sequence ID of the next message to processed, along with its Mediator Instance ID

Click **Recover Now** to access the Faults page of the Mediator Instance Details page to perform single-fault recovery.

Mediator Resequencing Group: FedEx1

✖ **Faulted:** The processing of messages in this group is suspended due to a fault.

Fault Time	Jun 15, 2009 1:16:27 PM
Faulted Sequence ID	2
Mediator Instance	79A4CB4059FB11DEBFEAD9610458E24D

Next Sequence ID To Process	3
Mediator Instance	7B4A3DE059FB11DEBFEAD9610458E24D

The processing of the messages in the group will resume from the next Sequence ID after the faulted instance is recovered.

Recover the faulted instance:

Group Is Timed-out

A group is in the timed-out state when processing of the group stops while waiting for an expected message. The following information is displayed for a timed-out group:

- The sequence ID of the last processed message
- The sequence ID of the next message to be processed, along with its Mediator Instance ID

Click **Skip** to unlock the group and start processing the next available instances in the group.

Mediator Resequencing Group: UPS3

⏸ **Timed Out:** The processing of messages in this group is suspended due to a timeout.

Last Processing Time	Jun 10, 2009 11:27:42 AM
Last Processed Sequence ID	1
Mediator Instance	6639F25059AB305E90W2JET305U734FW

Next Sequence ID To Process	2
Mediator Instance	6B2D306059AB305E90W2JET305U734FW

To resume the processing of the messages in the group, you must skip to the next available Sequence ID. Any messages with Sequence IDs between the Last and the Next will not be processed.

Skip to the next available instance:

Group Is Faulted Due to a System Error

A group can be in a faulted state when processing of the group is suspended due to a system error. This state is termed as a special case of a Faulted Group. This group is not timed out and there is no faulted message for the group. The groups in this state can be described as Errored Groups. The following information is displayed for an Errored Group:

- The sequence ID of the last processed message
- The sequence ID of the next message to be processed, along with its Mediator Instance ID

Click **Retry** to unlock the group and start processing the next instances in the group.

Mediator Resequencing Group: FedEx3

✖ Faulted: The processing of messages in this group is suspended due to an internal system error. Refer to the logs for more details.

Last Processing Time Mar 26, 2010 2:42:30 AM

Last Processed Sequence ID 1

Mediator Instance E0829BE038BB11DF9F4DA371B72E9C12

Next Sequence ID To Process 2

Mediator Instance 6B2D306059AB305E90W2JET305U734FW

To resume the processing of messages, you must retry the group. The processing of the messages will resume from a next Sequence ID.

Retry the message processing in the group:

16.2.2 Mediator Instance Window

The Faults tab of the Mediator Instance Details window provides the following resequencer-specific information:

- Group ID of the resequenced message
- Operation performed on the resequenced message

Flow Trace > Instance of Mediator 1

Instance Details of Mediator1

This page shows Mediator component instance details.

Instance ID: mediator:64f38630831c11d8faba9721b80c8
Started: 6 Aug, 2009 11:34:44 PM

Audit Trail **Faults**

This page lists all faults that have occurred in this component instance. If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This action reruns the instance and attempts to recover from the fault. Recovering a fault in a mediator resequencing group also starts the processing of the other messages in the group that were suspended due to the fault.

Group	Message	Recovery	Time	Operation	Case
san1	✖ Exception occurred when binding was in	🔄 Recoverable	6 Aug, 2009 11:34:44 PM	execute	FileOut.Write

If you click on a fault message, the fault message window appears with details of the fault. If you click **Retry**, then the Mediator Service Engine retries to process the message. If you click **Abort**, then it aborts the faulted message, then unlocks the group, and finally, resumes processing from the next message in the sequence.

Flow Trace > Instance of Mediator1 Data Refreshed 10 Aug, 2009 3:15:18 AM PDT

Instance Details of Mediator1 Instance ID: mediator64f38630831c11debf8a97e2188bcc8
Started: 6 Aug, 2009 11:34:44 PM

This page shows Mediator component instance details.

Audit Trail **Faults**

This page lists all faults that have occurred in this component instance. If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This action reruns the instance and attempts to recover from the fault. Recovering a fault in a mediator resequencing group also starts the processing of the other messages in the group that were suspended due to the fault.

Error Message: Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: "JCA Binding execute of Reference operation 'Write' failed due to: Invalid Output Directory. Invalid Out

Fault ID: 64567ef0831c11debf8a97e2188bcc8
Fault Time: 6 Aug, 2009 11:34:44 PM

System Fault:
Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: "JCA Binding execute of Reference operation 'Write' failed due to: Invalid Output Directory. Invalid Output Directory. The value specified for the output (Physical/Logical) Directory interaction parameter or jca binding property has an invalid value: "jms/test". The invoked JCA adapter raised a resource exception. Please examine the above error message carefully to determine a resolution.

This fault can be recovered. To recover, select this fault in the table and choose a recovery action from the recovery panel.

Time	Operation	Case
6 Aug, 2009 11:34:44 PM	execute	FileOut.Write

Recover Fault:64567ef0831c11debf8a97e2188bcc8

Modify the variable information and choose one of the available recovery actions.

Resubmit Location Request
Payload Part request

```

Payload
<ns1:data xmlns:ns1="http://www.example.org">
  <ns1:groupId>san1</ns1:groupId>
  <ns1:data>001</ns1:data>
</ns1:data>
    
```


- **Select a table and columns:** To select either a specific table from which to delete values, or to select one or more columns from a specific table from which to delete values.
4. In the **Select Values** section, select one of the following options:
 - **All:** To delete all values from selected table and columns.
 - **Marked for delete:** To delete only the values that have been marked for deletion from the selected table and columns.
 - **Updated between:** To delete values updated between a specific time periods.
 5. If you select the **Updated between** option in Step 4, then you must enter a starting date in the **From** field and an ending date in the **To** field.
 6. Click **Delete**.

Part VII

Administering Decision Service Components and Business Rules Service Engines

This part describes how to administer Decision Service components and Business Rules service engines.

This part includes the following chapters:

- [Chapter 18, "Configuring Business Rules Engine"](#)
- [Chapter 19, "Monitoring Decision Service Components and Engines"](#)
- [Chapter 20, "Tracing Rule Execution in Fusion Middleware Control Console"](#)

Configuring Business Rules Engine

This chapter describes how to configure Business Rules Engines.

This chapter includes the following topics:

- [Section 18.1, "Configuring the Business Rules Engine"](#)

18.1 Configuring the Business Rules Engine

The Business Rules Engine does not support any user level configuration. For information on monitoring and managing Decision Service components that run on Business Rules Engines, see [Chapter 19, "Monitoring Decision Service Components and Engines"](#).

Monitoring Decision Service Components and Engines

This chapter describes how to monitor Decision Service Components. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

This chapter includes the following topics:

- [Section 19.1, "Monitoring Business Rules Service Engine Instances and Faults"](#)
- [Section 19.2, "Monitoring Business Rules Service Engine Statistics"](#)
- [Section 19.3, "Monitoring Business Rules Service Engine Instances"](#)
- [Section 19.4, "Monitoring Business Rules Service Engine Faults"](#)
- [Section 19.5, "Monitoring Business Rules Service Engine Deployed Components"](#)
- [Section 19.6, "Monitoring Decision Service Component Instances from a Composite Application"](#)
- [Section 19.7, "Monitoring Decision Service Component Logs"](#)

19.1 Monitoring Business Rules Service Engine Instances and Faults

Using the Business Rules Engine home page **Dashboard** tab, you can monitor recent instances and faults of Decision Service components running in the SOA Infrastructure. These Decision Service components can be part of separate SOA composite applications. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

1. Access the Business Rules Engine home page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Business Rules .	1. Select soa-infra .
	2. Right-click and select Service Engines > Business Rules .

2. Click **Dashboard**.

The Recent Instances area of the **Dashboard** tab displays recent instances of all Decision Service components, including the instance ID of the Decision Service component, the Decision Service component name, the SOA composite application of which the Decision Service component is a part, the state of the instance, for

example, completed successfully or faulted, the instance start time, the last modification time, and a **Show logs** icon (clicking the **Show logs** icon shows the Log Messages page with filtered messages specific to that instance).

Note: To see the state with the correct information, you must set the **Capture Composite Instance State** option. You can change this setting on the SOA Administration Common Properties page. Turning this feature on allows for separate tracking for "running" instances. However, this may impact the performance. For information on setting this option, see [Section 3.1, "Configuring SOA Infrastructure Properties"](#).

The screenshot displays the SOA Administration console interface for the Business Rules Engine. The top navigation bar includes 'SOA Infrastructure' and 'Business Rules Engine (Service Engine)'. The main content area is divided into three sections: 'Recent Instances', 'Components', and 'Recent Faults'.

Recent Instances Table:

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
decision:224f92e5-8...	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:23 PM	[Log]
decision:4d89792e-4...	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:22 PM	[Log]
decision:9dc870e2-7...	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:20 PM	[Log]
decision:802e0c42-4...	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:19 PM	[Log]
decision:1ff23702-cc...	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:18 PM	[Log]

Components Table:

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
OracleRules1	SOAComposite1 [1.1]	Up	2	0	0	0
LoanAdvisorRules	AutoLoanComposite [2.	Up	11	0	0	0
CreditRatingRules	AutoLoanComposite [2.	Up	11	0	0	0
OracleRules1	SOAComposite1 [4.0]	Up	46	0	0	0
OracleRules1	SOAComposite1 [1.0]	Up	0	0	0	0

Recent Faults Table:

Error Message	Fault Time	Composite	Component	Component Instance ID	Logs
Error while executing a rule session unit of work. The rule sessi	Mar 25, 2009 10:25:35 AM	SOAComposite1 [1.0]	rules	decision:b2e13614-d	[Log]
Error while executing a rule session unit of work. The rule sessi	Mar 24, 2009 4:51:02 PM	SOAComposite1 [1.0]	rules	decision:cdbf34c4-5c	[Log]
Error while executing a rule session unit of work. The rule sessi	Mar 24, 2009 4:48:32 PM	SOAComposite1 [1.0]	rules	decision:25fb9d9f-be	[Log]

- In the **Instance ID** column, click an instance ID for a Decision Service component to view its audit trail.

Note: The contents of the audit trail page depends on the **Audit Level** settings. When the **Audit Level** property is set to **Production**, the audit trail shows only the activity names. When the **Audit Level** is in **Development** mode, the audit trail shows the Decision Service instance payload details. In other modes, for example **Off**, the audit trail does not show Decision Service details. You can change the **Audit Level** on the SOA Administration Common Properties page. Additionally, this option can be set for a specific composite from the home page for the composite.

4. In the **Component** column, click a specific Decision Service component to access its home page.
5. In the **Composite** column, click a specific SOA composite application to access its home page.
6. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
7. Click **Show All** to access the Instances page of the service engine.

The lower part of the **Dashboard** tab displays the following:

- The Components table shows the Decision Service components deployed on the Business Rules engine across SOA composites. It also shows the status of the SOA composites and the instance count information in the respective instance state columns.
- The Recent Faults area shows the recent faults in the service engine, including the error message, the time at which the fault occurred, the SOA composite application in which the fault occurred, the Decision Service component, and the instance ID of the Decision Service component, and a **Show logs** icon (clicking the **Show logs** icon shows the Log Messages page with filtered messages specific to that instance).

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#).

19.2 Monitoring Business Rules Service Engine Statistics

Using the Business Rules Engine home page **Statistics** tab, you can monitor the Business Rules engine performance and metrics. This page shows service engine-level not component-level details. Business Rules components are also called Decision Service Components in the Oracle Fusion Middleware documentation.

1. Access the Business Rules Engine statistics page through one of the following options:

From the SOA Infrastructure Menu...

Select **Service Engines > Business Rules**.

From the SOA Folder in the Navigator...

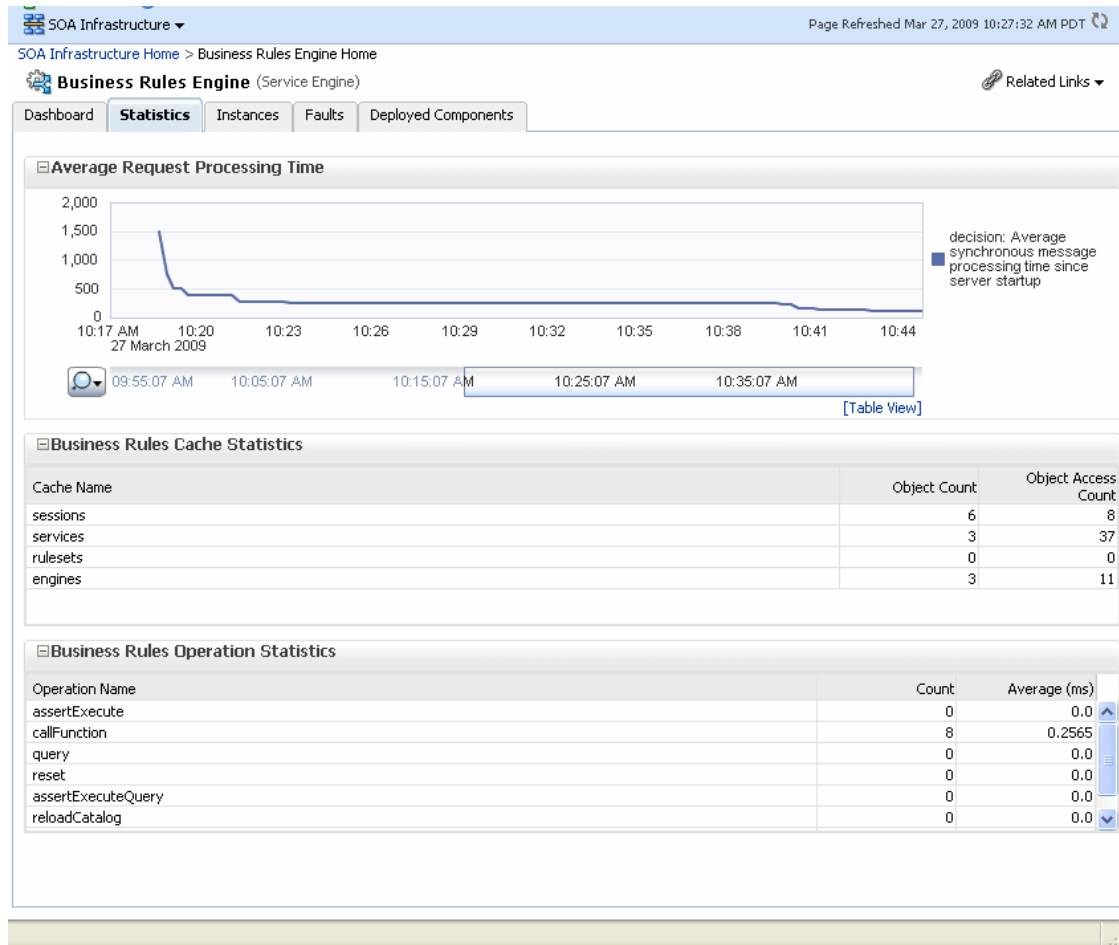
1. Select **soa-infra**.
 2. Right-click and select **Service Engines > Business Rules**.
-

2. Click **Statistics**.

The **Statistics** tab displays the following:

- **Average Request Processing Time:** This chart displays the average request processing time of the Business Rules engine since server startup. That is, how many requests were processed by the service engine per unit of time.
- **Business Rules Cache Statistics:** This area provides details about the service engine cache. This area lists the types of caches used by the service engine and the object count in each of the caches. All these metrics are based on the object count since server startup.
- **Business Rules Operation Statistics:** This area shows the operation statistics. Using the operation statistics you can determine the number of calls to Oracle Business Rules Decision Functions since server startup, and determine the total time spent in Decision Functions since server startup.

Note: When you view Business Rules Operation Statistics for composite applications created with Oracle Fusion Middleware 11g Release 1 (11.1.1), the only operation shown is the **callFunction** operation. In this release the Decision Service only calls Oracle Business Rules using Decision Functions, and this operation is indicated with values for the operation named **callFunction** (with **Count** and **Average(ms)** fields). With composite applications that were migrated from older releases, the Decision Service performs **callFunction** operations and the other operations listed in the Business Rules Operation Statistics area. For these migrated projects, you can debug the flow of the request through various important operations within the service engine. Also, you can find any long-running operations and take the necessary actions. These metrics also are since server startup.



19.3 Monitoring Business Rules Service Engine Instances

Using the Business Rules Engine home page **Instances** tab, you can monitor all Decision Service component instances. These Decision Service components can be part of separate SOA composite applications. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

1. Access the Business Rules Engine Instances page through one of the following options:

From the SOA Infrastructure Menu...

Select **Service Engines > Business Rules**.

From the SOA Folder in the Navigator...

1. Select **soa-infra**.
2. Right-click and select **Service Engines > Business Rules**.

2. Click **Instances**.

The **Instances** tab displays the following:

- A utility for searching for a specific instance by specifying criteria and clicking **Search**.
- Instances, including the instance ID of the Decision Service component, the Decision Service component name, the SOA composite application name, the state of the instance (for example, completed successfully, running, or faulted),

the instance start time, the last modification time, and a **Show logs** icon (clicking the **Show logs** icon shows the instance log messages).

The screenshot displays the SOA Infrastructure Business Rules Engine Instances page. The page includes a search filter with fields for Instance ID, Start Time From, Start Time To, and Modified Date From, along with a Modified Date To field and a State dropdown menu. Below the search filter is a table of instances. The table has columns for Instance ID, Component, Composite, State, Start Date, and Last Modified Date. All instances shown are in a 'Completed' state.

Instance ID	Component	Composite	State	Start Date	Last Modified Date
decision:9dc40d71-b81a-4c23-868c-65161f	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:43:06 AM	Mar 27, 2009 10:43:06 AM
decision:8d67ed23-997f-4996-afbb-645155	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:43:01 AM	Mar 27, 2009 10:43:01 AM
decision:8ea2718a-5594-45fe-9ee3-42553c	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:42:58 AM	Mar 27, 2009 10:42:58 AM
decision:77088e04-03a1-4d75-bd79-971c5f	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:42:55 AM	Mar 27, 2009 10:42:55 AM
decision:dfc8e66d-ed9d-4b77-95f7-f37b83	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:42:52 AM	Mar 27, 2009 10:42:52 AM
decision:58ac9d7c-5617-4095-bee8-a0abf1	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:41:00 AM	Mar 27, 2009 10:41:00 AM
decision:5c820df5-622a-40b8-ae37-40584f	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:40:46 AM	Mar 27, 2009 10:40:46 AM
decision:e60007d1-81e4-414a-80e5-607fd3	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:40:25 AM	Mar 27, 2009 10:40:25 AM
decision:cf1eb0ea-24be-4536-9b22-7cd8dc	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:40:21 AM	Mar 27, 2009 10:40:21 AM
decision:e6e69e67-7a01-425d-9925-40ce0f	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:40:18 AM	Mar 27, 2009 10:40:18 AM
decision:98b33576-715c-45db-bd5e-489c7e	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:40:13 AM	Mar 27, 2009 10:40:13 AM
decision:b0e49c1f-f867-49a4-a28b-c9c5bct	OracleRules1	SOAComposite1 [4.0]	Completed	Mar 27, 2009 10:39:52 AM	Mar 27, 2009 10:39:52 AM

- In the **Instance ID** column, click an instance ID for a Decision Service component to view its audit trail details.

Note: The contents of the audit trail page depends on the **Audit Level** settings. When the **Audit Level** property is set to **Production**, the audit trail shows only the activity names. When the **Audit Level** is in **Development** mode, the audit trail shows the Decision Service instance payload details. You can change the **Audit Level** on the SOA Administration Common Properties page. Additionally, this option can be set for a specific composite from the home page for the composite.

- In the **Component** column, click a specific Decision Service component to access its home page.
- In the **Composite** column, click a specific SOA composite application to access its home page.
- In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)

19.4 Monitoring Business Rules Service Engine Faults

Using the Business Rules Engine home page **Faults** tab, you can monitor all Decision Service component faults. The **Faults** tab shows this information for Decision Service components that can be part of separate SOA composite applications. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

Note: Decision Service component faults are always nonrecoverable.

1. Access the Business Rules Engine Faults tab through one of the following options:

From the SOA Infrastructure Menu...

Select **Service Engines > Business Rules**.

From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
 2. Select **Service Engines > Business Rules**.
-

2. Click **Faults**.

The **Faults** tab displays the following:

- A utility for searching for a specific fault by specifying criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the Decision Service component, including the error message, the time at which the fault occurred, the SOA composite application and Decision Service component in which the fault occurred, and the Decision Service component instance ID.

Decision Service component instance faults cannot be recovered.

The screenshot shows the Business Rules Engine (Service Engine) interface. The **Faults** tab is active. A message states: "The Decision Service faults cannot be recovered." Below this is a search utility with the following fields:

- Error Message Contains:
- Fault ID:
- Composite Instance ID:
- Component Instance ID:
- Fault Time From: (UTC-08:00) US Pacific Time
- Fault Time To: (UTC-08:00) US Pacific Time

Buttons for **Search** and **Reset** are present. A **Search** dropdown is set to **All Faults**. Below the search utility is a table of faults:

Error Message	Fault Time	Composite	Component	Component Instance ID	Logs
Error while executing a rule session	Mar 25, 2009 10:25:35 AM	SOAComposite1 [1.0]	rules	decision:b2e13614-d	
Error while executing a rule session	Mar 24, 2009 4:51:02 PM	SOAComposite1 [1.0]	rules	decision:cdbf34c4-5c	
Error while executing a rule session	Mar 24, 2009 4:48:32 PM	SOAComposite1 [1.0]	rules	decision:25fb9d9f-ba	

3. You can perform the following monitoring tasks from within the Faults tab:
 - a. From the **Fault Type** list, select to display All Faults, system faults, business faults, or Oracle Web Services Manager faults in the **Faults** tab.

- b. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each fault. The fault ID is automatically generated and uniquely identifies a fault. The fault ID is also displayed when you click an error message.
- c. In the **Component** column, click a specific Decision Service component to access its home page.
- d. In the **Component Instance ID** column, click a specific Decision Service component instance ID to view the audit trail.

Note: The contents of the audit trail page depends on the **Audit Level** settings. When the **Audit Level** property is set to **Production**, the audit trail shows only the activity names. When the **Audit Level** is in **Development** mode, the audit trail shows the Decision Service instance payload details. You can change the **Audit Level** on the SOA Administration Common Properties page. Additionally, this option can be set for a specific composite from the home page for the composite.

- e. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to the instance. Clicking the log link shows the faults and error messages related to that faulted instance.
4. In the **Error Message** column, click to view the fault details.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#).

19.5 Monitoring Business Rules Service Engine Deployed Components

Using the Business Rules Engine home page **Deployed Components** tab, you can monitor all Decision Service components deployed across SOA composite applications. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

1. Access the Business Rules Engine **Deployed Components** tab through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
Select Service Engines > Business Rules .	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select Service Engines > Business Rules.

2. Click **Deployed Components**.

The **Deployed Components** tab displays the following:

- A utility for searching for a specific component by specifying criteria and clicking **Search**.
- Components, including the name, the SOA composite application name, the status (Up or Down), and the instances count (total, running, and faulted).

SOA Infrastructure Home > Business Rules Engine Home

Business Rules Engine (Service Engine)

Dashboard Statistics Instances Faults **Deployed Components**

Search

Name

Composite Name

Search Reset

View

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverab
OracleRules1	SOAComposite1 [1.1]		2	0	0	
LoanAdvisorRules	AutoLoanComposite		11	0	0	
CreditRatingRules	AutoLoanComposite		11	0	0	
OracleRules1	SOAComposite1 [4.0]		33	0	0	
OracleRules1	SOAComposite1 [1.0]		0	0	0	

3. In the **Name** column, click a name to navigate to the Component home page and view component details.
4. In the **Composite** column, click a specific SOA composite application to access its home page.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#).

19.6 Monitoring Decision Service Component Instances from a Composite Application

You can monitor Decision Service component instances from a composite application. Each Decision Service component instance has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this Decision Service component is a part. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

Note: To see the state with the correct information, you must set the **Capture Composite Instance State** option. You can change this setting on the SOA Administration Common Properties page. Turning this feature on allows for separate tracking for "running" instances. However, this may impact the performance. For information on setting the option, see [Section 3.1, "Configuring SOA Infrastructure Properties"](#).

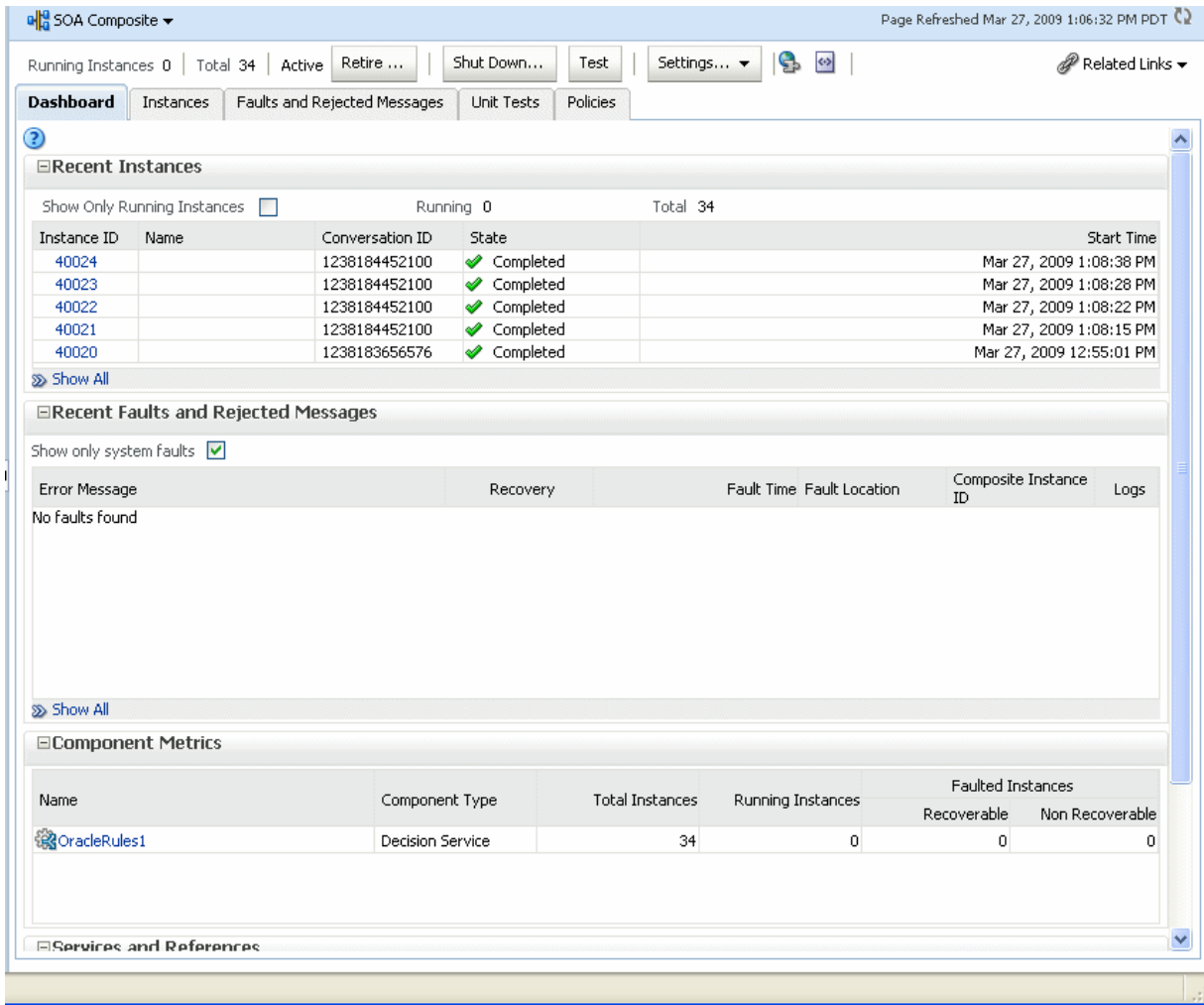
1. Access a Decision Service component from a composite application through one of the following options:

From the SOA Infrastructure Menu...

1. In the navigator, select **soa-infra**.
2. From the **SOA Infrastructure** menu, Select **Home**.
3. Click **Deployed Composites** tab.
4. In the **Composite** table select a specific SOA composite application that includes a Decision Service component.

From the SOA Folder in the Navigator...

1. Expand **soa-infra**.
2. Select a specific SOA composite application that includes a Decision Service component.



2. The **Component Metrics** table on the composite dashboard provides a high-level overview of each Decision Service component. This table includes columns showing the **Component Type**, the **Total Instances**, the **Running Instances**, and the **Faulted Instances** (recoverable and nonrecoverable).
3. Select a Decision Service component in the **Component Metrics** section to display the corresponding Decision Service Component page.

The screenshot displays the OracleRules1 monitoring dashboard. At the top, it shows 'SOA Composite' and 'Page Refreshed Mar 27, 2009 12:35:05 PM PDT'. Below the breadcrumb 'SOAComposite1 [4.0] > OracleRules1', there are tabs for 'Dashboard', 'Instances', 'Faults', and 'Policies'. The 'Recent Instances' section includes a 'Show Only Running Instances' checkbox and a summary table:

Running	Total
0	33

The main table for 'Recent Instances' has columns: Instance ID, State, Start Date, Last Modified Date, and Logs. It lists five completed instances from March 27, 2009.

Instance ID	State	Start Date	Last Modified Date	Logs
decision:9dc40d71-b	Completed	Mar 27, 2009 10:43:	Mar 27, 2009 10:43:06 AM	[Log]
decision:8d67ed23-9	Completed	Mar 27, 2009 10:43:	Mar 27, 2009 10:43:01 AM	[Log]
decision:8ea2718a-5	Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:58 AM	[Log]
decision:77088e04-0	Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:55 AM	[Log]
decision:dfc8e66d-ek	Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:52 AM	[Log]

Below this is a 'Show All' link. The 'Recent Faults' section has a 'Show only system faults' checkbox and a table with columns: Error Message, Fault Time, Component Instance ID, and Logs. It currently shows 'No faults found'.

At the bottom, there is another 'Show All' link and a section for 'Instance Rate per Min (Real-Time Data)'.

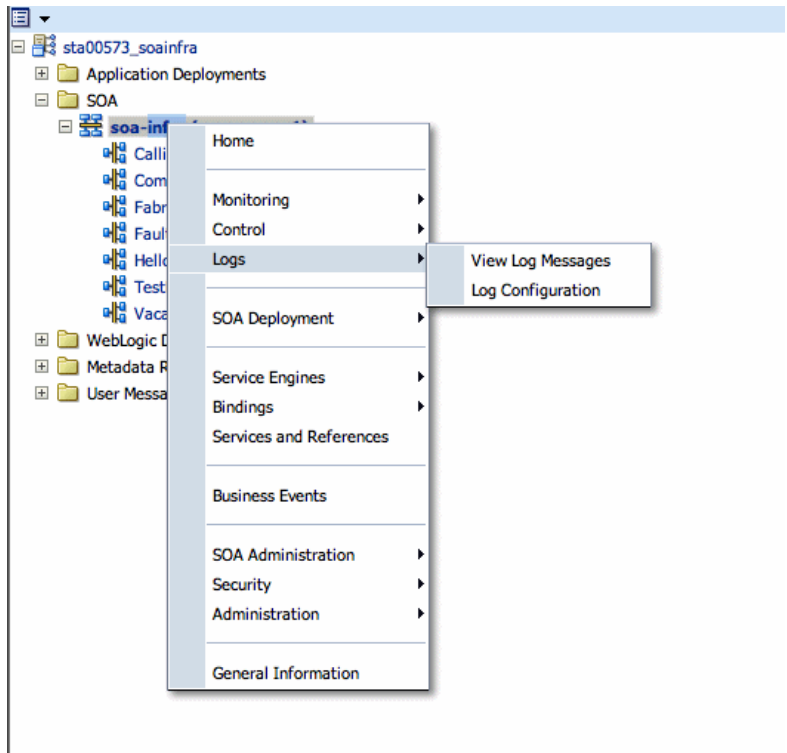
For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances"](#).

19.7 Monitoring Decision Service Component Logs

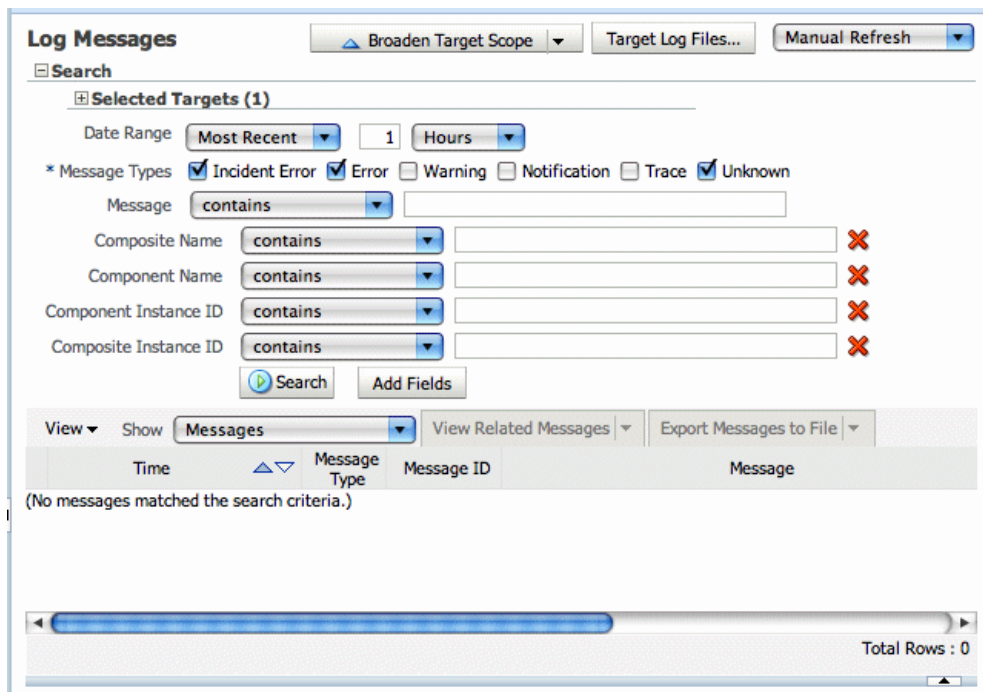
You can monitor Decision Service component logs. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

19.7.1 Viewing Decision Service Component Logs

To view the logs select **soa-infra** and right-click. In the navigation tree select **Logs** and click **View Log Messages**. This displays the Log Messages page.



The Log Messages page opens. Use this page to select target log files.



To access a pre-filtered list of log files for each instance or fault, click in the **Logs** column from any specific page (for example in the Decision Service engine or component's Faults or Instances tables).

For example, from the Faults table, click the **Logs** column.

SOA Infrastructure Home > Business Rules Engine Home

Business Rules Engine (Service Engine)

Dashboard | Statistics | Instances | **Faults** | Deployed Components

The Decision Service faults cannot be recovered.

Search

Error Message Contains:

Fault ID:

Fault Time From: (UTC-08:00) US Pacific Time

Fault Time To: (UTC-08:00) US Pacific Time

Composite Instance ID:

Component Instance ID:

Search Reset

Fault Type: All Faults

Error Message	Fault Time	Composite	Component	Component Instance ID	Logs
Error while executing a rule session	Mar 25, 2009 10:25:35 AM	SOAComposite1 [1.0]	rules	decision:b2e13614-d	
Error while executing a rule session	Mar 24, 2009 4:51:02 PM	SOAComposite1 [1.0]	rules	decision:cdbf34c4-5c	
Error while executing a rule session	Mar 24, 2009 4:48:32 PM	SOAComposite1 [1.0]	rules	decision:25fb9d9f-ba	

19.7.2 Setting the Diagnostic Logging Level with Log Configuration

Use the Log Configuration page to configure the logging level. To open the Log Configuration page, right-click **soa-infra** and select **Logs >Log Configuration**.

sta00573_soainfra

- Application Deployments
- SOA
 - soa-infra (
 - Calling [1]
 - Composit
 - FabricTes
 - FaultFlow
 - HelloWor
 - TestResu
 - Vacation
 - WebLogic Doma
 - Metadata Repos
 - User Messaging

Context Menu:

- Home
- Monitoring
- Control
- Logs**
 - View Log Messages
 - Log Configuration
- SOA Deployment
- Service Engines
- Bindings
- Services and References
- Business Events
- SOA Administration
- Security
- Administration
- General Information

To configure the Decision Service component logging level, expand the `oracle.soa.service.rules` and the `oracle.soa.services.rules.obrtrace` loggers and set the notification level.

Log Configuration

Use this page to configure basic and advanced log configuration settings.

Log Levels | Log Files

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are loggers that are saved in a configuration file and become active when the component is started. The log levels for these loggers are persisted across component restarts. Runtime loggers are automatically created during runtime and become active when a particular feature area is exercised. For example, oracle.j2ee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime loggers are not persisted across component restarts.

View: Runtime Loggers

Search: All Categories

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File
oracle.soa.adapter	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.b2b	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.bpel	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.mediator	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.services.common	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.services.identity	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.services.notification	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.services.rules	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.soa.services.rules.obrtrace	TRACE:1 (FINE)	odl-handler
oracle.soa.services.workflow	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.tip.dvm	NOTIFICATION:1 (INFO) [Inh]	odl-handler
oracle.tip.xref	NOTIFICATION:1 (INFO) [Inh]	odl-handler

Persist log level state across component restarts

Tracing Rule Execution in Fusion Middleware Control Console

This chapter discusses how to perform rule execution tracing by using Oracle Enterprise Manager Fusion Middleware Control Console.

This chapter covers the following sections:

- [Section 20.1, "The Oracle Enterprise Manager Fusion Middleware Control Console"](#)
- [Section 20.2, "Decision Tracing"](#)
- [Section 20.3, "Rule Execution Tracing Using Fusion Middleware Control Console"](#)

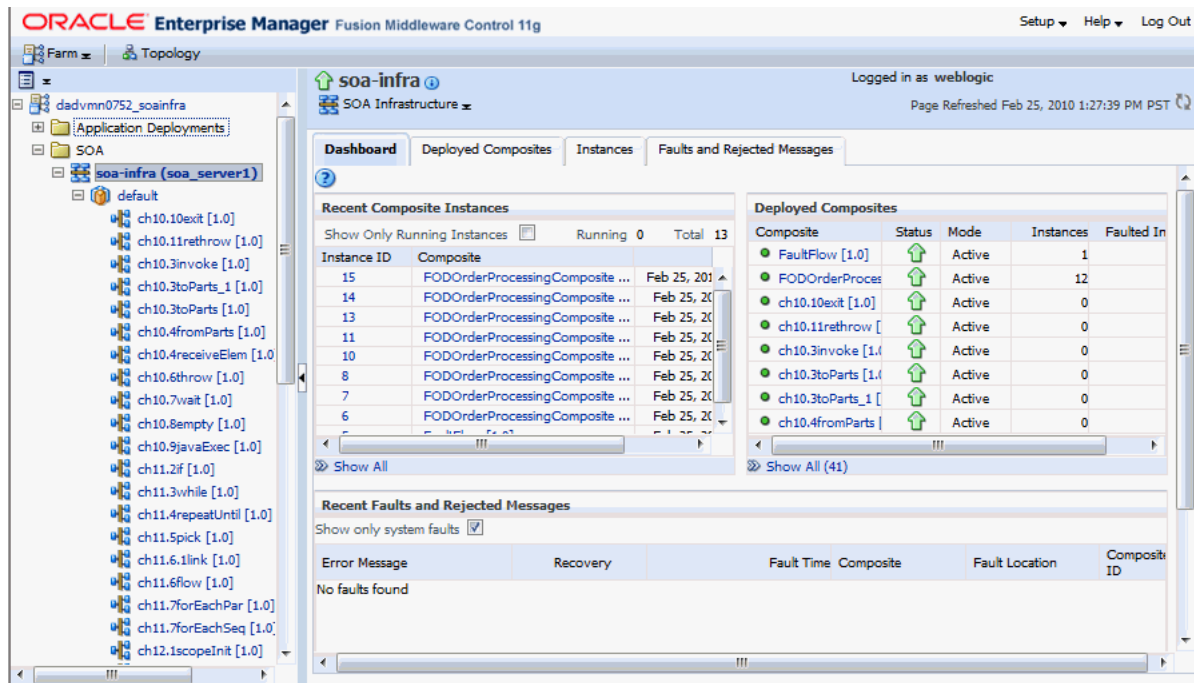
20.1 The Oracle Enterprise Manager Fusion Middleware Control Console

Oracle Enterprise Manager Fusion Middleware Control Console enables you to view the deployed SOA composite applications along with their details. Once you log in to the Fusion Middleware Control Console, you can see the Oracle Fusion Middleware Farm along with the components of the Farm.

When you open the SOA Infra, which contains the SOA Server metrics and the Service Engines, you can view a list of the deployed SOA composites, composite instances as well as any fault that is reported at the time of running a composite instance.

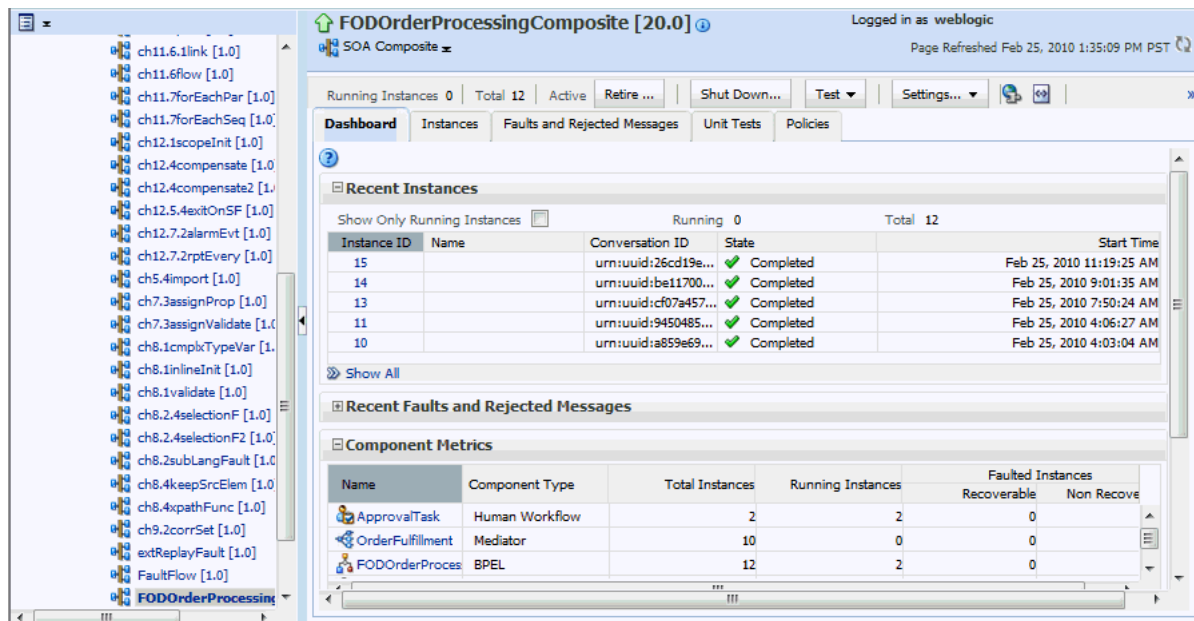
[Figure 20–1](#) displays Oracle Enterprise Manager Fusion Middleware Control Console.

Figure 20–1 Oracle Enterprise Manager Fusion Middleware Control Console



You can click the composite names to view the related instance details, component metrics, and services as shown in Figure 20–2.

Figure 20–2 SOA Composite



20.2 Decision Tracing

You can perform a rule execution trace by using Oracle Enterprise Manager Fusion Middleware Control Console.

A decision trace is a mechanism of tracing rule engine events that occur during the evaluation of rules. The types of events traced are:

- Fact operations (assert, retract, and modify)
- Rules execution
- Rule activation
- Ruleset stack changes
- Rule compilation
- Reset (required for maintaining state during analysis)

Each trace contains information about the event that it traces. For example, a rule trace entry for an executed rule consists of:

- Rule name (RL name)
- Execution sequence number
- List of fact IDs for the facts that matched this rule
- Timestamp in milliseconds

Decision trace levels are similar to the audit levels supported in SOA Suite:

- **Off:** Decision tracing is disabled. The decision component instance is not created at all.
- **Development:** Full decision tracing that contains all the details about facts (listing, operations such as Modify and Assert), rule activation, pop or push rulesets, and so on. It also provides a list of fact IDs on which the executed rules are matched.
- **Production:** The executed rules are traced. All the details about facts, rule activation, pop or push ruleset are not available. The trace do not contain a list of the matching facts IDs.

You can set trace levels either at the SOA Infra level or at the composite level.

[Figure 20-3](#) displays the options to set different trace levels at the SOA Infra level by using Fusion Middleware Control Console.

Figure 20–3 Decision Trace Levels

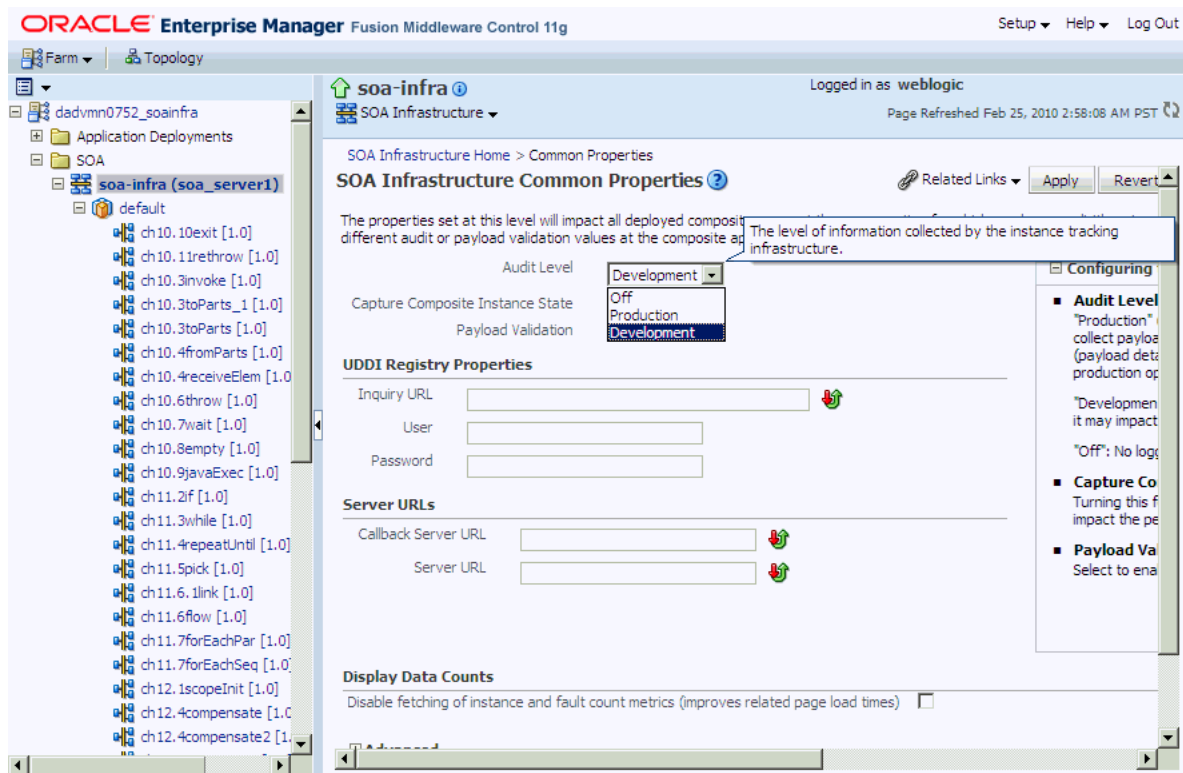


Figure 20–5, "Setting the Decision Trace Level at the Composite Level" displays how to set the composite trace level.

20.3 Rule Execution Tracing Using Fusion Middleware Control Console

You can use Oracle Enterprise Manager Fusion Middleware Control Console to launch rule execution tracing.

20.3.1 Tracing Rule Execution in the Development Level

Setting the decision trace level as Development enables you to view all the details pertaining to a rule that has been executed.

To perform a Development-level rule execution trace:

1. Open the composite application in Fusion Middleware Control Console, as shown in Figure 20–4. The composite under consideration is FOD Order Processing.

You will find a list of the recent composite instances that have been run under the composite Dashboard tab.

Figure 20–4 Opening the SOA Composite

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control Console interface. The main window displays the details for the SOA Composite **FODOrderProcessingComposite [20.0]**. The interface includes a navigation tree on the left, a main dashboard with tabs for **Dashboard**, **Instances**, **Faults and Rejected Messages**, **Unit Tests**, and **Policies**. The **Dashboard** tab is active, showing the following sections:

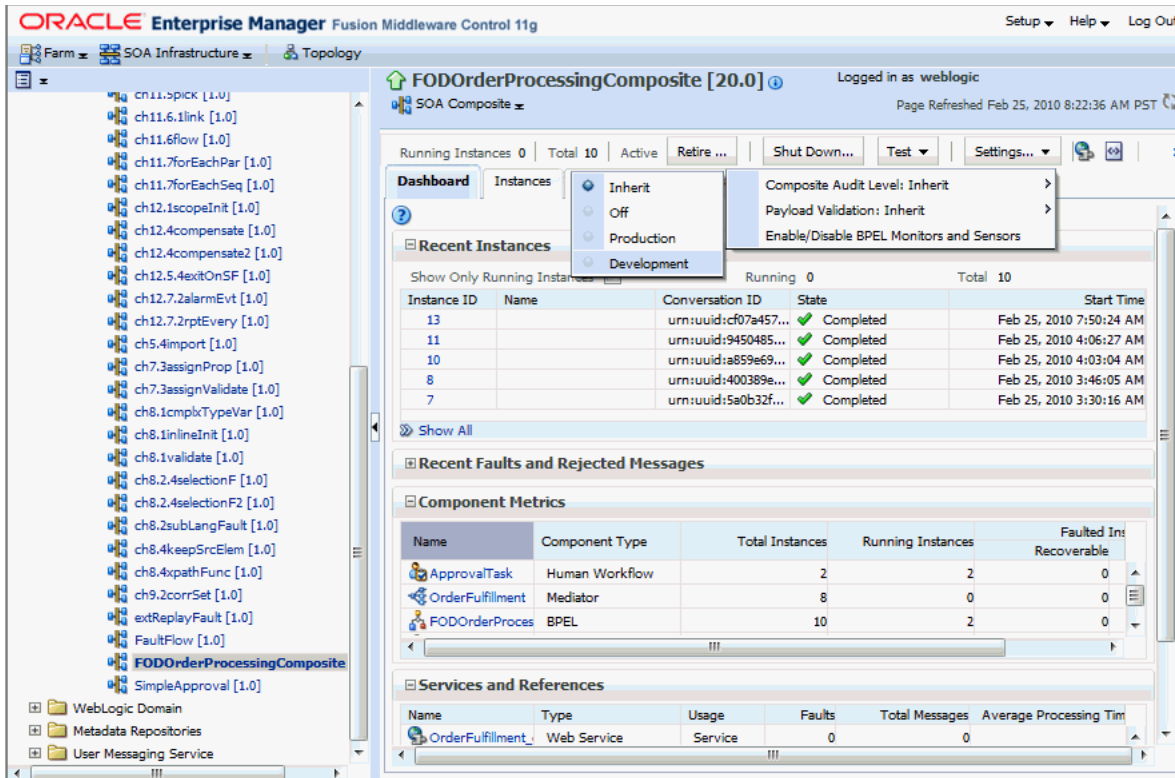
- Recent Instances:** A table showing instance details.

Instance ID	Name	Conversation ID	State	Start Time
13		urn:uuid:cf07a457...	Completed	Feb 25, 2010 7:50:24 AM
11		urn:uuid:9450485...	Completed	Feb 25, 2010 4:06:27 AM
10		urn:uuid:a859e69...	Completed	Feb 25, 2010 4:03:04 AM
8		urn:uuid:400389e...	Completed	Feb 25, 2010 3:46:05 AM
7		urn:uuid:5a0b32f...	Completed	Feb 25, 2010 3:30:16 AM
- Recent Faults and Rejected Messages:** A section for viewing faults and rejected messages.
- Component Metrics:** A table showing metrics for components.

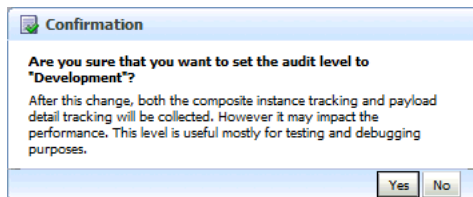
Name	Component Type	Total Instances	Running Instances	Faulted Inst. Recoverable
ApprovalTask	Human Workflow	2	2	0
OrderFulfillment	Mediator	8	0	0
FODOrderProces	BPEL	10	2	0
- Services and References:** A section for viewing services and references.

2. Click the **Settings** list, select **Composite Audit Level**, and then **Development** as shown in Figure 20–5 to set the trace level as Development at the composite level.

Figure 20–5 Setting the Decision Trace Level at the Composite Level



3. Click Yes in the Confirmation dialog box.



4. Click Test and then client to invoke a test instance of the composite as shown in Figure 20–6 to view the decision traces corresponding to different input parameters, such as the OrderID.

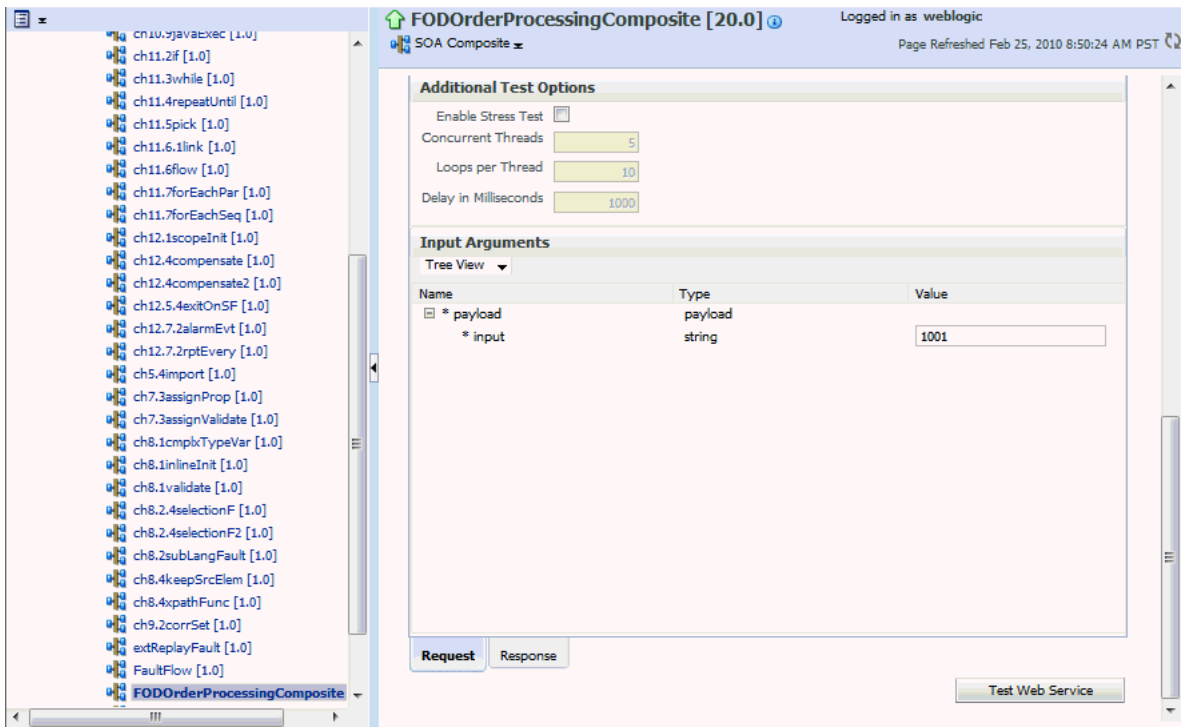
Figure 20–6 Invoking a Test Instance of the Composite

The screenshot displays the Fusion Middleware Control Console for the **FODOrderProcessingComposite [20.0]**. The interface includes a tree view on the left showing the composite's structure, with **FODOrderProcessingComposite** selected. The main panel shows the **Recent Instances** table, which lists completed instances with their IDs, names, conversation IDs, and start times. Below this is the **Component Metrics** table, which provides a summary of the composite's components, including **ApprovalTask** (Human Workflow), **OrderFulfillment** (Mediator), and **FODOrderProces** (BPEL). The **Services and References** table at the bottom shows the composite's dependencies, such as **OrderFulfillment_** (Web Service), **client** (Web Service), and **FedEx** (JCA Adapter). A dropdown menu is open over the **Test** button, showing the selected service **OrderFulfillment_ep** and its client **client**.

5. Enter an OrderID, for example 1001, in the **Value** field in the Input Arguments section on the Test Web Service page and click the **Test Web Service** button as shown in Figure 20–7.

Based on the input OrderID, the service invokes a BPEL process instance containing the details of the OrderID, and the rule that is relevant to the order details is executed.

Figure 20–7 Entering Input Parameter Value



- Click **Launch Message Flow Trace** under the **Response** tab to open the Flow Trace window as shown in Figure 20–8.

Figure 20–8 Launching the Decision Trace



- Click the Decision Service Component instance called **DiscountDictionary** in the Trace section as shown in [Figure 20-9](#) to view the actual rule execution trace.

Figure 20-9 Opening the Instance Detail Window for the Decision Service Component

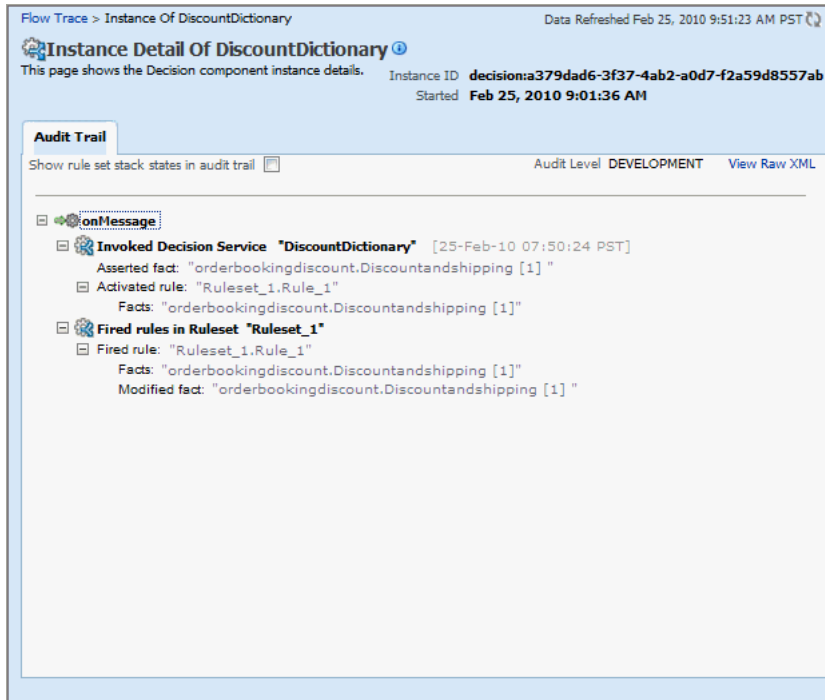
The screenshot displays the 'Flow Trace' window. At the top, it shows 'Data Refreshed Feb 25, 2010 9:18:46 AM PST' and 'ECID 00001564sV8F4E8JviZBF11BXJPw0000DD'. Below this, there is a 'Faults' section with a table that currently shows 'No faults found'. The 'Trace' section contains a table with the following data:

Instance	Usage	Type	State	Time	Composite Instance
client	Service	Web Service	Completed	Feb 25, 2010 9:01:35 AM	FODOrderProcessingComposite
FODOrderProcessingProcess		BPEL Component	Completed	Feb 25, 2010 9:01:36 AM	FODOrderProcessingComposite
GetOrderInfo	Reference	JCA Adapter	Completed	Feb 25, 2010 9:01:35 AM	FODOrderProcessingComposite
GetCustomerInfo	Reference	JCA Adapter	Completed	Feb 25, 2010 9:01:35 AM	FODOrderProcessingComposite
DiscountDictionary		Decision Service Component	Completed	Feb 25, 2010 9:01:36 AM	FODOrderProcessingComposite
OrderFulfillment		Mediator Component	Completed	Feb 25, 2010 9:01:36 AM	FODOrderProcessingComposite
USPS	Reference	JCA Adapter	Completed	Feb 25, 2010 9:01:36 AM	FODOrderProcessingComposite

Note: You can also view the values of composite variables before and after invocation of business rule component. You need to click the BPEL process component instance in the Flow Trace window, and then click the relevant "payload". In this case, the BPEL component name is FODOrderProcessingProcess.

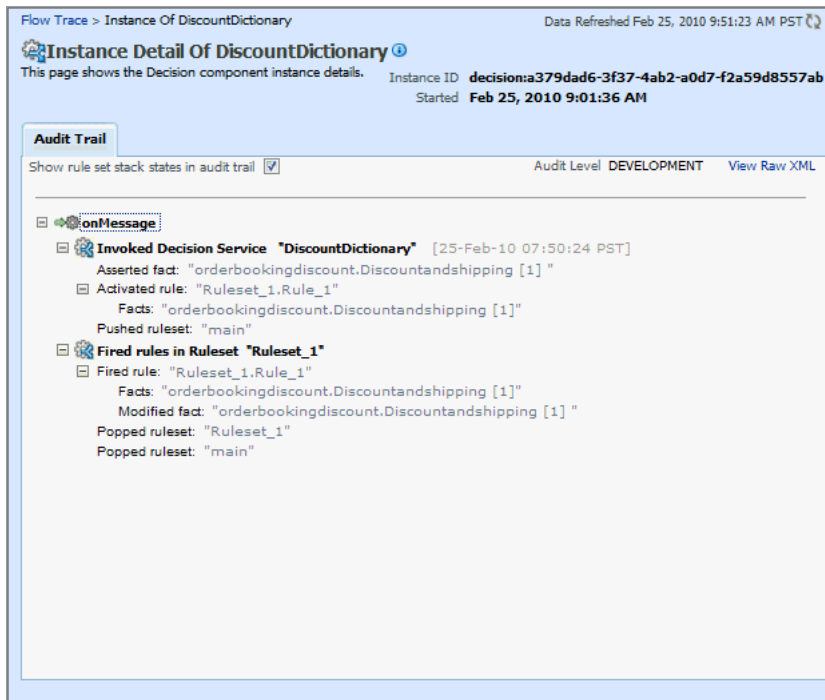
[Figure 20-10](#) displays execution trace for the Decision Service Component called DiscountDictionary.

Figure 20–10 Viewing the Rule Execution Trace



- Click the **Show rule set stack states in audit trail** checkbox to view further details of the rule execution as shown in [Figure 20–11](#).

Figure 20–11 Viewing Detailed Rule Execution Trace



In [Figure 20–11](#), you can see that the Development-level trace report displays the fact name, activated rule, as well as the pushed and popped ruleset names.

The following table lists the entries of the trace report:

Element	Description
Invoked Decision Service Name	Displays the name of the decision service component that is invoked.
Asserted Fact	Displays the name of the fact that is passed by the BPEL service to the decision service component. This is based on the input parameter provided by the user, which as per the example is the OrderID 1001.
Activated Rule	Displays the name of the rule that is activated, along with the name of the fact that activated the rule.
Pushed ruleset	Displays the name of the ruleset that has been invoked when the fact is asserted.
Fired rules in Ruleset	Displays the name of the ruleset whose rule is executed.
Fired rule	Displays the name of the rule that is executed.
Modified fact	Displays the name of the fact that has been modified as a result of the rule execution. This modified fact is then passed by the decision service component to the BPEL service.
Popped ruleset	Displays the name of the ruleset for which execution is complete and so, the ruleset is taken out of the execution queue.

Note: The entry "Invoked Decision Service Name" will appear differently in different scenarios:

- For AS10.1.3.x to AS11 upgraded rules dictionaries with `AssertExecuteWatch` patterns, the entry appears in the trace report as "Invoked Decision Service."
- For AS10.1.3.x to AS11 upgraded rules dictionaries with `CallFunction` patterns, the entry appears in the trace report as "Invoked Decision Function."
- For AS11 created dictionaries, the entry is displayed as "Invoked Decision Function."

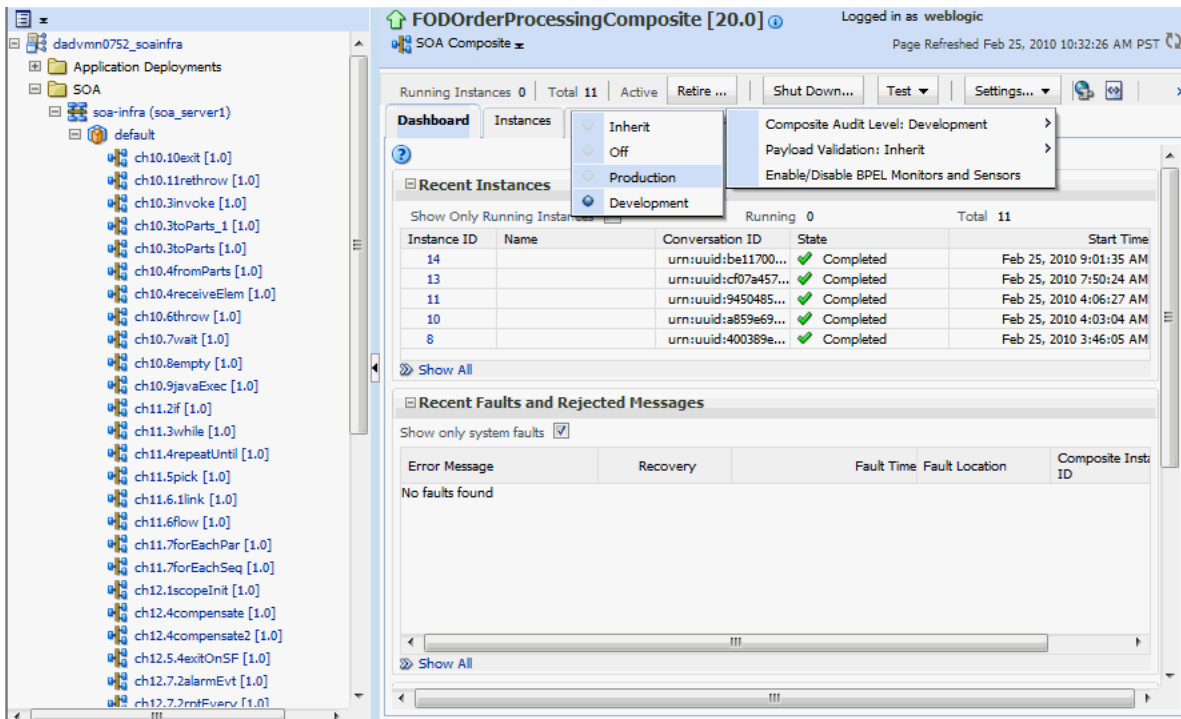
20.3.2 Tracing Rule Execution in the Production Level

Setting the decision trace level as Production provides a truncated report on the rule execution trace. It only displays the ruleset and the rules that have been fired and does not display details about facts, rule activation, and so on.

The process of Production-level tracing is similar to the Development-level tracing. However, for Production-level tracing, you need to do the following:

In Fusion Middleware Control Console, after opening the composite, select **Production** from the **Composite Audit Level** from the **Settings** menu as shown in [Figure 20-12](#).

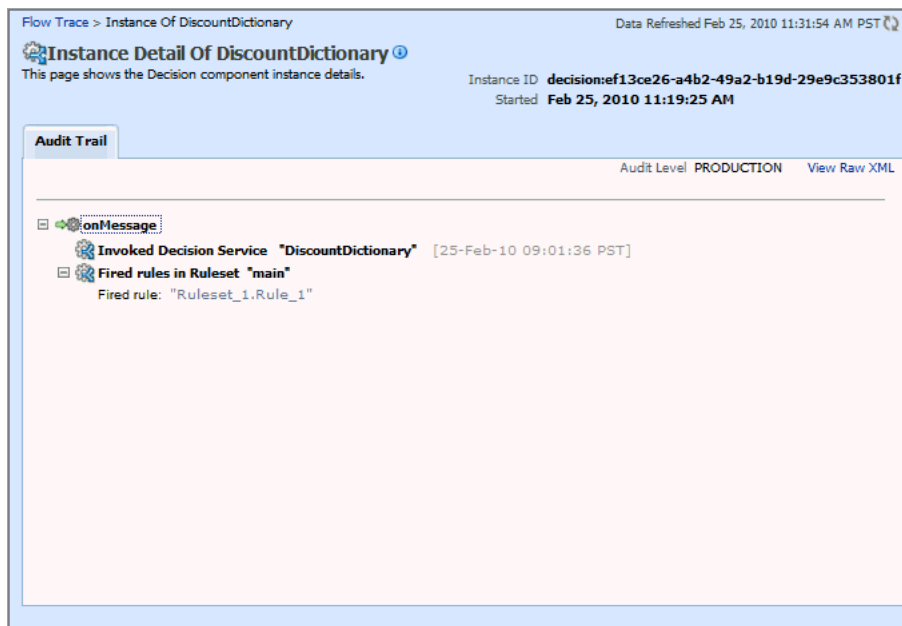
Figure 20–12 *Setting the Decision Trace Level as Production*



You can also set this trace level at the SOA Infra level.

Figure 20–13 displays the Flow Trace window that displays the trace report.

Figure 20–13 *Viewing Production Level Rule Execution Trace*



In Figure 20–13, you can see that the Production-level trace report contains only the name of the ruleset and the rules that have been fired. In addition, the **Show rule set stack states in audit trail** checkbox that provides a drill-down detailed trace report is unavailable in the Production-level trace report.

Part VIII

Administering Human Task Service Components and Human Workflow Service Engines

This part describes how to administer human task service components and human workflow service engines.

This part includes the following chapters:

- [Chapter 21, "Configuring Human Workflow Service Components and Engines"](#)
- [Chapter 22, "Monitoring Human Workflow Service Components and Engines"](#)
- [Chapter 23, "Managing Human Workflow Service Components and Engines"](#)

Configuring Human Workflow Service Components and Engines

This chapter describes how to configure human task service components and the human workflow service engine.

This chapter includes the following topics:

- [Section 21.1, "Configuring Human Workflow Notification Properties"](#)
- [Section 21.2, "Configuring Human Workflow Task Service Properties"](#)
- [Section 21.3, "Configuring Oracle HTTP Server for Task Form Attachments"](#)
- [Section 21.4, "Configuring the Pluggable Notification Service"](#)
- [Section 21.5, "Configuring Multiple Send Addresses"](#)
- [Section 21.6, "Configuring Notification Retries"](#)
- [Section 21.7, "Configuring the Identity Service"](#)
- [Section 21.8, "Seeding Users, Groups, and Application Roles using LDAP Tools"](#)

21.1 Configuring Human Workflow Notification Properties

You can configure human workflow notification properties, such as setting the notification mode for messages and setting actionable addresses. These properties are used to notify users of changes to the state of a task. Workflow notifications can use three types of addresses:

- From address: For sending notifications.
- Actionable address: For receiving actionable responses.
- Reply to address: For receiving reply notifications.

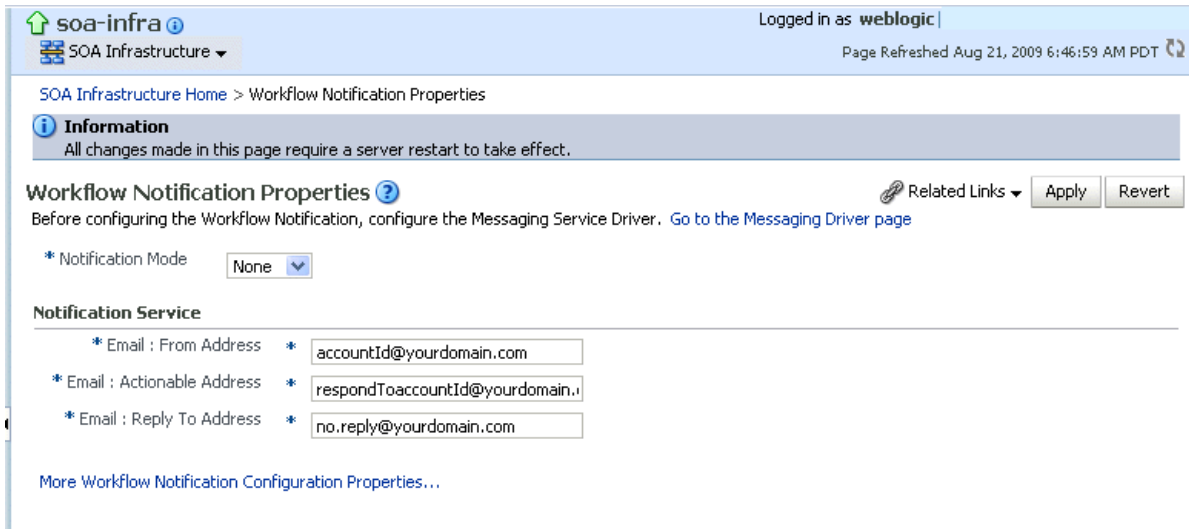
Note: In the following procedures, you must configure your channel drivers before configuring your workflow notification properties. Ensure that you know all necessary driver addresses before beginning (for example, the incoming IMAP and outgoing SMTP e-mail servers).

To configure human workflow notification properties:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select SOA Administration > Workflow Notification Properties .	1. Right-click soa-infra .
	2. Select SOA Administration > Workflow Notification Properties .

The Workflow Notification Properties page appears.



You now configure Oracle User Messaging Service to send and receive notifications. During configuration, you provide the addresses that are used by human workflow.

2. Click **Go to the Messaging Driver Page**.
3. Click **Configure Driver** in the upper right section of the page. This takes you to a page to configure the messaging service driver, including properties such as the following:
 - Incoming IMAP and outgoing SMTP e-mail servers
 - Outgoing server user names and passwords
 - List of sender addresses and the default sender address (The addresses you specify for these properties must match the addresses you specify in the **Email: From Address** and **Email: Actionable Address** fields of the Workflow Notification Properties page.)

For handling incorrect e-mail responses, the e-mail driver should be configured to handle incoming mails. This action enables human workflow participants to receive and forward notifications. Messaging drivers support the various messaging transports. See section [Section 27.4.1, "How to Configure a Driver"](#) for instructions.

usermessagingdriver-email Logged in as weblogic
 User Messaging Email Driver Page Refreshed Feb 20, 2009 1:33:11 PM PST

Information
 All fields on this page will require a restart to take effect.

Email Driver Properties Related Links Apply Revert

For detailed description of the driver properties, refer to the Administrator's Guide for Oracle SOA Suite.

Common Configuration

Supported Delivery Types: EMAIL
 Capability: SEND, RECEIVE
 Cost:
 Speed:
 Sender Addresses:
 Default Sender Address:

Supported Protocols:
 Supported Carriers:
 Supported Content Types: text/plain, text/html, multipart/mixed, multipart/alternative, multipart/related
 Supported Status Types: DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE, USER_REPLY_ACKNOWLEDGEMENT_SUCCESS, USER_REPLY_ACKNOWLEDGEMENT_FAILURE
 Sending Queues Info: OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSI

Driver-Specific Configuration

Name	Description	Mandatory	Encoded Credential	Value
MailAccessProtocol	E-mail receiving protocol. The possible values are IMAP and POP3. Required only if e-mail receiving is supported on the driver instance			<input type="text" value="IMAP"/>
RetryLimit	This value specifies the number of times to retry connecting to the incoming mail server, if the connection is lost due to some reason. The default value is -1 which means no limit to the number of tries.			<input type="text" value="-1"/>

Notes:

- The host name and IP address of the e-mail server with which you configure must also be added to the /etc/hosts file of the server on which Oracle SOA Suite is running. For example, if the host name is xyz.oracle.com and the IP address is aa.bb.cc.dd, then add this information to the /etc/hosts file.
- After you configure the inbound (IMAP) e-mail server, the outbound (SMTP) e-mail server, or both, you must restart the managed Oracle WebLogic Server on which the SOA Infrastructure is configured for these setting to take effect.

4. Return to the Workflow Notification Properties page.
5. Specify the mode of the notification service. The possible values are:
 - **ALL:** The e-mail, short message service (SMS), instant message (IM), and voice channels are configured and notification is sent through any channel that you use.
 - **EMAIL:** Only the e-mail channel is configured for sending notification messages.
 - **NONE:** No channel is configured for sending notification messages. This is the default setting.
6. Specify notification channel values:

Field	Description	Example
Email: From Address	<p>Enter the outgoing e-mail address from which end users receive notifications.</p> <p>The address you specify must match the sender addresses and the default sender address that you specify on the Email Driver Properties page of the Oracle User Messaging Service.</p> <p>Note: You can only receive error messages when the outgoing e-mail address is also configured to receive incoming messages. This ensures that error messages from incorrect or nonexistent e-mail addresses are captured by the server. Even if you configure a separate incoming account in the Email: Reply To Address field, error messages do not appear in the server logs.</p>	<p>workflow.notifications@mycompany.com</p>
Email: Actionable Address	<p>Enter the incoming email address for performing task actions. The actionable e-mail account is the account in which task action-related e-mails are received and processed by human workflow.</p> <p>The address you specify must match the sender addresses and the default sender address that you specify on the Email Driver Properties page of the Oracle User Messaging Service.</p>	<p>workflow.actions@mycompany.com</p>
Email: Reply To Address	<p>Enter the address to display in e-mails sent out from Oracle SOA Suite. It can be a dummy address such as no.reply@myoracle.com or a valid address. If a valid address is provided, and configured in the Messaging Driver page, then if a user replies to actionable e-mails, human workflow sends an automated e-mail indicating the correct usage. This is another incoming e-mail account.</p>	<p>workflow.no.reply@mycompany.com</p>

7. Click **Apply**.
8. If you want to configure advanced notification properties in the System MBean Browser, click **More Workflow Notification Configuration Properties**. Properties that display include, but are not limited to, the following. Descriptions are provided for each property.
 - **ASNSDriverIMAddress** — The address at which to receive incoming instant messages (IMs).
 - **CustomNSDriverPropertyNames** — Returns custom notification services property names.
 - **FaxCoverPageCount** — The return number of configured fax cover pages.
9. Make changes appropriate to your environment.

Note: If your IM message contains content that appears to be actionable, note that acting upon the task from within the message does not cause any action to be taken. For example, acting upon the task in the following IM message does not cause any action to occur.

Help desk request for wfaulk Task Help desk request for wfaulk requires your attention. NOTE: You can act on the task by copy-pasting one of following lines as your response.

```
RESOLVED : [[NID]] :
Pt12uRUu9H+Xem4NYS2o7dKDtqNLs42d4YIs8yS08Gn0ZVYFsb1SQVenRukRE+
IcE7c4XDb+tPazvP v9T2iA0qylDg0bTaVxX13HhsrCYAg= : [[NID]]
UNRESOLVED : [[NID]] :
xT9106rbaGRAey+BtgQyJIXk62mkFtCe7ocKxwNLIsPzyE5/7AnGwXlBodEgQxr6
jorvsw2F54k/C1 r5mvyAJpAp4I4TekOHi4qhQ3eSbBHdzET1IL4F3qV/KZ/BAUsq :
[[NID]]
```

For more information about notifications and the User Messaging Service, see the following documentation:

- [Part X, "Administering Oracle User Messaging Service"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

21.2 Configuring Human Workflow Task Service Properties

You can assign the actionable e-mail account name, specify workflow session time out and custom classpath URL properties values, configure dynamic assignment and task escalation functions of the assignment service, and set additional human workflow properties.

Dynamic assignment functions select a particular user or group from either a group, or from a list of users or groups. The selection is made according to criteria specific to the particular dynamic assignment function.

To configure human workflow task service properties:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select SOA Administration > Workflow Task Service Properties .	1. Right-click soa-infra . 2. Select SOA Administration > Workflow Task Service Properties .

The upper part of the Workflow Task Service Properties page displays the field for the actionable e-mail account and the automatically defined dynamic assignment functions.

soa-infra | SOA Infrastructure | Logged in as weblogic | Page Refreshed Feb 18, 2009 4:02:05 PM PST

SOA Infrastructure Home > Workflow Task Service Properties

Workflow Task Service Properties

* Actionable Email Account:

* Workflow Service Session Timeout (in minutes):

Workflow Custom Classpath URL:

Dynamic Assignment and Task Escalation Functions

Register custom dynamic assignment functions with the Workflow Service by specifying the class implementing the function and optional parameters.

View

Function Name	Classpath
ROUND_ROBIN	oracle.bpel.services.workflow.assignment.dynamic.patterns.RoundRobin
LEAST_BUSY	oracle.bpel.services.workflow.assignment.dynamic.patterns.LeastBusy
MANAGERS_MANAGER	oracle.bpel.services.workflow.assignment.dynamic.patterns.TaskEscalationManagersManager
MOST_PRODUCTIVE	oracle.bpel.services.workflow.assignment.dynamic.patterns.MostProductive

Parameters:

Name	Value
No parameters found	

2. Enter the following details.

Function	Description
Actionable Email Account	Enter the incoming, actionable e-mail account to use. The default account name is Default , which is the account configured in Section 21.1, "Configuring Human Workflow Notification Properties." If a different account name is specified in this field, then create and configure the account as described in Section 21.5, "Configuring Multiple Send Addresses."
Workflow Service Session Timeout (in minutes)	Enter the length of time that a user logged into the Oracle BPM Worklist can remain inactive before their session expires, and they are required to log in again. This also applies to authenticated sessions created through one of the <code>TaskQueryService</code> authentication methods.
Workflow Custom Classpath URL	Enter the URL classpath. This is the classpath used by workflow services to look up classes implementing custom dynamic assignment and task escalation functions, custom callbacks, and customized instances of the system resource bundle, <code>WorkflowLabels.properties</code> . This can be any valid URL (either a local file path or remote URL). The classpath can specify either a directory or a JAR file. If the URL specifies a directory, it must include a trailing <code>'/'</code> character.

3. Go to the **Dynamic Assignment and Task Escalation Functions** section.

The dynamic assignment functions are defined in the following table. You can also create your own functions and register them with the workflow service.

Function	Type	Description
ROUND_ROBIN	Dynamic assignment	This function picks each user or group in turn. This function uses the initialization parameter <code>MAX_MAP_SIZE</code> . This parameter specifies the maximum number of sets of users or groups for which the function can maintain <code>ROUND_ROBIN</code> counts. The dynamic assignment function holds a list of users and groups in memory for each group (or list of users and groups) on which it is asked to execute the <code>ROUND_ROBIN</code> function.
LEAST_BUSY	Dynamic assignment	This function picks the user or group with the least number of tasks currently assigned to it.
MANAGERS_MANAGER	Task escalation	This function picks the manager's manager.
MOST_PRODUCTIVE	Dynamic assignment	This function picks the user or group that has completed the most tasks over a certain time period (by default, the last seven days). This function uses the initialization parameter <code>DEAFULT_TIME_PERIOD</code> . This parameter specifies the length of time (in days) over which to calculate the user's productivity. This value can be overridden when calling the <code>MOST_PRODUCTIVE</code> dynamic assignment function. Use an XPath function by specifying an alternative value as the third parameter in the XPath function call.

4. Click a function to display its parameters and values in the **Parameters** section.
5. Click **Add** to add a function. You are prompted to specify the following:
 - Function name
 - Class path
 - Function parameter name
 - Function parameter value

Note that you cannot add multiple properties to a function on this page. To do that, use the System MBean Browser, which is available by selecting **Administration > System MBean Browser** from the **SOA Infrastructure** menu.
6. Click **OK**.
7. If you want to update the value of a parameter in a function, select the function in the **Dynamic Assignment and Task Escalation Functions** table.

The parameter value displays for editing.
8. Update the value.
9. Expand the **Advanced** section.

The **Advanced** section displays the following properties:

Advanced ?

* Worklist Application URL

* Pushback Assignee

* Portal Realm Mapping

Task Auto Release Configuration

Priority	Default Duration	Percentage of Expiration
5	P5D	70
2	P2D	40
1	P1D	30
4	P4D	60

[More Workflow Taskservice Configuration Properties...](#)

These properties are defined in the following table.

