Oracle® Fusion Middleware

Administrator's Guide for Oracle SOA Suite and Oracle Business 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 Fusion Middleware User's Guide for Oracle Business Process Management*
- *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.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Part I

Understanding Oracle 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"

1

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"
- Section 1.5, "Administration for Application Developers"

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

- *Oracle Application Server 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

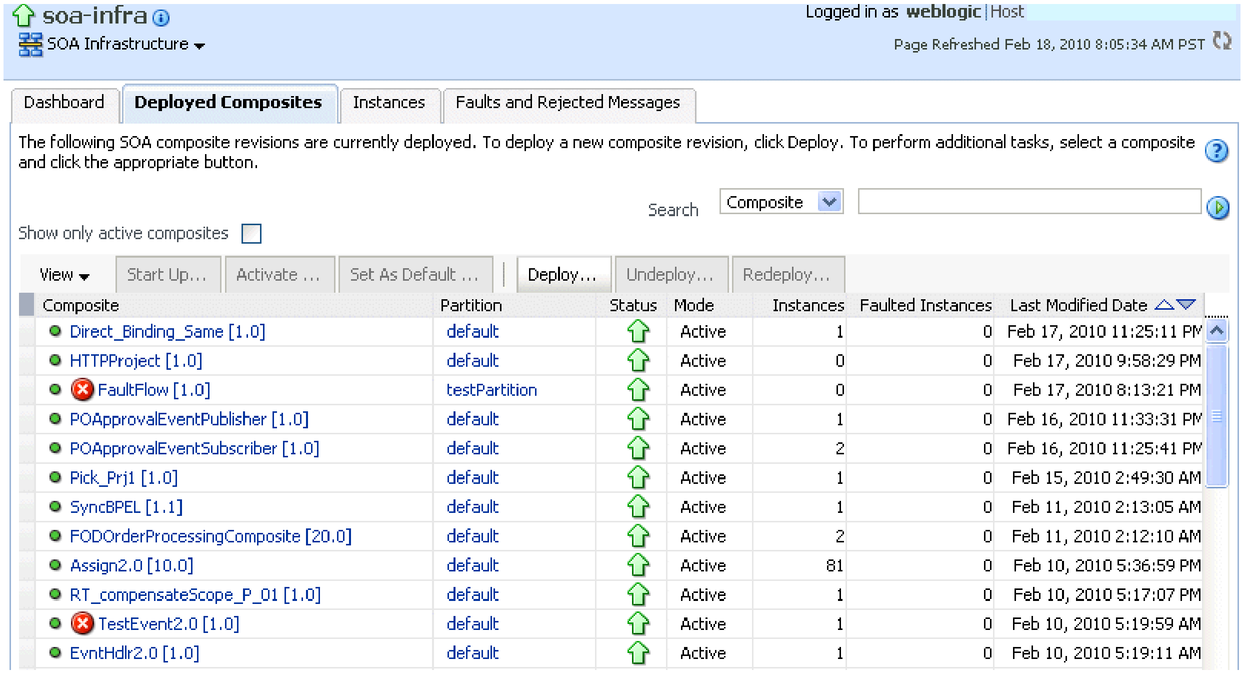
The SOA Infrastructure is a Java EE-compliant application running in Oracle WebLogic Server. The application manages composites and their life cycle, service engines, and binding components.

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

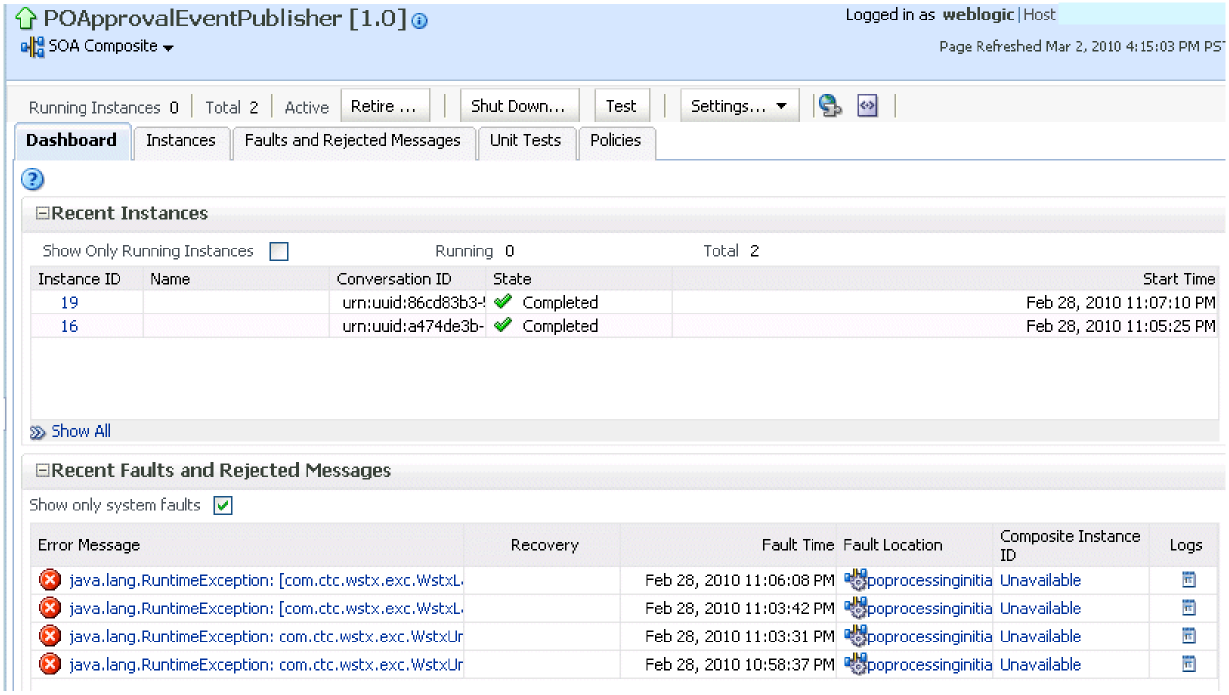


The following SOA composite revisions are currently deployed. To deploy a new composite revision, click Deploy. To perform additional tasks, select a composite and click the appropriate button.

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
● EvntHdlr2.0 [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)

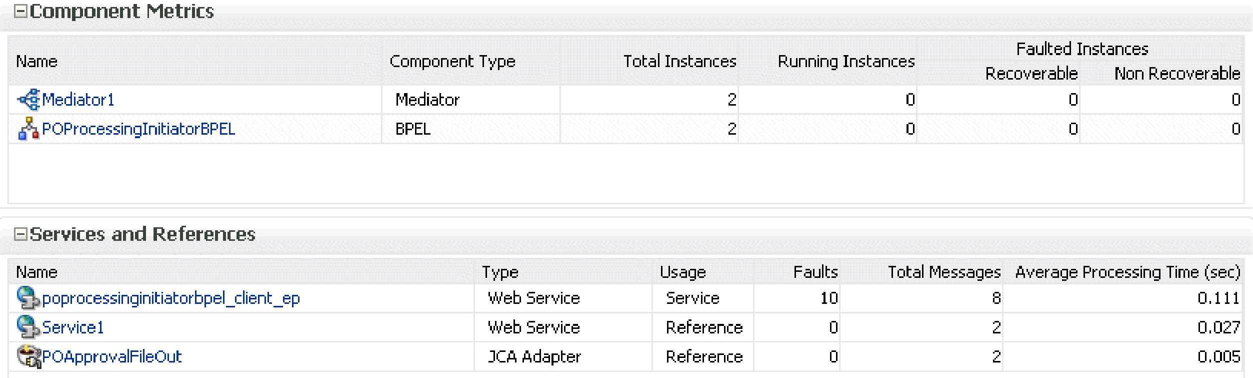

POApprovalEventPublisher [1.0]
SOA Composite
Logged in as weblogic | Host
Page Refreshed Mar 2, 2010 4:15:03 PM PST
Running Instances 0
Total 2
Active
Retire ...
Shut Down...
Test
Settings...
Dashboard
Instances
Faults and Rejected Messages
Unit Tests
Policies
Recent Instances
Show Only Running Instances ☐
Running 0
Total 2
Show All
Recent Faults and Rejected Messages
Show only system faults ☑

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

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

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)



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

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 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:

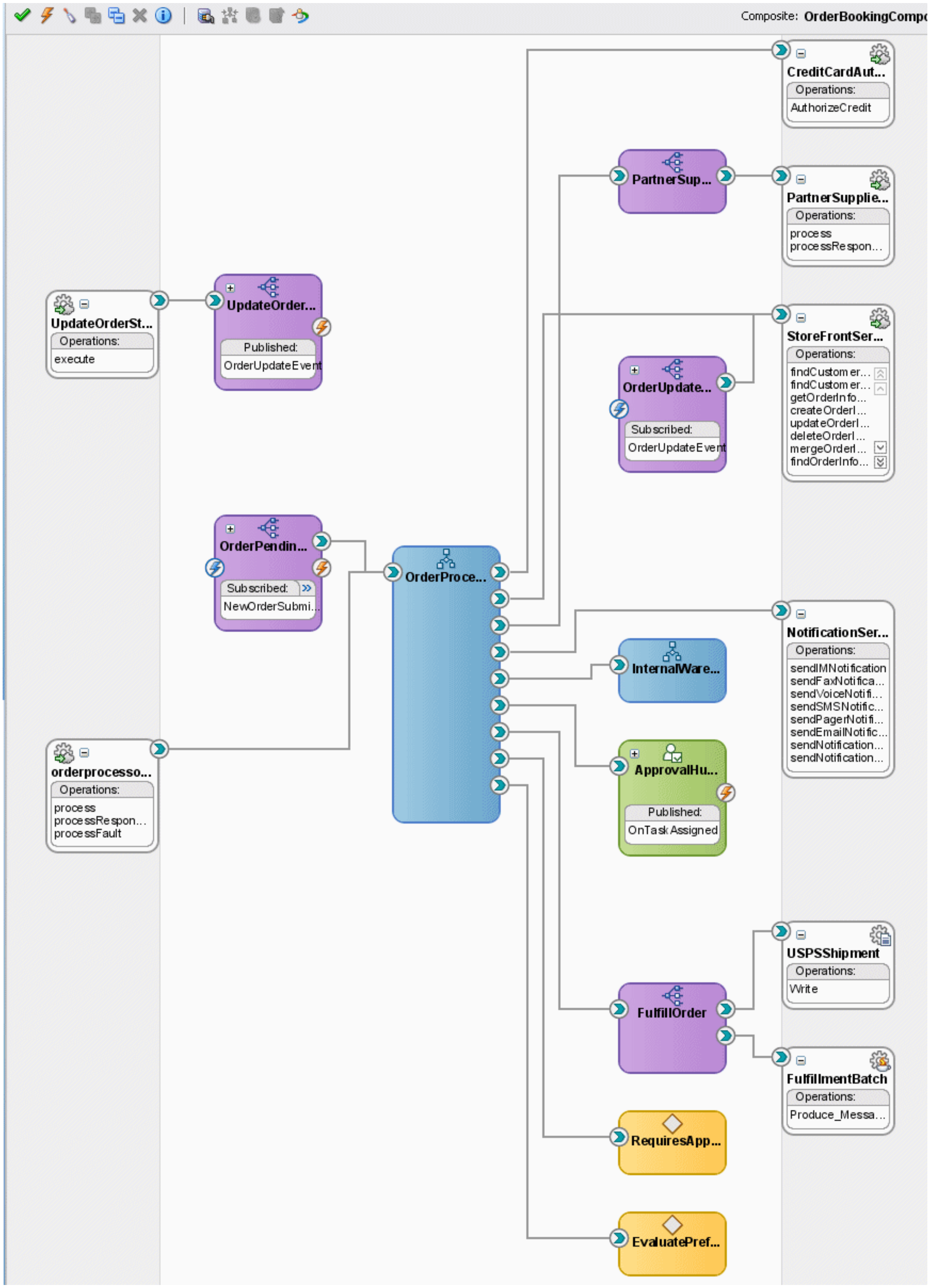
- Service components such as Oracle Mediator for routing, BPEL processes for orchestration, BPMN processes for orchestration (if Oracle BPM Suite is also installed), human tasks for workflow approvals, spring for integrating Java interfaces into SOA composite applications, and decision services for working 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.

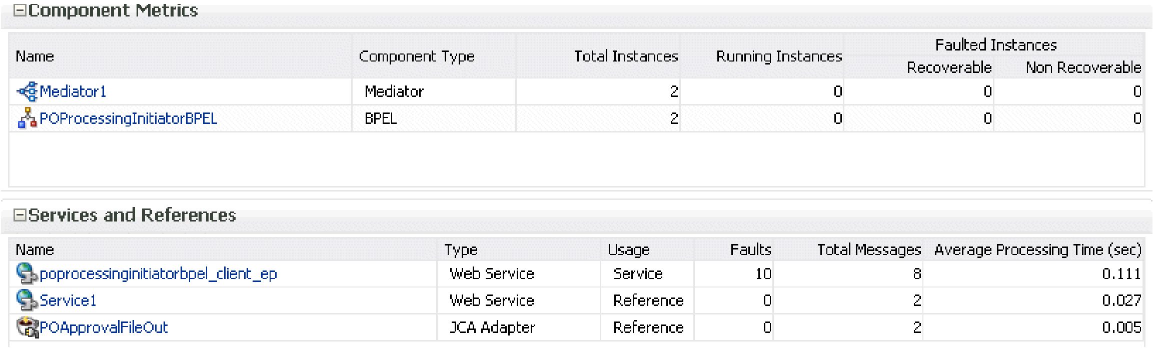
Figure 1–4 provides an example of a SOA composite application in the SOA Composite Editor in Oracle JDeveloper. Service binding components (such as **orderprocessor_client_ep**) advertise their capabilities to external consumers. The service exposes a public interface of the SOA composite application (**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 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.

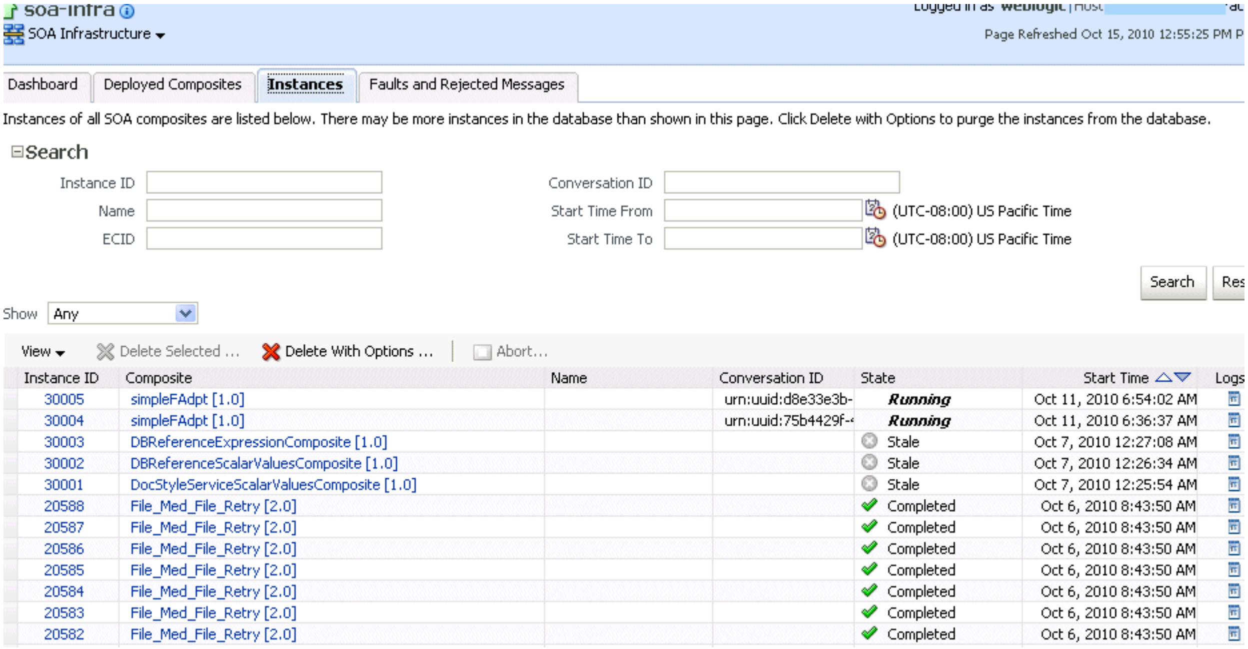
Instances that you create as unit tests from the Test Runs page are distinguished from those created automatically or created manually from the Test Web Service page by a little yellow box. This box displays to the left of the instance ID, as shown in Figure 1–6. This box is visible in both the Instances 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:

- Programatically 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 of

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



Instances of all SOA composites are listed below. There may be more instances in the database than shown in this page. Click Delete with Options to purge the instances from the database.

Instance ID	Composite	Name	Conversation ID	State	Start Time	Logs
30005	simpleFAdpt [1.0]		urn:uuid:d8e33e3b-	***Running***	Oct 11, 2010 6:54:02 AM	
30004	simpleFAdpt [1.0]		urn:uuid:75b4429f-	***Running***	Oct 11, 2010 6:36:37 AM	
30003	DBReferenceExpressionComposite [1.0]			Stale	Oct 7, 2010 12:27:08 AM	
30002	DBReferenceScalarValuesComposite [1.0]			Stale	Oct 7, 2010 12:26:34 AM	
30001	DocStyleServiceScalarValuesComposite [1.0]			Stale	Oct 7, 2010 12:25:54 AM	
20588	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20587	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20586	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20585	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20584	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20583	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20582	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	

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:

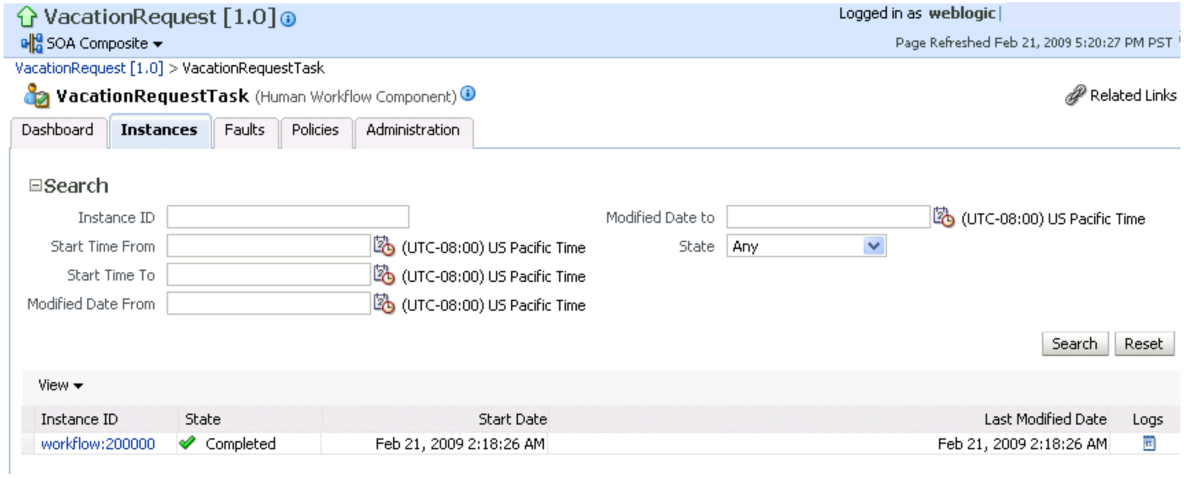
- BPEL process — For process orchestration of synchronous and asynchronous processes
- BPMN process (if Oracle BPM Suite is installed) — For creating and modeling business processes using Business Process Management Notation and Modeling (BPMN)
- Oracle Mediator — For content transformation and routing 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



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	

Note: 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"

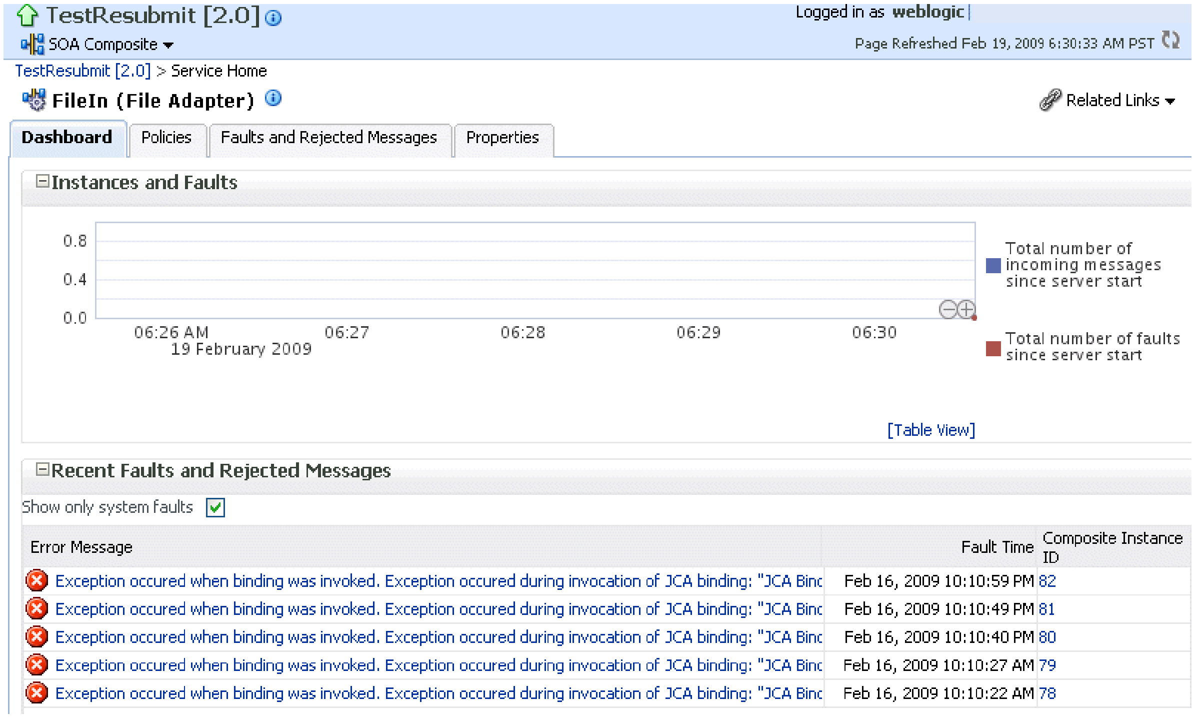
1.2.5 Understanding Binding Components

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


TestResubmit [2.0]
SOA Composite
Logged in as weblogic
Page Refreshed Feb 19, 2009 6:30:33 AM PST
TestResubmit [2.0] > Service Home
FileIn (File Adapter)
Related Links
Dashboard
Policies
Faults and Rejected Messages
Properties
Instances and Faults
0.8
0.4
0.0
06:26 AM
19 February 2009
06:27
06:28
06:29
06:30
Total number of incoming messages since server start
Total number of faults since server start
[Table View]
Recent Faults and Rejected Messages
Show only system faults ☑

Error Message	Fault Time	Composite Instance ID
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:59 PM	82
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:49 PM	81
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:40 PM	80
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:27 AM	79
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:22 AM	78

For more information, see Section XIV, "Administering Binding Components."

1.2.6 Understanding Service Engines

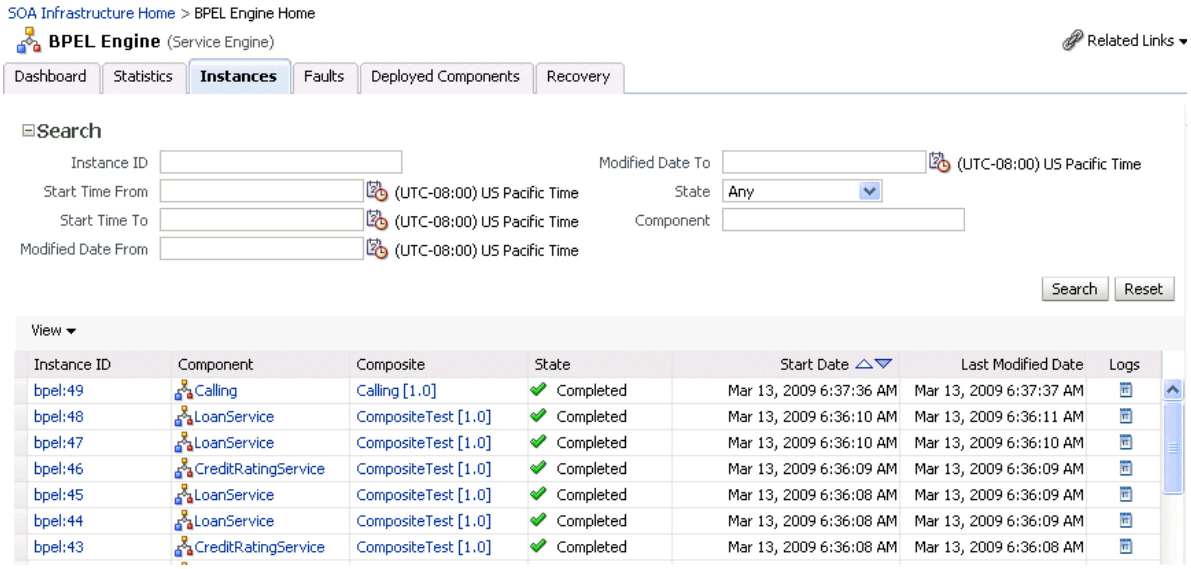
The SOA Infrastructure includes a set of service engines (BPEL process, human workflow, decision service, Oracle mediator, and spring) that execute the business logic of their respective components within the SOA composite application (for example, a BPEL process). If Oracle BPM Suite is installed, the 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
Start Time To
Modified Date From
Modified Date To
Component
(UTC-08:00) US Pacific Time
(UTC-08:00) US Pacific Time
(UTC-08:00) US Pacific Time
(UTC-08:00) US Pacific Time
Search
Reset
View

State: Any

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	▤
bpel:48	LoanService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:10 AM	Mar 13, 2009 6:36:11 AM	▤
bpel:47	LoanService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:10 AM	Mar 13, 2009 6:36:10 AM	▤
bpel:46	CreditRatingService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:09 AM	Mar 13, 2009 6:36:09 AM	▤
bpel:45	LoanService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:09 AM	▤
bpel:44	LoanService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:09 AM	▤
bpel:43	CreditRatingService	CompositeTest [1.0]	✓ Completed	Mar 13, 2009 6:36:08 AM	Mar 13, 2009 6:36:08 AM	▤

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 run time 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."

Note: While this guide primarily describes how to use Oracle SOA Suite with Oracle WebLogic Server, most of the information is also applicable to using Oracle SOA Suite with other third-party application servers. However, there may be some differences with using third-party application servers.

For information about these differences, see *Oracle Fusion Middleware Third-Party Application Server Guide*.

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.

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

Component	Composite	Service Engine	SOA Infrastructure	Which Setting Takes Precedence?
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.
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 11.1, "Configuring BPEL Process Service Engine Properties"
- Section 11.4, "Setting the Audit Level at the BPEL Process Service Component Level"

- Chapter 22, "Configuring Human Workflow Service Components and Engines"
- Chapter 37, "Configuring Service and Reference Binding Components"
- Section 40.1, "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:

- Creation and deletion of partitions. Once you create partitions, you can deploy a composite to the appropriate partition. This action 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
- Publication of web services to the Universal Description, Discovery, and Integration (UDDI) registry
- Disabling of business monitors (BPEL sensors, BPEL monitors, and BPMN measurements)

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 Application Server 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
▪ 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	▪ 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 13.1, "Recovering from BPEL Process Service Component Faults"
- Section 13.3, "Recovering from BPEL Process Service Engine Faults"
- Section 16.2, "Managing Oracle Mediator Faults"
- Section 24.2, "Recovering from Human Workflow Service Engine Faults"
- Section 24.4, "Recovering from Human Task Service Component Faults"
- Section 36.4, "Recovering from Business Event Faults"

- Section 42.1, "Recovering from BPMN Process Service Component Faults"
- Section 42.3, "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 13.2, "Managing BPEL Process Service Component Policies"
- Section 24.1, "Managing Human Task Service Component Policies"
- Section 39.1, "Managing Binding Component Policies"
- Section 42.2, "Managing BPMN Process Service Component Policies"
- *Oracle Application Server Web Services Security Guide* 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 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, 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 life cycle 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, stage, 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.

SOA Governance Suite provides Oracle SOA Suite and Oracle BPM Suite users with options to specify and automate a complete life cycle for applications and their components (for example, planning, design, implementation, testing, staging, production, changes, and retirement).

For more information about administering the life cycle states of a SOA composite application and SOA governance, 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"

2

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 and Oracle Business Process Management 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.

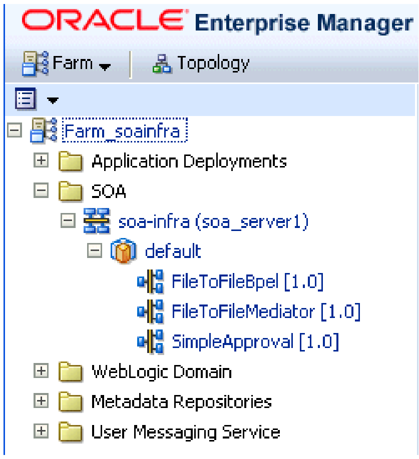
2.2.1 Navigating Through the SOA Infrastructure Home Page and Menu

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:

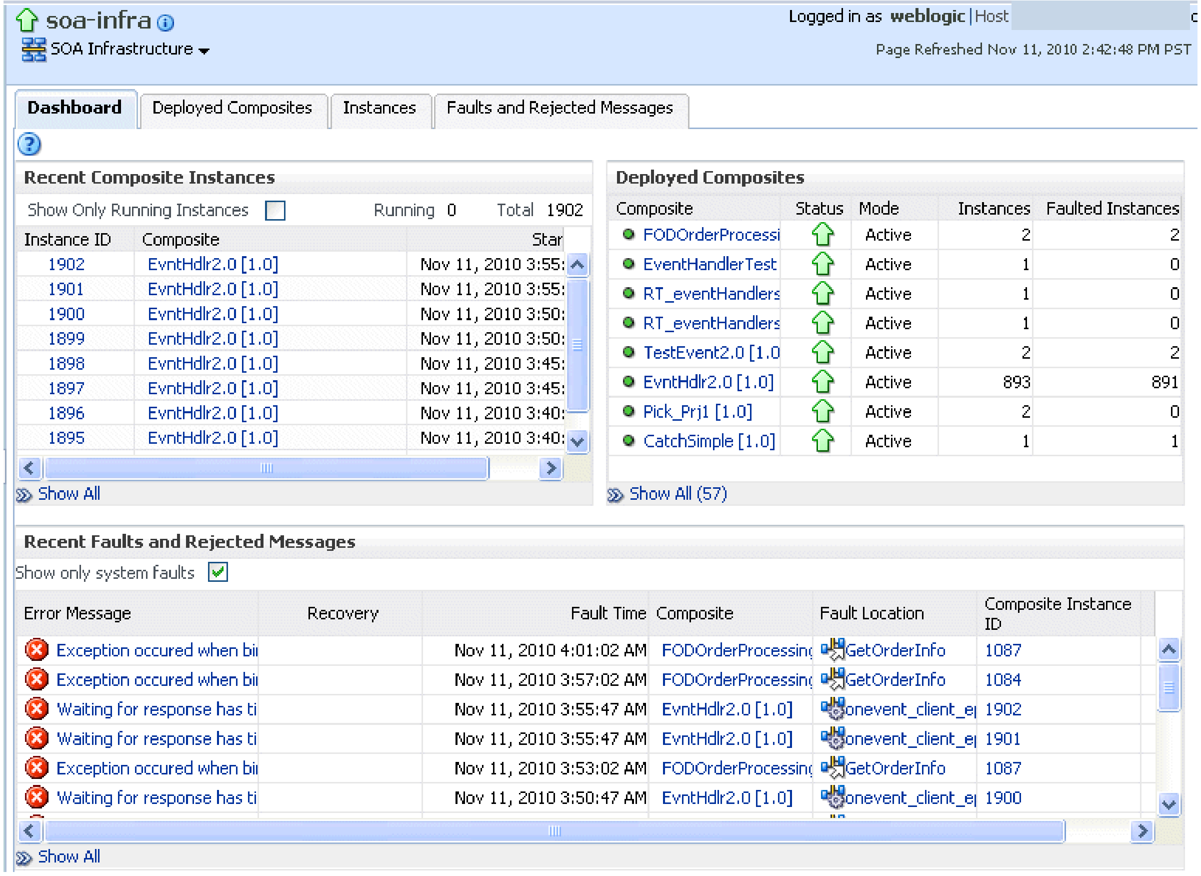
1. Expand **SOA** > **soa-infra** in the navigator.

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


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Nov 11, 2010 2:42:48 PM PST
Dashboard
Deployed Composites
Instances
Faults and Rejected Messages

Recent Composite Instances

Show Only Running Instances ☐ Running 0 Total 1902

Instance ID	Composite	Star
1902	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:55:
1901	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:55:
1900	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:50:
1899	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:50:
1898	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:45:
1897	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:45:
1896	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:40:
1895	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:40:

Show All

Deployed Composites

Composite	Status	Mode	Instances	Faulted Instances
FODOrderProcessi	⇧	Active	2	2
EventHandlerTest	⇧	Active	1	0
RT_eventHandlers	⇧	Active	1	0
RT_eventHandlers	⇧	Active	1	0
TestEvent2.0 [1.0	⇧	Active	2	2
EvntHdlr2.0 [1.0]	⇧	Active	893	891
Pick_Prj1 [1.0]	⇧	Active	2	0
CatchSimple [1.0]	⇧	Active	1	1

Show All (57)

Recent Faults and Rejected Messages

Show only system faults ☑

Error Message	Recovery	Fault Time	Composite	Fault Location	Composite Instance ID
⊗ Exception occured when bi		Nov 11, 2010 4:01:02 AM	FODOrderProcessin	GetOrderInfo	1087
⊗ Exception occured when bi		Nov 11, 2010 3:57:02 AM	FODOrderProcessin	GetOrderInfo	1084
⊗ Waiting for response has ti		Nov 11, 2010 3:55:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1902
⊗ Waiting for response has ti		Nov 11, 2010 3:55:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1901
⊗ Exception occured when bi		Nov 11, 2010 3:53:02 AM	FODOrderProcessin	GetOrderInfo	1087
⊗ Waiting for response has ti		Nov 11, 2010 3:50:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1900

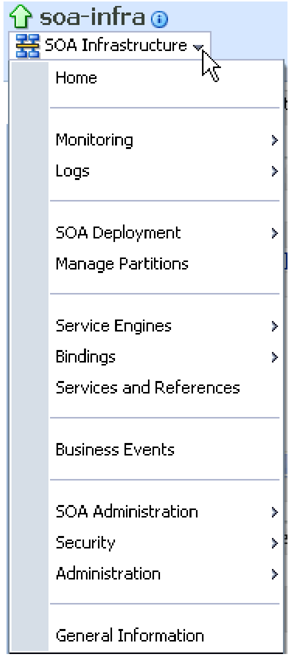
Show All

   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	This option displays the following details of the SOA Infrastructure Dashboard page: ■ 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. For more information, see Section 4.1, "Monitoring SOA Infrastructure Recent Instances and Faults."

Option	Description
Monitoring	This option displays the following details: ■ 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. For more information, see Section 4.2, "Monitoring Processing Requests."
Logs	This option enables you to view and configure the logging levels for run-time loggers. For more information, see Section 3.4, "Configuring Log Files."
SOA Deployment	This option enables you to deploy, undeploy, or redeploy SOA composite applications. For more information, see Section 5.1, "Deploying Applications."
Manage Partitions	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. 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."
Service Engines	This option provides access to monitoring and management tasks for the BPEL process, Oracle BPMN, Oracle Mediator, human workflow, and business rules service engines.
Bindings	This option displays details about recently active document types and trading partners, and inbound and outbound endpoints for Oracle B2B.
Services and References	This option displays message processing metrics for service and reference binding components in all SOA composite applications. For more information, see Section 4.3, "Monitoring Service and Reference Binding Components in the SOA Infrastructure."
Business Events	This option displays available business events, current event subscribers, and fault details. For more information, see Chapter 36, "Managing Business Events."

Option	Description
SOA Administration	This option provides access to the following configuration tasks for the SOA Infrastructure and each service engine: ▪ **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. For more information, see Section 3.1, "Configuring SOA Infrastructure Properties." ▪ **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. For more information, see Section 11.1, "Configuring BPEL Process Service Engine Properties." ▪ **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. For more information, see Section 40.1, "Configuring BPMN Process Service Engine Properties" ▪ **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. For more information, see Section 14.1, "Introduction to Configuring Oracle Mediator." ▪ **Workflow Notification Properties**: For setting the workflow service notification mode and actionable e-mail address value. For more information, see Section 22.1, "Configuring Human Workflow Notification Properties." ▪ **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. For more information, see Section 22.2, "Configuring Human Workflow Task Service Properties." ▪ **B2B Server Properties**: For enabling Dynamic Monitoring Service (DMS) metrics. ▪ **Cross References**: For selecting cross-reference values.
Security	This option displays the following selections: ▪ **Application Policies**: For creating application policies that an application relies upon for controlling access to resources. ▪ **Application Roles**: For creating application roles for applications. For more information about application roles, see *Oracle Containers for J2EE Security Guide*. This option is available for all deployed Java EE applications, including the SOA Infrastructure (**soa-infra**) application. Note that these options do *not* configure security policies for SOA composites. For more information about attaching policies to composite applications, see Section 8.8, "Managing SOA Composite Application Policies."

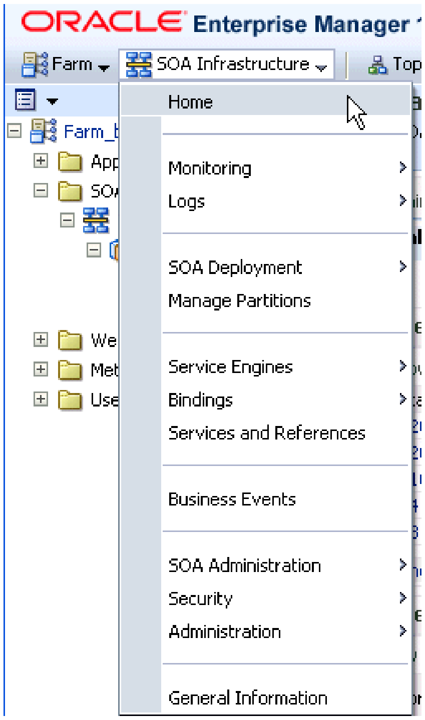
Option	Description
Administration	This option displays the following selections: - **MDS Connections**: For managing metadata service (MDS) connections. - **TopLink Sessions**: For managing cache for the TopLink persistence framework. - **System MBean Browser**: For advanced configuration of properties across applications and components. For more information, see *Oracle Application Server Administrator's Guide* for instructions on using the System Mean Browser. 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 *Oracle Fusion Middleware Oracle WebLogic Scripting Tool*. **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 run time behavior of other Oracle SOA Suite components.
General Information	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.

Note: Starting with 11*g* Release 1 (11.1.1.4.0), you can no longer stop and start the SOA Infrastructure from the **SOA Infrastructure** menu.

---

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.