Properties	Description
Worklist Application URL	In the e-mails that are sent for tasks, the link to the Oracle BPM Worklist is read from this property. This element identifies the URL. Configuring this is useful if the custom Oracle BPM Worklist is built. The tag <code>PC_HW_TASK_ID_TAG</code> in this URL is replaced with the task ID when constructing the URL for the e-mail.
Pushback Assignee	A task can be pushed back to the previous approver or previous initial assignees. The original assignees do not need to be the approver, as they may have reassigned the task, escalated the task, and so on. The possible values for this element are INITIAL_ASSIGNEES and APPROVER .
Portal Realm Mapping	Used when authenticating a user from an HTTP servlet request through the task query service method <code>createContext</code> (for example, when Oracle BPM Worklist runs in a single sign-on (SSO) environment). The HTTP servlet request does not carry information about the identity service realm to which the remote user belongs; this parameter is used to configure which realm to use to authenticate the user in an HTTP servlet request remote user.

Properties	Description
Task Auto Release Configuration	<p>When a task is assigned to a group, application role, or multiple users, a user must first acquire the task before working on it. Once the task is acquired, other users cannot work on the task. If a user acquires a task, but does not act on it, the task is eventually automatically released, allowing other users to acquire the task. This prevents a user from acquiring tasks, then forgetting to work on them. This prevents others from working on them. Task auto release enables you to configure the time period that elapses after a user acquires a task and before the system automatically releases the task and makes it available again to other users. The auto release durations can be configured as a default duration and as a percentage of the expiration duration of a given task. The auto release durations can be configured differently for tasks of different priority.</p> <p>For example, assume the task automatic release duration for priority 2 tasks is set to 50%, with a default duration of 12 hours. If a priority 2 task is set to expire in two days, the task is automatically released after one day (which is 50% of the expiration duration). If no expiration date is set for the task, then the task is automatically released after 12 hours (which is the default automatic release duration).</p>

10. Make changes appropriate to your environment.
11. Click **Apply**.
12. If you want to configure advanced task service properties in the System MBean Browser, click **More Workflow Taskservice Configuration Properties**. See Step 8 of [Section 21.1, "Configuring Human Workflow Notification Properties"](#) for a list of some advanced properties that are displayed.
13. Make changes appropriate to your environment.

For more information about the task service and assignment service, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

21.3 Configuring Oracle HTTP Server for Task Form Attachments

When adding an attachment to the task form through Oracle HTTP Server (OHS), the location, `/ADFAttachmentHelper`, must be included in the OHS configuration. For example, add the following to the `mod_wl_ohs.config` file of OHS, under `instance_home/config/OHS/ohs_instance`:

```
<Location /ADFAttachmentHelper>
    SetHandler weblogic-handler
    PathTrim /weblogic
    ErrorPage http://WEBLOGIC_HOME:WEBLOGIC_PORT/
</Location>
```

21.4 Configuring the Pluggable Notification Service

Custom notification service implementations can be plugged in and used instead of the default notification service providers. You can plug in a custom notification service for all channels or selectively for specific channels. For example, the notification service provides the ability to plug in an existing SMS implementation instead of the default SMS notification service.

21.4.1 Pluggable Notification Service Implementation

To plug in a notification service, perform one of the following tasks:

- Implement interface
`oracle.bpel.services.notification.ICustomNotificationService`
- Extend the abstract class
`oracle.bpel.services.notification.AbstractCustomNotificationServiceImpl`.

This interface has methods for the following channels:

- E-mail
- Voice
- SMS
- Instant messaging (IM)

The plugged-in notification service can override the default providers for one or more channels. When the custom notification service is overriding the default implementation for a subset of channels, the methods corresponding to the other channels (channels that are not overridden) are not called by the notification service. Those methods can just return null. Alternatively, the implementation can extend the following abstract class:

```
oracle.bpel.services.notification.AbstractCustomNotificationServiceImpl
```

This provides empty implementations for each of the channels. In that case, the implementation can just extend the methods for the interested channels.

The implementation and its dependent classes must be available in the classpath of Oracle WebLogic Server.

21.4.2 Pluggable Notification Service Registration

Once the implementation is available, you register it in the System MBean Browser.

To register the pluggable notification service:

1. Log in to Oracle Enterprise Manager Fusion Middleware Control Console.
2. In the navigator, expand the **SOA** folder.
3. Right-click **soa-infra**, and select **Administration > System Mbean Browser**.
The System MBean Browser displays on the right side of the page.
4. Expand **Application Defined MBeans > oracle.as.soainfra.config > Server: server_name > HWFMailerConfig > human-workflow**.
5. Click the **CustomNSDriverPropertyNames** property on the right side of the page.
6. Record the values displayed by **CustomNSDriverPropertyNames** for the **All**, **Voice**, **Email**, **Fax**, **Pager**, **SMS**, and **IM** properties.
7. Click **Return**.
8. Click the **Operations** tab.
9. Click **setCustomNSDriverPropertyValue**.

The screenshot shows the Oracle SOA Infrastructure System MBean Browser. The left pane displays a tree view of MBeans under 'Application Defined MBeans', with 'human-workflow' selected. The right pane shows the details for the 'setCustomNSDriverPropertyValue' operation. The MBean Name is 'oracle.as.soainfra.config:Location=soa_server1,name=human-workflow,type=HWFMailer,Application=soa-infra'. The Operation Name is 'setCustomNSDriverPropertyValue' and the Description is 'Set custom notification services property value'. The Return Type is 'java.lang.String'. Below this, a 'Parameters' table is shown:

Name	Description	Type	Value
propertyName	A Key for identifying and setting properties	java.lang.String	<input type="text"/>
propertyValue	A Configuration Property Value	java.lang.String	<input type="text"/>

Below the parameters table, there is a 'Return Value' field with a text input area.

10. In the **Value** field for **propertyName**, enter one of the values you noted down for the **All**, **Voice**, **Email**, **Fax**, **Pager**, **SMS**, and **IM** properties on the CustomNSDriverPropertyNames page. Note the following details:
 - If you are overriding the default implementation for only the e-mail channel, use the **Email** value in the **Value** field for **propertyName** and the complete class name of your implementation in the **Value** field for **propertyValue**.
 - The override for other channels is configured the same way as the e-mail channel.
 - Using the value of the **All** property in the **Value** field for **propertyName** refers to an implementation for all specified channels.
11. In the **Value** field for **propertyValue**, provide the complete class name of your implementation.
12. Click **Invoke**.
13. Restart Oracle WebLogic Server.

21.5 Configuring Multiple Send Addresses

It may be necessary in some processes to distinguish e-mail notification based on the from address of the e-mail. For example, a human resources BPEL process sends e-mails with the from address set as `HR@yourcompany.com`, while a finance BPEL process sends e-mails with the from address set as `finance@yourcompany.com`.

To configure multiple send addresses:

1. Log in to Oracle Enterprise Manager Fusion Middleware Control Console.
2. In the navigator, expand the **SOA** folder.
3. Right-click **soa-infra**, and select **Administration > System Mbean Browser**.
The System MBean Browser displays on the right side of the page.
4. Expand **Application Defined MBeans > oracle.as.soainfra.config > Server: server_name > HWFMailerConfig > human-workflow**.

5. Under the **Attributes** tab, record the value of the **ASNSDrivers** attribute. By default, only the **Default** value is available.
6. Click **Return**.
7. Click the **Operations** tab.
8. Click **setASNSDriver**.
9. For **propertyName**, enter a value (for this example, `EmailFromAddress`).
10. For **propertyValue**, enter a value (for this example, `HR@yourcompany.com`).
11. For **driverName**, enter a value (for this example, `HR`).
12. Click **Invoke**.
13. Add as many accounts as the number of from addresses needed:
 - For **propertyName**, enter a value (for this example, `EmailFromAddress`).
 - For **propertyValue**, enter a value (for this example, `finance@yourdomain.com`).
 - For **driverName**, enter a value (for this example, `Finance`).
14. Click **Invoke**.

The **ASNSDriver** attribute now shows all the accounts created in the previous steps and the **getCustomNSDriverPropertyValue** operation now shows the addresses being used for each of the drivers.
15. Using Oracle WebLogic Server Administration Console, install multiple Oracle User Messaging Service e-mail drivers, one for each from address.
16. Configure the e-mail drivers to use the required from address for sending outgoing e-mails.
17. In Oracle JDeveloper during design time, use `HR` as the account name to configure an e-mail activity for an HR BPEL process and `Finance` as the account name to configure an e-mail activity for the finance BPEL process.

21.6 Configuring Notification Retries

Oracle SOA Suite provides support for reliable notifications. The outbound notification creates a notification message with a unique notification ID and stores the message and unique ID in the dehydration store. It then enqueues this unique ID in the JMS queue and commits the transaction. A message-driven bean (MDB) listening on this queue dequeues the message and sends a notification to the user. If there is any notification failure, the notification retries three times. If the retries all fail, it marks this notification as errored.

21.7 Configuring the Identity Service

By default, the identity service uses the embedded LDAP server in Oracle WebLogic Server as the default authentication provider. You can, however, configure Oracle WebLogic to use an alternative authentication provider, such as Oracle Internet Directory, Microsoft Active Directory, or Sun iPlanet, along with the default authenticator.

This section describes how to add an authentication provider and create users and groups in the authentication provider using either Oracle WebLogic Administration Console or Oracle Directory Services Manager.

This section describes the following topics:

- [Section 21.7.1, "Adding an Authentication Provider"](#)
- [Section 21.7.2, "Creating Users and Groups in the Authentication Provider"](#)
- [Section 21.7.3, "Configuring the Directory Service"](#)

Note: Oracle Fusion Middleware supports providers that enable the User and Role API to interact with custom identity stores. For more information, visit the following URL:

http://www.oracle.com/technology/products/id_mgmt/opss/index.html

21.7.1 Adding an Authentication Provider

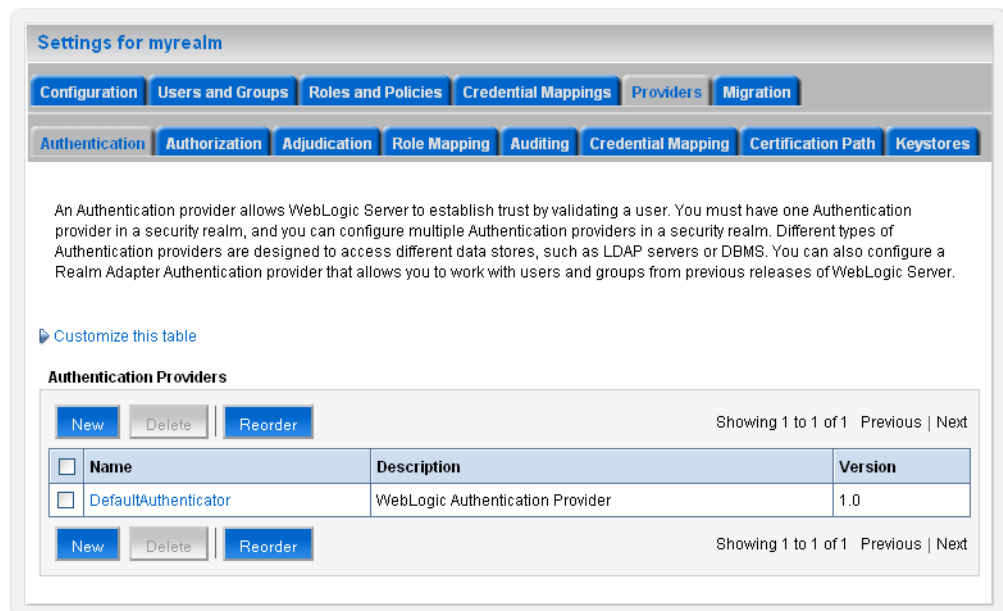
You can add an authentication provider to a security realm using Oracle WebLogic Server Administration Console.

To add an authentication provider:

1. Log in to the Oracle WebLogic Server Administration Console.
2. Click **Security Realms** in the **Domain Structure** pane, and click the name of a realm in the list (**myrealm**, for example).
3. Click **Providers > Authentication**.

The Authentication Providers page appears.

Figure 21–1 Security Realm Authentication Providers



4. Click **New** to add a new authentication provider.
- The Create a New Authentication Provider page appears.

Figure 21–2 Create a New Authentication Provider

5. Type a name for the provider in the **Name** field, choose the authenticator type using the **Type** drop-down list, and click **OK**.

For example, you can type `OIDAuthenticator` as the name and choose **OracleInternetDirectoryAuthenticator** as the type for a provider that authenticates users using the Oracle Internet Directory.

Similarly, you can type a name and choose **ActiveDirectoryAuthenticator**, **iPlanetAuthenticator**, **openLDAPAuthenticator**, or **NovellAuthenticator** from the list to specify the corresponding authenticator.

Note: When using Oracle Internet Directory as the authentication provider, you must set the `orclsslinteropmode` attribute to 0 (zero) using Oracle Directory Services Manager. See [Section 21.7.3, "Configuring the Directory Service"](#) for more information.

6. On the **Providers > Authentication** page, click the authenticator that you just created.

The settings for the authentication provider appears.

Figure 21–3 Settings for the Authentication Provider

7. Choose **SUFFICIENT** from the **Control Flag** drop-down list, and click **Save**.

This specifies that if a user is authenticated successfully using this authenticator, WebLogic should accept the authentication and not continue to invoke any additional authenticators. If the authentication fails, Oracle WebLogic Server attempts to authenticate the user using the next authenticator in the list.

If you set the **Control Flag** to **SUFFICIENT**, ensure that all subsequent authenticators also have the **Control Flag** set to **SUFFICIENT**. Likewise, ensure that the **Control Flag** of the default authenticator is set to **SUFFICIENT** as well.

8. Click **Provider Specific** to enter the details for the authenticator server.
9. Enter the provider-specific information about the authentication provider, check the **Use Retrieved User Name as Principal** check box, and click **Save**.

[Table 21–1](#) lists information you must specify. Use the default setting for the rest of the fields.

Table 21–1 Provider Specific Authentication Server Settings

Field	Description
Host	The host name or IP address on which the authenticator server is running.
Port	The port number on which the authenticator server is running.
Principal	The Distinguished Name (DN) of the authenticator server user that Oracle WebLogic Server should use when connecting to the server.
Credential	The credential (usually a password) used to connect to the authenticator server.
User Base DN	The base Distinguished Name (DN) of the tree in the LDAP directory that contains users.
Group Base DN	The base Distinguished Name (DN) of the tree in the LDAP directory that contains groups.

Table 21–1 (Cont.) Provider Specific Authentication Server Settings

Field	Description
Use Retrieved User Name as Principal	Specifies whether to use the user name retrieved from the LDAP server as the principal in the subject.
User Name Attribute	The attribute of an LDAP user object class that specifies the name of the user (for example, UID, CN, MAIL).

If the user attribute being used is other than the default `username` attribute in the LDAP server, add the following entries to the identity store instance in the `jps-config.xml` file:

```
<property name="username.attr" value="desired_attr"/>
<property name="user.login.attr" value="desired_attr"/>
```

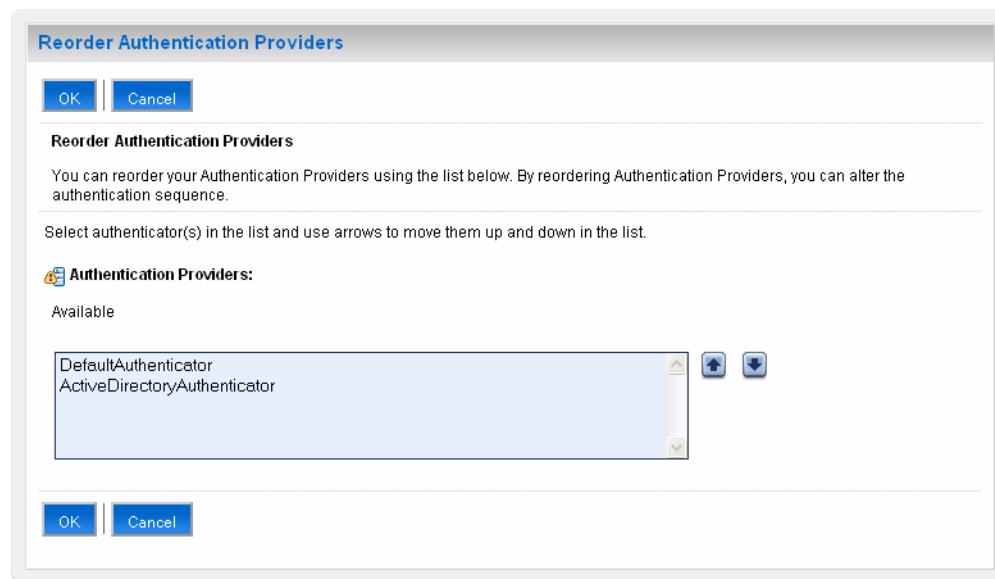
where `desired_attr` can be one of `CN`, `UID`, or `MAIL`.

10. Click **Security Realms > Providers > Authentication** to return to the list of authentication providers.

11. Click **Reorder**.

The Reorder Authentication Providers page appears.

Figure 21–4 Reorder Authentication Providers



12. Select the new authentication provider, click the **Up** arrow to move the provider to the top of the list, and click **OK**.

After reordering, the **DefaultAuthenticator** should appear at the bottom of the list. This action enables the system to handle logins as `weblogic` that are not typically in an LDAP directory, but still must be authenticated to start the server.

Note that if multiple authentication providers are configured, authentication falls through the list of authenticators according to the control flags set. But the Java Portlet Specification (JPS) provides authorization against only the first entry in the list of providers.

21.7.2 Creating Users and Groups in the Authentication Provider

You can create users and groups in the authentication provider using either Oracle WebLogic Server Administration Console or Oracle Directory Services Manager.

21.7.2.1 Creating Users and Groups Using WebLogic Console

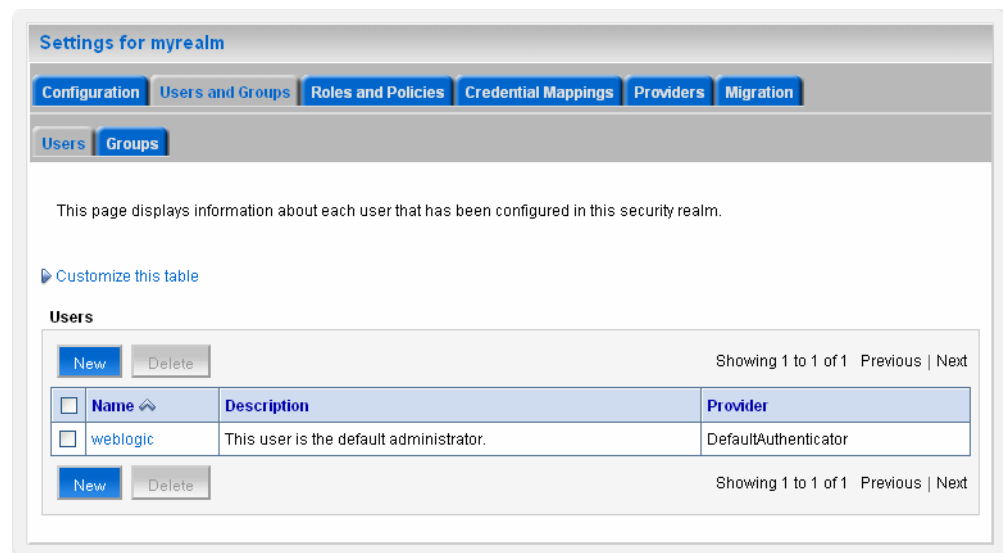
You can create users and groups for a specific provider, and define user and group membership, using the Oracle WebLogic Server Administration Console.

To create a user using WebLogic Console:

1. Log in to the Oracle WebLogic Console.
2. Click **Security Realms** in the **Domain Structure** pane, and click the name of a realm in the list (myrealm, for example).
3. Click **Users and Groups > Users**.

The Users page appears.

Figure 21–5 WebLogic Console Users and Groups



4. Click **New** to add a new user. The Create a New User page appears.
5. Enter the required information about the user, and click **OK**.

[Table 21–2](#) lists information you must specify.

Table 21–2 User Properties

Field	Description
Name	(Required) The name of the new user.
Description	A description of the new user.
Provider	The provider for the user.
Password	The password associated with the login name for the new user.
Confirm Password	Confirmation of the password.

The system creates the new user in the specified provider and shows the Users page. You can configure group membership for the user, as required.

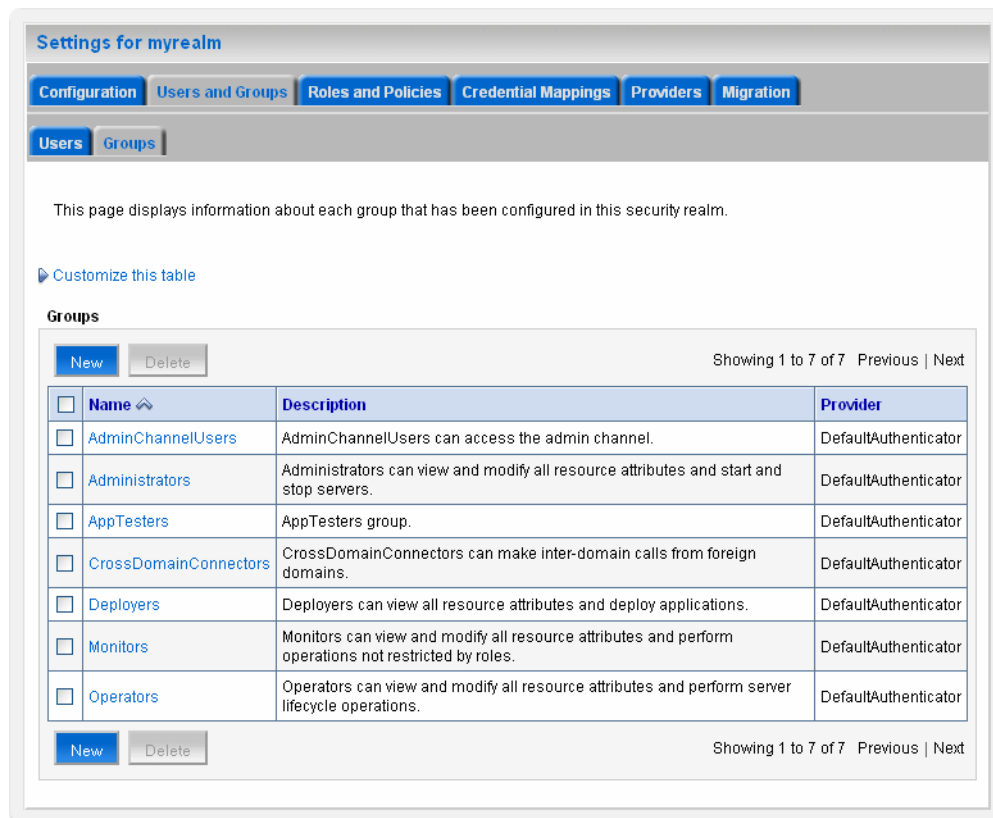
6. To specify group membership for the user, click the newly-created user in the list. The settings for the new user page appear.
7. Click **Groups** to specify group membership for the user.
8. Select a group in the **Available** list and click the right arrow to move it to the **Chosen** list.
You can press Ctrl-Click to select multiple groups to move.
9. Click **Save**.

To create a group using WebLogic Console:

1. Click **Users and Groups > Groups**.

The Groups page appears.

Figure 21–6 WebLogic Console Groups



2. Click **New** to add a new group. The Create a New Group page appears.
3. Enter the required information about the group, and click **OK**.

Table 21–3 lists information you must specify.

Table 21–3 Group Properties

Field	Description
Name	(Required) The name of the new group.

Table 21–3 (Cont.) Group Properties

Field	Description
Description	A description of the new group.
Provider	The provider for the group.

The system creates the new group in the specified provider and shows the Groups page. You can configure group membership for the group, as required.

- To specify group membership for the group (specify parent groups), click the newly-created group in the list. The settings for the new group page appear.
- Click **Membership** to add the group to other groups.
- Select a parent group in the **Available** list and click the right arrow to move it to the **Chosen** list.

You can press Ctrl-Click to select multiple groups to move.

- Click **Save**.

21.7.2.2 Creating Users and Groups Using Oracle Internet Directory

You can create users and groups using Oracle Internet Directory through the Oracle Directory Services Manager.

To connect to Oracle Internet Directory from the Oracle Directory Services Manager:

- Launch the Oracle Directory Services Manager by navigating to the following URL using a Web browser:

```
http://host_name:port/odsm/faces/odsm.jspx
```

where *host_name* and *port* are the host name and the managed server port number on which Oracle Internet Directory is running.

- Click the **Connect to a directory** link and choose **Create a New Connection** in the drop-down menu. The New Connection dialog appears.
- Select **OID** as the directory type, enter values in the required fields, and click **Connect**.

Table 21–4 lists information you can specify.

Table 21–4 Group Properties

Field	Description
Name	The name of the connection.
Server	(Required) The host name or IP address of the system on which Oracle Internet Directory is running.
Port	(Required) The port number on the system on which Oracle Internet Directory is running.
SSL Enabled	Select to enable a Secure Sockets Layer (SSL) communication.
User Name	(Required) The user name used to log in to Oracle Internet Directory.
Password	(Required) The password associated with the user name.
Start Page	The start page after logging into Oracle Internet Directory.

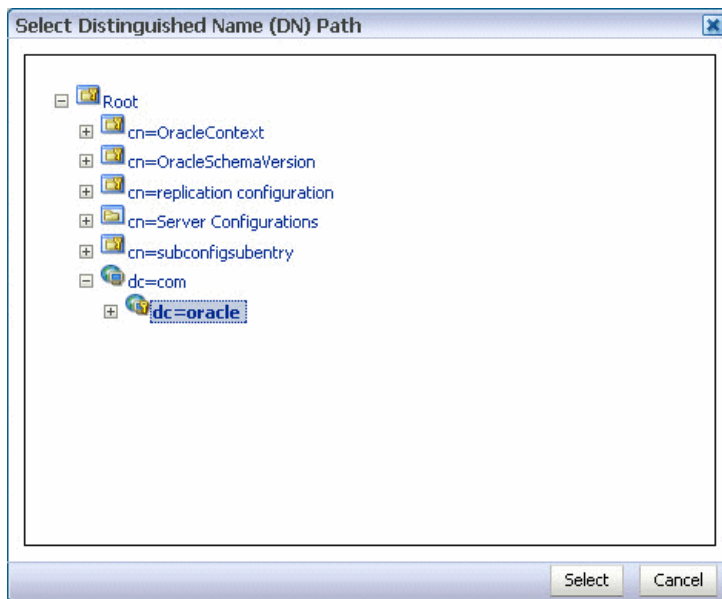
The Oracle Directory Services Manager Home tab appears.

4. Click the **Data Browser** tab. You can use this tab to create and remove entries.

To create a domain:

1. Click the **Create a new entry** button in the **Data Tree** pane. The Entry Properties page of the Create New Entry wizard appears.
2. Click the **Add** button to add the required object class for the domain. The Add Object Class dialog box appears.
3. Type the name of the object class. When the correct object class appears in the **Name** list, select it, and click **OK**.
4. Repeat Steps 2 and 3 to add all the required object classes for the domain. Generally, **top**, **domain**, and **orclContainer** are the object classes required for a domain.
5. Click **Browse** to choose the parent of the domain. The Select Distinguished Name (DN) Path dialog box appears.

Figure 21–7 Select Distinguished Name (DN) Path (Domain)



6. Select the parent of the domain and click **Select**. You can create a hierarchy of entries by selecting the appropriate parent domains.
7. Click **Next** in the Create New Entry dialog box. The Mandatory Properties page of the Create New Entry wizard appears.
8. Type and select values for the required fields, and click **Next**.

Table 21–5 lists information you can specify.

Table 21–5 Mandatory Properties (Domain)

Field	Description
dc	(Required) The domain component.
Relative Distinguished Name	(Required) The relative distinguished name of the user.

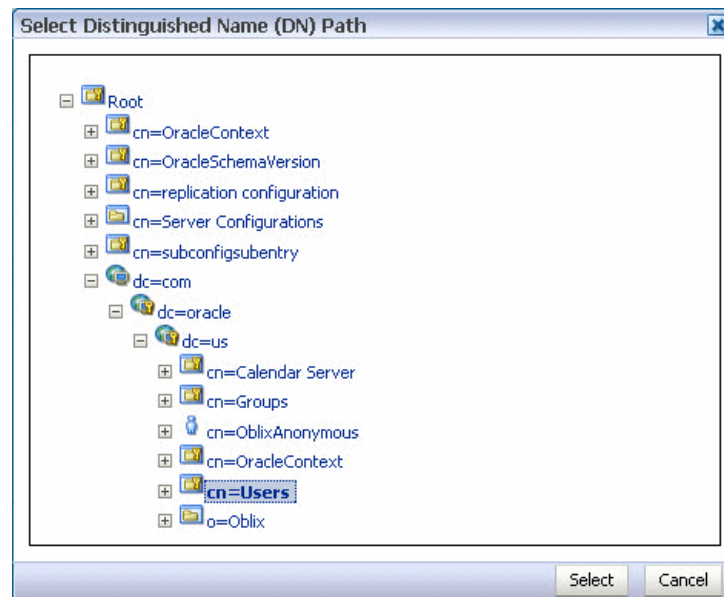
The Status page of the Create New Entry wizard appears.

9. Verify the status of the new domain, and click **Finish** to create the new domain.

To create a user:

1. Click the **Create a new entry** button in the **Data Tree** pane. The Entry Properties page of the Create New Entry wizard appears.
2. Click the **Add** button to add the required object class for the user. The Add Object Class dialog box appears.
3. Type the name of the object class. When the correct object class appears in the **Name** list, select it, and click **OK**.
4. Repeat Steps 2 and 3 to add all the required object classes for the user. Generally, **top**, **person**, **inetorgperson**, **organizationalPerson**, and **orcluser** are the object classes required for a user.
5. Click **Browse** to choose the parent of the user. The Select Distinguished Name (DN) Path dialog box appears.

Figure 21–8 Select Distinguished Name (DN) Path (User)



6. Select the parent of the user and click **Select**.
7. Click **Next** in the Create New Entry dialog box. The Mandatory Properties page of the Create New Entry wizard appears.
8. Type and select values for the required fields, and click **Next**.

Table 21–6 lists information you can specify.

Table 21–6 Mandatory Properties (User)

Field	Description
cn	(Required) The common name.
sn	(Required) The surname (last name).
Relative Distinguished Name	(Required) The relative distinguished name of the user.

The Status page of the Create New Entry wizard appears.

9. Verify the status of the new user, and click **Finish** to create the new user.
10. Click the entry for the newly-created user in the **Data Tree** pane. The **Person** tab for the user appears.

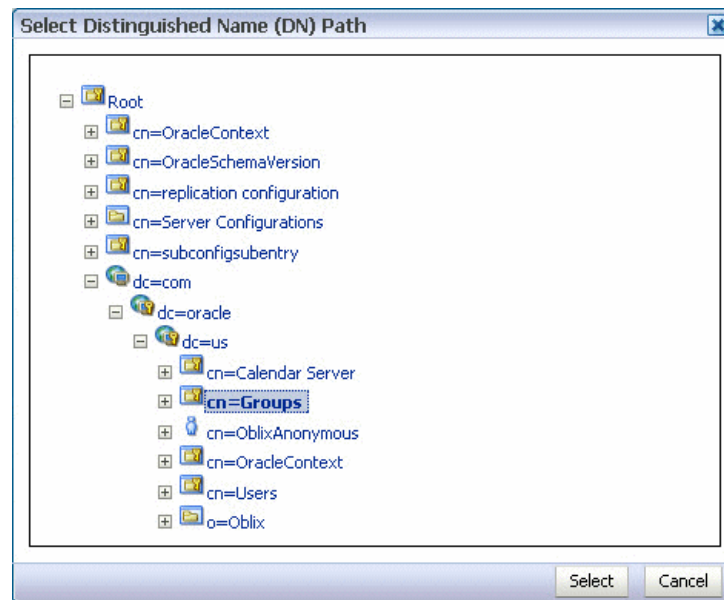
Figure 21–9 User Information: Person Tab

The screenshot shows the 'Person' tab for a user named 'user1'. At the top, there is a header with the user's name and an 'Apply' button. Below the header, the 'Distinguished Name' is listed as 'cn=user1,cn=Users, dc=us,dc=oracle,dc=com'. The 'Created by' and 'Modified by' fields both show 'cn=orcladmin', and the 'Created at' and 'Modified at' fields both show 'March 16, 2009 6:49:29 AM PDT'. The main content area is divided into two sections: 'Basic User Information' and 'Contact Information'. The 'Basic User Information' section includes fields for 'User Name' (filled with 'user1'), 'First Name', 'Last Name' (filled with 'user1'), 'Title', 'Manager', 'Employee Number', 'Email Address', and 'Upload Photo' (with a 'Browse...' button). The 'Contact Information' section includes fields for 'Postal Address', 'Home Postal Address', 'Telephone Number', and 'Mobile'. A vertical scrollbar is visible on the right side of the form.

11. Enter details about the user, and click **Apply**.

To create a group:

1. Click the **Create a new entry** button in the **Data Tree** pane. The Entry Properties page of the Create New Entry wizard appears.
2. Click the **Add** button to add the required object class for the group. The Add Object Class dialog box appears.
3. Type the name of the object class. When the correct object class appears in the **Name** list, select it, and click **OK**.
4. Repeat Steps 2 and 3 to add all the required object classes for the group. Generally, **top**, **groupOfUniqueNames**, and **orclGroup** are the object classes required for a group.
5. Click **Browse** to choose the parent of the group. The Select Distinguished Name (DN) Path dialog box appears.

Figure 21–10 Select Distinguished Name (DN) Path (Group)

6. Select the parent of the group and click **Select**.
7. Click **Next** in the Create New Entry dialog box. The Mandatory Properties page of the Create New Entry wizard appears.
8. Type and select values for the required fields, and click **Next**.

[Table 21–7](#) lists information you can specify.

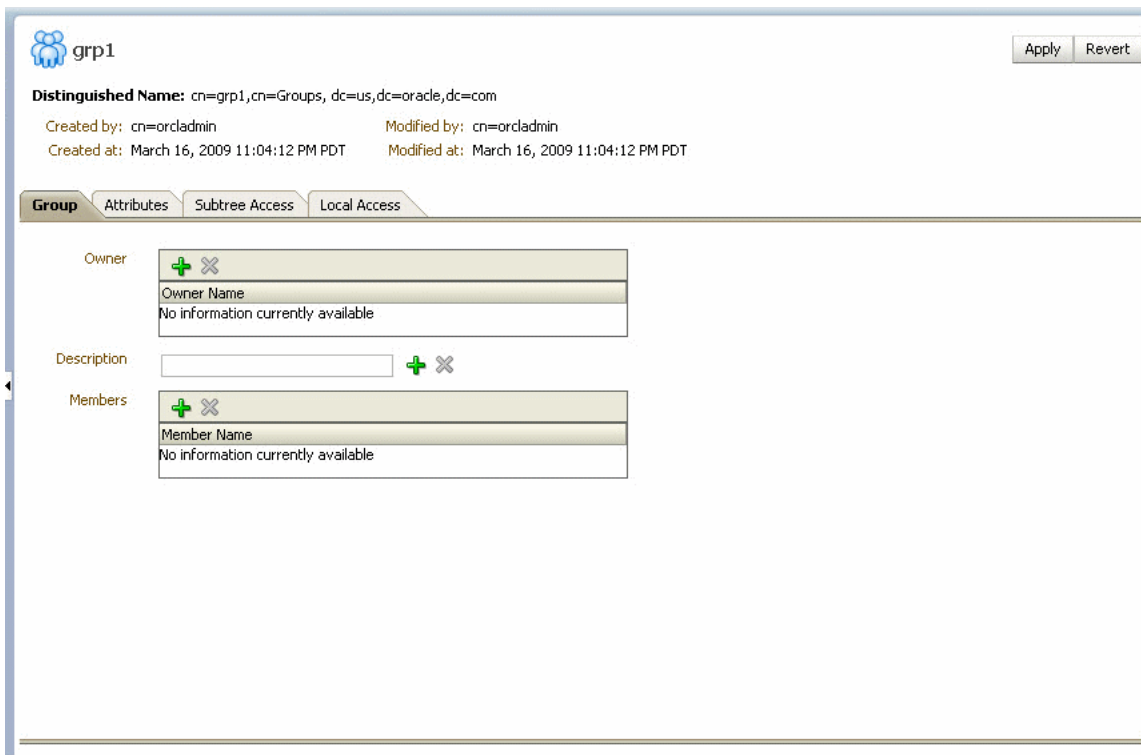
Table 21–7 Mandatory Properties

Field	Description
cn	(Required) The common name.
Relative Distinguished Name	(Required) The relative distinguished name of the group.

The Status page of the Create New Entry wizard appears.

9. Verify the status of the new group, and click **Finish** to create the new group.
10. Click the entry for the newly-created group in the **Data Tree** pane. The **Group** tab for the group appears.

Figure 21–11 Group Information: Group Tab



11. Specify details about the group, and click **Apply**.

To delete an entry:

1. Select an entry in the **Data Tree** pane.
2. Click the **Delete** this entry button in the **Data Tree** pane.

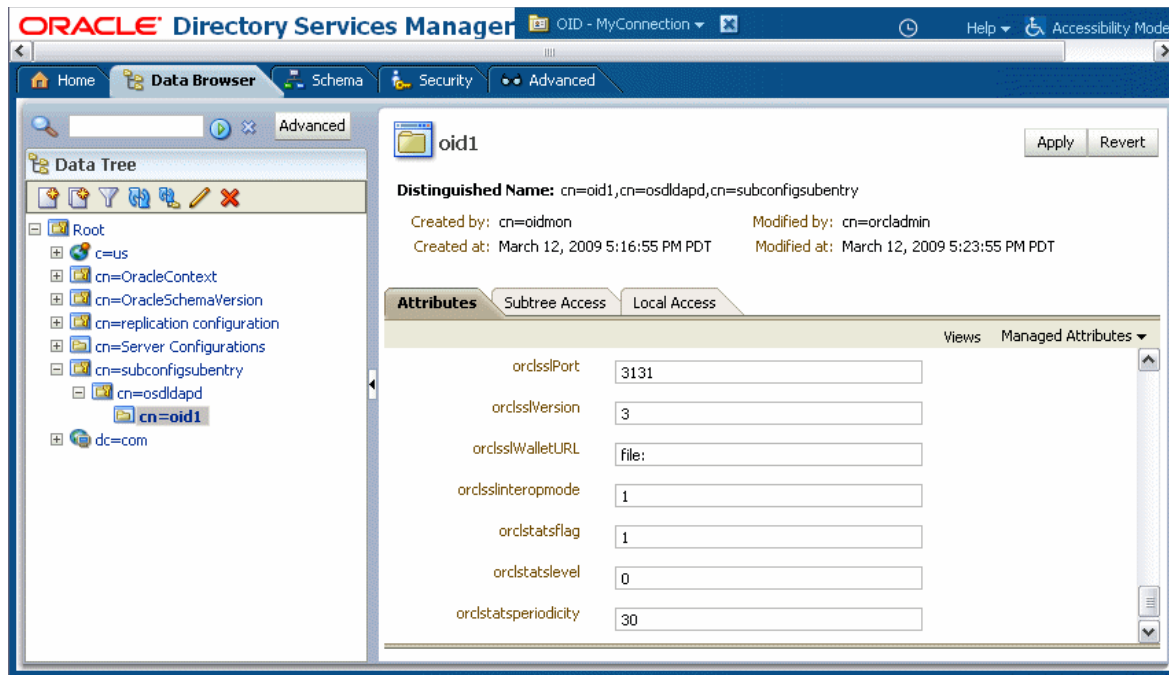
21.7.3 Configuring the Directory Service

When using Oracle Internet Directory as the authentication provider, you must set the `orclsslinteropmode` attribute to 0 (zero) using Oracle Directory Services Manager.

To configure the directory service:

1. Launch Oracle Directory Services Manager and choose an Oracle Internet Directory connection using the drop-down list.
2. Click the **Data Browser** tab.
3. Expand the `cn=subconfigsubentry > cn=osldapd > cn=oid1` nodes.

Figure 21–12 Oracle Directory Services Manager Data Browser



4. In the Attributes tab, set the **orclsslinteropmode** attribute to 0.
5. Click the **Apply** button.

21.7.4 Customizing the Identity Provider

To customize the identity provider (for example, to handle user and role information stored in home grown solutions), see the 11g R1 release notes.

21.8 Seeding Users, Groups, and Application Roles using LDAP Tools

This section provides an overview of the procedures required for seeding users, groups, and application roles with LDAP tools.

When you create a task, you assign humans to participate in and act upon the task. Participants can perform actions upon tasks during run time from Oracle BPM Worklist, such as approving a vacation request, rejecting a purchase order, providing feedback on a help desk request, or some other action. There are three types of participants:

- Users
- Groups
- Application roles

For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

21.8.1 Changing the Default Password in the Embedded LDAP Server

The password credential is accessible from the Oracle WebLogic Server Administration Console by selecting **Security > Embedded LDAP** for your domain.

For instructions on changing the default password credential, see Chapter 9, "Managing the Embedded LDAP Server" of *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

21.8.2 Seeding Users or Groups through the LDAP Browser

1. Start an LDAP browser (for example, openLdap browser, ldapbrowser, jXplorer, and so on). See the documentation for your browser for instructions.
2. Connect to the LDAP server by providing the host name, port number on which the server is running, and the administration user credentials with which to log in.
 - For Embedded LDAP:
 - a. The default managed server port number is 7001.
 - b. The administration credential username is `cn=admin`.
 - c. The administration credential password is what you set in [Section 21.8.1, "Changing the Default Password in the Embedded LDAP Server."](#)
 - For OIDm:
 - a. The default port number is 3060.
 - b. The administration username is `cn=orcladmin`.
 - c. The administration password is the password for the LDAP server.
3. Seed a user or group through the browser by performing the following steps:
 - a. Select a parent under which to add a user or group.
 - b. Select the **Edit** menu and choose an appropriate option to add a new entry.
 - c. Enter all required attribute values for the entry.
4. Seed users or groups through the LDIF file by performing the following steps:
 - a. Select the domain under which to seed the users or groups.
 - b. Select the **LDIF** menu and choose to import an LDIF file.
 - c. In the Import LDIF File dialog, browse for and select the LDIF file and click **Import**.

Similarly, the users or groups seeded on the LDAP server can be exported to an LDIF file by selecting the **Export** option from the **LDIF** menu.
5. Add attributes to the users or groups by performing the following steps:
 - a. Select an entry for which to add a new attribute.
 - b. Right-click and choose the option to add a new attribute.
 - c. In the Add Attribute dialog, provide the name and value of the attribute.

You can only add attributes that are defined in the LDAP server schema.
6. Delete attributes for users or groups by performing the following steps:
 - a. Select an entry for which to delete a new attribute.
 - b. Select an attribute from the list of attributes and delete it.

21.8.3 Seeding Application Roles using WLST Scripts

For instructions on using the WebLogic Scripting Tool (WLST) to seed application roles, see Chapter 4, "Infrastructure Security Custom WLST Commands" of *Oracle Fusion Middleware WebLogic Scripting Tool Command Reference*.

21.8.4 Seeding Application Roles in Oracle Enterprise Manager Fusion Middleware Control Console

1. In the navigator, select the appropriate Oracle WebLogic Server under **WebLogic Domain** > *Farm_Domain_name*.
2. In the right pane, select **WebLogic Domain** -> **Security** -> **Application Roles**.
3. Create an application role by performing the following steps:
 - a. Select the **Create** option in the Application Roles page.
The Create Application Role page appears.
 - b. In the **Application** list, select the application name (*server_name/soa_infra*) under which to create a role.
 - c. Enter the role name, display name, and description for the application role.
 - d. Add members by selecting **Add Role** in the **Roles** section and **Add User** in the **Users** section.
 - e. Click **OK** to create the application role.
4. Edit application roles by performing the following steps:
 - a. In the **Application** list of the **Search** section of the Application Roles page, select an appropriate application.
This action lists all the application roles created for that application.
 - b. To the right of the **Role Name** list, click the **Search** icon.
 - c. Select the application role to edit.
 - d. Click **Edit**.
 - e. Add or delete roles in the **Roles** section and **Users** section of the Edit Application Role page.
 - f. Click **OK**.
5. Delete application roles by performing the following steps:
 - a. In the **Application** list of the **Search** section of the Application Roles page, select an appropriate application.
This action lists all the application roles created for that application.
 - b. Select the application role to delete.
 - c. Click the **Delete** button to delete the application role.
 - d. Click **Yes** in the Confirmation dialog.

Monitoring Human Workflow Service Components and Engines

This chapter describes how to monitor human task service components and the human workflow service engine.

This chapter includes the following topics:

- [Section 22.1, "Monitoring Human Task Service Component Instances and Faults"](#)
- [Section 22.2, "Viewing the Status of Human Workflow Tasks"](#)
- [Section 22.3, "Monitoring Human Task Service Component Instances"](#)
- [Section 22.4, "Monitoring Human Workflow Service Engine Instances and Faults"](#)
- [Section 22.5, "Monitoring Human Workflow Service Engine Active Requests and Operation Statistics"](#)
- [Section 22.6, "Monitoring Human Workflow Service Engine Instances"](#)
- [Section 22.7, "Monitoring Deployed Human Workflows in the Service Engine"](#)

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)

22.1 Monitoring Human Task Service Component Instances and Faults

You can monitor human task service component recent instances and faults. Each service component in a SOA composite application has its own instance ID. These IDs are different from the overall instance ID of the SOA composite application of which each service component is a part.

To monitor human task service component instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.
-

2. Select the human task service component in the **Component Metrics** table.

The upper part of the Dashboard page displays the following details:

- Recent instances of the human task service component, including the instance ID of the service component, the state of the instance (for example, completed or running), the instance start time, the last modification time, and links to log files describing the instances.
- Recent faults in the human task service component, including the error message, whether the fault is recoverable, the time at which the fault occurred, the instance ID of the human task service component, and links to log files describing the faults.

The screenshot displays the Oracle SOA Suite dashboard for a component named 'Task1'. The interface includes a navigation menu with 'Dashboard', 'Instances', 'Faults', 'Policies', and 'Administration'. The 'Recent Instances' section is active, showing a table with one instance in a 'Running' state. Below this, there is a 'Show All' link. The 'Recent Faults' section is also visible, indicating that no faults were found.

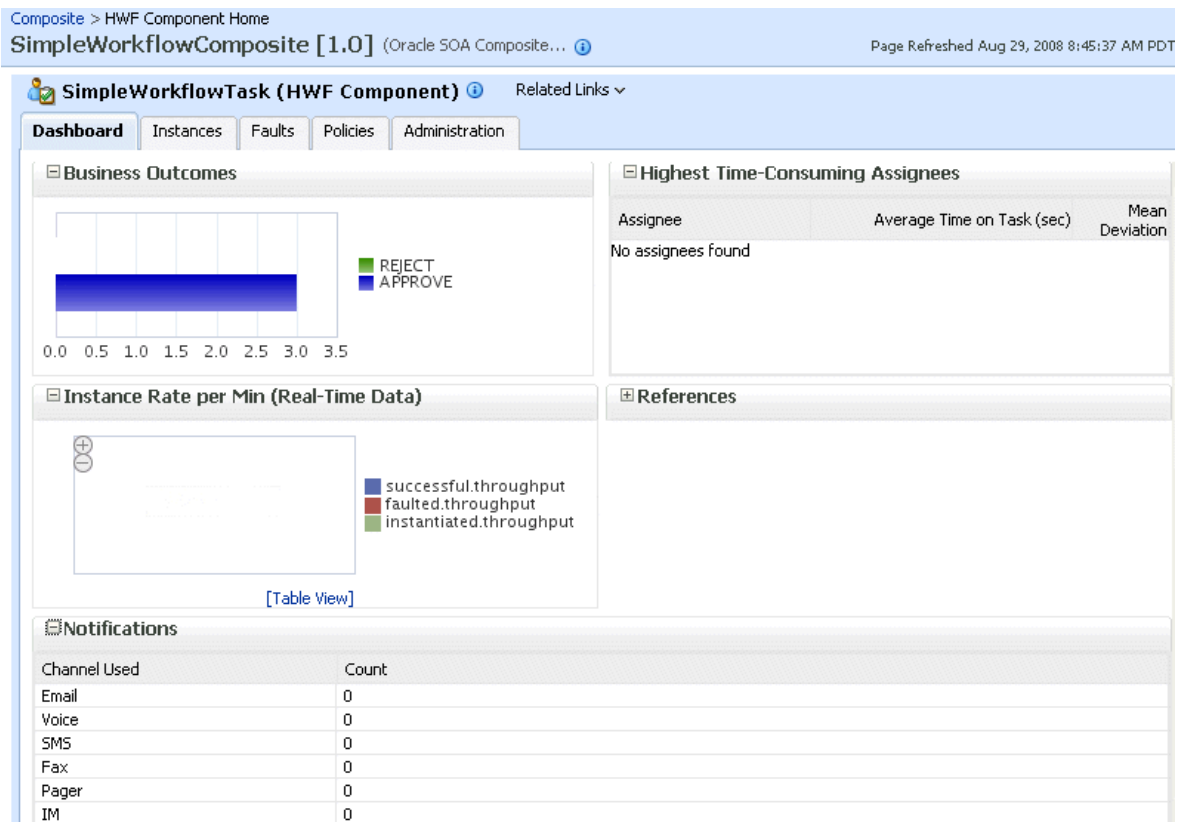
Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200000	Running	Apr 16, 2009 11:00:	Apr 16, 2009 11:00:55 AM	Logs

Error Message	Recovery	Fault Time	Component Instance ID	Logs
No faults found				

3. In the **Recent Instances** section, perform the following tasks:
 - a. In the **Instance ID** column, click an instance ID for a service component to monitor the current status of a task on which approval actions are being taken.
 - b. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - c. Click **Show All** below the section to access the Instances page of the service component.
4. In the **Recent Faults** section, perform the following tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.
 - c. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - d. Click **Show All** below the section to access the Faults page of the service component.

The lower part of the Dashboard page displays the following details:

- A graphical representation of business outcomes.
- Assignees that take the longest time to respond to and act upon tasks.
- The number of successful, faulted, and instantiated instances processed per minute.
- The number of faults occurring and messages processed in any reference binding component with which this human task service component communicated.
- The notification channels used for task approval in the human task service component.



For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances"](#) and *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files.

22.2 Viewing the Status of Human Workflow Tasks

You can monitor the current status of human workflow tasks being acted upon by participants.

To view the status of human workflow tasks:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.

2. Select the human task service component in the **Component Metrics** table.
The Dashboard page appears.

testall [1.0] | Logged in as weblogic | Page Refreshed Apr 27, 2009 6:50:53 AM PDT

testall [1.0] > Task1

Task1 (Human Workflow Component) | Related Links

Dashboard | Instances | Faults | Policies | Administration

Recent Instances

Show Only Running Instances

Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200000	Running	Apr 16, 2009 11:00:	Apr 16, 2009 11:00:55 AM	

Running 1 Total 1

[Show All](#)

Recent Faults

Show only system faults

Error Message	Recovery	Fault Time	Component Instance ID	Logs
No faults found				

3. In the **Instance ID** column, click an instance ID of a service component to monitor the current status of a task on which approval actions are being taken.

The Task Details page displays the following details:

- Task details about the selected service component instance ID (task number), including the current state (for example, assigned), task outcome (if completed), task priority, creation date, updated date, expiration date, and task assignee.
- A flow of the current status of a task (for example, assigned or approved).

Task Details

Task Number	workflow:200002	Creator	Assignees	fmwadmin
State	ASSIGNED	Created Date	Aug 26, 2008 2:33:45 AM	Acquired By
Outcome		Updated Date	Aug 26, 2008 2:33:45 AM	
Priority	3	Expiration Date		

onMessage

Initiated

Aug 26, 2008 2:33:45 AM User:fmwadmin; State:ASSIGNED

As the task is acted upon by participants, the flow is updated.

Task Details

Task Number	workflow:200000	Creator	Assignees
State	COMPLETED	Created Date	Aug 21, 2008 4:36:10 AM
Outcome	APPROVE	Updated Date	Aug 21, 2008 4:53:07 AM
Priority	3	Expiration Date	
		Acquired By	fmwadmin

onMessage

- Initiated**
 Aug 21, 2008 4:36:10 AM User:fmwadmin; State:ASSIGNED
- Outcome Updated**
 Aug 21, 2008 4:53:07 AM User:fmwadmin; State:OUTCOME_UPDATED; Outcome:APPROVE
- Completed**
 Aug 21, 2008 4:53:07 AM User:fmwadmin; State:COMPLETED; Outcome:APPROVE

4. In the upper right corner of the page, click **Worklist Application** to access the login page for the Oracle BPM Worklist.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances."](#)

22.3 Monitoring Human Task Service Component Instances

You can monitor human task service component instances. Each service component has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this service component is a part.

Note: Human workflow invocations from the BPEL service engine use different transactions than BPEL processes. Therefore, if a BPEL transaction is rolled back for any reason, the workflow task instances are still created.

To monitor human task service component instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the human task service component in the **Component Metrics** table.
3. Click **Instances**.

The Instances page displays the following details:

- A utility for searching for a specific human task service component instance by specifying a criteria and clicking **Search**.
- Instances, including the instance ID of the service component, the state of the instance (for example, completed successfully or faulted), the instance start time, the last modification time, and links to log files describing the instance.

The screenshot shows the Oracle SOA Suite Administration console. The breadcrumb path is "DocumentReviewComposite [1.0] > DocumentReviewHumanTask". The page title is "DocumentReviewHumanTask (Human Workflow Component)". There are tabs for "Dashboard", "Instances", "Faults", "Policies", and "Administration". A search form is visible with fields for "Instance ID", "Start Time From", "Start Time To", "Modified Date From", "Modified Date To", and "State". Below the search form is a table with columns: "Instance ID", "State", "Start Date", "Last Modified Date", and "Logs". One instance is listed with ID "workflow:200029", state "Completed", start date "Apr 20, 2009 11:51:14 AM", and last modified date "Apr 20, 2009 11:58:25 AM".

4. In the **Instance ID** column, click a specific ID for a service component to monitor the current status of a task on which approval actions are being taken.
5. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances"](#) and *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files.

22.4 Monitoring Human Workflow Service Engine Instances and Faults

You can monitor instances and faults of all human task service component instances running in the human workflow service engine. These human task service components can be part of separate SOA composite applications.

To monitor human workflow service engine instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Dashboard**.

The upper part of the Dashboard page displays the following details:

- Recent instances of all human task service components running in the human workflow service engine, including the instance ID of the service component, the service component, the SOA composite application of which the service component is a part, the state of the instance (for example, completed, running, or faulted), the instance start time, and the last modification time.
- Service components, including the service component name, SOA composite application, state of the service component, and total, running, and faulted instances.

soa-infra SOA Infrastructure Logged in as weblogic
 SOA Infrastructure Home > Human Workflow Engine Home
Human Workflow Engine (Service Engine) Related Links

Dashboard | Statistics | Instances | Faults | Deployed Components | Notification Management

Recent Instances

Show Only Running Instances Running 5 Total 17

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
workflow:200066	rc2Task	rc2 [1.0]	Running	Apr 24, 2009 3:34:3	Apr 24, 2009 3:40:16 PM	
workflow:200060	rc2Task	rc2 [1.0]	Running	Apr 24, 2009 3:23:3	Apr 24, 2009 3:27:47 PM	
workflow:200036	Task1	testall [4.0]	Running	Apr 21, 2009 2:02:2	Apr 21, 2009 2:02:25 PM	
workflow:200024	Task1	testall [3.0]	Running	Apr 16, 2009 3:26:5	Apr 16, 2009 3:26:52 PM	
workflow:200000	Task1	testall [1.0]	Running	Apr 16, 2009 11:00:	Apr 16, 2009 11:00:55 AM	

[Show All](#)

Components

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
Humantask1	Project1 [2.0]		1	0	0	1
Task1	testall [1.0]		1	1	0	0
Task2	testall [1.0]		0	0	0	0
ApproveDealStructure	SalesQuoteComposit		1	0	0	0
FillProposalDetails	SalesQuoteComposit		1	0	0	0

3. In the **Recent Instances** section, perform the following tasks:
 - a. In the **Instance ID** column, click an instance ID for a service component to monitor the current status of a task on which approval actions are being taken.
 - b. In the **Component** column, click a specific service component to access its home page.
 - c. In **Composite** column, click a specific SOA composite application to access its home page.
 - d. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - e. Click **Show All** below the section to access the Instances page of the service engine.
4. In the **Components** section, perform the following tasks:
 - a. In the **Name** column, click a specific service component to access its home page.
 - b. In **Composite** columns, click a specific SOA composite application to access its home page.
 - c. Click **Show All** below the section to access the Deployed Components page of the service engine.

The lower part of the Dashboard page displays the following details:

- Recent faults, including the error message, the time at which the fault occurred, the SOA composite application, the service component, and the service component instance ID.
- Task assignees who take the longest time to act upon a task and who have the highest backlog of pending tasks to which to respond.

Recent Faults

Show only system faults

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Logs
No faults found						

[Show All](#)

Users with Highest Backlog

Assignee	Average Time on Task (hour)	Mean Deviation	Pending Tasks
mtwain	0.14731482	0.21622057	0
jstein	0.14537036	0.14261186	5
California	0.10583334	0.0	0
jcooper	0.09212963	0.09625161	3
jlondon	0.032222223	0.0	1

5. In the **Recent Faults** section, perform the following additional tasks:
 - a. In the **Error Message** column, click an error message to display complete information about the fault. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery. Clicking this link invokes the human workflow audit trail page for the instance. The audit trail page has a link to the Oracle BPM Worklist called **Go to Worklist Application**, where you can go to recover from the fault. This link does not take you directly to the fault; you must manually locate the fault.
 - b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.
 - c. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.
 - d. Click **Show All** below the section to access the Faults page of the service engine.

22.5 Monitoring Human Workflow Service Engine Active Requests and Operation Statistics

You can view details about active requests in the human workflow service engine and operational statistics. such as service used, operations performed, and active and completed requests.

To monitor human workflow service engine active requests and operation statistics:

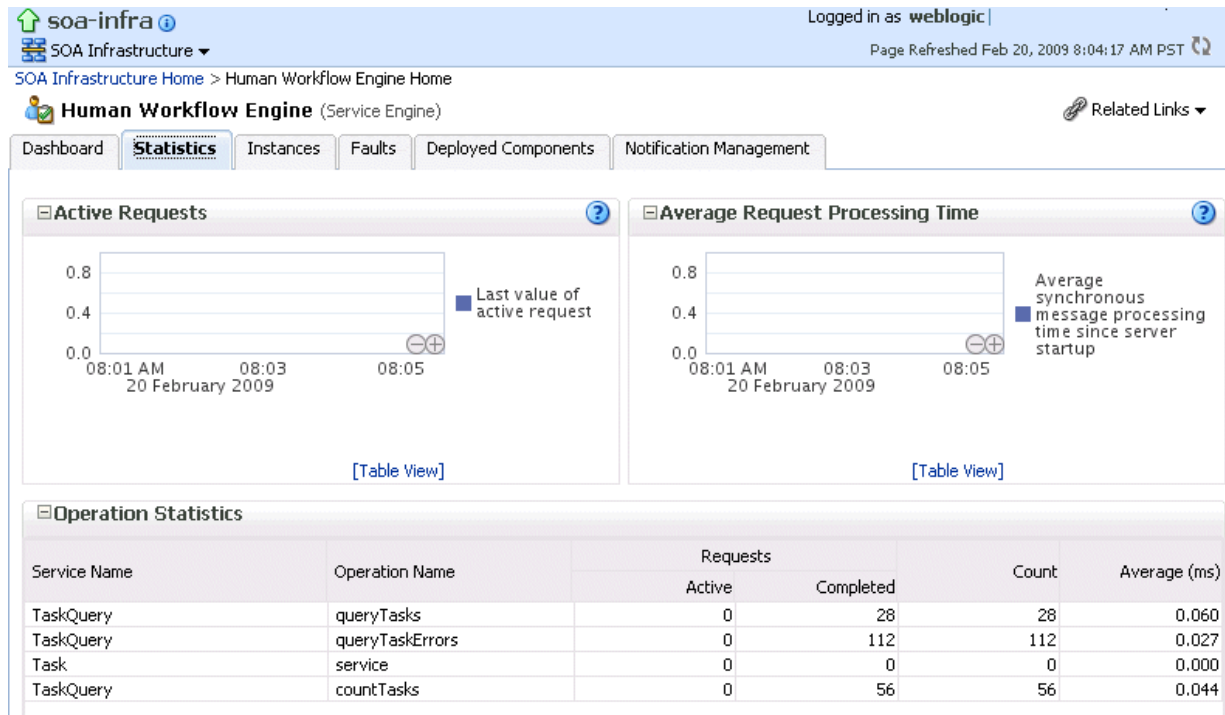
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Statistics**.

The Statistics page displays the following details:

- Active requests in the service engine. Use this graphic to get an idea of the current service engine load. Only under extreme load conditions is there data shown in the graph. This is because most requests are processed instantaneously by the service engine. The data is collected by a Dynamic Monitoring Service (DMS) state sensor. Once the requests are processed by the service engine, the count goes to zero. This action enables you to know the current load on the service engine (for example, if it is too high).
- Average request message processing time in the service engine since the last startup of the SOA Infrastructure. Use this graph to check service engine performance. Note that while the processing time is calculated based on the last startup of the SOA Infrastructure, the data displaying in the graph is only gathered from the time at which you first accessed this page. The graph does not continue calculating and displaying data if you have not accessed this page. The DMS phase event sensor calculates the average request processing time and provides the processing time data.
- Operation statistics about human workflow services used in the service engine, including the human workflow service used, the operation performed by the service, the number of active and completed requests, the count, and the average processing time.



For more information, see the following documentation:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for details about human workflow services and operations

22.6 Monitoring Human Workflow Service Engine Instances

You can monitor all human task service component instances running in the service engine. These human task service components can be part of separate SOA composite applications.

To monitor human workflow service engine instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Instances**.

The Instances page displays the following details:

- A utility for searching for a specific instance by specifying a criteria and clicking **Search**.
- Instances, including the instance ID of the service component, the service component, the SOA composite application of which the service component is a part, the state of the instance (for example, completed, running, or faulted), the instance start time, the last modification time, and links to log files that describe the instance.

SOA Infrastructure Home > Human Workflow Engine Home

Human Workflow Engine (Service Engine)

Dashboard | Statistics | **Instances** | Faults | Deployed Components | Notification Management

Start Time From: (UTC-08:00) US Pacific Time | Start Time To: (UTC-08:00) US Pacific Time | Modified Date From: (UTC-08:00) US Pacific Time | State: Any

Search Res

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
workflow:200035	ApprovePricing	SalesQuoteComposite [1.0]	Faulted	Apr 21, 2009 11:14:30 AM	Apr 25, 2009 11:14:	
workflow:200066	rc2Task	rc2 [1.0]	Running	Apr 24, 2009 3:34:38 PM	Apr 24, 2009 3:40:1	
workflow:200063	rc2Task	rc2 [1.0]	Completed	Apr 24, 2009 3:28:13 PM	Apr 24, 2009 3:31:4	
workflow:200060	rc2Task	rc2 [1.0]	Running	Apr 24, 2009 3:23:31 PM	Apr 24, 2009 3:27:4	
workflow:200036	Task1	testall [4.0]	Running	Apr 21, 2009 2:02:25 PM	Apr 21, 2009 2:02:2	
workflow:200034	FillProposalDetails	SalesQuoteComposite [1.0]	Completed	Apr 21, 2009 10:50:40 AM	Apr 21, 2009 11:14:	
workflow:200033	ApproveDealStructure	SalesQuoteComposite [1.0]	Completed	Apr 21, 2009 10:50:28 AM	Apr 21, 2009 11:06:	
workflow:200029	DocumentReviewHumai	DocumentReviewComposi	Completed	Apr 20, 2009 11:51:14 AM	Apr 20, 2009 11:58:	
workflow:200024	Task1	testall [3.0]	Running	Apr 16, 2009 3:26:52 PM	Apr 16, 2009 3:26:5	
workflow:200019	Task1	testall [3.0]	Stale	Apr 16, 2009 3:22:39 PM	Apr 16, 2009 3:22:3	
workflow:200014	Task2	testall [2.0]	Stale	Apr 16, 2009 3:10:23 PM	Apr 16, 2009 3:10:2	
workflow:200013	Task1	testall [2.0]	Stale	Apr 16, 2009 3:10:19 PM	Apr 16, 2009 3:10:1	

3. In the **Instances** section, perform the following additional tasks:
 - a. In the **Instance ID** column, click an instance ID for a service component to monitor the current status of a task on which approval actions are being taken.

- b. In the **Component** column, click a specific service component to access its home page.
- c. In the **Composite** column, click a specific SOA composite application to access its home page.
- d. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances"](#) and *Oracle Fusion Middleware Administrator's Guide* for details about viewing and searching log files.

22.7 Monitoring Deployed Human Workflows in the Service Engine

You can monitor all deployed SOA composite applications with human task service components running in the service engine.

To monitor deployed human workflows in service engines:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Deployed Components**.

The Deployed Components page displays the following details:

- A utility for searching for a specific deployed SOA composite application by specifying the full name and clicking **Search**.
- Details about deployed human task service components running in this service engine, including the service component name, the SOA composite application, the current status, and the number of total, faulted, and running instances.

soa-infra SOA Infrastructure Logged in as weblogic
 SOA Infrastructure Home > Human Workflow Engine Home
Human Workflow Engine (Service Engine) Related Links

Dashboard | Statistics | Instances | Faults | **Deployed Components** | Notification Management

Search
 Name
 Composite Name
 Search Reset

View

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
Humantask1	Project1 [2.0]		1	0	0	1
Task1	testall [1.0]		1	1	0	0
Task2	testall [1.0]		0	0	0	0
ApproveDealStructure	SalesQuoteComposit		1	0	0	0
FillProposalDetails	SalesQuoteComposit		1	0	0	0
ApprovePricing	SalesQuoteComposit		1	0	0	1
Task1	testall [3.0]		2	1	0	0
Task2	testall [3.0]		0	0	0	0
Task1	testall [4.0]		1	1	0	0
Task2	testall [4.0]		0	0	0	0
Humantask1	Project1 [1.0]		2	0	0	2
Task1	testall [2.0]		2	0	0	0

3. In the **Name** column, click a specific service component to access its home page.
4. In the **Composite** column, click a specific SOA composite application to access its home page.

Managing Human Workflow Service Components and Engines

This chapter describes how to manage human task service components and the human workflow service engine.

This chapter includes the following topics:

- [Section 23.1, "Managing Human Task Service Component Policies"](#)
- [Section 23.2, "Recovering from Human Workflow Service Engine Faults"](#)
- [Section 23.3, "Managing the URI of the Human Task Service Component Task Details Application"](#)
- [Section 23.4, "Recovering from Human Task Service Component Faults"](#)
- [Section 23.5, "Managing Outgoing Notifications and Incoming E-mail Notifications"](#)
- [Section 23.6, "Moving Human Workflow Data from a Test to a Production Environment"](#)

Note: Human task service components are also known as human workflow service components in Oracle Enterprise Manager Fusion Middleware Control Console.

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)

23.1 Managing Human Task Service Component Policies

You can attach and detach security policies to and from human task service components of currently deployed SOA composite applications. Policies apply security to the delivery of messages. Oracle Fusion Middleware uses a policy-based model to manage Web services.

Note: Before attaching policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use in your environment.

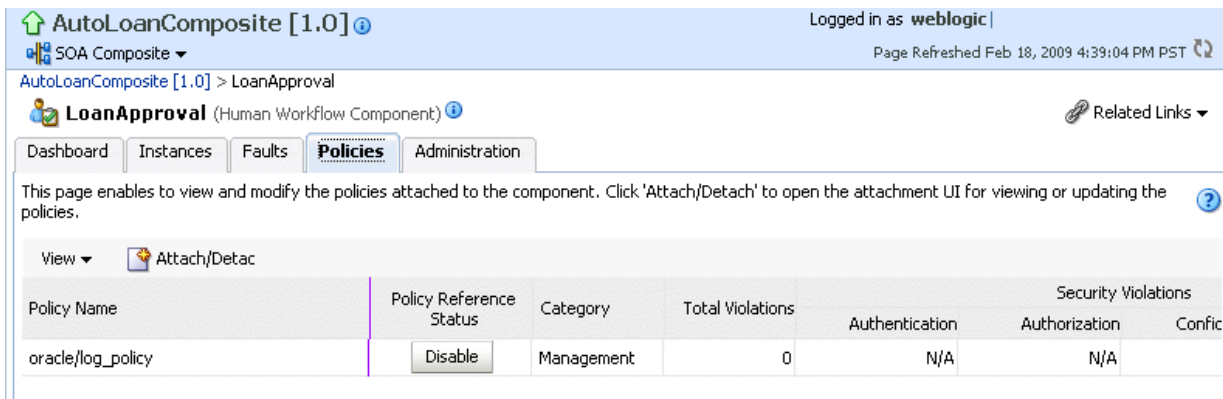
To manage human task service component policies:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the human task service component in the **Component Metrics** table.
3. Click **Policies**.

The Policies page enables you to attach and detach security policies to and from a human task service component. The policies table displays the attached policy name, the policy reference status (enabled or disabled) that you can toggle, the category (Management, Reliable Messaging, MTOM Attachment, Security, or WS Addressing), the total violations, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.



4. Click **Attach/Detach**.

If multiple components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

5. Select the service or component to which to attach or detach a policy.

This invokes a dialog for attaching or detaching policies.

Policies currently attached appear in the **Attached Policies** section. Additional policies available for attachment appear in the **Available Policies** section.

6. Select to attach policies appropriate to your environment.
7. Click **Attach**.
8. When you are finished attaching policies, click **Validate**.
9. If an error message appears, make the necessary corrections until you no longer have any validation errors.
10. Click **OK**.

The attached policy displays in the policies table.

For more information, see the following documentation:

- [Section 1.4.3.2, "Understanding Policies"](#)
- [Section 8.8, "Managing SOA Composite Application Policies"](#) for the dialogs that display during policy attachment
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use for your environment

23.2 Recovering from Human Workflow Service Engine Faults

You can view and recover from faults in the human workflow service engine. All human task service component faults, regardless of the SOA composite application instance of which they are a part, can be viewed in the human workflow service engine.

Human workflow invocations from the BPEL service engine use different transaction than BPEL processes. Therefore, if a BPEL transaction is rolled back for any reason, the workflow task instances are still created.

To view and recover from human workflow service engine faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Faults**.

The Faults page displays the following details:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the human workflow service engine, including the fault ID, error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application and human task service component in which the fault occurred, the instance ID of the human task service component, and a link to a log file describing the fault.

soa-infra SOA Infrastructure Logged in as weblogic Page Refreshed Apr 27, 2009 7:03:20 AM PDT

SOA Infrastructure Home > Human Workflow Engine Home

Human Workflow Engine (Service Engine) Related Links

Dashboard Statistics Instances **Faults** Deployed Components Notification Management

If a fault is marked as Recoverable, you can select it and click Recover to open the instance audit trail; from there, click the link to the Worklist application. There you can take an appropriate action (e.g. reassigning to a correct user), after which the Human Workflow engine will attempt to rerun the instance in which the fault occurred and recover from it.

Search

Fault ID Component Instance ID

Fault Time From (UTC-08:00) US Pacific Time

Fault Time To (UTC-08:00) US Pacific Time

Composite Instance ID

Search Reset

Show only recoverable faults Fault Type All Faults

Select View

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Logs
Error in routing slipThe task	Recover...	Apr 21, 2009 2:02:25 PM	testall [4.0]	Task1	workflow:200037	
Error in routing slipThe task	Recover...	Apr 16, 2009 3:26:52 PM	testall [3.0]	Task1	workflow:200025	

Human task service engine faults identified as recoverable can be recovered from Oracle BPM Worklist.

3. Perform fault recovery through either of the following methods:
 - a. In the **Error Message** column, click a specific message to display complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. If the fault is recoverable, a **Recover Now** button displays that you can click to recover from the fault. Clicking this button invokes the human workflow audit trail page for the instance. The audit trail page has a link to the Oracle BPM Worklist called **Go to Worklist Application**, where you can go to recover from the fault. The Oracle BPM Worklist link does not take you directly to the fault; you must manually locate the fault.
 - b. In the **Recovery** column, click a fault that is marked as recoverable to invoke the human workflow audit trail page for the instance. The audit trail page provides the same link to the Oracle BPM Worklist called **Go to Worklist Application**.
4. Perform the following additional monitoring tasks from within the faults table:
 - a. Click the **Show only recoverable faults** check box to display only faults from which you can recover.
 - b. From the **Fault Type** list, select to display all faults, system faults, business faults, or Oracle Web Service Manager (OWSM) faults in the faults table. Click the **Help** icon for a description of these fault types.
 - c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - d. In the **Composite** column, click a specific SOA composite application to access its home page.
 - e. In the **Component** column, click a specific service component to access its home page.

- f. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.
- g. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

23.3 Managing the URI of the Human Task Service Component Task Details Application

You can add or remove the URI of the task details application used in human workflow.

To manage the URI of the human task service component task details application:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the human task service component in the **Component Metrics** table.
3. Click **Administration**.

The Administration page shows the URI for the task details application.

testall [3.0] | Logged in as weblogic | Page Refreshed Apr 17, 2009 6:33:20 PM PDT

testall [3.0] > Task2

Task2 (Human Workflow Component)

Dashboard | Instances | Faults | Policies | **Administration**

Add or remove the URI for the user defined task details application.

View ▾ + Add URI ✖ Remove

Application Name	Host Name	HTTP Port	HTTPS Port	URI
worklist	myhost39.us.oracle.com	8001	0	/workflow/testallTaskflow/fi

Apply Revert

Note: If the SOA Server is SSL enabled or disabled, then you must manually enable or disable SSL for any already deployed workflow task detail applications. Change the workflow task display URL to use the correct protocol and port number. To enable the use of the SSL (HTTPS) URL, ensure that the HTTP port setting is left blank.

4. Click the **Add** icon to specify the following details for the URI:
 - Application name
 - Host name
 - HTTP port
 - HTTPS port (optional)

- URI
5. Click **Apply**.

23.4 Recovering from Human Task Service Component Faults

You can view and recover from human task service component faults. The human task service component is also known as the human workflow service component.

To view and recover from human task service component faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the human task service component in the **Component Metrics** table.
3. Click **Faults**.

The Faults page displays the following details:

- A utility for searching for a specific human task service component fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the human task service component, including the fault ID, error message, whether you can recover from the fault, the time at which the fault occurred, the instance ID of the human task service component, and a link to a log file describing the fault.

VacationRequest [1.0] | Logged in as weblogic | Page Refreshed Mar 21, 2009 1:54:06 PM PDT

VacationRequestTask (Human Workflow Component)

Dashboard | Instances | **Faults** | Policies | Administration

If a fault is marked as Recoverable, you can select it and click Recover to open the instance audit trail; from there, click the link to the Worklist application. There you can take an appropriate action (e.g. reassigning to a correct user), after which the Human Workflow engine will attempt to rerun the instance in which the fault occurred and recover from it.

Search

Fault ID: Component Instance ID:

Fault Time From: (UTC-08:00) US Pacific Time

Fault Time To: (UTC-08:00) US Pacific Time

Composite Instance ID:

Search Reset

Show only recoverable faults: Fault Type: All Faults

Error Message	Recovery	Fault Time	Component Instance ID	Logs
No faults found				

Human workflow service engine faults identified as recoverable can be recovered from the Oracle BPM Worklist.

4. Perform fault recovery through either of the following methods:
 - a. In the **Error Message** column, click a specific message to display complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. If the fault is recoverable, a **Recover Now** button displays that you can click to recover from the fault. Clicking this button invokes the human workflow audit trail page for the instance. The audit trail page has a link to the Oracle BPM Worklist called **Go to Worklist Application**, where you can go to recover from the fault. The Oracle BPM Worklist link does not take you directly to the fault; you must manually locate the fault.
 - b. In the **Recovery** column, click a fault that is marked as recoverable to invoke the human workflow audit trail page for the instance. The audit trail page provides the same link to the Oracle BPM Worklist called **Go to Worklist Application**.
5. Perform the following additional monitoring tasks from within the faults table:
 - a. Click the **Show only recoverable faults** check box to display only faults from which you can recover.
 - b. From the **Fault Type** list, select to display all faults, system faults, business faults, or OWSM faults in the faults table. Click the **Help** icon for a description of these fault types.
 - c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - d. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.
 - e. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

23.5 Managing Outgoing Notifications and Incoming E-mail Notifications

You can manage incoming and outgoing notifications through e-mail in human workflow, including testing messages, resending messages, and identifying messages as spam.

Incoming and outgoing notifications are sent to and from human workflow. Incoming notifications are responses to actionable notifications. For example, an outgoing notification is sent to the manager of an employee requesting vacation leave. The manager approves the request by clicking the **Approve** link in the actionable notification e-mail. This action sends an incoming notification to human workflow for possible additional processing.

To manage outgoing notifications and incoming e-mail notifications:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > Human Workflow .	1. Right-click soa-infra .
	2. Select Service Engines > Human Workflow .

2. Click **Notification Management**.

The upper part of the Notification Management page displays the following details:

- A utility for searching for a specific message by specifying a criteria and clicking **Search**. You must expand the **Search** icon to display this utility.
- Outgoing notifications, including the source ID, the source type (for example, if a notification is sent by a BPEL service component, the type is BPEL), the channel used (for example, e-mail, SMS, instant messenger, or voice), the address of the message recipient, the message status (for example, error, send, retry, sent), and the time at which the message was sent.

SOA Infrastructure Home > Human Workflow Engine Home

Human Workflow Engine (Service Engine)

Dashboard | Statistics | Instances | Faults | Deployed Components | **Notification Management**

Outgoing notifications are sent to users from Human Workflow and BPEL processes. Incoming notifications are responses to actionable notifications. This page enables you to manage and troubleshoot both types of notifications.

Send Test Notification...

Outgoing Notifications

Search

Source ID	Source Type	Channel	Recipient	Status	Time
7ab15659-a3a4-422	WORKFLOW	Email	jstein@emailexample.com	Sent	Apr 24, 2009 3:41:06 PM
ed17f8bd-f2d3-404c	WORKFLOW	Email	wfaulk@emailexample.com	Sent	Apr 24, 2009 3:40:50 PM
4e14a470-f06c-4695	WORKFLOW	Email	tom@maprao-pc.com	Sent	Apr 24, 2009 3:35:47 PM
dcdf425b-c43a-4472	WORKFLOW	Email	wfaulk@emailexample.com	Sent	Apr 24, 2009 3:32:32 PM
609725b6-4939-445	WORKFLOW	Email	wfaulk@emailexample.com	Sent	Apr 24, 2009 3:32:31 PM
609725b6-4939-445	WORKFLOW	Email	istein@emailexample.com	Sent	Apr 24, 2009 3:31:17 PM

The lower part of the Notification Management page displays the following details:

- A utility for searching for a specific message by specifying a criteria and clicking **Search**. You must expand the **Search** icon to display this utility.
- Incoming notifications, including the message ID, the channel used (same types as for outgoing notifications), the address of the message sender, the address of the message recipient, the message status (replied e-mail notification, unsolicited e-mail, unknown e-mail content, response not processed, and response processed), a link to the content of the message, and the time at which the message was received.

Incoming Notifications

Search

Sender: Recipient:

Date From: (UTC-08:00) US Pacific Time Date To: (UTC-08:00) US Pacific Time

Channel:

Search Reset

Select View Mark as Spam Not Spam Delete

Message ID	Channel	Sender	Recipient	Status	Content	Time
No incoming notifications found						

3. Perform the following actions on outgoing notifications.

Action	Description
Send Test Notification	Test that outgoing messages are arriving at the correct destination. This ensures that the destination is reachable and messages are arriving. Selecting this option invokes a dialog for specifying the following destination details: <ul style="list-style-type: none"> Destination address Delivery channel (for example, e-mail) Message subject and content
Resend	Select specific outgoing notification messages in the table and click Resend to resend. Use this option if you believe that messages are not arriving at their correct destination. For example, you may have incorrectly configured a recipient address. After correcting the address, click Resend to test the delivery.
Resend All Similar Notifications	Resend all error notification messages having the same recipient address as the selected one.
View Bad Addresses	Click to display a list of bad or invalid addresses. The addresses are automatically removed from the bad address list after one hour. If you do not want to wait an hour, you can explicitly select and delete them.
Delete icon	Click to delete a selected message.

If outgoing notifications are sent to an incorrect address of a message recipient, they display as errors in the **Recipient** column. You can correct the recipient's address and resend the notification.

- In the **Recipient** column, click the e-mail address and correct the address.
- Perform the following actions on incoming notifications.

Action	Description
Mark as Spam	Mark the message sender's address of the selected notification as spam. This action prevents incoming notifications from the same sender address from being delivered again.
No Spam	Mark incoming messages as not being spam. This action enables new messages from the sender's address to be delivered again.
Delete icon	Click to delete a selected message.

For more information about notifications, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

23.6 Moving Human Workflow Data from a Test to a Production Environment

You can migrate Human Workflow user metadata, such as views, flex field mappings, and vacation rules, from a test environment to a production environment using the Human Workflow User Config Data Migrator. The Data Migrator is available as an ant target that can be executed at the command line. You specify the input parameters for the migration of data in a properties file, `migration.properties`.

For example, assume you have two SOA servers installed:

- SOAServer_A

A test server that includes human workflow user-configurable data (user views, standard views, user rules, group rules, attribute labels, and task payload flex field mappings).

- SOAServer_B

A production server to which you want to move the data on SOAServer_A.

Since you have a significant amount of data on SOAServer_A, it can be time consuming to manually migrate all of the data to SOAServer_B.

You can use the Data Migrator to move the data from the test server to the production server. You run the `ant` target at the command line of SOAServer_A to migrate data to SOAServer_B.

Migration is always performed through an XML file. The Data Migrator supports the following operations:

- Export operation: Stores all the human workflow user-configurable data from the source SOA server to the XML file.
- Import operation: Creates all the Human Workflow user-configurable data in the target SOA server by reading from the XML file.

The Data Migrator consists of the following files:

- `migration.properties`: Contains all required input properties in terms of key-value pairs for migration operations.
- `build.xml`: Contains the `ant` target `runHwfMigrator` that executes the Data Migrator

23.6.1 Moving Human Workflow Data from Test to Production Environments

Perform the following steps to move data from a test to a production environment.

1. Ensure that the `PATH` environment variable contains the `JAVA_HOME` and `ANT_HOME` environment variables and that they point to the locations within the Oracle SOA Suite installation.
2. Create a `migration.properties` file in any location to export user metadata for the worklist application (for example, group rules, views, flex field mappings, and vacation rules) from the test environment. See [Section 23.6.2.1, "Migration Property File Examples"](#) for instructions on how to specify properties.

Note the following:

- You can export only nonprotected flex field mappings
- You can export only protected attribute labels
- You can only export one type of data at a time.
- When you export data for a particular user or group, you must export each in separate operations.
- You must export attribute labels before you export flex field mappings.

To export attribute labels, use the following values in the `migration.properties` file:

```
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
migrateAttributeLabel = true
```

To export flex field mappings, use the following values in the `migration.properties` file:

```
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
migrateAttributeLabel = false
```

3. Export the data with the ant script. The following example shows how to invoke the command and specify the parameters:

```
ant -f ant-t2p-worklist.xml
-Dbea.home=/scratch/oracle/MW_HOME
-Dsoa.home=/scratch/oracle/MW_HOME/AS11gR1SOA
-Dmigration.properties.file=migration.properties
-Dsoa.hostname=hostname -Dsoa.rmi.port=7001
-Dsoa.admin.user=weblogic
-Drealm=jazn.com
-Dmigration.file=/tmp/export_all_userRules.xml
-Dmap.file=/tmp/export_all_userRules_mapper.xml
```

Note: After specifying the Admin user name, enter the password when prompted.

See [Section 23.6.3, "ant Script Data Migration Syntax"](#) for instructions on specifying ant properties.

4. Ensure that the application is deployed to the production system.
5. Create the `migration.properties` file to import user metadata for the worklist application to the production environment.