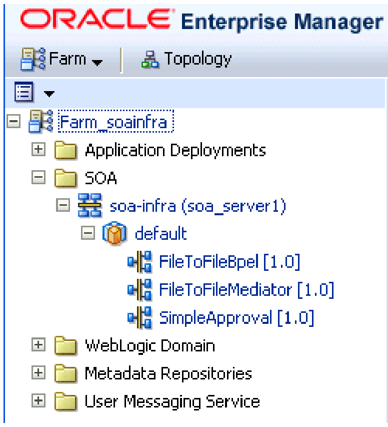
2.2.2 Navigating Through the SOA Composite Application Home Page and Menu

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:

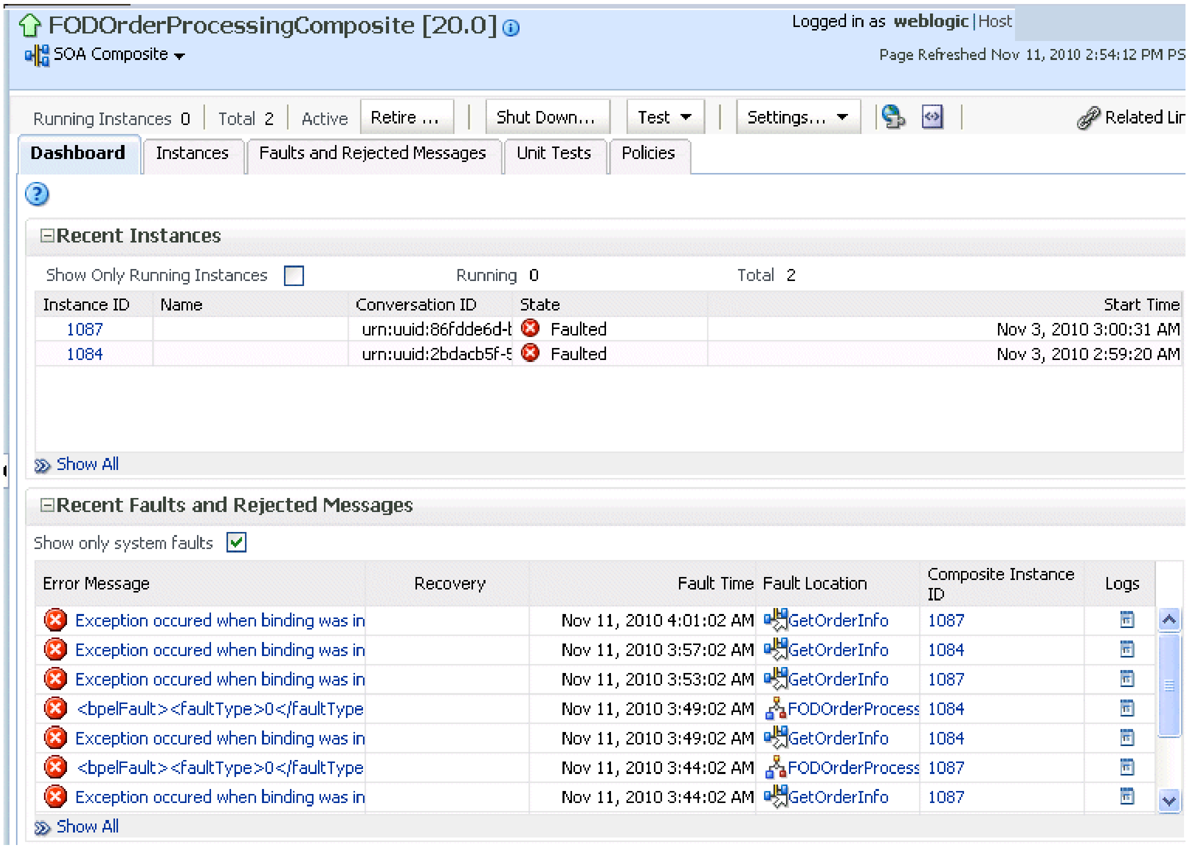
1. Expand **SOA** > **soa-infra** in the navigator.
2. Expand the partitions.

   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.


FODOrderProcessingComposite [20.0]
SOA Composite
Logged in as weblogic | Host
Page Refreshed Nov 11, 2010 2:54:12 PM PS
Running Instances 0
Total 2
Active
Retire ...
Shut Down...
Test
Settings...
Related Lir
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
1087		urn:uuid:86fdde6d-t	Faulted	Nov 3, 2010 3:00:31 AM
1084		urn:uuid:2bdacb5f-5	Faulted	Nov 3, 2010 2:59:20 AM

Show All

Recent Faults and Rejected Messages

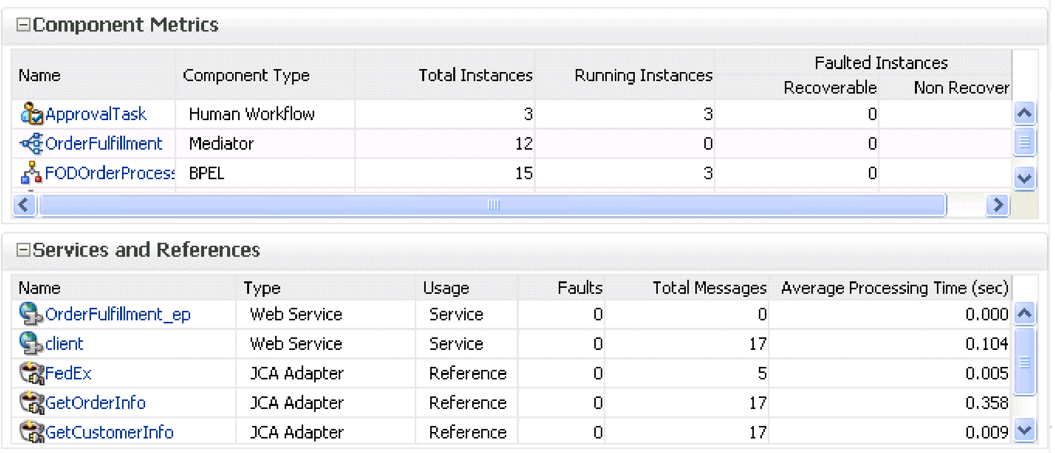
Show only system faults ☑

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
Exception occured when binding was in		Nov 11, 2010 4:01:02 AM	GetOrderInfo	1087	
Exception occured when binding was in		Nov 11, 2010 3:57:02 AM	GetOrderInfo	1084	
Exception occured when binding was in		Nov 11, 2010 3:53:02 AM	GetOrderInfo	1087	
<bpelFault><faultType>0</faultType		Nov 11, 2010 3:49:02 AM	FODOrderProcess	1084	
Exception occured when binding was in		Nov 11, 2010 3:49:02 AM	GetOrderInfo	1084	
<bpelFault><faultType>0</faultType		Nov 11, 2010 3:44:02 AM	FODOrderProcess	1087	
Exception occured when binding was in		Nov 11, 2010 3:44:02 AM	GetOrderInfo	1087	

Show All

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

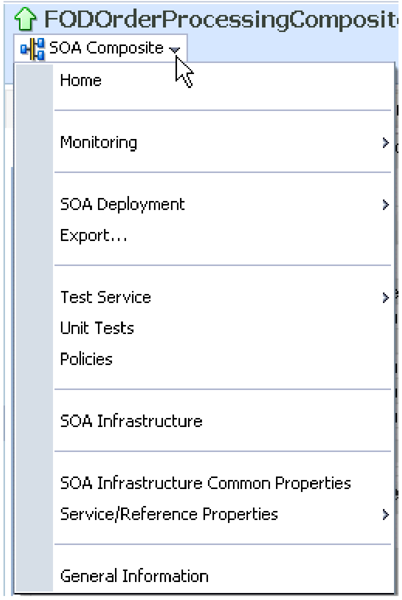
Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recover
ApprovalTask	Human Workflow	3	3	0	
OrderFulfillment	Mediator	12	0	0	
FODOrderProces:	BPEL	15	3	0	

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	This option displays the following details for the SOA composite application home page. ■ 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. For more information, see Section 8.2, "Managing the State of Deployed SOA Composite Applications."
Monitoring	This option displays the performance summary statistics for the selected SOA composite application.
SOA Deployment	This option enables you to undeploy or redeploy this SOA composite application, or deploy another SOA composite application. For more information, see Section 5.1, "Deploying Applications."
Export	This option enables you to export a running SOA composite application to a JAR file. For more information, see Section 8.9, "Exporting a Running SOA Composite Application."
Test Service	This option enables you to manually initiate an instance of this deployed SOA composite application through the Test Web Service page. For more information, see Section 8.1, "Initiating a SOA Composite Application Test Instance."
Unit Tests	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. For more information, see Section 8.7, "Automating the Testing of SOA Composite Applications."
Policies	This option enables you to view and attach or detach policies to or from the SOA composite application. For more information, see Section 8.8, "Managing SOA Composite Application Policies."
SOA Infrastructure	This option takes you to the SOA Infrastructure home page.

Option	Description
SOA Infrastructure Common Properties	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. For more information, see Section 3.1, "Configuring SOA Infrastructure Properties."
Service/ Reference Properties	This option enables you to configure WSDL file properties for the service and reference binding components included in the SOA composite application. For more information, see Section 37.1, "Configuring Service and Reference Binding Component Properties."
General Information	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.

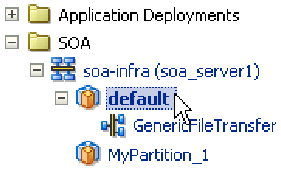
6. Right-click the name of a SOA composite application in the navigator. A menu is displayed that provides you with access to the same administrative options that appear in the **SOA Composite** menu.

2.2.3 Navigating Through the Partition Home Page and Menu

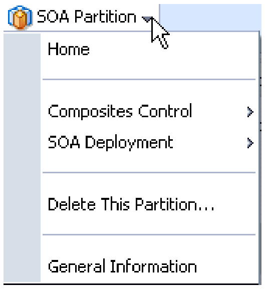
You can navigate to administrative tasks for a specific partition in the SOA Infrastructure.

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	This option displays the following details for the partition home page: ■ 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	This option displays the following bulk life cycle management tasks: ■ **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. For information about these composite states, see Section 8.2.1, "Managing the State of All Applications at the SOA Infrastructure Level."
SOA Deployment	This option displays the following management tasks. ■ **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.
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.

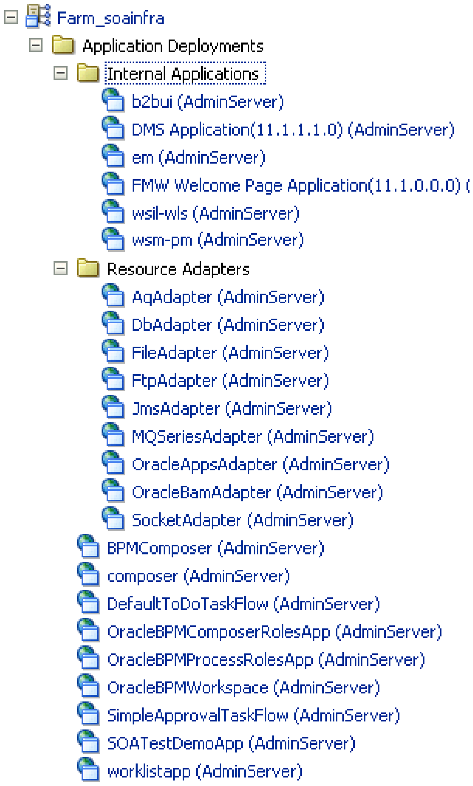
For information about partitions, see Section 1.4.3.5, "Understanding Partitioning of the SOA Infrastructure" and Section 8.10, "Grouping SOA Composite Applications into Partitions."

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.

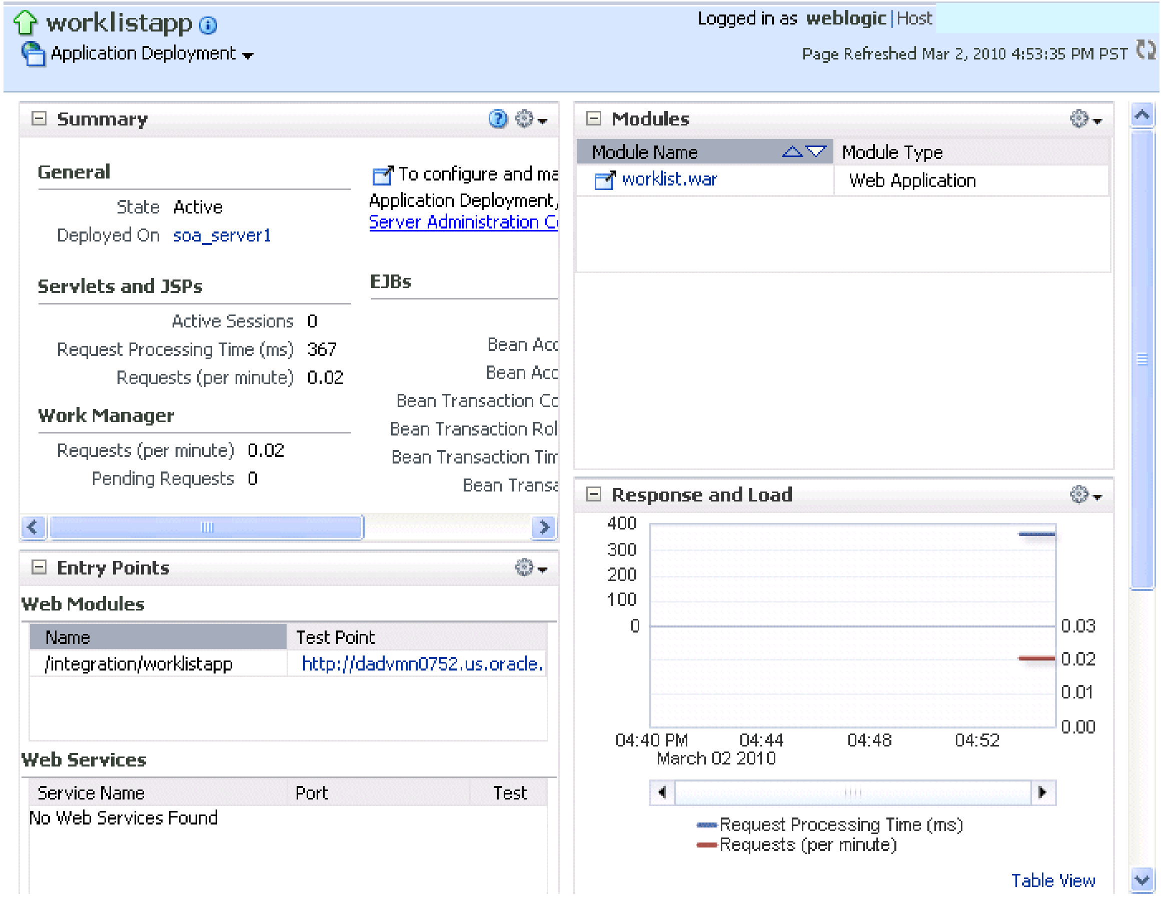


- Farm_soainfra
  - Application Deployments
    - Internal Applications
      - b2bui (AdminServer)
      - DMS Application(11.1.1.1.0) (AdminServer)
      - em (AdminServer)
      - FMW Welcome Page Application(11.1.0.0.0) (
      - wsil-wls (AdminServer)
      - wsm-pm (AdminServer)
    - Resource Adapters
      - AqAdapter (AdminServer)
      - DbAdapter (AdminServer)
      - FileAdapter (AdminServer)
      - FtpAdapter (AdminServer)
      - JmsAdapter (AdminServer)
      - MQSeriesAdapter (AdminServer)
      - OracleAppsAdapter (AdminServer)
      - OracleBamAdapter (AdminServer)
      - SocketAdapter (AdminServer)
    - BPMComposer (AdminServer)
    - composer (AdminServer)
    - DefaultToDoTaskFlow (AdminServer)
    - OracleBPMComposerRolesApp (AdminServer)
    - OracleBPMProcessRolesApp (AdminServer)
    - OracleBPMWorkspace (AdminServer)
    - SimpleApprovalTaskFlow (AdminServer)
    - SOATestDemoApp (AdminServer)
    - worklistapp (AdminServer)

   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.



General

State Active
Deployed On soa_server1

To configure and ma
Application Deployment,
Server Administration C

Servlets and JSPs

Active Sessions 0
Request Processing Time (ms) 367
Requests (per minute) 0.02

Work Manager

Requests (per minute) 0.02
Pending Requests 0

EJBs

Bean Acc
Bean Acc
Bean Transaction Co
Bean Transaction Rol
Bean Transaction Tim
Bean Transa

Module Name	Module Type
worklist.war	Web Application

Web Modules

Name	Test Point
/integration/worklistapp	http://dadvmn0752.us.oracle.

Web Services

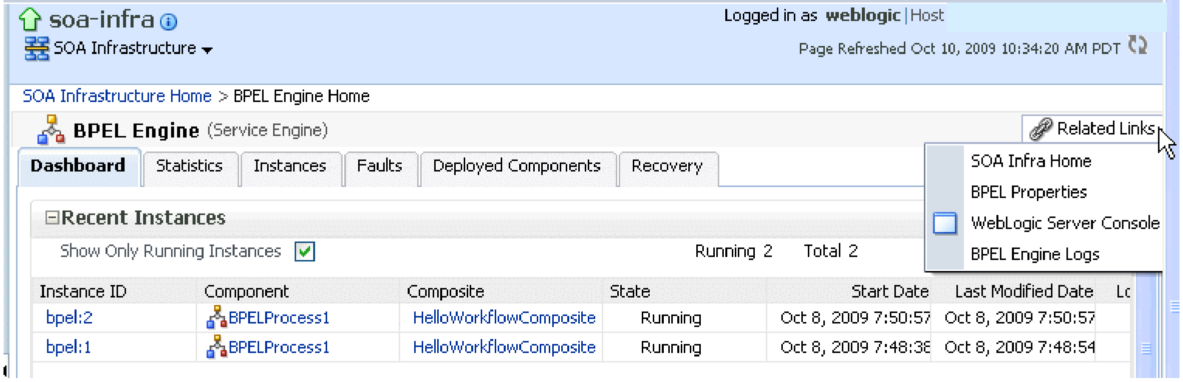
Service Name	Port	Test
No Web Services Found		

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

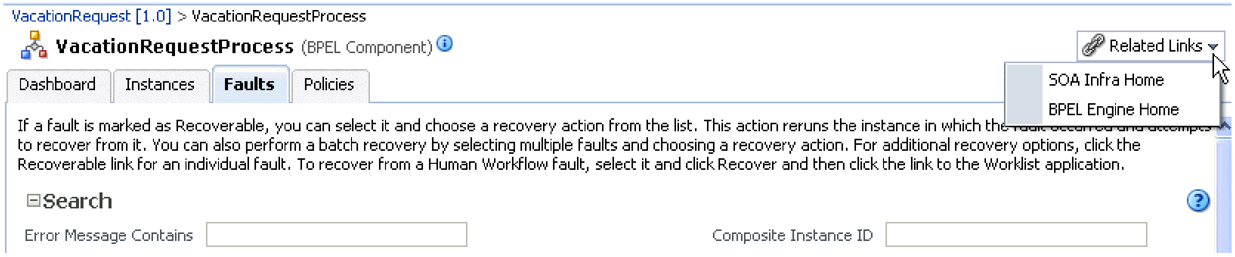


Instance ID	Component	Composite	State	Start Date	Last Modified Date	Lc
bpel:2	BPELProcess1	HelloWorkflowComposite	Running	Oct 8, 2009 7:50:57	Oct 8, 2009 7:50:57	
bpel:1	BPELProcess1	HelloWorkflowComposite	Running	Oct 8, 2009 7:48:3	Oct 8, 2009 7:48:54	

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.

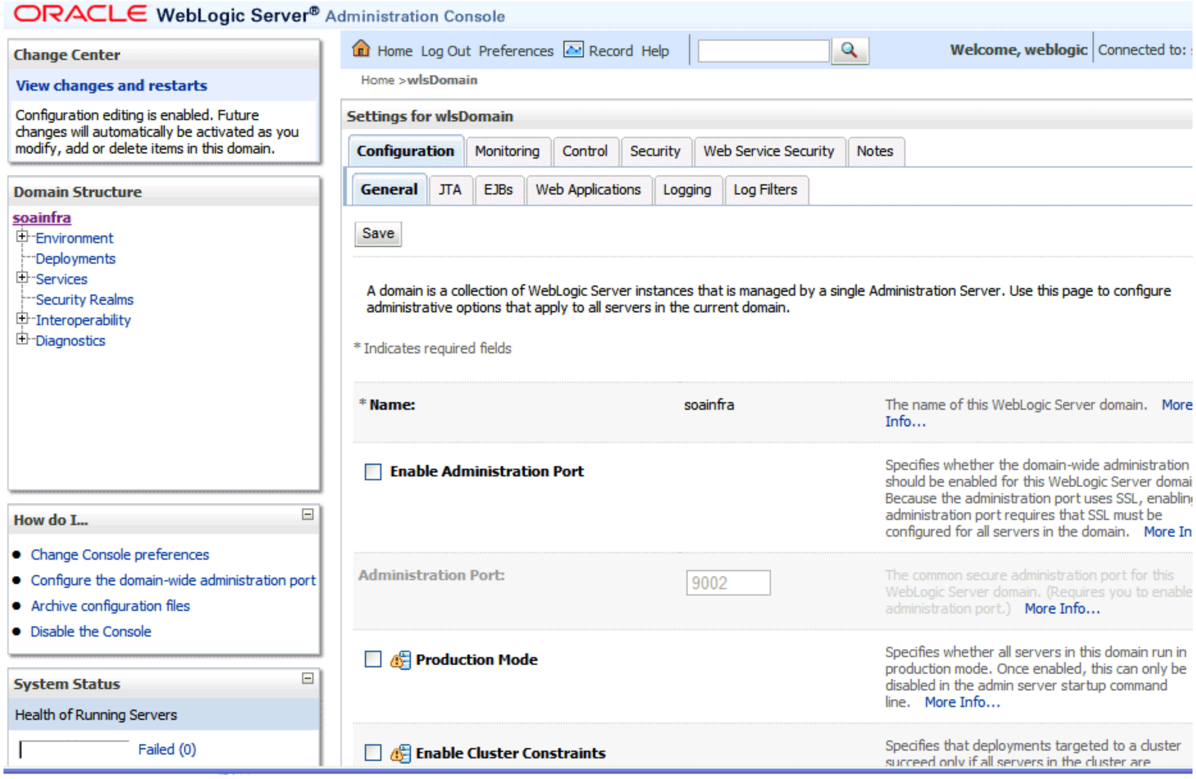
Figure 2–2 Related Links Menu for a Service Component of a SOA Composite Application



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
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.

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



Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

A domain is a collection of WebLogic Server instances that is managed by a single Administration Server. Use this page to configure administrative options that apply to all servers in the current domain.

* Indicates required fields

* **Name:** soainfra — The name of this WebLogic Server domain. More Info...

☐ **Enable Administration Port** — Specifies whether the domain-wide administration should be enabled for this WebLogic Server domai Because the administration port uses SSL, enablin administration port requires that SSL must be configured for all servers in the domain. More In

Administration Port: 9002 — The common secure administration port for this WebLogic Server domain. (Requires you to enable administration port.) More Info...

☐ **Production Mode** — Specifies whether all servers in this domain run in production mode. Once enabled, this can only be disabled in the admin server startup command line. More Info...

☐ **Enable Cluster Constraints** — Specifies that deployments targeted to a cluster succeed only if all servers in the cluster are

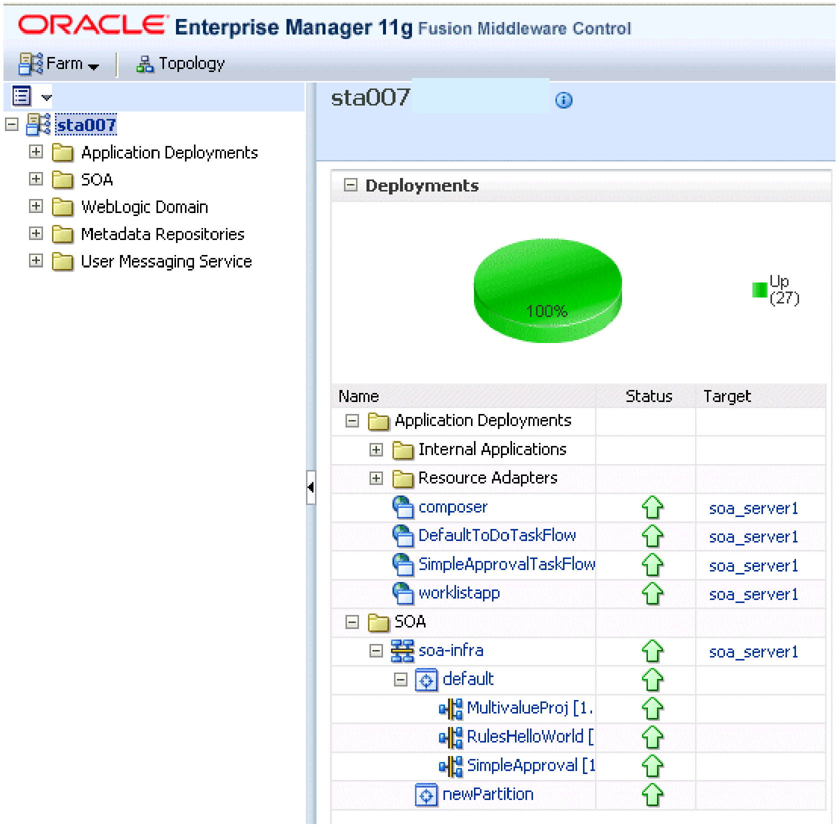
You can perform the following Oracle SOA Suite tasks from Oracle WebLogic Server Administration Console:

- 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**).



Name	Status	Target
Application Deployments		
Internal Applications		
Resource Adapters		
composer	⇧	soa_server1
DefaultToDoTaskFlow	⇧	soa_server1
SimpleApprovalTaskFlow	⇧	soa_server1
worklistapp	⇧	soa_server1
SOA		
soa-infra	⇧	soa_server1
default	⇧	
MultivalueProj [1.	⇧	
RulesHelloWorld [	⇧	
SimpleApproval [1	⇧	
newPartition	⇧	

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"

3

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 Managed Server and 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"
- Section 3.6, "Specifying a Nondefault XA Transaction Timeout Value for XA Data Sources"

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**.

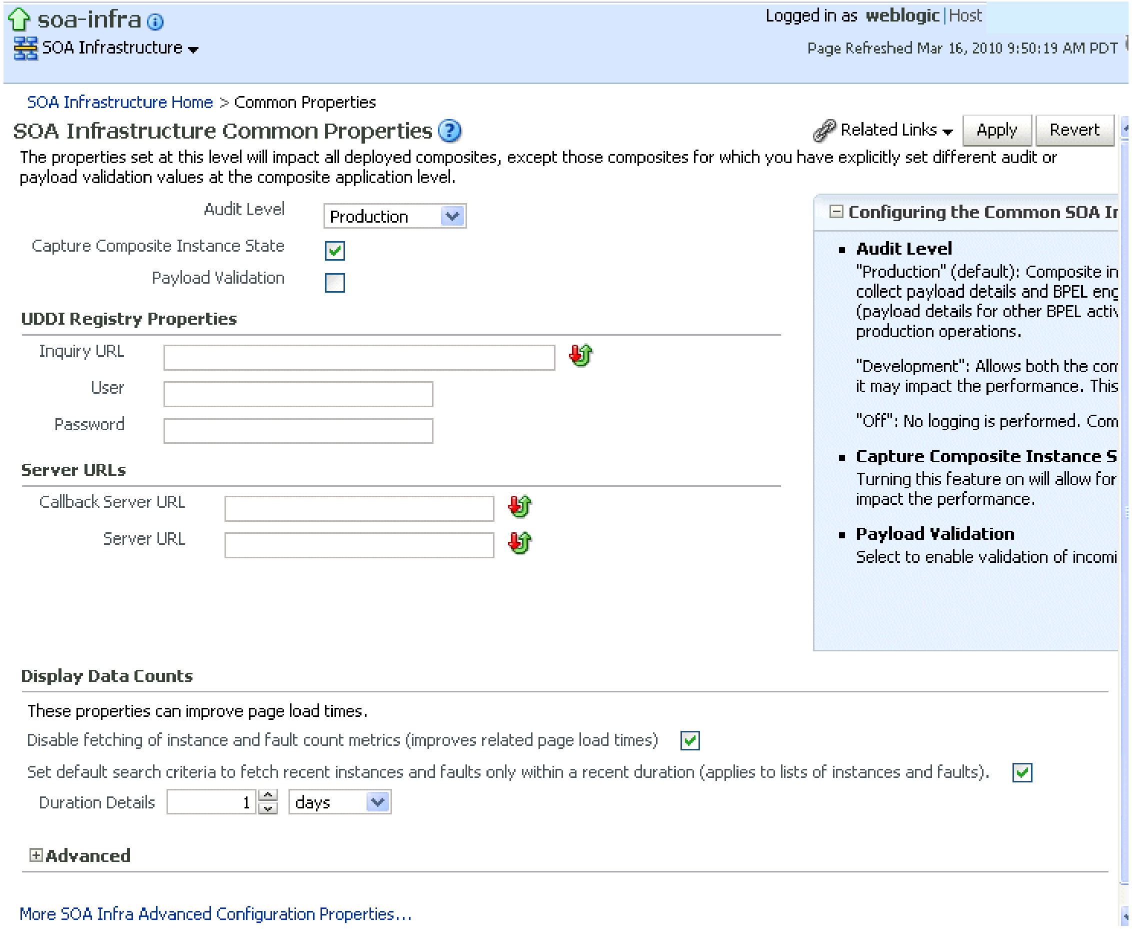
To configure SOA Infrastructure properties:

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...
1. Select **SOA Administration** > **Common Properties**.	1. Right-click **soa-infra**. 2. Select **SOA Administration** > **Common Properties**.	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.


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Mar 16, 2010 9:50:19 AM PDT
SOA Infrastructure Home > Common Properties
Related Links
Apply
Revert

SOA Infrastructure Common Properties

The properties set at this level will impact all deployed composites, except those composites for which you have explicitly set different audit or payload validation values at the composite application level.

Audit Level: Production

Capture Composite Instance State ☑

Payload Validation ☐

UDDI Registry Properties

Inquiry URL

User

Password

Server URLs

Callback Server URL

Server URL

Configuring the Common SOA In

- **Audit Level**
  "Production" (default): Composite in collect payload details and BPEL eng (payload details for other BPEL activ production operations.

  "Development": Allows both the com 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

Display Data Counts

These properties can improve page load times.

Disable fetching of instance and fault count metrics (improves related page load times) ☑

Set default search criteria to fetch recent instances and faults only within a recent duration (applies to lists of instances and faults). ☑

Duration Details: 1 days

Advanced

More SOA Infra Advanced Configuration Properties...

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

Element	Description
Audit Level	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. ■ **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	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: ■ It shows the counts of running instances versus total instances ■ You can also limit the view to running instances only Valid states are running, completed, faulted, recovery needed, stale, terminated, and state not available. 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. **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, 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. 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 *not* listed in the table of running instances. In addition, to terminate a running instance, the instance must have a state (for example, running, faulted, and so on). 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.

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.	`http://master.mycompany.com:8888/registry/uddi/inquiry`
User	Enter the registry inquiry user.	`admin`
Password	Enter the password for the master registry inquiry user.	Enter a password that utilizes good security practices.

   For information about setting the endpoint reference and service key, see Section 37.1.3, "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	Enter the server URL. This URL is published as part of the SOAP address of a service in the concrete WSDL file. **Note:** In 10.1.*x* releases, you manually configured SOAP optimization with the `optSoapShortcut` property. For release 11*g*, SOAP optimization is automatically configured. Therefore, if you upgrade to 11*g* 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 `composite.xml` 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.

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.

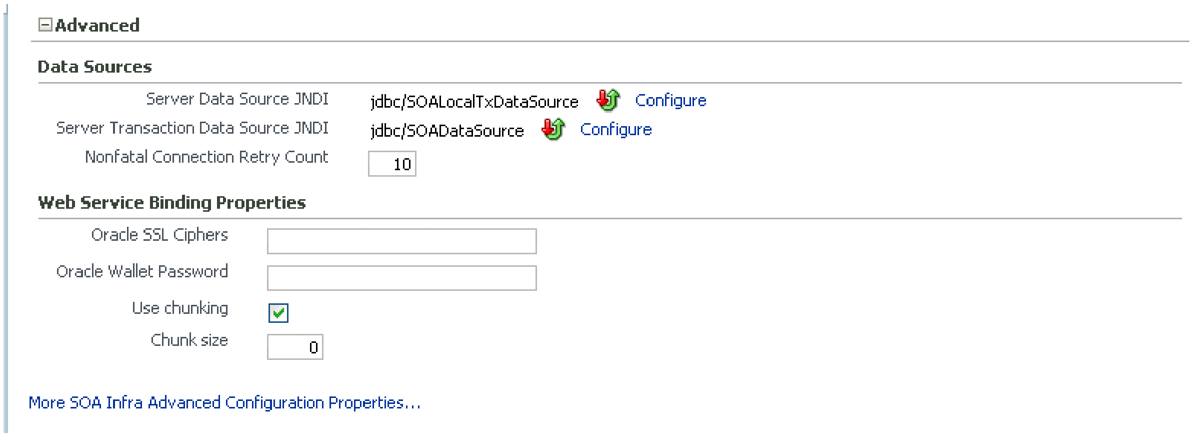
Note: Any changes to these properties impact all SOA farms associated with this Oracle Enterprise Manager instance.

Element	Description
Disable fetching of instance and fault count metrics	Select to disable the display of instance and fault count metrics on the following pages: ■ Dashboard pages of the SOA Infrastructure, SOA composite applications, service engines, and service components ■ Delete with Options: Instances dialog 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. 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.3, "Optimizing the Loading of Pages with Instance and Fault Metrics."

Element	Description
Set default search criteria to fetch recent instances and faults only within a recent duration (applies to lists of instances and faults)	Select this check box and specify a time period during which to retrieve recent instances and faults for display on the following pages: ■ 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 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. When you select this check box 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.

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.3, "Optimizing the Loading of Pages with Instance and Fault Metrics."

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



⊟ Advanced

Data Sources

Server Data Source JNDI: jdbc/SOALocalTxDataSource

Server Transaction Data Source JNDI: jdbc/SOADataSource

Nonfatal Connection Retry Count: 10

Web Service Binding Properties

Oracle SSL Ciphers:

Oracle Wallet Password:

Use chunking: ☑

Chunk size: 0

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 Managed Server and SOA Infrastructure

You can stop and start the SOA Infrastructure in Oracle Enterprise Manager Fusion Middleware Control Console for maintenance or for configuration restarts. To do so, stop and start the managed server on which the SOA Infrastructure is installed. This restarts both the managed server and the SOA Infrastructure.

Notes:

- Starting with 11*g* Release 1 (11.1.1.4.0), you can no longer stop and start the SOA Infrastructure from the **soa-infra** menu in the navigator.
- You can also have a developer configuration that only includes an administration server, and no managed servers.

To stop and start the managed server and SOA Infrastructure:

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

From the WebLogic Server Menu...	From the WebLogic Domain Folder in the Navigator...
1. Select **Control**.	1. Right-click the managed server (for example, **soa_server1**). 2. Select **Control**.

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

For information on stopping and starting managed servers with Node Manager, see *Oracle Fusion Middleware Node Manager Administrator's Guide for Oracle WebLogic Server*.

For information on starting and stopping managed servers with WLST commands, see *Oracle Application Server Administrator's Guide*.

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:

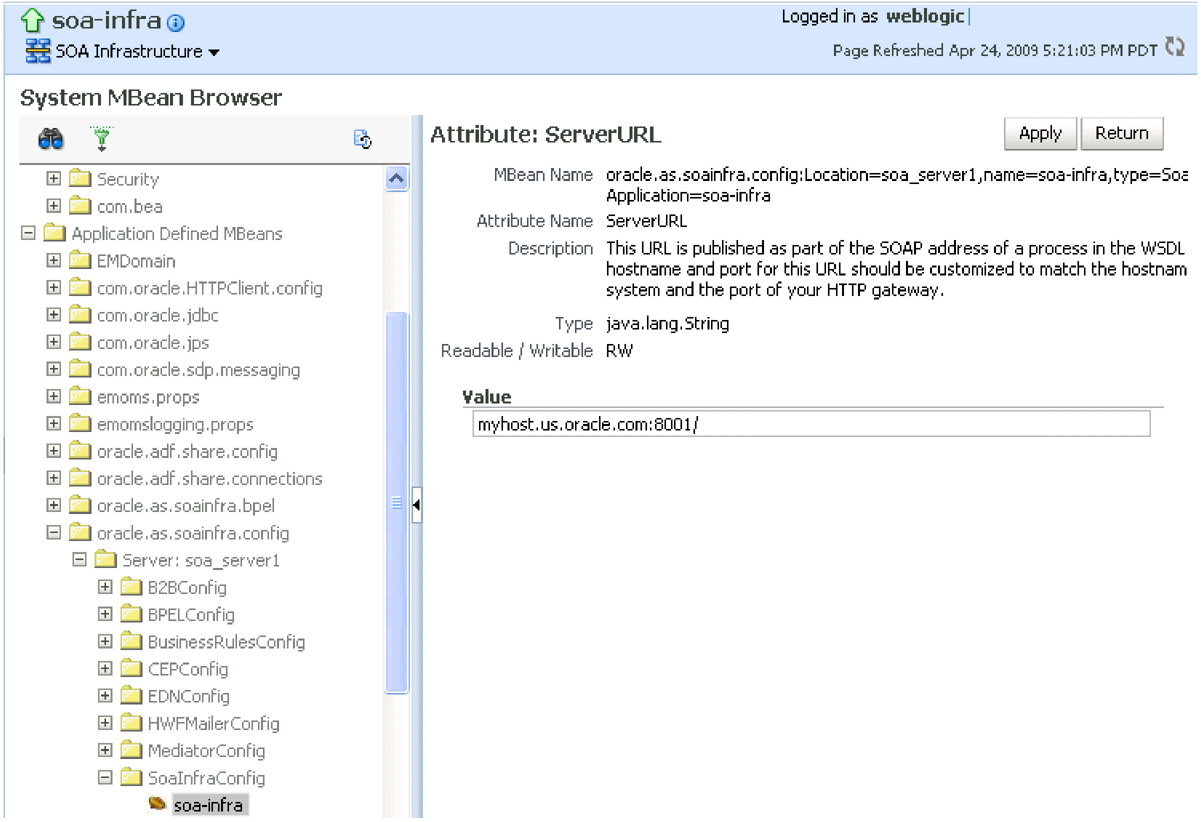
- If the SOA Infrastructure and managed Oracle WebLogic Server port numbers are different, you receive a `ConnectException` error when trying to connect to the Oracle BPM Worklist. Ensure that these port numbers match.
- You *cannot* change the SOA Infrastructure port from the Oracle WebLogic Server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



Attribute: ServerURL

MBean Name	oracle.as.soainfra.config:Location=soa_server1,name=soa-infra,type=Soa Application=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 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.

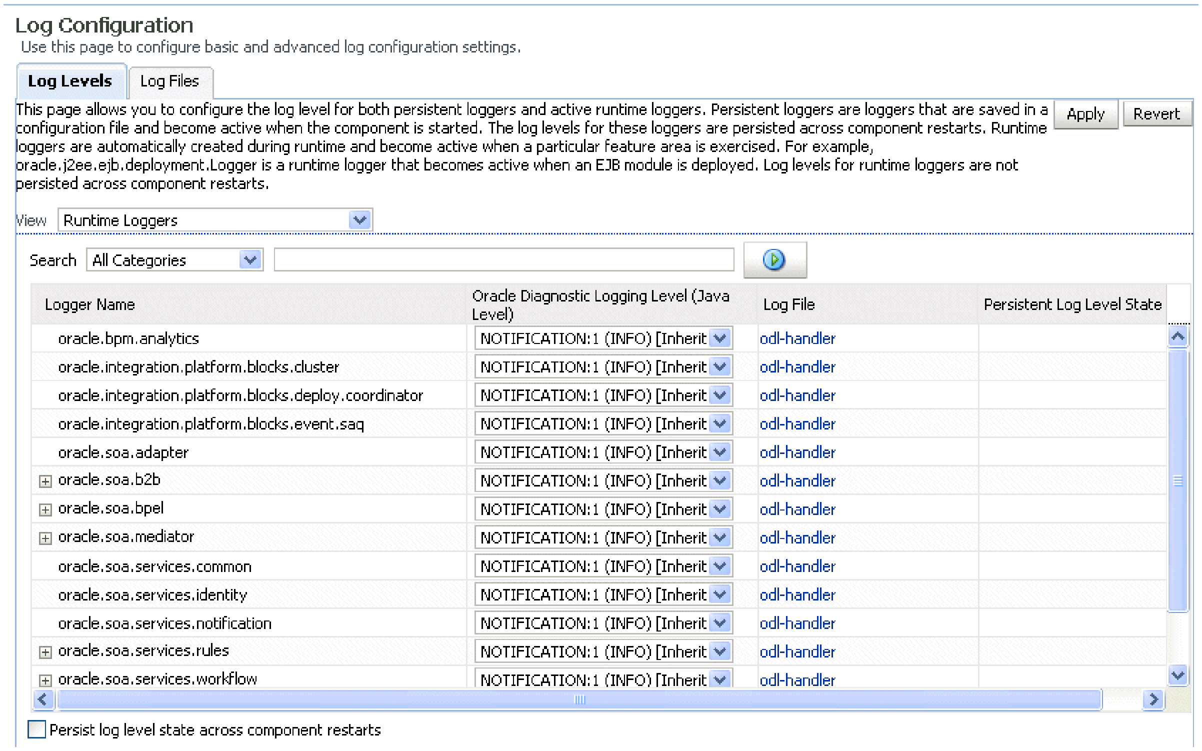
To configure log files:

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.

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	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.

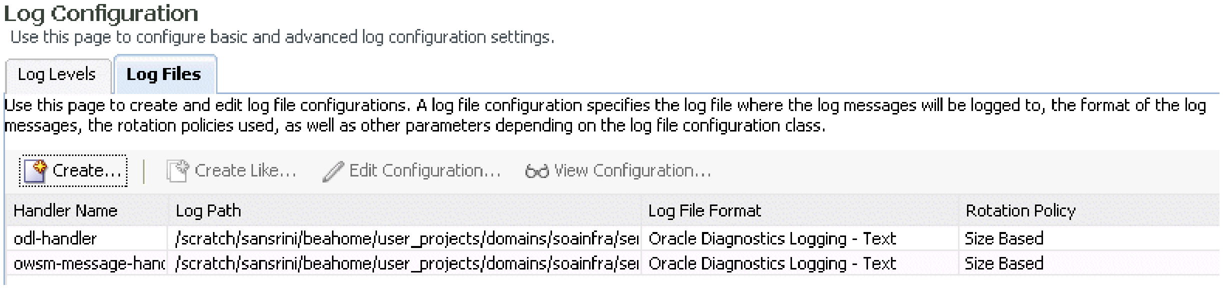
   b. In the **Oracle Diagnostic Logging Level** columns, select the level and type of information to write to a log file.