Note the following:

- You can only import one type of data at a time.
- When you import data for a particular user or group, you must import them in separate operations.
- You must import attribute labels before you import flex field mappings.

To import attribute labels, use the following values in the `migration.properties` file:

```
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
migrateAttributeLabel = true
```

To import flex field mappings, use the following values in the `migration.properties` file:

```
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
migrateAttributeLabel = false
```

6. Import the data to the production environment from the file `export_all_userRules.xml`, which you created with the `map.file` property in Step 3. The following example shows how to invoke the command and specify the properties:

```
ant -f ant-t2p-worklist.xml
-Dbea.home=/scratch/oracle/MW_HOME
-Dsoa.home=/scratch/oracle/MW_HOME/AS11gR1SOA
-Dmigration.properties.file=migration.properties
-Dsoa.hostname=hostname
-Dsoa.rmi.port=7001
```

```
-Dsoa.admin.user=weblogic
-Dsoa.admin.password=password
-Drealm=jazn.com
-Dmigration.file=/tmp/export_all_userRules.xml
-Dmap.file=/tmp/export_all_userRules_mapper.xml
```

Note that if the data, such as rules and views, are attached to the user, then the user must be an available user in the production SOA server.

7. Deploy J2EE human task forms, as you would deploy any .ear file.
8. If necessary, update the workflow notification configuration with production mail server and inbound and outbound e-mail accounts. See [Section 21.1, "Configuring Human Workflow Notification Properties."](#)

23.6.2 migration.properties File Syntax

The migration.properties file specifies the input parameters for data migration. The template for this file is located in the following directory:

The migration.properties file contains the following input parameters:

```
operationType = {EXPORT | IMPORT}
objectType = {VIEW | RULE | TASK_PAYLOAD_FLEX_FIELD_MAPPING}
name = name of VIEW or TASK_PAYLOAD_FLEX_FIELD_MAPPING
user = username of VIEW or RULE
group = groupname for RULE
grantPermission = {true | false}
migrateAttributeLabel = {true | false}
override = {true | false}
skip = {true | false}
migrateToActiveVersion = {true | false}
template.version = 2009-June-11
```

Argument	Definition
operationType	Specify to perform one of the following actions: <ul style="list-style-type: none"> ■ EXPORT: Data is migrated from a SOA server instance into an XML file. ■ IMPORT: Data is migrated from the XML file into the SOA server instance.
objectType	Specify the type of object to migrate: <ul style="list-style-type: none"> ■ VIEW: Migrates views. ■ RULE: Migrates vacation rules. ■ TASK_PAYLOAD_FLEX_FIELD_MAPPING: Migrates flex field mappings.
name	Specify the object name if you specified VIEW or TASK_PAYLOAD_FLEX_FIELD_MAPPING values for the objectType. This property refers to the following: <ul style="list-style-type: none"> ■ viewName for VIEW ■ taskDefinitionId for TASK_PAYLOAD_FLEX_FIELD_MAPPING Specify ALL to identify all objects of this kind.
user	Specify the user name only if you specified the VIEW or RULE value for the objectType property. If a user is not specified for VIEW, it implies STANDARD_VIEW.

Argument	Definition
group	Specify this property only if you specified the <code>RULE</code> value of the <code>objectType</code> property. It identifies the group name (for example, <code>LoanAgentGroup</code>).
grantPermission	Specify this property only if you specified the <code>VIEW</code> value of the <code>objectType</code> property. <ul style="list-style-type: none"> ■ <code>true</code>: Migrates view definitions and grants. ■ <code>false</code>: Migrates only view definitions.
migrateAttributeLabel	Specify one of the following values: <ul style="list-style-type: none"> ■ <code>true</code>: Migrates only attribute labels. Payload mappings are <i>not</i> migrated. ■ <code>false</code>: Does not migrate attribute labels and payload mappings.
override	Specify whether to override the data on the target SOA server: <ul style="list-style-type: none"> ■ <code>true</code>: Overrides the existing workflow user-configurable data on the target SOA server. ■ <code>false</code>: Does not override the target SOA server instance that has the workflow user-configurable data.
skip	Specify error handling details. <ul style="list-style-type: none"> ■ <code>true</code>: Errors are skipped and the migration utility continues processing. ■ <code>false</code>: Any encountered error halts the migration.
migrateToActiveVersion	Specify a value for mapping task definition IDs. <ul style="list-style-type: none"> ■ <code>true</code>: Maps task definition IDs to the active version in the target SOA server instance. ■ <code>false</code>: Does not map task definitions.
template.version	Specifies the template version.

23.6.2.1 Migration Property File Examples

This section provides examples how to configure the `migration.properties` file.

23.6.2.1.1 Exporting All Protected Attribute Labels The following example exports all protected attribute labels.

```
operationType = EXPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.2 Importing All Protected Attribute Labels The following example imports all protected attribute labels.

```
operationType = IMPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
```

```

user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11

```

23.6.2.1.3 Exporting Specific Protected Attribute Labels The following example exports specific protected attribute labels.

```

operationType = EXPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = cb801c91-4605-4e96-a234-aeb8441f0388
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11

```

23.6.2.1.4 Importing Specific Protected Attribute Labels The following example imports specific protected attribute labels.

```

operationType = IMPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = cb801c91-4605-4e96-a234-aeb8441f0388
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11

```

23.6.2.1.5 Exporting Nonprotected Task Payload Flex Field Mappings for All Task Definition IDs The following example exports nonprotected task payload flex field mappings for all task definition IDs.

```

operationType = EXPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11

```

23.6.2.1.6 Importing Nonprotected Task Payload Flex Field Mappings for All Task Definition IDs The following example imports nonprotected task payload flex field mappings for all task definition IDs. Task payload flex field mappings use attribute labels. As a prerequisite, find out the attribute labels involved in the task payload flex field mappings to import. These attribute labels must be available in the target SOA server

before the import of nonprotected task payload flex field mappings into the target SOA server.

The recommended steps are as follows:

- Import the attribute labels into the target SOA server.
- Import the task payload flex field mappings into the target SOA server.

```
operationType = IMPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.7 Exporting Nonprotected Task Payload Flex Field Mappings for a Specific Task

Definition ID The following example exports nonprotected task payload flex field mappings for a specific task definition ID.

```
operationType = EXPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name =
default/HelpDeskRequestComposite!1.0*c9856b8b-bc9e-46a4-8aef-698e539ba1d7/HelpDesk
RequestHumanTask
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.8 Importing Nonprotected Task Payload Flex Field Mappings for a Specific Task

Definition ID The following example imports nonprotected task payload flex field mappings for a specific task definition ID. Task payload flex field mappings make use of attribute labels. As a prerequisite, find out the attribute labels that are involved in the task payload flex field mappings to import. These attribute labels must be available in the target SOA server before the import of nonprotected task payload flex field mappings into the target SOA server.

The recommended steps are as follows:

- Import the attribute labels into the target SOA server.
- Import the task payload flex field mappings into the target SOA server.

```
operationType = IMPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name =
default/HelpDeskRequestComposite!1.0*c9856b8b-bc9e-46a4-8aef-698e539ba1d7/HelpDesk
RequestHumanTask
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
```

```
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.9 Exporting All Rules for a Specific User This example exports all rules for a specific user. Note that the `group` property is left blank when you export rules for a specific user.

```
operationType = EXPORT
objectType = RULE
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.10 Importing All Rules for a Specific User This example imports all rules for a specific user. Note that the `group` property is left blank when you import rules for a specific user.

```
operationType = IMPORT
objectType = RULE
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.11 Exporting All Rules for a Specific Group This example exports all rules for a specific group. Note that the `user` property is left blank when you export rules for a specific group.

```
operationType = EXPORT
objectType = RULE
name = ALL
user =
group = LoanAgentGroup
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.12 Importing All Rules for a Specific Group This example imports all rules for a specific group. Note that the `user` property is left blank when you import rules for a specific group.

```
operationType = IMPORT
objectType = RULE
name = ALL
user =
group = LoanAgentGroup
```

```
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.13 Exporting All User Views This example exports all user views.

```
operationType = EXPORT
objectType = VIEW
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.14 Importing All User Views This example imports all user views.

```
operationType = IMPORT
objectType = VIEW
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.15 Exporting a Specific User View This example exports a specific user view.

```
operationType = EXPORT
objectType = VIEW
name = jcooperUserView1
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.16 Importing a Specific User View This example imports a specific user view.

```
operationType = IMPORT
objectType = VIEW
name = jcooperUserView1
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
```

```
template.version = 2009-June-11
```

23.6.2.1.17 Export All Standard Views This example exports all standard views.

```
operationType = EXPORT
objectType = VIEW
name = ALL
user =
group = LoanAgentGroup
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.18 Importing All Standard Views This example imports all standard views.

```
operationType = IMPORT
objectType = VIEW
name = ALL
user =
group = LoanAgentGroup
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.19 Exporting a Specific Standard View This example exports a specific standard view.

```
operationType = EXPORT
objectType = VIEW
name = MyStandardView1
user =
group = LoanAgentGroup
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.2.1.20 Importing a Specific Standard View This example imports a specific standard view.

```
operationType = IMPORT
objectType = VIEW
name = MyStandardView1
user =
group = LoanAgentGroup
grantPermission = true
migrateAttributeLabel = false
override = true
skip = true
migrateToActiveVersion = false
template.version = 2009-June-11
```

23.6.3 ant Script Data Migration Syntax

Use the ant script for data migration. The script is located in the following directory:

```
ORACLE_HOME/bin/ant-t2p-worklist.xml
```

The script uses the following format to migrate human workflow configurable data from one SOA server to another:

```
ant -f ant-t2p-worklist.xml
-Dbea.home=BEA_HOME
-Dsoa.home=SOA_HOME
-Dmigration.properties.file=MIGRATION_PROPERTY_FILE_PATH
-Dsoa.hostname=SOA_HOSTNAME
-Dsoa.rmi.port=SOA_RMI_PORT
-Dsoa.admin.user=SOA_ADMIN_USER
-Dsoa.admin.password=SOA_ADMIN_PASSWORD
-Drealm=REALM -Dmigration.file=MIGRATION_FILE
-Dmigration.file=<MIGRATION_FILE>
-Dmap.file=MAP_FILE
```

Argument	Definition
bea.home	The absolute path of the installation directory for Oracle WebLogic Server.
soa.home	The absolute path of the Oracle SOA Suite home directory.
migration.properties.file	The absolute path to the migration.properties file.
soa.hostname	The host name of the SOA server instance. Note: You must specify the complete domain name, such as myhost.us.oracle.com, instead of myhost.
soa.rmi.port	The remote method invocation (RMI) port of the SOA server instance.
soa.admin.user	The Admin user name to connect to the SOA server instance.
soa.admin.password	The Admin user password to connect to the SOA server instance.
realm	The realm of the SOA server instance.
migration.file	The complete path location of the migration file in which all user-configurable data from the SOA server is exported to or imported from.
map.file	The full path location of the map file in which all the TaskDefinitionId mappings in the target SOA server are provided. This file enables you to customize the mapping.

For example:

```
ant -f ant-t2p-worklist.xml
-Dbea.home=/net/myhost/jsmith/fmwhome
-Dsoa.home=/net/myhost/jsmith/fmwhome/AS11gR1SOA
-Dmigration.properties.file=migration.properties
-Dsoa.hostname=myhost.us.oracle.com -Dsoa.rmi.port=7001
-Dsoa.admin.user=weblogic
-Drealm=jazn.com
-Dmigration.file=/tmp/export_all_userRules.xml
-Dmap.file=/tmp/export_all_userRules_mapper.xml
```

Note: After specifying the Admin user name, enter the password when prompted.

Part IX

Administering Oracle Business Activity Monitoring

This part describes how to administer Oracle Business Activity Monitoring.

This part includes the following chapters:

- [Chapter 24, "Configuring Oracle Business Activity Monitoring"](#)
- [Chapter 25, "Monitoring Oracle Business Activity Monitoring"](#)
- [Chapter 26, "Managing Oracle Business Activity Monitoring"](#)

Configuring Oracle Business Activity Monitoring

This chapter introduces Oracle Business Activity Monitoring (Oracle BAM) configuration, and it explains how to configure Oracle BAM Server properties, Web applications properties, and distribution lists.

This chapter includes the following topics:

- [Section 24.1, "Introduction to Configuring Oracle BAM"](#)
- [Section 24.2, "Configuring Oracle BAM Web Basic Properties"](#)
- [Section 24.3, "Configuring Oracle BAM Server Basic Properties"](#)
- [Section 24.4, "Configuring the Logger"](#)
- [Section 24.5, "Configuring Oracle User Messaging Service"](#)
- [Section 24.6, "Configuring Oracle BAM Distribution Lists"](#)
- [Section 24.7, "Configuring Oracle BAM Adapter"](#)
- [Section 24.8, "Configuring Oracle BAM Batching Properties"](#)
- [Section 24.9, "Configuring Security"](#)
- [Section 24.10, "Configuring Advanced Properties"](#)
- [Section 24.11, "Oracle BAM Configuration Property Reference"](#)

24.1 Introduction to Configuring Oracle BAM

Oracle BAM Server is the collection of the components Oracle BAM Active Data Cache (Oracle BAM ADC), Oracle BAM Report Cache, Oracle BAM Enterprise Message Sources (EMS), and Oracle BAM Event Engine.

The Oracle BAM Web applications are a collection of thin clients (Active Studio, Architect, Administrator, and Active Viewer) and Oracle BAM Report Server.

For more information about each of the subcomponents of Oracle BAM Server and Oracle BAM Web applications, see *Oracle Fusion Middleware User's Guide for Oracle Business Activity Monitoring*.

The most commonly used Oracle BAM Server and Web applications properties are configured in Oracle Enterprise Manager Fusion Middleware Control Console. See [Section 24.3, "Configuring Oracle BAM Server Basic Properties"](#) and [Section 24.2, "Configuring Oracle BAM Web Basic Properties"](#) for more information.

Security configuration is discussed in [Section 24.9, "Configuring Security"](#), and adding and managing Oracle BAM roles (permissions) and user accounts is discussed in [Section 26.3, "Managing Oracle BAM Users."](#)

Oracle User Messaging Service (UMS) must be configured so that alerts are delivered to Oracle BAM users. See [Section 24.5, "Configuring Oracle User Messaging Service"](#) for this information.

When using Oracle BAM in an SOA composite application, the Oracle BAM Adapter configuration must be completed. See [Section 24.7, "Configuring Oracle BAM Adapter"](#) for more information.

Advanced properties are located in configuration files that must be edited using the System MBean Browser. See [Section 24.10, "Configuring Advanced Properties"](#) for more information. Also, see [Section 24.11, "Oracle BAM Configuration Property Reference"](#) for a listing of all properties available for Oracle BAM configuration.

Oracle BAM distribution lists are used to send alerts and reports to multiple Oracle BAM users, rather than having to specify several individual recipients. Distribution lists are configured in the Oracle BAM Administrator application. See [Section 24.6, "Configuring Oracle BAM Distribution Lists"](#) for more information.

For performance tuning information for Oracle BAM, see *Oracle Fusion Middleware Performance and Tuning Guide*.

For Oracle BAM high availability configuration information, see *Oracle Fusion Middleware High Availability Guide*.

24.2 Configuring Oracle BAM Web Basic Properties

Some basic Oracle BAM Web applications properties are configured using Oracle Enterprise Manager Fusion Middleware Control Console.

Oracle BAM Web applications must be restarted when changes are made to any Oracle BAM properties. See [Section 26.2, "Managing Oracle BAM Availability"](#) for information about restarting Oracle BAM.

The following topics describe how to configure each property:

- [Section 24.2.1, "Configuring Oracle BAM Web Applications Properties"](#)
- [Section 24.2.2, "Configuring Application URL"](#)
- [Section 24.2.3, "Configuring Report Loading Indicator"](#)
- [Section 24.2.4, "Configuring Server Name"](#)

For information about configuring advanced properties, see [Section 24.10, "Configuring Advanced Properties"](#) and [Section 24.11, "Oracle BAM Configuration Property Reference."](#)

24.2.1 Configuring Oracle BAM Web Applications Properties

The Oracle BAM Web applications properties are configured in the OracleBamWeb Properties page in Fusion Middleware Control Console.

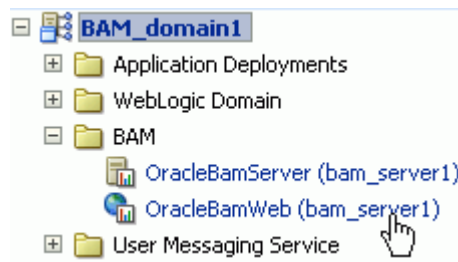
To configure Oracle BAM Web applications properties:

1. Go to the OracleBamWeb Properties page in Fusion Middleware Control Console by selecting the **OracleBamWeb** node.

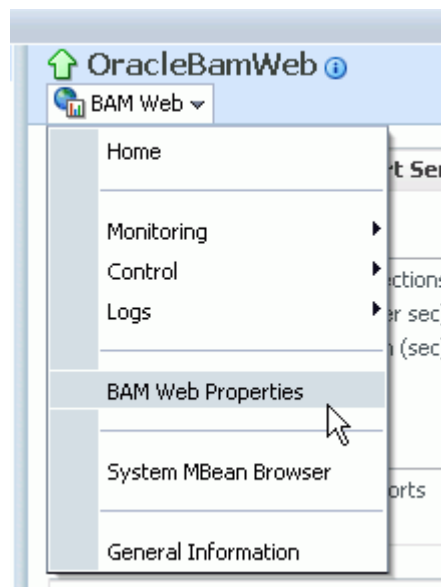
Open Fusion Middleware Control Console in your Web browser at:

`http://host_name:port_number/em`

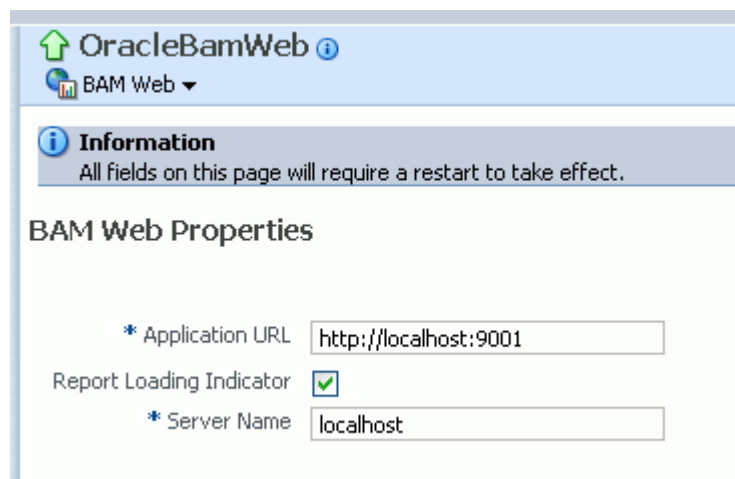
In the navigation tree, the Oracle BAM Web node is named **OracleBamWeb** in the **BAM** folder.



2. Select **BAM Web Properties** in the **BAM Web** menu.



The BAM Web Properties page opens.



3. Enter the desired values in each of the fields provided.

See the following sections for information about configuring each of the properties:

- [Section 24.2.2, "Configuring Application URL"](#)
 - [Section 24.2.3, "Configuring Report Loading Indicator"](#)
 - [Section 24.2.4, "Configuring Server Name"](#)
4. Click **Apply**.

You must restart the Oracle BAM application after any property changes.

24.2.2 Configuring Application URL

The Application URL property value must be updated from `localhost` to the actual host name to generate the correct URLs for reports and alerts.

The Application URL property is configured in both the Oracle BAM Web applications properties page and the Oracle BAM Server properties page. In Oracle BAM Web applications page, the URL is used to generate the full URL for reports and alerts.

Note that this property is common to both Oracle BAM Web applications and Oracle BAM Server. If it is configured on one page, the same value appears on the other configuration page.

24.2.3 Configuring Report Loading Indicator

The Report Loading Indicator property specifies whether the report loading indicator is enabled or disabled by default when viewing reports in Oracle BAM Active Studio and Oracle BAM Active Viewer.

With this property enabled, the report loading indicator is shown by default when a report is viewed; however, individual users can choose to disable the report loading indicator in their user preferences configuration. See *Oracle Fusion Middleware User's Guide for Oracle Business Activity Monitoring* for more information.

24.2.4 Configuring Server Name

The Server Name property provides the host name of Oracle BAM Server. Oracle BAM Web applications are separate applications that require the location of Oracle BAM Server to get data from the Active Data Cache and Report Cache for the Oracle BAM Report Server.

24.3 Configuring Oracle BAM Server Basic Properties

Some basic Oracle BAM Server properties are configured using Oracle Enterprise Manager Fusion Middleware Control Console.

Oracle BAM Server must be restarted after any changes to Oracle BAM properties. See [Section 26.2, "Managing Oracle BAM Availability"](#) for information about restarting Oracle BAM.

The following topics describe how to configure each property:

- [Section 24.3.1, "Configuring Oracle BAM Server Properties"](#)
- [Section 24.3.2, "Configuring Data Source JNDI"](#)
- [Section 24.3.3, "Configuring Application URL"](#)
- [Section 24.3.4, "Configuring Viewset Sharing"](#)
- [Section 24.3.5, "Configuring Report Cache Persistence Manager"](#)

- [Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties"](#)
- [Section 24.3.7, "Configuring Outbound Email Account"](#)

For information about configuring advanced properties, see [Section 24.10, "Configuring Advanced Properties"](#) and [Section 24.11, "Oracle BAM Configuration Property Reference."](#)

24.3.1 Configuring Oracle BAM Server Properties

Oracle BAM Server properties are configured in the OracleBamServer Properties page in Oracle Enterprise Manager Fusion Middleware Control Console.

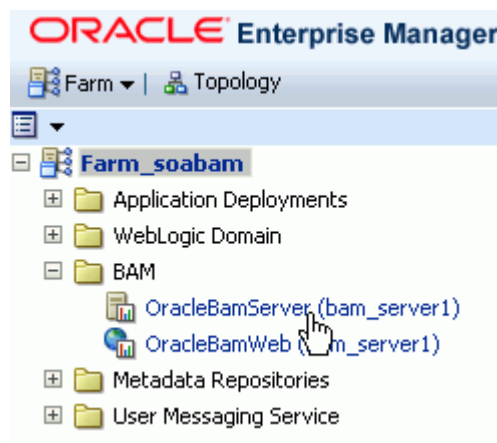
To configure Oracle BAM Server properties:

1. Go to the Oracle BAM Server home page by selecting the **OracleBamServer** node in Fusion Middleware Control Console.

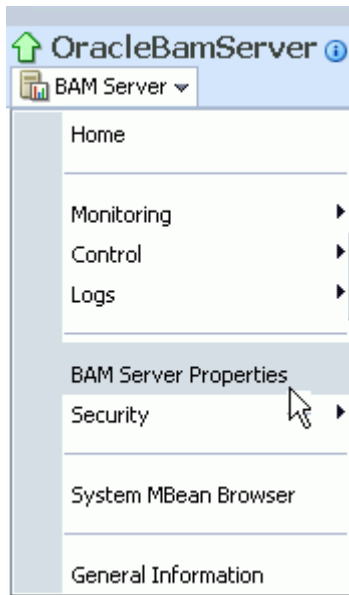
Open Fusion Middleware Control Console in your Web browser at:

`http://host_name:port_number/em`

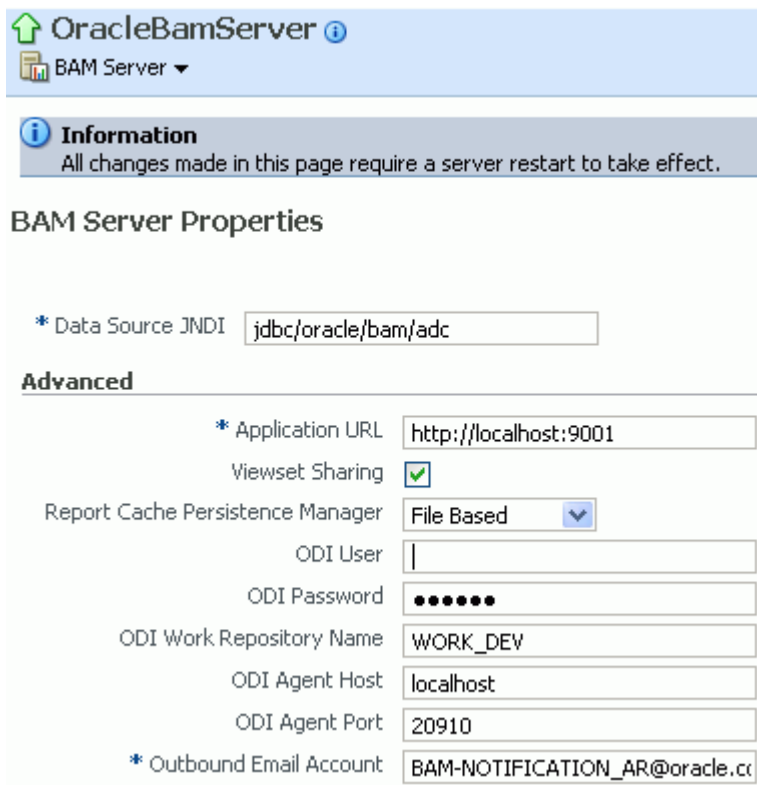
In the navigation tree, the Oracle BAM Server node is named **OracleBamServer**, and it is found in the **BAM** folder.



2. Select **BAM Server Properties** from the **BAM Server** menu.



The BAM Server Properties page opens.



3. Enter the desired values in each of the fields provided.

See the following sections for information about configuring each of the properties:

- [Section 24.3.2, "Configuring Data Source JNDI"](#)
- [Section 24.3.3, "Configuring Application URL"](#)
- [Section 24.3.4, "Configuring Viewset Sharing"](#)

- [Section 24.3.5, "Configuring Report Cache Persistence Manager"](#)
 - [Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties"](#)
 - [Section 24.3.7, "Configuring Outbound Email Account"](#)
4. Click **Apply**.

You must restart the Oracle BAM application after any property changes.

24.3.2 Configuring Data Source JNDI

The Data Source JNDI property specifies the database used by Oracle BAM ADC. Enter the data source JNDI name created for Oracle BAM ADC. For general information about configuring data sources see *Oracle Fusion Middleware Configuring and Managing JDBC for Oracle WebLogic Server*

24.3.3 Configuring Application URL

The Application URL property is used only by Oracle BAM Web applications. This configuration property is no longer used by Oracle BAM Server. See [Section 24.2.2, "Configuring Application URL"](#) for information about configuring this property for Oracle BAM Web applications.

24.3.4 Configuring Viewset Sharing

The Viewset Sharing property enables viewset sharing when possible. A viewset is an object that represents a query to a given Oracle BAM data object. A viewset can include fields (which can be columns from the data object or lookups from other data objects), aggregates, groups, or calculated fields. A viewset can also be sorted, filtered, and row-level security is applied implicitly to it.

Typically, a particular viewset can be shared with other users if they are trying to access the same Oracle BAM dashboard, if the viewsets are not dissimilar due to factors such as row-level security, prompts or parameters used in filters, and so on.

A snapshot is a query result set that can be created by the viewset. Snapshots can be produced from a viewset after it is opened. Because snapshot generation is so performance-intensive, viewset sharing allows Oracle BAM Server to take only one snapshot of a given view to share across multiple users of the same dashboard.

Sharing viewsets between users of the same views improves performance, but requires that new users wait for viewsets to be synchronized as each new user begins sharing the viewset.

The first user who opens an Oracle BAM dashboard receives a new snapshot (which is cached) and immediately receives active data in real time. Changes for active data, called change lists, are cached.

When additional users open the same dashboard, they receive the cached snapshot that was generated for the first user, and they receive cached change lists (more rapidly than the first user) while the "Synchronizing Active Data" message is displayed.

By default, up to 50 change lists are cached, so if multiple users open a dashboard, secondary users must wait for up to 50 change lists to be sent to the dashboard before they begin receiving real-time active data.

The `ElementsCountLimit` property can be set to allow fewer change lists to be cached. See [Section 24.11, "Oracle BAM Configuration Property Reference"](#) for information about configuring advanced properties.

24.3.5 Configuring Report Cache Persistence Manager

The Report Cache Persistence Manager property specifies the persistence location (file based or memory based). Select the appropriate persistence location for your Oracle BAM Report Cache.

24.3.6 Configuring Oracle Data Integrator Integration Properties

The Oracle Data Integrator integration properties specify values for integrating Oracle Data Integrator with Oracle BAM Server.

Enter the appropriate values for the following properties:

ODI User: The user that executes the scenarios in Oracle Data Integrator.

ODI Password: The encoded Oracle Data Integrator password.

ODI Work Repository Name: The name of the Oracle Data Integrator work repository database.

ODI Agent Host: The IP address or host name of the server where the Oracle Data Integrator agent is running.

ODI Agent Port: The Transmission Control Protocol (TCP) port on which the Oracle Data Integrator agent is listening.

24.3.7 Configuring Outbound Email Account

This section explains how to configure the e-mail address that appears in the From header of e-mail notifications sent by the Oracle BAM Event Engine.

The Outbound Email Account property on Oracle BAM Server must point to a dedicated e-mail account for delivering Oracle BAM alert notification e-mail messages and Oracle BAM report link e-mail messages.

If an Oracle BAM alert configured with a secondary action to send an e-mail notification fails on the primary action, this property must be configured with an e-mail address that Oracle UMS can access at run time. Creating a dedicated e-mail account for this purpose is recommended.

Note: Administrators should not use personal e-mail accounts to test alerts, because Oracle UMS may delete e-mail notifications in the mail box and continue deleting messages as they arrive.

To complete the configuration, you must configure the Oracle UMS `usermessagingdriver-email` driver. See [Section 24.5, "Configuring Oracle User Messaging Service"](#) for details.

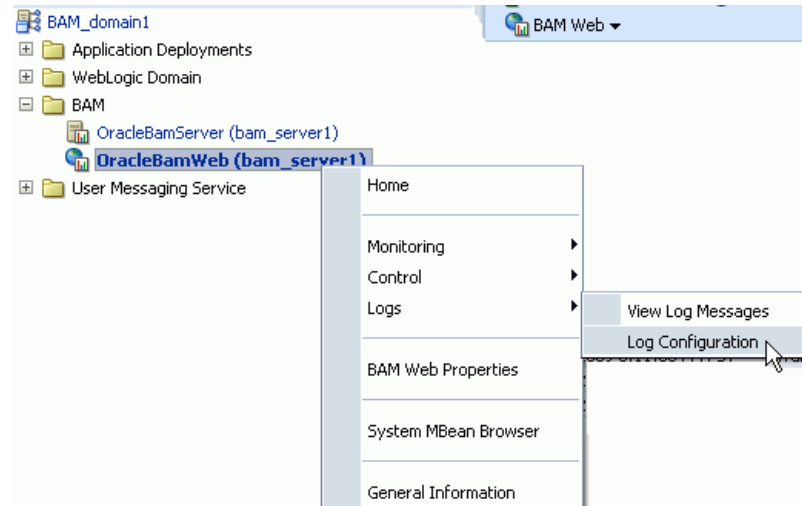
Oracle BAM Event Engine has another configuration property, `TimeoutPeriodToGetFailedStatusesInMins`, which is the time interval for which the Event Engine waits after delivering an e-mail notification, to see if it receives any failure notification from Oracle UMS. The default value for this property is 10 minutes. If a failure notification does not arrive within this time, the Event Engine assumes that e-mail delivery was successful, and the failover action is discarded. Failure notifications arriving after this time are ignored by the Event Engine. See [Section 24.11, "Oracle BAM Configuration Property Reference"](#) for information about configuring `TimeoutPeriodToGetFailedStatusesInMins`.

24.4 Configuring the Logger

Use the Log Configuration page to configure logging levels. For information about viewing the logs, see [Section 25.6, "Monitoring Oracle BAM Logs."](#) Also, see [Section 3.4, "Configuring Log Files"](#) and *Oracle Fusion Middleware Administrator's Guide* for general information about logging and log levels.

To open the Log Configuration page, right click the **OracleBamServer** node or **OracleBamWeb** node in the navigation tree and select **Logs > Log Configuration** as shown in [Figure 24-1](#).

Figure 24-1 Logs Shortcut Menu



For each logger, select the desired notification level as shown in [Figure 24-2](#).

Figure 24–2 Setting Log Levels

Log Configuration

Use this page to configure basic and advanced log configuration settings.

Log Levels | Log Files

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are logged configuration file and become active when the component is started. The log levels for these loggers are persisted across component restarts. Log levels for active runtime loggers are automatically created during runtime and become active when a particular feature area is exercised. For example, oracle.j2ee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime loggers are persisted across component restarts.

View: Runtime Loggers

Search: All Categories | bam

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File
oracle.bam	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.adc	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.common	INCIDENT_ERROR:1 (SEVERE+100) ERROR:1 (SEVERE) WARNING:1 (WARNING)	
oracle.bam.configuration.common.BAMCommon	NOTIFICATION:1 (INFO) NOTIFICATION:16 (CONFIG)	
oracle.bam.configuration.integration.mbeans.BAMIntegration	TRACE:1 (FINE)	
oracle.bam.configuration.server.BAMServerApp	TRACE:16 (FINER) TRACE:32 (FINEST)	
oracle.bam.configuration.server.mbeans.BAMServerAppMBeans	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.configuration.util.BAMMBeanHelper	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.configuration.web.BAMWebApplication	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.configuration.web.mbeans.BAMWebApplicationMBeans	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.ems	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.eventengine	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.middleware	NOTIFICATION:1 (INFO) [Inherited from parent]	

Persist log level state across component restarts

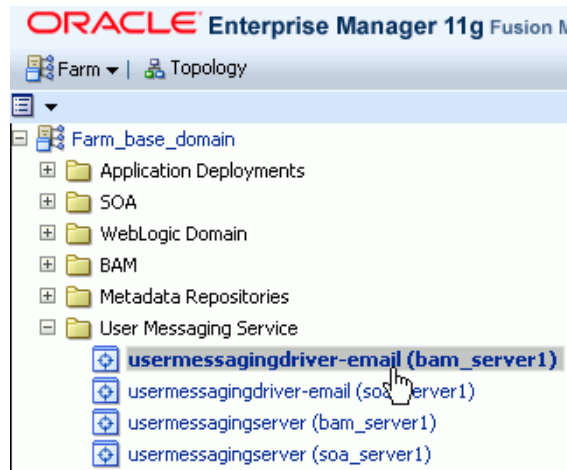
24.5 Configuring Oracle User Messaging Service

Oracle User Messaging Service (UMS) must be configured properly in Fusion Middleware Control Console to send e-mail notifications when alerts are issued.

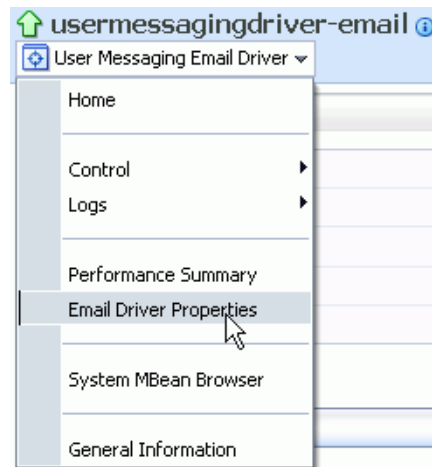
The UMS e-mail driver monitors the outbound e-mail account configured for Oracle BAM Server for any delivery failures, including rejected e-mails. E-mail delivery failure notifications are asynchronous, that is, there is no definite time within which e-mail rejection notification is received.

To configure the service:

1. Open Fusion Middleware Control Console in your Web browser at:
`http://host_name:port_number/em`
2. Go to the `usermessagingdriver-email` (User Messaging Email Driver) page in Fusion Middleware Control Console by expanding the **User Messaging Service** folder, then selecting the `usermessagingdriver-email (bam_server1)` node.



- From the User Messaging Email Driver shortcut menu, select **Email Driver Properties**.



- In the **Driver-Specific Configuration** section, the properties **IncomingMailServer**, **IncomingUserIDs**, and **IncomingUserPasswords** must be provided with the Internet Message Access Protocol (IMAP) server name (Oracle UMS also supports POP3), e-mail account name, and password to access this e-mail account.

Driver-Specific Configuration				
Name	Description	Mandatory	Encoded Credential	Value
IncomingMailServer	The host name of the incoming mail server. Required only if e-mail receiving is supported on the driver instance.			<input type="text"/>
IncomingUserIDs	The list of user names of the mail accounts the driver instance is polling from. Each name must be separated by a comma, for example, foo,bar. Required only if e-mail receiving is supported on the driver instance.			<input type="text"/>
IncomingUserPasswords	The list of passwords corresponding to the user names. Each password is separated by a comma and must reside in the same position in the list as their corresponding user name appears on the usernames list. Required only if e-mail receiving is supported on the driver instance.		✓	Type of Password: <input type="text" value="Indirect Password, Create New User"/> Indirect Username/Key: <input type="text"/> Password: <input type="password"/>

See [Section 27.4, "Configuring User Messaging Service Drivers"](#) for more information. [Table 27-4, "Custom E-Mail Properties"](#) contains specific information about the properties you must configure.

- Click **Apply** to save the changes.

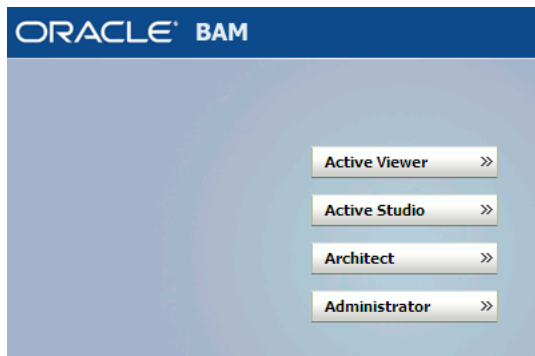
6. Enter the e-mail account in the Outbound Email Account property in the Oracle BAM Server configuration. See [Section 24.3.7, "Configuring Outbound Email Account"](#) for details.

24.6 Configuring Oracle BAM Distribution Lists

Oracle BAM distribution lists are used to send alerts and reports to multiple Oracle BAM users, rather than having to specify several individual recipients. Oracle BAM distribution lists are configured using the Oracle BAM Administrator application.

To configure distribution lists:

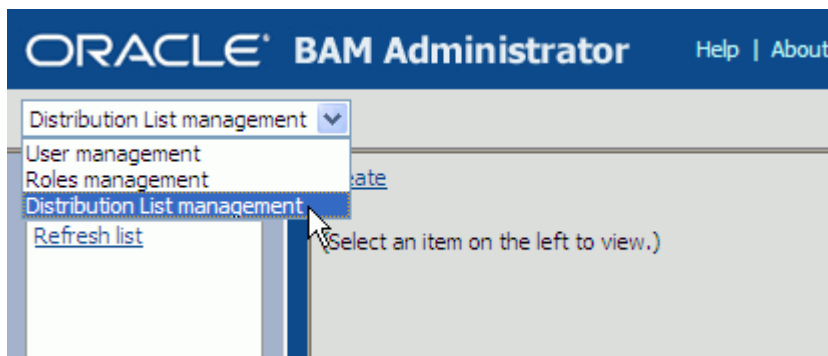
1. Go to the Oracle BAM start page, log in, and select **Administrator**.



The Oracle BAM start page is located at:

http://host_name:port_number/OracleBAM/

2. Select **Distribution List management** from the list.



3. Click **Create**.
4. Enter a unique **Distribution List Name** and click **Create**.

ORACLE[®] BAM Administrator Help | About

Distribution List management ▼

Distribution Lists
[Refresh list](#)

Enter the information for the new Distribution List.

Distribution List Name

5. Click **Continue** to save the distribution list name.

ORACLE[®] BAM Administrator Help | About

Distribution List management ▼

Distribution Lists
[Refresh list](#)
[myDistList](#)

Distribution List "myDistList" has been created.

6. Select the new distribution list that is displayed in the **Distribution Lists** list on the left side of the page, and click **Edit**.

ORACLE[®] BAM Administrator Help | About

Distribution List management ▼

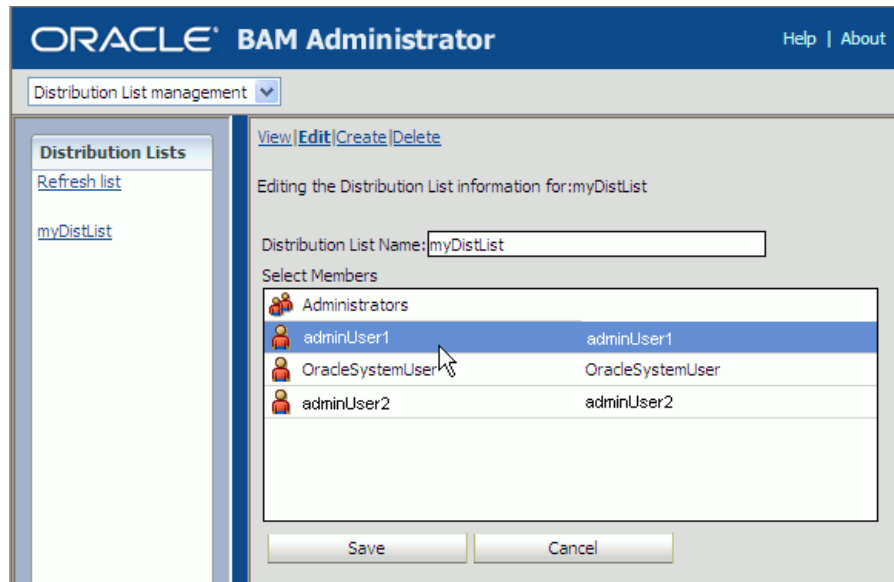
Distribution Lists
[Refresh list](#)
[myDistList](#)

[View](#) | [Edit](#) | [Create](#) | [Delete](#)

Distribution List information for "myDistList".

Distribution List Name:	myDistList
Distribution List Members:	
Last modified:	3/25/2009 3:54:48 AM

7. Select user accounts to add to the distribution list from the **Select Members** list.
 You can select multiple users by clicking on several user names. The highlighted user names are added to the distribution list.



8. Click **Save**.

The users are added to the distribution list.

24.7 Configuring Oracle BAM Adapter

Oracle BAM Adapter properties, including the adapter batching properties, are configured in Oracle WebLogic Server Administration Console. See [Section 24.7.1, "Configuring Oracle BAM Adapter Properties"](#) for details.

Some issues that must be considered when Oracle BAM Adapter (including Oracle BAM sensor actions in a BPEL process) is used in an SOA composite application are configuring connection factories, trusted domains, and credential mapping.

Before deploying applications that use Oracle BAM Adapter, a connection factory to Oracle BAM Server must be configured. You can configure both Remote Method Invocation (RMI) and Simple Object Access Protocol (SOAP) connection factories. See [Section 24.7.2, "Configuring Oracle BAM Connection Factories"](#) for details.

When using the RMI connection between an SOA composite application and Oracle BAM Server, that is when they are deployed in different domains, trusted domain configuration must be done in Oracle WebLogic Server Administrative Console. See [Section 24.7.3, "Configuring Trusted Domains"](#) for more information.

If the Oracle BAM Adapter is using credentials rather than a plain text user name and password, in order for Oracle BAM Adapter (including Oracle BAM sensor actions in a BPEL process) to connect to Oracle BAM Server, the credentials must also be established and mapped. See [Section 24.7.4, "Configuring Credential Mapping"](#) for more information.

Notes: Use plain text user names and passwords only in nonproduction mode. Do not mix using credential mapping and plain text user information; apply one at a time to avoid confusion.

Because Oracle BAM and Oracle SOA Infrastructure use different identity stores, an Oracle BAM user must be configured in the service infrastructure identity store if there is not a common service infrastructure user and Oracle BAM user.

Oracle BAM Adapter does not support transactional behavior. Even though there is a section in Oracle WebLogic Server Administration Console for configuring transaction support, Oracle BAM Adapter must remain at the No Transaction level.

24.7.1 Configuring Oracle BAM Adapter Properties

Oracle BAM Adapter properties are configured in Oracle WebLogic Server Administration Console.

To configure Oracle BAM Adapter properties:

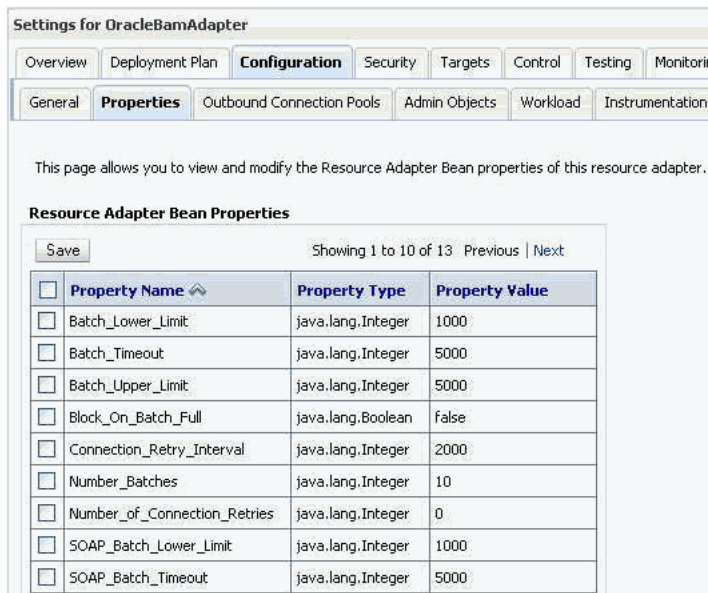
1. Go to the Oracle WebLogic Server Administration Console (http://host_name:port_number/console), and log on.
2. In the **Domain Structure** menu, select **Deployments**.



3. In the **Deployments** summary table, search for **OracleBamAdapter** and click it.



4. In the Settings for OracleBamAdapter page, select the **Configuration** tab, and then the **Properties** tab in the second row.



- Enter the new values, select the checkboxes for each updated value, and click **Save**.

See [Table 24–1, "Oracle BAM Adapter Configuration Properties"](#) for information about each property.

Also, see [Section 24.8, "Configuring Oracle BAM Batching Properties"](#) for general information about configuring batching properties.

Note: To commit these changes to the deployment plan you must click **Activate Changes** in the Change Center. If the **Activate Changes** button does not appear, see the *Oracle BAM Troubleshooting Guide* on the Oracle Technology Network web site for a workaround:

<http://www.oracle.com/technology/products/integration/bam/collateral/documentation.html>

- Restart the SOA domain server.

It needs to be restarted because that is where the Oracle BAM Adapter is deployed.

Table 24–1 Oracle BAM Adapter Configuration Properties

RMI Property	SOAP Property	Default	Description
Batch_Lower_Limit	SOAP_Batch_Lower_Limit	1000	The minimum amount of elements in a batch before it is sent out.
Batch_Upper_Limit	SOAP_Batch_Upper_Limit	5000	The maximum amount of elements in a batch before it is sent out.
Batch_Timeout	SOAP_Batch_Timeout	5000	The timeout in milliseconds after which the batch is sent out even if it is not full.

Table 24–1 (Cont.) Oracle BAM Adapter Configuration Properties

RMI Property	SOAP Property	Default	Description
Block_On_Batch_Full	SOAP_Block_On_Batch_Full	false	The default setting for block on batch full, which indicates whether batching operations should block when the batch is full. If true then batching calls block until room is freed up in the batch for the operation. If false then BatchIsFullException exception is thrown.
Number_Batches	SOAP_Number_Batches	10	The limit of the number of pending calls allowed.

24.7.1.1 Configuring the Adapter to Retry Sending Messages

If messages from BPEL process monitors are published when Oracle BAM Server is unavailable, the messages are not persisted and therefore are not published to the Oracle BAM data objects when Oracle BAM Server comes back online.

You can change this behavior by setting the Oracle BAM Adapter property `Block_On_Batch_Full` to `true` in Oracle BAM Adapter configuration as described in [Section 24.7.1, "Configuring Oracle BAM Adapter Properties."](#)

For more information about BPEL process monitors see "Instrumenting BPEL Processes With Monitors" in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

24.7.2 Configuring Oracle BAM Connection Factories

Some configuration in the Oracle WebLogic Server Administration Console is necessary before using Oracle BAM Adapter.

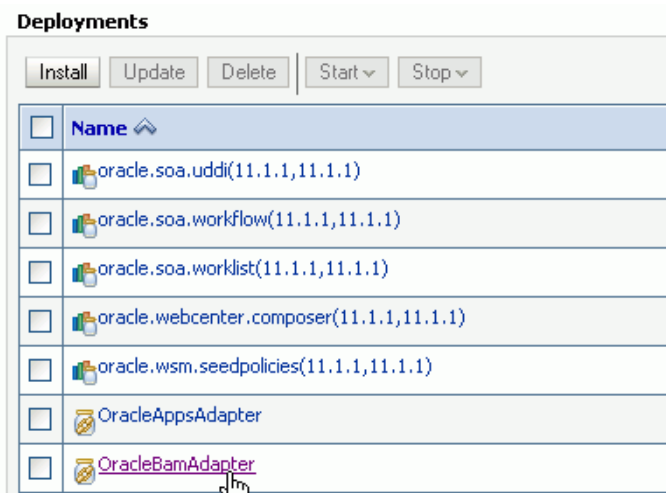
Use the Oracle WebLogic Server Administration Console to configure the Oracle BAM connection factories for connections with Oracle BAM Server.

To configure Oracle BAM connection factories:

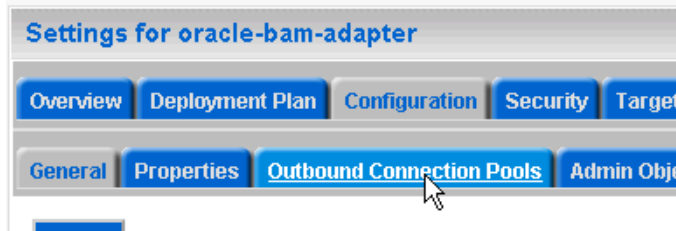
1. Go to the Oracle WebLogic Server Administration Console (http://host_name:port_number/console), and log on.
2. In the **Domain Structure** menu, select **Deployments**.



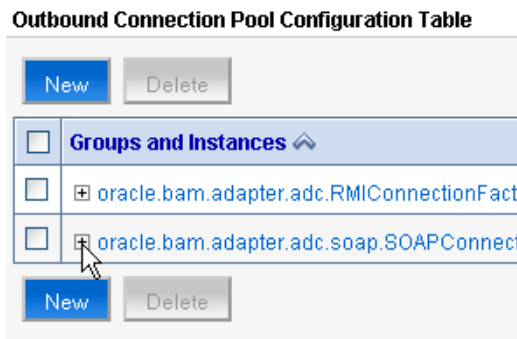
3. In the **Deployments** summary table, search for **OracleBamAdapter** and click it.



4. In the Settings for OracleBamAdapter page, select the **Configuration** tab, and then the **Outbound Connection Pools** tab in the second row.



5. Configure the connection factory interface that you intend to use in Oracle JDeveloper, by expanding the appropriate **Group and Instance** target and clicking the Java Naming and Directory Interface (JNDI) name.



To configure the connection factory for RMI-based calls, click to expand the **oracle.bam.adapter.adc.RMIConnectionFactory** group and select the JNDI name that the user uses in Oracle JDeveloper. The **eis/bam/rmi** connection factory is provided out of the box.

To configure the connection factory for SOAP-based calls, click to expand the **oracle.bam.adapter.adc.SOAPConnectionFactory** group and select the JNDI name that the user uses in Oracle JDeveloper. The **eis/bam/soap** connection factory is provided out of the box.

Outbound Connection Pool Configuration Table

<input type="checkbox"/>	Property Name
<input type="checkbox"/>	Groups and Instances ^
<input type="checkbox"/>	oracle.bam.adapter.adc.RMIConnectionFactory
<input type="checkbox"/>	eis/bam/rmi
<input type="checkbox"/>	oracle.bam.adapter.adc.soap.SOAPConnectionFactory
<input checked="" type="checkbox"/>	eis/bam/soap

- Configure each of the properties by clicking in the table cells and entering the values.

Settings for oracle.bam.adapter.adc.soap.SOAPConnectionFactory

General **Properties** Transaction Authentication Connection Pool Logging

This page allows you to view and modify the configuration properties of this outbound connection pool. Properties you modify here are saved to a deployment plan.

Outbound Connection Properties

Save Showing 1 to 5 of 5 Previous | Next

<input type="checkbox"/>	Property Name ^	Property Type	Property Value
<input type="checkbox"/>	HostName	java.lang.String	localhost
<input type="checkbox"/>	IsHTTPEnabledWebService	java.lang.String	false
<input type="checkbox"/>	Password	java.lang.String	
<input type="checkbox"/>	PortNumber	java.lang.String	9001
<input type="checkbox"/>	UserName	java.lang.String	

Save Showing 1 to 5 of 5 Previous | Next

Note: Press Enter after entering a value in the table.

Note: The **UserName** field should contain an Oracle BAM user who is a member of application-level role Administrator or Report Architect. See [Section 26.3.3, "Adding Members to Application Roles"](#) and [Section 26.3.4, "Understanding Oracle BAM Application Roles"](#) for information about assigning users to Oracle BAM application roles.

This configuration creates the connection factory with HTTP. To configure an HTTPS connection factory, see [Section 24.7.2.1, "Configuring HTTPS for Oracle BAM Adapter"](#).

The RMI protocol has different configuration properties. You must provide **InstanceName** and **IsClustered** in addition to the standard connection properties.

Settings for oracle.bam.adapter.adc.RMIConnectionFactory

General **Properties** Transaction Authentication Connection Pool Logging

This page allows you to view and modify the configuration properties of this outbound connection pool. Properties you modify here are saved to a deployment plan.

Outbound Connection Properties

Save Showing 1 to 6 of 6 Previous | Next

<input type="checkbox"/>	Property Name	Property Type	Property Value
<input type="checkbox"/>	HostName	java.lang.String	localhost
<input type="checkbox"/>	InstanceName	java.lang.String	ADCServer1
<input type="checkbox"/>	IsClustered	java.lang.String	false
<input type="checkbox"/>	Password	java.lang.String	...
<input type="checkbox"/>	PortNumber	java.lang.String	9001
<input type="checkbox"/>	UserName	java.lang.String	...

Save Showing 1 to 6 of 6 Previous | Next

7. Select the checkboxes next to the values you have updated and click **Save**.

Note: To commit these changes to the deployment plan you must click **Activate Changes** in the Change Center. If the **Activate Changes** button does not appear, see the *Oracle BAM Troubleshooting Guide* on the Oracle Technology Network web site for a workaround:

<http://www.oracle.com/technology/products/integration/bam/collateral/documentation.html>

24.7.2.1 Configuring HTTPS for Oracle BAM Adapter

To configure HTTPS:

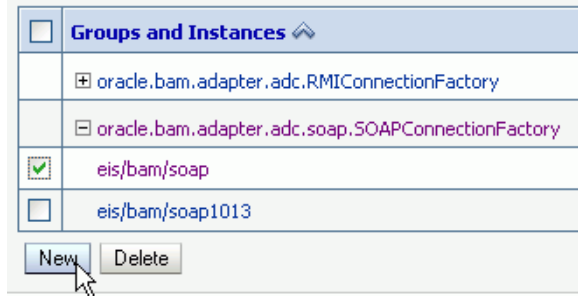
1. Locate the oracle.bam.adapter.adc.soap.SOAPConnectionFactory connection factory in the Oracle WebLogic Server Administration Console as described in [Section 24.7, "Configuring Oracle BAM Adapter"](#).

Settings for oracle-bam-adapter

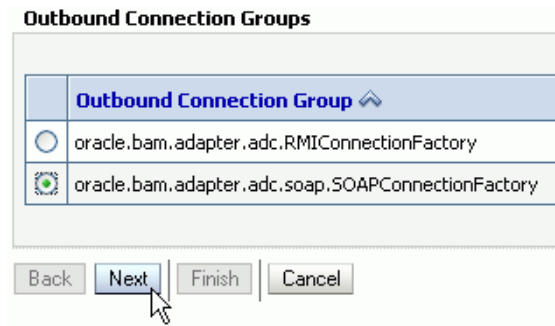
Overview Deployment Plan **Configuration** Security Target

General **Properties** **Outbound Connection Pools** Admin Objects

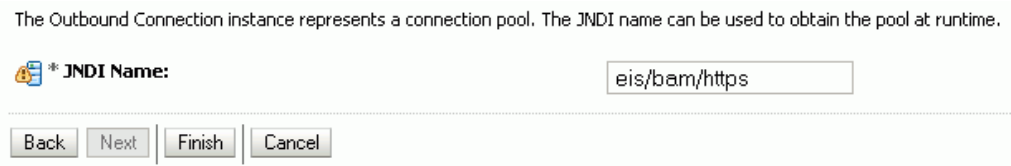
2. Click to expand the **oracle.bam.adapter.adc.soap.SOAPConnectionFactory** node, select the **eis/bam/soap** option, and click **New**.



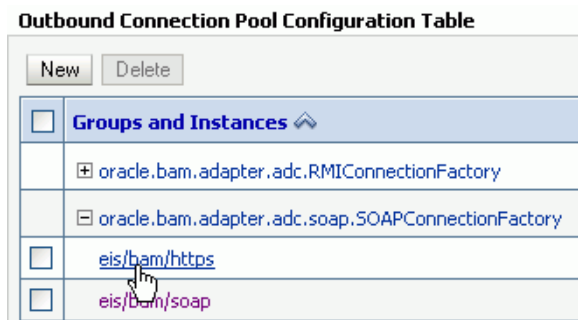
3. Select the `oracle.bam.adapter.adc.soap.SOAPConnectionFactory` option and click **Next**.



4. Enter a JNDI name for this connection factory and click **Finish**.



5. Select the `eis/bam/https` connection pool instance in the **Groups and Instances** list.



6. Complete the configuration properties as shown in [Section 24.7, "Configuring Oracle BAM Adapter,"](#) and change the `IsHTTPSEnabledWebService` value to `true`.

Outbound Connection Properties

Save Showing 1 to 5 of 5 Previous | Next

<input type="checkbox"/>	Property Name ^	Property Type	Property Value
<input type="checkbox"/>	HostName	java.lang.String	localhost
<input type="checkbox"/>	IsHTTPEnabledWebService	java.lang.String	true
<input type="checkbox"/>	Password	java.lang.String	*****
<input type="checkbox"/>	PortNumber	java.lang.String	9002
<input type="checkbox"/>	UserName	java.lang.String	*****

24.7.3 Configuring Trusted Domains

When using the RMI connection between an SOA composite application and Oracle BAM Server, that is when they are deployed in different domains, trusted domain configuration must be done in Oracle WebLogic Server Administrative Console.

To configure trusted domains:

- Using the Oracle WebLogic Server Administration Console, in both SOA and Oracle BAM Server domains, go to *base_domain* > **Security** > **General**, and expand the **Advanced** settings.

Advanced

Security Interoperability Mode: default Specifies the security mode of the communication channel used for XA calls between servers that participate in a global transaction. All server instances in a domain must have the same security mode setting. [More Info...](#)

Credential: The credential for this WebLogic Server domain. When a domain is created, a unique credential is generated for the domain. If you want to establish trust between two or more domains, decide on a credential that will be shared by the domains, then specify it here and in the other domains. [More Info...](#)

Confirm Credential:

- Enter the credential for the WebLogic Server domain in the **Credential** and **Confirm Credential** fields.

Enter the same credential in both the SOA and Oracle BAM Server domains to establish trust between the domains.

- Save and Activate the changes, then restart Oracle WebLogic Server.

For more information about trusted domains see "Enabling Global Trust" in *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

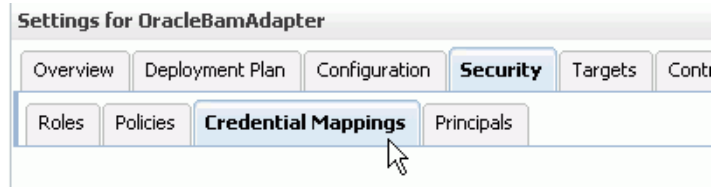
24.7.4 Configuring Credential Mapping

Configure Oracle BAM Adapter to securely store user name and password properties using Oracle WebLogic Server credential mapping functionality.

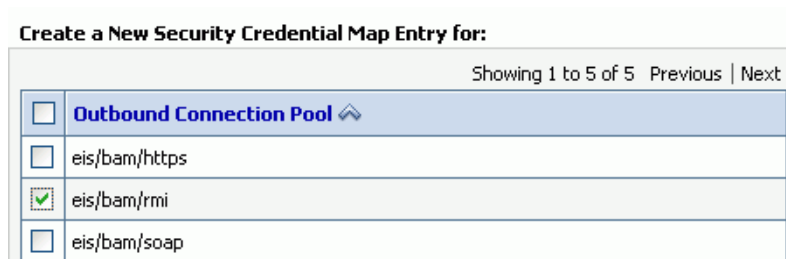
Note: Use plain text user names and passwords only in nonproduction mode. Do not mix using credential mapping and plain text user information; apply one at a time to avoid confusion.

To configure credential mapping:

1. Using the Oracle WebLogic Server Administration Console, go to **Deployment > OracleBamAdapter > Security > Credential Mappings**.



2. Click **New** and select an outbound connection pool instance for which to create a credential mapping entry, then click **Next** (By default, Oracle BAM is installed with two connection pools, `eis/bam/rmi` and `eis/bam/soap`).



Note: Ensure that a separate credential mapping entry for each outbound connection pool is created. If there are any additional outbound connection pools other than the defaults, you must create corresponding credential mappings for them as well.

3. Select **Unauthenticated WLS User**, and click **Next** (**Unauthenticated WLS User** is similar to an anonymous user).



4. Specify a corresponding user name and password for connecting to Oracle BAM Server, then click **Finish** to complete the credential mapping.

Create a New Security Credential Mapping

Back Next Finish Cancel

EIS User Name and Password

Configure the EIS User Name and Password that you would like to map the WebLogic Server User to:

* Indicates required fields

Enter the EIS User Name:

* **EIS User Name::**

Enter the EIS Password:

* **EIS Password::**

* **Confirm Password::**

- Repeat these steps to create the credential mapping for the other Oracle BAM connection pool entries.

After you configure the credential mappings for each of the outbound connection pool entries, the mappings appear in the **Credential Mappings** table.

Credential Mappings

New Delete Showing 1 to 2 of 2 Previous | Next

<input type="checkbox"/>	WLS User	EIS User	Outbound Connection Pool
<input type="checkbox"/>	Anonymous	user	eis/bam/rmi
<input type="checkbox"/>	Anonymous	user	eis/bam/soap

- For these changes to take effect, Oracle WebLogic Server must be restarted.

24.8 Configuring Oracle BAM Batching Properties

The batch processor batches operations (for example, insert, update, upsert, and delete) between the client and the Active Data Cache server to improve performance by limiting the number of remote calls. For example, 10 update operations could be processed in a single remote call with batching enabled, rather than making 10 remote calls.

Note: Batching is used only on incoming data, not on internal Oracle BAM processes.

Oracle BAM batching properties are located in the `BAMCommonConfig.xml` file at:

```
WLS_HOME/user_projects/domains/base_domain/config/fmwconfig/servers/bam_server
1/applications/oracle-bam_11.1.1/config/
```

Oracle BAM must be restarted after any changes to Oracle BAM properties. See [Section 26.2, "Managing Oracle BAM Availability"](#) for information about restarting Oracle BAM.

Note: The Oracle BAM ADC API properties are the properties used by all Oracle BAM clients (such as ICommand and Oracle Data Integrator), and the SOAP properties are only used by Oracle BAM Adapter when configured to use SOAP.

Table 24–2 Active Data Cache API and SOAP (Oracle BAM Adapter) Batching Properties

Oracle BAM ADC API Property	SOAP Property	Default	Description
ActiveDataCache_Datasets_Batching_Limit_PendingCalls	Adapter_SOAP_Batching_Limit_PendingCalls	10	The limit of the number of pending calls allowed.
ActiveDataCache_Datasets_Batching_Limit_Lower	Adapter_SOAP_Batching_Limit_Lower	1000	The minimum number of elements in a batch before it is sent out.
ActiveDataCache_Datasets_Batching_Limit_Upper	Adapter_SOAP_Batching_Limit_Upper	5000	The maximum number of elements in a batch before it is sent out.
ActiveDataCache_Datasets_Batching_Timeout	Adapter_SOAP_Batching_Timeout	5000	The timeout interval in milliseconds after which the batch is sent out even if it is not full.
ActiveDataCache_Datasets_Batching_BlockOnBatchFull	Adapter_SOAP_Batching_BlockOnBatchFull	false	The block on batch full properties indicate whether batching operations should block when the batch is full. If set to true, then batching calls block until room is freed up in the batch for the operation. If set to false, a <code>BatchIsFullException</code> exception is thrown.
ActiveDataCache_Datasets_Batching_RetryInterval	Adapter_SOAP_Batching_RetryInterval	30000	The interval in milliseconds at which batch processing should attempt to retry failed flush attempts.
ActiveDataCache_Datasets_Batching_MaxRetryInterval	Adapter_SOAP_Batching_MaxRetryInterval	3600000	The maximum interval in milliseconds at which batch processing should attempt to retry failed flush attempts.
ActiveDataCache_Datasets_Batching_MaximumRetries	Adapter_SOAP_Batching_MaximumRetries	Integer.MAX_VALUE	The maximum number of times batch processing should attempt to retry failed flush attempts. Zero indicates no retry.

Table 24–2 (Cont.) Active Data Cache API and SOAP (Oracle BAM Adapter) Batching

Oracle BAM ADC API Property	SOAP Property	Default	Description
ActiveDataCache_Datasets_Batching_SuspendOnDisconnect	Adapter_SOAP_Batching_SuspendOnDisconnect	false	Suspend on disconnect, which indicates whether batching operations should be permanently suspended if and when the connection to Oracle BAM Server is lost.

Batching Retry Mechanism

The batching retry mechanism is designed to retry remote calls to the server in the event communication with the server is lost due to, for example, network problems or Oracle BAM Server going offline. The operation of this retry mechanism is governed by the configuration properties detailed in this section. The term *flush* refers to the attempt to send the batch calls to the Oracle BAM Server for processing.

The `RetryInterval` property specifies the interval between retry attempts in milliseconds. If the `MaxRetryInterval` value is unspecified (0), then the code continues retrying at the `RetryInterval` value until the batch flush is successful or the `MaximumRetries` value is exceeded.

If the `MaxRetryInterval` value is specified, then the retry interval value is doubled on each retry up to the `MaxRetryInterval` value. It stays at the `MaxRetryInterval` rate until the batch flush is successful, or the `MaximumRetries` value is exceeded. This allows the retry rate to decline over time to a more reasonable long-term rate. If the server does not recover quickly, do not continue to retry at a rapid rate.

If the `MaximumRetries` value is 0, then no retries are attempted and failed batches are discarded.

If the `SuspendOnDisconnect` value is `true`, then all batching is permanently suspended until the client application is restarted, regardless of whether communication with Oracle BAM Server is reestablished.

If the pending batch limit is reached and the current batch is full (maximum size reached), then batch calls are blocked. There is no place to queue the operation from the current call, so Oracle BAM blocks the client until the condition resolves itself.

[Table 24–2](#) describes the configuration properties that can be specified for the Active Data Cache API batching (which is used by the RMI connection factory, configured in [Section 24.7.2, "Configuring Oracle BAM Connection Factories"](#)).

The Oracle BAM Adapter batching mechanism (used by the SOAP connection factory) has an identical set of configuration properties and default values.

24.9 Configuring Security

Security is configured in Oracle WebLogic Server. See *Oracle Fusion Middleware Securing Oracle WebLogic Server* for information about the topics listed in this section.

General information about Oracle WebLogic Server security is available in *Oracle Fusion Middleware Understanding Security for Oracle WebLogic Server*.

This section address the following security topics as they relate to Oracle BAM:

- [Section 24.9.1, "Configuring Credential Mapping"](#)
- [Section 24.9.2, "Configuring Oracle BAM User Permissions"](#)
- [Section 24.9.3, "Configuring Secure Socket Layer"](#)
- [Section 24.9.4, "Configuring Oracle Internet Directory"](#)
- [Section 24.9.5, "Securing Oracle BAM JMS Resources"](#)

24.9.1 Configuring Credential Mapping

Credential mapping is used to securely store user name and password properties when using the Oracle BAM Adapter. For information see [Section 24.7.4, "Configuring Credential Mapping."](#)

24.9.2 Configuring Oracle BAM User Permissions

To provide secure access to the Oracle BAM applications, users are assigned to roles that provide the necessary permissions. See [Section 26.3, "Managing Oracle BAM Users"](#) for more information.

24.9.3 Configuring Secure Socket Layer

Oracle WebLogic Server provides the facilities needed to enable Secure Socket Layer (SSL) on any Oracle SOA Suite and Oracle WebCenter connections into Oracle WebLogic Server.

Use the Java Development Kit (JDK) `keytool` utility to create and manage keystores and certificates, and use the Oracle WebLogic Server Administration Console to configure Oracle WebLogic Server listeners.

See "Configuring SSL" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* for more information.

Although Oracle WebLogic Server lets you configure the Oracle BAM Web applications on both SSL and non-SSL ports, and Oracle BAM can also be configured to run on both SSL and non-SSL ports, it causes issues with the URL configured for Oracle BAM alerts. When Oracle BAM is running on both SSL and non-SSL ports, it cannot send two Oracle BAM report URLs to the alert e-mail receiver. It is the responsibility of the administrator to decide which mode of access (SSL or non-SSL) to use for the Oracle BAM report URL recipients.

To start Oracle BAM in SSL mode, and enable Oracle BAM clients (like ICommand) to invoke Oracle BAM ADC, invoke EJBs, JMS resources, and JDBC resources using SSL, you must configure the following Oracle BAM properties:

`Communication_Protocol` in the `BAMCommonConfig.xml`, `BAMServerConfig.xml`, and `BAM ICommandConfig.xml` files, as follows:

Default value: `<Communication_Protocol>t3</Communication_Protocol>`

For SSL using t3s: `<Communication_Protocol>t3s</Communication_Protocol>`

`ListenPort` in `BAMCommonConfig.xml` file, as follows:

Default value: `<ListenPort>ListenPort</ListenPort>`

For SSL: `<ListenPort>SSLListenPort</ListenPort>`

24.9.4 Configuring Oracle Internet Directory

For general information about configuring Oracle Internet Directory, see "Configuring Users and Groups in the Oracle Internet Directory and Oracle Virtual Directory Authentication Providers" in *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

To use Oracle Internet Directory with Oracle BAM:

1. Configure Oracle Internet Directory using the Oracle WebLogic Server Administration Console.
2. Create **OracleSystemUser** in Oracle Internet Directory, by connecting to Oracle Internet Directory with an Lightweight Directory Access Protocol (LDAP) browser and creating a user in the same base user Distinguished Name that was provided in the Oracle WebLogic Server Administration Console while configuring Oracle Internet Directory.
3. Run the following SQL statements to null the user global unique identifiers (GUID) in the Oracle BAM schema:

```
UPDATE "SysIterUser" SET "SysIterUser"."GUID" = NULL,
"SysIterUser"."Inactive" = NULL;
```

24.9.5 Securing Oracle BAM JMS Resources

This is an optional procedure if you want to restrict access to the Oracle BAM system JMS topics.

To secure Oracle BAM JMS resources:

1. Create a group with any group name using Oracle Weblogic Server Administration Console. For example, `OracleSystemGroup`.
2. Go to `WLS_HOME/AS11gR1SOA/bam/bin` and invoke `secure_jms_system_resource.py` using WLST.

The usage should be:

```
<JAVA_HOME>/bin/java -classpath <weblogic.jar_location> weblogic.WLST./secure_
jms_system_resource.py --username admin_user_name --password admin_password
--url admin_server_t3_url --jmsSystemResource JMS_system_resource_name --group
security_group_to_use
```

3. Assign `OracleSystemUser` to this group.
4. Assign all those Oracle BAM users to this group.

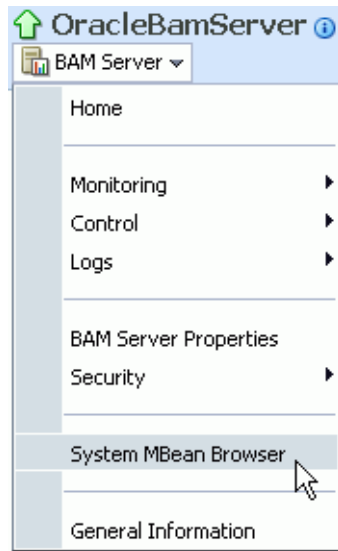
24.10 Configuring Advanced Properties

Oracle BAM provides many advanced properties not available for configuration using the `OracleBamServer` and `OracleBamWeb` properties pages in Fusion Middleware Control Console. These advanced properties are configured using the System MBean Browser.

See [Section 24.11, "Oracle BAM Configuration Property Reference"](#) for a listing of all properties available for Oracle BAM configuration.

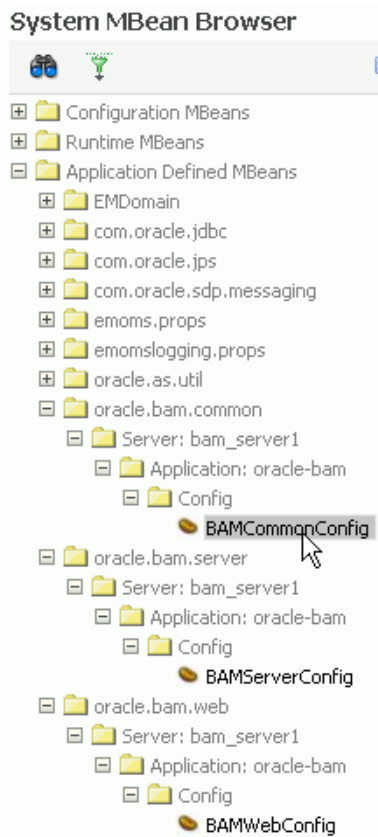
To configure the advanced properties using the System MBean Browser:

1. Select **System MBean Browser** in the `OracleBAMWeb` or `OracleBAMServer` menu.



2. Select the path to the appropriate Application Defined MBeans page:
 - For properties common to all Oracle BAM components select **Application Defined MBeans > oracle.bam.common > Server: bam_server1 > Application: oracle-bam > Config > BAMCommonConfig** (see [Figure 24-3](#)).
 - For Oracle BAM Server-specific properties select **Application Defined MBeans > oracle.bam.server > Server: bam_server1 > Application: oracle-bam > Config > BAMServerConfig**.
 - For Oracle BAM Web applications-specific properties select **Application Defined MBeans > oracle.bam.web > Server: bam_server1 > Application: oracle-bam > Config > BAMWebConfig**.

Figure 24–3 System MBean Browser Navigation Tree



The associated configuration properties are displayed in the System MBean Browser.

Application Defined MBeans: Config:BAMCommonConfig Apply

Show MBean Information

Attributes		Notifications
Name	Description	Access Value
1 Adapter_SOAP_Batching_FlushOnDer	This designates the limit for Flushing on demand for the BAM adapter.	RW 1000
2 Adapter_SOAP_Batching_Limit_Lower	This designates the lower limit for SOAP batching for the BAM adapter.	RW 1000
3 Adapter_SOAP_Batching_Limit_Upper	This designates the lower limit for SOAP batching for the BAM adapter.	RW 5000
4 Adapter_SOAP_Batching_Timeout	This designates the timeout for SOAP batching for the BAM adapter.	RW 50
5 ApplicationURL	This designates the Application URL	RW http://localhost:9001
6 ConfigMBean	If true, it indicates that this MBean is a ConfigMBean.	R true
7 eventProvider	If true, it indicates that this MBean is an event provider as defined by JSR-77.	R true
8 eventTypes	All the event's types emitted by this MBean.	R jmx.attribute.change
9 objectName	The MBean's unique JMX name	R oracle.bam.common:name=BAMComm
10 ReadOnly	If true, it indicates that this MBean is a read only MBean.	R false
11 RestartNeeded	Indicates whether a restart is needed.	R false
12 SystemMBean	If true, it indicates that this MBean is a System MBean.	R false

3. Edit property values in the **Values** column, and click **Apply**.
4. Oracle BAM must be restarted after any changes to Oracle BAM properties. See [Section 26.2, "Managing Oracle BAM Availability"](#) for information about restarting Oracle BAM.

Oracle BAM Configuration Property Files

All Oracle BAM properties are located in configuration files. These files are located in the following directory on the host where the Oracle BAM components are installed:

```
WLS_HOME/user_projects/domains/base_domain/config/fmwconfig/servers/bam_server
1/applications/oracle-bam_11.1.1/config
```

The configuration properties usually go into the `BAMCommonConfig.xml` file, which contains the properties global to all Oracle BAM components. These properties can also be specified in component specific configuration files:

- Oracle BAM Server-specific properties are configured in `BAMServerConfig.xml`
- Oracle BAM Web applications-specific properties are configured in `BAMWebConfig.xml`
- Oracle BAM ICommand utility-specific properties are configured in `BAMICCommandConfig.xml`

The properties set in the `BAMCommonConfig.xml` file are always loaded. Any additional configuration files must be loaded explicitly. Oracle BAM Server explicitly loads the `BAMServerConfig.xml` file, the Oracle BAM Web applications explicitly load the `BAMWebConfig.xml` file, and ICommand explicitly loads the `BAMICCommandConfig.xml` file. When a configuration file is loaded, its properties override any properties previously set, that is properties specified in `BAMServerConfig.xml` override properties set in `BAMCommonConfig.xml`.

24.11 Oracle BAM Configuration Property Reference

This section provides a brief description of each Oracle BAM configuration property that may be used.

Advanced properties are configured in the Fusion Middleware Control Console System MBean Browser. See [Section 24.10, "Configuring Advanced Properties"](#) for information about configuring properties that do not appear in the Oracle BAM configuration pages in Fusion Middleware Control Console.

Note: The Oracle BAM ADC API properties are the properties used by all Oracle BAM clients (such as ICommand and Oracle Data Integrator), and the SOAP properties are only used by Oracle BAM Adapter when configured to use SOAP.

Table 24–3 Oracle BAM Configuration Properties

Property Name	Description
<code>ActiveDataCache.API.Batching.ThreadPool.CoreSize</code>	Indicates how many threads to keep in the Oracle BAM ADC API ThreadPools when idle. Default: 5
<code>ActiveDataCache.API.Batching.ThreadPool.KeepAliveTimeInSecs</code>	Amount of time (in seconds) to keep an idle thread in the Oracle BAM ADC API ThreadPools. Default: 20
<code>ActiveDataCache.API.Batching.ThreadPool.MaxSize</code>	Maximum number of threads in the Oracle BAM ADC API ThreadPools. Default: 100

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ActiveDataCache.API.Batching.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Oracle BAM ADC API ThreadPools. Default: 30
ActiveDataCache.API.BufferedDataReader.ThreadPool.CoreSize	Indicates how many threads to keep in the Oracle BAM ADC BufferedDataReader ThreadPools when idle. Default: 10
ActiveDataCache.API.BufferedDataReader.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Oracle BAM ADC BufferedDataReader ThreadPools. Default: 20
ActiveDataCache.API.BufferedDataReader.ThreadPool.MaxSize	Maximum number of threads in the Oracle BAM ADC BufferedDataReader ThreadPools. Default: 100
ActiveDataCache.API.BufferedDataReader.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Oracle BAM ADC BufferedDataReader ThreadPools. Default: 30
ActiveDataCache.Kernel.ActiveDataQueue.ThreadPool.CoreSize	Indicates how many threads to keep in the Oracle BAM ADC ActiveDataQueue ThreadPools when idle. Default: 20
ActiveDataCache.Kernel.ActiveDataQueue.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Oracle BAM ADC ActiveDataQueue ThreadPools. Default: 20
ActiveDataCache.Kernel.ActiveDataQueue.ThreadPool.MaxSize	Maximum number of threads in the Oracle BAM ADC ActiveDataQueue ThreadPools. Default: 100
ActiveDataCache.Kernel.ActiveDataQueue.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Oracle BAM ADC ActiveDataQueue ThreadPools. Default: 30
ActiveDataCache_Datasets_Batching_BlockOnBatchFull	Block on batch full properties indicate whether batching operations should block when the batch is full. If set to <code>true</code> , then batching calls block until room is freed up in the batch for the operation. If set to <code>false</code> , a <code>BatchIsFullException</code> exception is thrown. Default: <code>false</code>

Table 24-3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ActiveDataCache_Datasets_Batching_Limit_Lower	<p>The minimum amount of elements in a batch before it is sent to the server. Depending on the load, batches may contain more than this minimum (up to the maximum), but they will never contain less than this minimum (unless the timeout expires).</p> <p>See <code>ActiveDataCache_Datasets_Batching_Timeout</code> for the exception to this rule.</p> <p>See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information.</p> <p>Default: 1000</p>
ActiveDataCache_Datasets_Batching_Limit_PendingCalls	<p>The limit of the number of pending batches that are waiting to be sent to the server. When this limit is reached and the current batch is full (at its upper limit), further batched operations become blocking calls until this condition is cleared. This limit throttles the client and keeps it from overrunning the server.</p> <p>See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information.</p> <p>Default: 10</p>
ActiveDataCache_Datasets_Batching_Limit_Upper	<p>The maximum amount of elements in a batch before it is sent out. A batch will never contain more than this maximum.</p> <p>See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information.</p> <p>Default: 5000</p>
ActiveDataCache_Datasets_Batching_MaximumRetries	<p>The maximum number of times batch processing retries failed attempts to send the batch to the server. A value of 0 (zero) indicates no retry.</p> <p>Default: 2147483647</p>
ActiveDataCache_Datasets_Batching_MaxRetryInterval	<p>The maximum interval in milliseconds at which batch processing retries failed attempts to send the batch to the server. If this maximum retry interval is specified, the retry interval will be doubled on each retry attempt until the interval reaches this maximum value. Further retries will use this maximum value. This enables the configuration of retry attempts that will taper off should the failure not resolve itself quickly. If a maximum retry interval of 0 (zero) is specified, the retry interval will not change.</p> <p>Default: 3600000</p>
ActiveDataCache_Datasets_Batching_RetryInterval	<p>The interval in milliseconds at which batch processing retries failed attempts to send the batch to the server. Retry is attempted when the failure is due to server connectivity problems such as the server being restarted.</p> <p>Default: 30000</p>

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ActiveDataCache_Datasets_Batching_SuspendOnDisconnect	Indicates whether batching operations are permanently suspended if and when the connection to Oracle BAM server is lost. Default: <code>false</code>
ActiveDataCache_Datasets_Batching_ThreadPoolSize	The constant size thread pool (that is, containing a fixed number of threads). Default: 25
ActiveDataCache_Datasets_Batching_Timeout	The time-out in milliseconds after which the batch is sent out even if it is not full (has less than the configured minimum in <code>ActiveDataCache_Datasets_Batching_Limit_Lower</code>). The time-out ensures that operations are not waiting overlong in a batch due to inactivity. A batched operation will never wait longer than this time-out to be sent to the server. See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 50
Adapter_SOAP_Batching_BlockOnBatchFull	Block on batch full properties indicate whether batching operations should block when the batch is full. If set to <code>true</code> , then batching calls block until room is freed up in the batch for the operation. If set to <code>false</code> , a <code>BatchIsFullException</code> exception is thrown. Default: <code>false</code>
Adapter_SOAP_Batching_Limit_Lower	The minimum amount of elements in a batch before it is sent out. See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 1000
Adapter_SOAP_Batching_Limit_Upper	The maximum amount of elements in a batch before it is sent out. See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 5000
Adapter_SOAP_Batching_Timeout	The timeout interval in milliseconds after which the batch is sent out even if it is not full. See Section 24.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 50
ADC_PassThrough_Import_BatchSize	The maximum number of rows that are imported from an external data object. Default: 50
ADC_PassThrough_Import_MaxRowsToImportAtOnce	Maximum number of rows imported by <code>ExternalDataManager</code> at one time. Default: 100

Table 24-3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ADC_PassThrough_Import_MaxSize	Maximum size imported by ExternalDataManager. Default: -1
ADCBatchSize	Refers to JDBC statement batching. When the Oracle BAM ADC executes SQL statements it uses JDBC batching to reduce the number of calls to the database, improving performance. Each call executes a batch of statements rather than a single statement. Default: 100
ADCChannelName	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: invm:topic/oracle.bam.messaging.activedatacache.activatedata
ADCDataSource	The data source for the Active Data Cache. See Section 24.3.2, "Configuring Data Source JNDI" for more information. Default: jdbc/oracle/bam/adc
ADCLogBatchInsertLocks	Indicates whether to log Oracle BAM ADC batch insert locks. Default: false
ADCLogFolderLocks	Indicates whether to log Oracle BAM ADC folder locks. Default: false
ADCLogSqlStatements	Indicates whether to log Oracle BAM ADC SQL statements. Default: false
ADCLogTransactionLocks	Indicates whether to log Oracle BAM ADC transaction locks. Default: false
ADCMaxViewsetRowCount	The default limit for rows of data displayed in a view with this property. Note that the higher you set this value, the more performance is impacted. Default: 64000
ADCPreloadDataObjectIDs	Indicates whether data objects should be loaded at Oracle BAM ADC startup rather than on-demand as they are accessed. Pre-loading the data objects increases startup time but decreases initial data object access time. Not pre-loading the data objects decreases startup time but increases initial data object access time. Also, pre-loading all data objects where many data objects are rarely referenced may needlessly increase memory requirements.