   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 Application Server 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.

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.

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

For more information, see *Oracle Application Server 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 Application Server 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** > **SOADataSource** > **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 `SOADataSource-jdbc.xml` file.
  1. Open the `soaDataSource-jdbc.xml` file on Oracle WebLogic Server.
  2. Change the `SOADataSource` driver name from `oracle.jdbc.OracleDriver` to `oracle.jdbc.xa.client.OracleXADataSource`.

```
<?xml version="1.0" encoding="UTF-8"?>
<jdbc-data-source
/. . .
. . .
/  <name>SOADataSource</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>
```

3.6 Specifying a Nondefault XA Transaction Timeout Value for XA Data Sources

The default XA transaction timeout value for XA data sources is `0` seconds. You can change the default value in the Oracle WebLogic Server Administration Console. Follow these steps.

1. Log in to Oracle WebLogic Server Administration Console.
2. Under **Domain Structure** on the left side of the page, select **Services** > **JDBC** > **Data Sources**.
3. In the **Name** column of the **Data Sources** table, select **EDNDataSource** (for event delivery network transactions) or **SOADataSource** (for all other types of transactions).
4. Under the **Configuration** tab at the top, click the **Transaction** subtab.

5. In the **XA Transaction Timeout** field, enter a value in seconds.
6. Select the **Set XA Transaction Timeout** check box. You *must* select this check box for the new XA transaction timeout value to take effect.
7. Click **Save**.

4

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:

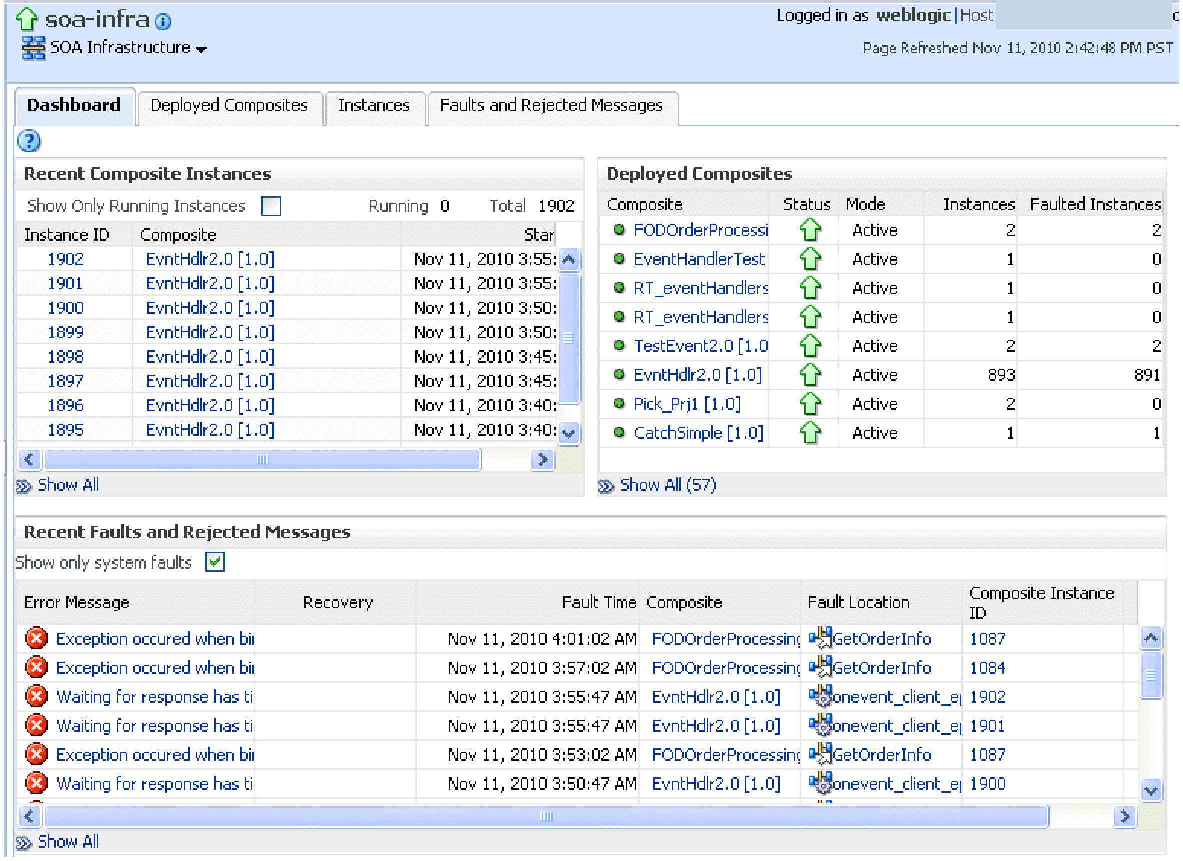
1. Access this page through one of the following options:

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.


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Nov 11, 2010 2:42:48 PM PST
Dashboard
Deployed Composites
Instances
Faults and Rejected Messages
Show All
Show All (57)
Show All

Recent Composite Instances

Show Only Running Instances ☐ Running 0 Total 1902

Instance ID	Composite	Star
1902	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:55:
1901	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:55:
1900	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:50:
1899	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:50:
1898	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:45:
1897	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:45:
1896	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:40:
1895	EvntHdlr2.0 [1.0]	Nov 11, 2010 3:40:

Deployed Composites

Composite	Status	Mode	Instances	Faulted Instances
FODOrderProcessi		Active	2	2
EventHandlerTest		Active	1	0
RT_eventHandlers		Active	1	0
RT_eventHandlers		Active	1	0
TestEvent2.0 [1.0		Active	2	2
EvntHdlr2.0 [1.0]		Active	893	891
Pick_Prj1 [1.0]		Active	2	0
CatchSimple [1.0]		Active	1	1

Recent Faults and Rejected Messages

Show only system faults ☑

Error Message	Recovery	Fault Time	Composite	Fault Location	Composite Instance ID
Exception occured when bi		Nov 11, 2010 4:01:02 AM	FODOrderProcessin	GetOrderInfo	1087
Exception occured when bi		Nov 11, 2010 3:57:02 AM	FODOrderProcessin	GetOrderInfo	1084
Waiting for response has ti		Nov 11, 2010 3:55:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1902
Waiting for response has ti		Nov 11, 2010 3:55:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1901
Exception occured when bi		Nov 11, 2010 3:53:02 AM	FODOrderProcessin	GetOrderInfo	1087
Waiting for response has ti		Nov 11, 2010 3:50:47 AM	EvntHdlr2.0 [1.0]	onevent_client_e	1900

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.

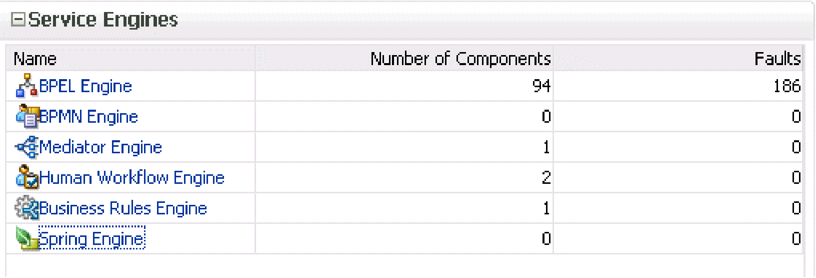
e. In the **Composite Instance ID** column, click a composite instance ID to access the flow trace of the message that contains that fault.

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:

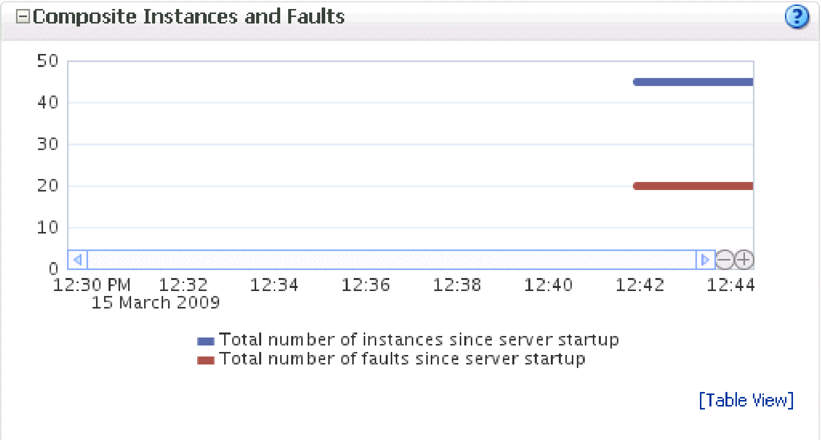
- The number of service components running in the service engines (BPEL process, BPMN process (if Oracle BPM Suite is installed), Oracle Mediator, human workflow, business rules, and spring) and the number of faulted instances for each service engine.



⊟Service Engines

Name	Number of Components	Faults
BPEL Engine	94	186
BPMN Engine	0	0
Mediator Engine	1	0
Human Workflow Engine	2	0
Business Rules Engine	1	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 Application Server 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.

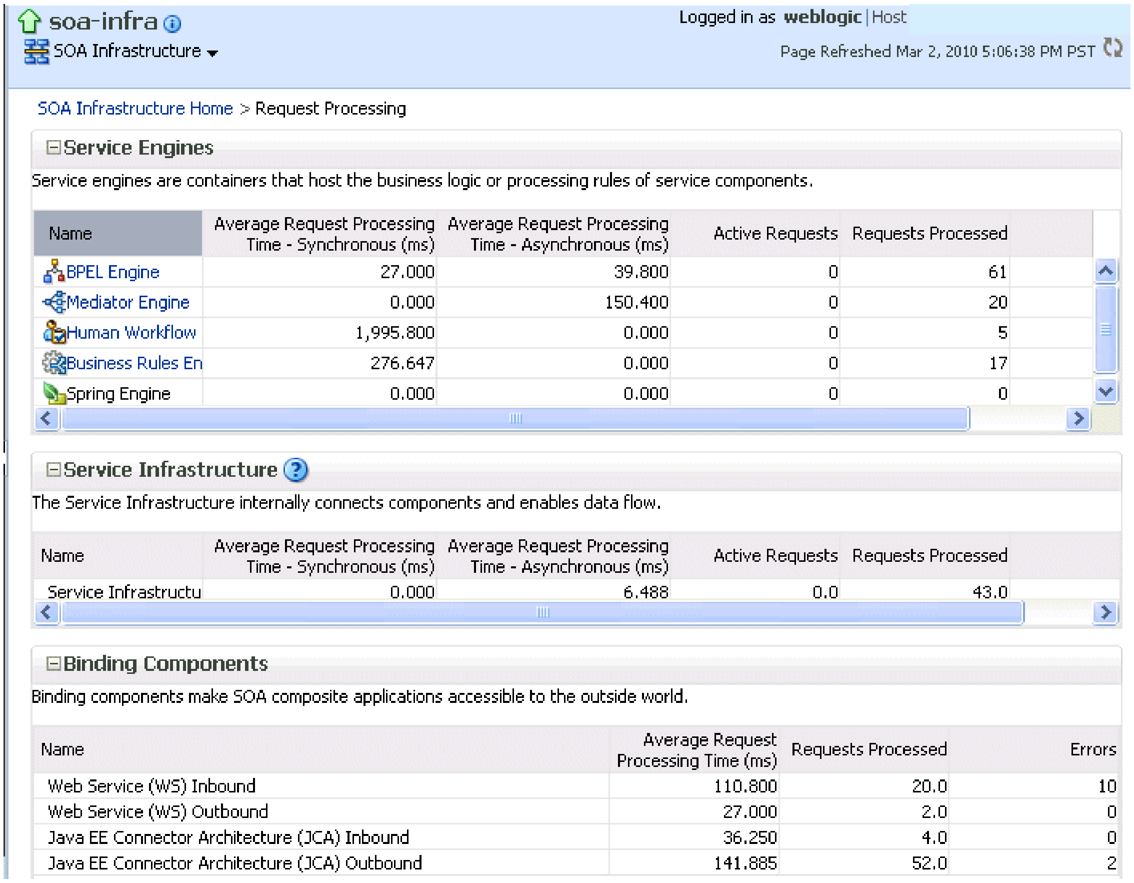
To monitor processing requests:

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
SOA Infrastructure
Logged in as weblogic | Host
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

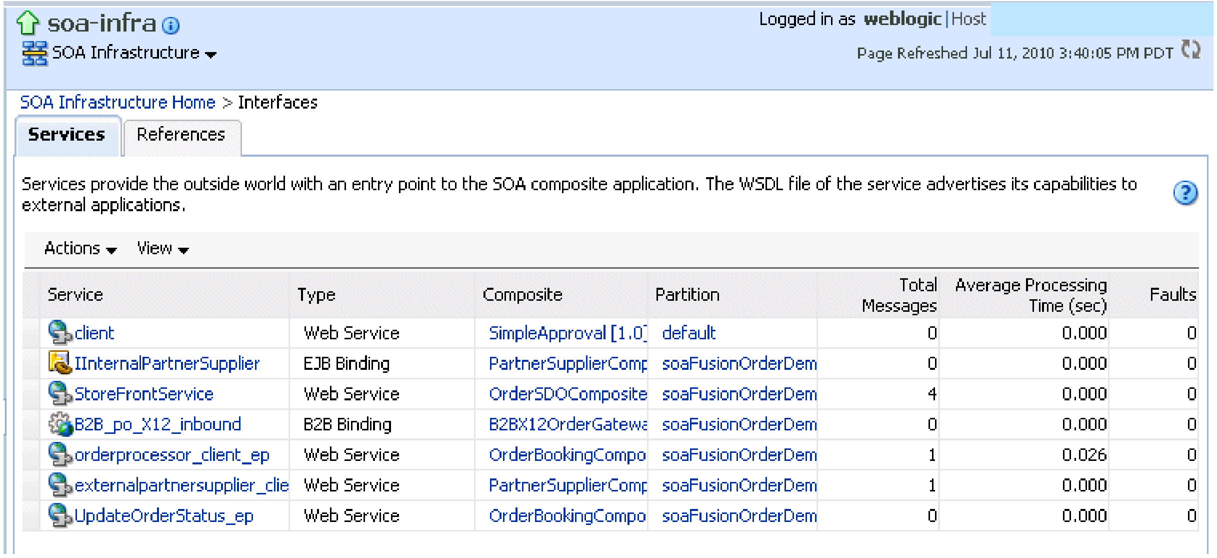
You can monitor all service and reference binding components used in all SOA composite applications deployed to the SOA Infrastructure. Services provide the outside world with an entry point to the SOA composite application. The WSDL file of the service advertises its capabilities to external applications. 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 Jul 11, 2010 3:40:05 PM PDT
SOA Infrastructure Home > Interfaces
Services
References
Actions
View

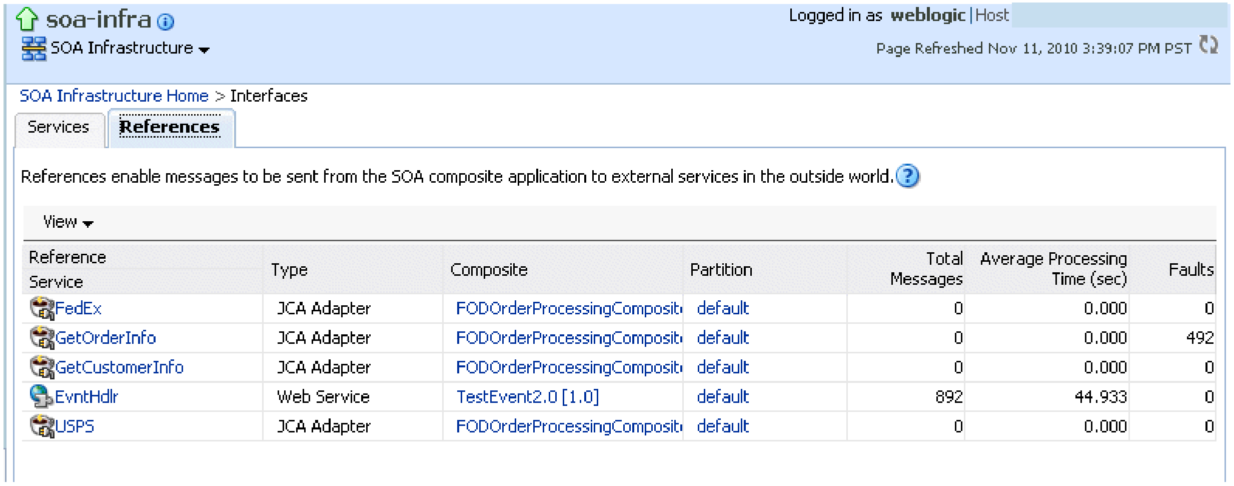
Services provide the outside world with an entry point to the SOA composite application. The WSDL file of the service advertises its capabilities to external applications.

Service	Type	Composite	Partition	Total Messages	Average Processing Time (sec)	Faults
client	Web Service	SimpleApproval [1.0]	default	0	0.000	0
IInternalPartnerSupplier	EJB Binding	PartnerSupplierComp	soaFusionOrderDem	0	0.000	0
StoreFrontService	Web Service	OrderSDOComposite	soaFusionOrderDem	4	0.000	0
B2B_po_X12_inbound	B2B Binding	B2BX12OrderGatewa	soaFusionOrderDem	0	0.000	0
orderprocessor_client_ep	Web Service	OrderBookingCompo	soaFusionOrderDem	1	0.026	0
externalpartnersupplier_clie	Web Service	PartnerSupplierComp	soaFusionOrderDem	1	0.000	0
UpdateOrderStatus_ep	Web Service	OrderBookingCompo	soaFusionOrderDem	0	0.000	0

2. In the **Service** column, click a specific service to access its home page.

3. In the **Composite** column, click a specific SOA composite application to access its home page.
4. 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 Nov 11, 2010 3:39:07 PM PST
SOA Infrastructure Home > Interfaces
Services
References
View

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

Reference Service	Type	Composite	Partition	Total Messages	Average Processing Time (sec)	Faults
FedEx	JCA Adapter	FODOrderProcessingComposite	default	0	0.000	0
GetOrderInfo	JCA Adapter	FODOrderProcessingComposite	default	0	0.000	492
GetCustomerInfo	JCA Adapter	FODOrderProcessingComposite	default	0	0.000	0
EvntHdlr	Web Service	TestEvent2.0 [1.0]	default	892	44.933	0
USPS	JCA Adapter	FODOrderProcessingComposite	default	0	0.000	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, "Managing Database Growth"
- Chapter 10, "Programmatically Managing SOA Composite Applications"

5

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 Consolee 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.

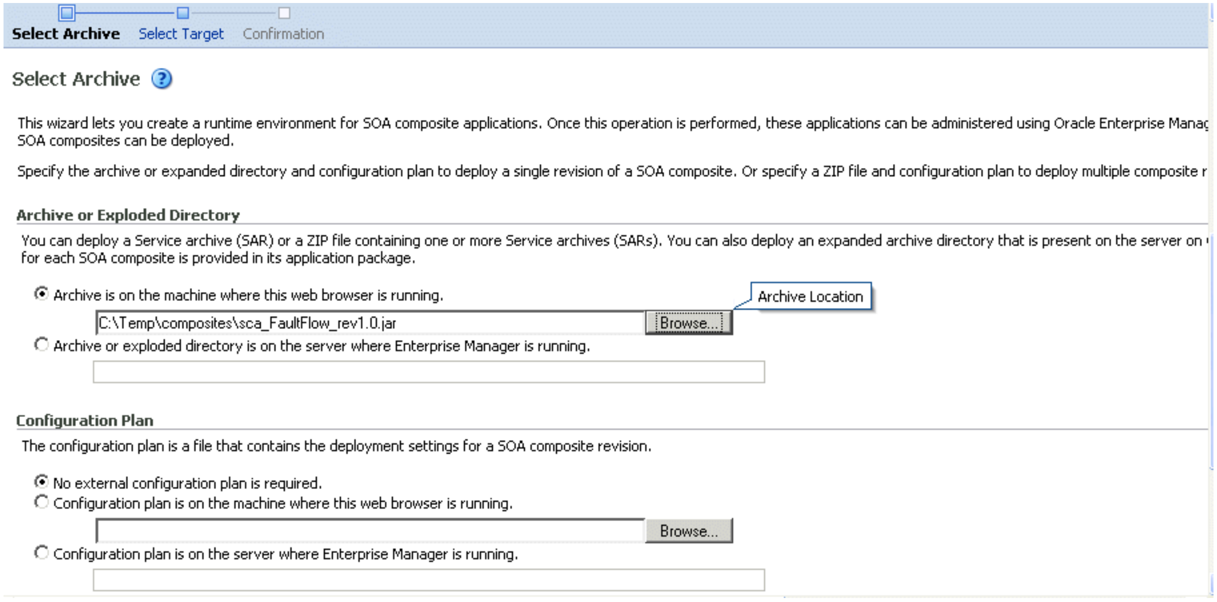
To deploy applications:

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 Manag
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 r

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
for each SOA composite is provided in its application package.