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ADCPushInterval	<p>The rate at which Oracle BAM Active Data Cache pushes events to Oracle BAM Report Server. This is one factor that affects the frequency at which active events occur on Oracle BAM dashboard pages. Increasing this interval reduces the load on Oracle BAM Server. However, larger intervals increase the likelihood of multiple updates in the dashboard being collapsed into single updates.</p> <p>Note that you can override the default <code>ADCPushInterval</code> within particular reports by setting the Active Data Retrieval Interval property in the Report Properties dialog box for a particular Oracle BAM dashboard or report. Open a report in Active Studio, then select Edit > Change Report Properties > Advanced to set the active data retrieval interval. Nonzero values override the <code>ADCPushInterval</code> value for that particular report.</p> <p>Default: 1000</p>
ADCPushThreadPoolSize	<p>Indicates the size of the threadpool for Oracle BAM ADC push functionality.</p> <p>Default: 10</p>
ADCRetryCount	<p>Number of times to retry the Oracle BAM Active Data Cache connection.</p> <p>Default: 2</p>
ADCSecurityFiltersEnabled	<p>Indicates whether Oracle BAM ADC security filters are to be enabled.</p> <p>Default: true</p>
ADCServerName	<p>Host name of Oracle BAM Server.</p> <p>Oracle Data Integrator uses this property as an Oracle BAM connection parameter.</p> <p>Default: localhost</p>
ADCServerPort	<p>Port used by Oracle BAM Server.</p> <p>Oracle Data Integrator uses this property as an Oracle BAM connection parameter.</p> <p>Default: 7001</p>
ADCViewsetTimeoutSec	<p>Specifies the time-out for retrieving a viewset.</p> <p>Default: 0</p>
ADCWaitTime	<p>Interval between Active Data Cache connection attempts.</p> <p>Default: 20</p>
ApplicationURL	<p>URL for Oracle BAM Web applications and Oracle BAM Server. See Section 24.3.3, "Configuring Application URL" and Section 24.2.2, "Configuring Application URL" for more information.</p> <p>Default: <code>http://localhost:7001</code></p>

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
Architect_Content_PageSize	Controls how many rows are shown when viewing data object contents in Oracle BAM Architect. Default: 100
AutoIncrementBlockSize	Indicates amount of increment for block size. Default: 100
CacheDirectory	Designates the directory used by Report Cache to cache snapshots and active data. Default: cache
ChangeListDelay	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 1
ChannelName	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: OracleBAM
CheckViewsFallingBehindInterval	Indicates the interval to check whether views are falling behind. Default: 20
CollaborationNILogin	Whether NI Login is used. Default: false
ColumnarTimeout	Indicates the columnar time-out. Default: 0
Communication_Protocol	Specifies the communication protocol for EJB. For SSL using t3: <Communication_Protocol>t3s</Communication_Protocol> See Section 24.9.3, "Configuring Secure Socket Layer." Default: t3
ConnectionFactoryName	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: jms/QueueConnectionFactory
DeletesActiveDataSize	InsertsActiveDataSize, UpdatesActiveDataSize, UpsertsActiveDataSize, DeletesActiveDataSize determine how many inserts, updates, upserts, and deletes, respectively, should be executed before releasing and then requiring the lock on the data object being modified. This keeps the operation from holding the data object lock for long periods of time when there are Viewsets open on this data object. Default: 50

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
DisplayUIStackTrace	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>This property enables user interface stack traces (by setting this property value to <code>true</code>). This property is used for temporary diagnostic purposes only because exposing a stack with internal details is a potential security threat.</p> <p>Default: <code>false</code></p>
DistributionListGroupType	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: <code>none</code></p>
ElementsCountLimit	<p>The number of change lists that are cached before rewriting the cache file.</p> <p>The default value is 50. When the 51st change list is received, it is cached by replacing the 1st change list.</p> <p>Default: 50</p>
ElementsSizeLimit	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 500</p>
EmailIDForSender	<p>E-mail address that appears in the From header of notifications sent by the Event Engine. See Section 24.3.7, "Configuring Outbound Email Account" for more information.</p> <p>Default: <code>BAM-NOTIFICATION_AR@oracle.com</code></p>
EMSCConnectionRecoveryDuration	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p>
EnableADCDatasetLockTimeout	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Indicates whether data set lock timeout is enabled.</p> <p>Default: <code>false</code></p>
EnableDataTruncationMsg	<p>Indicates whether to enable the data truncation message.</p> <p>Default: <code>false</code></p>
EnableGetAllViewsInOneRoundTrip	<p>Allows all views to be retrieved in one round trip.</p> <p>Default: <code>true</code></p>
EventEngine.Action.ThreadPool.CoreSize	<p>Indicates how many threads to keep in the Event Engine Action ThreadPools when idle.</p> <p>Default: 4</p>

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
EventEngine.Action.ThreadPool.KeepAliveTimeInSec	Amount of time (in seconds) to keep an idle thread in the Event Engine Action ThreadPools. Default: 20
EventEngine.Action.ThreadPool.MaxSize	Maximum number of threads in the Event Engine Action ThreadPools. Default: 100
EventEngine.Action.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Event Engine Action ThreadPools. Default: 4
EventEngine.AlertHistory.ThreadPool.CoreSize	Indicates how many threads to keep in the Event Engine AlertHistory ThreadPools when idle. Default: 4
EventEngine.AlertHistory.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Event Engine Action ThreadPools. Default: 20
EventEngine.AlertHistory.ThreadPool.MaxSize	Maximum number of threads in the Event Engine AlertHistory ThreadPools. Default: 100
EventEngine.AlertHistory.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Event Engine RuleFire ThreadPools. Default: 10
EventEngineAlertHistoryEventLogging	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: false
EventEngineAlertHistoryRecordsPerWrite	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 10
EventEngine.RuleFire.ThreadPool.CoreSize	Indicates how many threads to keep in the Event Engine RuleFire ThreadPools when idle. Default: 4
EventEngine.RuleFire.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Event Engine RuleFire ThreadPools. Default: 20
EventEngine.RuleFire.ThreadPool.MaxSize	Maximum number of threads in the Event Engine RuleFire ThreadPools. Default: 100
EventEngine.RuleFire.ThreadPool.QueueSize	Maximum number of messages that can be queued in the Event Engine RuleFire ThreadPools. Default: 4

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
EventEngineCheckADCIntervalSecs	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 5</p>
EventEngineMaxConnections	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 25</p>
EventEngineMaxShutdownWaitInterval	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 10</p>
EventEngineSaveLastFireIntervalSecs	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 10</p>
FileHandleCacheSize	<p>Used by Oracle BAM Report Cache to cache file <i>handles</i> of the files used for caching when file-based persistence is used (see Section 24.3.5, "Configuring Report Cache Persistence Manager" for information about persistence management).</p> <p>Handle caching increases the speed of reading and writing active data and snapshots. Each viewset has two file handles--one for the snapshot and another for active data.</p> <p>The value for this property sets the number of file handles that are cached by default.</p> <p>To disable file handle caching, set this property value to zero (0).</p> <p>The cost of file handle caching is that all of the cached file handles remain open, and so a) on servers configured for a very small number of concurrent open file handles, and b) on servers heavily loaded with open file handle count reaching the maximum value, this could create a problem. For these scenarios, reduce <code>FileHandleCacheSize</code> to an appropriate smaller value.</p> <p>Default: 100</p>
GenericSatelliteChannelName	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: <code>invmjms:topic/oracle.bam.messaging.systemobjectnotification</code></p>

Table 24-3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
GenericSatelliteSystemObjectNames	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default values:</p> <p>SystemObjectName=SysIterReport, MonitorColumnName=SysIterLastModified, MessageColumn1=SysIterID, MessageColumn2=SysIterLastModified;</p> <p>SystemObjectName=SysIterUser, MonitorColumnName=SpecificTimeZoneOffset, MessageColumn1=SysIterID;</p> <p>SystemObjectName=SysIterUser, MonitorColumnName=AdjustTimeZoneSetting, MessageColumn1=SysIterID;</p> <p>SystemObjectName=SysIterUser, MonitorColumnName=AdjustDaylightSavingsSetting, MessageColumn1=SysIterID;</p> <p>SystemObjectName=SysIterDataset, MonitorColumnName=SysIterLastModified, MessageColumn1=SysIterID;</p>
HelpAppLocation	This property is no longer used in Oracle BAM.
iActiveDataCloseReportsTimeout	<p>Timeout to close reports.</p> <p>Default: 500</p>
iActiveDataMaxDiffCounter	<p>The maximum difference counter for iActiveData.</p> <p>Default: 10</p>
iActiveDataMinIntervalsToWait	<p>The minimum interval to wait for iActiveData.</p> <p>Default: 5</p>
iActiveDataReloadOnSecsBehindThreshold	<p>The threshold value for reloading iActiveData. The</p> <p>Default: 10</p>
iActiveDataRestartInterval	<p>The restart interval for iActiveData.</p> <p>Default: 3000</p>
iActiveDataRestartTimeout	<p>The restart timeout value for iActiveData.</p> <p>Default: 10000</p>
iActiveDataScriptsCleanupFactor	<p>A property to address a Microsoft Internet Explorer memory leak, when active data is coming into the dashboard at a fast pace, by forcing periodic browser refreshes. This value may be further increased when active data is coming to the dashboard at a rate of 25 events per second or greater. You can monitor the Microsoft Internet Explorer memory consumption to determine an appropriate value.</p> <p>Default: 1048576</p>

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ICommand_Default_User_Name	Specifies default security credentials for running ICommand operations. See <i>Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite</i> for more information.
ICommand_Default_Password	Specifies default security credentials for running ICommand operations. See <i>Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite</i> for more information.
Import_BatchSize	Batch size for import by ExternalDataManager. Default: 50
Import_MaxRowsAtOnce	Maximum number of rows imported by ExternalDataManager at one time. Default: 100
Import_MaxSize	Maximum size imported by ExternalDataManager. Default: -1
InsertsActiveDataSize	InsertsActiveDataSize, UpdatesActiveDataSize, UpsertsActiveDataSize, and DeletesActiveDataSize determine how many inserts, updates, upserts, and deletes, respectively, should be executed before releasing and then requiring the lock on the data object being modified. This keeps the operation from holding the data object lock for long periods of time when there are viewsets open on this data object. Default: 50
ListenPort	For SSL: <ListenPort>SSLListenPort</ListenPort> See Section 24.9.3, "Configuring Secure Socket Layer." Default: ListenPort
MaxDBNodeFailoverRetries	Used in Oracle RAC High Availability configuration. Indicates the number of retries Oracle BAM Server attempts in an event of an Oracle RAC failover. Default: 5
MTimerThreadPoolSize	Oracle BAM has a timer implementation that dispatches timer events using a thread pool. This allows timer events to be processed in parallel. This property determines the thread pool size for this timer implementation. Default: 5

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ODIAgentHost	The IP address or host name of the server where the Oracle Data Integrator agent is running. See Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: localhost
ODIAgentPort	The TCP port on which the Oracle Data Integrator agent is listening. See Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: 20910
ODIPassword	The encoded Oracle Data Integrator password. See Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: SUNOPSIS
ODIUser	The user that executes the scenarios in Oracle Data Integrator. See Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: SUPERVISOR
ODIWorkRepositoryName	The name of the Oracle Data Integrator work repository database. See Section 24.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: WORK_DEV
oracle.bam.common.messaging.util. MessageConsumerRegistryQueuedPusher_ CorePoolSize	Indicates how many threads to keep in Message Registry ThreadPool when idle. Default: 20
oracle.bam.common.messaging.util. MessageConsumerRegistryQueuedPusher_ KeepAliveTime	Amount of time (in seconds) to keep an idle thread in the Message Registry ThreadPool. Default: 60
oracle.bam.common.messaging.util. MessageConsumerRegistryQueuedPusher_ MaximumPoolSize	Maximum number of threads in the Message Registry ThreadPool. Default: 100
oracle.bam.common.messaging.util. MessageConsumerRegistryQueuedPusher_ MaximumQueueSize	Maximum number of messages that can be queued in the Message Registry ThreadPool. Default: 30
RecordsLimitForEmail	The number of rows allowed in a List view or Columnar report used in an e-mail attachment before a limit error is displayed. Attachments containing reports can become large because they include data compared to a report link that accesses the report and data on Oracle BAM Server. Default: 1000
RecordsLimitForSaveOffline	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 0

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
RecordsLimitForValueBrowser	Number of values that are presented in values browser for constructing filter expressions. Default: 50
ReportCache.ViewSets.ThreadPool.CoreSize	Number of threads to keep in Report Cache ThreadPool when idle. Default: 5
ReportCache.ViewSets.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Report Cache ThreadPool. Default: 20
ReportCache.ViewSets.ThreadPool.MaxSize	Maximum number of threads in the Report Cache ThreadPool. Default: 100
ReportCache.ViewSets.ThreadPool.QueueSize	Maximum no. of messages that can be queued in the Report Cache ThreadPool. Default: 30
ReportCacheChannelName	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: <code>invmjms:topic/oracle.bam.messaging.reportcache.activedata</code>
ReportCacheMaxConnections	The maximum number of connections allowed by Report Cache to its clients. Default: 25
ReportCacheMaxShutdownWaitInterval	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 10
ReportCachePersistenceManager	See Section 24.3.5, "Configuring Report Cache Persistence Manager" for more information. Default: <code>FileBasedPersistenceManager</code>
ReportLoadingSetting	The report loading indicator to be enabled. See Section 24.2.3, "Configuring Report Loading Indicator" for more information. Default: on
SensorFactory	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: <code>oracle.bam.common.statistics.noop.SensorFactoryImpl</code>
ServerName	The Oracle BAM Server host name. See Section 24.2.4, "Configuring Server Name" for more information. Default: localhost

Table 24–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
UpdatesActiveDataSize	<p>InsertsActiveDataSize, UpdatesActiveDataSize, UpsertsActiveDataSize, and DeletesActiveDataSize determine how many inserts, updates, upserts, and deletes, respectively, should be executed before releasing and then requiring the lock on the data object being modified. This keeps the operation from holding the data object lock for long periods of time when there are Viewsets open on this data object.</p> <p>Default: 50</p>
UpsertsActiveDataSize	<p>InsertsActiveDataSize, UpdatesActiveDataSize, UpsertsActiveDataSize, and DeletesActiveDataSize determine how many inserts, updates, upserts, and deletes, respectively, should be executed before releasing and then requiring the lock on the data object being modified. This keeps the operation from holding the data object lock for long periods of time when there are Viewsets open on this data object.</p> <p>Default: 50</p>
UseDBFailover	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: true</p>
ViewSetExpiryTimeout	<p>This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.</p> <p>Default: 120</p>
ViewSetSharing	<p>See Section 24.3.4, "Configuring Viewset Sharing" for more information.</p> <p>Default: true</p>

Monitoring Oracle Business Activity Monitoring

This chapter describes how to view Oracle Business Activity Monitoring (Oracle BAM) performance statistics and logs using Oracle Enterprise Manager Fusion Middleware Control Console.

This chapter includes the following topics:

- [Section 25.1, "Introduction to Monitoring Oracle BAM"](#)
- [Section 25.2, "Monitoring Oracle BAM Server Components"](#)
- [Section 25.3, "Monitoring Oracle BAM Web Applications"](#)
- [Section 25.4, "Monitoring Oracle BAM Web Services"](#)
- [Section 25.5, "Monitoring Oracle BAM Performance"](#)
- [Section 25.6, "Monitoring Oracle BAM Logs"](#)

25.1 Introduction to Monitoring Oracle BAM

You can monitor several aspects of the Oracle BAM components using Oracle Enterprise Manager Fusion Middleware Control Console.

The Oracle BAM Server home page in Fusion Middleware Control Console enables you to monitor each of the Oracle BAM Server Components: Active Data Cache, Event Engine, Report Cache, and Enterprise Message Sources. See [Section 25.2, "Monitoring Oracle BAM Server Components"](#) for more information.

The Oracle BAM Web home page in Fusion Middleware Control Console enables you to monitor Oracle BAM Report Server. See [Section 25.3, "Monitoring Oracle BAM Web Applications"](#) for more information.

In addition, the Performance Summary pages for each component allow you to track specific statistics of your choosing. See [Section 25.5, "Monitoring Oracle BAM Performance"](#) for more information.

Also, you can configure and monitor Oracle BAM logs using Fusion Middleware Control Console. See [Section 25.6, "Monitoring Oracle BAM Logs"](#) for more information.

25.2 Monitoring Oracle BAM Server Components

Oracle BAM Server components are monitored on the Fusion Middleware Control Console page for Oracle BAM Server.

To monitor Oracle BAM Server components:

Open Fusion Middleware Control Console in your Web browser at:

`http://host_name:port_number/em`

Then, go to the Oracle BAM Server home page by selecting **BAM > OracleBamServer** in the navigation tree.

In the OracleBamServer page, you can select each tab (Active Data Cache, Event Engine, Report Cache, Enterprise Message Sources) to monitor the individual Oracle BAM Server components.

Note: Alternatively, on the farm home page, you can also select the Oracle BAM targets from the right side page content area, where it displays details of the farm.

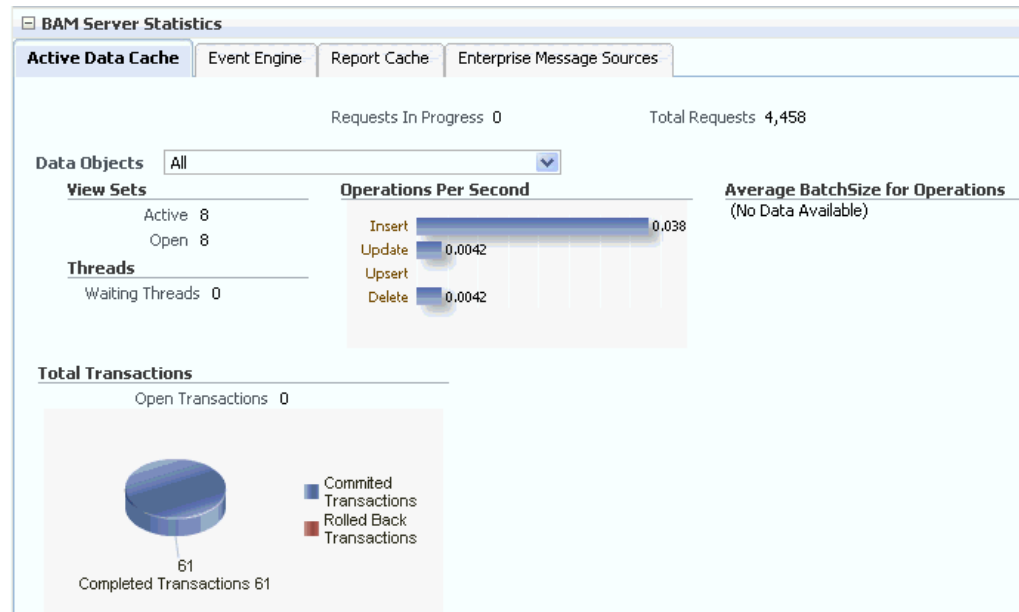
25.2.1 Monitoring Oracle BAM Active Data Cache

Oracle BAM Active Data Cache (Oracle BAM ADC) is designed and optimized to handle large amounts of data in real time. Data coming into Oracle BAM ADC immediately updates all defined calculations and aggregates in real time in an in-memory cache so that this data can be pushed as quickly as possible to Oracle BAM dashboards and reports. Data fed to the Oracle BAM ADC is received from a combination of sources, from Java Message Service (JMS) topics and queues to more traditional data queries and databases. Oracle BAM ADC ensures that no matter the source, when Oracle BAM Server is aware of the incoming data, it is streamed to Oracle BAM alerts and dashboards as incremental changes.

There are two key components to the Oracle BAM ADC, data sets and viewsets. Oracle BAM ADC receives transactions (insert, update, upsert, delete) into the data sets. These data sets are constructed based on the design that an Oracle BAM developer defines for data relationships when data objects are defined in Oracle BAM Architect. Data objects can be reflective of flat tables of data, or more complex, star-schema relationships between data objects, which are represented in Oracle BAM as data object look-ups.

After data is updated in the data sets, viewsets that are listening on these data sets go into action. The viewsets have knowledge of all of the open Oracle BAM dashboards and alerts that users are viewing in the Oracle BAM system. Viewsets ensure that data updates to these open objects are incrementally updated first, using a push-based mechanism to publish updates to open dashboards and alerts, providing users with the latest information.

Use the Oracle BAM pages in Fusion Middleware Control Console to monitor statistics for all data objects in Oracle BAM ADC as a group, or select a particular data object from the **Data Objects** list to monitor.



Note: When you select a data object from the list, cached data is displayed to preserve performance. You must refresh the page (using the Refresh icon) to display the latest data associated with the selected data object.

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Viewsets

Active viewsets are those which are typically seen in Oracle BAM reports. Open viewsets are the sum of active and static open viewsets.

Oracle BAM reports and alerts use active viewsets. Oracle BAM Server uses static viewsets for internal process. There are also internal parts of the code that use static viewsets on system objects (metadata tables). It is possible that if Oracle BAM Server is not closing the static viewsets, you observe different values for them.

Static viewsets do not support active data generation and are used to fetch data from data objects, therefore, they are kept open for only a very short time when data is fetched. For that reason, in the **Open Viewsets** counter, the values appearing most of the time are from active viewsets.

Viewset Count Variation

You can monitor the viewset count for Oracle BAM components Active Data Cache, Report Cache, and Report Server. You may see that viewset counts do not match between Active Data Cache, Report Cache, and Report Server metrics.

The Report Server opens viewsets through the Report Cache for all of the views contained in the reports opened in browsers. The Active Data Cache opens more viewsets than the Report Cache. One such viewset opened is in the Active Data Cache through the Event Engine.

Whenever the Event Engine starts, it loads all the defined alerts, and for those alerts that are defined to monitor data changes in the Active Data Cache, corresponding viewsets are opened in the Active Data Cache. That is why more viewsets are

displayed in the Active Data Cache monitoring page than on the Report Cache and Report Server pages.

For most of the views in a report, there is a corresponding viewset in the Active Data Cache. Viewsets opened by the report are shared with the subsequent instances of that report, except for Crosstab views. In reports using the Crosstab view, the viewset call is different than the one used by other views. When a report containing a Crosstab view is opened, three viewsets are opened in the Active Data Cache. Two of the viewsets are closed immediately after fetching the data, while one is kept open to monitor the incoming changes.

Operations Per Second

The Operations Per Second statistic includes all of the insert, update, upsert, and delete operations occurring on the selected data object. The Operations Per Second graph displays statistic for the last 5 minutes.

Average Batch Size for Operations

The Average Batch Size For Operations statistic is the average number of records included in each batch operation on the selected data object. The Average Batch Size for Operations graph displays statistic for the last 5 minutes.

Waiting Threads

Certain operations must be synchronized, requiring a data object to be locked. This statistic displays the number of threads that are blocked, waiting for the data object to be unlocked in order to perform subsequent operations.

Total Transactions

The Total Transactions statistic displays the number of transactions on Oracle BAM data objects. It is the sum of committed and rolled back transactions. The Total Transactions graph also displays the number of open and completed transactions.

For example, if you add a row in an Oracle BAM data object and save it (commit), it is one transaction. This metric is useful only if the client of Oracle BAM Server is using transactions.

Transactions can also be used by an EMS, when connecting to a JMS topic or queue.

You can configure this metric to track transactions in the Oracle BAM sensor actions in BPEL and in the Oracle Data Integrator knowledge modules.

In regard to Rolled Back Transactions, if an invalid insert operation is attempted on an Oracle BAM data object, Oracle BAM Server rolls back the transaction.

25.2.2 Monitoring the Event Engine Component

The Event Engine is used by Oracle BAM Server to evaluate and execute Oracle BAM alerts. The Event Engine monitors complex data conditions and implements specified rules. Rules can include a series of conditions and actions attached to an event. The Event Engine continuously monitors the information in the Active Data Cache for certain conditions and executes the related actions defined in associated rules.

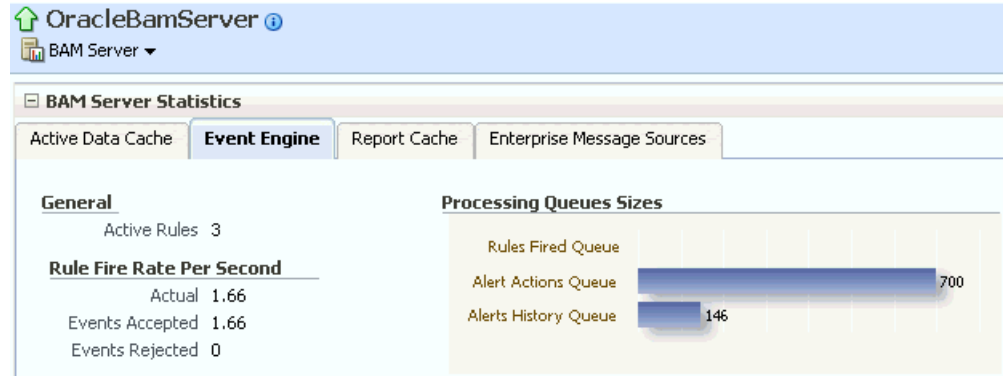
The Event Engine is responsible for tracking events based on date, time, or data changes. The Event Engine design employs a satellite concept, in which there are four different systems (satellites) within which event clauses can be registered and tracked.

The Date and Time satellites are both based on a scheduler, and they are used for alerts such as "E-mail a snapshot of this Oracle BAM dashboard to me every morning at 8 a.m."

The Manual satellite is used to *manually* send alerts by name (using a Web service call).

The Data satellite is used to track alerts that are based on specific changes in the data of a given data object, such as "Call this Web service when SUM(Sales) > 10000 in the MediaSales data object," or "Let me know when anything in this dashboard changes."

You can monitor statistics for active Event Engine rules, condition met rates, and processing queues.



Active Rules

Active Rules displays the number of alert rules that are active (not expired or invalid) in Oracle BAM Event Engine. Active Rules displays the total number of alert rules in Oracle BAM Event Engine, which is the sum of alerts created for all of the Oracle BAM users.

Rule Fire Rate Per Second

The Rule Fire Rate Per Second group of statistics displays the rates of events over the last 5 minutes for Actual, Events Accepted, and Events Rejected rates.

Actual rule fire rate per second is the number of events fired per second in Event Service. It is the number of events fired per second, taking into account number of times alerts fired events in the previous 5 minutes. For example, if when the OracleBamServer page was loaded, only 2 alerts fired in previous 5 minutes, the value shown would be $2 / (5 \times 60)$, that is 0.0067. So, if fired twice in 300 seconds, it would fire 0.0067 times in one second.

Events Accepted is the number of events fired per second from the satellite. That is, the number of events fired per second from alerts configured, that were accepted (for further processing), taking into account events that were accepted in the previous 5 minutes. The value shown is calculated in the same way as Actual. Unless the Event Engine's queue thresholds are exceeded, all events fired are accepted and processed further.

Events Rejected is the number of rejecting events per second. That is, the number of events fired per second from alerts configured, that were rejected (for further processing), taking into account events that were rejected in the previous 5 minutes. The value shown is calculated the same way as Actual. Fired events are rejected when the Event Engine's queue thresholds are exceeded. Ideally this value should be zero.

Processing Queues Sizes

The Processing Queues Sizes graph displays the size of the event processing queue, that is, the number of events waiting to be processed. These queues are emptied as soon as the events are processed, so there would have to be a large number of events being generated simultaneously to see alerts waiting for processing in the queues.

The Processing Queues Sizes graph displays statistics for the last 5 minutes. The graph displays Rules Fired, Alert Actions and Alerts History Queue health.

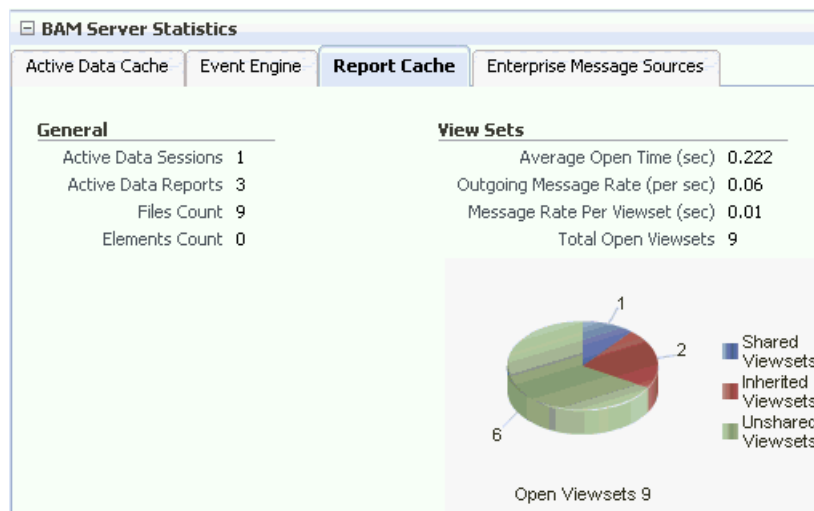
Rules Fired Queue displays the number of events that were fired that are waiting to be processed. The Event Engine maintains internal in-memory queue for fired events where all the events are placed temporarily, before being pulled out from here for further processing, as soon as the Event Engine resources are available. This metric shows the number of events fired waiting in queue to be picked by the system.

Alert Actions Queue displays the number of actions waiting to be processed. The Event Engine maintains internal in-memory queue for actions where all the actions are placed temporarily, before being pulled out from here for further processing, as soon as the Event Engine resources are available. This metric shows the number of actions waiting in queue to be picked by the system.

Alerts History Queue displays the number of alert history items to be saved. The Event Engine maintains internal in-memory queue for all history items, where all the items are temporarily placed, and before picking them up to save to back end. This metric shows the number of history items waiting in queue to be picked by the system.

25.2.3 Monitoring the Report Cache Component

The Report Cache assists the Active Data Cache with maintenance of the viewset snapshots in memory. The Report Cache opens viewsets in the Active Data Cache for the Report Server (an Oracle BAM Web applications component). It then caches the snapshot (in small parts) and the active data before sending it to the Report Server. This allows for random access into the snapshot and recovery from losing the connection to Oracle BAM Server. The Report Cache also, along with the Active Data Cache, supports viewset sharing.



Active Data Sessions

The Active Data Sessions statistic displays the total number of Report Cache sessions with active data.

When a user opens multiple browser windows on a single computer to view Oracle BAM reports, all of the open browser windows share the same Active Data Session. It does not matter whether the user opens the same report or different reports in each browser window, the Active Data Sessions count is always 1.

Active Data Reports

The Active Data Reports statistic displays the total number of open reports requesting active data.

Files Count

The Files Count statistic displays the total number of files currently managed by `FileBasedPersistenceManager` when the Oracle BAM Server is configured to use a file-based persistence manager. See [Section 24.3.5, "Configuring Report Cache Persistence Manager"](#) for more information.

Elements Count

The Elements Count statistic displays the total number of elements currently managed by `InMemoryPersistenceManager` when the Oracle BAM Server is configured to use a memory-based persistence manager. See [Section 24.3.5, "Configuring Report Cache Persistence Manager"](#) for more information.

Viewsets

The Viewsets group of statistics displays the following counters:

Average Open Time (sec) is the average time taken to open a viewset.

Outgoing Message Rate (per sec) is the number of change lists delivered per second by Report Cache to all of its clients.

Message Rate Per Viewset (sec) the number of change lists delivered per second per viewset.

Total Open Viewsets is the total number of viewsets (that is, the sum of shared, unshared, and inherited viewsets) maintained in Report Cache for all of the views contained in the reports opened in browsers.

The Open Viewsets graph displays shared, inherited, and unshared viewsets.

Shared Viewsets are the parent viewsets (these are the viewsets that are opened first).

Inherited Viewsets are the child viewsets (these viewsets are opened later).

Unshared Viewsets (independent viewsets) are neither shared or inherited.

Viewset sharing occurs whenever possible for performance reasons (the consumers require the exact same viewsets, so the viewsets can be shared). If the viewsets cannot be shared, they are unshared.

When users who do not have any differences in row-level security open the same report at close to the same time, the viewsets that are created for them in the Active Data Cache are shared in the Report Cache.

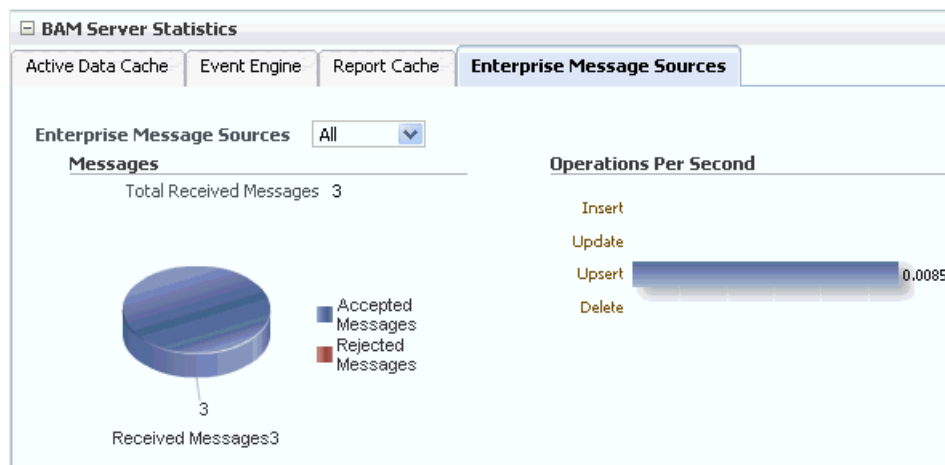
Note: Viewset counts may not match between Active Data Cache, Report Cache, and Report Server metrics. See "[Viewset Count Variation](#)" on page 25-3 for more information.

25.2.4 Monitoring the Enterprise Message Sources

Enterprise Message Sources (EMS) are used by applications to provide direct Java Message Service (JMS) connectivity to Oracle BAM Server by mapping messages directly to Oracle BAM data objects. Oracle BAM Server can read data directly from any JMS-based message queue or topic. This option offers guaranteed messaging. It is more difficult to configure and not as fast to perform rigorous data transformations in XML Stylesheet Language (XSL) than in an Extract Transform and Load (ETL) tool like Oracle Data Integrator.

The EMS feature does not configure ETL scenarios, but rather maps from a message directly to a data object on Oracle BAM Server; however, you can still use XSL transformations before the data is inserted (updated, upserted, or deleted) into the data object. Each EMS reads from a specific JMS topic or queue, and the information is delivered into a data object in the Active Data Cache. The Oracle BAM Architect Web application is used to configure EMS definitions.

For more information about configuring EMS definitions, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.



Note: Data is displayed in the Enterprise Message Source tab only when EMS definitions are created and started in Oracle BAM Architect. Fusion Middleware Control Console may take some time to fetch the data and display the statistic in the Enterprise Message Source tab.

Refreshing the page displays the latest EMS data. You can refresh the page using the Refresh icon.

Page Refreshed Apr 15, 2009 7:41:54 AM PDT 

Enterprise Message Sources

Select the EMS to monitor. You can choose to display aggregated statistics for all EMS definitions, or select a particular EMS to monitor from the list provided.

Messages

Monitor the number of messages received by the selected EMS. You can find rejection statistics in the Performance Summary metrics page.

The Messages graph displays the number of Received Messages broken down into Accepted Messages and Rejected Messages, and at the top of the graph the number of Total Received Messages is displayed.

Operations Per Second

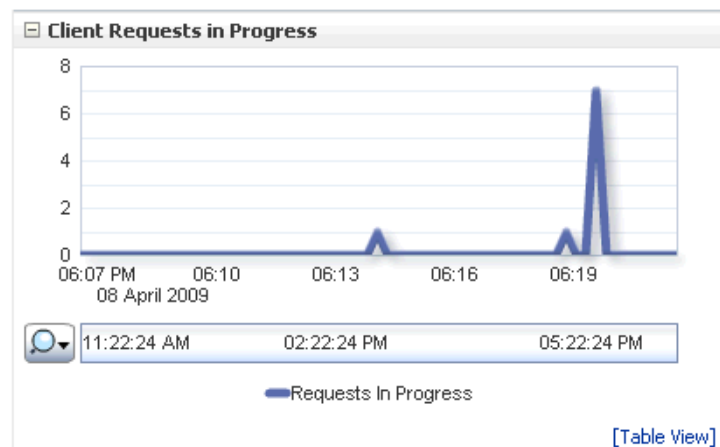
Monitor the rate of insert, update, upsert, and delete operations performed by the selected EMS.

The Operations Per Second graph displays statistic for last 5 minutes.

For more granular detail about the rates for each type of operation, go to the Performance Summary page. See [Section 25.5, "Monitoring Oracle BAM Performance"](#) for more information.

25.2.5 Monitoring the Client Requests in Progress

The Oracle BAM **Client Requests in Progress** chart is displayed in the lower right corner of the Oracle BAM Server home page. Client requests include all of the requests made to the Oracle BAM Server Enterprise Java Beans (EJB).



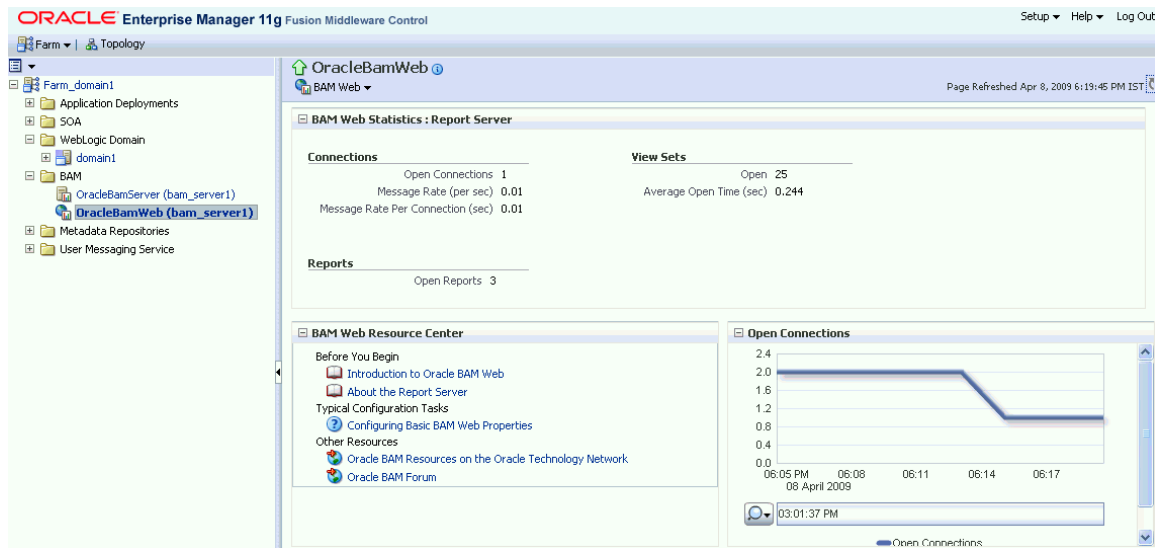
There are a lot of internal requests made when opening a single report (for permissions, the report metadata, the views data, and so on); however, the user may or may not see those internal requests displayed in this chart.

25.3 Monitoring Oracle BAM Web Applications

Oracle BAM Web applications are monitored in the Oracle BAM Web page of Fusion Middleware Control Console.

To monitor Oracle BAM Report Server go to the Oracle BAM Web home page by selecting **BAM > OracleBamWeb** in the navigation tree.

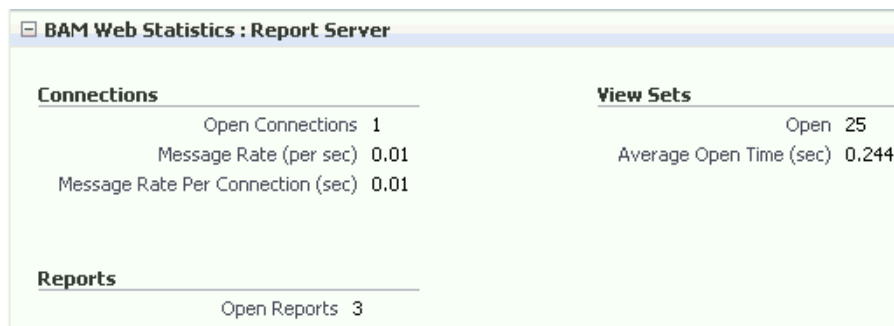
Figure 25–1 BAM Web Statistics



25.3.1 Monitoring Oracle BAM Report Server

Oracle BAM Report Server applies the report definitions to the data sets retrieved from the Oracle BAM ADC for presentation in a browser. It manages information paging for viewing and printing reports. After reports are created, they are stored in the Oracle BAM ADC so that report creation is not repeated each time. Most reporting views are designed to support live, active displays of data changing in real time.

You can monitor statistics for Oracle BAM Report Server connections, viewsets, and reports.



Connections

The Connections statistics display the following:

Open Connections is the number of connections open on the Report Server. An open connection corresponds to each user per session. It is different from the number of reports opened, because one user could at most have one connection open at a time regardless of how many reports the user has opened.

Message Rate (per sec) is the total number of messages (viewset change lists) delivered per second to all users (connections).

Message Rate Per Connection (sec) is the number of messages (viewset change lists) delivered per second per user (connection).

Viewsets

The Viewsets statistics display the number of open viewsets (Open), and the average amount of time (in seconds) that it takes to open the viewsets on the server (Average Open Time (sec)).

Average Open Time (sec) is a measure of the average length of time the server requires to construct the viewset and send it to the Web browser. This statistic does not take into account the amount of time required to render the HTML and load the Javascript on the client-side Web browser.

Note: Viewset counts may not match between Active Data Cache, Report Cache, and Report Server metrics. See "[Viewset Count Variation](#)" on page 25-3 for more information.

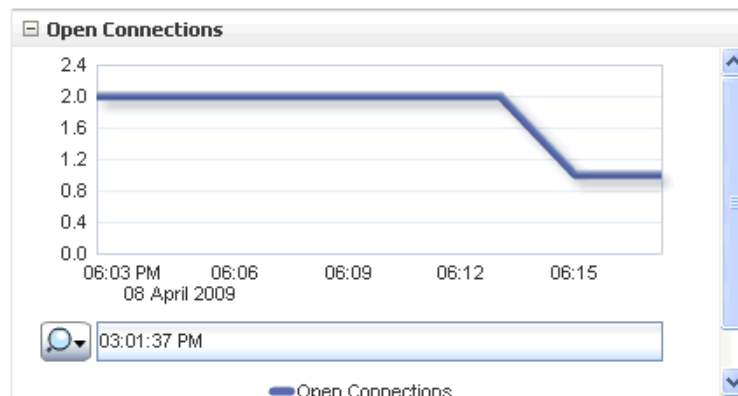
Reports

The Report statistic displays the total number of open reports. The Open Connections graph displays open connections to Oracle BAM Web applications. You can use the zoom axis to zoom in on a particular time in which you are interested to see the open connections statistic.

The total number of reports includes the count of duplicate reports opened by the same user. Even if the same report is opened in multiple browser windows, each instance is considered a separate report, because a new viewset is opened in Report Server (through Oracle BAM Report Cache) for each report instance, though the viewsets are shared.

25.3.2 Monitoring Open Connections

The Oracle BAM **Open Connections** chart is displayed in the lower right corner of the Oracle BAM Server home page.



25.4 Monitoring Oracle BAM Web Services

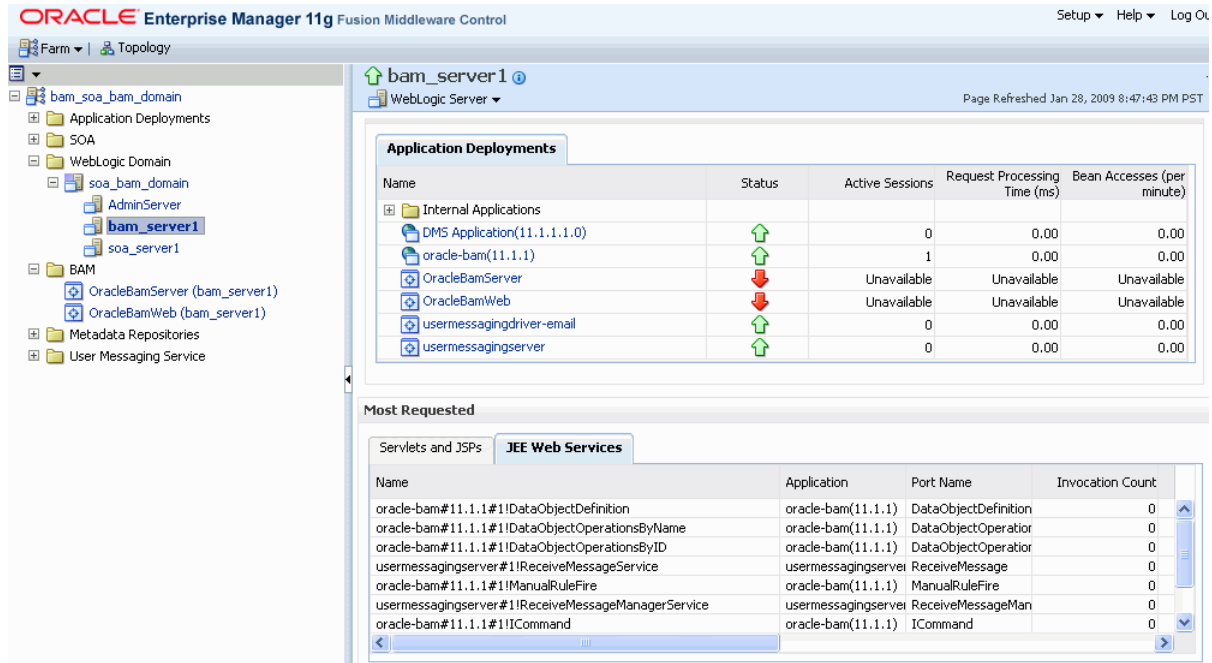
Oracle BAM Web services details are not listed in the Oracle BAM home pages. Oracle BAM Web services counters are available by selecting **WebLogic Domain > soa_bam_domain > bam_server1** in the navigation tree, and selecting the **JEE Web Services** tab in the **Most Requested** region as shown in [Figure 25-2](#).

Oracle BAM provides DataObjectDefinition, DataObjectOperationsByName, DataObjectOperationsByID, DataObjectOperations10131, ManualRuleFire, and

ICommand Web services. See "Using Oracle BAM Web Services" in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

You can see the following statistics in JEE Web Services table: Invocation Count, Response Count, Response Error Count, Average Response Time (ms), Average Execution Time (ms), and Dispatch Time Total.

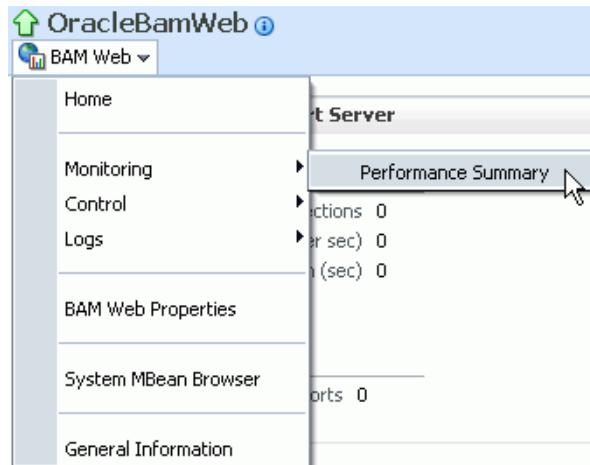
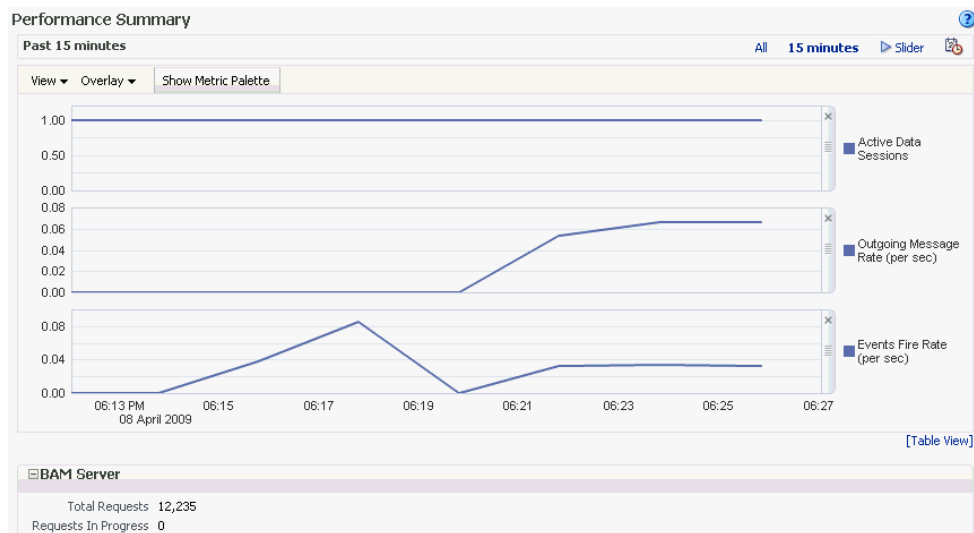
Figure 25–2 Oracle BAM Web Services Counters



25.5 Monitoring Oracle BAM Performance

The performance of Oracle BAM applications is reflected in metrics and statistics. There are separate Performance Summary pages with appropriate metrics for Oracle BAM Server and Oracle BAM Web applications.

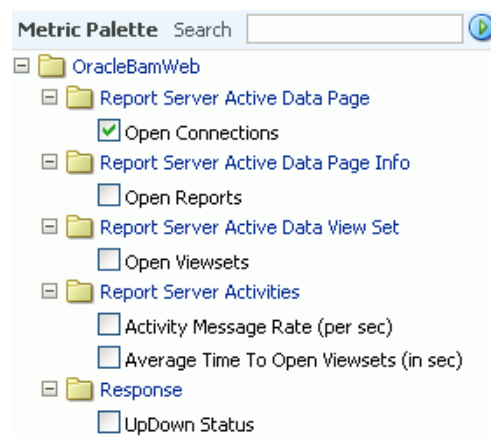
When you select the **Monitoring > Performance Summary** menu item in each of the Oracle BAM component menus (as shown in [Figure 25–3](#)), the Performance Summary page appears as shown in [Figure 25–4](#).

Figure 25–3 Monitoring Shortcut Menu**Figure 25–4 Performance Summary Page**

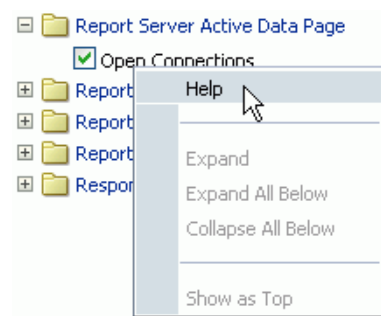
Many metrics are available for capture and display (most of which are also displayed in the Oracle BAM component home pages). Descriptions of each metric are available in the metrics help pages.

To get the most valuable, focused information, use the Metric Palette. Click **Show Metric Palette** to display the Metric Palette, shown in [Figure 25–5](#).

Choose the metrics in which you are most interested. As you select or deselect metrics from the palette, the metrics graph at the left is updated automatically.

Figure 25–5 Metric Palette for Oracle BAM Web Applications

Right click the metric label and select **Help**, as shown in [Figure 25–6](#), to find more information about each of the metrics.

Figure 25–6 Metrics Shortcut Menu

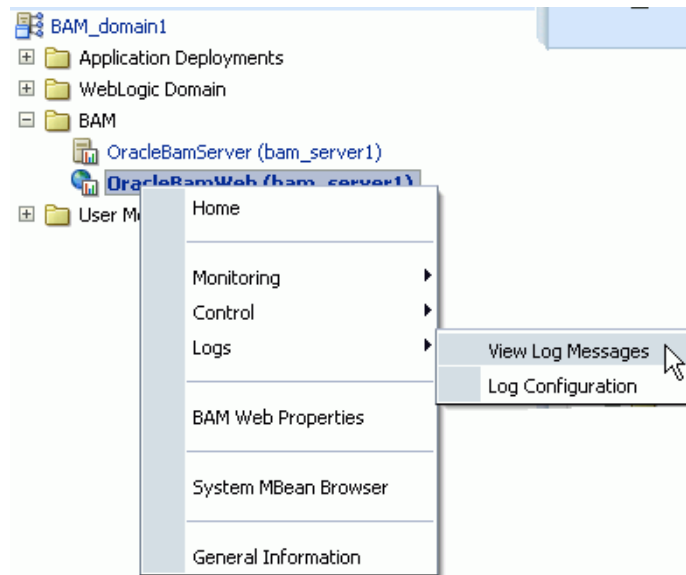
25.6 Monitoring Oracle BAM Logs

Oracle BAM logs are configured and viewed using Fusion Middleware Control Console.

Note: Despite having separate log pages for Oracle BAM Server and Oracle BAM Web applications, each page displays the logs for all Oracle BAM application components.

For information about using the logger features see the online Help page. For information about configuring the logger, see [Section 24.4, "Configuring the Logger."](#)

To view the logs, right click the **OracleBamServer** node or **OracleBamWeb** node in the navigation tree and select **Logs > View Log Messages** as shown in [Figure 25–7](#).

Figure 25–7 Logs Shortcut Menu

The log viewer page opens as shown in [Figure 25–8](#). Use this page to query for information about the component. Fields and lists are used to customize the query.

Figure 25–8 Log Messages Page

Log Messages Broaden Target Scope Target Log Files... Manual Refresh

Search

Date Range: Most Recent 24 Hours

* Message Types: Incident Error Error Warning Notification Trace Unknown

Message: contains

Search Add Fields

View Show Messages View Related Messages Export Messages to File

Time	Message Type	Message ID	Message	Log File
Feb 11, 2009 6:11:03 PM PST	Warning	BEA-050006	An attempt was made to look up versioned object "f	bam_server1.log
Feb 11, 2009 6:11:47 PM PST	Warning	BEA-050006	An attempt was made to look up versioned object "f	bam_server1.log
Feb 11, 2009 6:49:58 PM PST	Warning	BEA-050006	An attempt was made to look up versioned object "f	bam_server1.log

After entering your search criteria, click **Target Log Files**. The Log Files page appears as shown in [Figure 25–9](#). You can view specific log information (shown in [Figure 25–10](#)) or download the log.

Figure 25–9 Log Files Page

Log Messages > Log Files

Log Files

View Log File Download

Name	Directory	Log Type	Last Modified	Size (KB)
bam_server1.log	/scratch/.../as11wls/user_projects/domains/doma	Server	Feb 11, 2009 6:49:58 PM PST	219.82
bam-diagnostic.log	/scratch/.../as11wls/user_projects/domains/doma	Server	Feb 11, 2009 7:02:10 PM PST	524.03
owsm-diagnostic.log	/scratch/.../as11wls/user_projects/domains/doma	Server	Feb 9, 2009 12:34:54 PM PST	0.74
bam_server1-diagnostic.log	/scratch/.../as11wls/user_projects/domains/doma	Server	Feb 11, 2009 7:02:10 PM PST	549.90
diagnostic.log	/scratch/.../as11wls/user_projects/domains/doma	Server	Feb 9, 2009 12:32:24 PM PST	0.00

Figure 25–10 Log File bam_server1.log

Log Messages > Log Files > View Log File: bam_server1.log
 View Log File: bam_server1.log View Manual Refresh

Name /scratch:/.../as11wls/user_projects/domains/domain1/servers/bam_server1/logs/bam_server1.log Download Log Type Server
 Last Modified Feb 11, 2009 6:49:58 PM PST Size (KB) 219.61

Date Range Time Interval Start Date 2009/02/09 12:32:08 PM End Date 2009/02/11 06:49:58 PM Search

View View Related Messages

Time	Message Type	Message ID	Message
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-000214	WebLogic Server "bam_server1" version: WebLogic Server 10.3.1.0 Wed J
Feb 9, 2009 12:32:08 PM PST	Warning	BEA-000808	Executing thread is a non WLS thread. Please modify the application to use
Feb 9, 2009 12:32:08 PM PST	Warning	BEA-170019	The server log file /scratch:/.../as11wls/user_projects/domains/doma
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-170023	The Server Logging is initialized with Java Logging API implementation.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-320001	The ServerDebug service initialized successfully.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-280050	Persistent store "WLS_DIAGNOSTICS" opened: directory="/scratch:/.../
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "t3" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "t3s" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "http" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "https" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "iiop" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "iiops" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "ldap" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "ldaps" is now configured.
Feb 9, 2009 12:32:08 PM PST	Notification	BEA-002622	The protocol "cluster" is now configured.

Total Rows : 600

Managing Oracle Business Activity Monitoring

This chapter describes how to manage Oracle Business Activity Monitoring (Oracle BAM) components and features.

This chapter includes the following topics:

- [Section 26.1, "Introduction to Managing Oracle BAM"](#)
- [Section 26.2, "Managing Oracle BAM Availability"](#)
- [Section 26.3, "Managing Oracle BAM Users"](#)

26.1 Introduction to Managing Oracle BAM

Use Oracle Enterprise Manager Fusion Middleware Control Console to manage Oracle BAM availability. See [Section 26.2, "Managing Oracle BAM Availability"](#) for more information.

Oracle BAM users and groups are created in Oracle WebLogic Server Administration Console (or in a security provider configured for your Oracle WebLogic Server); application-level roles are administered and new groups/roles and policies/grants can be created in Fusion Middleware Control Console (in Application Policies); and the users' Oracle BAM objects are managed in Oracle BAM Administrator. See [Section 26.3, "Managing Oracle BAM Users"](#) for more information.

26.2 Managing Oracle BAM Availability

Oracle BAM Server and Web applications can be started and stopped using Fusion Middleware Control Console. Or, as a convenience, the entire Oracle BAM application (or the Oracle WebLogic Server to which it is deployed) can be restarted in the Oracle WebLogic Server Administration Console.

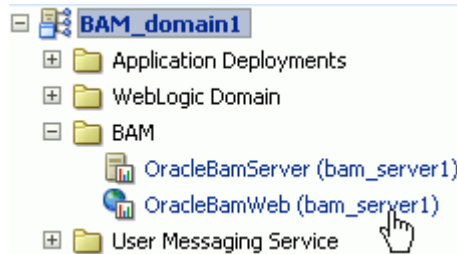
Note: On all UNIX installations of Oracle BAM, due to a behavior of the Java AWT APIs that Oracle BAM uses, Oracle BAM Server must be started with the `DISPLAY` environment variable *unset*.

```
$ unsetenv DISPLAY
```

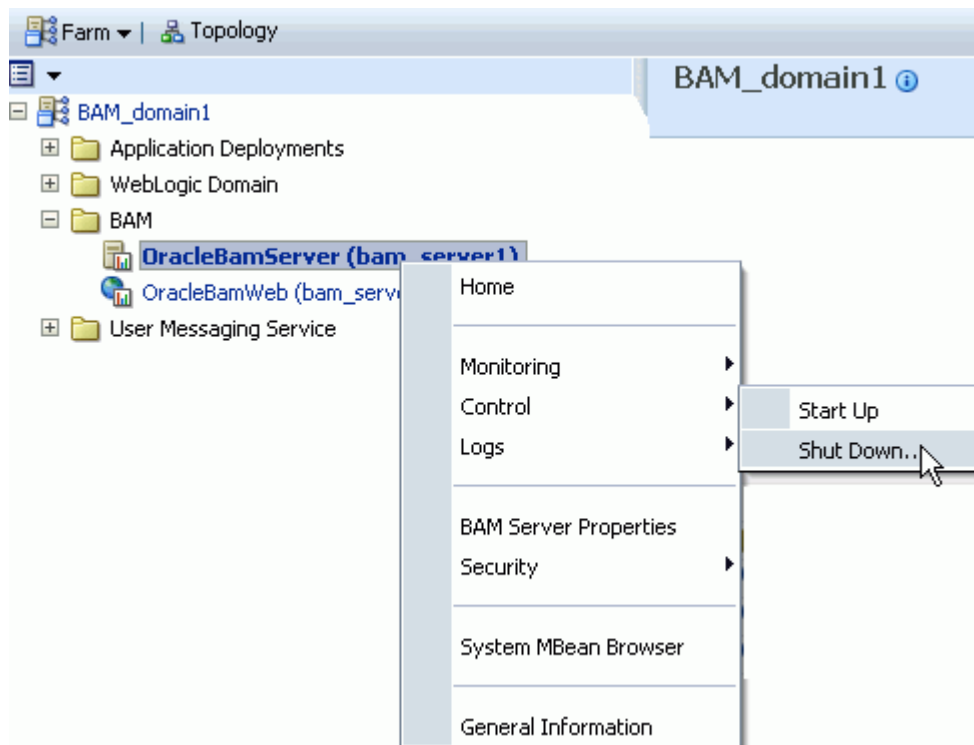
Restarting is required for any configuration changes made in the Oracle BAM configuration properties pages or configuration files.

To start or stop Oracle BAM components in Fusion Middleware Control Console:

1. Open Fusion Middleware Control Console in your Web browser at:
`http://host_name:port_number/em`
2. Locate the **OracleBamServer** or **OracleBamWeb** node in the Fusion Middleware Control Console navigation tree.



3. Right click the node to open the shortcut menu, and select **Control**.



Start Up starts the component.

Shut Down shuts down the component.

Note: Do not use **Start Up** alone to restart the component. To restart the component, you must stop the component using **Shut Down** before using **Start Up** to start the component or an error occurs.

26.3 Managing Oracle BAM Users

These are the main steps for managing Oracle BAM users:

1. Configure the Security Provider

Users, groups, or both, to be used with Oracle BAM users must be present in a security provider configured for your Oracle WebLogic Server. See *Oracle Fusion Middleware Securing Oracle WebLogic Server* for the main steps and links to detailed information about configuring security for Oracle WebLogic Server.

2. Create Users and Groups

Users and groups are defined in the configured security provider (for example, in the Oracle WebLogic Server embedded LDAP server). Refer to your specific security provider documentation for details on defining users and groups. See [Section 26.3.1, "Defining Users and Groups"](#) and [Section 26.3.2, "Using Previously Seeded Group Members"](#) for more information.

See [Section 26.3.5, "Configuring Oracle WebLogic Server Embedded LDAP Server"](#) for example instructions about using Oracle WebLogic Server Administration Console to create users and groups.

3. Assign Users and Groups to Application Roles

In turn, these users, groups, or both, are assigned to Oracle BAM application-level roles that grant those users, groups, or both, specific permissions for using Oracle BAM applications. Users and groups are granted Oracle BAM application permissions based on their Oracle BAM role membership.

See [Section 26.3.3, "Adding Members to Application Roles"](#) for a detailed description of the Oracle BAM application roles and their associated Oracle BAM application permissions.

Membership in Oracle BAM application roles is administered from the Application Roles page for Oracle BAM provided by Fusion Middleware Control Console. This page allows users and groups to be added as members to the various Oracle BAM application roles and allows creation of new application roles. See [Section 26.3.4, "Understanding Oracle BAM Application Roles"](#) for more information.

Note: Oracle BAM does not support assigning Oracle BAM application permissions directly to users and groups. Oracle BAM application permissions can only be granted to Oracle BAM application roles.

The only way to grant Oracle BAM application permissions to users and groups is to make those users and groups members of an Oracle BAM application role associated with the desired Oracle BAM application permissions.

With the exception of the Administrator role, membership in an Oracle BAM application role does not imply any Oracle BAM data access permissions. The Oracle BAM application roles only grant the user access to the associated Oracle BAM user interface as described in [Section 26.3.4, "Understanding Oracle BAM Application Roles."](#)

When the user logs on to the Oracle BAM start page, there is a button for each of the Oracle BAM applications. Whether these buttons are enabled or not is based on the user's Oracle BAM application role membership.

Note: Changes to a user's group and role membership could take as much as 5 minutes to propagate throughout the system.

4. Populate Users In Oracle BAM Applications

Users are not visible from Oracle BAM Administrator until they have logged into Oracle BAM for the first time. Oracle BAM also provides a utility that you can run to populate the users in Oracle BAM Administrator. See [Section 26.3.6, "Populating Users in Oracle BAM Administrator"](#) for more information.

5. Set Up Data Access Permissions on Oracle BAM

Specific data access permissions can be granted to users and groups using Oracle BAM Architect and Oracle BAM Active Studio. Users and groups can be granted "read", "update" and "delete" access permissions to specific Data Objects and Folders. See "Creating Permissions on Data Objects" and "Using Data Object Folders" in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for more information.

Data access permissions can also be granted to users and groups at the row level for Data Objects. See "Creating Security Filters" in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for information about row-level data security.

Individual report authors can control which Oracle BAM users have access to reports. See "Setting Folder Permissions" in *Oracle Fusion Middleware User's Guide for Oracle Business Activity Monitoring* for more information.

6. Manage Oracle BAM Object Ownership

When Oracle BAM users are removed from the security provider, the user accounts still appear in Oracle BAM Administrator because they may *own* Oracle BAM objects that must be transferred to other users before the user is completely removed from Oracle BAM. Object ownership is managed using Oracle BAM Administrator (see [Section 26.3.7, "Managing Oracle BAM Object Ownership"](#)).

7. Remove Users From Oracle BAM

The administrator must also remove users from Oracle BAM Administrator after they are deactivated in the security provider (see [Section 26.3.8, "Removing Invalid Users from Oracle BAM Administrator"](#)).

About OracleSystemUser

OracleSystemUser is the default owner of all Oracle BAM objects. It is required by Oracle BAM Server and must not be deleted.

26.3.1 Defining Users and Groups

Users are defined in the configured security provider's identity store (for example, Oracle WebLogic Server embedded LDAP server).

Groups, also referred to as enterprise-level roles, are also defined in this identity store. Groups are referred to as enterprise-level roles to distinguish them from application-level roles.

The enterprise-level roles are global to Oracle WebLogic Server, and they are applicable to all applications running on that server, including Oracle BAM. The application-level roles are specific to each application.

See [Section 26.3.5, "Configuring Oracle WebLogic Server Embedded LDAP Server"](#) for example instructions about using Oracle WebLogic Server Administration Console to create users and groups.

Note: When you delete a user you cannot re-use that user name until you resolve the old instance with Oracle BAM. Oracle BAM will mark the deleted user inactive when you delete the user in Oracle Weblogic Server.

If you attempt to reuse the same user name for a new account, Oracle BAM does not consider the newly added user to be the same user as the one previously deleted. You must delete the original user from Oracle BAM using Oracle BAM Administrator (and optionally transfer the user's Oracle BAM objects to another valid user). Once the inactive user is removed from Oracle BAM you can reuse the user name.

See [Section 26.3.8, "Removing Invalid Users from Oracle BAM Administrator"](#) for information about removing users from Oracle BAM.

26.3.2 Using Previously Seeded Group Members

The following Oracle WebLogic Server groups have been previously seeded in the Oracle BAM application policy:

- BamAdministrators: Member of application role Administrator.
- BamReportArchitects: Member of application role Report Architect.
- BamReportCreators: Member of application role Report Creator.
- BamReportViewers: Member of application role Report Viewer.

Application Roles > Edit Application Role

Edit Application Role : Report Architect

General

Application	oracle-bam(11.1.1)
Role Name	Report Architect
Display Name	Has access to features for creating
Description	

Members

An application role may need to be mapped to users or groups defined i

Roles

+ Add Role ✕ Delete...	
Name	Type
BamReportArchitects	Group

These members are a convenience. If you define these groups in your configured security provider, you can then assign Oracle BAM application-level roles to specific users and groups by placing them into these groups. All of this can be done from your security provider and does not require any Oracle BAM application policy modifications.

You must create these groups manually in the security provider because Oracle BAM does not automatically seed users or groups in the configured security provider.

26.3.3 Adding Members to Application Roles

The Oracle BAM application policy defines the Oracle BAM application-level roles described in [Section 26.3.4, "Understanding Oracle BAM Application Roles"](#) including role membership. The Oracle BAM application policy is managed in Fusion Middleware Control Console. The default policy store provider is the XML file-based policy store.

Application Policies
 Application policies are the authorization policies that an application relies upon for controlling access to its resources.
 To manage users and groups in the WebLogic Domain, use the [Oracle WebLogic Server Security Provider](#).

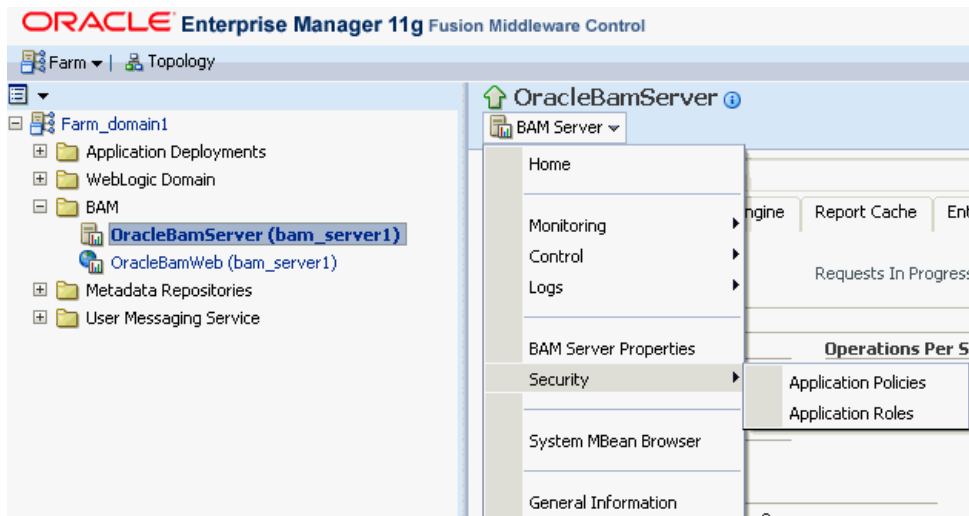
Policy Store Provider

Search

Principal	Permission
Administrator	oracle.bam.common.security.BAMPermission (Administrator) oracle.bam.common.security.BAMPermission (CreateDataObject) oracle.bam.common.security.BAMPermission (ActiveViewer) oracle.bam.common.security.BAMPermission (ActiveStudio) oracle.bam.common.security.BAMPermission (Architect) oracle.bam.common.security.BAMPermission (CreateReport) oracle.bam.common.security.BAMPermission (CreateAlertRule) oracle.bam.common.security.BAMPermission (EmailRenderedReport)
Report Architect	oracle.bam.common.security.BAMPermission (CreateDataObject) oracle.bam.common.security.BAMPermission (ActiveViewer) oracle.bam.common.security.BAMPermission (ActiveStudio) oracle.bam.common.security.BAMPermission (Architect) oracle.bam.common.security.BAMPermission (CreateReport) oracle.bam.common.security.BAMPermission (CreateAlertRule) oracle.bam.common.security.BAMPermission (EmailRenderedReport)
Report Creator	oracle.bam.common.security.BAMPermission (ActiveViewer) oracle.bam.common.security.BAMPermission (ActiveStudio) oracle.bam.common.security.BAMPermission (CreateReport) oracle.bam.common.security.BAMPermission (CreateAlertRule) oracle.bam.common.security.BAMPermission (EmailRenderedReport)
Report Viewer	oracle.bam.common.security.BAMPermission (ActiveViewer)

To add members to the Oracle BAM application-level roles, you must add entries to the membership list of the desired role using Fusion Middleware Control Console.

Shown here is the navigation required to open the Oracle BAM Application Roles page in Fusion Middleware Control Console:



Select a role in the **Role Name** list:

Application Roles

Application roles are the roles used by security aware applications that are specific to the a. These are also application roles that are created in the context of end users accessing the

To manage users and groups in the WebLogic Domain, use the [Oracle WebLogic Server](#)

Policy Store Provider

Search

<input type="button" value="Create..."/> <input type="button" value="Create Like..."/> <input type="button" value="Edit..."/> <input type="button" value="Delete..."/>	
Role Name	Members
Administrator	Administrators, BamAdministrators, OracleSystemI
Report Architect	BamReportArchitects
Report Creator	BamReportCreators
Report Viewer	BamReportViewers

Add a member to the role:

Application Roles > Edit Application Role

Edit Application Role : Report Architect

General

Application: oracle-bam(11.1.1)
 Role Name: Report Architect
 Display Name: Has access to features for creating
 Description:

Members
 An application role may need to be mapped to users or groups defined in

Roles

<input type="button" value="+ Add Role"/> <input type="button" value="X Delete..."/>	
Name	Type
BamReportArchitects	Group

Users

<input type="button" value="+ Add User"/> <input type="button" value="X Delete..."/>	
Name	
No users added.	

Select an available user and move it to the **Selected Users** list:

Add User

Specify criteria to search and select WebLogic users that you want to grant permissions to.

Search

Select users

Available Users		Selected Users
<input type="checkbox"/> OracleSystemUser <input checked="" type="checkbox"/> UserA	<input type="button" value="Move"/> <input type="button" value="Move All"/> <input type="button" value="Remove"/> <input type="button" value="Remove All"/>	

OK Cancel

26.3.4 Understanding Oracle BAM Application Roles

Oracle BAM defines the following application level roles:

- Administrator: Has access to all features.
- Report Architect: Has access to features for creating data objects and reports.
- Report Creator: Has access to features for creating reports.
- Report Viewer: Has access to features for viewing reports.

The application roles determine the permissions granted to specific users or groups. If a user or group is a member of one of these Oracle BAM application roles, then they are granted the associated Oracle BAM permissions.

The Oracle BAM application roles are granted the following permissions:

Administrator Permissions

- Administrator: Has full access to Oracle BAM Administrator application functionality
- CreateDataObject: Can create data objects in Oracle BAM Architect
- ActiveViewer: Has full access to Oracle BAM Active Viewer application functionality
- ActiveStudio: Has full access to Oracle BAM Active Studio application functionality
- Architect: Has full access to Oracle BAM Architect application functionality
- CreateReport: Can create reports in Oracle BAM Active Studio
- CreateAlertRule: Can create alerts in Oracle BAM Architect and Oracle BAM Active Studio
- EmailRenderedReport: Can e-mail report attachments to Oracle BAM users

Report Architect Permissions

- CreateDataObject: Can create data objects in Oracle BAM Architect
- ActiveViewer: Has full access to Oracle BAM Active Viewer application functionality
- ActiveStudio: Has full access to Oracle BAM Active Studio application functionality
- Architect: Has full access to Oracle BAM Architect application functionality
- CreateReport: Can create reports in Oracle BAM Active Studio
- CreateAlertRule: Can create alerts in Oracle BAM Architect and Oracle BAM Active Studio
- EmailRenderedReport: Can e-mail report attachments to Oracle BAM users

Report Creator Permissions

- ActiveViewer: Has full access to Oracle BAM Active Viewer application functionality
- ActiveStudio: Has full access to Oracle BAM Active Studio application functionality
- CreateReport: Can create reports in Oracle BAM Active Studio

- **CreateAlertRule:** Can create alerts in Oracle BAM Active Studio
- **EmailRenderedReport:** Can e-mail report attachments to Oracle BAM users

Report Viewer Permissions

- **ActiveViewer:** Has full access to Oracle BAM Active Studio application functionality

26.3.5 Configuring Oracle WebLogic Server Embedded LDAP Server

The Oracle WebLogic Server embedded LDAP server is the default security provider for Oracle WebLogic Server. This section describes the procedures for adding new users and groups to the Oracle WebLogic Server embedded LDAP server.

See "Managing the Embedded LDAP Server" in *Oracle Fusion Middleware Securing Oracle WebLogic Server* for information about configuring the embedded LDAP server.

26.3.5.1 Using the Oracle WebLogic Server Administration Console

Oracle WebLogic Server administration is performed using the Oracle WebLogic Server Administration Console at

`http://host_name:port_number/console`

Oracle WebLogic Server must be running to access the administration console. This console requires the user to log in with Oracle WebLogic Server administrator credentials. After successfully logging in, the user is placed at the Oracle WebLogic Server Administration Console home page.

26.3.5.2 Adding a Group

To add a group:

1. Go to **Home > Security Realms > myrealm > Users and Groups** in Oracle WebLogic Server Administration Console.
2. Select the **Groups** tab, and click **New**.
3. Enter the desired group name and description. Do not change the provider.
4. Click **OK**.

26.3.5.3 Adding a User

To add a user:

1. Go to **Home > Security Realms > myrealm > Users and Groups** in Oracle WebLogic Server Administration Console.
2. Select the **Users** tab, and click **New**.
3. Enter the desired user name, description, and login password. Do not change the provider.
4. Click **OK**.

26.3.5.4 Adding a User to a Group

To add a user to a group:

1. Go to **Home > Security Realms > myrealm > Users and Groups** in Oracle WebLogic Server Administration Console.

2. Select the **Users** tab, and select the desired user.
3. Select the **Groups** tab.
4. Move the desired groups from the **Available** list to the **Chosen** list. The **Chosen** list represents the list of groups of which the user is now a member.
5. Click **Save**.

26.3.6 Populating Users in Oracle BAM Administrator

Users are not automatically populated in Oracle BAM Administrator by the security provider. The system administrator must either run the `registerusers` utility, or have users log in to the Oracle BAM start page by using the provided credentials, before they can be managed in Oracle BAM Administrator.

Oracle BAM is a monitoring and analytics application that in implementation often supports requirements to secure data, not only at the user and permissions level, but also at the row level for specific analytic data. Because of requirement, Oracle BAM users require some management in Oracle BAM Administrator that is not provided in the standard Oracle WebLogic Server user management tool set. In order to configure these additional security features for a specific user, that user must be defined in Oracle BAM Administrator.

See the following topics for more information:

- [Section 26.3.6.1, "Using the Registerusers Utility"](#)
- [Section 26.3.6.2, "Populating By User Login"](#)

26.3.6.1 Using the Registerusers Utility

The `registerusers` utility is a standalone Java application for registering users with Oracle BAM Server. Normally, Oracle BAM is not aware of a particular defined user until that user logs into Oracle BAM for the first time. On initial login, Oracle BAM looks up the user in the configured security provider, and synchronizes Oracle BAM's definition for that user with that of the configured security provider. This includes the user name, role membership, group membership, user properties (for example, e-mail address), and so on.

Because Oracle BAM is not aware of defined users until they have logged in at least one time, it is not possible to perform certain Oracle BAM user configuration related to that user. For example, when defining data object permissions in Oracle BAM, the user is not present in the list of known users presented by the permission editor.

The `registerusers` utility allows a user with Oracle BAM administrator privileges to register a list of users with Oracle BAM. The result of this registration is that these users are fully defined in Oracle BAM and available for further Oracle BAM user configuration, such as defining data object permissions.

The users are only added to Oracle BAM if they are successfully authenticated with the security provider. The input to this utility is a simple list of white-space delimited user names.

The `registerusers` utility confirms the successful registration of each user to standard out, and the failed registration of any user to standard error. The following is sample output from the `registerusers` utility:

```
>registerusers -file cmd_file.txt
Enter Password:
Connecting to BAM server as user weblogic.
Registering users...
```

```

Registration Succeeded For User: washington.
Registration Failed   For User: adams. Reason: BAM-00400: Authentication failed.
Registration Succeeded For User: jefferson.
Registration Failed   For User: nixon. Reason: BAM-00400: Authentication failed.
Registration Succeeded For User: reagan.
Registration Succeeded For User: clinton.
Registration Succeeded For User: obama.

```

If the utility is executed without any arguments, then the command syntax is displayed to standard out.

The syntax of the command is:

```

registerusers -adminuser <adminusername> -adminpswd <password> -host <host>
-port <port> -protocol <protocol> [-file <filename>]... [<username>]...

```

where:

<adminusername> specifies the name of a user with Oracle BAM administrator privileges.

<password> specifies the password for the user specified by -adminuser.

<host> specifies the host name or IP address of the target Oracle BAM Server.

Default: localhost

<port> specifies the port number of the target Oracle BAM server. Default: 7001

<protocol> specifies the communication protocol to be used. Can be t3 or t3s for SSL. Default: t3

<filename> specifies a file containing command line arguments. The -file option is replaced by the contents of the specified file.

<username> specifies the name of a user to be registered with Oracle BAM.

For example:

```

>registerusers -adminuser weblogic -adminpswd weblogic -host localhost -port 7001
-protocol t3 -file cmd_file.txt smith jones

```

If the -adminuser option is omitted, then it is prompted for from standard in. If the -adminpswd option is omitted, it is prompted for from standard in using a password prompt where typed characters are hidden.

The file represented by <filename> should contain white-space delimited command line arguments. White-space includes blanks, EOL characters, and commas. Both single- and double-quoted strings are supported.

The file can also contain double-slash and slash-asterisk comments for documentation purposes. These comments are ignored.

If a command line argument must contain any white-space characters (including commas), forward slashes (/) (as in file paths), or asterisks (*), then it must be quoted. For example, "/dir1/dir2/file.txt".

The file can contain further -file options. The file should be in UTF-8 format to support extended character sets.

The following is a sample command file:

```

// Specify Oracle BAM administrator account to execute command. Password is not
// provided so that the user is securely prompted for the password.
-adminuser user_name
// Configure the target BAM server.

```

```
-host localhost -port 7001 -protocol t3
// Register the following users.
jones /* This is Mr. Jones. */
smith /* This is Ms. Smith. */
// Register users from another file.
-file "/dir1/dir2/user_list.txt"
```

Default values for `-host`, `-port`, and `-protocol` arguments are included in the `UserRegisterConfig.xml` file. These defaults are only used if the option is not specified on the command line. If these options are not specified on the command line, or in the `UserRegisterConfig.xml` configuration file, then hard-wired defaults are used. The command syntax shows the default values that are in effect.

The hard-wired defaults are:

```
-host localhost -port 7001 -protocol t3
```

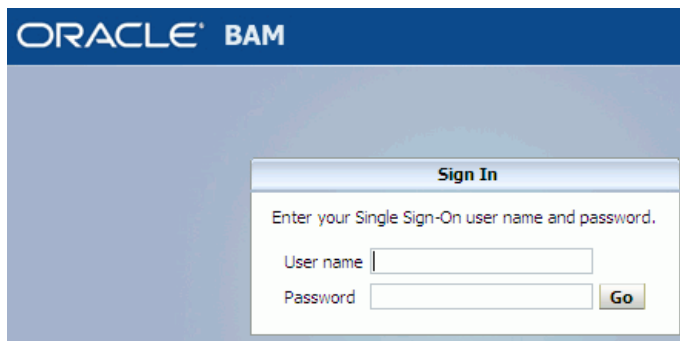
The following is an example of a `UserRegisterConfig.xml` file. The `-host` default is picked up from the `ADCServerName` element, the `-port` default is picked up from the `ADCServerPort` element, and the `-protocol` default is picked up from the `Communication_Protocol` element.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<UserRegister>
  <ADCServerName>localhost</ADCServerName>
  <ADCServerPort>7001</ADCServerPort>
  <Communication_Protocol>t3</Communication_Protocol>
</UserRegister>
```

26.3.6.2 Populating By User Login

To populate users in Oracle BAM Administrator:

1. Have each Oracle BAM user open the Oracle BAM start page and log in using the credentials specified by the security provider.

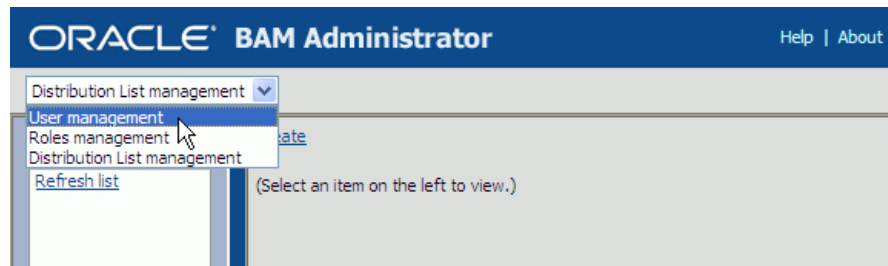


The Oracle BAM start page can be found at:

http://host_name:port_number/OracleBAM/

2. The administrator opens the Oracle BAM start page, logs in, and selects **Administrator**.
3. Select **User management** from the list, if the User Management page is not displayed in Oracle BAM Administrator.

Figure 26–1 Oracle BAM Administrator Function List



4. Verify that each Oracle BAM user appears in the **Users** list (use the **Refresh list** link to show the latest data).

26.3.7 Managing Oracle BAM Object Ownership

When Oracle BAM users are removed from the security provider, the user accounts continue to appear in the Oracle BAM Administrator application with an exclamation mark (!) icon to indicate that they are not valid.

These users do not have access to Oracle BAM applications, but remain visible because they may *own* objects in Oracle BAM that must be transferred to other users before the user is completely removed from Oracle BAM.

Object ownership is managed using Oracle BAM Administrator.

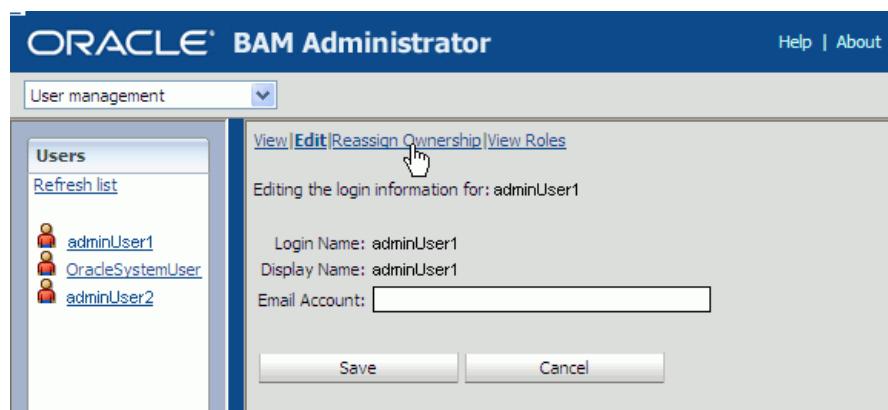
To transfer object ownership:

1. Go to the Oracle BAM start page, log in, and select **Administrator**.

The Oracle BAM start page can be found at:

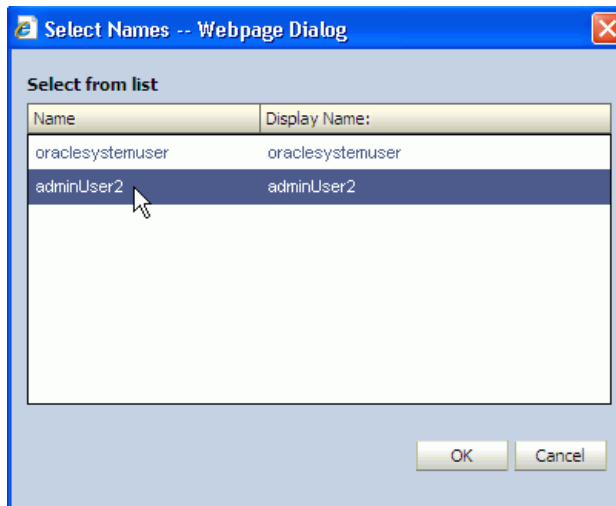
`http://host_name:port_number/OracleBAM/`

2. Select **User management** from the list (see Figure 26–1).
3. Select the user in the **Users** list that currently owns the objects you can reassign.
4. Click **Reassign Ownership**.



The **Select Names** dialog box displays a list of users.

5. Select a user account in the list that becomes the new owner of the objects.



6. Click **OK**.

Reports are moved to a subfolder named after the selected user name.

Alerts are moved, and a zero (0) is appended to the alert name if the selected owner has an alert with the same name. If the alert needs an item updated or specified, an exclamation mark (!) is displayed on the alert icon in Oracle BAM Architect and Oracle BAM Active Studio Alerts pages.

Shared reports and folders change ownership but are not moved.

26.3.8 Removing Invalid Users from Oracle BAM Administrator

Invalid users are not automatically removed from Oracle BAM because they may own reports and alerts that must be transferred to active Oracle BAM users. After those objects are transferred, an invalid user may be deleted from Oracle BAM Administrator.

To remove invalid users:

1. Go to the Oracle BAM start page, log in, and select **Administrator**.

The Oracle BAM start page can be found at:

`http://host_name:port_number/OracleBAM/`

2. Select **User management** from the list (see [Figure 26-1](#)).
3. Select an invalid user in the **Users** list whose objects have been reassigned.

See [Section 26.3.7, "Managing Oracle BAM Object Ownership"](#) for information about reassigning objects.

An inactive user has an exclamation point (!) icon next to the user name.

4. Click **Delete**.

Part X

Administering Oracle User Messaging Service

This part describes how to administer Oracle Messaging Service.

This part includes the following chapters:

- [Chapter 27, "Configuring Oracle User Messaging Service"](#)
- [Chapter 28, "Monitoring Oracle User Messaging Service"](#)
- [Chapter 29, "Managing Oracle User Messaging Service"](#)

Configuring Oracle User Messaging Service

This chapter describes how to configure Oracle User Messaging Service (UMS).

This chapter includes the following topics:

- [Section 27.1, "User Messaging Service Overview"](#)
- [Section 27.2, "Introduction to Oracle User Messaging Service Configuration"](#)
- [Section 27.3, "Accessing User Messaging Service Configuration Pages"](#)
- [Section 27.4, "Configuring User Messaging Service Drivers"](#)
- [Section 27.5, "Securing User Messaging Service"](#)
- [Section 27.6, "Troubleshooting Oracle User Messaging Service"](#)

27.1 User Messaging Service Overview

Oracle User Messaging Service enables two-way communication between users and deployed applications. Key features include:

- Support for a variety of messaging channels—Messages can be sent and received through Email, IM (XMPP), SMS (SMPP), and Voice. Messages can also be delivered to a user's SOA/WebCenter Worklist.
- Two-way Messaging—In addition to sending messages from applications to users (referred to as *outbound* messaging), users can initiate messaging interactions (inbound messaging). For example, a user can send an email or text message to a specified address; the message is routed to the appropriate application which can then respond to the user or invoke another process according to its business logic.
- User Messaging Preferences—End users can use a web interface to define preferences for how and when they receive messaging notifications. Applications immediately become more flexible; rather than deciding whether to send to a user's email address or instant messaging client, the application can simply send the message to the user, and let UMS route the message according to the user's preferences.

Note: The User Messaging Preferences UI is available at:

`http://<host>:<port>/sdpmessaging/userprefs-ui`

The User Messaging Preferences UI is also embedded in the SOA Worklist application. You can access it from the Worklist application by choosing **Preferences > Notification**.

- Robust Message Delivery—UMS keeps track of delivery status information provided by messaging gateways, and makes this information available to applications so that they can respond to a failed delivery. Or, applications can specify one or more *failover* addresses for a message in case delivery to the initial address fails. Using the failover capability of UMS frees application developers from having to implement complicated retry logic.
- Pervasive integration within Fusion Middleware: UMS is integrated with other Fusion Middleware components providing a single consolidated bi-directional user messaging service.
 - Integration with Oracle BPEL—Oracle JDeveloper includes pre-built BPEL activities that enable messaging operations. Developers can add messaging capability to a SOA composite application by dragging and dropping the desired activity into any workflow.
 - Integration with Oracle Human Workflow—UMS enables the Human Workflow engine to send actionable messages to and receive replies from users over email.
 - Integration with Oracle BAM—Oracle BAM uses UMS to send email alerts in response to monitoring events.
 - Integration with Oracle WebCenter—UMS APIs are available to developers building applications for Oracle WebCenter Spaces. The API is a realization of Parlay X Web Services for Multimedia Messaging, version 2.1, a standard web service interface for rich messaging.

27.1.1 Components

There are three types of components that make up Oracle User Messaging Service. These components are standard Java EE applications, making it easy to deploy and manage them using the standard tools provided with Oracle WebLogic Server.

- UMS Server: The UMS Server orchestrates message flows between applications and users. The server routes outbound messages from a client application to the appropriate driver, and routes inbound messages to the correct client application. The server also maintains a repository of previously sent messages in a persistent store, and correlates delivery status information with previously sent messages.
- UMS Drivers: UMS Drivers connect UMS to the messaging gateways, adapting content to the various protocols supported by UMS. Drivers can be deployed or undeployed independently of one another depending on what messaging channels are available in a given installation.
- UMS Client applications: UMS client applications implement the business logic of sending and receiving messages. A UMS client application might be a SOA application that sends messages as one step of a BPEL workflow, or a WebCenter Spaces application that can send messages from a web interface.

In addition to the components that make up UMS itself, the other key entities in a messaging environment are the external gateways required for each messaging channel. These gateways are not a part of UMS or Oracle WebLogic Server. Since UMS Drivers support widely-adopted messaging protocols, UMS can be integrated with existing infrastructures such as a corporate email servers or XMPP (Jabber) servers. Alternatively, UMS can connect to outside providers of SMS or text-to-speech services that support SMPP or VoiceXML, respectively.

27.1.2 Architecture

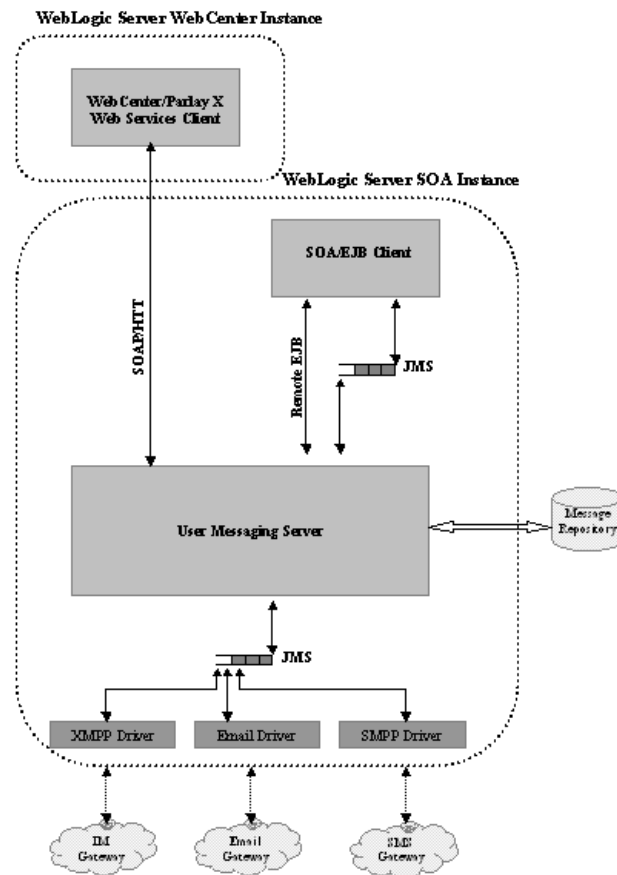
The system architecture of Oracle User Messaging Service is shown in [Figure 27-1](#).

For maximum flexibility, the components of UMS are separate Java EE applications. This allows them to be deployed and managed independently of one another. For example, a particular driver can be stopped and reconfigured without affecting message delivery on all other channels.

Exchanges between UMS client applications and the UMS Server occur as SOAP/HTTP web service requests for web service clients, or through Remote EJB and JMS calls for BPEL messaging activities. Exchanges between the UMS Server and UMS Drivers occur through JMS queues.

Oracle UMS server and drivers are installed alongside SOA or BAM in their respective WebLogic Server instances. A WebCenter installation includes the necessary libraries to act as a UMS client application, invoking a server deployed in a SOA instance.

Figure 27-1 UMS architecture



27.2 Introduction to Oracle User Messaging Service Configuration

Oracle User Messaging Service enables users to receive notifications sent from SOA applications that are developed and deployed to the Oracle WebLogic Server using Oracle JDeveloper.

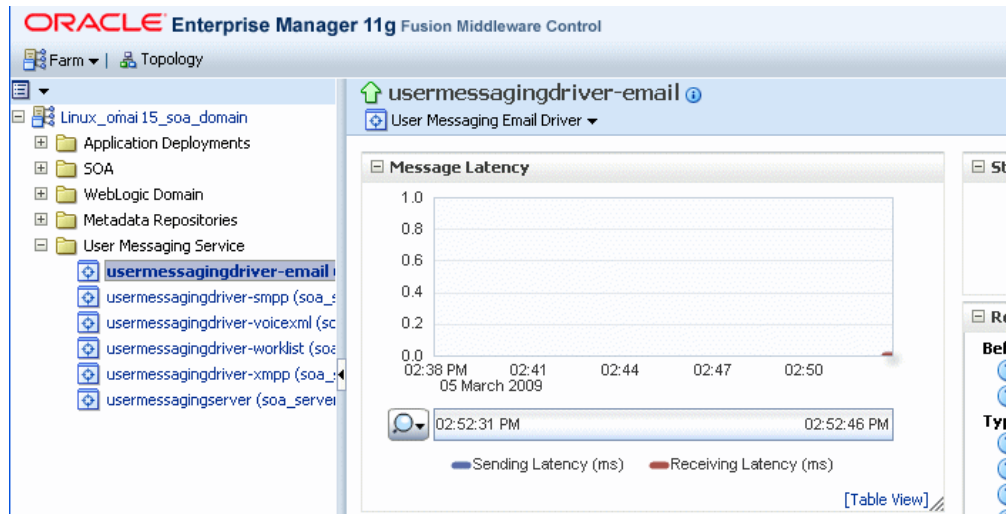
At the application level, there is notification activity for a specific delivery channel (such as SMS or E-Mail). For example, when you build a SOA application that sends e-mail notification, you drag and drop an *Email Activity* component from the

JDeveloper *Component Palette* to the appropriate location within a workflow. The application connects then sends notifications.

For more information about Oracle JDeveloper, see your JDeveloper documentation.

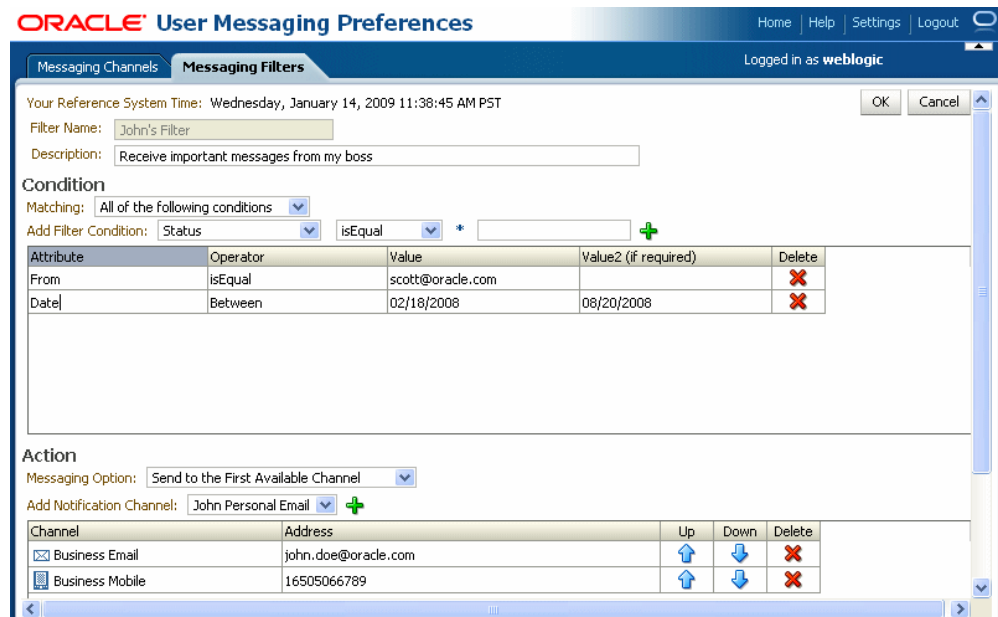
To enable the workflow participants to receive and forward notifications, use Oracle 11g Enterprise Manager to set the Oracle User Messaging Service environment by configuring the appropriate driver instances that reside on the same Oracle WebLogic Server on which you deploy the workflow application (Figure 27–2). Oracle User Messaging Service includes drivers that support messaging through E-Mail, IM, SMS and voice channels. For more information, see Section 27.4, "Configuring User Messaging Service Drivers".

Figure 27–2 Oracle Enterprise Manager 11g Fusion Middleware Control



In order for workflow participants to actually receive the notifications, they must register the devices that they use to access messages through User Messaging Preferences (Figure 27–3).

Figure 27-3 User Messaging Preferences



ORACLE User Messaging Preferences

Home | Help | Settings | Logout

Logged in as **weblogic**

Messaging Channels | **Messaging Filters**

Your Reference System Time: Wednesday, January 14, 2009 11:38:45 AM PST

Filter Name: John's Filter

Description: Receive important messages from my boss

Condition

Matching: All of the following conditions

Add Filter Condition: Status isEqual * [] +

Attribute	Operator	Value	Value2 (if required)	Delete
From	isEqual	scott@oracle.com		✗
Date	Between	02/18/2008	08/20/2008	✗

Action

Messaging Option: Send to the First Available Channel

Add Notification Channel: John Personal Email +

Channel	Address	Up	Down	Delete
<input checked="" type="checkbox"/> Business Email	john.doe@oracle.com	↑	↓	✗
<input type="checkbox"/> Business Mobile	16505066789	↑	↓	✗

27.3 Accessing User Messaging Service Configuration Pages

You configure User Messaging Service through Oracle Enterprise Manager Fusion Middleware Control. For more information on Oracle Enterprise Manager, see your Oracle Enterprise Manager documentation.

27.3.1 How to Set the Storage Method

Use the Basic Configuration page to set deployment type for the Messaging Server (that is, select the storage method for run time and management data) and add (or remove) the User Messaging Preference Business Terms that are used for creating message filters.

Select Persistent (the default) to enable entries and the Messaging Store to persist when the server has been restarted. In the Transient mode (which is recommended for lightweight deployments), the Messaging Server does not maintain any data stored in the Messaging Store after a restart.

27.3.2 How to Add or Remove User Messaging Preferences Business Terms

The Basic Configuration page enables you to add or remove the business terms used to construct the message filters in User Message Preferences. For more information about building messaging filters with business terms, refer to [Adding Business Terms](#).

27.3.2.1 Adding Business Terms

Note: Business Terms are stored per server instance. If there are multiple instances (as in a cluster), then new business terms must be added to each instance individually.

To add a business term to User Messaging Preferences:

1. Click **Add**.
2. Enter a descriptive name for the business term.
3. Select a data type (string, number, or date).
4. Click **Apply**.

27.3.2.2 Removing Business Terms

To remove a business term from User Messaging Preferences:

1. Select the business term.
2. Click **Delete**.
3. Click **Apply** to confirm the new term.

27.4 Configuring User Messaging Service Drivers

Oracle User Messaging Service includes the following drivers.

- [Configuring the E-Mail Driver](#)
- [Configuring the SMPP Driver](#)
- [Configuring the XMPP Driver](#)
- [Configuring the VoiceXML Driver](#)
- [Configuring the Worklist Driver](#)
- [Configuring the Proxy Driver](#)

Note: For the cluster env, when you use separate messaging drivers for separate managed server nodes, all the drivers must be configured separately.

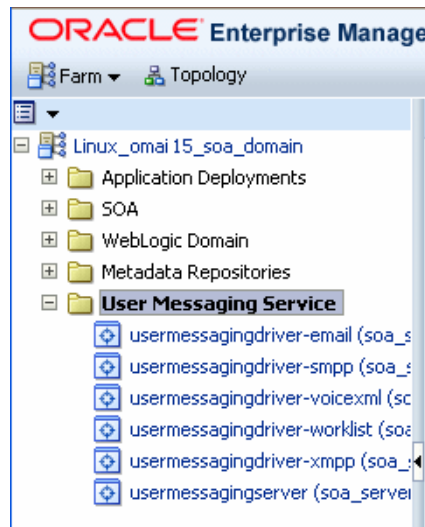
UMS Messaging Drivers are configured per instance. Configuring only one does not populate the configuration values to the drivers on the other cluster nodes.

27.4.1 How to Configure a Driver

To configure a driver:

1. Log into the Enterprise Manager Fusion Middleware Control console as an administrator.
2. Expand the *Fusion Middleware* folder ([Figure 27-4](#)).

Figure 27–4 Expanding the UMS Folder



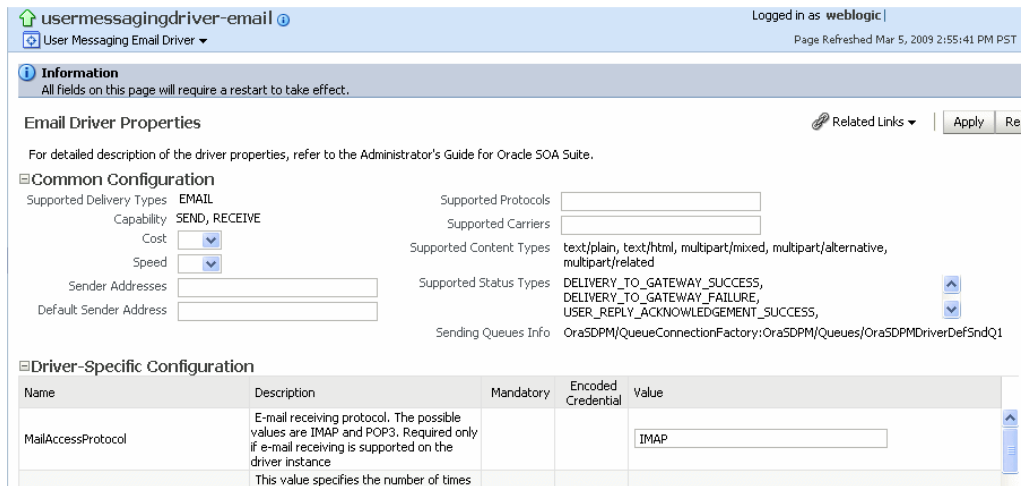
3. Navigate to the User Messaging Service *Home* page.
4. Click `usermessagingserver(soa_server1)`. The Associated Drivers page appears.

Figure 27–5 Drivers Associated with the UMS Instance

Associated Drivers			
Local		All	
Name	Driver Type	Status	Configure Driver
/Linux_omai_15_soa_domain/soa_domain/soa_server1/usermessagingdriver-worklist	User Messaging Worklist Driver	↑	
/Linux_omai_15_soa_domain/soa_domain/soa_server1/usermessagingdriver-xmpp	User Messaging XMPP Driver	↑	
/Linux_omai_15_soa_domain/soa_domain/soa_server1/usermessagingdriver-email	User Messaging Email Driver	↑	
/Linux_omai_15_soa_domain/soa_domain/soa_server1/usermessagingdriver-voicexml	User Messaging VoiceXML Driver	↑	
/Linux_omai_15_soa_domain/soa_domain/soa_server1/usermessagingdriver-smpp	User Messaging SMPP Driver	↑	

5. Select the *Local* tab to access the drivers collocated with the UMS server instance. These drivers may or may not be registered with the UMS server depending on whether or not they are properly configured. The *ALL* tab lists all drivers that are deployed in the domain and registered to all the UMS server instances.
6. Find the Email driver in the list, and then click the adjacent **Configure Driver** icon. The configuration page displays (Figure 27–6).

Figure 27–6 The Basic Configuration Page for a Selected Driver



7. If needed, expand the *Driver-Specific Configuration* section and configure the driver parameters. For more information, see [Section 27.4.1.1, "About Driver Properties"](#).

27.4.1.1 About Driver Properties

Oracle User Messaging Service drivers share common properties (listed in [Table 27–1](#)) that are used by the Messaging Engine when routing outbound messages. Typically, administrators set such Quality of Service (QoS) properties as driver cost (*Cost*) and driver speed (*Speed*), supported carriers (*SupportedCarriers*), and supported protocols (*SupportedProtocols*). Driver developers configure properties that typically do not require modification by the administrator, such as supported delivery types (*SupportedDeliveryTypes*), and supported content types (*SupportedContentTypes*).

Note: Properties such as *SendingQueuesInfo* are for advanced use and only require modification for advanced deployment topologies.

Table 27–1 Common Driver Properties

Name	Description	Mandatory Property?
Capability	Sets the driver’s capability to send or receive messages. The values are <i>SEND</i> , <i>RECEIVE</i> , and <i>BOTH</i> .	Yes
Cost	The cost level of the driver (from 0 - 10). 0 is least expensive; 10 is most expensive. If the value is not in this range, cost is considered to be 0.	No
DefaultSenderAddress	The default address of the sender. The driver uses these addresses when sending a message that has no sender address specified, or when the specified sender address is not in the sender addresses list and the driver does not support using the application-provided sender address.	No
SenderAddresses	The list of sender addresses that the driver supports. If provided by the driver, the Messaging Engine can use this to route a sending message to the driver by matching against the sender address of the message.	No
SendingQueuesInfo	The information for the Driver Sending Queue.	Yes
Speed	The speed level of the driver (from 0-10, with 10 being the fastest).	No
SupportedCarriers	A comma-delimited list of supported carriers.	No

Table 27-1 (Cont.) Common Driver Properties

Name	Description	Mandatory Property?
SupportedContentTypes	The content type supported by the driver.	Yes
SupportedDeliveryTypes	The delivery types supported by the driver.	Yes
SupportedProtocols	A comma-delimited list of supported protocols. Entering an asterisk (*) for any protocol.	No
SupportedStatusTypes	The status types supported by the driver.	No
SupportsCancel	Supports a Cancel operation on a message.	No
SupportsReplace	Supports a Replace operation on a message.	No
SupportsStatusPolling	For certain protocols, an active polling of the remote gateway must be performed to check the status of a message previously sent. This property indicates whether the driver supports such status polling. If set to <i>true</i> , the Messaging Engine invokes the driver connection's <code>getStatus()</code> operation.	No
SupportsTracking	Supports Tracking operation on a message.	No

27.4.1.2 Securing Passwords

Sensitive driver properties (namely, passwords) can be stored securely in the credential store using Oracle Enterprise Manager. Properties are marked with the flag *Encoded Credential* and have a custom entry form field.

To store a sensitive driver property securely:

1. Go to the driver configuration page of the selected driver.
2. In the **Driver-Specific Configuration** section, locate the property with the *Encoded Credential* flag set.
3. Select the credential type (Depending on the selected credential type, you are prompted to enter the username and/or password.). There are three options:
 - Indirect password, create new user (*default option*)—specify the username and real password; the password is stored in the credential store with the username as part of the key. The key and a fixed folder (*map name*) are stored in the driver deployment's `driverconfig.xml`.
 - Indirect password, use existing user—choose an existing username/key in the credential store (to reference the password you stored previously).
 - User a clear text password—specify the password, and it is stored directly in `driverconfig.xml`.
4. click **Apply** to save the changes.
5. Restart the driver application or the container for the changes to take effect.

You can check the password in the driver deployment directory's `driverconfig.xml`. For an indirect password, the format is:

```
value="->mapName:keyName" (mapName is the driver target name, and the key is
<parameter_name>.<username>)
```

For example, here is a sample entry in `driverconfig.xml` for an Email Driver's `OutgoingPassword` property:

```
<Property value="-&gt;
/Farm_base_domain/base_domain/server_soa/usermessagingdriver-email:
OutgoingPassword.ouser" encodedCredential="true"
type="java.lang.String" mandatory="no" name="OutgoingPassword"
description="oracle.sdp.messaging.EmailDriverConfig.outgoingPassword" />
```

27.4.1.3 Configuring the E-Mail Driver

The E-Mail Driver both sends and receives messages (that is, its *Capability* property is set to *BOTH* by default). The E-Mail Driver sends messages over SMTP and uses either IMAP and POP3 for receiving messages.

27.4.1.3.1 E-Mail Driver Interoperability This section details interoperability features of the E-Mail Driver.

The E-Mail driver is compatible with these protocols: POP3, IMAP4, and SMTP.

E-Mail Driver features include:

- Automatic connection retry
- SMTP for message sending
- IMAP4 and POP3 for message receiving (using polling)
- Scalable, highly available
- Prevents message loss and avoids duplication

The Gateway Vendors and Versions in [Table 27–2](#) have been verified.

Table 27–2 E-Mail Driver Gateway Vendors and Versions

Vendor	Version
Oracle Beehive	Release 1 (1.4.3)
Oracle Collaboration Suite	10g Release 1 (10.1.2)
Microsoft Exchange	2003
Dovecot (IMAP4/POP3)	0.99.11
sendmail (SMTP)	8.13.1

27.4.1.3.2 Common Properties These are common driver properties that are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values refer to the javadoc of `DriverConfigPropertyNames`.

Table 27–3 Common Email Properties

Name	Description	Mandatory	Default Value
InstanceName	Instance Name (for internal use only)	Yes	Email-Driver
Capability	Message sending and receiving capability	Yes	Both
SupportedDeliveryTypes	Supported Delivery Types	Yes	Email

Table 27-3 (Cont.) Common Email Properties

Name	Description	Mandatory	Default Value
SupportedContentTypes	Supported Content Types	Yes	text/plain, text/html, multipart/mixed, multipart/alternative, multipart/related
SupportedStatusTypes	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE, USER_REPLY_ACKNOWLEDGEMENT_SUCCESS, USER_REPLY_ACKNOWLEDGEMENT_FAILURE
Cost	Cost	No	N/A
Speed	Speed	No	N/A
SupportedCarriers	Supported Carriers	No	N/A
Supported Protocols	Supported Protocols	No	N/A
SupportsCancel	Supports Cancel Operation on the Message	No	False
SupportsReplace	Supports Replace Operation on the Message	No	False
SupportsTracking	Supports Tracking Operation on the Message	No	False
SupportsStatusPolling	Supports Status Polling Operation on the Message	No	False
SenderAddresses	Sender Addresses	No	N/A
DefaultSenderAddress	Default Sender Address	No	N/A
SendingQueuesInfo	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPM/DriverDefSndQ1

27.4.1.3.3 Email Custom Properties These are properties specific to this driver and are generally associated with configuring access to the remote gateway and certain protocol or channel-specific behavior.

Table 27–4 Custom E-Mail Properties

Name	Description	Mandatory?	Default Value
MailAccessProtocol	E-mail receiving protocol. The possible values are <i>IMAP</i> and <i>POP3</i> . Required only if e-mail receiving is supported on the driver instance.	No	IMAP
RetryLimit	This value specifies the number of times to retry connecting to the incoming mail server, if the connection is lost due to some reason. The default value is <i>-1</i> which means no limit to the number of tries.	No	-1
MailDelFreq	The frequency to permanently remove deleted messages. The unit is in seconds and the default value is 600 seconds. A negative value indicates the messages should not be expunged. For the POP3 protocol, the message is expunged after it is processed.	No	600
AutoDelete	This value indicates if the driver should mark the messages deleted after they have been processed. The default is <i>Disabled</i> . For the POP3 protocol, the messages are always deleted right after they are processed.	No	Disabled
Debug	This value indicates if the driver is running in Debug mode. When enabled, JavaMail will print out requests and responses between the e-mail driver and the mail server to the console. The default is <i>Disabled</i> .	No	Disabled
CheckMailFreq	The frequency with which to retrieve messages from the mail server. The unit is in seconds and the default value is 30 seconds.	No	30
ReceiveFolder	The name of the folder the driver is polling messages from. The default value is <i>INBOX</i> .	No	INBOX
OutgoingMailServer	The name of the SMTP server. Mandatory only if e-mail sending is required.	No	N/A
OutgoingMailServerPort	The port number of the SMTP server; typically 25.	No	25
OutgoingMailServerSecurity	The security setting used by the SMTP server. Possible values are <i>None</i> , <i>TLS</i> and <i>SSL</i> . Default value is <i>None</i> .	No	None
OutgoingDefaultFromAddr	The default FROM address (if one is not provided in the outgoing message).	No	N/A
OutgoingUsername	The username used for SMTP authentication. Required only if SMTP authentication is supported by the SMTP server.	No	N/A
OutgoingPassword	The password used for SMTP authentication. Required only if SMTP authentication is supported by the SMTP server. Includes Type of Password (choose from <i>Indirect Password/Create New User</i> , <i>Indirect Password/Use Existing User</i> , <i>Use Cleartext Password</i>) and Password.	No	N/A
IncomingMailServer	The host name of the incoming mail server. Required only if e-mail receiving is supported on the driver instance.	No	N/A

Table 27-4 (Cont.) Custom E-Mail Properties

Name	Description	Mandatory?	Default Value
IncomingMailServerPort	Port number of IMAP4 (that is, 143 or 993) or POP3 (that is, 110 or 995) server.	No	N/A
IncomingMailServerSSL	Indication to enable SSL when connecting to IMAP4 or POP3 server. The default is <i>Disabled</i> .	No	Disabled
IncomingMailIDs	The e-mail addresses corresponding to the user names. Each e-mail address is separated by a comma and must reside in the same position in the list as their corresponding user name appears on the usernames list. Required only if e-mail receiving is supported on the driver instance.	No	N/A
IncomingUserIDs	The list of user names of the mail accounts the driver instance is polling from. Each name must be separated by a comma, for example, <i>foo,bar</i> . Required only if e-mail receiving is supported on the driver instance.	No	N/A
IncomingUserPasswords	The list of passwords corresponding to the user names. Each password is separated by a comma and must reside in the same position in the list as their corresponding user name appears on the usernames list. Required only if e-mail receiving is supported on the driver instance. Includes Type of Password (choose from <i>Indirect Password/Create New User, Indirect Password/Use Existing User, Use Cleartext Password</i>) and Password.	No	N/A
ProcessingChunkSize	The number of messages processed during each message polling. The default is 100.	No	100
ImapAuthPlainDisable	Indication to disable or enable plain text authentication (AUTHENTICATE PLAIN command) for IMAP user authentication. Default is <i>Disabled</i> .	No	Disabled. When this property is disabled, that means that plain text is allowed.

27.4.1.3.4 Client API MessageInfo Support These properties are message delivery related which are specified through client API. [Table 27-5](#) describes if the protocol or driver implementation honors such properties.

Table 27-5 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	False
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.4.1.4 Configuring the SMPP Driver

SMPP (Short Message Peer-to-Peer) is one of the most popular GSM SMS protocols. User Messaging Service includes a pre-built implementation of the SMPP protocol as a driver that is capable of both sending and receiving short messages. If the sending feature is enabled, the SMPP driver opens one TCP connection to the SMS-C (Short Message Service Center) as a transmitter for sending. If the driver's receiving feature is enabled, it opens another connection to the SMS-C as a receiver for receiving. Only

two TCP connections (both initiated by the driver) are needed for all communication between the driver and the SMS-C.

Note: The SMPP Driver implements Version 3.4 of the SMPP protocol and only supports connections to an SMS-C or an SMS Gateway that supports this version.

27.4.1.4.1 SMPP Driver Interoperability This section details interoperability features of the SMPP Driver.

The SMPP driver is compatible with these protocols: SMPP v3.4.

SMPP Driver features include:

- Automatic connection retry
- HTTP proxy for firewall traversal
- Authentication configuration
- Configurable chunk size
- Bulk Sending
- Encoding: UCS2, IA5, GSM_DEFAULT
- Priority Setting
- Configurable Window size
- Plain text content only

The Gateway Vendors in [Table 27–6](#) have been verified.

Table 27–6 SMPP Driver Gateway Vendors

Vendor
Syniverse
Clickatell
Logica CMG
OpenSMPP (simulator)

27.4.1.4.2 Common Properties These are common driver properties that are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values refer to the javadoc of `DriverConfigPropertyNames`.

Table 27–7 Common SMPP Properties

Name	Description	Mandatory	Default Value
InstanceName	Instance Name (for internal use only)	Yes	SMPP-Driver
Capability	Message sending and receiving capability	Yes	Both

Table 27-7 (Cont.) Common SMPP Properties

Name	Description	Mandatory	Default Value
SupportedDeliveryTypes	Supported Delivery Types	Yes	SMS
SupportedContentTypes	Supported Content Types	Yes	text/plain
SupportedStatusTypes	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
Cost	Cost	No	N/A
Speed	Speed	No	N/A
SupportedCarriers	Supported Carriers	No	N/A
Supported Protocols	Supported Protocols	No	N/A
SupportsCancel	Supports Cancel Operation on the Message	No	False
SupportsReplace	Supports Replace Operation on the Message	No	False
SupportsTracking	Supports Tracking Operation on the Message	No	False
SupportsStatusPolling	Supports Status Polling Operation on the Message	No	False
SenderAddresses	Sender Addresses	No	N/A
DefaultSenderAddress	Default Sender Address	No	N/A
SendingQueuesInfo	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1

27.4.1.4.3 Custom Properties These are properties specific to this driver and are generally associated with configuring access to the remote gateway and certain protocol or channel-specific behavior.

Table 27-8 Custom SMPP Properties

Name	Description	Mandatory?	Default Value
SmsAccountId	The Account Identifier on the SMS-C.	Yes	N/A
SmsServerHost	The name (or IP address) of the SMS-C server.	Yes	N/A
TransmitterSystemId	The account ID that is used to send messages.	Yes	N/A
ReceiverSystemId	The account ID that is used to receive messages.	Yes	N/A
TransmitterSystemType	The type of transmitter system. The default is <i>Logica</i> .	Yes	The default value is <i>Logica</i> .
ReceiverSystemType	The type of receiver system. The default is <i>Logica</i> .	Yes	The default value is <i>Logica</i> .

Table 27–8 (Cont.) Custom SMPP Properties

Name	Description	Mandatory?	Default Value
TransmitterSystemPassword	The password of the transmitter system. Includes Type of Password (choose from <i>Indirect Password/Create New User, Indirect Password/Use Existing User, Use Cleartext Password</i>) and Password.	Yes	N/A
ReceiverSystemPassword	The password for the receiver system. Includes Type of Password (choose from <i>Indirect Password/Create New User, Indirect Password/Use Existing User, Use Cleartext Password</i>) and Password.	Yes	N/A
ServerTransmitterPort	The TCP port number of the transmitter server.	Yes	N/A
ServerReceiverPort	The TCP port number of the receiver server.	Yes	N/A
DefaultEncoding	The default encoding of the SMPP driver. The default is <i>IA5</i> . Choose from the drop-down list: <i>IA5, UCS2, GSM_DEFAULT</i> .	No	IA5
EncodingAutoDetect	If enabled, the SMPP driver encodes automatically. Default is <i>Enabled</i> .	No	Enabled
LocalSendingPort	The local TCP port used by the SMPP driver to send messages to the SMS-C.	No	N/A
LocalReceivingPort	The local TCP port used by the SMPP driver to receive messages from the SMS-C.	No	N/A
LocalAddress	The host name (or IP address) of the server that hosts the SMPP driver.	No	N/A
WindowSize	The window size for SMS. This value must be a positive number. Default is <i>1</i> .	No	1
EnquireInterval	The interval, in seconds, to send an enquire message to the SMS-C. Default is <i>30</i> seconds.	No	30
ThrottleDelay	The delay, in seconds, between throttles. Default is <i>30</i> .	No	30
BindRetryDelay	The minimum delay, in seconds, between bind entry attempts. Default is <i>30</i> .	No	30
ResponseTimer	Time lapse allowed between SMPP request and response, in seconds. Default is <i>30</i> .	No	30
RegisteredDeliveryMask	The Registered Delivery Bit Mask. Default is <i>0xFF</i> , which does not change the delivery flag value.	No	0xFF
RangeSetNull	Set to <i>true</i> to set the <i>address range</i> field of <i>BIND_RECEIVER</i> to <i>null</i> . Set to <i>false</i> (the default value) to set the address range field to <i>SmsSystemId</i> . Default is <i>Disabled</i> .	No	Disabled
PriorityAllowed	The highest priority allowed for the SMPP driver. The range is 0 (normal) to 3 (highest). Default is <i>0</i> .	No	0

Table 27–8 (Cont.) Custom SMPP Properties

Name	Description	Mandatory?	Default Value
BulkSending	Setting this value to <i>enabled</i> (the default) enables sending messages in bulk to the SMS-C.	No.	Enabled
PayloadSending	Determines if the <code>message_payload</code> parameter is always used when sending a message to the SMS-C. Default is Disabled.	No	Disabled
SourceTon	The Type of Number (TON) for ESME address(es) served through SMPP receiver session. Default is 0.	No	0
SourceNpi	The Numbering Plan Indicator (NPI) for ESME address(es) served through the SMPP receiver session. Default is 0.	No	0
DestinationTon	The Type of Number (TON) for destination. Default is 0.	No	0
DestinationNpi	The Numbering Plan Indicator (NPI) for destination. Default is 0.	No	0
ExtraErrorCode	A comma-separated list of error codes.	No	N/A
MaxChunks	The maximum SMS chunks for a message. Default is -1 (no maximum).	No	-1 (no maximum)
ChunkSize	The size of each SMS message chunk. Default is 160.	No	160
LongMessageSending	Supports sending long messages. Default is <i>Disabled</i> .	No	Disabled
DatagramMessageMode	Supports Datagram Message mode. Default is <i>Disabled</i> .	No	Disabled

27.4.1.4.4 Client API MessageInfo Support These properties are message delivery related which are specified through client API. [Table 27–9](#) describes if the protocol or driver implementation honors such properties.

Table 27–9 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	True
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.4.1.5 Configuring the XMPP Driver

The XMPP Driver provides unidirectional as well as bidirectional access from Oracle Fusion Middleware to end users for real-time instant messaging (IM) through XMPP (Extensible Messaging and Presence Protocol). This driver enables end users to receive alert notifications or interactively chat with applications through their IM client of choice.

27.4.1.5.1 About XMPP XMPP is an open, XML-based protocol for Instant Messaging and Presence. XMPP-based software is deployed on thousands of servers across the Internet and is used by millions of people worldwide. XMPP consists of a client/server architecture, which resembles the ubiquitous e-mail network. XMPP

servers are completely decentralized, allowing anyone to set up their own server. Messaging is achieved as in the email network, where recipients are addressed by a username and a host name (for example: username@host name).

In the XMPP network, users are identified by an XMPP (Jabber) ID, which consists of a username and the host name of the particular XMPP server to which the user connects. An end user of XMPP connects to an XMPP server using an XMPP client in order to send instant messages to other XMPP users. XMPP, however, is not the only protocol network available for instant messaging. XMPP has an extensible and modular architecture. It integrates with proprietary IM networks, enabling XMPP users to communicate with those on other networks.

In order to use the XMPP Driver in UMS, you must have access to a Jabber/XMPP server and an XMPP account for the UMS XMPP Driver instance to login as.

27.4.1.5.2 XMPP Driver Interoperability This section details interoperability features of the XMPP Driver.

The XMPP driver is compatible with these protocols: XMPP (RFC 3920, 3921).

XMPP Driver features include:

- Automatic connection retry
- HTTP proxy for firewall traversal
- Plain text content only

The Gateway Vendors and Versions in [Table 27–6](#) have been verified.

Table 27–10 XMPP Driver Gateway Vendors and Versions

Vendor	Version
Jabberd	v1, v2
ejabberd	v2

27.4.1.5.3 Third-Party Software The XMPP Driver uses or requires the following third-party software:

Table 27–11 Required Third-Party Software

Name	Instructions	Version(s)
Apache Smack	This driver uses the Apache Smack XMPP Java library to connect to a Jabber/XMPP Instant Messaging Server. This driver includes a licensed copy of Smack (version 3.0.4).	3.0.4
XMPP Server	Optional. To download and install your own Jabber/XMPP server, pick and install a server from http://www.jabber.org .	

Note: You are not required to install your own XMPP Server if you have access to an existing server. For a list of public servers, see <http://www.jabber.org>.

27.4.1.5.4 Driver Application Archive (EAR) \$ORACLE_HOME/communications/applications/sdpmessagingdriver-xmpp.ear

27.4.1.5.5 Common Properties These are common driver properties that are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values refer to the javadoc of `DriverConfigPropertyNames`.

Table 27–12 Common XMPP Properties

Name	Description	Mandatory	Default Value
<code>InstanceName</code>	Instance Name (for internal use only)	Yes	XMPP-IM-Driver
<code>Capability</code>	Message sending and receiving capability	Yes	Both
<code>SupportedDeliveryTypes</code>	Supported Delivery Types	Yes	IM
<code>SupportedContentTypes</code>	Supported Content Types	Yes	text/plain
<code>SupportedStatusTypes</code>	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
<code>Cost</code>	Cost	No	N/A
<code>Speed</code>	Speed	No	N/A
<code>SupportedCarriers</code>	Supported Carriers	No	N/A
<code>SupportedProtocols</code>	Supported Protocols	No	N/A
<code>SupportsCancel</code>	Supports Cancel Operation on the Message	No	False
<code>SupportsReplace</code>	Supports Replace Operation on the Message	No	False
<code>SupportsTracking</code>	Supports Tracking Operation on the Message	No	False
<code>SupportsStatusPolling</code>	Supports Status Polling Operation on the Message	No	False
<code>SenderAddresses</code>	Sender Addresses	No	N/A
<code>DefaultSenderAddress</code>	Default Sender Address	No	N/A
<code>SendingQueuesInfo</code>	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory;OraSDPM/Queues/OraSDPMDriverDefSndQ1

27.4.1.5.6 XMPP Custom Properties The XMPP Driver includes the custom properties shown below.

Table 27–13 Custom XMPP Properties

Name	Description	Mandatory	Default Values
<code>IMServerHost</code>	Jabber/XMPP server hostname.	No	N/A

Table 27–13 (Cont.) Custom XMPP Properties

Name	Description	Mandatory	Default Values
IMServerPort	Corresponding Jabber/XMPP server port. Default is 5222.	Yes	5222
IMServerUsername	Jabber/XMPP username with which you log in. You may also enter a complete Jabber ID if its domain name is different from the Jabber/XMPP server hostname (for example: <i>oracleagent1@host.com</i>). Note: An attempt will be made to register this user account if it does not exist and the server supports account registration.	No	N/A
IMServerPassword	Corresponding password for the username listed above. Includes Type of Password (choose from <i>Indirect Password/Create New User</i> , <i>Indirect Password/Use Existing User</i> , <i>Use Cleartext Password</i>) and Password.	No	N/A
SecurityMode	Security mode to use when making a connection to the server. Available options are: <i>None</i> (Security is disabled and only un-encrypted connections will be used), <i>TLS</i> (Security through TLS encryption is used whenever it is available), <i>SSL</i> (Security through SSL encryption is used). Default is <i>TLS</i> .	No	TLS
SASL Authentication Enabled	Whether or not to use SASL authentication when logging into the server. If SASL authentication fails, then the driver will try to use non-SASL authentication. By default, SASL is enabled.	No	Enabled

27.4.1.5.7 Client API MessageInfo Support These properties are message delivery related which are specified through client API. The table below describes if the protocol or driver implementation honors such properties.

Table 27–14 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	False
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.4.1.6 Configuring the VoiceXML Driver

The VoiceXML Driver supports the Genesys VoiceGenie gateway's outbound call protocol to send messages authored in VoiceXML. The gateway delivers the message using text-to-speech synthesis.

27.4.1.6.1 VoiceXML Driver Interoperability This section details interoperability features of the VoiceXML Driver.

The VoiceXML driver is compatible with these protocols: VoiceXML over HTTP (VoiceGenie gateway protocol).

VoiceXML Driver features include:

- VoiceXML content only

The Gateway Vendor and Version in [Table 27–15](#) has been verified.

Table 27–15 VoiceXML Driver Gateway Vendor and Version

Vendor	Version
Genesys VoiceGenie	6.4.2

27.4.1.6.2 Common Properties These are common driver properties that are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values refer to the javadoc of `DriverConfigPropertyNames`.

Table 27–16 Common VoiceXML Properties

Name	Description	Mandatory	Default Value
<code>InstanceName</code>	Instance Name (for internal use only)	Yes	VoiceXML-Driver
<code>Capability</code>	Message sending and receiving capability	Yes	SEND
<code>SupportedDeliveryTypes</code>	Supported Delivery Types	Yes	VOICE
<code>SupportedContentTypes</code>	Supported Content Types	Yes	text/vxml, text/x-vxml
<code>SupportedStatusTypes</code>	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
<code>Cost</code>	Cost	No	N/A
<code>Speed</code>	Speed	No	N/A
<code>SupportedCarriers</code>	Supported Carriers	No	N/A
<code>SupportedProtocols</code>	Supported Protocols	No	N/A
<code>SupportsCancel</code>	Supports Cancel Operation on the Message	No	False
<code>SupportsReplace</code>	Supports Replace Operation on the Message	No	False
<code>SupportsTracking</code>	Supports Tracking Operation on the Message	No	False
<code>SupportsStatusPolling</code>	Supports Status Polling Operation on the Message	No	False
<code>SenderAddresses</code>	Sender Addresses	No	N/A
<code>DefaultSenderAddress</code>	Default Sender Address	No	N/A
<code>SendingQueuesInfo</code>	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1

27.4.1.6.3 VoiceXML Custom Properties The VoiceXML Driver includes the custom properties shown below.

Table 27–17 Custom VoiceXML Properties

Name	Description	Mandatory	Default Values
VoiceXMLOutboundServlet URI	The URL of the VoiceXML gateway.	Yes	N/A
VoiceXMLOutboundServlet UserName	The user name of the VoiceXML gateway.	No	N/A
VoiceXMLOutboundServlet Password	The password of the user of the VoiceXML gateway.	No	N/A
VoiceXMLOutboundServlet DNIS	The number that should appear in the recipient's Caller ID display.	No	N/A
VoiceXMLReceiveURL	The URL of this driver's servlet which handles incoming requests from the VoiceXML Gateway. The format is <code>http://<host>:<port>/usermessagingdriver-voicexml/receive</code> . The default behavior, if this property is not set, is to use the local container's HTTP listen host and port. The default behavior only works for the first driver instance. For additional instances, the context root is different and this property must be configured using the correct context root replacement for <code>/sdpmessagingdriver-voicexml</code> .	No	N/A

Note: In a clustered (high-availability) environment with Oracle HTTP Server (OHS) configured, do not use the OHS port to configure the VoiceXML Driver Receive URLs. Using the OHS port to configure the VoiceXML Driver Receive URLs will cause a conflict with the drivers.

Each Voice XML Driver must be configured with its own WLS server's port.

27.4.1.6.4 Client API MessageInfo Support These properties are message delivery related which are specified through client API. The table below describes if the protocol or driver implementation honors such properties.

Table 27–18 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	False
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.4.1.7 Configuring the Worklist Driver

The Worklist driver enables notifications from all sources to be sent to users in the form of *worklist* tasks for integration into the users' WebCenter Unified Worklist.

Note: Worklist Message tasks are accessible both through a WebCenter that has been configured to search the BPEL connection that the Worklist message driver is sending messages to, as well as through the BPEL Worklist application. The BPEL Worklist Application also shows these message-based tasks as Worklist items.

This integration is achieved by exposing a *Worklist* channel (delivery type) to applications and end users. Messages sent through the user's Worklist channel are processed by the Worklist driver. The User Messaging Service API semantics are the same as those for existing channels such as IM or Email. *This driver handles sending messages only.* The Driver Application Archive (EAR) is located at: `$ORACLE_HOME/communications/applications/sdpmessagingdriver-worklist.ear`

27.4.1.7.1 Install the Worklist Driver To enable the messaging worklist feature, the WebLogic SOA domain must be extended using the extension template available at `$ORACLE_HOME/common/templates/applications/oracle.ums.driver.worklist_template_11.1.1.jar`. To extend a SOA domain using the Oracle Fusion Middleware Configuration Wizard:

1. Launch Oracle Fusion Middleware Configuration Wizard (`$ORACLE_HOME/common/bin/config.sh` or `%ORACLE_HOME%\common\bin\config.cmd`).
2. Select the *Extend an existing WebLogic domain* option.
3. Select the desired SOA domain directory.
4. Select the *Extend my domain using an existing extension template* option.
5. Click **Browse**, and navigate to `$ORACLE_HOME/common/templates/applications`
6. Select `oracle.ums.driver.worklist_template_11.1.1.jar`
7. Complete the remaining steps of the Oracle Fusion Middleware Configuration Wizard, and restart the SOA servers.

Note: *Special Considerations if the SOA managed server is on a remote computer:* The `oracle.ums.driver.worklist_template_11.1.1.jar` extension template includes a SOA composite application (`sca_sdpmessaging-sca-worklist-composite_rev1.0.jar`) that is copied to `$DOMAIN_HOME/soa/autodeploy`, and is auto-deployed by the SOA Infra run time upon server restart. However, if the SOA Infra run time is on a remote computer, and the domain is packed with the `-managed=true` option (the correct option to use), this directory is not included in the archive. Thus, the composite is not deployed upon restarting the SOA managed server.

In order to complete the installation, copy the contents of `$DOMAIN_HOME/soa/autodeploy` from the AdminServer computer to the corresponding location on the remote computer with the SOA managed server, and restart the SOA managed server. You may have to create the directory structure `soa/autodeploy` under `$DOMAIN_HOME` on the remote computer.

27.4.1.7.2 Common Properties The following common driver properties are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values see the javadoc of `DriverConfigPropertyNames`.

Table 27–19 Common Worklist Properties

Name	Description	Mandatory?	Default Value
InstanceName	Instance Name (for internal use only)	Yes	Worklist-Driver
Capability	Message sending and receiving capability	Yes	SEND
SupportedDeliveryTypes	Supported Delivery Types	Yes	WORKLIST
SupportedContentTypes	Supported Content Types	Yes	text/plain, text/html
SupportedStatusTypes	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
Cost	Cost	No	N/A
Speed	Speed	No	N/A
SupportedCarriers	SupportedCarriers	No	N/A
SupportedProtocols	SupportedProtocols	No	N/A
SupportsCancel	Supports Cancel Operation on the Message	No	False
SupportsReplace	Supports Replace Operation on the Message	No	False
SupportsTracking	Supports Tracking Operation on the Message	No	False
SupportsStatusPolling	Supports Status Polling Operation on the Message	No	False
SenderAddresses	Sender Addresses	No	N/A
DefaultSenderAddress	Default Sender Address	No	N/A
SendingQueuesInfo	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1

27.4.1.7.3 Custom Properties The following custom property is available:

Table 27–20 Custom Worklist Property

Name	Description	Mandatory	Default Value
BPELConnectionURL	The URL of the BPEL server to connect to. The format is 'http://<bpel-host>:<bpel-port>'. The default behavior, if this property is not set, is to use the local container's HTTP connection URL.		

27.4.1.7.4 Client API MessageInfo Support This table shows if the protocol or driver implementation honor the following message delivery-related properties that are specified through the client API.

Table 27–21 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	False
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.4.1.8 Configuring the Proxy Driver

The Proxy Driver acts as a Messaging Web Service client to a Fusion Middleware Messaging server hosted elsewhere in the intranet or Internet. It uses SOAP over HTTP (the Parlay X Multimedia Web Service protocol) to send messages and receive messages as well as return message delivery status. The ParlayX Web Service relays messages from one UMS instance to another. It can be used to relay traffic from multiple instances in an Intranet to a terminating instance that has all of the protocol-specific drivers configured to an external gateway such as an SMSC, or to an SMTP or IMAP mail server.

27.4.1.8.1 Common Properties These are common driver properties that are indicative of the capabilities of this driver for use by the engine when routing outbound messages. Some properties are set by the driver developer and do not normally require modification, while others can be modified by the administrator to change the routing behavior. Some properties such as `SendingQueuesInfo` are for advanced use and only require modification for advanced deployment topologies. For a complete description of these properties and available values refer to the javadoc of `DriverConfigPropertyNames`.

Table 27–22 Common Proxy Properties

Name	Description	Mandatory	Default Value
<code>InstanceName</code>	Instance Name (for internal use only)	Yes	Proxy-Driver
<code>Capability</code>	Message sending and receiving capability	Yes	SEND
<code>SupportedDeliveryTypes</code>	Supported Delivery Types	Yes	EMAIL, SMS, VOICE, IM, WORKLIST
<code>SupportedContentTypes</code>	Supported Content Types	Yes	*
<code>SupportedStatusTypes</code>	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
<code>Cost</code>	Cost	No	N/A
<code>Speed</code>	Speed	No	N/A
<code>SupportedCarriers</code>	Supported Carriers	No	N/A
<code>SupportedProtocols</code>	Supported Protocols	No	N/A
<code>SupportsCancel</code>	Supports Cancel Operation on the Message	No	False
<code>SupportsReplace</code>	Supports Replace Operation on the Message	No	False

Table 27–22 (Cont.) Common Proxy Properties

Name	Description	Mandatory	Default Value
SupportsTracking	Supports Tracking Operation on the Message	No	False
SupportsStatusPolling	Supports Status Polling Operation on the Message	No	False
SenderAddresses	Sender Addresses	No	N/A
DefaultSenderAddress	Default Sender Address	No	N/A
SendingQueuesInfo	Driver Sending Queue Info	Yes	OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1

27.4.1.8.2 Proxy Custom Properties The Proxy Driver includes the custom properties shown below.

Table 27–23 Custom Proxy Properties

Name	Description	Mandatory	Default Values
GatewayURL	The URL to the hosted 11g UMS Web Service gateway. The URL is in the following format: <code>http://<host>:<port>/sdpmessaging/parlayx/SendMessageService</code>	Yes	N/A
Username	Username of the messaging gateway.	No	N/A
Password	The password of the username	No	N/A
Policies	Comma-delimited list of Oracle Web Services Manager WS-Security policies to be attached to proxy driver requests	No	N/A

27.4.1.8.3 Client API MessageInfo Support These properties are message delivery related which are specified through client API. The table below describes if the protocol or driver implementation honors such properties.

Table 27–24 Client API MessageInfo Support

Name	Description	Support
Expiration	<i>Expiration</i> means how long the message may exist until it expires.	False
Delay	<i>Delay</i> means the amount of time that must elapse before the message is sent.	False

27.5 Securing User Messaging Service

The User Messaging Preferences User Interface and the Parlay X Web Services can be secured at the transport-level using Secure Sockets Layer (SSL). By default, all deployed web services are unsecured. Web Service Security should be enabled for any services that are deployed in a production environment.

- To enable SSL in the Oracle WebLogic Server, see "Configure SSL for Oracle WebLogic Server" in the *Oracle Fusion Middleware Administrator's Guide*. This step is sufficient to secure the User Messaging Preferences User Interface.

- To secure the Parlay X Web Services, see "Configuring Transport-Level Security" in the *Securing WebLogic Web Services*.

UMS supports the use of Oracle Web Services Manager WS-Security policies to protect UMS web services. For more information about Oracle Web Services Manager, see "Using Oracle Web Service Security Policies", in *Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server*.

The recommended security configuration for web services uses Security Assertion Markup Language (SAML) tokens to pass identities between web service clients and UMS. With SAML tokens, instead of the web service client passing a username and password to UMS, a trust relationship is established between the client and UMS by means of exchanging certificates. Once this keystore configuration is in place, the web service client passes only the user identity, and vouches for the fact that it has authenticated the user appropriately.

The recommended policies to use for UMS web services are:

- `oracle/wss11_saml_token_with_message_protection_service_policy` (server-side)
- `oracle/wss11_saml_token_with_message_protection_client_policy` (client-side)
- `oracle/wss11_saml_token_identity_switch_with_message_protection_client_policy` (client-side)

Note: The choice of client-side policy depends on the security context in which your application is executing.

- If the thread that is making the web service call has the intended Subject associated with it (for example, from a web application that performs user authentication, or a Java EE module with a *run-as* identity defined), then use the policy `oracle/wss11_saml_token_with_message_protection_client_policy`.

The current thread Subject will be passed through using the SAML Policy WS-Security headers. In this case you should not specify the parameter

```
javax.xml.ws.BindingProvider.USERNAME_PROPERTY
```

when creating your web service client instance.

- If the thread that is making the web service call will have an undefined Subject associated with it, or if you need to programmatically supply a different identity, then use the policy `oracle/wss11_saml_token_identity_switch_with_message_protection_client_policy`, and specify the parameter `javax.xml.ws.BindingProvider.USERNAME_PROPERTY` when creating your web service client instance. If you want to perform dynamic identity switching, you must grant additional code permissions to your application. For more information, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.
-

27.5.1 Web Service Security on Notification

The different Web services include corresponding notification Web services (`MessageNotification`, `PresenceNotification`) that run on the client side and

receive notifications (message delivery status, message receipt, presence status change) when the appropriate event occurs.

This implementation does not provide for the use of Web Service security (WS-Security) by default during notification of the clients. That is, the server assumes that the notification Web services running on the client side do not use WS-Security, and makes no attempt to authenticate itself when sending notifications. If you enable WS-Security on the client side, the notification from the server fails because the notification SOAP request is missing the required headers.

27.5.2 Enabling UMS Service Security

To enable a policy for an UMS web service, follow the steps in "Configuring Oracle WSM Security Policies in Administration Console" in *Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server*, selecting policy `oracle/wss11_saml_token_with_message_protection_service_policy`. This configuration must be repeated for each service that you want to secure.

27.5.3 Enabling Client Security

Web service client security must be enabled programmatically. When using the client libraries described in *Parlay X Messaging Client API and Client Proxy Packages* (in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*), WS-Security policy configuration is provided when a client object is constructed. The client constructors take an argument of type `Map<String, Object>`. In general when using SAML authentication, the key/value pairs (Table 27-25) should be added to the configuration map in addition to other required properties such as the endpoint address.

Table 27-25 Client security keys

Key	Type	Typical Value
<code>oracle.sdp.parlayx.ParlayXConstants.POLICIES</code>	<code>String[]</code>	<code>oracle/wss11_saml_token_with_message_protection_client_policy</code>
<code>javax.xml.ws.BindingProvider.USERNAME_PROPERTY</code>	<code>String</code>	<code><valid username></code>
<code>oracle.wsm.security.util.SecurityConstants.Config.KEYSTORE_RECIPIENT_ALIASES_PROPERTY</code>	<code>String</code>	(optional) keystore alias for target service. See Client Aliases .

Example 27-1 Web Service Client Security

```
import oracle.sdp.parlayx.multimedia_messaging.send.SendMessageClient

...

Map<String, Object> config = new HashMap<String, Object>();
config.put(javax.xml.ws.BindingProvider.ENDPOINT_ADDRESS_PROPERTY, ums_url);
config.put(oracle.sdp.parlayx.ParlayXConstants.POLICIES, new String[]
{"oracle/wss11_saml_token_with_message_protection_client_policy"});
config.put(javax.xml.ws.BindingProvider.USERNAME_PROPERTY, "test.user1");

SendMessageClient sendClient = new SendMessageClient(config);
```

27.5.4 Keystore Configuration

In order to use the recommended WS-Security policy, you must configure a keystore containing the public and private key information required by OWSM. Refer to "Configuring the Credential Store Using WLST" in *Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server* for information on how to configure the keystore and corresponding credential store entries.

- If both your web service client and UMS server are in the same domain, then they share a keystore and credential store.
- If your web service client and UMS server are in different domains, then you must import the UMS public key into your client domain's keystore, and must import your client domain's public key into the UMS keystore.

27.5.5 Client Aliases

When using certain WS-Security policies such as the SAML policy recommended here, the client must use the server's public key to encrypt the web service request. However, there is generally only one keystore configured per domain. Therefore, if you have a domain in which there are web service clients that communicate with web services in multiple other domains, then you may be required to override the default keystore entry used by OWSM.

For example, if you have a domain in which application "A" is a web service client to a UMS web service, and application "B" is a web service client to a web service in another domain, then A's requests must be encrypted using the public key of the UMS domain, and B's requests must be encrypted using the public key of the other domain. You can accomplish this goal by overriding the keystore alias used by OWSM for each request:

- Import (for example) the UMS public key with alias "ums_public_key", and the other public key with alias "other_public_key".
- When creating an UMS web service client, specify the recipient keystore alias parameter, setting the key to `oracle.wsm.security.util.SecurityConstants.Config.KEYSTORE_RECIPIENT_ALIAS_PROPERTY` and the value to "ums_public_key" as shown in [Example 27-2](#).

Example 27-2 Client Aliases

```
import oracle.sdp.parlayx.multimedia_messaging.send.SendMessageClient

...

Map<String, Object> config = new HashMap<String, Object>();
config.put(javax.xml.ws.BindingProvider.ENDPOINT_ADDRESS_PROPERTY, ums_url);
config.put(oracle.sdp.parlayx.ParlayXConstants.POLICIES, new String[]
{"oracle/wss11_saml_token_with_message_protection_client_policy"});
config.put(javax.xml.ws.BindingProvider.USERNAME_PROPERTY, "test.user1");
config.put(oracle.wsm.security.util.SecurityConstants.Config.KEYSTORE_RECIPIENT_
ALIAS_PROPERTY, "ums_public_key")
SendMessageClient sendClient = new SendMessageClient(config);
```

- The other web service client similarly must override the keystore alias, but the exact mechanism may differ. For example if using a JAX-WS client stub directly, then you can add the override property to the JAX-WS request context. See "Policy Configuration Overrides for the Web Service Client" in *Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server* for more details.

27.5.6 Securing JMS Resources

This (optional) procedure enables administrators to restrict access to the Oracle User Messaging Service's JMS resources (such as queues) for enhanced security.

Note: This section details steps to follow in order to secure JMS Resources. If you are starting with a new installation (Patch Set 2) of Oracle User Messaging Service, then follow these steps.

If you are not upgrading to Patch Set 2, then these instructions are not to be used.

If you previously created a domain in an earlier release and are upgrading, but have not already done so, then complete the steps in the latest Release Notes before proceeding.

To secure the JMS system resources, lock all JMS sub-deployments that start with the name *UMSJMSSystemResource* (there may be multiple automatically-created resources for UMS in a multi-server or cluster deployment) with the role *OracleSystemRole*. Do this using the WebLogic Console, or you may run a WLST script (available at `$ORACLE_HOME/communications/bin/secure_jms_system_resource.py`) as follows:

```
$ORACLE_HOME/common/bin/wlst.sh
$ORACLE_HOME/communications/bin/secure_jms_system_resource.py
--username=<admin_username> --password=<password>
--url=t3://<admin-host>:<admin-port> --jmsSystemResource
<UMSJMSSystemResource> --role OracleSystemRole
```

For example:

```
$ORACLE_HOME/common/bin/wlst.sh
$ORACLE_HOME/communications/bin/secure_jms_system_resource.py
--username=weblogic --password=<password> --url=t3://localhost:7001
--jmsSystemResource UMSJMSSystemResource --role OracleSystemRole
```

By default, the UMS system runs as the user *OracleSystemUser* for accessing JMS resources. If the user *OracleSystemUser* does not exist, or you secure the UMS JMS resources with any other role that some other user has been granted, you must override the default user identity used by the UMS system by specifying an alternate username for the following JVM system property when you start the container:

```
oracle.ums.system.user=<username>
```

For example, if the user is *MySystemUser*, you can pass the JVM system property on command line as: `-Doracle.ums.system.user=MySystemUser`

27.6 Troubleshooting Oracle User Messaging Service

To debug User Messaging Service, first check the server diagnostic logs. The logs may contain exception, error, or warning messages that provide details about incorrect behavior along with actions to remedy the problem. The following table describes additional methods for debugging common User Messaging Service problems.

Table 27–26 Troubleshooting UMS

Symptom	Possible Causes	Solutions
Notifications are not being sent from BPEL or Human Workflow components in SOA.	Notification Mode is set to NONE in SOA Workflow Notification configuration.	Change the Notification Mode setting to <i>EMAIL</i> or <i>ALL</i> using Oracle Fusion Middleware Control.
Email notification is not being sent.	<p>The Outgoing (SMTP) Mail Server settings in the UMS Email Driver are incorrect.</p> <p>The SMTP server requires authentication or a secure connection (TLS or SSL).</p>	<p>Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control:</p> <ul style="list-style-type: none"> ■ OutgoingMailServer ■ OutgoingMailServerPort <p>Note: Validate the values by using them in any e-mail client for connecting to the SMTP server.</p> <p>Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control:</p> <ul style="list-style-type: none"> ■ OutgoingUsername ■ OutgoingPassword ■ OutgoingMailServerSecurity

Table 27–26 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions
<p>Notifications are not being sent because of error message: No matching drivers found for sender address = <address></p>	<p>The UMS Driver for the appropriate channel is configured with a specific list of <i>SenderAddresses</i>, and the message sent by the application has set a non-matching Sender Address.</p> <p>Note: UMS Server matches the outbound message's sender address, if set, against the available drivers' <i>SenderAddresses</i> to find a matching driver to use for delivering the message. If a driver has set one or more <i>SenderAddresses</i>, then the UMS Server only sends messages with the matching sender address to it.</p>	<ul style="list-style-type: none"> ■ Check the following settings in the appropriate UMS Driver using Oracle Fusion Middleware Control: <p style="margin-left: 20px;"><i>SenderAddresses</i></p> <p style="margin-left: 20px;">Note: The format for <i>SenderAddresses</i> is a comma-delimited list of <DeliveryType>: <Address>.</p> <p style="margin-left: 20px;">For example:</p> <p style="margin-left: 40px;">EMAIL: sender@example.com, EMAIL: sender@example2.com</p> ■ Leave this property blank, if you want this driver to service outbound messages for all sender addresses for this channel (delivery type). ■ If there are multiple driver instances deployed for the same channel (delivery type) with different configurations, use the <i>SenderAddresses</i> to differentiate the driver instances. For example, one instance can be set with a specific value in <i>SenderAddresses</i> to only service outbound messages with that matching sender address, while the other instance can keep the <i>SenderAddresses</i> blank in order to service all outbound messages that do not specify any sender address or one that does not match that of the first driver instance. ■ <i>SenderAddresses</i> that are configured with the incorrect syntax (such as missing <DeliveryType>:) are ignored by the UMS Server for the purpose of driver selection.
<p>The email client inconsistently receives notifications.</p>	<p>The Incoming Mail Server settings in the UMS Email Driver are configured with the same email account to which notifications are being sent.</p> <p>If the notification is sent to the same account, the UMS Email Driver may download and process the email before the email client can display it.</p>	<p>Use an exclusive e-mail account for Incoming Mail Server settings. Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control:</p> <ul style="list-style-type: none"> ■ <i>IncomingMailIDs</i> ■ <i>IncomingUserIDs</i>

Table 27–26 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions	
SOA Human Workflow notifications are sent, but are not actionable.	The Actionable Email Address is not configured in SOA Workflow Notification Properties.	Set the Actionable Email Address in SOA Workflow Notification Properties with the address of the email account configured in the UMS Email Driver.	
	The Human Workflow task is not set to send actionable notifications.	Set the <i>actionable</i> attribute for the Human Workflow task in JDeveloper and redeploy the SOA composite application.	
SOA Human Workflow actionable notifications are sent, but no action is taken after responding.	The Incoming Mail Server settings in the UMS Email Driver are incorrect.	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: <ul style="list-style-type: none"> ■ MailAccessProtocol (<i>IMAP</i> or <i>POP3</i>, in uppercase) ■ ReceiveFolder ■ IncomingMailServer ■ IncomingMailServerPort ■ IncomingMailServerSSL ■ IncomingMailServerSSL ■ IncomingUserIDs ■ IncomingUserPasswords ■ ImapAuthPlainDisable <p>Note: Validate the values by using them in any e-mail client for connecting to an IMAP or POP3 server.</p>	
		The mail access protocol is incorrect.	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: <ul style="list-style-type: none"> ■ MailAccessProtocol (<i>IMAP</i> or <i>POP3</i>, in uppercase)
		The email server is SSL-enabled.	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: <ul style="list-style-type: none"> ■ IncomingMailServerSS
		The receive folder name is incorrect.	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: <ul style="list-style-type: none"> ■ ReceiveFolder <p>Note: Some email servers may expect the value INBOX to be inbox or Inbox (that is, case-sensitive). Based on your email server, use an appropriate value.</p>
		A non-default email client is configured for receiving notifications. When the user clicks the approval link, the default mail client page opens, which may send emails to a different email server.	Configure the default email client to receive actionable notifications.

Table 27-26 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions
SOA BPEL User Notification or Human Workflow notifications are sent to the correct delivery type (email, sms, and so on) but to the wrong address.	<p>A self-provisioned messaging channel was created by the user in User Messaging Preferences for use in BPEL User Notification or Human Workflow use cases.</p> <p>Note: The User Messaging Preferences UI allows the end user to create his or her own messaging channel for various use cases, but these are not to be used for BPEL User Notification and Human Workflow.</p>	<p>Do not use a self-provisioned messaging channel for BPEL User Notification or Human Workflow use cases (that is, do not set as Default channel, and do not use in a messaging filter for such use cases). BPEL User Notification and Human Workflow utilize User Messaging Preferences only for the delivery type preference, and the actual address is retrieved from the user profile in the identity management system.</p> <p>Note: Addresses from the user profile in the identity management system are available through User Messaging Preferences using pre-defined channel names, such as <i>Business Email</i>, <i>Business Mobile</i>, <i>Business Phone</i>, <i>Instant Messaging</i>. Use these pre-defined messaging channels instead for BPEL User Notification and Human Workflow use cases.</p>

Monitoring Oracle User Messaging Service

This chapter describes how to monitor Oracle User Messaging Service using Oracle Enterprise Manager Fusion Middleware Control.

This chapter includes the following topics:

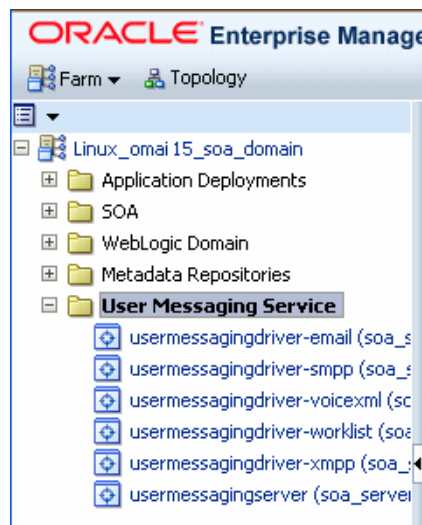
- [Section 28.1, "Monitoring Oracle User Messaging Service"](#)
- [Section 28.2, "Log Files"](#)
- [Section 28.3, "Metrics and Statistics"](#)

28.1 Monitoring Oracle User Messaging Service

You can monitor Oracle User Messaging Service logs and metrics using Oracle Enterprise Manager Fusion Middleware Control. To access this functionality:

1. Go to the Enterprise Manager page for your SOA farm.

Figure 28–1 Managing your SOA farm



2. Select Fusion Middleware, SOA, User Messaging Service.
3. Select the server or driver of your choice.

If you select a driver, quick statistics are displayed that indicate the state and performance of the driver.

If you select a server, you see a list of associated drivers, in addition to the quick statistics. You can select one of the drivers to view its statistics, or you can click the Configure Driver icon to configure it. For more information on configuring drivers, see [Chapter 27, "Configuring Oracle User Messaging Service"](#).

Figure 28–2 Using the Configure Driver icon

Name	Driver Type	Status	Configure Driver
/Farm_soa/soa/server_soa/sdpMessagingDriver-voicexml	User Messaging VoiceXML Driver	Down	

- Right-click a driver to take the actions listed in.

Figure 28–3 Available actions

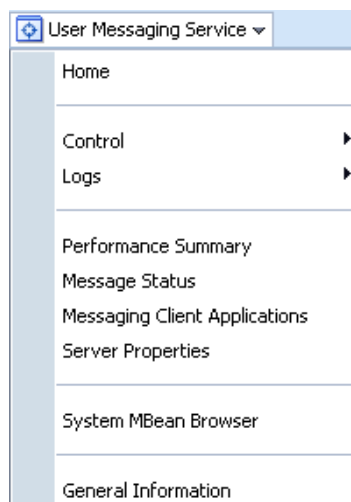


Table 28–1 Driver actions

Selection	Action
Home	The Home page lists the quick statistics for the selected driver.
Control	Start Up or Shut Down driver.
Logs	View and configure message logs for the selected driver.
Performance Summary	Displays Performance Statistics on a customizable metrics page. Use this page to view statistics for this driver. Customize this page using the Metric Palette. The Metric Palette enables you to choose from all of the available metrics so that you see only the information that is most valuable to you.
Message Status	Check the delivery status of messages sent and received, and resend selected messages. You can filter the search by adding more search fields and setting the desired operator and search value. Some fields can be added multiple times in order to use them with different and complementary operators, or with the <i>Contains</i> operator.
Messaging Client Applications	Messaging client applications registered with the User Messaging Service can be manually de-registered in cases where the applications have been undeployed and are holding onto access points that must be made available to other applications.

Table 28–1 (Cont.) Driver actions

Selection	Action
Server Properties	Configure message storage method and business terms for message filter creation. See Chapter 27, "Configuring Oracle User Messaging Service" for more information.
System MBean Browser	System MBean Browser the System MBeans and their configuration settings.
General Information	General Information displays the name, version, Oracle Home, and host for the selected driver.



For more information about Oracle Enterprise Manager, see your Oracle Enterprise Manager documentation.

28.1.1 Using Message Status

You can check the delivery status of messages sent and received, and resend selected messages. To check message status:

1. In the navigation tree, right-click the UMS target for which you want to view message status.
2. Select **Message Status**. The *Message Status* page appears.
3. Click **Search** to search the messages using the default criteria. The search returns a listing for the messages.

Figure 28–4 Message Status

Message ID (Recipient)	Recipient	Operation	Overall Status	Timestamp
83a436f69844c492023652c5bd60a3bb (WORKLIST:weblogic)	WORKLIST:weblogic	Send	✗	Apr 7, 2009 7:58:42 PM
83a861849844c492023652c56349e77d (VOICE:16505767675)	VOICE:16505767675	Send	✓	Apr 7, 2009 7:57:11 PM
83a7ff1a9844c492023652c5aaa70d4a (VOICE:16505061142)	VOICE:16506114142	Send	✓	Apr 7, 2009 7:56:46 PM
83965d009844c492023652c5690fcd1e (WORKLIST:weblogic)	WORKLIST:weblogic	Send	✗	Apr 7, 2009 7:37:30 PM
49DBE0BF.6050105@oracle.com (EMAIL:bugbash8@stapn50.us.oracle.com)	EMAIL:bugbash8@steblogi.us.	Receive	✓	Apr 7, 2009 4:28:36 PM
82e554df9844c492023652c50ca41541 (EMAIL:paulo.angulo@oracle.com)	EMAIL:paulo.eblogi@oracle.co	Send	✓	Apr 7, 2009 4:24:08 PM

You can customize the search by adding more search fields and setting the desired operator and search value. Some fields can be added multiple times in order to use them with different and complementary operators, or with the Contains operator. To customize the search:

1. Click **Add Fields**.
2. Select the field(s) on which you want to search.
3. Choose operators and fill in variables as needed.
4. Click **Search**. The customized search is done and results returned.

Figure 28–5 Custom search

Message Status
 Check the delivery status of messages sent and received, and resend selected messages. Filter the search by adding more search fields and setting the desired operator and search value. Some fields can be added multiple times in order to use them with different and complementary operators, or with the "Contains" operator.

Search Message Status * Required

* Maximum Messages Displayed: Equals | 100 | Recipient: Contains | bug |

* Operation: Equals | Any | Driver Instance Name: Contains | email |

* Overall Status: Equals | Any |

Message ID (Recipient)	Recipient	Operation	Overall Status	Timestamp
49DBE0BF.6050105@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 4:28:36 PM
49DBDFDF.7080902@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 4:21:45 PM
49DBDE7A.4070408@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 4:17:29 PM
49DBDAFD.8000305@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 4:00:48 PM
49DBD637.90602@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 3:41:10 PM
49DBD557.5050501@oracle.com (EMAIL:bugtceiv8@sash850.us.oracle.com)	EMAIL:bugtceiv8@sash850.us.	Receive	✓	Apr 7, 2009 3:37:18 PM

Total Rows: 15

5. If you want to resend a message, select the message in the list and click **Resend**.

28.1.2 Deregistering Messaging Client Applications

You can manually deregister Messaging Client Applications after the applications have been undeployed and are holding onto access points that must be made available to other applications. To deregister Messaging Client Applications:

1. Right-click a target in the navigation tree, and select **Messaging Client**. The Messaging Client page appears.
2. Select the message that you want to deregister.
3. Click **De-register**.

Figure 28–6 Messaging Client Applications page

Name	Version	Client Type	Listener End Point	Receiving Queues	Access
UMS5SampleApp	11.1.1.1.0	EJB	MessageListener: [JNDI Name=null, Home Class=null], StatusListener: [JNDI Name=null, Home Class=null]	[JNDI Name=OraSDPM/Queues /OraSDPMAppDefRcvQ1, Connection Factory=OraSDPM/QueueConnectionFactory]	EMAIL
ParlayX	11.1.1.1.0	EJB	MessageListener: [JNDI Name=null, Home Class=null], StatusListener: [JNDI Name=null, Home Class=null]	[JNDI Name=OraSDPM/Queues /OraSDPMWSRcvQ1, Connection Factory=OraSDPM/QueueConnectionFactory]	
<anonymous>@ParlayX	2.1	PARLAYX			

A confirmation box appears asking you to confirm your choice.

4. Confirm your choice.

28.1.3 Monitoring Drivers Using the All Tab

The **All** tab only lists successfully-registered drivers in the domain (not all drivers that exist).

Since the drivers are not configured out-of-the-box, they are not registered unless you configure them. To ensure that you see all of the drivers in the **v** tab, configure the SMPP, VoiceXML and XMPP drivers (if you plan to use them). Once configured, they are registered with the engine and are displayed in the **All** tab.

28.2 Log Files

Right-click the driver for which you want to view log information, then choose Logs, View Log Files. The Log Messages page appears.

Figure 28–7 Querying logs

Log Messages

Search

Date Range: Most Recent, 1 Hours

Time Interval: Start Date, Start Time 01:00 AM, End Date, End Time 01:00 AM

* Message Types: Incident Error, Error, Warning, Notification, Trace, Unknown, Maximum Rows Displayed: 500

View: Show Summary, by Message Type, View Related Messages, Export Messages to File

Incident Errors	Errors	Warnings	Notifications	Traces	Unknowns	Log File
0	55				0	

Use this page to query for log information about the driver. Fields and lists are used to customize the query. After entering your search criteria, click Log Files. The Log Files page appears.

Figure 28–8 Log search results

usermessagingserver | Logged in as weblogic | Page Refreshed Apr 6, 2009 7:48:16 AM PDT

Log Messages | Broaden Target Scope | Target Log Files... | Manual Refresh

Search

Date Range: Time Interval | Start Date: 3/6/09 6:48 AM | End Date: 4/6/09 7:48 AM

* Message Types: Incident Error Error Warning Notification Trace Unknown

Message: contains

View: Show Messages | View Related Messages | Export Messages to File

Time	Message Type	Message ID	Message	Log File
Apr 6, 2009 12:21:48 AM PDT	Notification	SDP-25105	Initializing Messaging Store in TOPLINK mode.	soa_server1-c
Apr 6, 2009 12:22:05 AM PDT	Notification		TopLink, version: Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build 090304)	soa_server1-c
Apr 6, 2009 12:22:05 AM PDT	Notification		Server: WebLogic Server 10.3.1.0 Sun Mar 8 21:45:15 MDT 2009 1199850	soa_server1-c
Apr 6, 2009 12:22:06 AM PDT	Notification		messaging_store login successful	soa_server1-c
Apr 6, 2009 12:22:08 AM PDT	Notification	SDP-25034	There are total 1 registered User Messaging Drivers. Driver(s): 1, n: Farm_soa_bam_em_dc	soa_server1-c
Apr 6, 2009 12:22:16 AM PDT	Notification		ADF Config instance implementation: oracle.adf.share.config.MDSConfigFactory	soa_server1-c
Apr 6, 2009 1:10:27 AM PDT	Notification	ADFC-54008	ADFC: Initializing ADF Page Lifecycle for the JSF environment, LifecycleContextBuilder is 'ora	soa_server1-c
Apr 6, 2009 1:10:28 AM PDT	Notification	ADFC-50011	ADFC: Configuration parameter adf-scene-ba-support set to 'true'.	soa_server1-c

Rows Selected: 1 | Total Rows: 31

Apr 6, 2009 12:21:48 AM PDT (Notification)

Message ID: SDP-25105 | Host: stbcw19-3
 Message Level: 1 | Host IP Address: 152.68.199.15
 Relationship ID: 0 | User: <anonymous>
 Argument 1: TOPLINK | Thread ID: [ACTIVE].ExecuteThread: '2' for queue: 'weblogic.kernel.Default (self-tuning)'
 Component: soa_server1 | ECID: 000011uJuuCgoAJvaYBV119qQU000004
 Module: oracle.sdp.messaging.engine.store
 Message: Initializing Messaging Store in TOPLINK mode.

You can view log information or download the log.

28.2.1 Configuring Logging

Use Enterprise Manager to configure log levels.

Figure 28–9 Configuring log levels

ORACLE Enterprise Manager 11g Fusion Middleware Control | Setup | Help | Log Out

usermessagingserver | Logged in as weblogic | Page Refreshed Apr 6, 2009 7:57:50 AM PDT

Log Configuration

Use this page to configure basic and advanced log configuration settings.

Log Levels | Log Files | Apply | Revert

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are loggers that are saved in a configuration file and become active when the component is started. The log levels for these loggers are persisted across component restarts. Runtime loggers are automatically created during runtime and become active when a particular feature area is exercised. For example, oracle.jee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime loggers are not persisted across component restarts.

View: Runtime Loggers

Search: All Categories

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File	Persistent Log Level State
oracle.sdp.messaging	NOTIFICATION:1 (INFO) [Inherit]	odl-handler	

For each logger, set the notification level.

Figure 28–10 Select notification level

Log Levels | Log Files

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are loggers that are saved in a config component is started. The log levels for these loggers are persisted across component restarts. Runtime loggers are automatically created during runtime as s exercised. For example, oracle.j2ee.ejb.deployment.Logger is a runtime logger that becomes active when an EJB module is deployed. Log levels for runtime restarts.

view **Runtime Loggers**

Search

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File
<input type="checkbox"/> oracle.sdp.messaging	NOTIFICATION:1 (INFO) [Inherit]	odl-handler wls-domain
oracle.sdp.messaging.benchmark	NOTIFICATION:1 (INFO) [Inherit]	odl-handler wls-domain
<input type="checkbox"/> oracle.sdp.messaging.client	NOTIFICATION:1 (INFO) [Inherit]	odl-handler wls-domain
oracle.sdp.messaging.driver.base	NOTIFICATION:1 (INFO) [Inherit]	odl-handler wls-domain
oracle.sdp.messaging.driver.base	NOTIFICATION:1 (INFO) [Inherit]	odl-handler wls-domain
oracle.sdp.messaging.driver.dispatcher	INCIDENT_ERROR:1 (SEVERE+) ERROR:1 (SEVERE) WARNING:1 (WARNING) NOTIFICATION:1 (INFO) NOTIFICATION:16 (CONFIG)	er in er in
<input type="checkbox"/> oracle.sdp.messaging.driver.management	TRACE:1 (FINE) TRACE:16 (FINER)	er in

As a result of your configuration actions, notifications appear according to your specification.

Figure 28–11 Viewing log files

usermessagingserver | Logged in as **weblogic**

User Messaging Service | Page Refreshed Apr 6, 2009 8:05:21 AM PDT

Log Messages > Log Files > View Log File: soa_server1-diagnostic.log

View Log File: soa_server1-diagnostic.log | View **Manual Refresh**

Name `/scratch/ocmsuser/Oracle/Middleware/user_projects/domains/soa_bam_em_domain/servers/soa_server1/logs/soa_server1-diagnostic.log` | **Download** | Log Type **Server**
Size (KB) **293.33**

Last Modified **Apr 6, 2009 7:18:18 AM PDT**

Date Range **Time Interval** | Start Date **4/6/09 12:18 AM** | End Date **4/6/09 12:25 AM** | **Search**

View **View Related Messages**

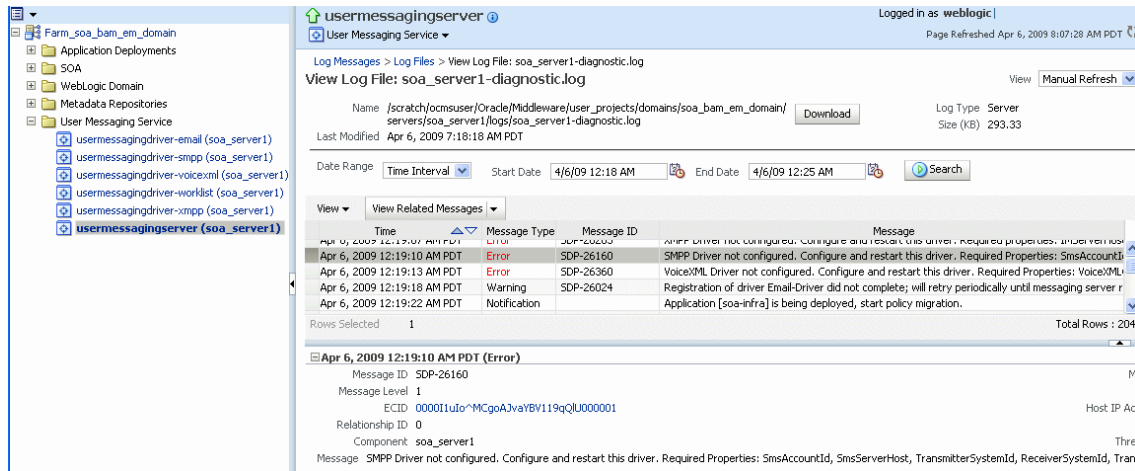
Time	Message Type	Message ID	Message
Apr 6, 2009 12:22:05 AM PDT	Notification		TopLink, version: Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build 090304)
Apr 6, 2009 12:22:05 AM PDT	Notification		Server: WebLogic Server 10.3.1.0 Sun Mar 8 21:45:15 MDT 2009 1199850
Apr 6, 2009 12:22:06 AM PDT	Notification		messaging_store login successful
Apr 6, 2009 12:22:08 AM PDT	Notification	SDP-25034	There are total 1 registered User Messaging Drivers. Driver(s): 1, n: Farm_soa_bam_em_domain
Apr 6, 2009 12:22:10 AM PDT	Notification	SDP-26007	Received inbound queue info from messaging engine: [QueueInfo[QueueConnectionFactory:JND
Apr 6, 2009 12:22:16 AM PDT	Notification		ADF Config instance implementation: oracle.adf.share.config.MDSConfigFactory
Apr 6, 2009 12:22:18 AM PDT	Notification		Read metric configuration file "/scratch/ocmsuser/Oracle/Middleware/user_projects/domains/soa
Apr 6, 2009 12:22:19 AM PDT	Notification		DMS-50982: Registered metric rules "server-oracle_eps_server-11.0.xml".

Rows Selected **1** | Total Rows : 204

Apr 6, 2009 12:22:05 AM PDT (Notification)

Message Level	1	Host	stecut19-3
ECID	000011uJUUCgoAJvaYBV119qQU000004	Host IP Address	199.68.199.19
Relationship ID	0	User	<anonymous>
Component	soa_server1	Thread ID	[ACTIVE].ExecuteThread: '2' for queue: weblogic.kernel.Default (self-tuning)
Module	oracle.toplink.default		
Message	TopLink, version: Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build 090304)		

Figure 28–12 Error messages



28.3 Metrics and Statistics

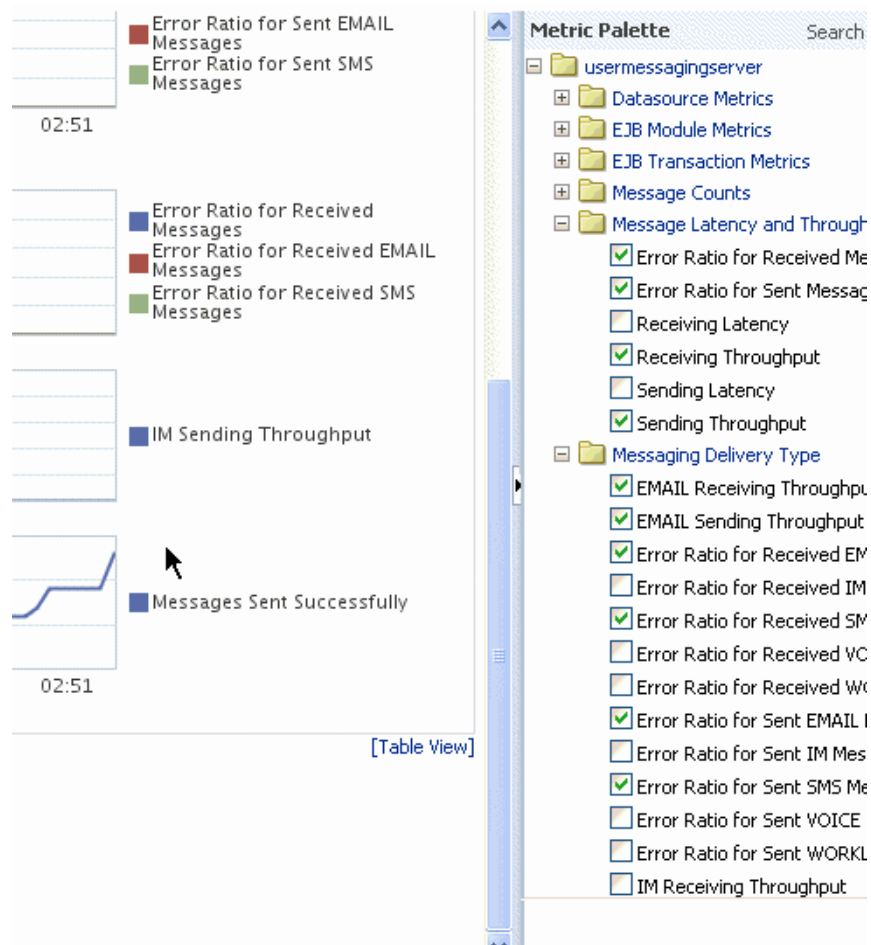
The performance of your applications is reflected in metrics and statistics. When you select the Performance Summary for a driver, the Performance Summary page appears.

Figure 28–13 UMS metrics



Many metrics are available for capture and display, but in order to get the most valuable, focused information, use Metric Palette. Click Show Metric Palette to display the Metric Palette. Choose the metrics in which you are most interested. As you select or deselect metrics from the palette, the metrics display is automatically updated.

Figure 28-14 Metrics Palette



Managing Oracle User Messaging Service

This chapter describes how to manage Oracle User Messaging Service.

This chapter includes the following topic:

- [Section 29.1, "Deploying Drivers"](#)
- [Section 29.2, "Undeploying and Unregistering Drivers"](#)

29.1 Deploying Drivers

When you install Oracle UMS, pre-installed drivers are included (Email, XMPP, SMPP, and VoiceXML). Of these, only the Email driver is deployed to the WebLogic Server. To deploy the others, target that driver to the WebLogic Server (using WebLogic Administration Console, or you can target the drivers when creating or extending the domain using the Oracle Fusion Middleware Configuration Wizard).

The Worklist driver must be deployed to a SOA Server if you want to make use of the UMS integration with Worklist. Because this integration involves multiple JEE applications and a SOA composite, there is a special extension template you must use to enable this feature in one step. See [Install the Worklist Driver](#) for more information.

You can deploy additional drivers in a variety of ways using: WLST commands (recommended), Oracle Enterprise Manager, and through the Oracle Fusion Middleware Configuration Wizard.

Note: To deploy two or more driver instances of a particular driver EAR, you must use the custom deployment plan templates available at `$ORACLE_HOME/communications/plans`. Deploying drivers using WLST commands is recommended because these commands automatically modify your Deployment Plans for you; using other methods requires you to manually modify your Deployment Plans.

29.1.1 Deploy Drivers Using WLST Commands

You can deploy drivers using the WLST command `deployUserMessagingDriver`.

29.1.1.1 `deployUserMessagingDriver`

Command Category: UMS

Use with WLST: Online

29.1.1.1.1 Description `deployUserMessagingDriver` is used to deploy additional instances of user messaging drivers.

Specify a base driver type (for example: email, xmpp, voicexml, and others) and a short name for the new driver deployment. The string *usermessagingdriver-* is prepended to the specified application name. Any valid parameters for the *deploy* command can be specified, and is passed through when the driver is deployed.

29.1.1.1.2 Syntax `deployUserMessagingDriver(baseDriver, appName, [targets], [stageMode], [options])`

Argument	Definition
<code>baseDriver</code>	Specifies the base messaging driver type. Must be a known driver type, such as 'email', 'proxy', 'smpp', 'voicexml', or 'xmpp'.
<code>appName</code>	A short descriptive name for the new deployment. The specified value is prepended with the string <i>usermessagingdriver-</i>
<code>targets</code>	Optional. Additional arguments that are valid for the <i>deploy</i> command can be specified and is passed through when the new driver is deployed.
<code>stageMode</code>	
<code>options</code>	

29.1.1.1.3 Examples To deploy a second instance of an email driver with name *myEmail*.