● Archive is on the machine where this web browser is running.
C:\Temp\composites\sca_FaultFlow_rev1.0.jar
○ Archive or exploded directory is on the server where Enterprise Manager is running.

Archive Location

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.

2. 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.

3. 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.

4. 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.

5. 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.

Note: Human workflow artifacts such as task mapped attributes (previously known as flex field mappings) and rules (such as vacation rules) are defined based on the namespace of the task definition. Therefore, the following issues are true when the same SOA composite application with a human workflow task is deployed into multiple partitions:

- For the same task definition type, mapped attributes defined in one partition are visible in another partition.
- Rules defined on a task definition in one partition can apply to the same definition in another 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 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*.

5.1.1 Deploying SOA Composite Applications with Task Flows

When you deploy a SOA composite application with a task flow Enterprise Resource Archive (EAR) file from Oracle Enterprise Manager Fusion Middleware Control Console or Oracle WebLogic Server Administration Console to a multiple partition environment, you cannot specify partition details. To specify a partition, modify the `hwtaskflow.xml` file to include the partition name in the generated EAR file (the project version of the file remains unchanged). This file is located under the `TaskForm` project `adfmsrc` directory (for example, `HelpDeskRequestTaskFlow\adfmsrc\hwtaskflow.xml`).

```
<hwTaskFlows
 xmlns="http://xmlns.oracle.com/bpel/workflow/hwTaskFlowProperties">
   <ApplicationName>worklist</ApplicationName>
   <LookupType>LOCAL</LookupType>
   <TaskFlowDeploy>false</TaskFlowDeploy>
   <PartitionName>partition2</PartitionName>
```

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...
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**.	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**.	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**.	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...
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**.	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**.	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**.	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.

6

Securing SOA Composite Applications

This chapter describes security procedures unique to SOA composite applications.

This chapter includes the following topics:

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

- Section 8.8, "Managing SOA Composite Application Policies"
- Section 13.2, "Managing BPEL Process Service Component Policies"
- Section 16.3, "Managing Oracle Mediator Policies"
- Section 24.1, "Managing Human Task Service Component Policies"
- Section 39.1, "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	*Oracle Containers for J2EE Security Guide*
Securing and administering Web services	*Oracle Application Server Web Services Security Guide*
Understanding Oracle WebLogic Server security	*Oracle Fusion Middleware Understanding Security for Oracle WebLogic Server*
Securing an Oracle WebLogic Server production environment	*Oracle Fusion Middleware Securing a Production Environment for Oracle WebLogic Server*
Securing Oracle WebLogic Server	*Oracle Fusion Middleware Securing Oracle WebLogic Server*
Developing new security providers for use with Oracle WebLogic Server	*Oracle Fusion Middleware Developing Security Providers for Oracle WebLogic Server*
Securing Web services for Oracle WebLogic Server	*Oracle Fusion Middleware Securing WebLogic Web Services for Oracle WebLogic Server*
Programming security for Oracle WebLogic Server	*Oracle Fusion Middleware Programming Security for Oracle WebLogic Server*

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.
   1. From the **SOA Infrastructure** menu, select **SOA Administration** > **Common Properties**.
   2. At the bottom of the page, click **More SOA Infra Advanced Configuration Properties**.
   3. Click **KeystoreLocation**.
   4. In the **Value** column, enter the keystore location.
   5. Click **Apply**.
   6. 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 (`KeystorePassword` is the default).
Type	Select **Password**.
User Name	Enter the keystore user name (`KeystorePassword` 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 `adfbc` and the certificate has a server name of `myhost05`, the following results in an SSL handshake exception.

```
<import namespace="/adfbc1/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, and 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 trust store as a trusted certificate.

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

3. Export the certificate from the Oracle WebLogic Server trust store.

   ```
   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 Configuring Oracle HTTP Server with Oracle BPM Worklist

You must add the `/integration` location in the `mod_wl_ohs.conf` file of Oracle HTTP Server for Oracle BPM Worklist to work through Oracle HTTP Server.

```
<Location /integration>
     SetHandler weblogic-handler
 #   PathTrim /weblogic
     ErrorPage  http:/WEBLOGIC_HOME:WEBLOGIC_PORT/
</Location>
```

6.6 Setting up SAML Message-Protected Policy Configuration for the SOA Infrastructure

This section describes how to set up and validate Security Assertion Markup Language (SAML) message-protected policy configuration for the SOA Infrastructure with the WebLogic Scripting Tool (WLST). The example in this section describes task query service configuration. However, these instructions are relevant to all human workflow services that support SAML-token ports:

- AG query service
- AG metadata service
- AG admin service
- Task query service
- Task service
- Task metadata service
- Runtime config service
- Task evidence service
- User metadata service

If you want to change the policy for another service, you must apply the same WLST commands to that service's SAML-token port.

To set up an SAML message-protected policy configuration:

1. Log in to the SOA domain (for example, named `base_domain`) using WLST.

2. Detach the existing out-of-the-box service policy named `wss10_saml_token_service_policy`.

```
wls:/base_domain/domainRuntime> detachWebServicePolicy('/base_domain/soa
_server1/soa-infra','integration/services/TaskQueryService','web',
'WorkflowProvider','TaskQueryServicePortSAML','oracle/
wss10_saml_token_service_policy')
```

3. Restart the application to activate any policy or configuration change.
4. Attach the new policy. In this case, the policy is named `oracle/wss10_saml_token_with_message_protection_service_policy`.

```
wls:/base_domain/domainRuntime> attachWebServicePolicy('/base_domain/soa
_server1/soa-infra','integration/services/TaskQueryService',
'web','WorkflowProvider','TaskQueryServicePortSAML','ora
cle/wss10_saml_token_with_message_protection_service_policy')
```

5. Restart the application to activate any policy or configuration change.
6. List the policy to validate.

```
wls:/base_domain/domainRuntime> listWebServicePolicies('/base_domain/soa
_server1/soa-infra','integration/services/TaskQueryService',
'web','WorkflowProvider','TaskQueryServicePortSAML')
    TaskQueryServicePortSAML :
    security :
oracle/wss10_saml_token_with_message_protection_service_policy,
    enabled=true
Attached policy or policies are valid; endpoint is secure.
```

7. Create a keystore, add the `orakey` alias, and run the Oracle Web Service Manager (OWSM) configuration to activate the SAML message-protected policy. For example:

```
keytool -genkeypair
        -keystore  domain_home/config/fmwconfig/default-keystore.jks
        -keyalg RSA
        -dname "cn=consumer,dc=example,dc=com"
        -alias clientalias
        -keypass  password
        -storepass password
        -validity 3600

keytool -exportcert
        -keystore domain_home/config/fmwconfig/default-keystore.jks
        -v
        -alias clientalias
        -storepass password
        -rfc
        -file domain_home/config/fmwconfig/certificate.cer

keytool -importcert
        -keystore domain_home/config/fmwconfig/default-keystore.jks
        -alias orakey
        -file domain_home/config/fmwconfig/certificate.cer
        -storepass password
         createCred(map="oracle.wsm.security", key="keystore-csf-key",
         user="owsm", password="welcome1", desc="Keystore key")
         createCred(map="oracle.wsm.security", key="enc-csf-key",
         user="clientalias", password="welcome1", desc="Encryption key")
         createCred(map="oracle.wsm.security", key="sign-csf-key",
        user="clientalias", password="welcome1", desc="Signing key")
```

8. Restart the servers.

6.7 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 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.

      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.

   f. Select the identity provider site where you want the user to perform the initial login.

   g. Scroll down the page until you see the field **Redirect URIs**.

   h. Add `/integration/worklistapp/*` to the list.

   After performing this step, you can log in to Oracle BPM Worklist at the SAML identity provider site though 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*.

6.8 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*.

6.9 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*.

6.10 Listing the Authentication Provider

This section describes how to set the first authentication provider.

6.10.1 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*.

6.10.2 Accessing Web-based Applications with the Default Authentication Provider

Logins to Web-based applications may fail when using Oracle Internet Directory authentication. This is caused when the Oracle WebLogic Server configuration is set to use the Oracle Internet Directory authentication before default authentication.

This may produce the following error:

```
"@ User "weblogic" is not found in configuration "jazn.com" Check if the user
 exists in the repository specified by the configurations. Check the error stack
 and fix the cause of the error. Contact oracle support if error is not fixable."
```

The order of the security providers should be:

1. Default authentication

2. Oracle Internet Directory/LDAP authentication

6.11 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**.

6.12 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 Application Server Web Services Developer's Guide*.

6.13 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 trust store).

6.14 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
   ```

6.15 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/AsyncSecondB
PELMTOM/BPELProcess1.wsdl">
    <interface.wsdl
 interface="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl
.interface(BPELProcess1)"
callbackInterface="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProce
ss1#wsdl.interface(BPELProcess1Callback)"/>
    <binding.ws
port="http://xmlns.oracle.com/Async/AsyncSecondBPELMTOM/BPELProcess1#wsdl.endp
oint(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.endp
oint(bpelprocess1_client_ep/BPELProcess1Callback_pt)">
            <wsp:PolicyReference
URI="oracle/wss_username_token_service_policy"
                           orawsp:category="security"
orawsp:status="enabled"/>
 </binding.ws>
    </callback>


.
  </reference>
```

7

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:

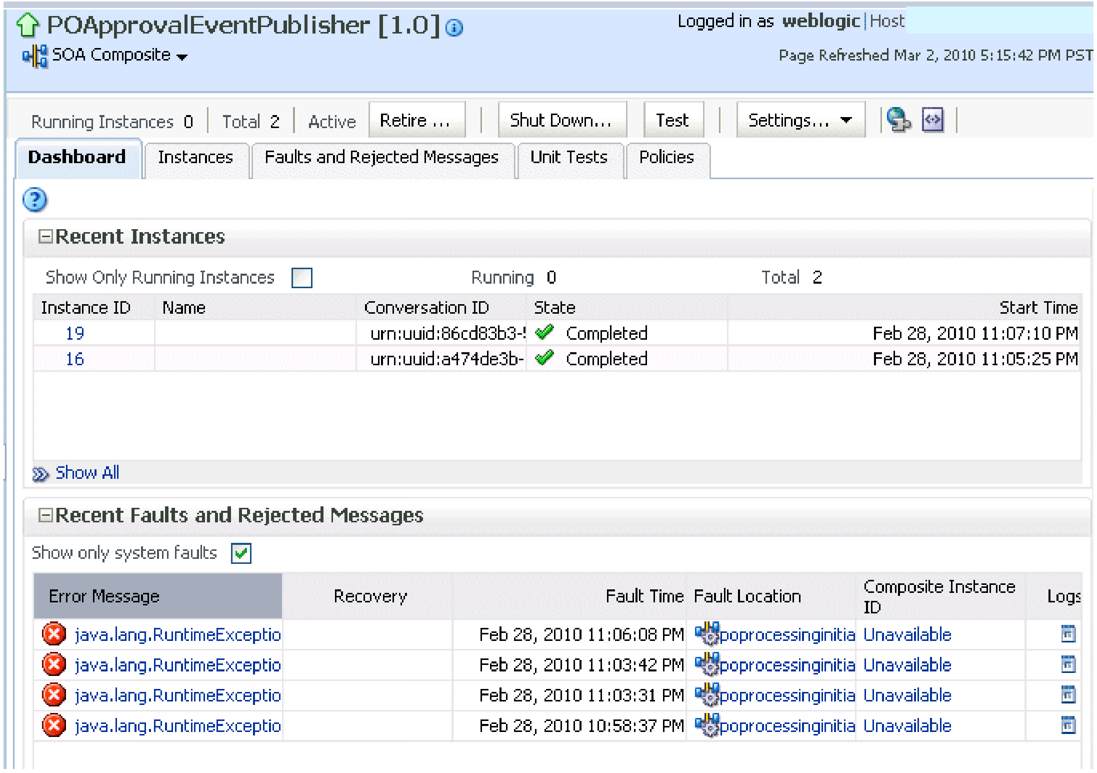
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Under **soa-infra**, select a specific SOA composite application.

2. Click **Dashboard** (if it is not 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 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]
SOA Composite
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 All
Recent Faults and Rejected Messages

Show Only Running Instances ☐ Running 0 Total 2

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

Show only system faults ☑

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

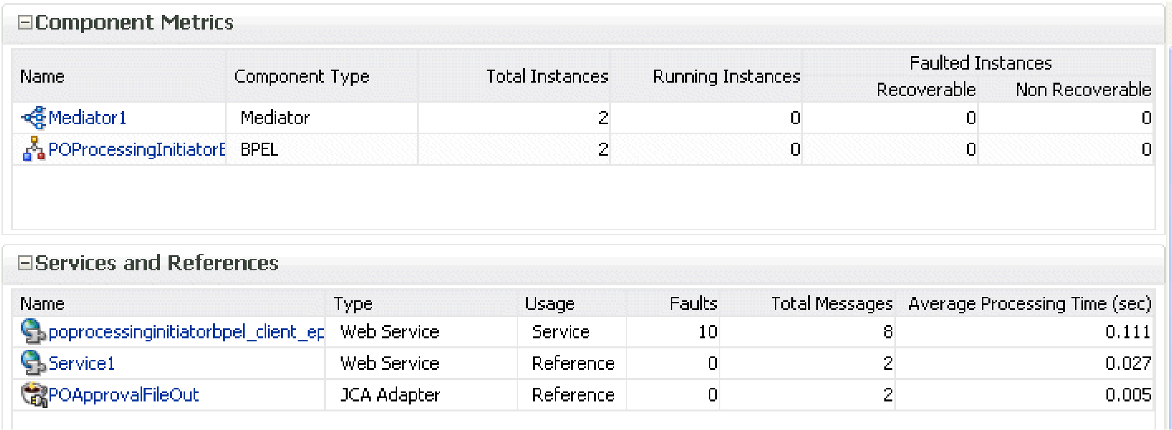
   d. In the **Composite Instance ID** column, click a composite instance ID to access the flow trace of the message that contains the fault. This displays the faults in the continuous context of a message flow from instance to instance.

   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 Application Server Administrator's Guide* for details about viewing and searching log files

8

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, "Disabling and Enabling BPEL and BPMN Business Monitors"

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...
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**.	1. Under **soa-infra**, select a specific SOA composite application. 2. At the top of the page, click **Test**.	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.

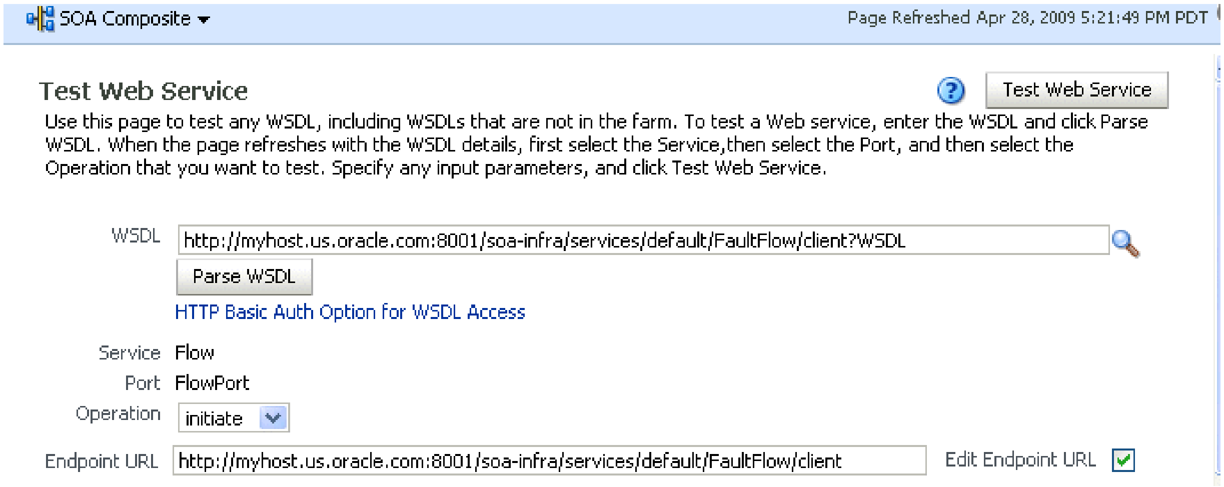
---

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.



Page Refreshed Apr 28, 2009 5:21:49 PM PDT

Test Web Service

Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the page refreshes with the WSDL details, first select the Service,then select the Port, and then select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL http://myhost.us.oracle.com:8001/soa-infra/services/default/FaultFlow/client?WSDL

Service Flow

Port FlowPort

Operation initiate

Endpoint URL http://myhost.us.oracle.com:8001/soa-infra/services/default/FaultFlow/client

Edit Endpoint URL ☑

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.

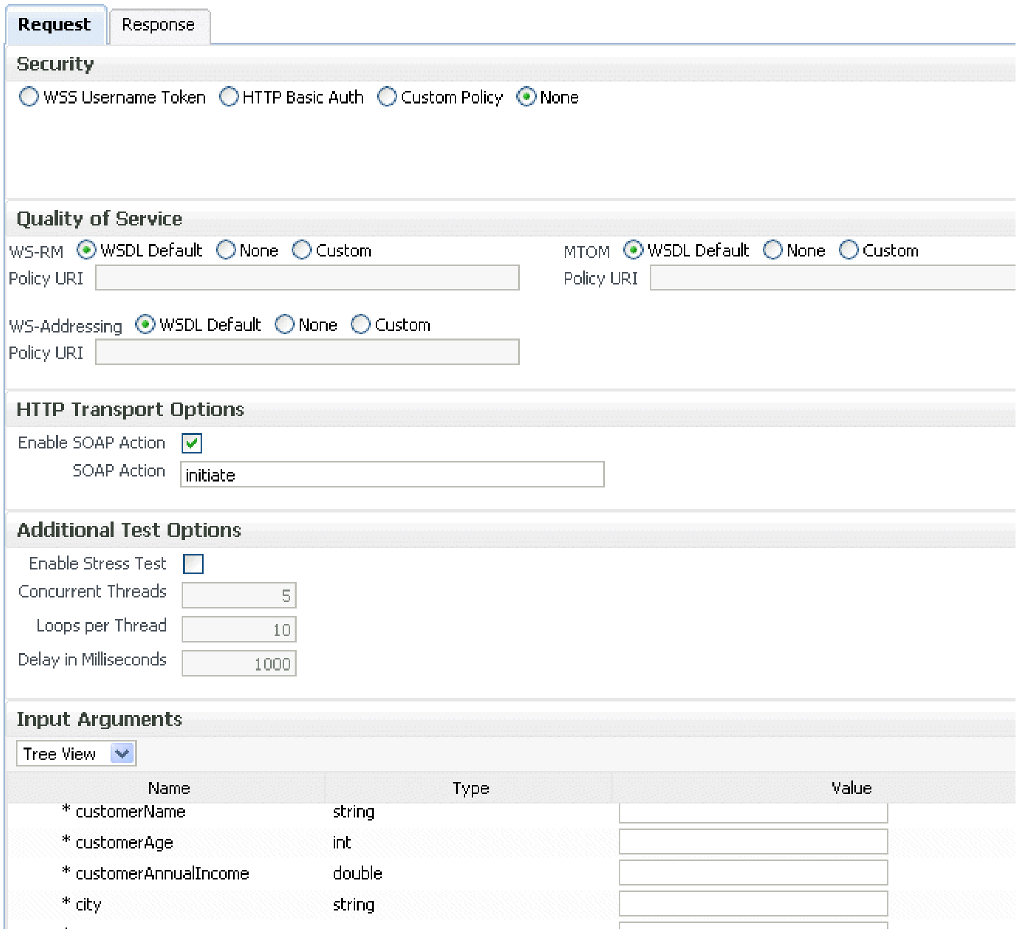
   If the WSDL URL does not contain the revision number, it is processed by the default composite application. For example, if there are two revisions of a composite application named `HelloWorld`, then the following endpoints are exposed by them:

- `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:



Security

○ WSS Username Token ○ HTTP Basic Auth ○ Custom Policy ● None

Quality of Service

WS-RM ● WSDL Default ○ None ○ Custom
Policy URI

MTOM ● WSDL Default ○ None ○ Custom
Policy URI

WS-Addressing ● WSDL Default ○ None ○ Custom
Policy URI

HTTP Transport Options

Enable SOAP Action ☑
SOAP Action: initiate

Additional Test Options

Enable Stress Test ☐
Concurrent Threads: 5
Loops per Thread: 10
Delay in Milliseconds: 1000

Input Arguments

Tree View

Name	Type	Value
* customerName	string	
* customerAge	int	
* customerAnnualIncome	double	
* city	string	

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 Application Server Web Services Security Guide*.