```
wls:/base_domain/serverConfig> deployUserMessagingDriver(baseDriver='email',
appName='myEmail')
```

To deploy a second instance of an email driver, specifying deployment targets.

```
wls:/base_domain/serverConfig> deployUserMessagingDriver(baseDriver='email',
appName='email2', targets='server1,server2')
```

29.1.2 Deploy Drivers Using Oracle Enterprise Manager

Follow these steps to deploy drivers using Oracle Enterprise Manager.

1. Retrieve a deployment template (for example: ORACLE_HOME/communications/plans)
2. Copy the plan to a location of your choice (to the same directory or any other directory).
3. Edit the plan:
Replace *DriverDeploymentName* with whichever name you want to use (ensure you replace all instances of the name).
Replace *DriverShortName* with any name you like.
4. Start Oracle Enterprise Manager.
5. Enter the location of the .ear file (Figure 29–1).
6. Enter the location of the Deployment Plan (Figure 29–1).

Figure 29–1 Deploying UMS Drivers using Oracle Enterprise Manager

ORACLE Enterprise Manager 11g Fusion Middleware Control

AdminServer (Oracle WebLogic Server) : Deploy

Select Archive Select Target Application Attributes Deployment Settings

Select Archive ?

Specify the application or the exploded directory. Optionally you can specify a deployment plan.

Archive or Exploded Directory

Java EE archive, Web Modules (WAR files), EJB Modules (EJB JAR files) and Resource Adapter Modules (RAR files) can be deployed. You can also deploy an exploded archive that is present on the server where Enterprise Manager is running.

Archive is on the machine where this web browser is running.

Archive or exploded directory is on the server where Enterprise Manager is running.

Deployment Plan

The deployment plan is a file that contains the deployment settings for an application. You can use a previously saved deployment plan for this application. Later in the deployment process, you can optionally edit the deployment plan and save it for a future deployment of this application. If you do not have a deployment plan, one will be created automatically during the deployment process when deployment configuration is done.

Create a new deployment plan when deployment configuration is done.

Deployment plan is on the machine where this web browser is running.

Deployment plan is on the server where Enterprise Manager is running.

The Select Target screen appears.

Figure 29–2 Select Target screen

ORACLE Enterprise Manager 11g Fusion Middleware Control

domain2 (Oracle WebLogic Domain) : Deploy

Select Archive **Select Target** Application Attributes Deployment Settings

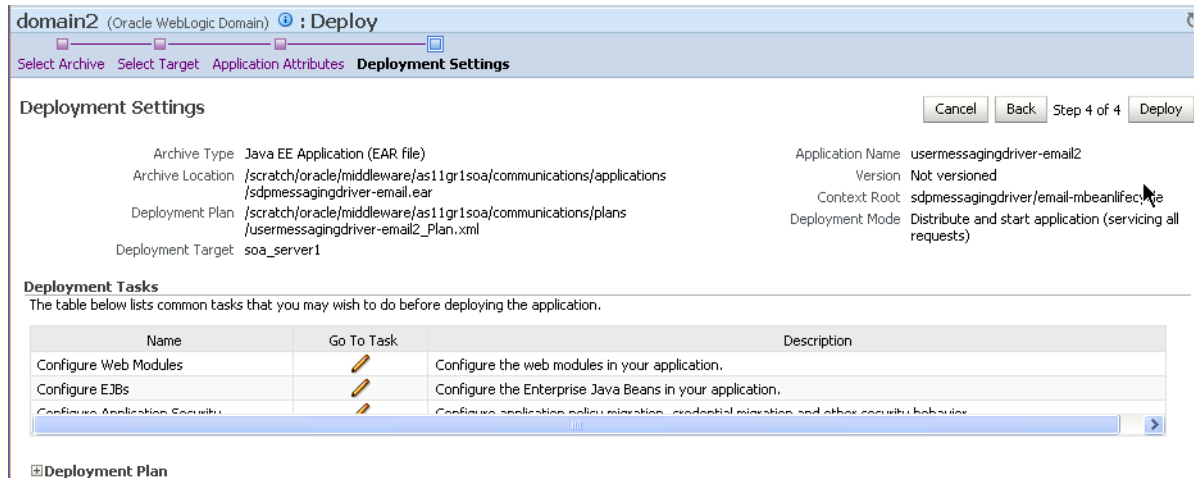
Select Target Step 2 of 4

Select the WebLogic server or cluster that you want this application to be deployed to.

Select	Name	Type	Deployed Applications
<input type="checkbox"/>	AdminServer	Oracle WebLogic Server	DMS Application#11.1.1.1.0, wsil-wls
<input type="checkbox"/>	soa_server1	Oracle WebLogic Server	AqAdapter, FtpAdapter, usermessagingdriver-email, JmsAdapter, OracleAppsAdapter, DMS Application#11.1.1.1.0, SocketAdapter, FileAdapter, MQSeriesAdapter, usermessagingdriver-email2, usermessagingdriver-im2, usermessagingserver, DbAdapter, b2bui, soa-infra, worklistapp, wsil-wls, OracleBamAdapter, wsm-pm

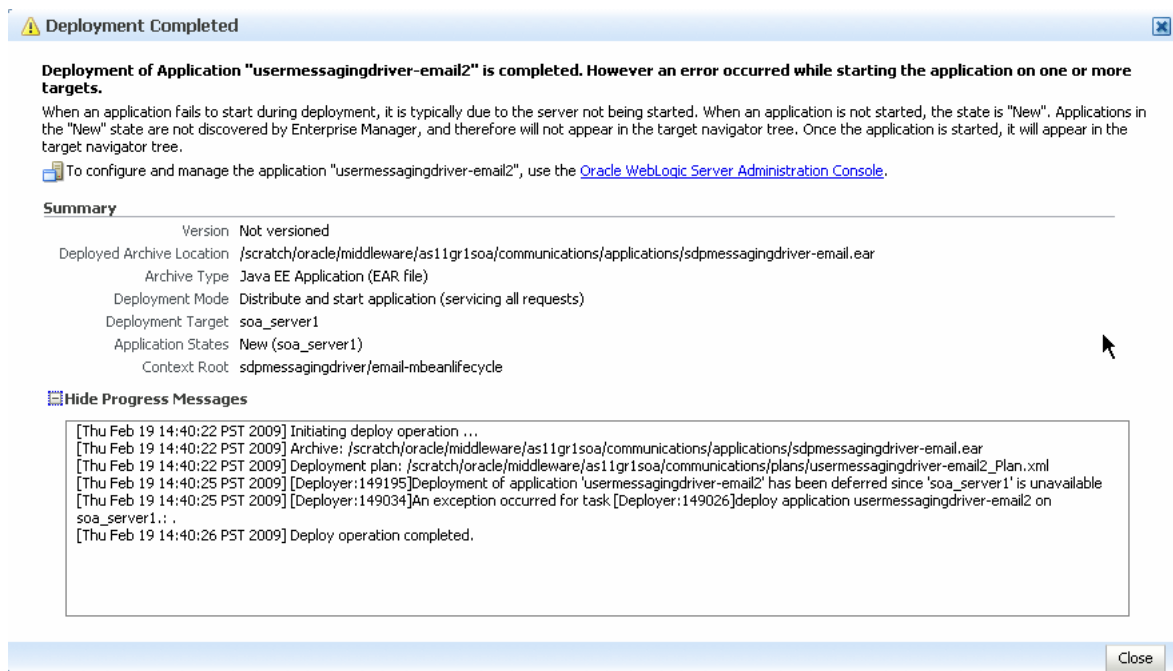
7. Select the SOA target.
8. Enter an application name in the Application Attributes screen. The application name must exactly match the string used for DriverDeploymentName (in Step 3 above) which is provided in the Deployment Plan. If it does not, the deployment and activation fails. The Deployment Setting screen appears.

Figure 29–3 Deployment Settings screen



9. Click **Deploy**. The **Deployment Completed** screen appears.

Figure 29–4 Deployment Completed screen



10. To see the result (driver deployed), start the SOA Server.

29.1.3 Deploy Drivers Using the Oracle Fusion Middleware Configuration Wizard

To install the SMPP, XMPP and VoiceXML drivers, extend the domain using the extension template available at \$ORACLE_HOME/common/templates/applications/oracle.ums.drivers_template_11.1.1.jar.

To extend a domain using Oracle Fusion Middleware Configuration Wizard:

1. Launch Oracle Fusion Middleware Configuration Wizard (`$ORACLE_HOME/common/bin/config.sh` or `%ORACLE_HOME%\common\bin\config.cmd`).
2. Select the *Extend an existing WebLogic domain* option.
3. Select the desired domain directory containing UMS.
4. Select the *Extend my domain using an existing extension template* option.
5. Click **Browse**, and navigate to `$ORACLE_HOME/common/templates/applications`
6. Select `oracle.ums.drivers_template_11.1.1.jar`
7. Complete the remaining steps of the Oracle Fusion Middleware Configuration Wizard, and remember to target the required drivers to the desired WebLogic servers and/or clusters.
8. Restart the appropriate WebLogic servers.

29.2 Undeploying and Unregistering Drivers

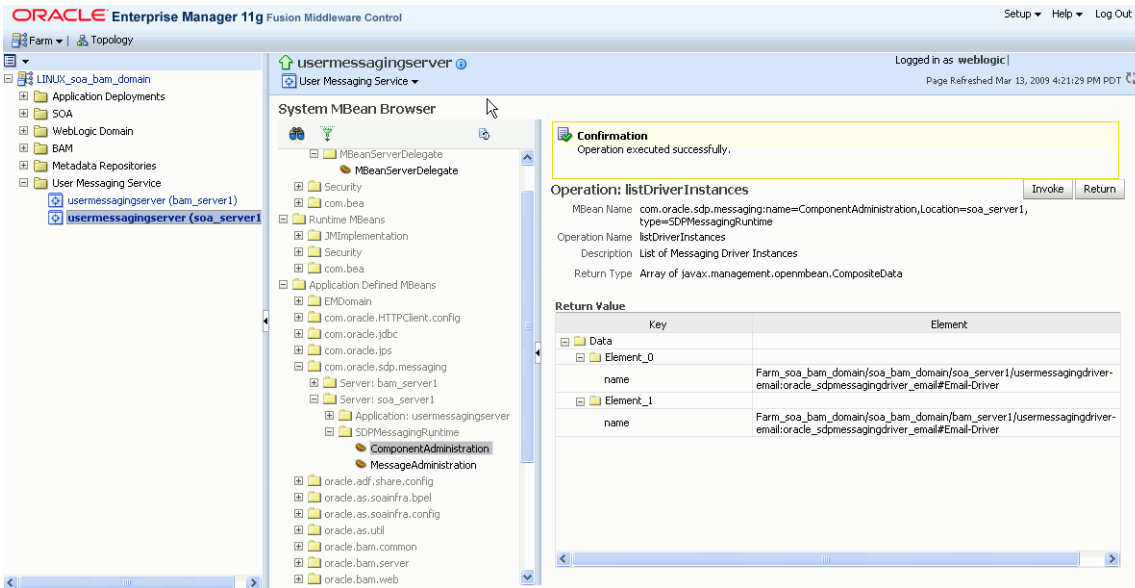
Since Messaging Drivers are standard JEE applications, they can be undeployed from the Oracle WebLogic Server using standard Oracle WebLogic tools such as the Admin Console or WLST.

However, since the UMS server keeps track of the messaging drivers that have been registered with it in a persistent store (database), this registration must be cleaned in a separate step using a run time MBean exposed by the UMS server. The procedure to do this from Oracle Enterprise Manager is as follows:

1. Ensure the UMS server is available.
2. In Oracle Enterprise Manager, select any `usermessagingserver` target in the domain.
3. From the target's menu, select *System MBean Browser*.
4. In System MBean Browser, locate the *ComponentAdministration* MBean of `usermessagingserver`:

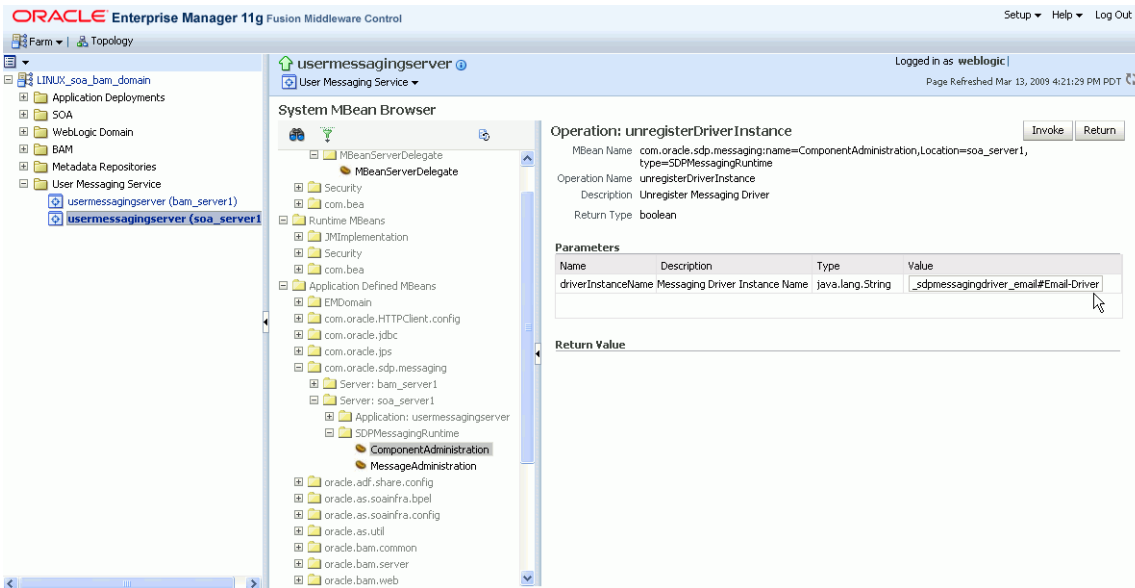
Expand the folder `com.oracle.sdp.messaging` > **Server** (such as `Server: soa_server1`) > **SDPMessagingruntime** > **ComponentAdministration**.
5. Invoke the operation `listDriverInstances`.
 - a. Click the **Operations** tab.
 - b. Click the operation `listDriverInstances`.
 - c. Click **Invoke**.
 - d. Identify and copy the name of the driver you want to unregister. (for example: `/Farm_soa_bam_domain/soa_bam_domain/soa_server1/usermessagingdriver-email:oracle_sdpMessagingdriver_email#Email-Driver`)

Figure 29–5 Listing Driver Instances



6. Click **Return**.
7. Invoke the operation *unregisterDriverInstance* with the desired driver name.
 - a. Click the operation *unregisterDriverInstance*.
 - b. Paste the driver name in the *Value* field (for example: /Farm_soa_bam_domain/soa_bam_domain/soa_server1/usermessagingsdriver-email:oracle_sdpMessagingdriver_email#Email-Driver).
 - c. Click **Invoke**.

Figure 29–6 Unregistering a Driver Instance



8. Check the confirmation dialog for success.

This completes the unregistration of the specified driver from the UMS server and it is no longer used in future message delivery.

Part XI

Administering Oracle JCA Adapters

This part describes how to administer Oracle Adapters.

This part includes the following chapters:

- [Chapter 30, "Configuring Oracle JCA Adapters"](#)
- [Chapter 31, "Monitoring Oracle JCA Adapters"](#)
- [Chapter 32, "Managing Oracle JCA Adapters"](#)

Configuring Oracle JCA Adapters

This chapter describes how to configure Oracle JCA Adapters.

This chapter includes the following topics:

- [Section 30.1, "Searching for Rejected Messages for an Inbound Adapter"](#)
- [Section 30.2, "Deleting Rejected Messages for an Inbound Adapter"](#)
- [Section 30.3, "Searching for Faults for an Outbound Adapter"](#)
- [Section 30.4, "Configuring the End Point Properties for an Inbound Adapter"](#)
- [Section 30.5, "Configuring the End Point Properties for an Outbound Adapter"](#)

30.1 Searching for Rejected Messages for an Inbound Adapter

Use the *Search* feature to search for faults and rejected messages for an inbound adapter.

To search for faults and rejected messages for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Click the **Faults and Rejected Messages** tab.
3. Enter any or all of the following search criteria:

- **Error Message Contains**
Enter any part of the error message text.
 - **Fault ID**
Enter the ID of the fault.
 - **Fault Time From**
Enter the lower limit of the time when the fault could have occurred.
 - **Fault Time To**
Enter the upper limit of the time when the fault could have occurred.
 - **Composite Instance ID**
Enter the ID of the composite.
 - **Fault Type**
Select a type from the list of faults available.
4. Click **Search** to start the search operation.
The fault or rejected message matching the criteria you specified is displayed.
 5. Click **Reset** to reset the search criteria.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.2 Deleting Rejected Messages for an Inbound Adapter

You can directly delete rejected messages from the database by specifying a search criteria.

To delete rejected messages for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Click the **Faults and Rejected Messages** tab.
3. Click **Delete Rejected Messages...**

The **Delete: Rejected Messages** dialog is displayed.

4. Specify a selection criterion for deleting rejected messages directly from the database, and then click **Delete**.

Note that to delete a fault, you must delete the associated composite instance from the **Instances** page.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.3 Searching for Faults for an Outbound Adapter

Use the *Search* feature to search for faults for an outbound adapter.

To search for faults for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Click the **Faults** tab.
3. In the **Search** section, enter any or all of the following search criteria:
 - **Error Message Contains**
Enter any part of the error message text.
 - **Fault ID**
Enter the ID of the fault.
 - **Fault Time From**
Enter the lower limit of the time when the fault could have occurred.
 - **Fault Time To**
Enter the upper limit of the time when the fault could have occurred.
 - **Composite Instance ID**
Enter the ID of the composite.
 - **Fault Type**

Select the type of the fault from the list of types available.

4. Click **Search** to start the search operation.

The fault matching the criteria you specified is displayed.

5. Click **Reset** to reset the search criteria.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.4 Configuring the End Point Properties for an Inbound Adapter

This section describes how to configure the end point properties for an inbound adapter. It includes the following topics:

- [Section 30.4.1, "Editing a Predefined Property for an Inbound Adapter"](#)
- [Section 30.4.2, "Adding Predefined Properties for an Inbound Adapter"](#)
- [Section 30.4.3, "Creating a New Property for an Inbound Adapter"](#)
- [Section 30.4.4, "Deleting a Property for an Inbound Adapter"](#)
- [Section 30.4.5, "Reverting a Property Value for an Inbound Adapter"](#)

30.4.1 Editing a Predefined Property for an Inbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible edit the predefined properties at a later stage.

To edit a predefined property for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Edit a predefined property:
 - a. Click **Properties** to see a list of the currently defined binding properties.
 - b. Select the property you want to edit.
 - c. Edit the value in the **Value** text box, and then click **Save**.

You have edited a predefined property for an inbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.4.2 Adding Predefined Properties for an Inbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible to add properties at a later stage.

Note: Though the Properties tab list both endpoint and the binding properties, you can *only* add endpoint properties.

To add a predefined property for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Add a predefined property:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Click the **Add** button.
A new empty row is appended to the existing list of properties.
 - c. Click the **Select Values** icon in the **Name** field of the new row.
The Properties dialog is displayed.
 - d. Select a property that is valid for the particular adapter from the list of properties, and then click **OK**.
 - e. Click **Save**.

You have added a predefined property for an inbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.4.3 Creating a New Property for an Inbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible to add new properties at a later stage.

To create a new property for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Create a new property:
 - a. Click the **Properties** tab to see the list of the currently defined binding properties.
 - b. Click the **Add** button.
A new empty row is appended to the existing list of properties.
 - c. Specify the property name and value in the **Name** and the **Value** fields of the new row.
 - d. Click **Save**.
You have created a new property for an inbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.4.4 Deleting a Property for an Inbound Adapter

You can delete only properties that you added from the predefined list of properties or the ones that you newly created.

To delete a property for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Delete a property:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Select the property you want to delete, and then click **Delete**.
A message asking you to confirm your action is displayed.
 - c. Click **OK** to confirm.
 - d. Click **Save**.
You have deleted a property for an inbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.4.5 Reverting a Property Value for an Inbound Adapter

You can only revert the properties that you have changed. Also note that you can perform the revert operation only on the existing property values and not on those that you added from the predefined list of properties or the ones that you created.

To revert a property value for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Revert a property value for an inbound adapter:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Select the property you want to revert, and then click **Revert**.
A message asking you to confirm your action is displayed.
 - c. Click **OK** to confirm.
 - d. Click **Save**.
You have reverted a property value for an inbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.5 Configuring the End Point Properties for an Outbound Adapter

This section describes how to configure the end point properties for an outbound adapter. It includes the following topics:

- [Section 30.5.1, "Editing a Predefined Property for an Outbound Adapter"](#)
- [Section 30.5.2, "Adding a Predefined Property for an Outbound Adapter"](#)
- [Section 30.5.3, "Creating a New Property for an Outbound Adapter"](#)
- [Section 30.5.4, "Deleting a Property for an Outbound Adapter"](#)
- [Section 30.5.5, "Reverting a Property Value for an Outbound Adapter"](#)

30.5.1 Editing a Predefined Property for an Outbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible to edit the predefined properties at a later stage.

To edit a predefined property for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Edit a predefined property:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Select the property you want to edit.
 - c. Edit the value in the **Value** text box, and then click **Save**.

You have edited a predefined property for an outbound adapter.

Note: For Oracle MQ Series Adapter in an asynchronous outbound request/reply scenario, properties are differentiated by an (Enqueue) or (Dequeue) label. For example, QueueName (Enqueue) is used for putting a message and QueueName (Dequeue) is used for dequeuing the reply.

When editing Oracle MQ Series Adapter properties in this scenario, note the following:

- If you change the ReplyToQueueName (Enqueue) property, you must also change the QueueName (Dequeue) property to the same value.
- If you change the MessageId (Dequeue) property, you must also change the MessageId (Enqueue) property to the same value.
- If you change the CorrelationId (Dequeue) property, you must also change the CorrelationId (Enqueue) property to the same value.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.5.2 Adding a Predefined Property for an Outbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible to add predefined properties at a later stage.

To add a predefined property for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Add a predefined property:

- a. Click the **Properties** tab to see a list of the currently defined binding properties.
- b. Click the **Add** button.
A new empty row is appended to the existing list of properties.
- c. Click the **Select Value** icon in the **Name** field of the new row.
The Properties dialog is displayed.
- d. Select a property that is valid for the particular adapter from the list of properties, and then click **OK**.
- e. Click **Save**.

You have added a predefined property for an outbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.5.3 Creating a New Property for an Outbound Adapter

The properties of an adapter are usually defined in Oracle JDeveloper during design time. However, it is possible to add new properties at a later stage.

To create a new property for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Create a new property:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Click the **Add** button.
A new empty row is appended to the existing list of properties.
 - c. Specify the property name and value in the **Name** and the **Value** fields of the new row.
 - d. Click **Save**.
You have created a new property for an outbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.5.4 Deleting a Property for an Outbound Adapter

You can delete only properties that you added from the predefined list of properties or the ones that you newly created.

To delete a property for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Delete a property for an outbound adapter:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Select the property you want to delete, and then click **Delete**.
A message asking you to confirm your action is displayed.
 - c. Click **OK** to confirm.
 - d. Click **Save**.
You have deleted a property for an outbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

30.5.5 Reverting a Property Value for an Outbound Adapter

You can revert changes made, if any, only for the already existing property values and not those that you added from the predefined list of properties or the ones that you newly created.

To revert a property value for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Reference Home page is displayed.

2. Revert a property value for an outbound adapter:
 - a. Click the **Properties** tab to see a list of the currently defined binding properties.
 - b. Select the property you want to revert, and then click **Revert**.
A message asking you to confirm your action is displayed.
 - c. Click **OK** to confirm.
 - d. Click **Save**.
You have reverted a property value for an outbound adapter.

For more information about configuring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

Monitoring Oracle JCA Adapters

This chapter describes how to monitor Oracle JCA Adapters.

This chapter includes the following topics:

- [Section 31.1, "Monitoring Instances and Faults for an Inbound Adapter"](#)
- [Section 31.2, "Monitoring Recent Faults and Rejected Messages for an Inbound Adapter"](#)
- [Section 31.3, "Monitoring Faults and Rejected Messages for an Inbound Adapter"](#)
- [Section 31.4, "Monitoring Properties for an Inbound Adapter"](#)
- [Section 31.5, "Monitoring Instances and Faults for an Outbound Adapter"](#)
- [Section 31.6, "Monitoring Recent Faults for an Outbound Adapter"](#)
- [Section 31.7, "Monitoring Faults for an Outbound Adapter"](#)
- [Section 31.8, "Monitoring Properties for an Outbound Adapter"](#)
- [Section 31.9, "Monitoring Adapter Logs"](#)

31.1 Monitoring Instances and Faults for an Inbound Adapter

An invocation to a service from a composite may result in an error. This error is captured as a fault in the service. You can view the details of the instances and faults of the inbound adapter in the Instances and Faults section of the Dashboard tab.

To monitor instances and faults for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the instances and faults for an inbound adapter:
 - a. Click **Dashboard**.
The **Dashboard** tab is displayed.
 - b. View the instances and faults listed in the **Instances and Faults** section.
The details of the fault is displayed in a line chart in the Instances and faults section. This line chart shows the total number of outgoing messages since the start of the server, and the total number of faults since the start of the server.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.2 Monitoring Recent Faults and Rejected Messages for an Inbound Adapter

To monitor the recent rejected messages for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the recent faults and rejected messages for an inbound adapter:
 - a. Click **Dashboard**.
The Dashboard tab is displayed.
 - b. View the recent faults and rejected messages listed in the **Recent Faults and Rejected Messages** section.
A list of recently rejected faults and messages with details such as error message, fault time, and the composite instance ID is displayed.
For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.3 Monitoring Faults and Rejected Messages for an Inbound Adapter

To monitor the rejected messages for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the faults and rejected messages for an inbound adapter:

- a. Click **Faults and Rejected Messages**.

The Faults and Rejected Messages tab is displayed.

A list of faults and rejected messages with details such as error message, fault time, and composite instance ID is displayed.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.4 Monitoring Properties for an Inbound Adapter

To monitor the properties for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the properties for an inbound adapter:

- a. Click **Properties**.

The Properties tab is displayed.

A list of properties with details such as name and value is displayed.

Note: In any adapter that has an inbound asynchronous request-reply scenario (the Get Message operation preceding the Send Reply operation) only details about the activation specification are displayed, and details about the interaction specification are not displayed.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.5 Monitoring Instances and Faults for an Outbound Adapter

An invocation to a reference from a composite may result in an error. This error is captured as a fault in the reference. The details of the instances and faults of the outbound adapter can be viewed in the Instances and Faults section of the Dashboard tab.

To monitor instances and faults for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the instances and faults for an outbound adapter:

- a. Click **Dashboard**.

The Dashboard tab is displayed.

- b. View the instances and faults listed in the **Instances and Faults** section.

The details of the fault is displayed in a line chart in the Instances and Faults tab. This line chart shows the total number of outgoing messages since the start of the server, and the total number of faults since the start of the server.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.6 Monitoring Recent Faults for an Outbound Adapter

To monitor recent faults for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the recent faults for an outbound adapter:
 - a. Click **Dashboard**.
The Dashboard tab is displayed.
 - b. View the recent faults listed in the **Recent Faults** section.
A list of recent faults with details such as name, time, and type is displayed.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.7 Monitoring Faults for an Outbound Adapter

To monitor faults for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the faults for an outbound adapter:

- a. Click the **Faults** tab.
The Faults tab is displayed.
- b. Click **View**.

A list of faults with details such as name, time, and type is displayed.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.8 Monitoring Properties for an Outbound Adapter

To monitor properties for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composites is displayed. 3. In the Composite section, click a specific SOA composite application. The the SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The the SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed.

2. Monitor the properties for an outbound adapter:

- a. Click the **Properties** tab.
The Properties portlet is displayed.
- b. Click **View**.

A list of properties with details such as name, and value is displayed.

Note: In the case of an adapter which has an outbound asynchronous request-reply scenario (the Send Message operation preceding the Get Response operation), only details about the interaction specification are displayed, and details about the activation specification are not displayed.

For more information about monitoring adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

31.9 Monitoring Adapter Logs

Oracle Fusion Middleware components generate 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. There is only one log for all Oracle JCA Adapters, and the log is called `oracle.soa.adapter`.

To monitor the File adapter logs:

1. Navigate to **Composite Home, J2EE Application** (menu), **Monitoring, Logs**.
2. Find the `oracle.soa.adapter` logger for adapters and increase verbosity.
3. Find resulting log files.
4. Make an adapter to fail. For example, delete a directory that the file adapter is supposed to write to, or delete a table that the Database adapter is reading from.
5. Ensure that the resulting log files give a good indication of the cause of failure.

For information about configuring logs, see [Section 3.4, "Configuring Log Files."](#)

Managing Oracle JCA Adapters

This chapter describes how to manage Oracle Adapters.

This chapter includes the following topics:

- [Section 32.1, "Managing Policies for an Inbound Adapter"](#)
- [Section 32.2, "Managing Policies for an Outbound Adapter"](#)

32.1 Managing Policies for an Inbound Adapter

To manage policies for an inbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page is displayed.

2. Click the **Policies** tab.

If the selected service has Web service bindings, then you can start the Policy Attachment wizard and attach policies. However, if the selected service does not have any Web service bindings, then a message stating that there are no subjects available for attachment is displayed.

For more information about managing adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

32.2 Managing Policies for an Outbound Adapter

To manage policies for an outbound adapter:

1. Navigate to the SOA composite application by using either of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Click Home. The SOA Infrastructure page is displayed. 2. Click the Deployed Composites tab. The list of deployed composite applications is displayed. 3. In the Composite section, click a specific SOA composite application. The SOA Composite home page is displayed. 4. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed. 	<ol style="list-style-type: none"> 1. Under soa-infra, click a specific SOA composite application. The SOA Composite home page is displayed. 2. Click the outbound adapter (reference) from the Services and References section in the right panel. The Service Home page is displayed.

2. Click the **Policies** tab.

If the selected reference has Web service bindings, then you can start the Policy Attachment wizard and attach policies. However, if the selected reference does not have any Web service bindings, then a message stating that there are no subjects available for attachment is displayed.

For more information about managing adapters, see Oracle Fusion Middleware User's Guide for Technology Adapters.

Part XII

Administering Oracle B2B

This part describes how to administer Oracle B2B.

This part includes the following chapters:

- [Chapter 33, "Configuring Oracle B2B"](#)
- [Chapter 34, "Monitoring Oracle B2B"](#)

Configuring Oracle B2B

This chapter describes how to configure Oracle B2B using Oracle Enterprise Manager Fusion Middleware Control.

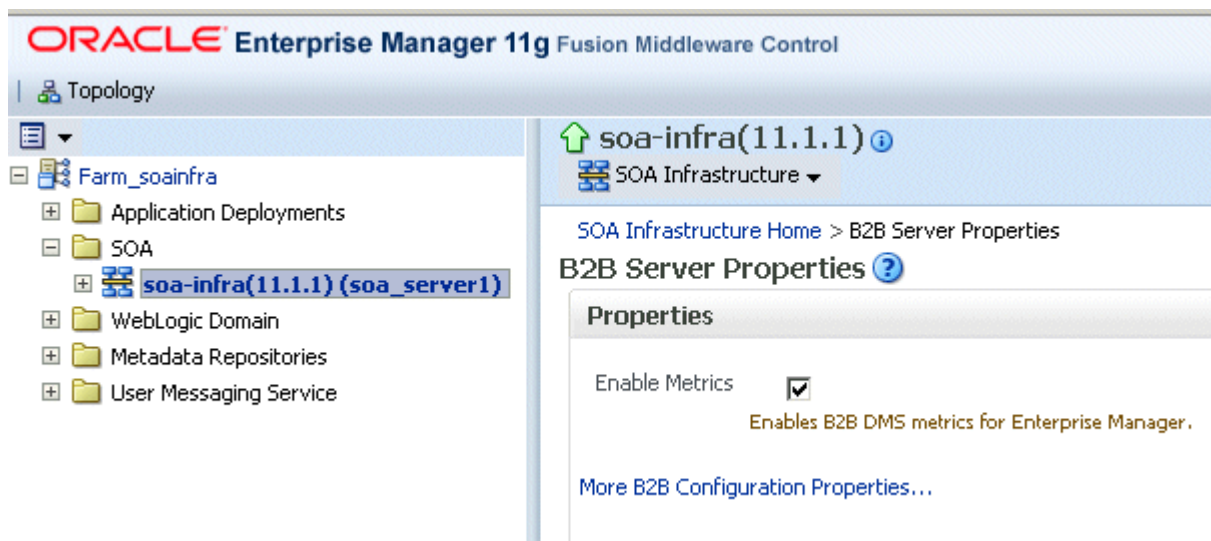
This chapter includes the following topic:

- [Section 33.1, "Configuring B2B Server Properties"](#)
- [Section 33.2, "Configuring B2B Operations"](#)
- [Section 33.3, "Configuring B2B Attributes"](#)

33.1 Configuring B2B Server Properties

You can configure the **Enable Metrics** property on the B2B Server Properties page, shown in [Figure 33-1](#).

Figure 33-1 The Enable Metrics Property

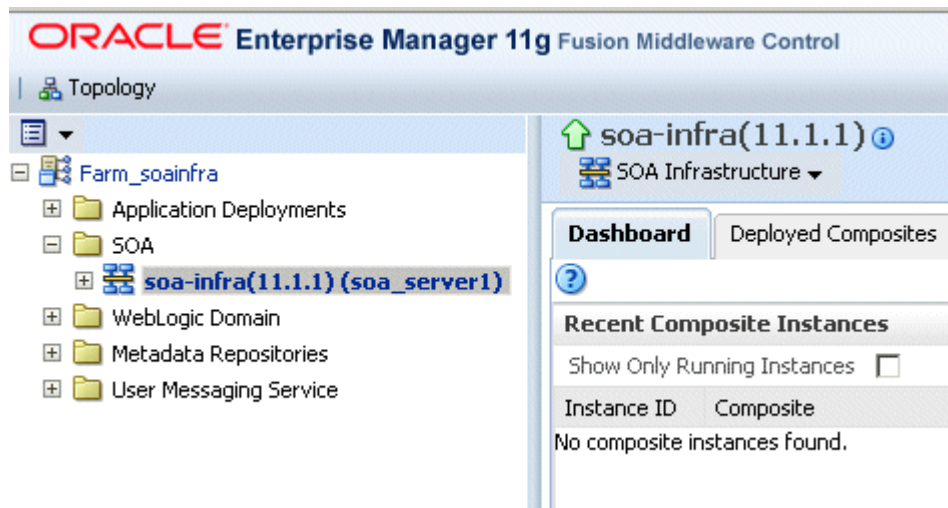


The default is to enable EM metrics, which includes data on the top 5 recently active document types, top 5 recently active trading partners, and inbound and outbound endpoints.

Note: You do not need to restart the server after changing this property.

To configure B2B server properties using Oracle Enterprise Manager Fusion Middleware Control:

1. Expand the **SOA** node.
2. Select the SOA infrastructure, for example, **soa-infra(11.1.1) (soa_server1)**.



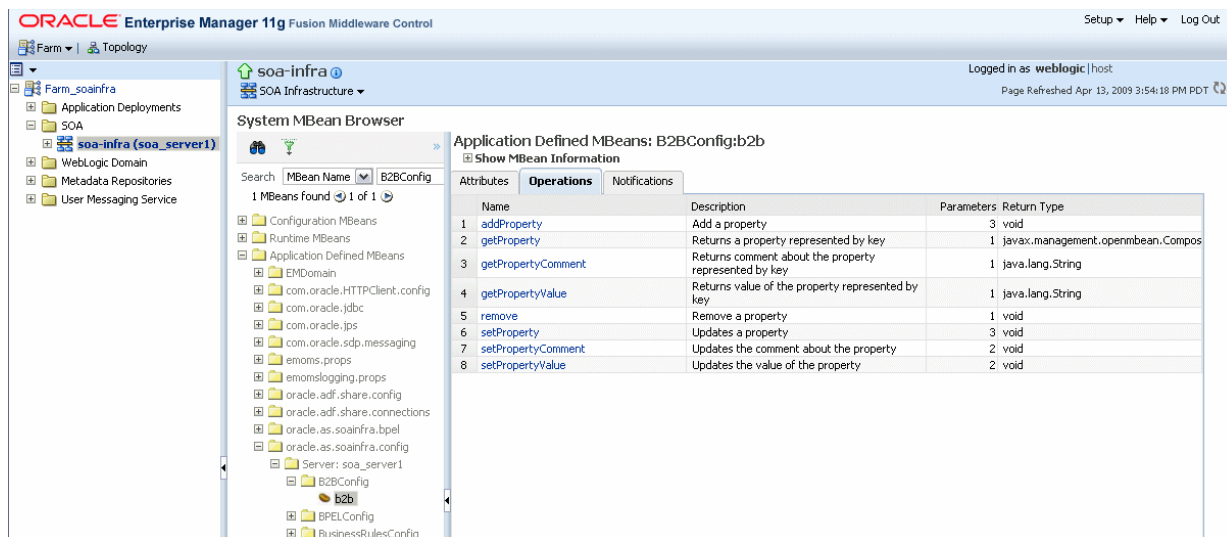
3. From the **SOA Infrastructure** menu, select **SOA Administration** and then **B2B Server Properties**.
4. Select **Enable Metrics** to view data on the B2B Bindings and SOA Composite pages.

For information on using Oracle B2B, which enables the secure and reliable exchange of business documents between an enterprise and its trading partners, see *Oracle Fusion Middleware User's Guide for Oracle B2B*.

33.2 Configuring B2B Operations

You can configure the properties of B2B operations by setting values using the System MBean Browser, as shown in [Figure 33-2](#).

Figure 33–2 B2BConfig: b2b MBean Browser



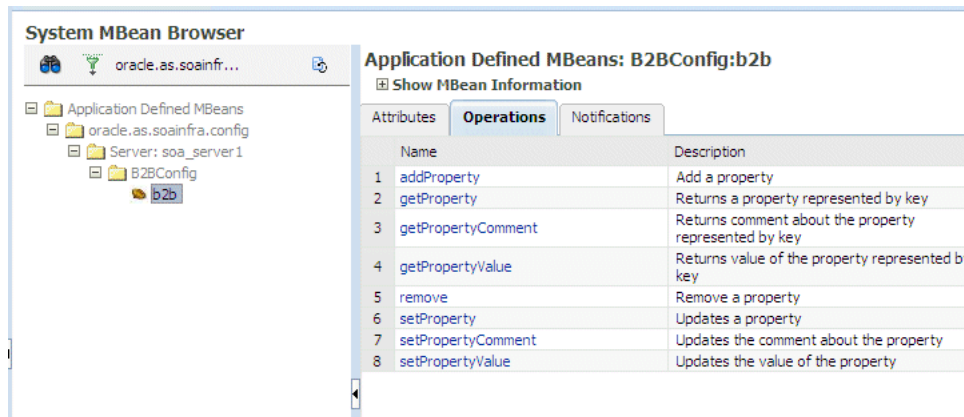
Note: Restarting the SOA Server is required after updating the following MBean properties:

- `b2b.inboundThreadCount`
 - `b2b.outboundThreadCount`
-

To specify B2B operation properties:

Note (a shortcut): To access the Application Defined MBeans: B2BConfig:b2b page, you can also click the **More B2B Configuration Properties** link on the B2B Server Properties page, shown in [Figure 33–1](#).

1. Using the Oracle Enterprise Manager Fusion Middleware Control Console, expand the **SOA** node and select the **soa-infra** node.
2. From the **SOA Infrastructure** menu, choose **Administration** and then **System MBean Browser**.
The System MBean Browser page is displayed.
3. Under **Application Defined MBeans**, expand the **oracle.as.soainfra.config** node.
4. Expand the **Server:soa_server1** node.
5. Expand the **B2BConfig** node.
6. Click the **b2b** MBean.
The properties of the MBean are displayed in the right pane.
7. Click the **Operations** tab.
8. Click an operation in the list.



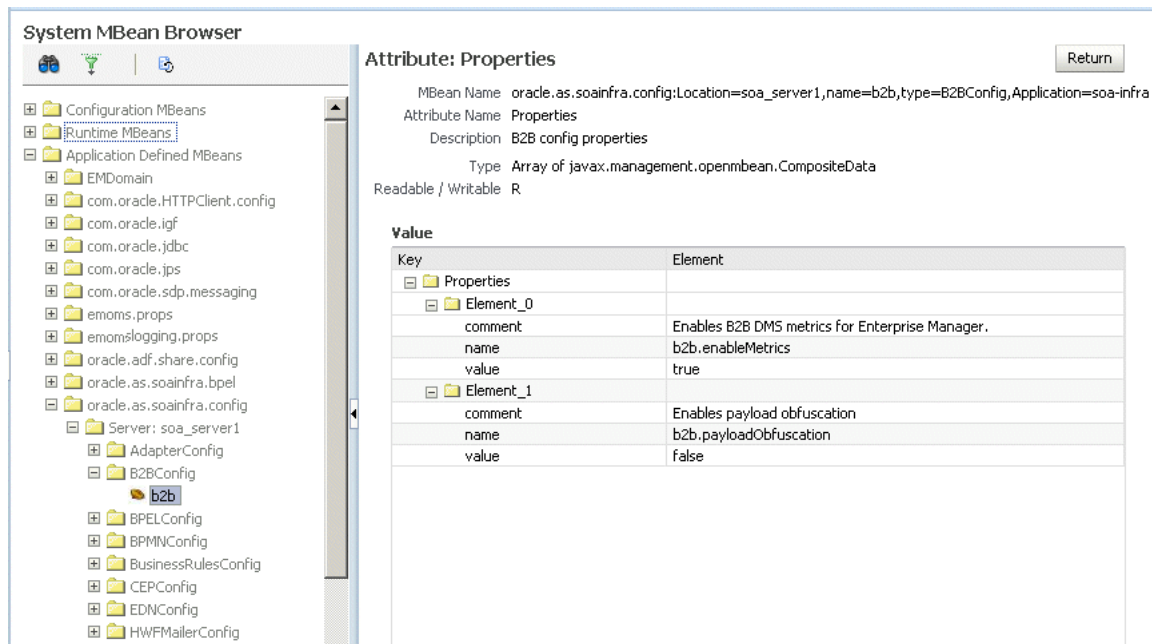
9. Provide the needed information—key, value, and an optional comment—and click **Invoke**.

See Appendix B, "Setting B2B Configuration Properties in Fusion Middleware Control" in *Oracle Fusion Middleware User's Guide for Oracle B2B* for a list of property names and possible values, including properties for turning off validation during deployment, setting the MDS cache size, setting thread count and thread sleep time, specifying how functional acknowledgments are handled, setting payload obfuscation, and more.

33.3 Configuring B2B Attributes

You can configure B2B attributes by setting values using the System MBean Browser, as shown in [Figure 33-3](#).

Figure 33-3 Configuring B2B Attributes



To specify B2B attribute properties:

1. Do Steps 1 through 6 in [Section 33.2, "Configuring B2B Operations."](#)

2. Click the **Attributes** tab.
3. Click **Properties**.
4. Expand **Element_0**, **Element_1**, and so on to find the property you want to change.
5. Note the property name and value and click **Return**.

For example, under **Element_3**, you see the **b2b.payloadObfuscation** property with the default value **false**.

6. Click the **Operations** tab.
7. Click **setProperty**.
8. Enter values for the key, value, and optional comment.

Operation: setProperty Invoke Revert Return

MBean Name oracle.as.soainfra.config:Location=soa_server1,name=b2b,type=B2BConfig,Application=soa-infra,ApplicationVersion=11.1.1

Operation Name setProperty

Description Updates a property

Return Type void

Parameters

Name	Description	Type	Value
key	Name of the property	java.lang.String	b2b.payloadObfuscation
value	Value of the property	java.lang.String	true
comment	Comment about the property	java.lang.String	

For example, to enable payload obfuscation, set **b2b.payloadObfuscation** to **true**.

9. Click **Invoke**.
10. Click **Return**.

Monitoring Oracle B2B

This chapter describes how to monitor Oracle B2B using Oracle Enterprise Manager Fusion Middleware Control.

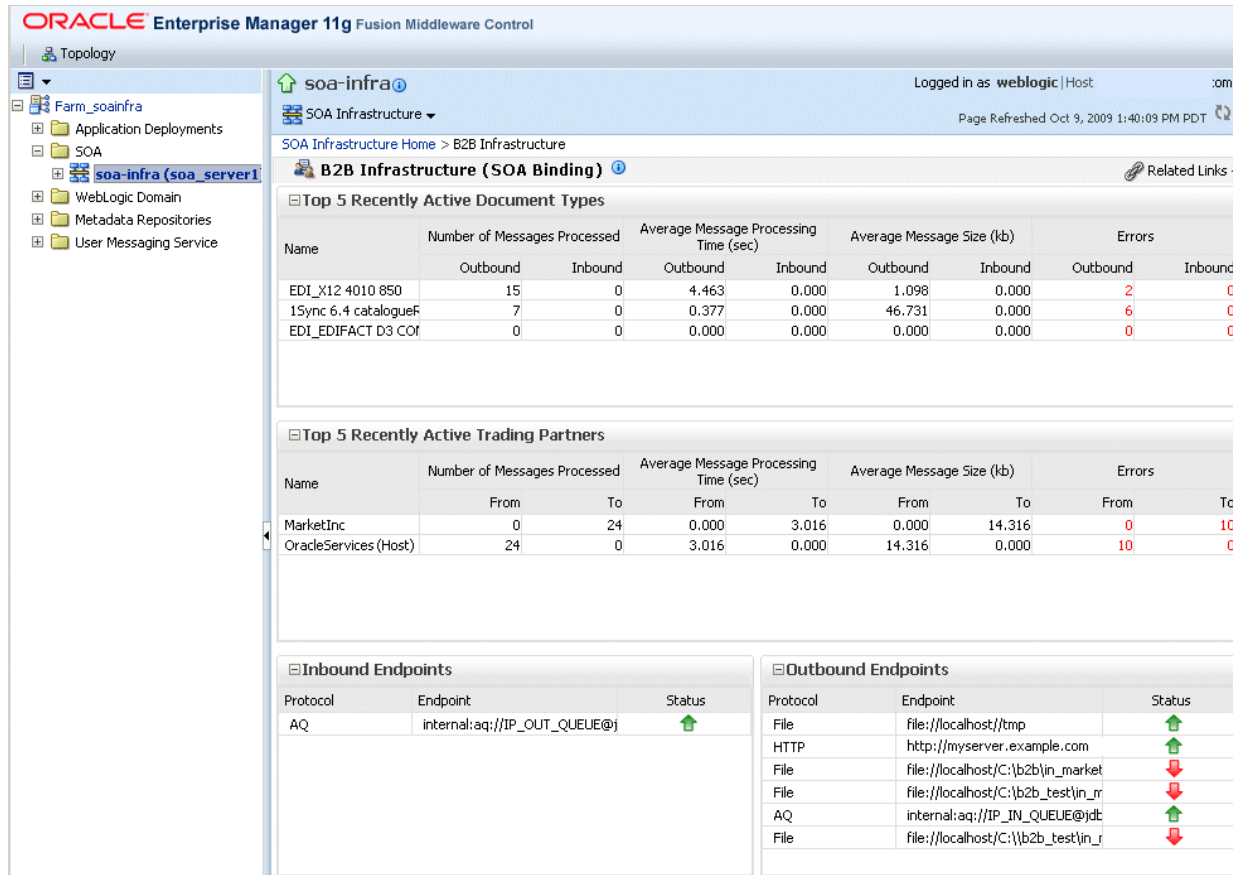
This chapter includes the following topics:

- [Section 34.1, "Monitoring the B2B Infrastructure"](#)
- [Section 34.2, "Accessing Oracle B2B from the B2B Infrastructure Page"](#)
- [Section 34.3, "Viewing the Message Flow of a B2B Binding Component"](#)
- [Section 34.4, "Viewing Services and References"](#)
- [Section 34.5, "Accessing Oracle B2B Reports from the B2B Composite Flow Trace Page"](#)

34.1 Monitoring the B2B Infrastructure

To monitor the B2B infrastructure, shown in [Figure 34-1](#), EM metrics must be enabled (the default) on the B2B Server Properties page.

Figure 34–1 B2B Infrastructure (SOA Binding)



Use the **B2B Server Properties** link under **Related Links** to change the setting. See Section 33.1, "Configuring B2B Server Properties," for more information on enabling EM metrics.

Table 34–1 describes the information displayed on the B2B Infrastructure (SOA Binding) page.

Table 34–1 B2B Infrastructure (SOA Binding)

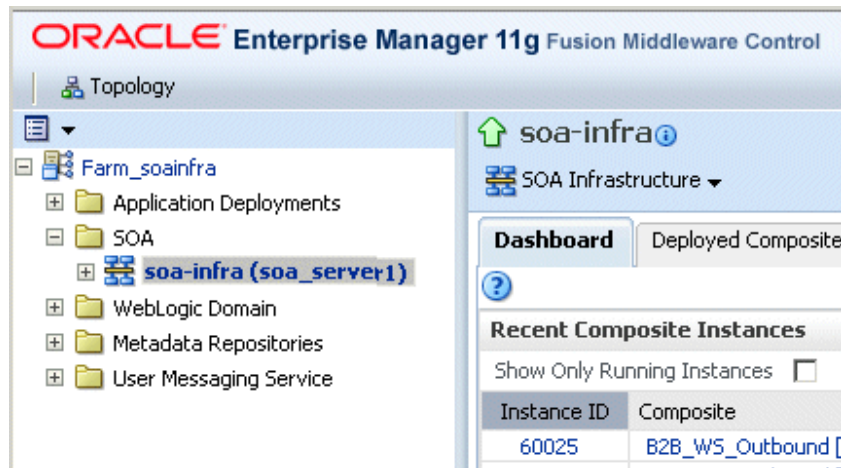
Area/Field	Description
Top 5 Recently Active Document Types	This section shows the active document types with the maximum number of messages exchanged (inbound and outbound combined) during the current session of the server. The document types listed in this section are from Oracle DMS metrics, triggered by run-time sensors. This data is not persisted. Therefore, if Oracle B2B is restarted, then new data based on Oracle B2B activity appears here.
Number of Messages Processed	Shows the number of document messages exchanged between the host and trading partners. Outbound indicates messages sent from the host to the trading partner and Inbound indicates messages sent from the trading partner to the host.
Average Message Processing Time (sec)	Shows the average document processing time, in seconds, for both outbound and inbound messages.
Average Message Size (kb)	Shows the average document size, in kilobytes, for both outbound and inbound messages.
Errors	Shows the document error count.

Table 34–1 (Cont.) B2B Infrastructure (SOA Binding)

Area/Field	Description
Top 5 Recently Active Trading Partners	<p>This section shows the active trading partners with the maximum number of messages exchanged (from and to combined) during the current session of the server.</p> <p>The trading partners listed here are from Oracle DMS metrics, triggered by run-time sensors. This data is not persisted. Therefore, if Oracle B2B is restarted, then new data based on Oracle B2B activity appears here.</p>
Number of Messages Processed	Shows the number of messages sent and received between the host and trading partners. From indicates messages sent from this partner to its trading partner. To indicates messages received by this partner from the trading partner.
Average Message Processing Time (sec)	Shows the average document processing time, in seconds, for exchanged messages.
Average Message Size (kb)	Shows the average document size, in kilobytes, for exchanged messages.
Errors	Shows the document error count.
Inbound Endpoints	This section shows the status of the listening endpoints at the time the connection was attempted (not for a later point in time). For example, in an EDI transaction using Generic File transport, when Oracle B2B reads from a directory, that directory is the inbound endpoint.
Protocol	Indicates the type of transport protocol used in the exchange, for example, File, AQ, and FTP, among others.
Endpoint	Indicates the location from which messages are received. The endpoint can be a URL, folders, or path, among others.
Status	Indicates the status (up or down) of the endpoint (protocol) the last time a connection was attempted.
Outbound Endpoints	This section show the status of the delivery endpoints at the time the delivery was attempted (not for a later point in time). For example, in an EDI transaction using Generic File transport, when Oracle B2B writes to a directory, that directory is the outbound endpoint.
Protocol	Indicates the type of transport protocol used in the exchange, for example, File, AQ, and FTP, among others.
Endpoint	Indicates the location to which messages are sent. The endpoint can be a URL, folders, or path, among others.
Status	Indicates the status (up or down) of the endpoint (protocol) the last time a delivery was attempted.

To monitor the B2B infrastructure using Oracle Enterprise Manager Fusion Middleware Control:

1. Expand the **SOA** node.
2. Select the SOA infrastructure, for example, **soa-infra (soa_server1)**.



- From the **SOA Infrastructure** menu, select **Bindings** and then **B2B**.

See [Table 34-1](#) for a description of the information displayed.

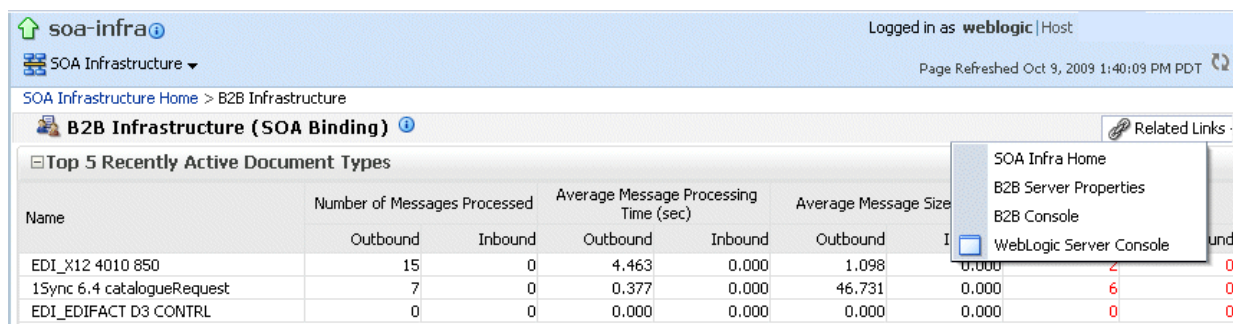
Information displayed in Oracle Enterprise Manager is based on DMS metrics, including inbound and outbound endpoints. Therefore, changes to Oracle B2B run-time data are not necessarily or immediately reflected in the Oracle Enterprise Manager console.

For example, if you purge run-time data or make B2B configuration changes in the Oracle B2B interface, the changes do not affect DMS metrics. To view current run-time data, use the Oracle B2B interface. Enterprise Manager Console data shows B2B message traffic from the time that the B2B (SOA) server starts.

34.2 Accessing Oracle B2B from the B2B Infrastructure Page

Use the **B2B Console** link under **Related Links**, as shown in [Figure 34-2](#), to log in to Oracle B2B.

Figure 34-2 Accessing Oracle B2B from Oracle Enterprise Manager Fusion Middleware Control



See *Oracle Fusion Middleware User's Guide for Oracle B2B* for information on using the Oracle B2B interface.

34.3 Viewing the Message Flow of a B2B Binding Component

To view the message flow of a B2B binding component in a SOA composite application instance:

- Select a SOA composite application with a B2B binding component.

A list of the recent instances is displayed in the **Dashboard** tab.

ORACLE Enterprise Manager 11g Fusion Middleware Control

Project_ebMS_PO [1.0] SOA Composite

Running Instances 0 | Total 36 | Active | Retire ... | Shut Down... | Test ... | Settings... |

Dashboard | Instances | Faults and Rejected Messages | Unit Tests | Policies

Instance ID	State	Start Time
20060	---	Sep 9, 2009 1:11:28 PM
20058	---	Sep 9, 2009 1:04:28 PM
20059	---	Sep 9, 2009 1:04:28 PM
20057	---	Sep 9, 2009 1:03:58 PM
20056	---	Sep 9, 2009 1:03:58 PM

Recent Faults and Rejected Messages

Show only system faults

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
No faults found					

Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recoverable
Mediator_ebMS_PO	Mediator	36	0	0	0

Services and References

Name	Type	Faults	Total Messages	Average Processing Time (sec)
File_Read_PO	Service	0	30	0.211
B2B_Send_ebMS_PO	Reference	0	30	0.039

2. To see all instances of this composite application, click the **Instances** tab.

ORACLE Enterprise Manager 11g Fusion Middleware Control

B2B_EDI_X12 [1.0] (Oracle SOA Composite)

Running Instances 0 | Total 30 | Active | Retire ... | Shut Down... | Enable Payload Validation ... | Test ... | Related Links

Dashboard | **Instances** | Faults and Rejected Messages | Unit Tests | Policies

Search

Instance ID: Start Time From: (UTC-08:00) US Pacific Time

Conversation ID: Start Time To: (UTC-08:00) US Pacific Time

Search | Reset

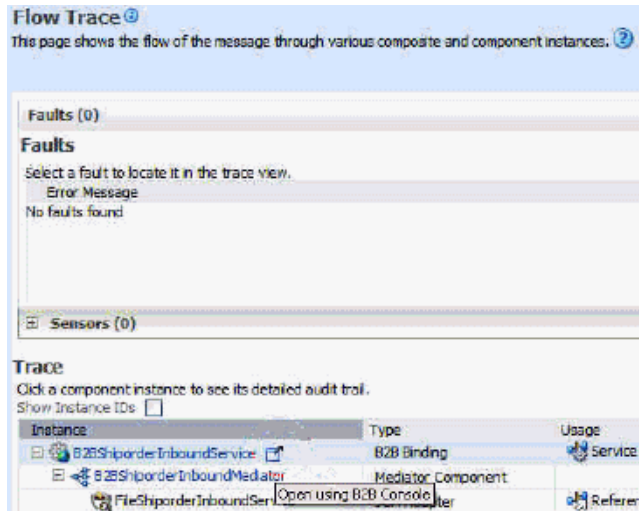
Show: Any

View: Delete Selected ... Delete With Options ... Abort...

Instance ID	Conversation ID	State	Faults	Start Time	Logs
60015	8C54845611E27685A4C000...	---	0	Dec 11, 2008 10:56:37 AM	
60014	8C54845611E27684A4F000...	---	0	Dec 11, 2008 10:56:33 AM	
60013	8C54845611E27684A4F000...	---	0	Dec 11, 2008 10:56:32 AM	
60012	8C54845611E27684718000...	---	0	Dec 11, 2008 10:56:32 AM	
60011	8C54845611E276833E5000...	---	0	Dec 11, 2008 10:56:27 AM	
60010	8C54845611E24F3638A000...	---	0	Dec 10, 2008 11:29:57 PM	
60009	8C54845611E24F3AFEF000...	---	0	Dec 10, 2008 11:29:56 PM	
60008	8C54845611E24F3AC82000...	---	0	Dec 10, 2008 11:29:55 PM	
60007	8C54845611E24F04F20000...	---	0	Dec 10, 2008 11:26:15 PM	
60006	8C54845611E24F042E5000...	---	0	Dec 10, 2008 11:26:12 PM	
60005	8C54845611E24F03162000...	---	0	Dec 10, 2008 11:26:07 PM	
60004	8C54845611E24F02C3F000...	---	0	Dec 10, 2008 11:26:06 PM	
60003	8C54845611E24F0254F000...	---	0	Dec 10, 2008 11:26:04 PM	
60002	8C54845611E24EF7702000...	---	0	Dec 10, 2008 11:25:20 PM	
60001	8C54845611E24DC194000...	---	0	Dec 10, 2008 11:05:06 PM	
50001	8C54845611E2382AB87000...	---	0	Dec 10, 2008 5:39:18 PM	
40005	8C54845611E22AA888B000...	---	0	Dec 10, 2008 12:51:00 PM	
40004	8C54845611E22AAA873000...	---	0	Dec 10, 2008 12:50:56 PM	
40003	8C54845611E22AAA4E3000...	---	0	Dec 10, 2008 12:50:55 PM	
40002	8C54845611E22AAA2B6000...	---	0	Dec 10, 2008 12:50:54 PM	
40001	8C54845611E22919151000...	---	0	Dec 10, 2008 12:23:32 PM	
30001	8C54845611E1E4CA6E5000...	---	0	Dec 9, 2008 4:29:46 PM	
20004	8C54845611E1E2E6E86000...	---	0	Dec 9, 2008 3:56:46 PM	
20003	8C54845611E1E2E6B8B000...	---	0	Dec 9, 2008 3:56:45 PM	
20002	8C54845611E1E2E6B8B000...	---	0	Dec 9, 2008 3:56:44 PM	

Note: You can see details of a specific message by searching on the instance ID on the **Reports** tab of Oracle B2B.

3. Click a specific instance in the **Instance ID** list to see faults and the flow trace.



The Trace displays the following details:

- The **Faults** section shows the faults occurring and sensor information collected in the services, service components, and references that comprise the SOA composite application.
- The **Trace** section shows the sequence of the message flow through the services, service components, and references that comprise the SOA composite application.

34.4 Viewing Services and References

The **Dashboard** tab for a composite application, shown in [Figure 34-3](#), lists the services and references used in the composite.

Figure 34–3 Services and References

Project_ebMS_PO [1.0] Logged in as weblogic|Host
Page Refreshed Sep 9, 2009 1:19:34 PM

Running Instances 0 | Total 36 | Active | Retire ... | Shut Down... | Test ▾ | Settings... ▾ |

Dashboard | Instances | Faults and Rejected Messages | Unit Tests | Policies

Instance ID	Name	Component ID	Status	Start Time
20060		JygzKlc4xapUldG...	---	Sep 9, 2009 1:11:28 PM
20058		58IT9XvzF2JA0h...	---	Sep 9, 2009 1:04:28 PM
20059		yqx0AGPFH63GN...	---	Sep 9, 2009 1:04:28 PM
20057		p4kT9jqCE8VajW...	---	Sep 9, 2009 1:03:58 PM
20056		V78qCW4Wr_xkF...	---	Sep 9, 2009 1:03:58 PM

[Show All](#)

Recent Faults and Rejected Messages

Show only system faults

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Log
No faults found					

[Show All](#)

Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recoverable
Mediator_ebMS_PO	Mediator	36	0	0	

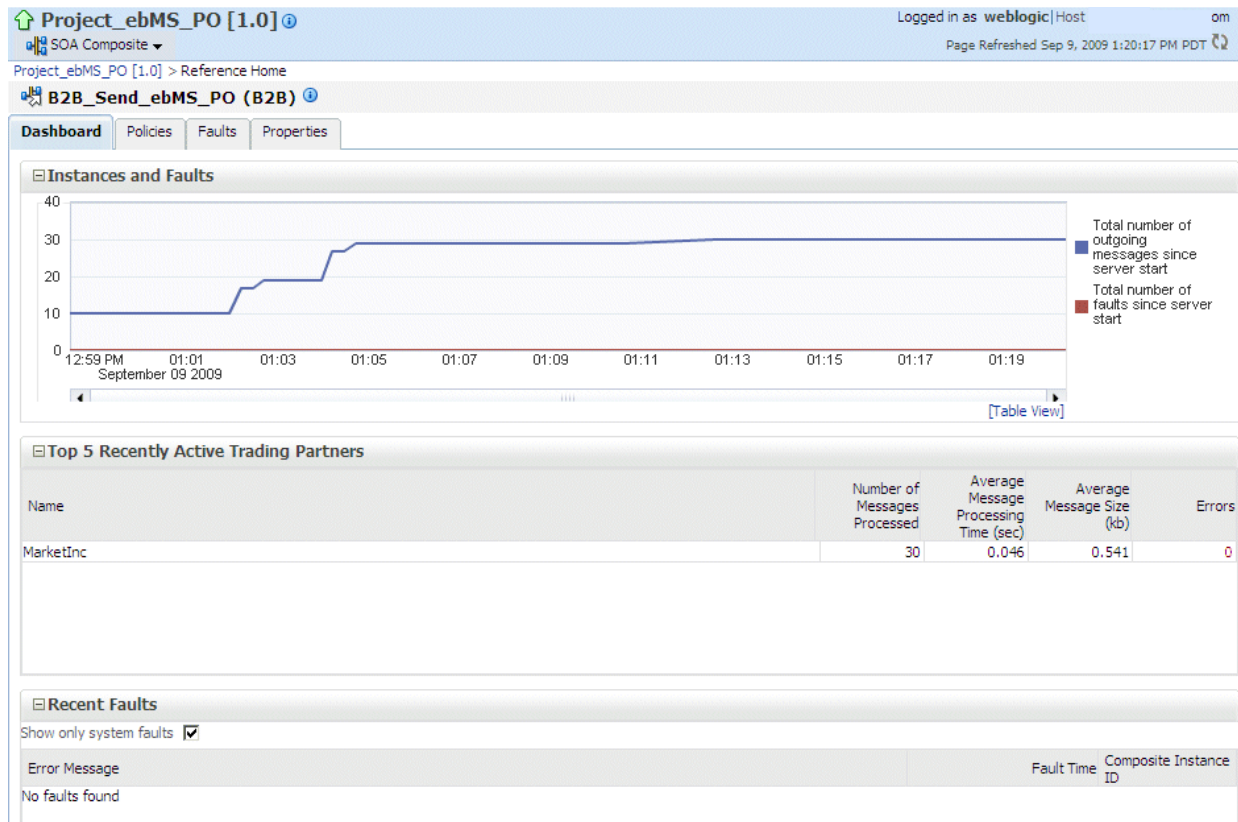
Services and References

Name	Type	Faults	Total Messages	Average Processing Time (s)
File_Read_PO	Service	0	30	0.
B2B_Send_ebMS_PO	Reference	0	30	0.

When B2B is used as a *service* (inbound), it receives messages from trading partners and delivers them to SOA composite applications. When B2B is used as a *reference* (outbound), it sends messages from the SOA composite application to partners.

Details of the B2B reference shown in the figure, **B2B_Send_ebMS_PO**, are displayed on the Reference Home page, shown in [Figure 34–4](#).

Figure 34–4 The B2B Reference, B2B_Send_ebMS_PO



The Instances and Faults area shows the number of outgoing messages and the number of faults since the server was started. See [Table 34–1](#) for a description of the Top 5 Recently Active Trading Partners area.

The Recent Faults area lists the faults, including details such as the error message, time of the fault, and the associated composite instance ID. Faults can be on the incoming messages processed by a service binding component or on the outgoing messages processed by a reference binding component.

Note that while all errors will appear in the B2B console, only a subset of faults will appear in Oracle Enterprise Manager Fusion Middleware Control. This subset includes all inbound messages containing an error after trading partner identification in B2B.

See [Chapter 4, "Monitoring the SOA Infrastructure,"](#) and [Chapter 37, "Monitoring Service and Reference Binding Components,"](#) for more information.

34.5 Accessing Oracle B2B Reports from the B2B Composite Flow Trace Page

The Oracle B2B composite Flow Trace page displays Oracle B2B Faults and Traces.

Flow Trace
 This page shows the flow of the message through various composite and component instances. ECID: 0AE58B04127066C94DB0000F8834FF0
 Started: Feb 25, 2010 10:38:51 AM

Faults (0)

Faults
 Select a fault to locate it in the trace view.

Error Message	Recovery	Fault Time	Fault Location	Composite Instance
No faults found				

Sensors (0)

Trace
 Click a component instance to see its detailed audit trail.
 Show Instance IDs:

Instance	Type	Usage	State	Time	Composite Instance
B2BShiporderInboundService	B2B Binding	Service	Completed	Feb 25, 2010 10:38:51 AM	B2BShiporderInboundComposi...
B2BShiporderInboundMediator	Mediator Component		Completed	Feb 25, 2010 10:38:51 AM	B2BShiporderInboundComposi...
FileShiporderInboundSer...	Open using B2B Console...	Reference	Completed	Feb 25, 2010 10:38:51 AM	B2BShiporderInboundComposi...

Part XIII

Administering Business Events

This part describes how to administer business events.

This part includes the following chapter:

- [Chapter 35, "Managing Business Events"](#)

Managing Business Events

This chapter describes how to manage business events. Business events consist of message data sent as the result of an occurrence in a business environment. When a business event is published, other service components or database agents can subscribe to it.

This chapter includes the following topics:

- [Section 35.1, "Overview of Event Delivery Network"](#)
- [Section 35.2, "Subscribing to Business Events"](#)
- [Section 35.3, "Managing Business Event Subscribers"](#)
- [Section 35.4, "Recovering from Business Event Faults"](#)

For more information about business events, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

35.1 Overview of Event Delivery Network

The subsystem of SOA that accepts published business events and delivers them to the subscribers is called the Event Delivery Network (EDN). EDN has two different implementations:

- EDN-DB
EDN-DB uses an Oracle database as a back-end store and depends on Oracle-specific features.
- EDN-JMS
EDN-JMS uses a JMS queue as a back-end store.

The correct implementation is configured during installation by Oracle Universal Installer. You can also make postinstallation changes. From an application development point of view, the two implementations are identical and the behavior is the same.

35.2 Subscribing to Business Events

You can subscribe to business events in Oracle Enterprise Manager Fusion Middleware Control Console. Business events consist of message data sent as the result of an occurrence in a business environment. You create business events in Oracle JDeveloper and include them in SOA composite applications that you deploy to Oracle Enterprise Manager Fusion Middleware Control Console. Service components and database agents can subscribe to business events. Only database agents can be subscribed to

from Oracle Enterprise Manager Fusion Middleware Control Console. Service components are only subscribed to from Oracle JDeveloper. When a business event is published, the entity subscribed to that event receives it.

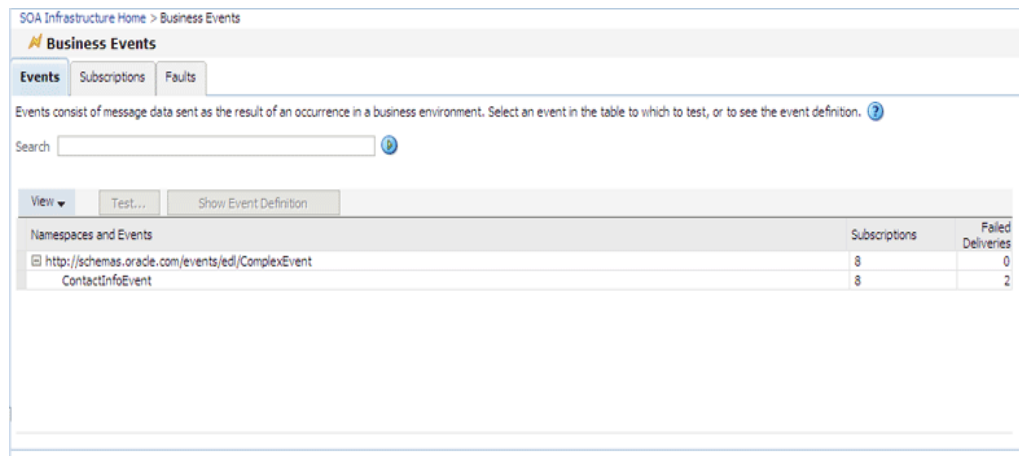
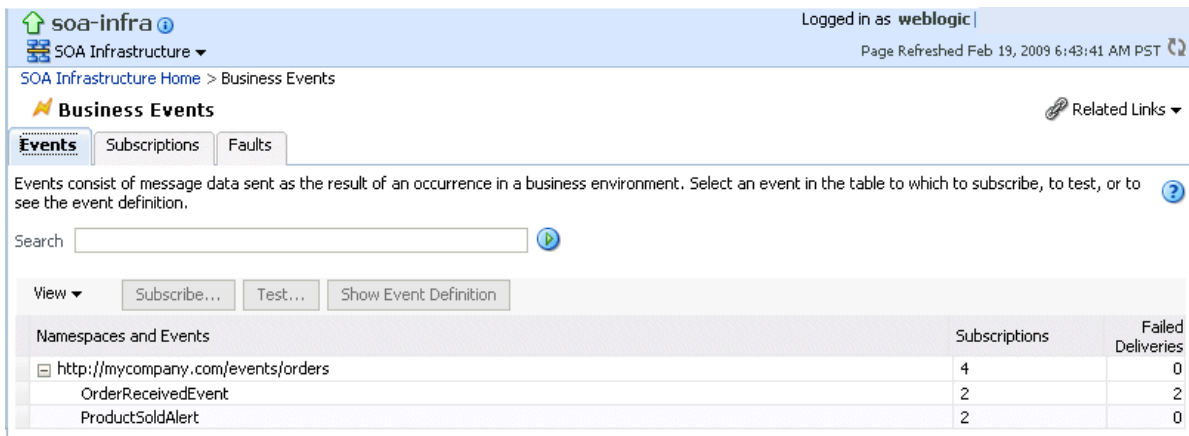
To subscribe to business events:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
Select Business Events .	Right-click soa-infra and select Select Business Events .

The Events page displays the following details:

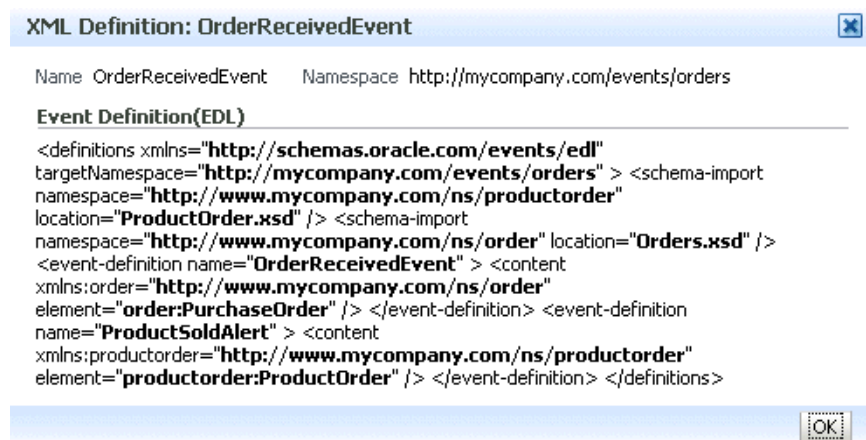
- A utility for searching for a specific business event by specifying a full or partial name and clicking the **Search** icon. Click the **Help** icon for details.
- Business events, including the namespace used, event name, number of subscriptions to each event, and number of failed event deliveries. Business events are contained within their namespace.



2. Select a specific event in the **Namespaces and Events** section.
3. Click **Show Event Definition**.

The event definition language (EDL) file for the selected event appears. The business event is defined using EDL. EDL is a schema used to build business event definitions.

In this example, two business events named **OrderReceivedEvent** and **ProductSoldAlert** appear in the event definition. The namespace (**orders**) and associated schema file (**ProductOrder.xsd**) are referenced.

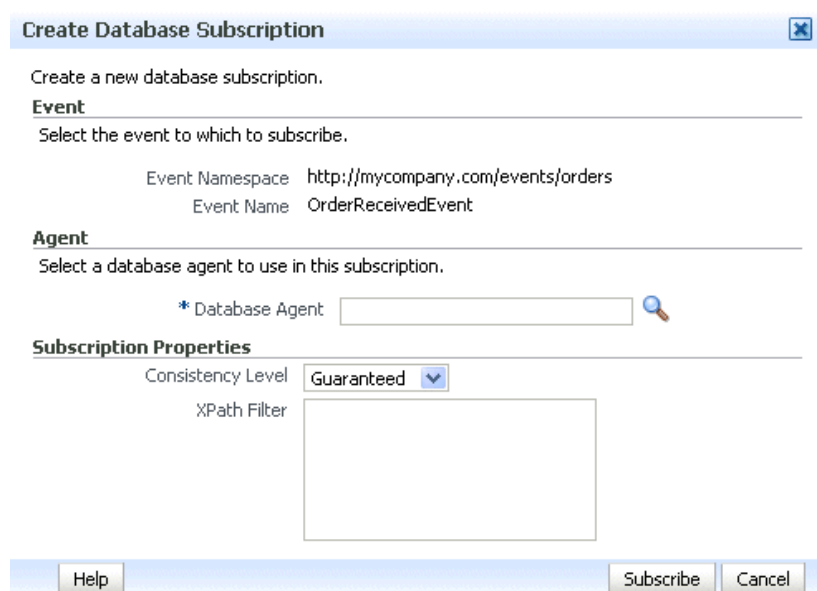


- Click **OK** to close the dialog.

Note: Step 5, step 6, and step 7 are not applicable to business events implementing EDN-JMS.

- Click **Subscribe** to subscribe a database agent to the event selected in the **Namespaces and Events** table.

The Create Database Subscription to an Event dialog appears. You create an agent to listen for and subscribe to appropriate events when they are published.



- Enter the following values. An asterisk indicates a required field.

Field	Description
Event Namespace	Displays the event namespace.
Event Name	Displays the event name.
Database Agent	Specify a database agent name or click Create Agent to create an agent. The agent listens for and subscribes to appropriate events when they are published.
Consistency Level	Select one of the following options: <ul style="list-style-type: none"> ■ Guaranteed: Delivers events to the subscriber asynchronously without a global transaction. The subscriber can choose to create its own local transaction for processing, but it is committed independently of the rest of the event processing. By default, guaranteed delivery attempts to deliver the event to the subscriber for three times. If it cannot deliver the event in these three attempts, then the delivery fails. Also, there is a possibility that a system failure can cause an event to be delivered multiple times because there is no global transaction. If the subscriber throws an exception (or fails in any way), the exception is logged, but the event is not resent. ■ Immediate: Delivers events to the subscriber on the same transaction and same thread as the publisher. The publish call does not return until all immediate subscribers have completed processing. If any subscribers throw an exception, no additional subscribers are invoked and an exception is thrown to the publisher.
XPath Filter	If you want to filter the event, specify an XPath expression. When the subscription is delivered and the expression logic is satisfied, the event is accepted for delivery. If the logic is not satisfied, the event is not delivered.

7. Click **Subscribe**.
8. Click **Test** to test a selected event. This action enables you to publish a test event that subscribers can act upon.
The Test Event dialog appears.
9. Specify the XML payload to use in the test.
10. Click **Publish**.

Note: Enforcement of policies for event subscriptions is not supported in this release. You can attach or detach a policy to or from a service component that subscribes to a business event (such as Oracle Mediator) without being warned. This action does not result in any errors; policy enforcement simply does not occur.

For more information, see the following documentation:

- [Section 1.2.8, "Understanding the Contents of SOA Composite Applications"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for details about business events

35.3 Managing Business Event Subscribers

You can also create, edit, and delete existing database subscriptions. When a business event is published, service components and database agents can subscribe to it. Use

this page to view all subscriptions to business events. This page also enables you to manage event subscriptions by database agents. Service component subscriptions are created in Oracle JDeveloper during design time and cannot be modified in Oracle Enterprise Manager Fusion Middleware Control Console.

Notes:

- If your SOA composite application includes a business event subscription, and you deploy different revisions of the composite, all event subscriptions from all revisions of the composite are active and receive messages. To receive the event with the latest revision of the composite only, it is recommended that you retire all previous revisions of the composite.
 - A BPEL component in a retired SOA composite application cannot receive a business event, even if the event is associated with a noninitiating receive activity of the BPEL process.
-
-

To manage business event subscribers:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Business Events .	1. Right-click soa-infra .
	2. Select Business Events .

2. Click **Subscriptions**.

The Subscriptions page displays the following details:

- A utility for searching for a specific subscription by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- The database subscriptions, including the event name, namespace used, subscription agent name, optionally defined XPath filters, consistency level, and number of failed deliveries. You create database subscriptions to business events in this page during run time.
- The component subscriptions, including the event name, namespace used, the service component subscribing to the event, the SOA composite application, optionally defined XPath filters, and the consistency level.

soa-infra | SOA Infrastructure | Logged in as weblogic | Page Refreshed Feb 19, 2009 6:43:41 AM PST

SOA Infrastructure Home > Business Events

Business Events | Related Links

Events | **Subscriptions** | Faults

The following list shows the components and database agents that have subscribed to an event. ?

Search

Subscription Type: Database and Component Subscriptions | Subscriber:

Event Namespace: All | Consistency Level: All

Event Name: All | XPath Filter:

Search | Reset

Database Subscriptions

View | Manage Database Agents

Event	Subscription	Failed Deliveries
Event Name	Database Agent	
OrderReceivedEvent	agent2	0
ProductSoldAlert	agent1	0
ProductSoldAlert	agent3	0

Component Subscriptions

View

Event	Subscription	Failed Deliveries
Event Name	Component	
OrderReceivedEvent	EventMediator	2

SOA Infrastructure Home > Business Events

Business Events

Events | **Subscriptions** | Faults

The following list shows the components that have subscribed to an event. ?

Search

Event Namespace: All | Consistency Level: All

Event Name: All | XPath Filter:

Subscriber:

Search | Reset

Component Subscriptions

View

Event	Subscription	Failed Deliveries
Event Name	Component	
ContactInfoEvent	BPelStar	
ContactInfoEvent	BPelEqual	
ContactInfoEvent	BPelGreater	
ContactInfoEvent	BPelZero	
ContactInfoEvent	MediatorJRF	
ContactInfoEvent	MediatorComplex	
ContactInfoEvent	BPelProcess_OOO	
ContactInfoEvent	BPelJRF	

Note: Step 3 and step 4 are not applicable to business events implementing EDN - JMS.

- Click the appropriate icon below the **Database Subscriptions** title to create, edit, or delete a database subscription.



4. Click **Manage Database Agents** to edit the PL/SQL procedure or delete agents not currently subscribing to events.
5. In the **Subscription Component** column, click a service component to access its home page.
6. In the **Composite** column, click a SOA composite application to access its home page.

For more information about business events, refer to *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

35.4 Recovering from Business Event Faults

You can recover from business event faults that are identified as recoverable.

To recover from business event faults:

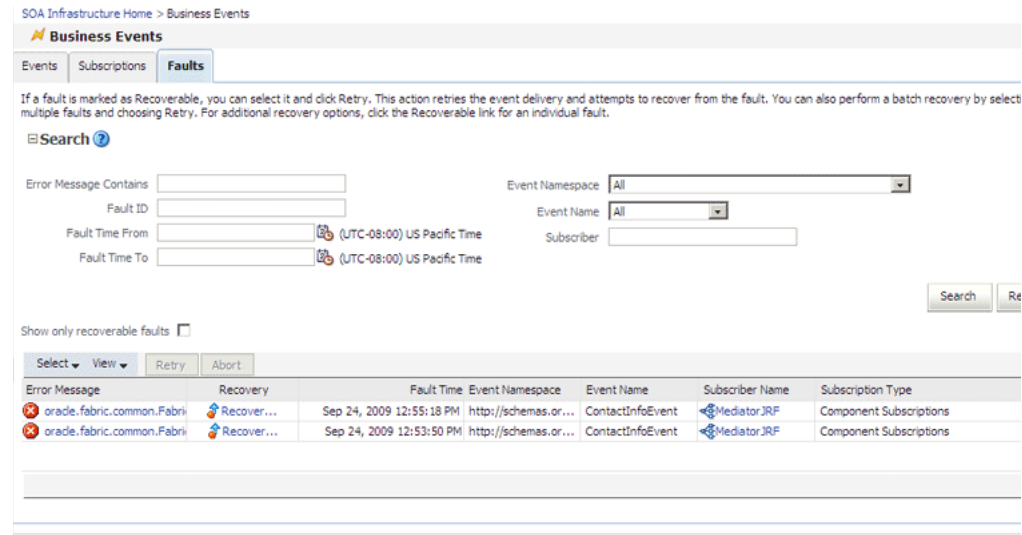
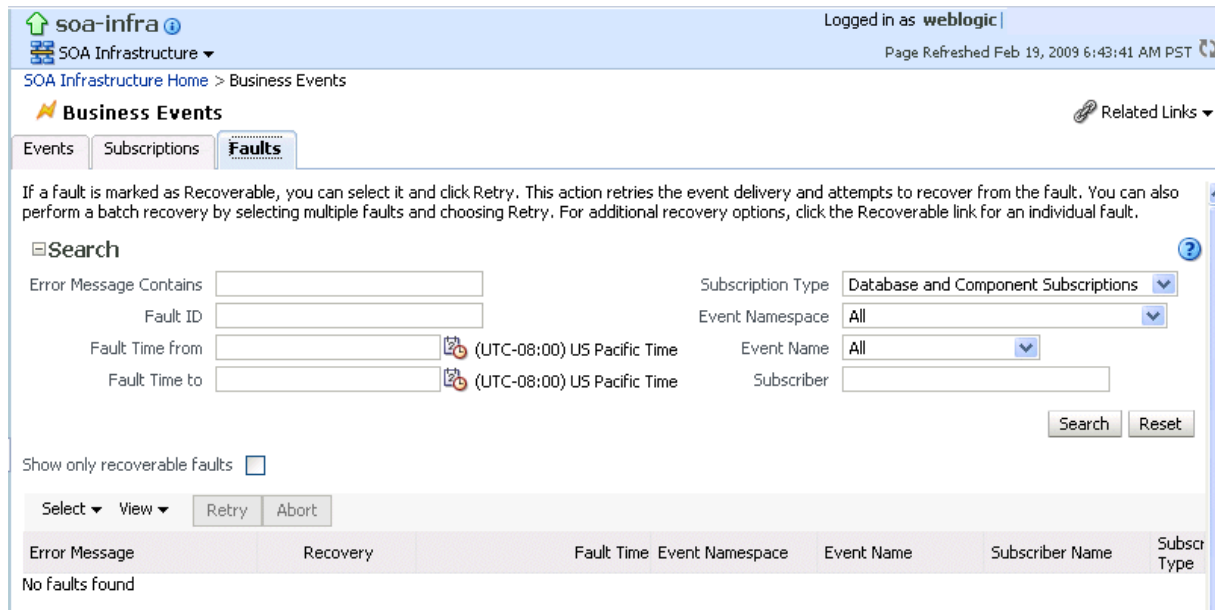
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Business Events .	1. Right-click soa-infra .
	2. Select Business Events .

2. Click **Faults**.

The **Faults** page displays the following details:

- A utility for searching for a specific business event fault by specifying a criteria and clicking **Search**.
- Faults occurring in a business event, including the error message, whether you can recover from the fault, the time at which the fault occurred, the event namespace, event name, the subscriber, and the subscription type (database or component). The **Recoverable?** column identifies faults for which recovery actions can be performed.



- From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message.
- Click a specific fault that has been identified as recoverable and select one of the following options:

Action	Description
Retry	Retries the instance in which the fault occurred.
Abort	Aborts the entire instance in which the fault occurred.

- In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

For more information about business events, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

Part XIV

Administering Binding Components

This part describes how to administer binding components.

This part includes the following chapters:

- [Chapter 36, "Configuring Service and Reference Binding Components"](#)
- [Chapter 37, "Monitoring Service and Reference Binding Components"](#)
- [Chapter 38, "Managing Service and Reference Binding Components"](#)

Configuring Service and Reference Binding Components

This chapter describes how to configure properties for Web service and JCA adapter service and reference binding components that are included in SOA composite applications. Binding components are network protocols and services that connect the SOA platform with the outside world.

This chapter includes the following topic:

- [Section 36.1, "Configuring Service and Reference Binding Component Properties"](#)

For more information about binding components, see the following documentation:

- [Section 1.2.5, "Understanding Binding Components"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

Notes:

- You cannot configure message header properties for direct binding components that invoke a SOA composite application through a remote RMI call. For this reason, the **Properties** tab does not display for direct binding components.
 - You cannot change the **httpBinding** property for the HTTP binding component.
-
-

36.1 Configuring Service and Reference Binding Component Properties

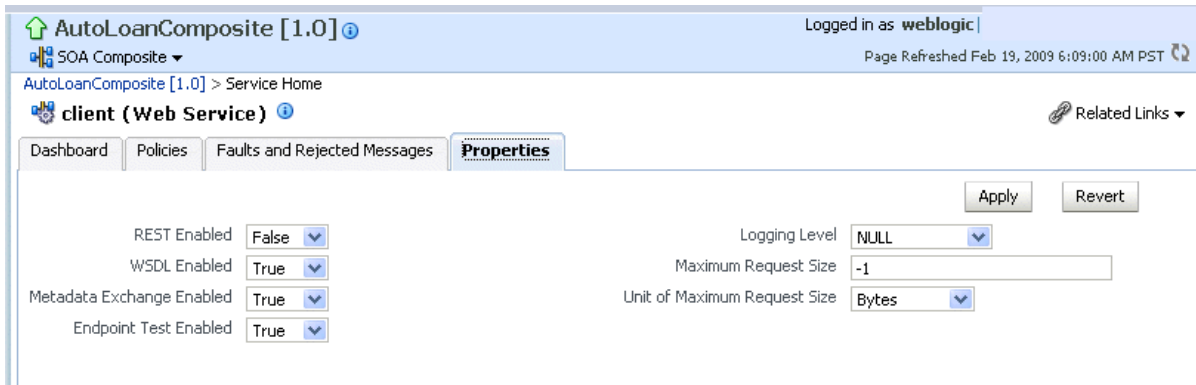
You can configure message header properties for the service and reference binding components included in a deployed SOA composite application.

To configure service and reference binding component properties:

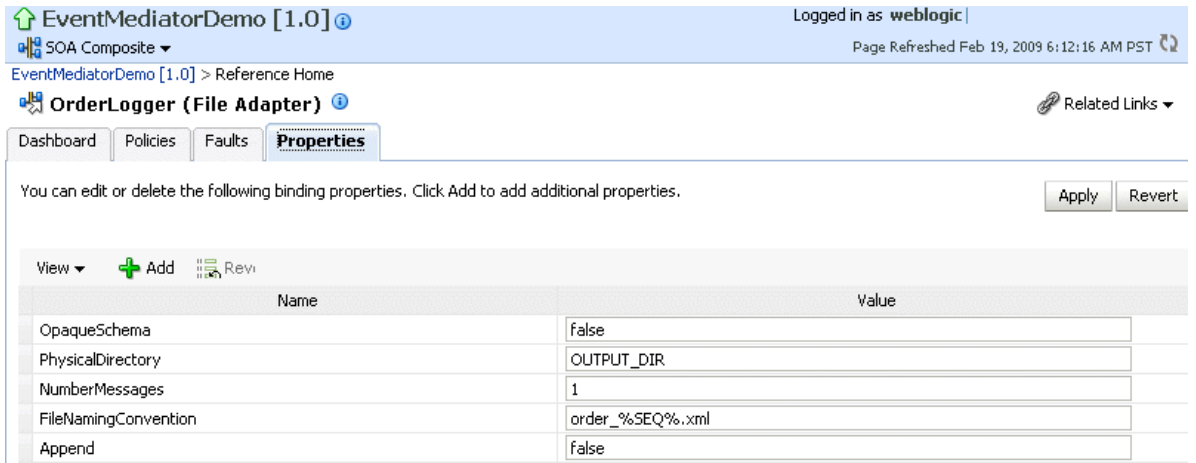
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...	From the SOA Composite Menu...
1. Select Services and References .	1. Right-click soa-infra .	1. Select Services/Reference Properties .
2. Select a specific service or reference.	2. Select Services and References .	2. Select a specific service or reference.
3. Click the Properties tab.	3. Select a specific service or reference.	3. Click the Properties tab.
	4. Click the Properties tab.	

The following binding component properties appear for a Web service.



The following binding component properties appear for a file adapter. Depending upon your selection of JCA adapter, different parameters display for configuring.



- Change properties based on your selection of binding component. See sections [Section 36.1.1, "Configuring Properties for Web Services"](#) and [Section 36.1.2, "Configuring Properties for Oracle JCA Adapters"](#) for available properties.

Note: To see adapter header properties and their values on this page, ensure that you change the value of the **Audit Level** property from **Production** (the default) to **Development** in the SOA Infrastructure Common Properties page. If this property is set to **Production**, the properties and their values do not display.

36.1.1 Configuring Properties for Web Services

Table 36–1 describes the properties available for a Web service binding component.

Table 36–1 Web Service Properties

Service, Reference, or Endpoint	Property Name	Description
Service	REST Enabled	Enable or disable the Web services port to accept messages in Representational State Transfer (REST) format.
Service	WSDL Enabled	Enable or disable the WSDL of the Web service.

Table 36–1 (Cont.) Web Service Properties

Service, Reference, or Endpoint	Property Name	Description
Service	Metadata Exchange Enabled	Enable or disable a metadata exchange of the Web service.
Service	Endpoint Test Enabled	Enable or disable an endpoint test of the Web service.
Service	Logging Level	Select the level of logging to perform on the Web service.
Service	Maximum Request Size	Enter the maximum request size of the Web service. A value of -1 indicates the size is unlimited.
Service	Unit of Maximum Request Size	Select the request unit of the Web service (either bytes, kilobytes, megabytes, or gigabytes).

36.1.2 Configuring Properties for Oracle JCA Adapters

Note that if you manually add a nonregistered JCA binding level property in the `composite.xml` file, then you cannot subsequently edit that property or also any other registered properties for that service or reference through Oracle Enterprise Manager Fusion Middleware Control Console.

Table 36–2 Types of JCA Adapters

Property Type	Description	Restrictions
Activation specification and interaction specification	Activation specification properties operate as services and interaction specification properties operate as references in a SOA composite application.	Do <i>not</i> add or remove these properties. You can only change their values. These properties require the adapter endpoint to be recycled. These types of properties are also dependent upon other properties. If you attempt to add one of these properties, you have no way of knowing which dependent properties must also be added.
Endpoint	These are tuning-related properties that are not exposed through the activation or interaction specification properties, such as specifying time outs, thresholds, maximum intervals, and so on.	There are no restrictions on adding, removing, or changing endpoint properties. The adapter is notified when these properties are added, removed, or changed, but it does not require redeployment. Note that you cannot add or remove <code>jca.retry.*</code> endpoint properties without redeploying the composite. However, you can change these properties by using Oracle Enterprise Manager Fusion Middleware Control Console without redeploying the composite.

This section includes the following topics:

- [Section 36.1.2.1, "Oracle AQ Adapter"](#)
- [Section 36.1.2.2, "Oracle Database Adapter"](#)
- [Section 36.1.2.3, "Oracle File Adapter"](#)
- [Section 36.1.2.4, "Oracle FTP Adapter"](#)

- [Section 36.1.2.5, "Oracle JMS Adapter"](#)
- [Section 36.1.2.6, "Oracle MQ Series Adapter"](#)
- [Section 36.1.2.7, "Oracle Socket Adapter"](#)
- [Section 36.1.2.8, "Oracle JCA Adapters Endpoint Properties"](#)

36.1.2.1 Oracle AQ Adapter

Table 36–3 describes the properties available for the Oracle AQ Adapter.

Table 36–3 Oracle AQ Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	DequeueTimeOut	Sets the dequeue timeout interval.
Service	ConnectionRetry Delay	Sets the connection retry interval.
Service	adapter.aq.dequeue.threads	The number of dequeue threads.
Service	jca.retry.count	The number of retries to post the message.
Service	jca.retry.interval	The time interval between message retries.
Service	QueueName	Indicates the AQ queue name.
Service	DatabaseSchema	Database schema name that hosts the queue.
Service	SchemaValidation	Validates the message payload.
Service	ObjectFieldName	Specifies the ADT entry used as a payload. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	PayloadHeaderRequired	Specifies if the ADT entries except for the payload are accessible.
Service	DequeueCondition	Specifies the expression to dequeue messages.
Service	Consumer	Specifies the consumer of a queue.
Service	MessageSelectorRule	Specifies the message selector to dequeue messages.
Service	StreamPayload	Specifies if the payload is streamed or not.
Service	Correlation	Specifies a correlation criterion or search criterion for the dequeue operation. For the enqueue operation, the value becomes the correlation of the message sent to AQ.
Reference	Username	Identifies a user name requesting access to a secure environment or program, such as an Oracle database or Oracle applications system.
Reference	Responsibility	Specifies a collection of functions within Oracle E-Business Suite. Each user is assigned one or more responsibilities to allow access to the appropriate functions and data.
Reference	QueueName	Indicates an AQ queue name.

Table 36–3 (Cont.) Oracle AQ Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	DatabaseSchema	Indicates the database schema name that hosts the queue.
Reference	ObjectFieldName	Specify the ADT entry to use as a payload. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	PayloadHeaderRequired	Specify if ADT entries except for the payload are accessible.
Reference	RecipientList	Specify recipient of the messages.
Reference	Correlation	Specifies a correlation criterion or search criterion for the dequeue operation. For the enqueue operation the value becomes the correlation of the message sent to AQ.

36.1.2.2 Oracle Database Adapter

Table 36–4 describes the properties available for the Oracle Database Adapter.

Table 36–4 Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	DescriptorName	The key into the TopLink metadata indicating the root relational table. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	QueryName	The key into the TopLink metadata indicating the named query to execute, with predefined where clause and parameters. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	MappingsMetaDataUR	In conjunction with MappingsMetaDataURL, the path to the TopLink metadata file that describes how a database schema has been mapped to a particular predefined XML schema. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	MappingsMetaDataUR	Indicates the path to the TopLink metadata file that describes how a database schema has been mapped to an XML schema. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.

Table 36–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	OXMappingsMetadataURL	In conjunction with <code>MappingsMetadataURL</code> , the path to the TopLink metadata file that describes how a database schema has been mapped to a particular predefined XML schema. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	PollingInterval	Indicates the number of seconds between queries to the database for new events.
Service	MaxRaiseSize	Indicates the maximum number of XML records that can be raised at a time to Oracle BPEL Process Manager or the activation listener.
Service	PollingStrategy	Indicates the method in which events are raised from the database. This is also known as <code>AfterReadStrategy</code> . Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	MarkReadColumn	Indicates the status column used by <code>LogicalDeletePollingStrategy</code> , for indicating which rows have been processed.
Service	MarkUnreadValue	The status of unprocessed rows.
Service	MarkReservedValue	The status of rows reserved by this polling instance.
Service	MarkReadValue	The status of processed rows.
Service	SequencingTableName	For example, <code>DB_ADAPTER_SEQUENCING</code> .
Service	SequencingTableKeyColumn	For example, <code>TABLE_NAME</code> . This column holds the primary keys of the various sequences stored.
Service	SequencingTableValueColumn	For example, <code>LAST_READ_ID</code> . This is the column that holds the value of the last processed sequence value.
Service	SequencingColumn	For example, <code>SCOTT.EMP.EMP_ID</code> . This is the monotonically increasing column on the polled table.
Service	SequencingColumnType	For example, the <code>java.math.BigDecimal</code> , <code>java.sql.Timestamp</code> . This is the type of sequence counter used.
Service	SequencingTableKey	For example, the <code>SCOTT.EMP</code> . This is the key into the sequencing helper table, usually the name of the table being polled.
Service	ShouldCacheSequenceValue	For <code>SequencingPollingStrategy</code> , the <code>lastReadId</code> can be kept in-memory so it does not have to be read at the start of each polling interval.

Table 36–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	ShouldWriteSequenceValue	For SequencingPollingStrategy, the lastReadId can be kept in-memory and only written out to disk or a database when the process, application server, or both are shut down.
Service	DeleteDetailRows	For the delete polling strategy, this indicates whether to delete detail rows and master rows after XML records have been read.
Service	SequencingDataSourceName	For ExternalSequencingPollingStrategy.
Service	SequencingIsXADaDataSource	For ExternalSequencingPollingStrategy.
Service	UseBatchDestroy	Deletes or updates multiple processed rows with a single Data Manipulation Language (DML) statement.
Service	DelayCommit	Indicates whether to delay the commit/destroy action until all rows picked up (across multiple maxTransactionSize units) have been processed.
Service	PollForChildUpdates	Indicates whether an update to a detail row must result in the master row and all its details being picked up for processing.
Service	ShouldOrderRows	For SequencingPollingStrategy, there may be cases in which you do not want to order the rows by the sequence value.
Service	NumberOfThreads	Indicates the number of transactional threads to be used by the database adapter.
Service	FetchSize	Indicates the JDBC level cursor fetch size.
Service	MaxBatchWritingSize	Indicates the JDBC level statements per batch statement.
Service	DeleteFromCursor	Indicates the JDBC delete level while iterating over the result set.
Service	UseDirectSQL	Enables performance optimization in certain cases.
Service	ReturnSingleResultSet	Reads from multiple joined tables in a single SQL select rather than many and returns a single giant result set.
Service	MaxTransactionSize	The maximum number of rows to raise as part of one database transaction.
Service	SequencingFileName	For FileSequencingPollingStrategy only. The file contains a single value, the last read sequence value/updated time. Timestamps appear in ISO format.
Service	SchemaValidation	Validates the XML against the XML schema before raising it. This can only happen if the automatically generated file has been hand-edited (that is, to add restrictions). Invalid records are rejected.

Table 36–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	EnableStreaming	Allows LOBs and multirecord XML files to be streamed through SAX events, allowing only a small part of the payload to be kept in memory at a time.
Reference	DescriptorName	The key into the TopLink metadata indicating the root relational table. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	OutputCompletedXML	Indicates if this interaction execution have an output message that is the input message with primary keys set.
Reference	MappingsMetaDataURL	The path to the toplink.xml file that describes how a database schema has been mapped to an XML schema. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	OXMappingsMetaDataURL	In conjunction with MappingsMetaDataURL, the path to the TopLink metadata file that describes how a database schema has been mapped to a particular predefined XML schema. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	GetActiveUnitOfWork	Operations within the same JTA transaction use the same TopLink Session and connection, and writes occur together on a JTA commit.
Reference	DmlType	Indicates the type of Data Modify Language (DML) operation (merge, insert, update, delete, write).
Reference	OutputCompletedXML	Does this interaction execute have an output message that is the input message with primary keys set? This is useful when assigning primary keys on an insert.
Reference	OptimizeMerge	Sets some properties to improve performance of the merge. For one, if multiple objects are merged, the read queries to check existence and load database versions into memory for comparison are performed as a single query, using an <code>in()</code> clause on the primary key.
Reference	DetectOmissions	Indicates whether to differentiate between null and "not there" in the input XML. The difference between <code><director /></code> (omission) and <code><director xsi:nil="true"/></code> (null).
Reference	MaxBatchWritingSize	The JDBC level statements per batch statement.
Reference	UseDirectSQL	Enables performance optimization in certain cases.

Table 36–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	QueryName	The key into the TopLink metadata indicating the named query to execute, with predefined where clause and parameters.
Reference	IsQueryByExample	The query is generated dynamically on each invoke, based on matching the example input XML record.
Reference	ReturnSingleResultSet	An advanced feature that influences how many total select statements TopLink uses when querying against multiple related tables (that is, master-detail). Safest setting is the default (one per table); setting it to <code>true</code> than attempts one total, by outer joining all related selects into a single result set.
Reference	CursorWindowSize	The number of records to return at a time when selecting a very large number of rows in a single query.
Reference	EnableStreaming	Allows LOBs and multirecord XMLs to be streamed through SAX events, allowing only a small part of the payload to be kept in memory at a time.
Reference	SqlString	The SQL to execute in the pure SQL interaction. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	IsTransactional	Indicates whether the pure SQL being executed is a write that must occur within transaction boundaries.
Reference	QueryTimeout	Indicates the JDBC level <code>queryTimeout</code> setting. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	MaxRows	Indicates the JDBC level <code>maxRows</code> setting. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	SchemaName	The schema of the stored procedure to execute.
Reference	PackageName	The package of the stored procedure to execute.
Reference	ProcedureName	The procedure of the stored procedure to execute.
Reference	Overload	Further identifies the stored procedure to execute (in case of overloading) by the expected number of parameters.
Reference	QueryTimeout	Indicates the JDBC level <code>queryTimeout</code> setting.

36.1.2.3 Oracle File Adapter

Table 36–5 describes the properties available for the Oracle File Adapter.

Table 36–5 Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	PhysicalDirectory	Specifies the physical directory for the file/FTP adapter.
Service	UseHeaders	Set to <code>true</code> if the file/FTP adapter must publish metadata (for example, the file name, directory name, last modified data, file size, and to exclude the payload). This is typically used in large payload scenarios where you want to use the inbound adapter as a notifier.
Service	Recursive	If set to <code>true</code> , the file/FTP adapter processes files recursively in subdirectories.
Service	PhysicalArchiveDirectory	Directory in which the inbound file/FTP adapter archives files after they have been processed successfully.
Service	PhysicalErrorArchiveDirectory	Indicates the directory where the inbound file/FTP adapter archives files in case of failures, such as translation errors, and errors during publishing.
Service	DeleteFile	If set to <code>true</code> , the file/FTP adapter deletes the file after it has been processed.
Service	IncludeFiles	Indicates the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is processed by the file/FTP adapter.
Service	ExcludeFiles	Indicates the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is excluded and not processed by the file/FTP adapter.
Service	PollingFrequency	This parameter specifies how often does the file/FTP adapter looks for files in the inbound directory. It is specified in seconds.
Service	MinimumAge	This parameter specifies the time interval after which to pick up a file for processing. For example, this enables a large file to be completely copied into the directory before it is retrieved for processing. The age is determined by the last modified time stamp. For example, if you know that it takes three to four minutes for a file to be written, set the minimum age of pollable files to five minutes. If a file is detected in the input directory and its modification time is less than 5 minutes older than the current time, the file is not retrieved because it is still potentially being written to.
Service	PublishSize	This parameter indicates that a file contains multiple messages and specifies how many messages to process simultaneously. For example, if a certain file has 11 records and this parameter is set to 2, then the file is processed 2 records at a time and the final record is processed in the sixth iteration.

Table 36–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	Lenient	If set to <code>true</code> , then the file adapter does not complain if it does not have enough permission to read/write to the inbound directory. By default, this is set to <code>false</code> .
Service	TriggerFilePhysicalDirectory	The directory path where the file/FTP adapter looks for the trigger files.
Service	TriggerFile	The name of the trigger file that causes the inbound file/FTP adapter to be activated.
Service	TriggerFileStrategy	This parameter defines the strategy that the file/FTP adapter uses to look for the specified trigger file in the trigger file directory. The acceptable values are <code>EndpointActivation</code> , <code>EveryTime</code> , or <code>OnceOnly</code> .
Service	MaxRaiseSize	This parameter specifies the maximum number of files that the file/FTP adapter submits for processing in each polling cycle. For example, if the inbound directory has 1000 files and this parameter is set to 100 and the polling frequency is one minute, then the file/FTP adapter submits 100 files every minute.
Service	DirectorySeparator	When you choose multiple directories, the generated JCA files use <code>\ ; \</code> as the separator for these directories. If you want, you can change the separator. If you do so, manually add <code>DirectorySeparator= \"<<chosen separator>> \</code> in the generated JCA file. For example, to use a comma (,) as the separator, you must first change the separator to <code>\ , \</code> in the physical directory and then add <code>DirectorySeparator= \" , \</code> in the JCA file.
Service	AsAttachment	If set to <code>true</code> , it causes the inbound file to be published as an attachment.
Service	CharacterSet	Set it to the character set for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.
Service	Encoding	Set it to the encoding for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.
Service	ContentType	Set it to the <code>Mime-Type</code> for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.

Table 36–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	ListSorter	Specifies the sorter that the file/FTP adapter uses to sort files in the inbound direction. You can set this parameter to <code>\ "oracle.tip.adapter.file.inbound.listing.TimestampSorterAscending\ "</code> or <code>\ "oracle.tip.adapter.file.inbound.listing.TimestampSorterDescending\ "</code> . You can also plug in your own sorter by writing a class that implements <code>\ "java.util.Comparator\ "</code> .
Service	SingleThreadModel	If the value is <code>true</code> , the file/FTP adapter poller processes files in the same thread; it does not use the global in-memory queue for processing.
Service	ThreadCount	If this parameter is available, the adapter creates its own processor threads rather than depending on the global thread pool processor threads (by default, four of them). This parameter partitions the in-memory queue and each composite application gets its own in-memory queue. If the <code>ThreadCount</code> is set to <code>\ "0\ "</code> , then it behaves in the same manner as the single thread model. If <code>ThreadCount</code> is set to <code>\ "-1\ "</code> , then it starts using the global thread pool. The maximum for this property is 40.
Service	recoveryInterval	Used by the inbound adapter to configure the recovery interval in case of errors. For example, if the physical directory is nonexistent, then the adapter uses this value to perform periodic sleep/wake ups to check if the physical directory has been created and is accessible.
Reference	PhysicalDirectory	Specifies the physical directory for the file/FTP adapter.
Reference	NumberMessages	Specifies the outbound file naming convention used.
Reference	ElapsedTime	This parameter is used for outbound batching. When the time specified elapses, the outgoing file is created. The parameter is of type <code>String</code> and is not mandatory. The default value is 1.
Reference	FileSize	Indicates if an opaque schema is being used.
Reference	FileNamingConvention	This parameter is for the naming convention for the outbound write operation file.
Reference	FileName	Use this parameter to specify a static single file name during the write operation.
Reference	Append	Setting this parameter to <code>\ "true\ "</code> causes the file/FTP adapter to append to a file on the outbound. If the file does not exist, a new file is created.
Reference	UseStaging	If <code>\ "true\ "</code> , then the outbound file/FTP adapter writes translated data to a staging file and afterward streams the staging file to the target file. If <code>\ "false\ "</code> , then the outbound file/FTP adapter does not use an intermediate staging file.

Table 36–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	ConcurrentThresh hold	The maximum number of translation activities that can be allowed to execute in parallel for a particular outbound scenario. The translation step during the outbound operation is CPU intensive and hence must to be guarded as it may cause starvation in other applications/threads. The maximum is 100 (same as the maximum for <code>dspMaxThreads</code> in BPEL).
Reference	SequenceName	Specifies the Oracle database sequence name to be used if you have already configured the outbound file/FTP adapter for high availability.
Reference	<code>oracle.tip.adapter.file.mutex</code>	Set it to the class name that specifies the mutex you want to use for the outbound write operation. This class must extend the <code>"oracle.tip.adapter.file.Mutex"</code> abstraction.
Reference	<code>serializeTranslation</code>	If set to <code>"true"</code> , then the translation step is serialized using a semaphore. The number of permits for semaphore (guarding the translation step) comes from the <code>ConcurrentThreshold</code> parameter. If <code>"false"</code> , then the translation step occurs outside the semaphore.
Reference	<code>inMemoryTranslation</code>	This parameter is applicable only if <code>UseStaging</code> is <code>"false"</code> . If set to <code>"true"</code> , then the translation step occurs in-memory (that is, an in-memory byte array is created). If set to <code>"false"</code> , then the adapter creates an output stream to the target file (FTP, FTPS, and SFTP included) and allows the translator to translate and write directly to the stream.
Reference	DeleteFile	If set to <code>"true"</code> , the file/FTP adapter deletes the file after it has been processed.
Reference	IgnoreZeroByteFile	Set it to <code>true</code> if you do not want the file/FTP adapter to throw an exception during the outbound read operation if the file was not found. This parameter is ignored if the schema for the inbound file is anything other than <code>opaque</code> .
Reference	IncludeFiles	Indicates the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is processed by the file/FTP adapter.
Reference	ExcludeFiles	Includes the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is excluded and not processed by the file/FTP adapter.
Reference	Recursive	If set to <code>true</code> , the file/FTP adapter processes files recursively in subdirectories.

Table 36–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	MaxRaiseSize	This parameter specifies the maximum number of files that the file/FTP adapter submits for processing in each polling cycle. For example, if the inbound directory has 1000 files and this parameter is set to 100 and the polling frequency is one minute, then the file/FTP adapter submits 100 files every minute.
Reference	DirectorySeparator	When you choose multiple directories, the generated JCA files use <code>\";\"</code> as the separator for these directories. If you want, you can change the separator. If you do so, manually add <code>DirectorySeparator=\"<<chosen separator>>\"</code> in the generated JCA file. For example, to use a comma (,) as the separator, you must first change the separator to <code>\",\"</code> in the physical directory and then add <code>DirectorySeparator=\", \"</code> in the JCA file.
Reference	SourceFileName	The source file for the file I/O operation.
Reference	SourcePhysicalDirectory	The source directory for the file I/O operation.
Reference	SourceType	Set this to <code>\\"native\"</code> if the source file is native and to <code>\\"xml\"</code> if the source file is XML.
Reference	SourceSchema	Set it to the schema for the source file.
Reference	SourceSchemaRoot	Set it to the root element name for the source file.
Reference	TargetFileName	Indicates the target file for the file I/O operation.
Reference	TargetPhysicalDirectory	Indicates the target directory for the file I/O operation.
Reference	TargetType	Set this to <code>\\"native\"</code> if the target file is native and to <code>\\"xml\"</code> if the source file is XML.
Reference	TargetSchema	Set it to the schema for the target file.
Reference	TargetSchemaRoot	Set it to the root element name for the target file.
Reference	Xsl	Set it to the XSL transformer between the source and target.
Reference	Type	Set it to <code>\\"COPY\"</code> , <code>\\"MOVE\"</code> , or <code>\\"DELETE\"</code> .
Reference	BatchSize	Set it to the batch size for the batching transformation.
Reference	ChunkSize	Specifies the number of outbound messages.

36.1.2.4 Oracle FTP Adapter

Table 36–6 describes the properties available for the Oracle FTP Adapter.

Table 36–6 Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	timestampOffset	This parameter is used by the FTP adapter to tackle time zone issues (typically, to convert the time difference between the FTP server and the system on which the FTP adapter is running to milliseconds).
Service	PhysicalDirectory	This parameter specifies the physical directory for the file/FTP adapter.
Service	UseHeaders	Set to <code>\ "true\ "</code> if the file/FTP adapter must publish metadata (for example, the file name, directory name, last modified data, file size, and to exclude the payload. This is typically used in large payload scenarios where you want to use the inbound adapter as a notifier.
Service	FileType	Set it to either <code>\ "ascii\ "</code> or <code>\ "binary\ "</code> , depending on the requirement.
Service	Recursive	If set to <code>\ "true\ "</code> , the file/FTP adapter processes files recursively in subdirectories.
Service	PhysicalArchiveDirectory	Directory in which the inbound file/FTP adapter archives files after they have been processed successfully.
Service	PhysicalErrorArchiveDirectory	Indicates the directory where the inbound file/FTP adapter archives files in case of failures, such as translation errors, and errors during publishing.
Service	UseRemoteArchive	Set this parameter to <code>\ "true\ "</code> to notify the FTP adapter that the archival directory is on the same FTP server. If set to <code>\ "false\ "</code> , the FTP adapter uses a local file system folder for archival.
Service	UseNlst	Set this parameter to <code>\ "true\ "</code> if you need the FTP adapter to use the <code>\ "NLST\ "</code> FTP command instead of the <code>\ "LIST\ "</code> that the adapter uses by default.
Service	DeleteFile	If set to <code>\ "true\ "</code> , the file/FTP adapter deletes the file after it has been processed.
Service	IncludeFiles	Indicates the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is processed by the file/FTP adapter.
Service	ExcludeFiles	Indicates the <code>regex</code> pattern against which the file names are matched. If the name of a certain file matches this pattern, it is excluded and not processed by the file/FTP adapter.
Service	PollingFrequency	This parameter specifies how often the file/FTP adapter checks for files in the inbound directory. It is specified in seconds.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	MinimumAge	This parameter specifies the time interval after which to pick up a file for processing. For example, this enables a large file to be completely copied into the directory before it is retrieved for processing. The age is determined by the last modified time stamp. For example, if you know that it takes three to four minutes for a file to be written, set the minimum age of pollable files to five minutes. If a file is detected in the input directory and its modification time is less than 5 minutes older than the current time, the file is not retrieved because it is still potentially being written to.
Service	PublishSize	This parameter indicates that a file contains multiple messages and specifies how many messages should be processed simultaneously. For example, if a certain file has 11 records and this parameter is set to 2, then the file is processed 2 records at a time and the final record is processed in the sixth iteration.
Service	TriggerFilePhysicalDirectory	The directory path in which the file/FTP adapter looks for the trigger files.
Service	TriggerFile	The name of the trigger file that causes the inbound file/FTP adapter to activate.
Service	TriggerFileStrategy	This parameter defines the strategy that the file/FTP adapter uses to look for the specified trigger file in the trigger file directory. The acceptable values are <code>EndpointActivation</code> , <code>EveryTime</code> , or <code>OnceOnly</code> .
Service	MaxRaiseSize	This parameter specifies the maximum number of files that the file/FTP adapter submits for processing in each polling cycle. For example, if the inbound directory has 1000 files and this parameter is set to 100 and the polling frequency is one minute, then the file/FTP adapter submits 100 files every minute.
Service	DirectorySeparator	When you choose multiple directories, the generated JCA files use <code>\";\"</code> as the separator for these directories. If you want, you can change the separator. If you do, manually add <code>DirectorySeparator=\"<<chosen separator>>\"</code> in the generated JCA file. For example, to use a comma (,) as the separator, you must first change the separator to <code>\",\"</code> in the physical directory and then add <code>DirectorySeparator=\",,\"</code> in the JCA file.
Service	AsAttachment	If set to <code>\true\"</code> , it causes the inbound file to be published as an attachment.
Service	CharacterSet	Set it to the character set for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	Encoding	Set it to the encoding for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.
Service	ContentType	Set it to the Mime-Type for the attachment. This parameter is not used internally by the file/FTP adapter and is meant for third party applications that process the attachments published by the file/FTP adapter.
Service	ListSorter	Specifies the sorter that the file/FTP adapter uses to sort files in the inbound direction. You can set this parameter to <code>"oracle.tip.adapter.file.inbound.listing.TimestampSorterAscending"</code> , or <code>"oracle.tip.adapter.file.inbound.listing.TimestampSorterDescending"</code> . You can also plug in your own sorter by writing a class that implements <code>"java.util.Comparator"</code> .
Service	SingleThreadModel	If the value is <code>true</code> , the file/FTP adapter poller processes files in the same thread; it does not use the global in-memory queue for processing.
Service	ThreadCount	If this parameter is available, the adapter creates its own processor threads rather than depending on the global thread pool processor threads (by default, 4 of them). In other words, this parameter partitions the in-memory queue and each composite application gets its own in-memory queue. If the <code>ThreadCount</code> is set to <code>"0"</code> , then it behaves in the same manner as the <code>SingleThreadModel</code> . If the <code>ThreadCount</code> is set to <code>"-1"</code> , then it starts using the global thread pool. The maximum value for this property is 40.
Service	recoveryInterval	Used by the inbound adapter to configure the <code>recoveryInterval</code> in case of errors. For example, if the <code>PhysicalDirectory</code> is nonexistent, then the adapter uses this value to perform periodic sleep/wake ups to check if the <code>PhysicalDirectory</code> has been created and is accessible.
Service	jca.message.encoding	This parameter is used to override the encoding specified in the NXSD schema for the inbound file/FTP adapter.
Service	oracle.tip.adapter.file.batching.rejection.quantum	This property lets you control the size of a rejected message for the inbound file/FTP adapter partner link. For example, if you set it to <code>"100"</code> , it causes the file/FTP adapter to reject 100 lines from the file since the actual file is too large.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	useFileSystem	This parameter is used by the inbound file/FTP adapter during read-only polling in a clustered environment. Setting it to <code>\ "true\ "</code> causes the adapter to use the file system to store metadata about files that have been already processed. Setting it to <code>\ "false\ "</code> causes the adapter to use a database table.
Service	oracle.tip.adapter.file.timeout.recoverpicked.minutes	Used by the inbound high-availability adapter when using <code>\ "FILEADAPTER_IN\ "</code> as the coordinator. When a file is first claimed (enqueued) by a node for processing, the <code>FILE_PROCESSED</code> column in <code>FILEADAPTER_IN</code> is set to <code>\ "0\ "</code> . At a later point in time, when one of the decoupled processor threads picks up the file for processing, the value of <code>FILE_PROCESSED</code> column is updated from <code>\ "0\ "</code> to <code>\ "1\ "</code> . When the file is processed completely, the <code>FILE_PROCESSED</code> column is updated from <code>\ "1\ "</code> to <code>\ "2\ "</code> . However, if the processor thread picks up a file, but the node crashes before it can process the file, then the file is never processed. This parameter is used to <code>\ "undo\ "</code> the pick operation. The adapter does this by deleting the entries in the <code>FILEADAPTER_IN</code> table that have been picked up, but not processed within the value specified here.
Service	oracle.tip.adapter.file.timeout.recoverunpicked.minutes	Used by the inbound high-availability adapter when using <code>\ "FILEADAPTER_IN\ "</code> as the coordinator. When a file is first claimed by a node for processing, the <code>FILE_PROCESSED</code> column in <code>FILEADAPTER_IN</code> is set to <code>\ "0\ "</code> . At a later point in time, when the decoupled-processor thread picks up the file for processing, the value of the <code>FILE_PROCESSED</code> column is updated from <code>\ "0\ "</code> to <code>\ "1\ "</code> . When the file is processed completely, the <code>FILE_PROCESSED</code> column is updated from <code>\ "1\ "</code> to <code>\ "2\ "</code> . If the node crashes when the <code>FILE_PROCESSED</code> is still <code>\ "0\ "</code> , the file is enqueued by a node (this means no other nodes can pick this one up). However, it also means that the decoupled processor threads have still not picked this one for processing. This parameter is used to <code>\ "undo\ "</code> the <code>claim</code> (<code>enqueue_</code> operation). The adapter does this by deleting the entries in the <code>FILEADAPTER_IN</code> table that have been claimed (for example, <code>FILE_PROCESSED == \ "0\ "</code>), but not picked up until now.
Service	purgeIntervalMillis	Defines how often the poller thread purges control files for read-only polling scenarios. This defaults to 5 days.
Service	oracle.tip.adapter.file.highavailability.maxRetryInterval	The number of milliseconds after which the inbound file/FTP adapter retries to establish a database connection in distributed polling scenarios.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	<code>oracle.tip.adapter.file.highavailability.maxRetry</code>	The number of times that the inbound file/FTP adapter retries to establish a database connection in distributed polling scenarios.
Service	<code>oracle.tip.adapter.file.rejectOriginalContent</code>	Setting to <code>\ "true\"</code> causes the file/FTP adapter to reject the original actual content. If set to <code>\ "false\"</code> , the adapter rejects the XML data created because of the translation step.
Service	<code>notifyEachBatchFailure</code>	Setting to <code>\ "true\"</code> causes the file/FTP adapter to call the notification agent's <code>onBatchFailure</code> every time an error occurs in a debatching scenario. If set to <code>\ "false\"</code> , the file/FTP adapter calls <code>onBatchFailure</code> only once after all messages in the debatching scenario.
Reference	<code>PhysicalDirectory</code>	The directory path for the file/FTP adapter.
Reference	<code>FileType</code>	Set it to either <code>\ "ascii\"</code> or <code>\ "binary\"</code> , depending on the requirement.
Reference	<code>NumberMessages</code>	This parameter is used for outbound batching. The outgoing file is created when the number of messages condition is met. The parameter is of type <code>String</code> and is not mandatory. The default value is 1.
Reference	<code>ElapsedTime</code>	This parameter is used for outbound batching. When the time specified elapses, the outgoing file is created. The parameter is of type <code>String</code> and is not mandatory. The default value is 1.
Reference	<code>FileSize</code>	This parameter is used for outbound batching. The outgoing file is created when the file size condition is met. The parameter is of type <code>String</code> and is not mandatory. The default value is 1000 KB.
Reference	<code>FileNamingConvention</code>	This parameter is for the naming convention of the outbound write operation file.
Reference	<code>FileName</code>	Use this parameter to specify a static single file name during the write operation.
Reference	<code>Append</code>	Setting this parameter to <code>\ "true\"</code> causes the file/FTP adapter to append to a file in the outbound direction. If the file does not exist, a new file is created.
Reference	<code>UseStaging</code>	If <code>\ "true\"</code> , then the outbound file/FTP adapter writes translated data to a staging file and afterward streams the staging file to the target file. If <code>\ "false\"</code> , then the outbound file/FTP adapter does not use an intermediate staging file.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	ConcurrentThres hold	The maximum number of translation activities allowed to execute in parallel for a particular outbound scenario. The translation step during the outbound operation is CPU intensive and must to be guarded as it may cause starvation in other applications/threads. The maximum value is 100 (same as the maximum value for dspMaxThreads in BPEL).
Reference	SequenceName	Specifies the Oracle database sequence name to use if you have already configured the outbound file/FTP adapter for high availability.
Reference	oracle.tip.adap ter.file.mutex	Set it to the class name that specifies the mutex you want to use for the outbound write operation. This class must extend the <code>\ "oracle.tip.adapter.file.Mutex\ "</code> abstraction.
Reference	serializeTransl ation	If set to <code>\ "true\ "</code> , then the translation step is serialized using a semaphore. The number of permits for semaphore (guarding the translation step) comes from the ConcurrentThreshold parameter. If <code>\ "false\ "</code> , then the translation step occurs outside the semaphore.
Reference	inMemoryTransla tion	This parameter is applicable only if UseStaging is <code>\ "false\ "</code> . If set to <code>\ "true\ "</code> , then the translation step occurs in-memory (that is, an in-memory byte array is created). If set to <code>\ "false\ "</code> , then the adapter creates an output stream to the target file (FTP, FTPS, and SFTP included) and allows the translator to translate and write directly to the stream.
Reference	FileType	Set it to either <code>\ "ascii\ "</code> or <code>\ "binary\ "</code> , depending on the requirement.
Reference	UseRemoteArchiv e	Set this parameter to <code>\ "true\ "</code> to notify the FTP adapter that the archival directory is on the same FTP server. If set to <code>\ "false\ "</code> , the FTP adapter uses a local file system folder for archival.
Reference	DeleteFile	If set to <code>\ "true\ "</code> , the file/FTP adapter deletes the file after it has been processed.
Reference	IgnoreZeroByteF ile	Set it to <code>\ "true\ "</code> if you do not want the file/FTP adapter to throw an exception during the outbound read operation if the file was not found. This parameter is ignored if the schema for the inbound file is anything other than <code>\ "Opaque\ "</code> .
Reference	IncludeFiles	Indicates the regex pattern against which the file names are matched. If the name of a certain file matches this pattern, it is processed by the file/FTP adapter.
Reference	ExcludeFiles	Indicates the regex pattern against which the file names are matched. If the name of a certain file matches this pattern, it is excluded and not processed by the file/FTP adapter.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	Recursive	If set to <code>\ "true\"</code> , the file/FTP adapter processes files recursively in subdirectories.
Reference	MaxRaiseSize	This parameter specifies the maximum number of files that the file/FTP adapter submits for processing in each polling cycle. For example, if the inbound directory has 1000 files and this parameter is set to 100 and the polling frequency is one minute, the file/FTP adapter submits 100 files every minute.
Reference	DirectorySeparator	When you choose multiple directories, the generated JCA files use <code>\ ; \"</code> as the separator for these directories. If you want, you can change the separator. If you do, manually add <code>DirectorySeparator=\ "<<chosen separator>>\"</code> in the generated JCA file. For example, to use a comma (,) as the separator, you must first change the separator to <code>\ , \"</code> in the physical directory and then add <code>DirectorySeparator=\ , \"</code> in the JCA file.
Reference	UseNlst	Set this parameter to <code>\ "true\"</code> if you need the FTP adapter to use the <code>\ "NLST\"</code> FTP command instead of <code>\ "LIST\"</code> that the adapter uses by default.
Reference	timestampOffset	This parameter is used by the FTP adapter to tackle time zone issues (typically, to convert the time difference between the FTP server and the system on which the FTP adapter is running to milliseconds).
Reference	SourceFileName	Indicates the source file for the file I/O operation.
Reference	SourcePhysicalDirectory	Indicates the source directory for the file I/O operation.
Reference	SourceType	Set this to <code>\ "native\"</code> if the source file is native and to <code>\ "xml\"</code> if the source file is XML.
Reference	SourceSchema	Set it to the schema for the source file.
Reference	SourceSchemaRoot	Set it to the root element name for the source file.
Reference	TargetFileName	Indicates the target file for the file I/O operation.
Reference	TargetPhysicalDirectory	The target directory for the file I/O operation.
Reference	TargetType	Set this to <code>\ "native\"</code> if the target file is native and to <code>\ "xml\"</code> if the source file is XML.
Reference	TargetSchema	Set it to the schema for the target file.
Reference	TargetSchemaRoot	Set it to the root element name for the target file.
Reference	Xsl	Set it to the XSL transformer between the source and target.
Reference	Type	Set it to either <code>\ "ascii\"</code> or <code>\ "binary\"</code> , depending on the requirement.

Table 36–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	BatchSize	Set it to the batch size for the batching transformation.
Reference	SourceIsRemote	Set it to <code>\ "false\ "</code> to notify the FTP adapter that the source for the I/O operation is a local file system as opposed to a remote FTP server.
Reference	TargetIsRemote	Set it to <code>\ "false\ "</code> to I/O notify the FTP adapter that the target for the I/O operation is a local file system as opposed to a remote FTP server.
Reference	ChunkSize	Set it to the ChunkSize for the chunked interaction operation.

36.1.2.5 Oracle JMS Adapter

Table 36–7 describes the properties available for the Oracle JMS Adapter.

Table 36–7 Oracle JMS Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	<code>adapter.jms.encoding</code>	Set the encoding to be used by JMS inbound adapter.
Service	<code>adapter.jms.receive.timeout</code>	Set the receive timeout interval.
Service	<code>adapter.jms.retry.interval</code>	Set the interval the JMS adapter uses to retry.
Service	<code>adapter.jms.registration.interval</code>	Set the registration interval.
Service	<code>adapter.jms.receive.threads</code>	Set the number of receive threads.
Service	<code>JMSReplyToDestinations</code>	Set the reply-to destination.
Service	<code>JMSReplyUseMessageIdForCorrelation</code>	Specifies whether the message ID is necessary for correlation. Valid values are true or false.
Service	<code>JMSReplyUseCorrelationIdForCorrelation</code>	Specifies whether the correlation ID is necessary for correlation. Valid values are true or false.
Service	<code>suppressHeaders</code>	Specifies whether or not to bypass headers. Valid values are true or false.
Service	<code>JMSReplyPropagateJMSExpiration</code>	Specifies whether a reply message is created with a TTL value of other than 0, which is the default value in a request-reply scenario. Valid values are true or false.
Service	<code>minimumDelayBetweenMessages</code>	This is a throttling parameter (in milliseconds) that adds a brief sleep period between each inbound posted message, thus slowing down the message inflow.

Table 36–7 (Cont.) Oracle JMS Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	requestReply.useCorrelation	Specifies whether correlation is necessary in a request-reply scenario. Valid values are <code>true</code> or <code>false</code> .
Reference	requestReply.cacheReceivers	Specifies whether correlation is necessary in a request-reply scenario. Valid values are <code>true</code> or <code>false</code> .
Reference	DestinationName	The name of the JMS physical destination.
Reference	PayloadType	Indicates the JMS message type.
Reference	DeliveryMode	Sets the JMS delivery mode. Delivery modes supported by JMS API are <code>PERSISTENT</code> and <code>NON_PERSISTENT</code> .
Reference	TimeToLive	Indicates the message lifetime in milliseconds.
Reference	Priority	Indicates the JMS message priority.
Reference	PayloadEntry	Specifies the <code>MapMessage</code> entry to use as the payload.
Reference	AttachmentList	Specifies the <code>MapMessage</code> entry to use as the payload and publish as an attachment.
Reference	RequestDestinationName	Indicates the name of the JMS physical destination.
Reference	ReplyDestinationName	Indicates the name of the JMS physical destination.
Reference	AllowTemporaryReplyDestination	Allows creation of a temporary destination for receiving messages.
Reference	DurableSubscriber	Indicates the unique name of the durable subscription within a client identifier.
Reference	MessageSelector	The message selector expression used for message selection when delivering a message to the destination.
Reference	ReplyTimeout	Indicates the <code>Timeout</code> to receive a reply message.

36.1.2.6 Oracle MQ Series Adapter

Table 36–8 describes the properties available for the Oracle MQ Series Adapter.

Table 36–8 Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	MessageType	Indicates the message type of the outbound/dequeue message.
Service	QueueName	Indicates the name of the inbound/outbound queue.
Service	UseMessageEncodingForTranslation	Set to <code>true</code> if the character set <code>from</code> header is used during translation.
Service	InboundThreadCount	Indicates the number of threads used in the inbound direction.

Table 36–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	BackoutQueueName	Indicates the name of a backout queue in which the rejected message goes.
Service	BackoutQueueManagerName	Indicates the name of the backout queue manager in which the rejected message goes.
Service	MaximumBackoutCount	Indicates the number of times the adapter retries before sending the message to a backout queue.
Service	BackoutInterval	Indicates the interval between a retry for a backout message.
Service	jca.message.encoding	This encoding value overwrites any encoding specified, either in MQMD or in a schema file.
Service	UseMessageEncodingForTranslation	Set to <code>\ "true\"</code> if the <code>characterSet</code> field of MQMD is use for translation in the inbound direction. If set to <code>\ "false\"</code> , the translator uses the encoding from the schema file. You can use the <code>jca.message.encoding</code> property to overwrite any encoding specified, either in MQMD or in the schema file.
Service	FallbackReplyToQueueName	Indicates the Fallback Reply To queue name.
Service	FallbackReplyToQueueManagerName	Indicates the Fallback Reply To queue manager name.
Service	Priority	Indicates the priority of the reply/outbound message.
Service	Expiry	Indicates the expiry time for the reply/outbound message.
Service	Persistence	Indicates the persistence of the reply/outbound message.
Service	Feedback	Indicates the feedback code of the reply/outbound message. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	MessageFormat	Indicates the format of the reply/outbound message.
Service	OnDeliveryFailure	Indicates the behavior of the adapter if reply/outbound message delivery fails.
Service	SegmentIfRequired	Indicates the segmentation property for the message.
Service	CopyPersistenceFromInbound	Indicates the copy persistence from inbound message to reply message in a synchronous request-response (inbound) scenario.
Service	PropagateExpiryInterval	Indicates the propagate expiry interval from the inbound message to the reply message in a synchronous request-response (inbound) scenario.
Service	QueueName	Indicates the name of the inbound/outbound queue.

Table 36–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	GetMessageOptions	Indicates the Get message options for an outbound dequeue scenario.
Service	FilterByMsgId	Indicates the message ID to use for filtering.
Service	FilterByCorrelationId	Indicates the correlation ID to use for filtering.
Service	FilterByGroupId	Indicates the group ID to use for filtering.
Service	FilterByMsgSeqNumber	Indicates the message sequence number to use for filtering.
Service	FilterByMsgSeqNumber	Indicates the message sequence number to use for filtering.
Reference	QueueName	Indicates the name of the inbound/outbound queue.
Reference	DistributionList	Indicates the distribution list in which the message goes.
Reference	PartialDeliveryForDL	Set to false if the message must go to all queues in the DL. Otherwise, it is set to true.
Reference	SecondaryQueueManagerName	Indicates the name of the secondary queue manager.
Reference	MessageFormat	Indicates the format of the reply/outbound message.
Reference	ReplyMessageId	Indicates the correlation scheme for the message ID to be set.
Reference	ReplyCorrelationId	Indicates the correlation scheme for the correlation ID to be set.
Reference	MessageId	Indicates the correlation scheme for the outbound message.
Reference	CorrelationId	Indicates the correlation scheme for the outbound message.
Reference	ReportCOA	Indicates the COA report to be set on the message.
Reference	ReportCOD	Indicates the COD report to be set on the message.
Reference	ReportException	Indicates the exception report to be set on the message.
Reference	ReportExpiry	Indicates the expiration report to be set on the message.
Reference	ReportPAN	Indicates if PAN is required.
Reference	ReportNAN	Indicates if NAN is required.
Reference	FallbackReplyToQueueName	Indicates the Fallback Reply To queue name.
Reference	FallbackReplyToQueueManagerName	Indicates the Fallback Reply To queue manager name.
Reference	Priority	Indicates the priority of the reply/outbound message.

Table 36–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	Expiry	Indicates the expiry time for the reply/outbound message.
Reference	Persistence	Indicates the persistence of the reply/outbound message.
Reference	Feedback	Indicates the feedback code of the reply/outbound message.
Reference	ReplyToQueueName	Indicates the ReplyToQueue to set on the message. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	ReplyToQueueManagerName	Indicates the ReplyToQueueManager to be set on the message. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	OnDeliveryFailure	Indicates the behavior of the adapter if reply/outbound message delivery fails.
Reference	SegmentIfRequired	Indicates the segmentation property for the message.
Reference	PartialDeliveryForDL	Set to <code>true</code> if partial delivery to the distribution list is allowed. Otherwise, it is set to <code>false</code> .
Reference	SyncSolicitRequest	Set to <code>true</code> if it is a synchronous request-response (outbound) scenario. Otherwise, it is set to <code>false</code> . Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	ResponseOpaqueSchema	Set to <code>true</code> if a reply/report message in a asynchronous request-response scenario has an opaque schema.
Reference	ResponseWaitInterval	Indicates the wait time for the reply/report to arrive.
Reference	ResponseNoMessageAllowed	Set to <code>true</code> if no message is allowed as a reply/report after the specified wait interval.
Reference	ResponseGetMessageOptions	Indicates the Get message options for a reply/report.
Reference	ResponseQueueOpenOptions	Indicates the open options for a reply/report queue.
Reference	PutMessageOptions	Indicates the Put message options.
Reference	QueueOpenOptions	Indicates the open options for the queue. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	UseMessageEncodingForTranslation	Set to <code>true</code> if the character set from the header is used during translation.

Table 36–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	DynamicQueueName	Indicates the dynamic queue name.
Reference	AlternateUserID	Indicates the alternate user ID.
Reference	WaitInterval	Indicates the wait interval for the outbound dequeue.
Reference	NoMessageAllowed	Set to true if no message is allowed in the outbound dequeue scenario after a specified wait interval.
Reference	UseMessageEncodingForTranslation	Set to <code>"true"</code> if the <code>characterSet</code> field of MQMD is to be used for translation in the inbound direction. If set to <code>"false"</code> , the translator uses the encoding from the schema file. You can use the <code>jca.message.encoding</code> property to overwrite any encoding specified, either in MQMD or in the schema file.

36.1.2.7 Oracle Socket Adapter

Table 36–9 describes the properties available for the Oracle Socket Adapter.

Note: Properties such as `TransMode` and `XSLT`, which are not listed in Table 36–9, are displayed in the **Properties** tab. However, you cannot edit properties that are not listed in Table 36–9. Making changes to noneditable properties makes the composite invalid and requires remodeling of the composite.

Table 36–9 Oracle Socket Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	Port	The port on which the inbound socket adapter listens for incoming socket connections.
Service	Encoding	Indicates the character encoding of the native data. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	ByteOrder	Indicates the byte order of the native data as <code>bigEndian</code> or <code>littleEndian</code> . Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	Host	Indicates the host to which the outbound socket adapter opens a socket connection.
Reference	Port	Indicates the port to which the outbound socket adapter tries to connect.

Table 36–9 (Cont.) Oracle Socket Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	Encoding	Indicates the character encoding of the native data. Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	ByteOrder	Indicates the byte order of the native data as <code>bigEndian</code> or <code>littleEndian</code> . Note that you <i>cannot</i> edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.

36.1.2.8 Oracle JCA Adapters Endpoint Properties

[Table 36–10](#) describes the endpoint properties available for the Oracle JCA Adapters.

You cannot add or remove the endpoint properties without redeploying the composite. However, you can change the endpoint properties by using Oracle Enterprise Manager Fusion Middleware Control Console without redeploying the composite.

Table 36–10 Oracle JCA Adapters Endpoint Properties

Direction (Inbound/Outbound)	Property Name	Description
Inbound	activationInstances	This property increases the number of polling (worker) threads for any inbound JCA resource adapter. It is only meant to help increase concurrency (scalability) for adapters that do not natively support multithreading. Since most of the adapters included with Oracle Fusion Middleware natively support multithreading, this setting is mostly useful to third party (custom) JCA adapters, which do not natively support multithreading. Set this property to the number of threads required for a particular JCA service (endpoint).
Inbound	UseWorkManager	By default, JCA adapters use the standard Oracle Fusion Middleware Oracle WebLogic Server work manager for starting polling (worker) threads. However, if you want a particular JCA service (endpoint) to use a custom (user-defined) work manager, then this property enables you to specify the name of a custom work manager. The work manager is only used to start the JCA Service (endpoint) for which this property has been defined.

Table 36–10 (Cont.) Oracle JCA Adapters Endpoint Properties

Direction (Inbound/Outbound)	Property Name	Description
Inbound	<code>rejectUncorrelatedMessages</code>	When native correlation is used to correlate an inbound asynchronous message with a previous outbound message (by way of defining a callback interface (for a reference) or by a midprocess receive (in BPEL)), the JCA framework normally tries to post the message to the composite, whether the inbound message can be correlated or not. By setting this property to <code>true</code> , the JCA framework rejects a message, which cannot be correlated (when native correlation is active).
Inbound	<code>jca.retry.count</code>	Indicates the maximum number of retries before rejection.
Inbound	<code>jca.retry.interval</code>	Indicates the time interval between retries (measured in seconds).
Inbound	<code>jca.retry.backoff</code>	Indicates the retry interval growth factor (positive integer).
Inbound	<code>jca.retry.maxInterval</code>	Indicates the maximum value of retry interval; that is, a cap if backoff is greater than 1.
Outbound	<code>jca.retry.count</code>	Indicates the maximum number of retries before throwing a retryable error condition back to the invoking service engine.
Outbound	<code>jca.retry.interval</code>	Indicates the time interval between retries (measured in seconds).
Outbound	<code>jca.retry.backoff</code>	Indicates the retry interval growth factor (positive integer).
Outbound	<code>jca.retry.maxInterval</code>	Indicates the maximum value of retry intervals; that is, a cap if the backoff is greater than 1.
Outbound	<code>jca.retry.maxPeriod</code>	Indicates the maximum total retry period. Retries do not occur longer than the value specified in this parameter.

The following examples show how to specify the endpoint properties in the `composite.xml` file in Oracle JDeveloper:

- [Example 1: Specifying Endpoint Properties - Inbound](#)
- [Example 2: Specifying Endpoint Properties - Outbound](#)

Example 1: Specifying Endpoint Properties - Inbound