Field	Description
WS-RM	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. ■ **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	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. ■ **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	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. ■ **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 `soap:operation` has a `soapAction` attribute. This flag is enabled if a `soapAction` 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 `soapAction` attribute of the WSDL `soap:operation`, 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 to send the invocations. 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.

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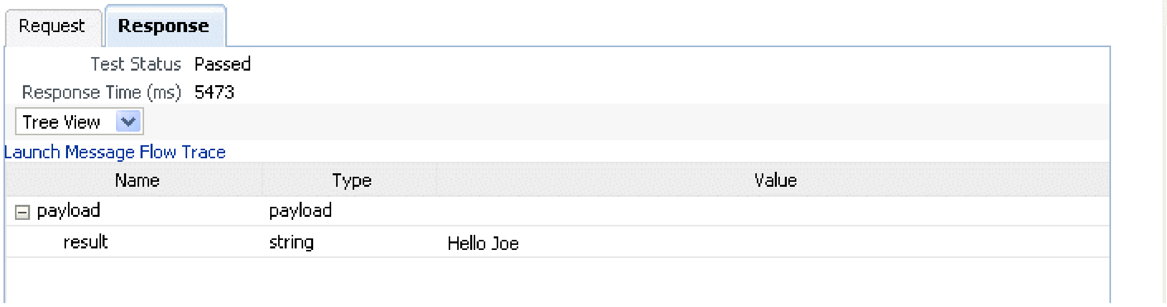
10. Click **Test Web Service**.

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



Test Status Passed
Response Time (ms) 5473

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.

---

11. Click **Launch Message Flow Trace** to access the flow trace of the instance.
12. 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.
13. 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 Application Server Web Services Security Guide* for specific details about policies and testing Web services from the Test Web Service page

8.1.1 Specifying RPC/Literal-Style WSDL Files on the Test Page

If you are specifying an RPC/literal-style WSDL file with a message defined by `"element="`, in the Test page in Oracle Enterprise Manager Fusion Middleware Control Console, use the **XML View** option of the **Input Arguments** section to modify the SOAP message. The SOAP body should look as follows:

```
<soap:Body>
    <ns:initiate>
        <payload>
          <value xmlns="...">3</value>
        </payload>
    </ns:initiate>
</soap:Body>
```

where `initiate` is the operation name, `payload` is the part name, and `value` is the element defined in the WSDL message/part.

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	■ 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**)

Table 8–1 (Cont.) Application State Actions

Action	Perform in the Deployed Composites Page of the SOA Infrastructure?	Perform on the Application Home Page (All Tabs)?
Test	No	Yes
Composite Audit Level	No	Yes
Payload Validation	No	Yes
Enable/Disable Business Monitoring	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:

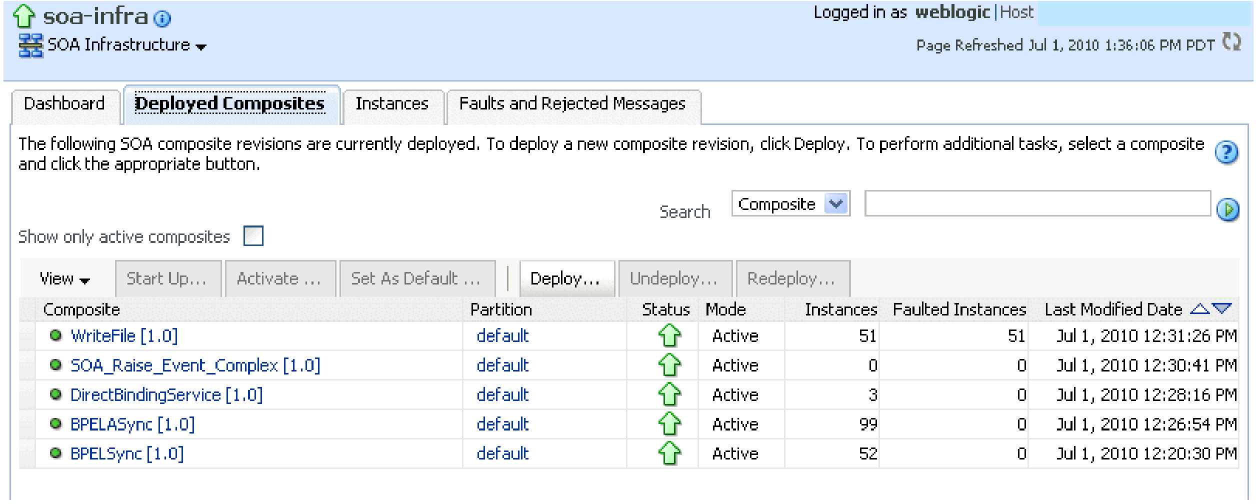
1. Access this page through one of the following options:

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**. You can also search for SOA composite applications by partition.
   - 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 composite name indicates that this is the default revision of the application.



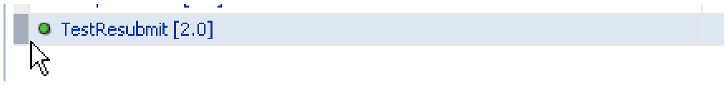
The following SOA composite revisions are currently deployed. To deploy a new composite revision, click Deploy. To perform additional tasks, select a composite and click the appropriate button.

Composite	Partition	Status	Mode	Instances	Faulted Instances	Last Modified Date
● WriteFile [1.0]	default	⇧	Active	51	51	Jul 1, 2010 12:31:26 PM
● SOA_Raise_Event_Complex [1.0]	default	⇧	Active	0	0	Jul 1, 2010 12:30:41 PM
● DirectBindingService [1.0]	default	⇧	Active	3	0	Jul 1, 2010 12:28:16 PM
● BPELASync [1.0]	default	⇧	Active	99	0	Jul 1, 2010 12:26:54 PM
● BPELSync [1.0]	default	⇧	Active	52	0	Jul 1, 2010 12:20:30 PM

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.

---

3. 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	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. New incoming requests cannot be processed. All existing instances are allowed to complete normally (the same as when a composite is retired). **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). This option displays when the composite application has been started.
Start Up	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. This option displays when the composite application has been stopped.

Action	Description
Retire	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. 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. A callback to an initiated composite application instance is delivered properly. This option displays when the composite application is active.
Activate	Activates the retired composite application revision. Note the following behavior with this option: ■ 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. This option displays when the application is retired.
Set As Default	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. 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. Note that inbound adapters are only activated on the default revision.
Deploy	Deploys a revision. Deployment activates the composite application in the SOA Infrastructure. Use this selection when you want to deploy: ■ 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. If you specify a revision that exists, you receive an error. You must change this revision outside of the Deploy SOA Composite wizard. For more information, see Section 5.1, "Deploying Applications" and Section 8.10, "Grouping SOA Composite Applications into Partitions."

Action	Description
Undeploy	Undeploys the selected composite application revision. The consequences of this action are as follows: ■ 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). **Note:** Undeploying multiple SOA composite applications at the same time is supported if they are in the same partition. For more information, see Section 5.3, "Undeploying Applications" and Section 8.10, "Grouping SOA Composite Applications into Partitions."
Redeploy	Redeploys an existing revision of a SOA composite application. The consequences of this action are as follows: ■ 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. For more information, see Section 5.2, "Redeploying Applications."

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

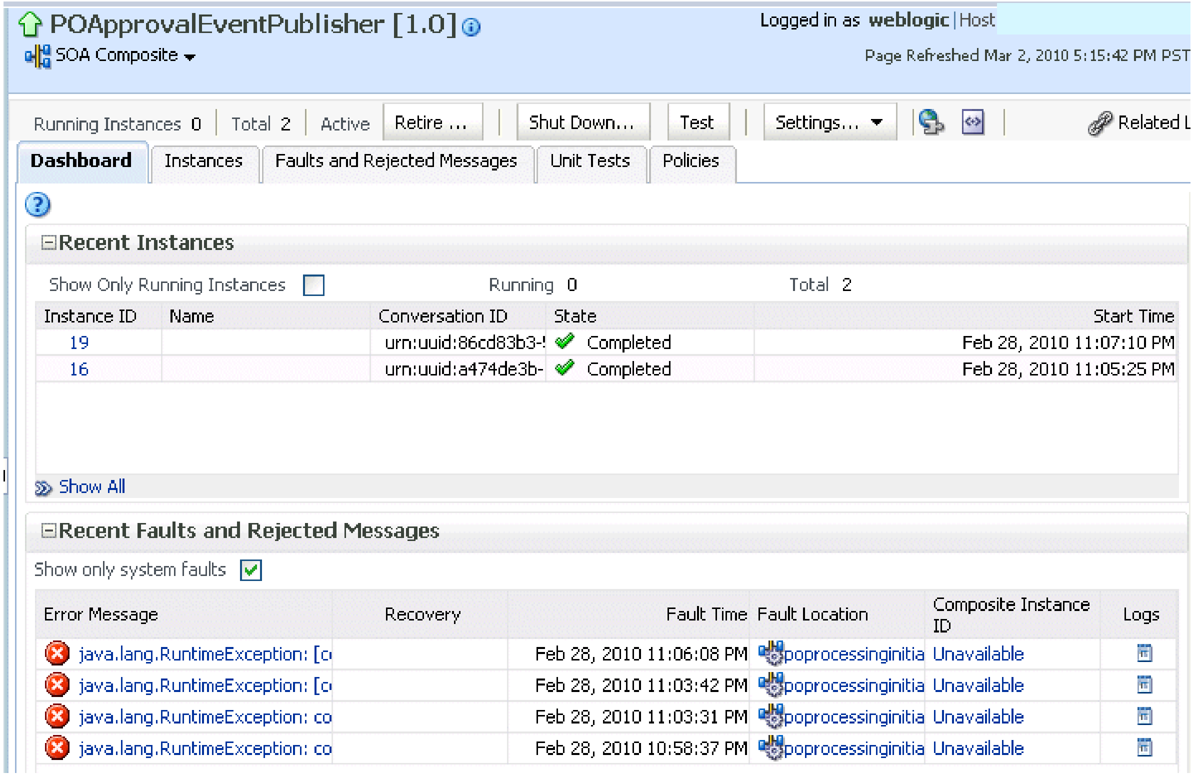
You can manage the state of an individual SOA composite application from the application's home page.

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...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. Select a specific SOA composite application.	1. Under **soa-infra**, select a specific SOA composite application.

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


POApprovalEventPublisher [1.0]
SOA Composite
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...
Related L
Dashboard
Instances
Faults and Rejected Messages
Unit Tests
Policies
Recent Instances
Show Only Running Instances ☐
Running 0
Total 2
Show All
Recent Faults and Rejected Messages
Show only system faults ☑

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

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

Notes:

- 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.
- When the **Capture Composite Instance State** check box is enabled on the SOA Infrastructure Common Properties page, created instances are displayed immediately even if you have defined a constraint that appears to prevent an instance from being displayed immediately (for example, you have defined a flush delay of 10 minutes or specified a batch size of 100 records to write to a database). This is because instance tracking is moved to the immediate mode since the state of the composites must be captured.

---

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	Enables you to initiate a test instance from the Test Web Service page. **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. For more information, see Section 8.1, "Initiating a SOA Composite Application Test Instance."

Action	Description
Settings: Composite Audit Level	Sets the level of audit tracking to perform at the SOA composite application level. This setting *can* 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. If you select to set the audit tracking level, the following options are available: ■ **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. 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. 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**. 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. ■ 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.
Settings: Payload Validation	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. 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.

Action	Description
Settings: Enable/Disable Business Monitoring	Select an option to invoke a confirmation dialog that displays the current status of the sensors. ■ **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. The **Enable/Disable Business Monitoring** selection only displays for composites that have a BPEL service component, regardless of whether that component includes sensors. 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. For more information, see Section 8.11, "Disabling and Enabling BPEL and BPMN Business Monitors" and Section 11.1, "Configuring BPEL Process Service Engine Properties."
Show WSDL and endpoint URI (icon)	Click to display the endpoint addresses and WSDLs of all external services for this SOA composite application. **Note**: If you are using the Safari Browser to view this information, see Section B.11, "Limitation on Using the Safari Browser to View WSDL File Content."
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:

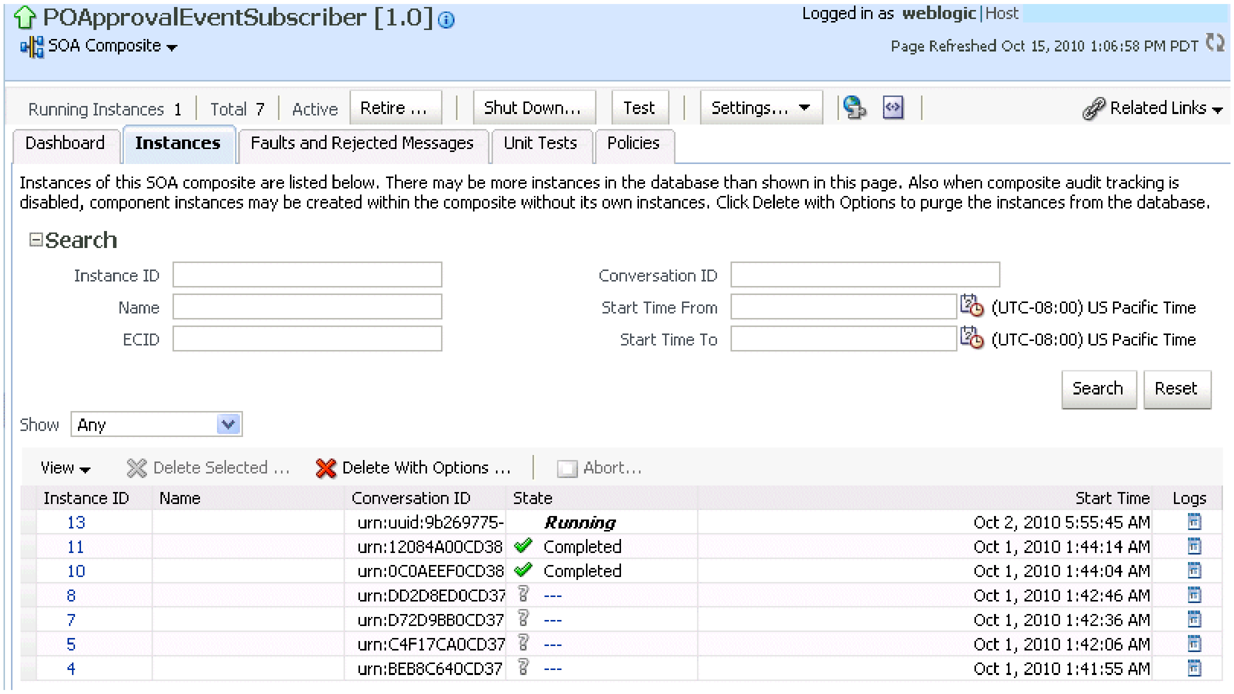
From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. Select a specific SOA composite application.	1. Under **soa-infra**, select a specific SOA composite application from its partition.

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.



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.

Instance ID	Name	Conversation ID	State	Start Time	Logs
13		urn:uuid:9b269775-	*Running*	Oct 2, 2010 5:55:45 AM	
11		urn:12084A00CD38	✓ Completed	Oct 1, 2010 1:44:14 AM	
10		urn:0C0AEEF0CD38	✓ Completed	Oct 1, 2010 1:44:04 AM	
8		urn:DD2D8ED0CD37	? ---	Oct 1, 2010 1:42:46 AM	
7		urn:D72D9BB0CD37	? ---	Oct 1, 2010 1:42:36 AM	
5		urn:C4F17CA0CD37	? ---	Oct 1, 2010 1:42:06 AM	
4		urn:BEB8C640CD37	? ---	Oct 1, 2010 1:41:55 AM	

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:

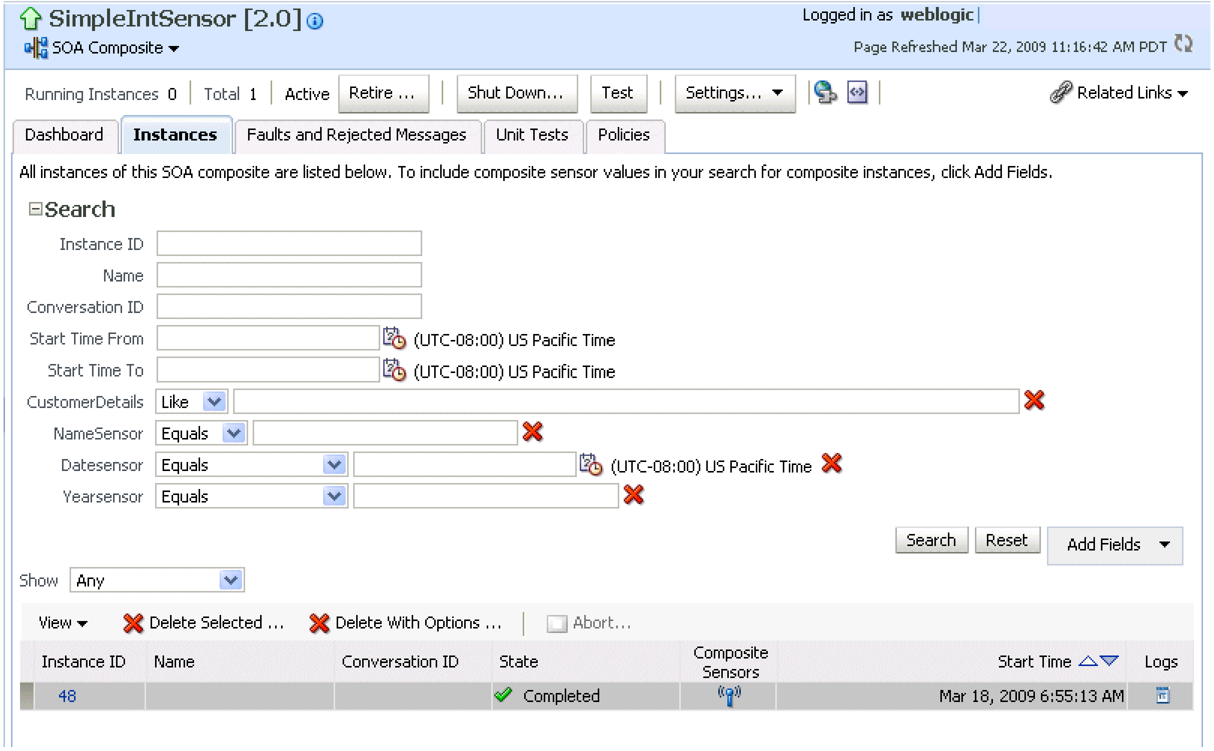
- The SOA Infrastructure audit level is set to **Off** or the composite audit level is set to **Off**. Even in such cases, the BPEL process service engine can generate instance data for the service components that are included in the SOA composite application.
- The SOA Infrastructure audit level is 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 purge script described in Section 9.3, "Deleting Large Numbers of Instances with the Purge Script." Selecting the **Delete All Instance** options in the **Delete with Options** dialog does *not* delete orphaned component instances.

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.

3. 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**).
4. Input specific values by which each sensor searches. Only the composite instances in which the sensor values match your specified criteria are returned.



All instances of this SOA composite are listed below. To include composite sensor values in your search for composite instances, click Add Fields.