```
<service name="Inbound">
  <interface.wsdl interface="http://xmlns...#wsdl.interface(Inbound_PortType)"/>
  <binding.jca config="Inbound_db.jca">
    <property name="jca.retry.interval">5</property>
    <property name="jca.retry.interval">1</property>
    <property name="jca.retry.backoff">2</property>
    <property name="jca.retry.maxInterval">6</property>
  </binding.jca>
</service>
```

```
</service>
```

Notice that the inbound property `jca.retry.maxPeriod` is not supported (like it is in outbound).

Example 2: Specifying Endpoint Properties - Outbound

```
<reference name="Outbound">
  <interface.wsdl interface="http://xmlns...#wsdl.interface(Outbound_PortType)"/>
  <binding.jca config="Outbound_jms.jca">
    <property name="jca.retry.count">5</property>
    <property name="jca.retry.interval">1</property>
    <property name="jca.retry.backoff">2</property>
    <property name="jca.retry.maxInterval">6</property>
    <property name="jca.retry.maxPeriod">30</property>
  </binding.jca>
</reference>
```

36.1.3 Changing the Endpoint Reference and Service Key for Oracle Service Registry Integration

If a reference binding component of the SOA composite application is integrated with Oracle Service Registry (OSR), you can change the endpoint reference and service key in the **General** section of this page.

The **UDDI ServiceKey** field automatically displays the value of `binding.ws.property="oracle.soa.uddi.serviceKey"` from the `composite.xml` file if you selected to use UDDI for run-time resolution of the endpoint.

You can edit the **UDDI ServiceKey** field after the SOA composite application has been deployed to either:

- Change the value as needed
- Add it to a composite that did not use UDDI for run-time endpoint resolution.

The **Endpoint Address** field represents the endpoint location as defined with the `ws.binding.endpointURI` property in the `composite.xml` file. The **Endpoint Address** field is not filled in after the SOA composite application has been deployed, but can override the endpoint location in the concrete WSDL.

The endpoint location order of precedence is as follows:

- Dynamically set the binding `oracle.soa.uddi.serviceKey` at run time in the **UDDI ServiceKey** field.
- Dynamically set the binding property `endpointURI` at run time in the **Endpoint Address** field.
- Use the binding property value for `oracle.soa.uddi.serviceKey` in the `composite.xml` file (viewable and editable in Oracle Enterprise Manager Fusion Middleware Control Console).
- Use the binding property value for `endpointURI` in the `composite.xml` file (viewable and editable in Oracle Enterprise Manager Fusion Middleware Control Console).
- Use the location specified in the concrete WSDL.

Figure 36–1 provides shows both fields.

Figure 36–1 Endpoint Reference and Service Key Properties

CO_SOA_ADFBC [1.0] SOA Composite Logged in as weblogic Page Refreshed Aug 17, 2009 12:23

Confirmation
Your changes have been saved.

CO_SOA_ADFBC [1.0] > Reference Home

Service1 (Web Service)

Dashboard Policies Faults **Properties** Apply Revert

General

UDDI ServiceKey
 Endpoint Address
 Maintain Session

HTTP Basic Authentication

HTTP User Name
 HTTP User Password
 Preemptive False

HTTP Chunking

Stop Chunking True
 Chunking Size(bytes)

HTTP Timeout

HTTP Read Timeout (ms)
 HTTP Connection Timeout (ms)

HTTP Proxy

Proxy Host
 Proxy Port
 Proxy User Name
 Proxy User Password
 Proxy Realm
 Proxy Authentication Type

1. In the **UDDI ServiceKey** field, change the service key to use during run time.
2. In the **Endpoint Address** field, enter the endpoint address to use during run time.

You can edit both fields. The value for one field is selected and used based on what you selected in the UDDI Deployment Options dialog during design time. The changes to these fields are persisted in the `composite.xml` file during run time.

For information about design-time tasks such as how to publish a business service, create a connection to the UDDI registry, and configure a SOA project to invoke a service from the registry, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

For information about how to set the inquiry URL during run time, see [Section 3.1, "Configuring SOA Infrastructure Properties."](#)

36.1.3.1 Configuring Caching of WSDL URLs

Caching of endpoint WSDL URLs occurs by default during run time. If an endpoint WSDL URL is resolved using the `orauddi` protocol, subsequent invocations retrieve the WSDL URLs from cache, and not from OSR. You can increase the amount of time that the endpoint WSDL URL is available in cache for inquiry by the service key with the `UddiCacheLifetime` property. This property invalidates the cache at specified time intervals. The default value is 86400 seconds. The minimum value is 300 seconds.

To configure endpoint caching of WSDL URLs:

1. From the **SOA Infrastructure** menu, select **Administration > System MBean Browser**.
2. Select **Application Defined MBeans > oracle.as.soainfra.config > Server: soa_server1 > SoaInfraConfig > soa-infra > Attributes**.
3. Click the `UddiCacheLifetime` property on the right side of the page.
4. Enter a value.
5. Click **Apply**.

Monitoring Service and Reference Binding Components

This chapter describes how to monitor service and reference binding components included in SOA composite applications.

This chapter includes the following topics:

- [Section 37.1, "Monitoring Binding Component Instances and Faults"](#)
- [Section 37.2, "Monitoring Binding Component Rejected Messages"](#)

For more information, see the following documentation:

- [Section 1.2.5, "Understanding Binding Components"](#) for conceptual details about binding components
- [Part XII, "Administering Oracle B2B"](#) for details about Oracle B2B
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

37.1 Monitoring Binding Component Instances and Faults

You can monitor instances and faults for all binding components included in SOA composite applications.

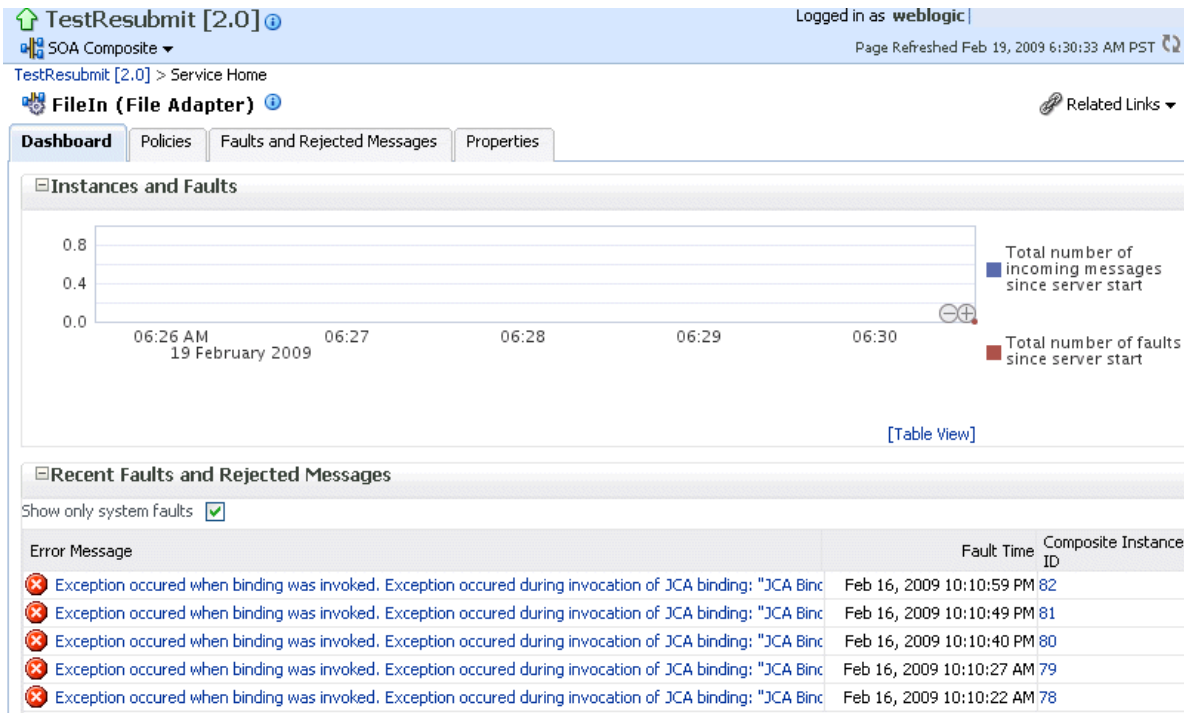
To monitor binding component instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Click **Dashboard** (if it is not selected).
3. Select a specific service or reference in the **Services and References** section.
4. If you select a service that is a JCA adapter or Web service, the Dashboard page displays the following details:
 - A graphic representation of the total incoming messages and faults since server startup.

- Recently rejected messages, including the message name, time of the fault, and the type of fault (business or system).



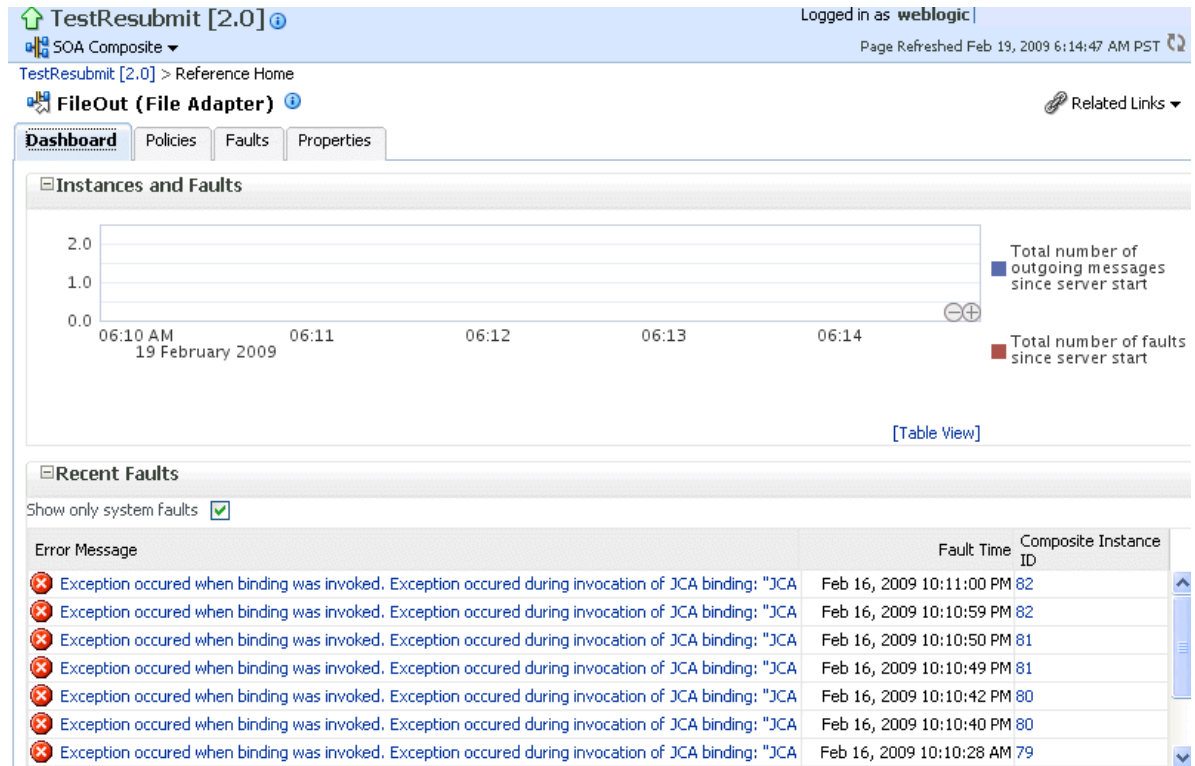
- If you select a service that invokes a SOA composite application through a remote RMI call (known as direct binding), the Dashboard page displays similar details as described in Step 4. Direct binding enables SOA composite applications to be invoked through an API that supports transaction and security propagation across JVMs.

The word **Direct** displays in the header to indicate that this is a direct binding component. However, no **Policies** and **Properties** tabs are available for direct binding components.



6. If you select a reference, the Dashboard page displays the following details:
 - A graphic representation of the total outgoing messages and faults since server startup.
 - Recent faults, including the time of the fault and the type of fault (business or system).

Reference binding components are only available for JCA adapters and Web services.



37.2 Monitoring Binding Component Rejected Messages

You can monitor rejected messages for all binding components included in a SOA composite application.

To monitor binding component rejected messages:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
-------------------------------------	---

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. | <ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application. |
|---|---|

2. Select a service or reference in the **Services and References** section.
3. Click **Faults and Rejected Messages**.

The Faults and Rejected Messages page shows the list of faults and rejected messages, including details such as the error message, time of the fault, and the

associated composite instance ID. Depending upon the type of the binding component selected, the faults can be on the incoming messages processed by a service binding component or outgoing messages processed by a reference binding component.

You can perform fault recovery from this page.


The screenshot shows the 'Faults and Rejected Messages' page in the Oracle Fusion Middleware Administration Console. The page is titled 'client (Web Service)' and has tabs for 'Dashboard', 'Policies', 'Faults and Rejected Messages', and 'Properties'. The 'Faults and Rejected Messages' tab is active. The page includes search filters for 'Error Message Contains', 'Fault ID', 'Fault Time From', and 'Fault Time To'. Below the filters is a 'Search' button and a 'Reset' button. The 'Fault Type' is set to 'All Faults'. A 'Delete Rejected Messages' button is visible. The table below shows a list of rejected messages with columns for 'Error Message', 'Fault Time', 'Rejected Message', and 'Composite Instance ID'.

Error Message	Fault Time	Rejected Message	Composite Instance ID
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:13 PM		13
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:13 PM		17
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:13 PM		12
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:13 PM		18
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:12 PM		19
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:12 PM		15
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:12 PM		11
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:12 PM		14
<faultType>1</faultType><NegativeCredit xmlns="http://services.otn.com"><par	Apr 26, 2009 11:56:12 PM		16

4. Click a specific message in the **Error Messages** column to display complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. A **Recover Now** option displays for recoverable faults. Click **Recover Now** to perform fault recovery.
5. If you want to delete rejected messages, click **Delete Rejected Messages**.
6. This displays a dialog for specifying a criteria for deleting rejected messages.

Delete : Rejected Messages ✕

Specify the criteria for selecting and deleting rejected messages directly from the database. Any selections you may have made in the Faults and Rejected Messages page will be ignored for this operation. To delete a fault, delete the associated composite instance from the Instances page.

 Common Delete Options

Preset Batches ▼

Delete All

This will delete all the rejected messages of this service.

Delete All Rejected Messages That Match These Criteria

Fault ID

Start Time From  (UTC-08:00) US Pacific Time

Start Time To  (UTC-08:00) US Pacific Time

7. Specify a criteria, and click **Delete**.

Managing Service and Reference Binding Components

This chapter describes how to manage Web service and JCA adapter service and reference binding components included in SOA composite applications.

This chapter includes the following topic:

- [Section 38.1, "Managing Binding Component Policies"](#)

Notes:

- Oracle SOA Suite does not support multiple bindings for service or reference binding components (for example, specifying both SOAP 1.1 and SOAP 1.2 in the `composite.xml` file). Support is only provided for a single Web service binding per service or reference. If you specify multiple bindings, remove all but one and redeploy your SOA composite application.
- The only type of binding component to which you can attach a policy is a Web service. If you click the **Policies** tab for another type of binding component, such as a JCA adapter, ADF-BC service, or EJB service, the following message is displayed:

Policies can be attached to web service bindings and SOA components.

For more information, see the following documentation:

- [Section 1.2.5, "Understanding Binding Components"](#) for conceptual details about binding components
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

38.1 Managing Binding Component Policies

You can attach and detach security policies to and from binding components included in a currently deployed SOA composite application. Policies apply security to the delivery of messages. Oracle Fusion Middleware uses a policy-based model to manage Web services.

Note: Before attaching policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use in your environment.

To manage binding component policies:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

The list of currently deployed SOA composite applications appears.

2. In the **Composite** list, select an application.

The Dashboard page for the selected SOA composite application appears. The **Services and References** section of this tab displays the binding components being used in the application.

3. In the **Services and References** section, select a service or reference.
4. Click **Policies**.

The Policies page enables you to attach and detach security policies to and from a service or reference binding component. The policies table displays the attached policy name, the policy reference status (enabled or disabled), the category (Management, Reliable Messaging, MTOM Attachment, Security, or WS Addressing), the violations since the SOA Infrastructure was last restarted, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.

AutoLoanComposite [1.0] | Logged in as weblogic | Page Refreshed Feb 19, 2009 6:39:39 AM PST

AutoLoanComposite [1.0] > Service Home

client (Web Service) | Related Links

Dashboard | **Policies** | Faults and Rejected Messages | Properties

Attach/Detach

Policy Name	Category	Policy Reference Status	Total Violations	Security Violations		
				Authentication	Authorization	Confide
oracle/log_policy	Management	Enabled	0	n/a	n/a	

Security Configuration Details
No policy is currently selected, or there are no properties for the selected policy.

5. Click **Attach/Detach**.

If multiple components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

Note: If you attach a policy to a service binding component (client) and initiate an instance of the SOA composite application in the Test Web Service page, and the policy attachment fails, an Oracle Web Services Manager (OSWM) policy error is not generated and viewable in Oracle Enterprise Manager Fusion Middleware Control Console.

If the same SOA composite application instance is initiated externally, a policy error is generated and viewable in Oracle Enterprise Manager Fusion Middleware Control Console.

For service components (such as a BPEL process) or reference binding components, the policy error is always generated and viewable, regardless of whether the application instance was initiated externally or internally through the Test Web Service page.

6. Select the service or component to which to attach or detach a policy.
This invokes a dialog for attaching or detaching policies.
Policies currently attached appear in the **Attached Policies** section. Additional policies available for attachment appear in the **Available Policies** section.
7. Select policies to attach that are appropriate to your environment.
8. Click **Attach**.
9. When you are finished attaching policies, click **Validate**.
10. If an error message appears, make the necessary corrections until you no longer have any validation errors.
The attached policy displays in the policies table.
11. Click **OK**.

For more information, see the following documentation:

- [Section 1.4.3.2, "Understanding Policies"](#)
- [Section 8.8, "Managing SOA Composite Application Policies"](#) for the dialogs that display during policy attachment
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use for your environment

38.1.1 Override Policy Configuration Property Values

Your environment may include multiple servers with the same policies. However, each server may have their own specific policy requirements. To satisfy your run-time requirements, you can override the property values for some management and security policies attached to service and reference binding components.

1. Follow the instructions in [Section 38.1, "Managing Binding Component Policies"](#) to attach a policy to a service or reference binding component.
2. Select the attached policy in the table.

The **Security Configuration Details** table displays at the bottom of the page.

File_MEDComposite_2 (Web Service) Rela

Dashboard **Policies** Faults and Rejected Messages Properties

Attach/Detach Disable

Policy Name	Category	Policy Reference Status	Total Violations	Security Violations		
				Authentication	Authorization	Confidentiality
oracle/log_policy	Management	Enabled	0	n/a	n/a	n/a
oracle/binding_authorization_permitall_policy	Security	Enabled	0	0	0	0
oracle/wss10_saml_token_with_message_prot	Security	Enabled	0	0	0	0

Security Configuration Details Apply Revert

Name	Value	Original Value
keys:ore.sig.csf.key	<input type="text"/>	
keys:ore.enc.csf.key	<input type="text"/>	

3. In the **Value** field, enter a value to override the default value in the **Original Value** column.
4. Click **Apply**.

For more information on overriding policy values, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.

38.1.2 Limitation on MTOM Optimization in Reference Binding Component Messages

MTOM optimization is not supported for messages sent from a reference binding component to an external service. All binary messages leaving the reference binding component increase by 33%.

Part XV

Administering Oracle BPMN Process Service Components and Engines

This part describes how to administer Oracle BPMN Process Service Components and Engines.

This part includes the following chapters:

- [Chapter 39, "Configuring Oracle BPMN Process Service Components and Engines"](#)
- [Chapter 40, "Monitoring BPMN Process Service Components and Engines"](#)
- [Chapter 41, "Managing Oracle BPMN Service Components and Engines"](#)

Configuring Oracle BPMN Process Service Components and Engines

This chapter includes the following topics:

- [Section 39.1, "Introduction to Configuring Oracle BPMN Service Components and Engines"](#)
- [Section 39.2, "Configuring BPMN Process Service Engine Properties"](#)

39.1 Introduction to Configuring Oracle BPMN Service Components and Engines

The properties you configure are used by the BPMN process service engine during processing of BPMN service components.

39.2 Configuring BPMN Process Service Engine Properties

To configure BPMN process service engine properties:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select SOA Administration > BPMN Properties. 	<ol style="list-style-type: none"> 1. Right-click soa-infra. 2. Select SOA Administration > BPMN Properties.

The BPMN Service Engine Properties page displays properties for setting audit trail and large document thresholds, setting dispatcher thread properties, validating payload schema, and setting the audit trail level.

The screenshot shows the 'BPMN Service Engine Properties' configuration page. The page title is 'soa-infra(11.1.1)' and it is logged in as 'weblogic|Host dadyma0193.us.oracle.com'. The page was refreshed on Sep 8, 2009 at 9:23:15 AM PDT. The page contains the following properties:

- Audit Level:** Inherit (dropdown menu)
- Audit Trail Threshold (Byte):** 50000
- Large Document Threshold (Byte):** 100000
- Dispatcher System Threads:** 2
- Dispatcher Invoke Threads:** 20
- Dispatcher Engine Threads:** 30
- Payload Validation:**

There is a link for 'More BPMN Configuration Properties...' at the bottom left of the form area.

2. Make changes to the service engine properties that are appropriate to your environment.

Property	Description
Audit Level	<p>Select one of the following options:</p> <ul style="list-style-type: none"> ■ Off: Composite instance tracking and payload tracking information is not collected. ■ Inherit: Logging is equal to the SOA Infrastructure audit level. This setting enables the BPMN audit level to automatically change when the global setting is changed. Setting a different audit level tracking in this page overrides the tracking set at the SOA Infrastructure level. ■ Minimal: The BPMN service engine does not capture any audit details. Therefore, they are not available in the flow audit trails. All other events are logged. ■ Production: The BPMN service engine does not capture the payload. The payload details are not available in the flow audit trails. Payload details for other BPMN activities are collected. This level is optimal for most normal operations and testing. ■ Development: Allows both composite instance tracking and payload tracking. All events are logged. However, it may impact performance. This level is useful mostly for debugging purposes.
Audit Trail Threshold	<p>Enter the maximum size in bytes of an instance audit trail before it is chunked and saved in a dehydration store table separate from the audit trail. If the threshold is exceeded, the View XML link is shown in the audit trail instead of the payload.</p>
Large Document Threshold	<p>Enter the maximum size of a generated document within a BPMN process component instance before it is stored in a separate table in the dehydration store.</p>
Dispatcher System Threads	<p>Specify the total number of threads allocated to process system dispatcher messages. System dispatcher messages are general clean-up tasks that are typically processed quickly by the server (for example, releasing stateful message beans back to the pool). Typically, only a small number of threads are required to handle the number of system dispatch messages generated during run time.</p> <p>The default value is 2 threads. Any value less than 1 thread is changed to the default.</p>
Dispatcher Invoke Threads	<p>Specify the total number of threads allocated to process invocation dispatcher messages. Invocation dispatcher messages are generated for each payload received and are meant to instantiate a new instance. If the majority of requests processed by the engine are instance invocations (as opposed to instance callbacks), greater performance may be achieved by increasing the number of invocation threads. Higher thread counts may cause greater CPU utilization due to higher context switching costs.</p> <p>The default value is 20 threads. Any value less than 1 thread is changed to the default.</p>
Dispatcher Engine Threads	<p>Specify the total number of threads allocated to process engine dispatcher messages. Engine dispatcher messages are generated whenever an activity must be processed asynchronously. If the majority of processes deployed are durable with a large number of dehydration points (midprocess receive, onMessage, onAlarm, and wait activities), greater performance may be achieved by increasing the number of engine threads. Note that higher thread counts can cause greater CPU utilization due to higher context switching costs.</p> <p>The default value is 30 threads. Any value less than 1 thread is changed to the default.</p>

Property	Description
Payload Validation	Select to enable validation of inbound and outbound messages. Nonschema-compliant payload data is intercepted and displayed as a fault. Note: This setting is independent of the SOA composite application and SOA Infrastructure payload validation level settings. If payload validation is enabled at both the service engine and SOA Infrastructure levels, data is checked twice: once when it enters the SOA Infrastructure, and again when it enters the service engine.

3. Click **Apply**.

4. If you want to configure advanced BPMN properties in the System MBean Browser, click **More BPMN Configuration Properties**. Properties that display include the following. Descriptions are provided for each property.

- **AuditDetailThreshold**—The maximum size (in bytes) an audit trail details string can be before it is stored separately from the audit trail
- **AuditLevel**—Controls the amount of audit events logged by a process; currently supported logging levels are: "off": absolutely no logging performed whatsoever; may result in a slight performance boost for processing instances
- **BpelcClasspath**—The extra classpath need to be included when compiling BPMN generated java sources.
- **ConfigMBean**—If true, it indicates that this MBean is a Config MBean.
- **CubeInstanceExpiration**—Cube instance expiration time in hours. The calculated information records which have been existing in cube schema for more than "cubeInstanceExpiration" time will be deleted.
- **CubeTimerMaxErrorCount**—Maximum allowed number of consecutive errors during cube timer processing. Once number of errors reaches "CubeTimerMaxErrorCount", the cube timer skips processing
- **CubeTimerMaxSkipOnErrorCount**—Specifies the number of times the timer skips processing once the number of errors reaches "CubeTimerMaxErrorCount"

Note: Once the cube timer errors out consecutively for "CubeTimerMaxErrorCount" times, the cube timer skips the timeout processing for "CubeTimerMaxSkipOnErrorCount" times. It then resumes the normal timeout processing. The calculated value is $\text{CubeTimerMaxErrorCount} * \text{CubeUpdateFrequency}$ that is equal to 3000 seconds.

If the lockout time needs to be less, you must either reduce the time to a lesser value or change the number of times to skip timeout processing.

- **CubeUpdateFrequency**—Frequency in seconds at which cube action calculates the workload
- **DisableActions**—Comma delimited list of disabled measurement actions (e.g. "CubeCommand, BAMCommand"). Also see PublishMaxTrackBackCount.
- **DisableProcessTracking**—If set to "true" the audit will disable process tracking. The default value "false".

- **DisableSensors**—If set to "true" the engine will disable all calls to sensors. The default value "false".
- **DispatcherEngineThreads**—The total number of threads that will be allocated to process engine dispatcher messages
- **DispatcherInvokeThreads**—The total number of threads that will be allocated to process invocation dispatcher messages
- **DispatcherMaxRequestDepth**—Maximum number of internal messages the engine will process. If this number is exceeded, new messages won't be dispatched. The default value is 600.
- **DispatcherSystemThreads**—The total number of threads that will be allocated to process system dispatcher messages
- **eventProvider**—If true, it indicates that this MBean is an event provider as defined by JSR-77.
- **eventTypes**—All the event's types emitted by this MBean.
- **ExpirationMaxRetry**—The maximum number of times a failed expiration call (wait/onAlarm) will be retried before failing
- **ExpirationRetryDelay**—The delay between the expiration retries. The default value is 120 seconds.
- **InstanceKeyBlockSize**—The size of the block of instance ids to allocate from the dehydration store during each fetch
- **LargeDocumentThreshold**—The maximum size (in bytes) a BPMN variable can be before it is stored in a separate location from the rest of the instance scope data
- **MaximumNumberOfInvokeMessagesInCache**—specify the number of invoke messages that can be kept in the in-memory cache, once the engine hits this limit, it would push the message to dispatcher in-memory cache, instead it would save the message in the db and these saved messages can be recovered using recovery job, you can use value -1 to disable
- **objectName**—The MBean's unique JMX name
- **OneWayDeliveryPolicy**—Changes whether the one-way invocation messages are delivered
- **PeopleQueryTimeout**—specify quartz cron expression People Query. People Query in Logical People Group is re-evaluated based on this cron expression
- **PublishMaxTrackBackCount**—Maximum number of records traversed from last audit record, checked for measurement and action enabled and published if so
- **QualityOfService**—flag to enable or disable coherence cache for BPMN service engine. use CacheEnabled for enabling coherence.
- **ReadOnly**—If true, it indicates that this MBean is a read only MBean.
- **RestartNeeded**—Indicates whether a restart is needed.
- **StatsLastN**—The size of the "most recently processed" request list
- **SystemMBean**—If true, it indicates that this MBean is a System MBean.
- **ValidateXML**—If set to "true" the engine will apply schema validation for incoming and outgoing XML documents. The default value "false".

- Version—version of the config file
- WFOracleUcmUrl—Specify URL for Oracle UCM repository administration server

Monitoring BPMN Process Service Components and Engines

This chapter describes how to monitor BPMN process service components and service engines.

This chapter includes the following topics:

- [Section 40.1, "Viewing the Audit Trail and Process Flow of a BPMN Process Service Component"](#)
- [Section 40.2, "Monitoring BPMN Process Service Component Instances and Faults"](#)
- [Section 40.3, "Monitoring BPMN Process Service Component Instances"](#)
- [Section 40.4, "Monitoring BPMN Process Service Engine Instances and Faults"](#)
- [Section 40.5, "Monitoring BPMN Process Service Engine Request and Thread Statistics"](#)
- [Section 40.6, "Monitoring BPMN Process Service Engine Instances"](#)
- [Section 40.7, "Monitoring Deployed BPMN Processes in the Service Engine"](#)

For more information, see the following sections:

- [Section 1.2.4, "Understanding Service Components and Service Component Instances"](#)
- [Section 1.2.6, "Understanding Service Engines"](#)

40.1 Viewing the Audit Trail and Process Flow of a BPMN Process Service Component

This section describes how to view the audit trail and process flow of a BPMN process service component in a SOA composite application instance.

Note: This section assumes a SOA composite application instance has been initiated. If not, see [Section 8.1, "Initiating a SOA Composite Application Test Instance"](#) for instructions.

To view the audit trail and process flow of a BPMN process service component:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Home .	1. Under soa-infra , select a specific SOA composite application.
2. Select the Deployed Composites tab.	
3. In the Composite section, select a specific SOA composite application.	

The Dashboard page for the selected composite application appears.

2. Use one of the following methods to select an instance of the application:
 - For recent instances of this application, click the instance number of an instance in the **Instance ID** column of the **Recent Instances** section.
 - For all instances of this application, click the **Instances** tab, then click a specific instance in the **Instance ID** list.

The Flow Trace page displays the following details:

- The **Faults** section shows the faults occurring in the services, service components, and references that comprise the SOA composite application. Sensors enable you to monitor BPMN process activities, variables, and faults during run time. Selecting a fault highlights the row in the **Trace** section in which the fault occurred. Closing the fault clears the selection in the **Trace** section.
- The **Sensors** section displays details about composite sensors included in the service and reference binding components of the SOA composite application. The total number of sensors is shown in the section header. Composite sensors can be added to service and reference binding components during design time in Oracle JDeveloper. You cannot add composite sensors to service components. Selecting a composite sensor in this section highlights the service or reference in the **Trace** section in which composite sensor data was collected. Closing the sensor clears the selection in the **Trace** section.

Note: Expand the **Faults** or **Sensors** sections one at a time. The fault or sensor information only displays for viewing in this way.

- The **Trace** section shows the sequence of the message flow through the services, service components, and references that comprise the SOA composite application.

The flow trace is a run-time trail of a message flow identified by an execution context ID (ECID) that displays in the upper right corner of the page. An ECID enables you to track a message flow that crosses instances of different composites. The flow trace lists all services, references, components across composites participating in the flow.

Flow Trace [?]
 This page shows the flow of the message through various composite and component instances. [?]

Data Refreshed Oct 22, 2009 3:30:23 PM PDT

ECID 00001GMaBc^2JRALJap2if1AlbvtH00005Q:46106783
 Started Oct 2, 2009 1:52:39 AM

Faults (2)

Select a fault to locate it in the trace view.

Error Message	Recovery	Fault Time	Fault Location	Composite Instance
<bpeFault><faultType> <message>0</message></faultType><bindingFault xmlns:...	Recover...	Oct 2, 2009 11:52:47 AM	BPMNThatFails of bpmn:1	FailsTruly of 1
Exception occurred when binding was invoked. Exception occurred during invocation of J...		Oct 2, 2009 11:52:46 AM	nonExistentFile of referer	FailsTruly of 1

Sensors (0)

Trace

Click a component instance to see its detailed audit trail.
 Show Instance IDs

Instance	Type	State	Time	Composite Instance
BPMNThatFails.service	Service	Completed	Oct 2, 2009 11:52:39 AM	FailsTruly of 1
BPMNThatFails	BPMN Component	Running	Oct 2, 2009 11:52:47 AM	FailsTruly of 1
nonExistentFile	Reference	Faulted	Oct 2, 2009 11:52:46 AM	FailsTruly of 1

For the flow example in the **Trace** section, the service binding component and reference binding component involved in the flow have successfully received and processed messages.

Note the following restrictions with ECIDs:

- A separate ECID displays for each instance of a composite application and not for the composite level ECID that can be used to track the complete flow of any instances for the composite application.
- To get complete flow information, you must find the composite level ECID in the log files. Use that value to get all information for a particular composite and therefore all its executed instances.
- ECIDs are not propagated through business events. This can limit the amount of logging information that is collected. For example, if you publish an event that is subscribed to in the same composite application, limited logging information is available.

3. Select a fault in the **Faults** section.

This highlights the row in the **Trace** section in which the fault occurred.

4. Close the fault to clear the selection in the **Trace** section.

5. Expand the **Sensors** section to display composite sensors.

6. Select a sensor in the **Sensors** section.

This highlights the row in the **Trace** section in which the composite sensor data was collected.

7. In the **Instance** column of the **Trace** section, click a specific BPMN process service component instance. Service component instances can be accessed from this section; services and references cannot be accessed.

The Instance page appears.

Use these pages to view the audit trail, flow and faults of a BPMN process service component instance. The following links provide additional details about the instance:

- **Flow Trace link:** Click the breadcrumbs in the upper left corner of the page to access the flow trace for the ECID (composite instance) that contains this BPMN component instance.

- **Information icon:** Click the information icon to the right of the name of the BPMN component (in the page title) to see biographical information about this BPMN instance. This information includes a summary of the instance, including instance ID, ECID, instance startup time or last modification time, instance state (for example, running), and number of faults.

This icon only displays on the Audit Trail pages of BPMN processes and Oracle Mediators, and not on the pages of human tasks and business rules.

- **Audit Level Settings:** Click to display information details, such as the audit level used by this instance.
- **View Raw XML:** Click to display the raw XML of the audit trail.

The **Audit Trail** tab displays execution details about the activities in the BPMN process.

8. Scroll through the audit trail to check for errors and expand the payload links to view their contents at a given point in the flow. This audit trail shows a fault in a BPMN process activity.

9. Click the **Flow** tab.

A flow diagram of the BPMN process activities appears. This flow diagram shows a fault highlighted in a BPMN process activity.

10. Click an activity to view the flow of the payload through the process.

Note: If using Internet Explorer, you can click **Copy details to clipboard** to copy the activity details to the clipboard. If using Mozilla Firefox, this link does not appear. Instead, you must manually select the text and copy and paste it to a file.

11. Scroll through the flow diagram to check for errors and click the highlighted activity to view error messages.

12. Close the window.

13. Click the **Faults** tab.

This tab shows the error message, whether you can recover from the fault, the time at which the fault occurred, and the activity in which the fault occurred. This page displays the faults in the BPMN component instance (but not the faults that occurred in a service or reference binding component).

You can recover from instance faults identified as recoverable. This page lists all instance faults, recoverable or not. The component instance faults that occurred in a service or reference are not listed here.

This page enables you to target individual faults from which to recover, and provides a degree of fault recovery granularity not available on other pages.

However, you cannot perform bulk fault recoveries on this page. To perform bulk fault recovery, use one of the following pages:

- **Faults and Rejected Messages** page of a specific SOA composite application or of the SOA Infrastructure
- **Faults** page of the BPMN process service engine or of a specific BPMN process service component

14. Select a fault for recovery that has been identified as recoverable through one of the following methods. The page refreshes to display a fault recovery section at the bottom of the page.
 - If you click a fault in the **Error Message** column, a popup message displays details about the fault, including the fault ID, fault time, fault location, fault type, and complete error message text. If the fault is identified as recoverable, a **Recover Now** button displays that you can click.
 - You click a fault identified as recoverable in the **Recovery** column.
15. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance with an option to provide a retry success action. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.
Rethrow	Rethrows the current fault. BPMN fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

Your selection causes additional fields to appear. For example, the following fields display if you select **Rethrow**.

16. Use the **After Successful Retry** list to select defined actions to invoke after a successful retry. If you select a variable in the **Variable** list, you can edit the value in the **Value** text box.
17. Click the **Back** button of your browser to exit the flow diagram.

40.2 Monitoring BPMN Process Service Component Instances and Faults

You can monitor BPMN process service component recent instances and faults. Each service component in a SOA composite application has its own instance ID. These IDs are different from the overall instance ID of the SOA composite application of which each service component is a part.

To monitor BPMN process service component instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Home .	1. Under soa-infra , select a specific SOA composite application.
2. Select the Deployed Composites tab.	
3. In the Composite section, select a specific SOA composite application.	

2. In the **Component Metrics** section, select the BPMN process service component.
3. Click **Dashboard**.

The screenshot shows the FailsTruly [5.6] dashboard for an SOA Composite. The top navigation bar includes 'Running Instances 0 | Total 1 | Active | Retire ... | Shut Down... | Test | Settings...'. The main content area is divided into two sections: 'Recent Instances' and 'Recent Faults and Rejected Messages'.

Recent Instances

Instance ID	Name	Conversation ID	State	Start Time
1		1254509558379	?	Oct 2, 2009 11:52:39 AM

Recent Faults and Rejected Messages

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
<bpeifault><faultType> <message>0</message></faultType></bpeifault>	Recover...	Oct 2, 2009 11:52:47 AM	BPMNThatFails	1	
Exception occurred when binding was invoked. Exception occurred during invocatic		Oct 2, 2009 11:52:46 AM	nonExistentFile	1	

The upper part of the Dashboard page displays the following details:

- Recent instances of the BPMN process service component, including the instance ID, the state of the instance (for example, completed successfully or faulted), the start time, the last modification time, and logs describing the instance.
 - Recent faults in the BPMN process service component, including the error message, whether you can recover from the fault, the time at which the fault occurred, the instance ID of the BPMN service component, the BPMN activity in which the fault occurred, and logs describing the fault.
 - The average processing time for each activity in the BPMN process service component.
4. In the **Recent Instances** section, you can perform the following tasks:
 - View the audit trail, process flow and faults of a service component. To do this, in the **Instance ID** column, click the instance ID of that service component.
 - Access the Log Messages page with filtered messages specific to that instance. To do this, in the **Logs** column, click a specific log.
 - Access the Instances page of the service component. To do this: Click **Show All** below the section.
 5. In the **Recent Instances and Faults** section, you can perform the following tasks:
 - Display complete information about a fault. To do this: In the **Error Message** column, click an error message. If the fault is identified as recoverable, you can perform fault recovery by clicking the **Recover Now** link.
 - Perform fault recovery at the component instance level. To do this: In the **Recovery** column, click a fault identified as **Recoverable**.
 - Access the Log Messages page with filtered messages specific to that instance. To do this: In the **Logs** column, click a specific log.
 - Access the Faults page of the service component. To do this: Click **Show All** below the section.

The lower part of the Dashboard page displays the following details:

- A graphical representation of the number of successful, faulted, and incoming (pending) instances of the BPMN process service component over a specific time range.
- The number of faults and message processed by any reference binding component with which this BPMN process service component communicated.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances."](#)

40.3 Monitoring BPMN Process Service Component Instances

You can monitor BPMN process service component instances. Each service component has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this service component is a part.

To monitor BPMN process service component instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.

2. In the **Component Metrics** section, select the BPMN process service component.
3. Click the **Instances** tab.

The screenshot shows the Fail2Truly [5.6] web interface. The breadcrumb path is SOA Composite > BPMNThatFails > BPMNThatFails (BPMN Component). The 'Instances' tab is selected. A search section contains fields for Instance ID, Start Time From, Start Time To, Modified Date From, Modified Date To, and State. Below the search section is a table with columns for Instance ID, State, Start Date, Last Modified Date, and Logs.

Instance ID	State	Start Date	Last Modified Date	Logs
bpmn:6	Running	Sep 10, 2009 2:07:43 PM	Sep 10, 2009 4:52:04 PM	
bpmn:2	Running	Sep 10, 2009 2:04:17 PM	Sep 10, 2009 2:04:22 PM	

The Instances page displays the following details:

- A utility for searching for a specific BPMN service component instance by specifying a criteria and clicking **Search**.
- BPMN process service component instances, including the instance ID, instance state (for example, completed or faulted), instance start time, last instance modification time, and log files describing the instance.

In this tab page, you can perform the following tasks:

- View the audit trail, process flow, and faults of a service component. To do this: In the **Instance ID** column, click the instance ID for a service component.
- Access the Log Messages page with filtered messages specific to that instance. To do this: In the **Logs** column, click a specific log.

For more information, see [Section 1.2.3, "Understanding SOA Composite Application Instances."](#)

40.4 Monitoring BPMN Process Service Engine Instances and Faults

You can monitor instances and faults of all BPMN process service components running in the BPMN process service engine. These BPMN process service components can be part of separate SOA composite applications.

To monitor BPMN process service engine instances and faults:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPMN .	1. Right-click soa-infra .
	2. Select Service Engines > BPMN .

2. Click **Dashboard**. [Figure 40–1](#) shows the upper half of the Dashboard page.

Figure 40–1 Dashboard Page: Upper Half

The screenshot shows the SOA Infrastructure Dashboard for 'soa-infra(11.1.1)'. The 'Recent Instances' section is active, displaying a table of running instances. The table has columns for Instance ID, Component, Composite, State, Start Date, Last Modified Date, and Logs. Two instances are listed, both in a 'Running' state.

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpmm:6	BPMNThatFails	FailsTruly [5.6]	Running	Sep 10, 2009 2:07:4	Sep 10, 2009 4:52:04 PM	
bpmm:2	BPMNThatFails	FailsTruly [5.6]	Running	Sep 10, 2009 2:04:1	Sep 10, 2009 2:04:22 PM	

The upper part of the Dashboard page displays recent instances of all BPMN process service components running in the BPMN process service engine, including the instance ID of the service component, the service component name, the SOA composite application of which the service component is a part, the state of the instance (for example, completed successfully or faulted), the instance start time, the last modification time, and logs describing the instance.

[Figure 40–2](#) shows the lower half of the Dashboard page.

Figure 40–2 Dashboard Page: Lower Half

The screenshot shows the SOA Infrastructure BPMN Engine Dashboard. The top navigation bar includes 'soa-infra(11.1.1)', 'SOA Infrastructure', and 'Page Refreshed Sep 11, 2009 12:00:52 PM PDT'. The main content area is divided into 'Components' and 'Recent Faults' sections.

Components Table:

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
BusinessRuleInclusiveGateway	BusinessRuleInclusiveGateway [1..1]	↑	0	0	0	0
EndToEndUserFileAdapter	EndToEndUserFileAdapter [1..2]	↑	0	0	0	0
BPMNThatFails	FailsTruly [5..6]	↑	2	2	0	0
BPMNProcessThatFails	MessageRecovery [1..4]	↑	4	0	0	2

Recent Faults Table:

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Activity	Logs
<faultType>></faultType><bindingFau...	Recover...	Sep 10, 2009 2:07:43 PM	FailsTruly [5..6]	BPMNThatFails	bpmn:6	a6	📄
<faultType>></faultType><bindingFau...	Recover...	Sep 10, 2009 2:04:22 PM	FailsTruly [5..6]	BPMNThatFails	bpmn:2	a6	📄

The lower part of the Dashboard page displays the following details:

- The service components running in the service engine, the SOA composite applications of the service components, the state of the applications (for example, running), and the total, running, and faulted instances in the service engine.
 - The recent faults in the service engine, including the error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application in which the fault occurred, the service component, the instance ID of the service component, the activity in which the fault occurred, and log files describing the fault.
- 3. In the **Recent Instances** section, you can perform the following monitoring tasks:
 - View the audit trail, process flow and faults of a service component. To do this: In the **Instance ID** column, click an instance ID for the service component.
 - Access the home page of a service component. To do this: In the **Component** column, click a specific service component.
 - Access its home page of a SOA composite application. To do this: In the **Composite** column, click the specific SOA composite application.
 - Access the Log Messages page with filtered messages specific to an instance. To do this: In the **Logs** column, click the specific log.
 - Access the Instances page of the service engine. To do this: Click **Show All** below the section.
- 4. In the **Components** section, you can perform the following tasks:
 - Access the home page of a specific service component. To do this: In the **Name** column, click the specific service component.
 - Access the home page of a specific SOA composite application. To do this: In the **Composite** column, click the specific SOA composite application.
 - Access the Deployed Components page of the service engine. To do this: Click **Show All** below the section.

5. In the **Recent Faults** section, you can perform the following tasks:
 - Display complete information about a fault. To do this: In the **Error Message** column, click an error message. If the fault is identified as recoverable, click the **Recover Now** link to perform fault recovery.
 - Perform fault recovery at the component instance level. To do this: In the **Recovery** column, click a fault identified as **Recoverable**.
 - Access the home page of a specific SOA composite application. To do this: In the **Composite** column, click the specific SOA composite application.
 - Access the home page of a specific service component. To do this: In the **Component** column, click a specific service component.
 - View the audit trail, process flow and faults of a service component. To do this: In the **Component Instance ID** column, click an instance ID for a service component.
 - Access the Log Messages page with filtered messages specific to a fault. To do this: In the **Logs** column, click the specific log.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances."](#)

40.5 Monitoring BPMN Process Service Engine Request and Thread Statistics

You can monitor request and thread statistics for all BPMN process service components running in the service engine.

To monitor BPMN process service engine request and thread statistics:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPMN .	1. Right-click soa-infra .
	2. Select Service Engines > BPMN .

2. Click **Statistics**.

The upper part of the Statistics page displays the following details. Click the **Help** icon for additional details.

- Pending requests in the service engine
- Active requests in the service engine
- Thread statistics for the service engine

The lower part of the Statistics page displays details about the count and minimum, maximum, and average request processing times.

40.6 Monitoring BPMN Process Service Engine Instances

You can monitor all BPMN process service component instances running in the service engine. These BPMN process service components can be part of separate SOA composite applications.

To monitor BPMN process service engine instances:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Service Engines > BPMN**.

From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
 2. Select **Service Engines > BPMN**.
-

2. Click **Instances**.

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpmn:6	BPMNThatFails	FailsTruly [5.6]	Running	Sep 10, 2009 2:07:43 PM	Sep 10, 2009 4:52:04 PM	
bpmn:5	BPMNProcessThatFails	MessageRecovery [1.4]	Faulted	Sep 10, 2009 2:07:32 PM	Sep 10, 2009 2:07:32 PM	
bpmn:4	BPMNProcessThatFails	MessageRecovery [1.4]	Completed	Sep 10, 2009 2:07:21 PM	Sep 10, 2009 2:07:21 PM	
bpmn:3	BPMNProcessThatFails	MessageRecovery [1.4]	Faulted	Sep 10, 2009 2:05:50 PM	Sep 10, 2009 2:05:50 PM	
bpmn:2	BPMNThatFails	FailsTruly [5.6]	Running	Sep 10, 2009 2:04:17 PM	Sep 10, 2009 2:04:22 PM	
bpmn:1	BPMNProcessThatFails	MessageRecovery [1.4]	Completed	Sep 10, 2009 2:02:59 PM	Sep 10, 2009 2:03:06 PM	

The Instances page displays the following details:

- A utility for searching for a specific instance by specifying a criteria and clicking **Search**.
 - Instances, including the instance ID of the service component, the service component name, the SOA composite application name, the state of the instance (for example, completed successfully, running, or faulted), the instance start time, the last modification time, and log files describing the instance.
3. In the **Instances** section, you can perform the following monitoring tasks:
 - View the audit trail, process flow, sensor values, and faults of a service component. To do this: In the **Instance ID** column, click an instance ID for a service component.
 - Access the home page of a specific service component. To do this: In the **Component** column, click the specific service component.
 - Access the home page of a specific SOA composite application. To do this: In the **Composite** column, click the specific SOA composite application.
 - Access the Log Messages page with filtered messages specific to an instance. To do this: In the **Logs** column, click the specific log.

For more information, see [Section 1.2.4, "Understanding Service Components and Service Component Instances."](#)

40.7 Monitoring Deployed BPMN Processes in the Service Engine

You can monitor all deployed SOA composite applications with BPMN process service components running in the service engine.

To monitor deployed BPMN processes in service engines:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...

1. Select **Service Engines > BPMN**.

From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
2. Select **Service Engines > BPMN**.

2. Click **Deployed Components**.

The screenshot shows the 'Deployed Components' page in the SOA Infrastructure BPMN Engine. The page includes a search bar with fields for 'Name' and 'Composite Name', and 'Search' and 'Reset' buttons. Below the search bar is a table with the following data:

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
BusinessRuleInclusiveGateway	BusinessRuleInclusiveGateway [1..1]	↑	0	0	0	0
End2EndUserFileAdapter	EndToEndUserFileAdapter [1..2]	↑	0	0	0	0
BPMNThatIFails	FailsTruly [5..6]	↑	2	2	0	0
BPMNProcessThatIFails	MessageRecovery [1..4]	↑	4	0	0	2

The Deployed Components page displays the following details:

- A utility for searching for a specific deployed SOA composite application by specifying a criteria and clicking **Search**.
- Details about deployed SOA composite applications with BPMN process service components running in this service engine, including the service component name, the SOA composite application, the current status, and the total, running, and faulted instances in the service engine.

To access the home page of a specific service component: In the **Name** column, click the specific service component.

To access the home page of a specific SOA composite application: In the **Composite** column, click the specific SOA composite application.

Managing Oracle BPMN Service Components and Engines

This chapter describes how to manage BPMN process service components and service engines.

This chapter includes the following topics:

- [Section 41.1, "Recovering from BPMN Process Service Component Faults"](#)
- [Section 41.2, "Managing BPMN Process Service Component Policies"](#)
- [Section 41.3, "Recovering from BPMN Process Service Engine Faults"](#)
- [Section 41.4, "Performing BPMN Process Service Engine Message Recovery"](#)

41.1 Recovering from BPMN Process Service Component Faults

You can monitor and perform individual and bulk fault recoveries for BPMN process service components that are identified as recoverable. For BPMN process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault.

To recover from BPMN process service component faults:

1. Access this page through one of the following options:

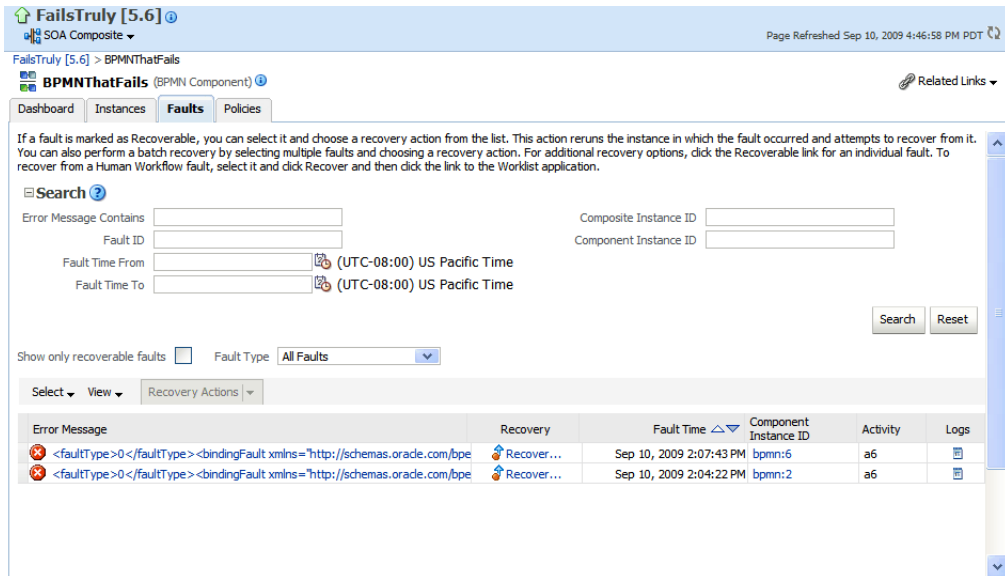
From the SOA Infrastructure Menu...

1. Select **Home**.
2. Select the **Deployed Composites** tab.
3. In the **Composite** section, select a specific SOA composite application.

From the SOA Folder in the Navigator...

1. Under **soa-infra**, select a specific SOA composite application.

-
2. In the **Component Metrics** section, select the BPMN process service component.
 3. Click **Faults**.



The Faults page displays the following details:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the service component, including the fault ID, error message, whether you can recover from the fault, time at which the fault occurred, service component instance ID, activity in which the fault occurred, and a link to a log file describing the fault.

BPMN process service component faults identified as recoverable can be recovered.

4. Select faults for recovery using one of the following methods. Note that fault recovery selection at the BPMN process service component level is equal to the SOA Infrastructure level, SOA composite application level, and Oracle Mediator service component level.

For...	Then...
Single fault recovery	<p>There are three options from which to choose for single-fault recovery:</p> <ol style="list-style-type: none"> 1. Click the row of the fault that has been identified as recoverable. With the row highlighted, select a specific action from the Recovery Action list, as described in Step 5. 2. In the Recovery column, click the Recover link to access the Faults page of the instance audit trail to perform fault recovery. 3. In the Error Message column, click the message of a fault that has been identified as recoverable. This displays complete fault details, including the fault ID, fault time, fault location, fault type, and error message text. A Recover Now option displays for recoverable faults. Click Recover Now to access the Faults page of the instance audit trail to perform fault recovery.

For...	Then...
Bulk fault recovery	<p>There are two options from which to choose for bulk-fault recovery:</p> <ol style="list-style-type: none"> 1. Use Shift+Click or Control+Click to select specific faults in the rows. or 2. From the Select menu, choose Select All Recoverable. Then use Shift+Click or Control+Click to deselect the faults to <i>not</i> include in the recovery operation. Then: 3. Select an action from the Recovery Action list, as described in Step 5. Note: Only the actions applicable to all selected faults are available.
Recovery of all faults	<ol style="list-style-type: none"> 1. From the Select menu, choose Select All Recoverable. 2. Select an action from the Recovery Action list, as described in Step 5. Note: Only the actions applicable to all selected faults are available.

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

5. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.
Rethrow	Rethrows the current fault. BPMN fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

6. Perform the following additional monitoring tasks from within the faults table:
 - a. Click the **Show only recoverable faults** check box to display only faults from which you can recover.
 - b. From the **Fault Type** list, select to display all faults, system faults, business faults, or Oracle Web Service Manager (OWSM) faults in the faults table. Click the **Help** icon for a description of these fault types.
 - c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.

- d. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.
- e. In the **Logs** column, click a link to access the Log Messages page with filtered messages specific to that instance.

For more information, see the following documentation:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#)
- [Section 8.5.2, "Examples of Fault Recovery for BPMN Processes"](#)
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*

41.2 Managing BPMN Process Service Component Policies

You can attach and detach policies to and from BPMN process service components in currently deployed SOA composite applications. Policies apply security to the delivery of messages. Oracle Fusion Middleware uses a policy-based model to manage Web services.

Note: Before attaching policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use in your environment.

To manage BPMN process service component policies:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
<ol style="list-style-type: none"> 1. Select Home. 2. Select the Deployed Composites tab. 3. In the Composite section, select a specific SOA composite application. 	<ol style="list-style-type: none"> 1. Under soa-infra, select a specific SOA composite application.

2. Select the BPMN process service component in the **Component Metrics** section.
3. Click **Policies**.

The Policies page enables you to attach and detach policies to and from BPMN process service components. The policies table displays the attached policy name, the policy reference status (enabled or disabled) that you can toggle, the category (Management, Reliable Messaging, MTOM Attachment, Security, or WS Addressing), the violations, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.

4. Click **Attach/Detach**.

If multiple components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

5. Select the service or component to which to attach or detach a policy.

This invokes a dialog for attaching or detaching policies.

Policies currently attached appear in the **Attached Policies** section. Additional policies available for attachment appear in the **Available Policies** section.

6. Select to attach policies appropriate to your environment.
7. Click **Attach**.
8. When you are finished attaching policies, click **Validate**.
9. If an error message appears, make the necessary corrections until you no longer have any validation errors.
10. Click **OK**.

The attached policy displays in the policies table.

For more information, see the following documentation:

- [Section 1.4.3.2, "Understanding Policies"](#)
- [Section 8.8, "Managing SOA Composite Application Policies"](#) for the dialogs that display during policy attachment
- *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for definitions of available policies and details about which ones to use for your environment

41.3 Recovering from BPMN Process Service Engine Faults

You can monitor and perform individual and bulk recoveries of faults occurring in BPMN process service engines that are identified as recoverable. All BPMN process service component faults, regardless of the SOA composite application instance of which they are a part, can be viewed in the BPMN process service engine. For BPMN process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and which triggers the action `ora-human-intervention`. However, without defining any fault policies, the fault takes its normal course as either a recoverable or nonrecoverable fault.

To recover from BPMN process service engine faults:

1. Access this page through one of the following options:

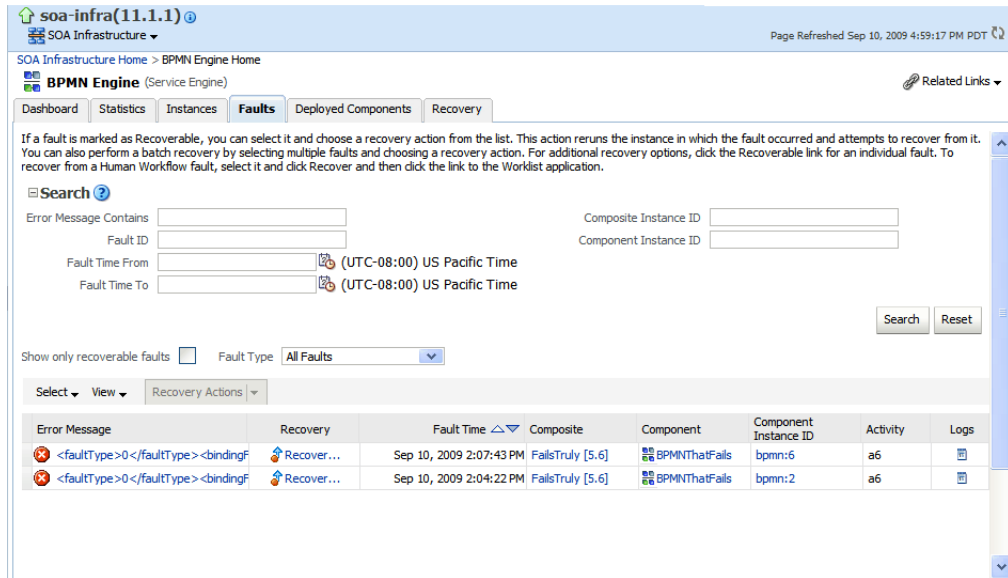
From the SOA Infrastructure Menu...

1. Select **Service Engines > BPMN**.

From the SOA Folder in the Navigator...

1. Right-click **soa-infra**.
 2. Select **Service Engines > BPMN**.
-

2. Select the **Faults** tab.



The Faults page displays the following details:

- A utility for searching for a specific fault by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
- Faults that occurred in the service engine, including the fault ID, error message, whether you can recover from the fault, the time at which the fault occurred, the SOA composite application and service component in which the fault occurred, and the service component instance ID.

BPMN process service engine faults identified as recoverable can be recovered.

3. As with fault recovery at the SOA Infrastructure level, SOA composite application level, and Oracle Mediator service component level, you can perform single fault recovery, bulk fault recovery, and recovery of all faults. See Step 4 of [Section 41.1, "Recovering from BPMN Process Service Component Faults"](#) for instructions on selecting faults to perform these types of recovery.

Note: In most cases, fault policy actions are automatically executed. The only exception is if you defined a fault policy that uses the action `ora-human-intervention`. This action creates a recoverable fault that can be recovered from Oracle Enterprise Manager Fusion Middleware Control Console.

4. Select an action from the **Recovery Action** list.

Action	Description
Retry	Retries the instance with an option to provide a retry success action. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.
Abort	Aborts the entire instance.
Replay	Replays the entire scope again in which the fault occurred.

Action	Description
Rethrow	Rethrows the current fault. BPMN fault handlers (catch branches) are used to handle the fault. By default, all exceptions are caught by the fault management framework unless an explicit rethrow fault policy is provided.
Continue	Ignores the fault and continues processing (marks the faulting activity as a success).

5. Perform the following additional monitoring tasks from within the faults table:
 - a. Click the **Show only recoverable faults** check box to only display faults from which you can recover.
 - b. From the **Fault Type** list, select to display all faults, system faults, business faults, or OWSM faults in the faults table. Click the **Help** icon for a description of these fault types.
 - c. From the **View** list, select **Columns > Fault ID** to display the fault IDs for each error message. The fault ID is automatically generated and uniquely identifies a fault. The fault ID also displays when you click an error message.
 - d. In the **Composite** column, click a specific SOA composite application to access its home page.
 - e. In the **Component** column, click a specific service component to access its home page.
 - f. In the **Component Instance ID** column, click a specific service component ID to access task details about the instance (for example, the current state of a task). Note that rejected messages do not have a component instance ID.

For more information, see the following sections:

- [Section 1.4.3.1, "Understanding Fault Recovery"](#) for conceptual details about faults
- [Section 8.5.2, "Examples of Fault Recovery for BPMN Processes"](#)

41.4 Performing BPMN Process Service Engine Message Recovery

You can perform a manual recovery of undelivered invoke or callback messages due to a transaction rollback in the process instance. Recovery of invoke messages applies to asynchronous BPMN processes only. Synchronous BPMN processes return an error to the calling client and are not recoverable from this page. Recoverable activities are activities that failed and can be recovered. For example, if you are using the file adapter to initiate an asynchronous BPMN process and your system crashes while the instance is processing, you can manually perform recovery when the server restarts to ensure that all message records are recovered.

To perform BPMN process service engine message recovery:

1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select Service Engines > BPMN .	1. Right-click soa-infra .
	2. Select Service Engines > BPMN .

2. Click **Recovery**.

The Recovery page displays the following details:

- A utility for searching for a specific message failure by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
 - Message failure in the service engine, including the conversation ID, whether you can recover from the message failure, the service component and composite application in which the failure occurred, and the time at which the fault occurred.
3. Select a fault in the table.
 4. Select one of the following options:

Action	Description
Recover	Retries the message in which the fault occurred.
Mark Cancelled	Marks the message so it is never delivered.

Part XVI

Appendixes

This part includes the following appendixes:

- [Appendix A, "Demo User Community"](#)
- [Appendix B, "Troubleshooting Oracle SOA Suite"](#)
- [Appendix C, "Oracle Enterprise Manager Roles"](#)

Demo User Community

This appendix describes the demo user community for task assignments in Oracle SOA Suite.

This appendix includes the following topics:

- [Section A.1, "Using the Demo User Community"](#)
- [Section A.2, "Users"](#)
- [Section A.3, "Groups"](#)
- [Section A.4, "soa-infra Application Roles"](#)
- [Section A.5, "SOATestDemoApp Application Roles"](#)
- [Section A.6, "Roles Granted to and Owned by Users"](#)
- [Section A.7, "The WorkflowPermission Class"](#)

A.1 Using the Demo User Community

After installing Oracle SOA Suite, you must seed the user demo community in the database. The demo user community is an organizational hierarchy of users and groups.

To seed the demo user community:

1. Download the `workflow-001-DemoCommunitySeedApp` sample from the following URL:
http://www.oracle.com/technology/sample_code/products/hwf/index.html
2. Follow the instructions in the `README.txt` file included with this sample. This file describes how to seed the user demo community described in the appendix.

A.2 Users

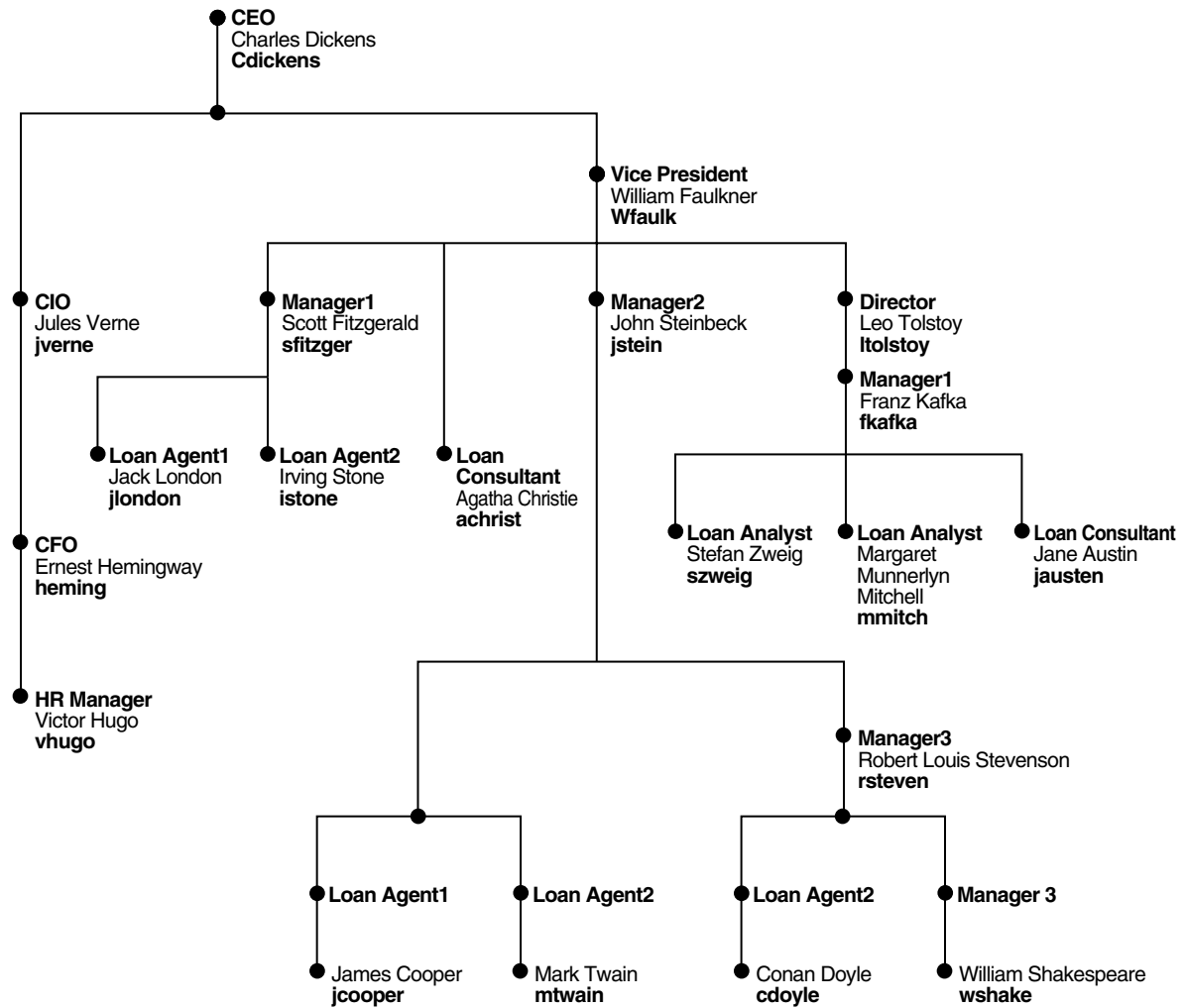
[Table A-1](#) lists the users in the demo community.

Table A-1 Users in the Demo Community

User	User Name	First Name	Last Name	Title	Manager	E-Mail
1	achrist	Agatha	Christie	Loan Consultant	wfaulk	achrist@emailExample.com
5	cdickens	Charles	Dickens	CEO	--	cdickens@emailExample.com
6	cdoyle	Conan	Doyle	Loan Agent 2	rsteven	cdoyle@emailExample.com
3	EHEMING	Ernest	Hemingway	CFO	JVerne	EHEMING@emailExample.com
7	fkafka	Franz	Kafka	Manager 1	Itolstoy	fkafka@emailExample.com
8	istone	Irving	Stone	Loan Agent 2	sfitzger	istone@emailExample.com
9	jausten	Jane	Austen	Loan Consultant	fkafka	jausten@emailExample.com
10	jcooper	James	Cooper	Loan Agent 1	jstein	jcooper@emailExample.com
11	jlondon	Jack	London	Loan Agent 1	sfitzger	jlondon@emailExample.com
12	jstein	John	Steinbeck	Manager 2	wfaulk	jstein@emailExample.com
2	JVerne	Jules	Verne	CIO	cdickens	JVerne@emailExample.com
13	Itolstoy	Leo	Tolstoy	Director	wfaulk	Itolstoy@emailExample.com
14	mmitch	Margaret	Mitchell	Loan Analyst	fkafka	mmitch@emailExample.com
15	mtwain	Mark	Twain	Loan Agent 2	jstein	mtwain@emailExample.com
16	rsteven	Robert	Stevenson	Manager 3	jstein	rsteven@emailExample.com
17	sfitzger	Scott	Fitzgerald	Manager 1	wfaulk	sfitzger@emailExample.com
18	szweig	Stefan	Zweig	Loan Analyst	fkafka	szweig@emailExample.com
4	VHUGO	Victor	Hugo	HR Manager	EHEMING	VHUGO@emailExample.com
19	wfaulk	William	Faulkner	Vice President	cdickens	wfaulk@emailExample.com
20	wshake	William	Shakespeare	Manager 3	rsteven	wshake@emailExample.com

Figure A-1 shows the organizational hierarchy of the demo community.

Figure A-1 Demo Community Organizational Hierarchy



A.3 Groups

Table A-2 lists the groups in the demo community; the users and groups that are granted each group role (direct grantees and all grantees); and the group roles and application roles granted to each group (direct-granted roles and all granted roles). See Table A-6 for the roles granted to users sorted by user.

Table A-2 Groups in the Demo Community: Grant Relationships

Group	Direct Grantees	All Grantees	Direct-Granted Roles	All Granted Roles
RegionalOffices	CentralRegion, WesternRegion, EasternRegion	szweig, wshake, jcooper, WesternRegion, mmitch, EasternRegion, jlondon, CentralRegion, istone, cdoyle, mtwain, California, fkafka	-	-
EasternRegion	szweig, wshake, mmitch, fkafka	szweig, wshake, mmitch, fkafka	RegionalOffices	RegionalOffices
CentralRegion	jlondon, mtwain	jlondon, mtwain	RegionalOffices	RegionalOffices

Table A–2 (Cont.) Groups in the Demo Community: Grant Relationships

Group	Direct Grantees	All Grantees	Direct-Granted Roles	All Granted Roles
WesternRegion	cdoyle, California	jcooper, istone, cdoyle, California	RegionalOffices	RegionalOffices
California	jcooper, istone	jcooper, istone	WesternRegion	RegionalOffices, WesternRegion
LoanAgentGroup	jldonon, wshake, LoanAnalyticGroup, jcooper, istone, cdoyle, mtwain	szweig, jldonon, wshake, LoanAnalyticGroup, jcooper, istone, cdoyle, mtwain, mmitch, fkafka	-	-
LoanAnalyticGroup	szweig, mmitch, fkafka	szweig, mmitch, fkafka	BPMWorkflowCustomize, LoanAgentGroup	BPMWorkflowCustomize, LoanAgentGroup
Supervisor	jcooper, mtwain, rsteven	jcooper, mtwain, rsteven	-	-
Executives	cdickens, JVerne, EHEMING, VHUGO	cdickens, JVerne, EHEMING, VHUGO	-	-

[Table A–3](#) continues information for several groups listed in [Table A–2](#). It lists the users and groups (direct owners and all owners) that own each group and the group roles (direct-owned roles and all owned roles) that each group owns. See [Table A–6](#) for the roles owned by users sorted by user.

Table A–3 Groups in the Demo Community: Ownership Relationships

Group	Direct Owners	All Owners	Direct Owned Roles	All Owned Roles
EasternRegion	jstein	jstein	-	-
WesternRegion	jstein	jstein	-	-
California	fkafka	fkafka	-	-
LoanAgentGroup	jcooper, fkafka	jcooper, fkafka	-	-
LoanAnalyticGroup	jstein	jstein	-	-
Supervisor	jstein	jstein	-	-

A.4 soa-infra Application Roles

[Table A–4](#) lists the soa-infra application roles; the users, groups, and roles that are granted each application role (direct grantees and all grantees); and the roles granted to each application role (direct-granted roles and all granted roles). See [Table A–6](#) for the application roles granted to users sorted by user.

Table A–4 Application Roles in soa-infra

Application Role	Direct Grantees	All Grantees	Direct-Granted Roles	All Granted Roles
SOAdmin	Administrators	Administrators	BPMWorkflowAdmin	BPMWorkflowCustomize BPMWorkflowAdmin
BPMWorkflowAdmin	SOAdmin, demoadmin	SOAdmin, demoadmin, Administrators	BPMWorkflowCustomize	BPMWorkflowCustomize
BPMWorkflowCustomize	LoanAnalyticGroup, BPMWorkflowAdmin	szweig, LoanAnalyticGroup, SOAdmin, BPMWorkflowAdmin, mmitch, fkafka, Administrators, demoadmin	-	-

For more information about application roles, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

A.5 SOATestDemoApp Application Roles

Table A-5 lists the roles in the SOATestDemoApp application.

Table A-5 SOATestDemoApp Roles

Application Role	Direct Grantees	All Grantees	Direct-Granted Roles	All Granted Roles
DevTeam	rsteven	rsteven, mmitch, fkafka, jcooper, istone		
QATeam	jlondon, Supervisor	jlondon, jcooper, mtwain, rsteven, mmitch, fkafka, istone		
ProductionTeam	mmitch, fkafka, California	mmitch, fkafka, jcooper, istone	DevTeam, QATeam	DevTeam, QATeam

A.6 Roles Granted to and Owned by Users

Table A-6 lists the roles granted to each user (direct-granted roles and all granted roles) and the roles owned by each user (direct-owned roles and all owned roles).

Table A-6 Roles for Each User

User Name	Direct-Granted Roles	All Granted Roles	Direct-Owned Roles	All Owned Roles
achrist	Executives	-	-	-
cdickens	-	-	Executives	-
cdoyle	WesternRegion, LoanAgentGroup	RegionalOffices, WesternRegion, LoanAgentGroup	-	-
EHEMING		Executives		
fkafka	LoanAnalyticGroup, EasternRegion, ProductionTeam	BPMWorkflowCustomize, RegionalOffices, LoanAnalyticGroup, LoanAgentGroup, EasternRegion, ProductionTeam, DevTeam, QATeam	LoanAgentGroup, California	LoanAgentGroup, California
istone	LoanAgentGroup, California	RegionalOffices, WesternRegion, LoanAgentGroup, California, DevTeam, QATeam, ProductionTeam	-	-
jausten	-	-	-	-
jcooper	Supervisor, LoanAgentGroup, California	RegionalOffices, WesternRegion, Supervisor, LoanAgentGroup, California, DevTeam, QATeam, ProductionTeam	LoanAgentGroup	LoanAgentGroup
jlondon	CentralRegion, LoanAgentGroup, QATeam	CentralRegion, RegionalOffices, LoanAgentGroup, QATeam	-	-
jstein	-	-	LoanAnalyticGroup, WesternRegion, Supervisor, EasternRegion	LoanAnalyticGroup, WesternRegion, Supervisor, EasternRegion
JVerne		Executives		

Table A-6 (Cont.) Roles for Each User

User Name	Direct-Granted Roles	All Granted Roles	Direct-Owned Roles	All Owned Roles
ltolstoy	-	-	-	-
mmitch	LoanAnalyticGroup, EasternRegion, ProductionTeam	BPMWorkflowCustomize RegionalOffices, LoanAnalyticGroup, LoanAgentGroup, EasternRegion, DevTeam, QATeam, ProductionTeam	-	-
mtwain	CentralRegion, Supervisor, LoanAgentGroup	CentralRegion, RegionalOffices, Supervisor, LoanAgentGroup, QATeam	-	-
rsteven	Supervisor, DevTeam	Supervisor, DevTeam	-	-
sfitzger	-	-	-	-
szweig	LoanAnalyticGroup, EasternRegion	BPMWorkflowCustomizeDem oApp/FlexFieldRole, RegionalOffices, LoanAnalyticGroup, LoanAgentGroup, EasternRegion		
vhugo		Executives		
wfaulk	-	-	-	-
wshake	LoanAgentGroup, EasternRegion	RegionalOffices, LoanAgentGroup, EasternRegion	-	-

A.7 The WorkflowPermission Class

[Table A-7](#) lists the permissions defined in the `WorkflowPermission` class and the application roles associated with each permission.

Table A-7 WorkflowPermission Class

Permission	Application Role with Permission
<code>workflow.mapping.publicFlexField</code>	BPMWorkflowAdmin, BPMWorkflowCustomize
<code>workflow.mapping.protectedFlexField</code>	BPMWorkflowAdmin
<code>workflow.admin</code>	BPMWorkflowAdmin
<code>workflow.admin.evidenceStore</code>	BPMWorkflowAdmin

Troubleshooting Oracle SOA Suite

This appendix describes how to troubleshoot issues you can encounter when using Oracle SOA Suite.

This appendix includes the following topics:

- [Section B.1, "Best Practice for Starting and Stopping a Managed Server"](#)
- [Section B.2, "Optimizing the Loading of Pages with Instance and Faults Metrics"](#)
- [Section B.3, "Resolving Message Failure Caused By Too Many Open Files"](#)
- [Section B.4, "Extending Tablespaces to Avoid Problems at Run Time"](#)
- [Section B.5, "Resolving Connection Timeouts"](#)
- [Section B.6, "Increasing Database Connection Values"](#)
- [Section B.7, "Accessing Oracle Enterprise Manager Fusion Middleware Control Console on Dual Stack Hosts that Support IPv4 and IPv6"](#)

B.1 Best Practice for Starting and Stopping a Managed Server

As a best practice, it is always recommended that you start and stop a managed server through one, but not both, of the following methods. Do *not* mix these methods, such as starting the managed server from the command line and stopping it from Oracle Enterprise Manager Fusion Middleware Control Console, or vice versa.

- Oracle Enterprise Manager Fusion Middleware Control Console
With this method, the node manager must be up and running. The node manager tracks all managed server startups and shutdowns performed from Oracle Enterprise Manager Fusion Middleware Control Console. With this method, the server state is not an issue.
- Command line
With this method, the node manager does not track the server state. Therefore, if you start the server from the command line and shut it down from Oracle Enterprise Manager Fusion Middleware Control Console, the Oracle WebLogic Administration Server accesses the node manager to determine its status, which returns a state of Unknown.

Perform the following steps to stop and start the server from Oracle Enterprise Manager Fusion Middleware Control Console.

1. Expand the WebLogic domain.
2. Select the managed server (for example, named soa_server1).

3. Select **Control > Shut Down**.
4. Select **Control > Start Up**.

For information on starting and stopping managed servers from the command line, see *Oracle Fusion Middleware Installation Guide for Oracle SOA Suite*.

B.2 Optimizing the Loading of Pages with Instance and Faults Metrics

Since production systems can include numerous composite instances and faults, there is a possibility of timeouts in the SOA Oracle Enterprise Manager Fusion Middleware Control Console pages as information retrieval becomes relatively slow. To optimize the loading performance of pages, you can enable a property setting in the SOA Infrastructure Common Properties page that disables the loading of all metrics information upon page load. The instances and faults metrics can be obtained on demand from the server.

1. In the navigator, click **soa-infra**.
2. Note that values appear in the **Running** and **Total** fields in the **Recent Composite Instances** section and the **Instances** column of the **Deployed Composites** section. When these values are large, it can take time to load this page and other pages with similar information.

The screenshot shows the SOA Infrastructure Control Console interface. The top navigation bar includes 'soa-infra' and 'SOA Infrastructure'. The main content area has tabs for 'Dashboard', 'Deployed Composites', 'Instances', and 'Faults and Rejected Messages'. The 'Dashboard' tab is active, displaying two sections: 'Recent Composite Instances' and 'Deployed Composites'.

Recent Composite Instances

Instance ID	Composite	Start Time
3	FaultFlow [1.0]	Aug 3, 2009 6:48:47 AM
2	FaultFlow [1.0]	Aug 3, 2009 6:48:12 AM
1	FaultFlow [1.0]	Aug 3, 2009 6:48:02 AM

Summary: Show Only Running Instances Running: 0 Total: 3

Deployed Composites

Composite	Status	Mode	Instances	Faulted Instances
FaultFlow [1.0]	Active	Active	3	0
sync [2.0]	Active	Active	0	0
sync [1.0]	Active	Active	0	0
async [2.0]	Active	Active	0	0
async [1.0]	Active	Active	0	0

3. From the SOA Infrastructure menu, select **SOA Administration > Common Properties**.
4. In the **Display Data Counts** section, select the **Disable fetching of instance and fault count metrics** check box.
5. Click **Apply**.
6. Return to the Dashboard page of the SOA Infrastructure.
7. Note that the values that previously displayed have been replaced with links.
8. Click a link.

The screenshot shows the SOA Infrastructure console interface. The 'Deployed Composites' table is visible, with columns for Composite, Status, Mode, Instances, and Faulted Instances. A tooltip is shown over the 'Instances' column for the 'FaultFlow [1.0]' composite, indicating a calculation process.

The values are calculated for the link you selected. When the calculation is complete, a message displays the total values.

The dialog box shows the results of the calculation for the 'FaultFlow [1.0]' composite, indicating that there are 3 instances. A 'Recalculate...' button is available for refreshing the data.

For more information about setting this property, see [Section 3.1, "Configuring SOA Infrastructure Properties."](#)

Notes:

- If you click a link to retrieve instance and fault count metrics, and Oracle Enterprise Manager Fusion Middleware Control Console times out, increase the transaction timeout property. For more information, see [Section B.5, "Resolving Connection Timeouts."](#)
 - If you click **Recalculate**, and the recalculation occurs quickly, the progress indicator does not have a chance to render. However, any updates to the data are reflected on-screen.
-

B.3 Resolving Message Failure Caused By Too Many Open Files

You can receive the following error at run time or compilation time, depending on the number of JAR files being used, the use of file descriptors by JDK 6/JRE, or both.

Message send failed: Too many open files

To resolve this error, increase the number of file descriptors to at least 4096.

1. Use the `limit` command (for the C shell) or the `ulimit` command (for the Bash shell) to identify the value for descriptors. A value of 1024 is typically too low, especially for JDK 6.

```
% limit
cputime      unlimited
```

```

filesize      unlimited
datasize      unlimited
stacksize     10240 kbytes
coredumpsize  unlimited
memoryuse     unlimited
vmemoryuse   unlimited
descriptors  1024
memorylocked  500000 kbytes
maxproc       46720
    
```

2. Log in as the root user on your operating system.
3. Edit the `/etc/security/limits.conf` file to increase the value for descriptors.

For this example, the `limits.conf` file looks as follows after increasing the limit for all users to 4096:

```

#<domain>      <type> <item>          <value>
#
#*              soft   core            0
#*              hard   rss             10000
#@student       hard   nproc          20
#@faculty       soft   nproc          20
#@faculty       hard   nproc          50
#ftp            hard   nproc          0
#@student       -      maxlogins      4

# End of file
@svrgroup       soft   memlock        500000
@svrgroup       hard   memlock        500000
*               soft   nofile         4096
*               hard   nofile         4096
    
```

4. Close your terminal and reopen for the change to take effect. A system restart is not required.

B.4 Extending Tablespaces to Avoid Problems at Run Time

If the database tablespace is not extended, run time processing can be impacted. Messages are not processed or persisted, and exception errors similar to the following can appear in the log files. This is because Oracle BPEL Process Manager relies on the database to store instance data. If the database is not available, run-time processing is impacted.

```

INFO: MediatorServiceEngine returning after processing the request for
operation = processResponse
    
```

```

[EL Warning]: 2009.01.14 11:46:16.783--UnitOfWork(32372128)--Exception
[EclipseLink-4002] (Eclipse Persistence Services - 1.1 (Build
SNAPSHOT-20081007)): org.eclipse.persistence.exceptions.DatabaseException
Internal Exception: java.sql.BatchUpdateException: ORA-01691: unable to
extend lob segment SH_SOAINFRA.SYS_LOB0000145067C00007$$ by 1024 in
tablespace SH_SOAINFRA
    
```

```

Error Code: 1691
Query: InsertObjectQuery(com.collaxa.cube.persistence.dto.AuditTrail@199b33d)
[EL Warning]: 2009.01.14 11:46:16.782--UnitOfWork(32372128)--Exception
[EclipseLink-4002] (Eclipse Persistence Services - 1.1 (Build
    
```

```

SNAPSHOT-20081007)): org.eclipse.persistence.exceptions.DatabaseException
Internal Exception: java.sql.BatchUpdateException: ORA-01691: unable to
extend lob segment SH_SOAINFRA.SYS_LOB0000145067C00007$$ by 1024 in
tablespace SH_SOAINFRA
. . .
. . .

```

Ensure that you set a tablespace to automatically extend itself by a specified amount when it reaches its size limit. If you do not enable autoextend, ensure that you respond when alerted that the tablespace is reaching its critical or warning threshold size. You can respond to size alerts by manually increasing the tablespace size.

B.5 Resolving Connection Timeouts

You can receive a connection timeout error under circumstances such as the following:

- You run a SOA composite application with a large payload that takes more than 30 seconds to process.
- You are invoking a stress test using a large payload from the Test Web Service page of Oracle Enterprise Manager Fusion Middleware Control Console.
- You are passing a large number of message files (one million) into a composite with a file adapter service.
- You are retrieving instance and fault count metrics in Oracle Enterprise Manager Fusion Middleware Control Console.

To avoid receiving timeout errors, increase the transaction timeout property as follows:

1. Log into Oracle WebLogic Administration Console.
2. Click **JTA**.
3. Change the value of **Timeout Seconds** (the default is 30).
4. Click **Save**.
5. Restart Oracle WebLogic Server.

B.6 Increasing Database Connection Values

You can receive the following error message because of slow connections to the database.

```

Exception [TOPLINK-4002] (Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build
090304)): oracle.toplink.exceptions.DatabaseException
Internal Exception: java.sql.SQLException: Internal error: Cannot obtain
XAConnection weblogic.common.resourcepool.ResourceDeadException: Pool
SOADatasource has been disabled because of hanging connection tests, cannot
allocate resources to applications.

```

If this occurs, perform the following steps:

1. Open the `DOMAIN_HOME\bin\setSOADomainEnv.cmd` file.
2. Uncomment the lines shown in bold.

```

# 8331492: Value of weblogic.resourcepool.max_test_wait_secs is 10
# seconds. It can be increased by uncommenting line below if your database
# connections are slow. See SOA documentation for more details.
EXTRA_JAVA_PROPERTIES="{EXTRA_JAVA_PROPERTIES}
-Dweblogic.resourcepool.max_test_wait_secs=30"

```

```
export EXTRA_JAVA_PROPERTIES
```

3. Save your changes and restart the managed Oracle WebLogic Server.

B.7 Accessing Oracle Enterprise Manager Fusion Middleware Control Console on Dual Stack Hosts that Support IPv4 and IPv6

If you run Oracle SOA Suite on a dual stack host that supports both IPv4 and IPv6, you must update the `etc/hosts` file as shown in [Table B-1](#) for IPv4 clients to access IPv6 URLs in Oracle Enterprise Manager Fusion Middleware Control Console.

Table B-1 IPv4 and IPv6 Settings in `etc/hosts` File

On The...	Edit the <code>etc/hosts</code> File as Follows....
On the IPv4 client:	<code>xx.xxx.xxx.xxx myhost10-ipv6</code> where <code>xx.xxx.xxx.xxx</code> is the IP address of IPv6.
On the IPv6 client	<code>fdf5:74cc:db0a::0:1 myhost10-ipv6 myhost10-ipv6.us.oracle.com</code> Note: Replace <code>fdf5:74cc:db0a::0:1</code> with a value appropriate to your host environment.

Oracle Enterprise Manager Roles

This appendix describes the privileges that users with the administrator, operator, and monitor roles are authorized with when accessing pages in Oracle Enterprise Manager Fusion Middleware Control Console.

This chapter includes the following topics:

- [Section C.1, "Roles and Privileges"](#)
- [Section C.2, "Removing the Mapping Between the Operators Role and the SOAOperator Role"](#)

For information about how to create roles, add users to groups, and secure resources with roles and policies, see *Oracle Fusion Middleware Securing Resources Using Roles and Policies for Oracle WebLogic Server* and the *Oracle Fusion Middleware Oracle WebLogic Server Administration Console Online Help*. Click the **Contents** link in the Console Help to access procedures for performing the above-mentioned tasks.

C.1 Roles and Privileges

Oracle Enterprise Manager Fusion Middleware Control Console supports the notion of role-based access. Users are mapped to different roles; each role corresponds to a different set of privileges. Using this mechanism, you can provision certain users with simple monitoring privileges (for instance view-only access), while administrators can be granted full access, including the ability to update configurations, restart servers, and so on.

The following roles have been defined for Oracle WebLogic Server in Oracle Enterprise Manager Fusion Middleware Control Console:

- Administrator
This role provides complete management and monitoring capabilities.
- Operator
This role provides restricted management capabilities.
- Monitor
This role provides read-only capabilities.

C.1.1 Overall Role Functionality Matrix

[Table C-1](#) lists the actions that users with each role can perform.

Table C-1 Role Functionality Matrix

Actions	Monitor	Operator	Administrator
View monitoring metrics	Yes	Yes	Yes
View configurations	Yes	Yes	Yes
Update configurations	No	No	Yes
Handle fault actions	No	Yes	Yes
Create instances using the Test Web Service page	Yes	Yes	Yes
Start, stop, retire, and activate a composite	No	Yes	Yes
Execute unit tests	No	Yes	Yes
Attach and detach policies	No	No	Yes
View instances, the flow trace, and the audit trail	Yes	Yes	Yes
View audit trail payloads	Yes	Yes	Yes
Delete instances	No	No	Yes
Start and stop the SOA Infrastructure	No	Yes	Yes
Perform deployment options (deploy, undeploy, and redeploy)	No	Yes	Yes
Modify composite properties (enable payload and audit level)	No	Yes	Yes
Create partitions	No	No	Yes
Delete partitions	No	No	Yes
Bulk composite life cycle management (start all, stop all, retire all, and activate all)	No	Yes	Yes

C.1.2 SOA Infrastructure Page

Table C-2 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-2 SOA Infrastructure Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Deployed Composites tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Start/stop (SOA Infrastructure) ■ Activate/retire ■ Deployment options ■ Set as default 	Operator	No	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Delete options (all) ■ Abort 	Administrator	No	No	Yes

Table C-2 (Cont.) SOA Infrastructure Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Faults and Rejected Messages tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Recovery actions ■ Delete rejected messages 	Operator Administrator	No No	Yes No	Yes Yes

C.1.3 SOA Infrastructure Menu

Table C-3 lists the lowest role that a user must have to access the options on this menu and the privileges that each role has on the menu options.

Table C-3 SOA Infrastructure Menu

Menu Items	Lowest Role for Accessing	Monitor	Operator	Administrator
Control	Operator	No	Yes	Yes
SOA Deployment	Operator	No	Yes	Yes
Logs >Log Configuration	Administrator	No	No	Yes
Other menu items	Monitor	Yes	Yes	Yes

C.1.4 SOA Composite Menu

Table C-4 lists the lowest role that a user must have to access the options on this menu and the privileges that each role has on the menu options.

Table C-4 SOA Composite Menu

Menu Items	Lowest Role for Accessing	Monitor	Operator	Administrator
SOA Deployment	Operator	No	Yes	Yes
Test Service	Monitor	Yes	Yes	Yes
Other menu items	Monitor	Yes	Yes	Yes

C.1.5 Composite Home Page

Table C-5 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-5 Composite Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Test composite service action ■ Activate/retire action ■ Start/stop action ■ Property changes (settings) 	Operator Operator Operator Operator	No No No No	Yes Yes Yes Yes	Yes Yes Yes Yes
View Instances tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Delete/abort actions 	Administrator	No	No	Yes

Table C-5 (Cont.) Composite Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery actions	Operator	No	Yes	Yes
▪ Delete rejected messages	Administrator	No	No	Yes
View Unit Test tab	Monitor	Yes	Yes	Yes
▪ Execute test action	Operator	No	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes

C.1.6 BPEL Process Service Engine

Table C-6 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-6 BPEL Process Service Engine

Menu Items	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Statistics tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery actions (abort, retry, and so on)	Operator	No	Yes	Yes
View Deployed Components tab	Monitor	Yes	Yes	Yes
Message Recovery tab	Monitor	Yes	Yes	Yes
▪ BPEL message recovery action	Operator	No	Yes	Yes
View Configuration (Properties page)	Monitor	Yes	Yes	Yes
▪ Apply button	Administrator	No	No	Yes
▪ Add button	Administrator	No	No	Yes

C.1.7 Mediator Service Engine

Table C-7 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-7 Mediator Service Engine

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Statistics tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes

Table C-7 (Cont.) Mediator Service Engine

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Faults tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Fault recovery action (abort, retry, and so on) 	Operator	No	Yes	Yes
View Deployed Components tab	Monitor	Yes	Yes	Yes
View Configuration (Properties page)	Monitor	Yes	Yes	Yes
Apply button	Administrator	No	No	Yes

C.1.8 Human Workflow Service Engine

[Table C-8](#) lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-8 Human Workflow Service Engine

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Statistics tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Fault recovery action (abort, retry, and so on) 	Operator	No	Yes	Yes
View Deployed Components tab	Monitor	Yes	Yes	Yes
View Notification Management tab	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Send notifications 	Administrator	No	No	Yes
Configuration (Properties page)	Monitor	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ Apply button 	Administrator	No	No	Yes

C.1.9 Business Rules Service Engine

[Table C-9](#) lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-9 Business Rules Service Engine

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
View Deployed Components tab	Monitor	Yes	Yes	Yes

C.1.10 BPEL Process Service Component Home Page

Table C-10 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-10 BPEL Process Service Component Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery action	Operator	No	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes

C.1.11 Mediator Service Component Home Page

Table C-11 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-11 Mediator Service Component Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery action	Operator	No	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes

C.1.12 Human Task Service Component Home Page

Table C-12 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C-12 Human Task Service Component Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery action	Operator	No	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes
View Administration tab	Monitor	Yes	Yes	Yes
▪ Apply changes	Administrator	No	No	Yes

C.1.13 Decision Service Component Home Page

Table C–13 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–13 Decision Service Component Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Instances tab	Monitor	Yes	Yes	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Fault recovery action	Operator	No	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes

C.1.14 Flow Trace Page

Table C–14 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–14 Flow Trace Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Flow trace	Monitor	Yes	Yes	Yes

C.1.15 Audit Trail

Table C–15 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–15 Audit Trail Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Audit Trail tab	Monitor	Yes	Yes	Yes
▪ Audit trail payloads	Monitor	Yes	Yes	Yes
View Flow Debug tab	Monitor	Yes	Yes	Yes
View Sensors tab	Monitor	Yes	Yes	Yes
View Fault Recovery tab	Monitor	Yes	Yes	Yes
▪ Recovery action	Operator	No	Yes	Yes

C.1.16 Services Home Page

Table C–16 lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–16 Services Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes

Table C–16 (Cont.) Services Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes
View Faults tab	Monitor	Yes	Yes	No
▪ Delete rejected messages	Administrator	No	No	Yes
View Properties	Monitor	Yes	Yes	Yes
▪ Apply changes	Administrator	No	No	Yes
▪ Add properties	Administrator	No	No	Yes

C.1.17 References Home Page

[Table C–17](#) lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–17 References Home Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Dashboard tab	Monitor	Yes	Yes	Yes
View Policies tab	Monitor	Yes	Yes	Yes
▪ Attach/detach action	Administrator	No	No	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Delete rejected messages	Administrator	No	No	Yes
View Properties	Monitor	Yes	Yes	Yes
▪ Apply changes	Administrator	No	No	Yes
▪ Add properties	Administrator	No	No	Yes

C.1.18 B2B Pages

[Table C–18](#) lists the lowest role that a user must have to access these pages and the privileges that each role has on these pages.

Table C–18 B2B Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View B2B Configuration page	Monitor	Yes	Yes	Yes
▪ Apply changes	Administrator	No	No	Yes
View B2B Bindings page	Monitor	Yes	Yes	Yes

C.1.19 Business Events Page

[Table C–19](#) lists the lowest role that a user must have to access this page and the privileges that each role has on this page.

Table C–19 Business Events Page

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Events tab	Monitor	Yes	Yes	Yes
▪ Subscribe/test	Administrator	No	No	Yes
▪ Show event definition	Monitor	Yes	Yes	Yes
View Subscriptions tab	Monitor	Yes	Yes	Yes
▪ Add/edit/delete subscriptions	Administrator	No	No	Yes
▪ Manage database agents	Administrator	No	No	Yes
View Faults tab	Monitor	Yes	Yes	Yes
▪ Retry/abort	Operator	No	Yes	Yes

C.1.20 System MBean Browser

Table C–20 lists the lowest role that a user must have to access this browser and the privileges that each role has on this page.

Table C–20 System MBean Browser

Page Elements	Lowest Role for Accessing	Monitor	Operator	Administrator
View Configuration	Monitor	Yes	Yes	Yes
▪ Add/apply changes	Administrator	No	No	Yes

C.2 Removing the Mapping Between the Operators Role and the SOAOperator Role

By default, the Oracle WebLogic Server Operators role is included as a member of the SOAOperator role in Oracle Enterprise Manager Fusion Middleware Control Console. Oracle recommends that you remove the Operators role.

Perform the following steps to remove the Operators role.

1. Log in to Oracle Enterprise Manager Fusion Middleware Control Console as a user with the Administrators role.
2. In the navigator, expand the **SOA** folder.
3. Right-click **soa-infra**, and select **Security > Application Roles**.
4. To the right of the **Role Name** field, click the **Search** icon.
The list of roles appears.
5. Click **SOAOperator**.
The Edit Application Role : SOAOperator page appears.
6. In the **Roles** section, select **Operators**.
7. Click **Delete**.
8. Click **OK** to save the changes.

This removes the Oracle WebLogic Server Operators role as a member of the Oracle Enterprise Manager Fusion Middleware Control Console SOAOperator role. At this point, the SOAOperator role includes only the Oracle WebLogic Server Administrators role.

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