Instance ID	Name	Conversation ID	State	Composite Sensors	Start Time	Logs
48			✓ Completed		Mar 18, 2009 6:55:13 AM	

5. 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.
6. 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.
7. 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	Prompts you to first specify a criteria for deleting the selected instance directly from the database: - **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. **Note:** If this composite has thousands of instances to delete, do not use this option. Instead, use the purge script described in Section 9.3, "Deleting Large Numbers of Instances with the Purge Script." - **Delete All Instances That Match These Criteria**: Specify a criteria for deleting instances, including the start and stop times, and instance state. Any selections you may have made in the Instances page (such as specifying and executing a search criteria) are ignored for this operation. To monitor the progress of instance deletion, you must check the log files. For information about log files, see Section 3.4, "Configuring Log Files."
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. From the **View** list, select **Columns** > **ECID** to display execution context IDs (ECIDs). An ECID enables you to track a message flow that crosses instances of different composites.
10. 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 Application Server 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 Instance States of Service Components and SOA Composite Applications

Assume you have a SOA composite application with multiple service components (for example, two BPEL process service components). If these service components are marked with the following instance states:

- Instance state of one BPEL process is marked as completed.
- Instance state of the other BPEL process is marked as faulted.

This results in the overall composite instance state being marked as faulted. This behavior differs from 11*g* Release 1 (11.1.1.2), in which the same scenario resulted in the overall composite instance state being marked as completed.

Assume you have a parent SOA composite application that calls a child SOA composite application, and a fault occurs in the child composite (and is handled by the parent composite). This results in the following instance states:

- The instance state of the child composite is marked as faulted.
- The instance state of the parent composite is marked as completed.

8.3.3 Setting the Composite Instance Name at Design Time

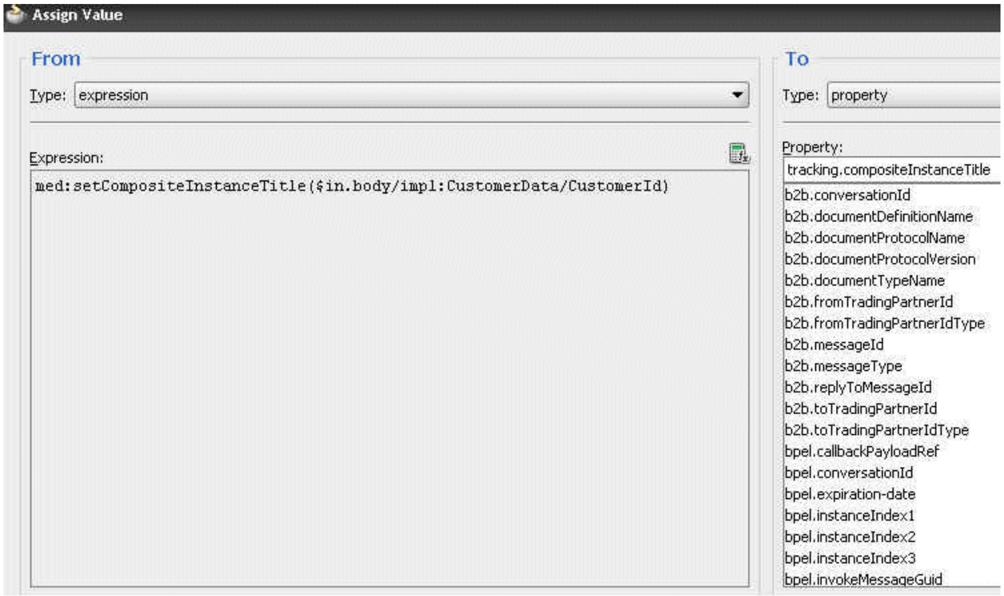
You can set the instance name of a SOA composite application during design time in Oracle Mediator and Oracle BPEL Process Manager. The instance name appears in the

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.

8.3.3.1 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.



Type: expression

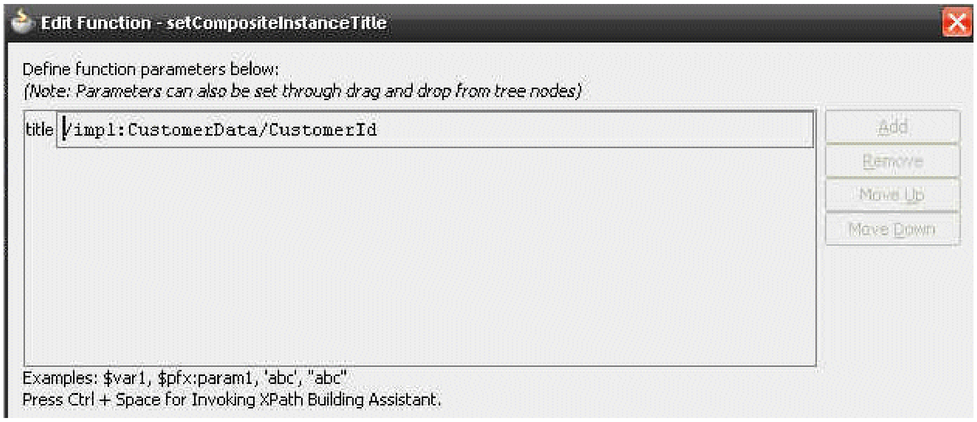
Expression:

```
med:setCompositeInstanceTitle($in.body/impl:CustomerData/CustomerId)
```

Type: property

Property: tracking.compositeInstanceTitle

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



Define function parameters below:
(Note: Parameters can also be set through drag and drop from tree nodes)

title `/impl:CustomerData/CustomerId`

Examples: $var1, $pfx:param1, 'abc', "abc"
Press Ctrl + Space for Invoking XPath Building Assistant.

8.3.3.2 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:

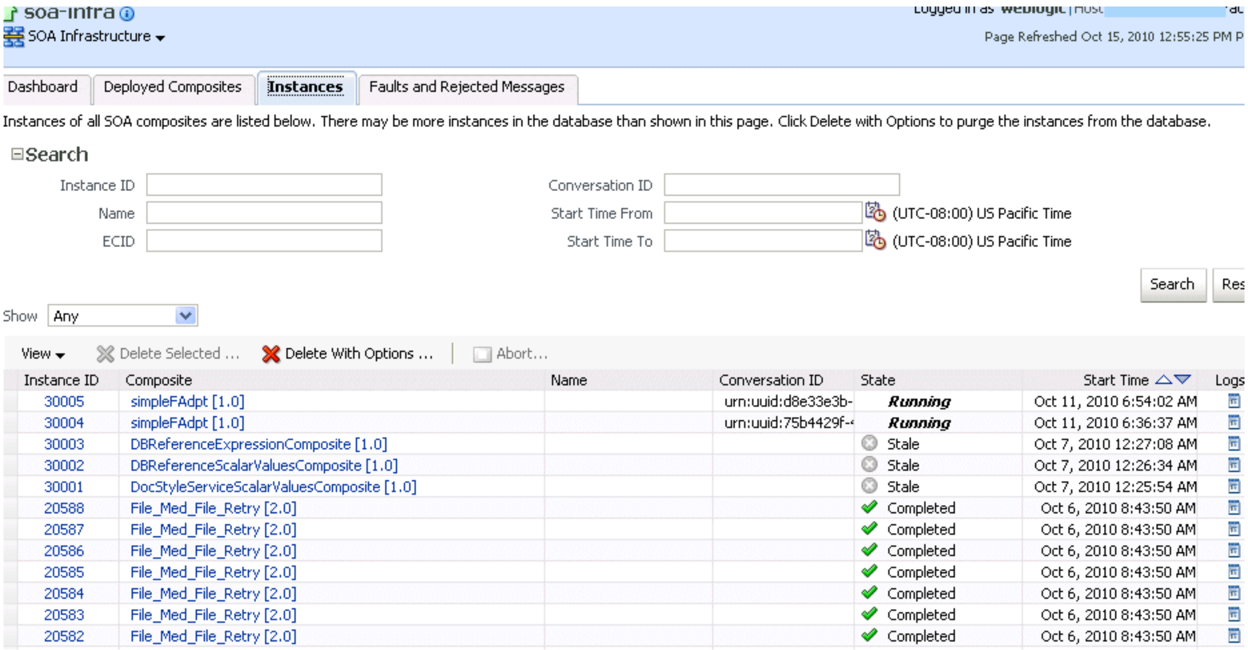
1. Access this page through one of the following options:

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.


soa-infra
Logged in as weblogic | Host [redacted]
SOA Infrastructure
Page Refreshed Oct 15, 2010 12:55:25 PM P
Dashboard
Deployed Composites
Instances
Faults and Rejected Messages

Instances of all SOA composites are listed below. There may be more instances in the database than shown in this page. Click Delete with Options to purge the instances from the database.

Show: Any

Instance ID	Composite	Name	Conversation ID	State	Start Time	Logs
30005	simpleFAdpt [1.0]		urn:uuid:d8e33e3b-	*Running*	Oct 11, 2010 6:54:02 AM	
30004	simpleFAdpt [1.0]		urn:uuid:75b4429f-	*Running*	Oct 11, 2010 6:36:37 AM	
30003	DBReferenceExpressionComposite [1.0]			Stale	Oct 7, 2010 12:27:08 AM	
30002	DBReferenceScalarValuesComposite [1.0]			Stale	Oct 7, 2010 12:26:34 AM	
30001	DocStyleServiceScalarValuesComposite [1.0]			Stale	Oct 7, 2010 12:25:54 AM	
20588	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20587	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20586	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20585	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20584	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20583	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	
20582	File_Med_File_Retry [2.0]			✓ Completed	Oct 6, 2010 8:43:50 AM	

   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.
Delete with Options	Prompts you to first specify a criteria for deleting the selected instance directly from the database. - **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 start and stop times, and instance state. Any instance state selections you made at the top of the Instances page are ignored for this operation. To monitor the progress of instance deletion, you must check the log files. For information about log files, see Section 3.4, "Configuring Log Files." **Notes:** - If this composite has thousands of instances to delete, do not use this option. Instead, use the purge script described in Section 9.3, "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. - This option does not purge BPEL process service engine recoverable invoke and callback messages. To completely purge those messages, use the purge scripts described in Section 9.3, "Deleting Large Numbers of Instances with the Purge Script."
Abort	Terminates the selected instance. However, instance details are still available for review. **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.

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. From the **View** list, select **Columns** > **ECID** to display execution context IDs (ECIDs). An ECID enables you to track a message flow that crosses instances of different composites.
7. 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.
8. In the **Composite** column, click a specific SOA composite application to access its home page.
9. 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:

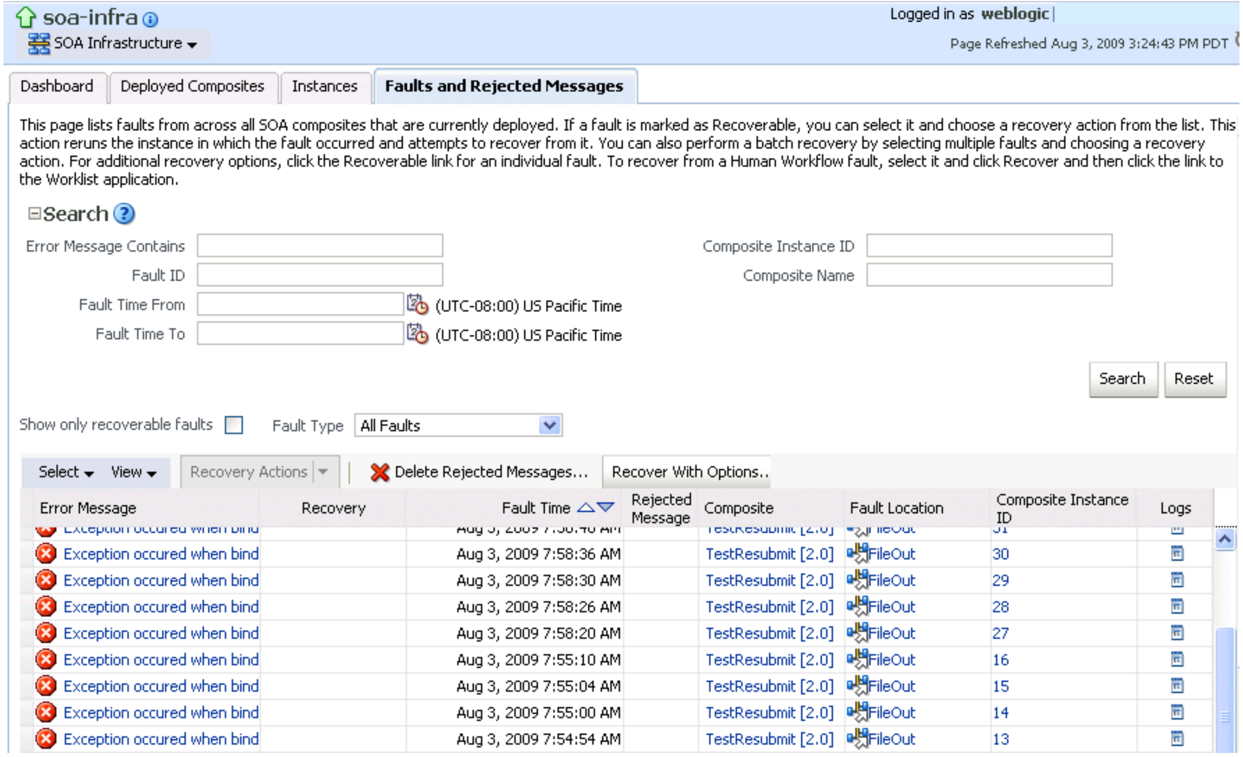
1. Access this page through one of the following options:

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.



Logged in as **weblogic**

Page Refreshed Aug 3, 2009 3:24:43 PM PDT

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

Fault ID

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

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

Composite Instance ID

Composite Name

Show only recoverable faults ☐ Fault Type All Faults

Error Message	Recovery	Fault Time	Rejected Message	Composite	Fault Location	Composite Instance ID	Logs
Exception occured when bind		Aug 3, 2009 7:58:36 AM		TestResubmit [2.0]	FileOut	30	
Exception occured when bind		Aug 3, 2009 7:58:30 AM		TestResubmit [2.0]	FileOut	29	
Exception occured when bind		Aug 3, 2009 7:58:26 AM		TestResubmit [2.0]	FileOut	28	
Exception occured when bind		Aug 3, 2009 7:58:20 AM		TestResubmit [2.0]	FileOut	27	
Exception occured when bind		Aug 3, 2009 7:55:10 AM		TestResubmit [2.0]	FileOut	16	
Exception occured when bind		Aug 3, 2009 7:55:04 AM		TestResubmit [2.0]	FileOut	15	
Exception occured when bind		Aug 3, 2009 7:55:00 AM		TestResubmit [2.0]	FileOut	14	
Exception occured 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	There are three options from which to choose for single-fault recovery: 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	There are two options from which to choose for bulk-fault recovery: 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 *not* 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	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.

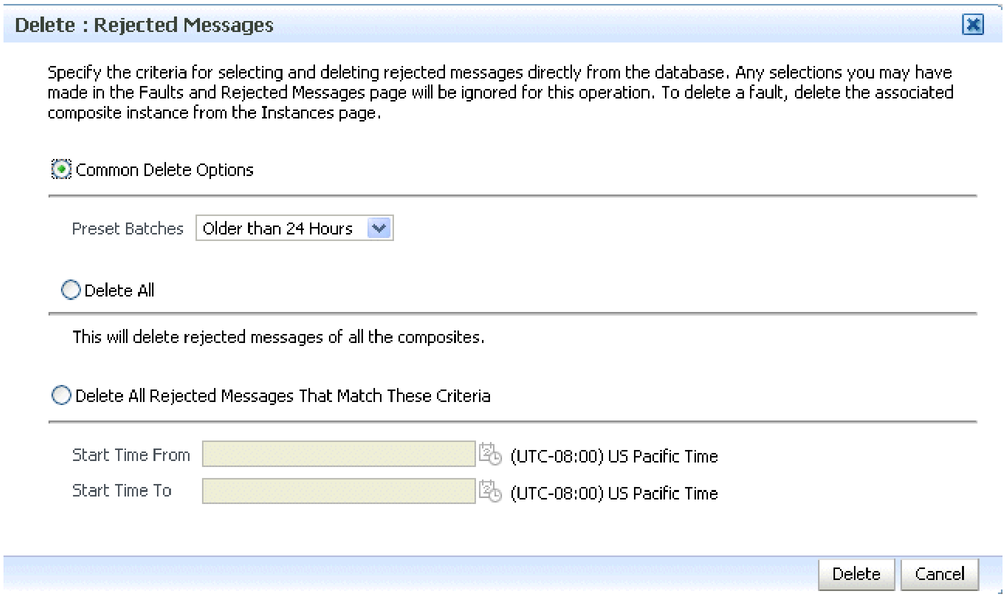
Action	Description	Action is Available for...
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.	BPEL process and Oracle Mediator
Abort	Terminates the entire instance.	BPEL process and Oracle Mediator
Replay	Replays the entire scope again in which the fault occurred.	BPEL process

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.

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.



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.

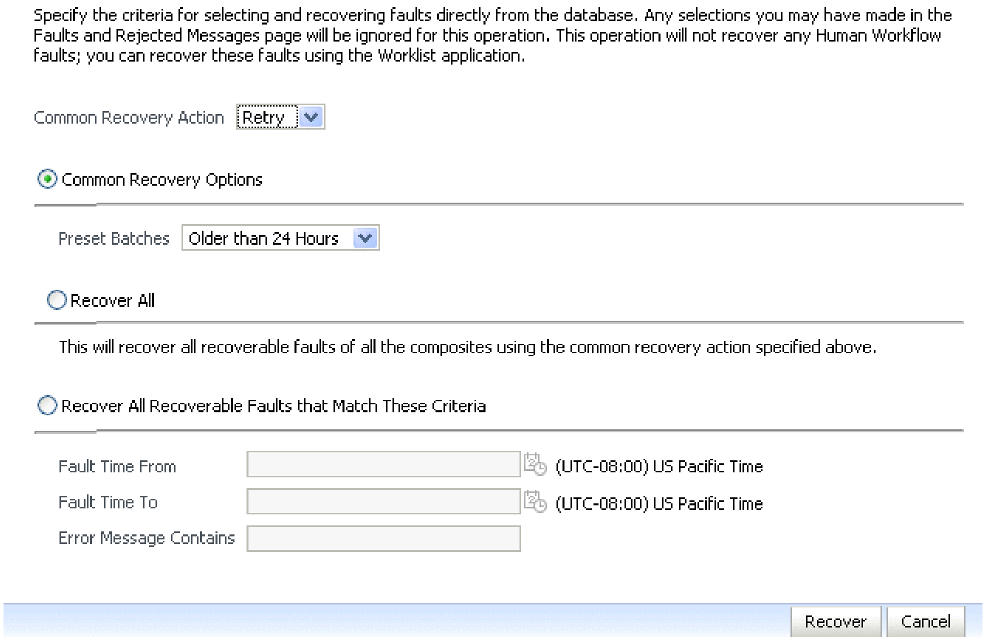
○ Delete All Rejected Messages That Match These Criteria

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

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

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: Retry

● Common Recovery Options

Preset Batches: Older than 24 Hours

○ 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:

    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 **Composite** column, click a specific SOA composite application to access its home page.

    c. 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.

    d. In the **Composite Instance ID** column, click a specific ID to access the flow trace of the instance.

    e. 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">
               <!-- 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*.

8.5.1.1 Example: Single Fault Recovery for BPEL Processes

This example assumes the following:

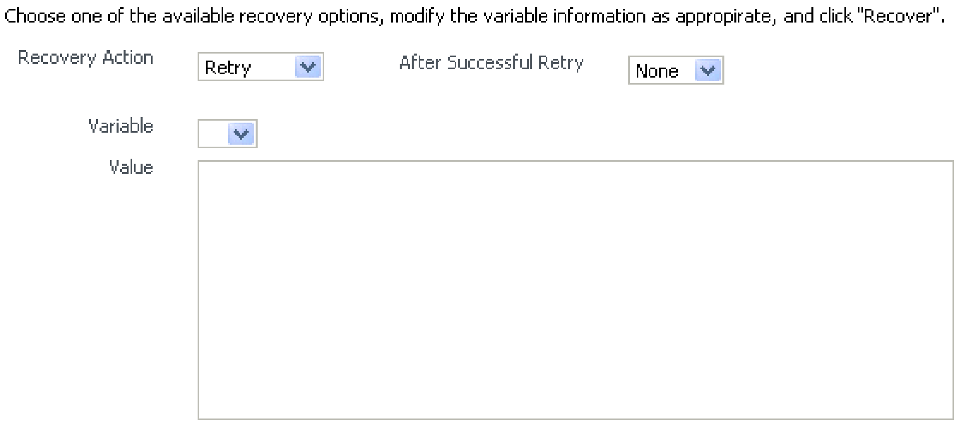
- An instance was initiated on the Test Web Service page shown in Section 8.1, "Initiating a SOA Composite Application Test Instance."
- An invalid social security number that begins with `0` was entered.

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 appropirate, 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">
               <!-- 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*.

8.5.2.1 Example: Single Fault Recovery for BPMN Processes

This example assumes the following:

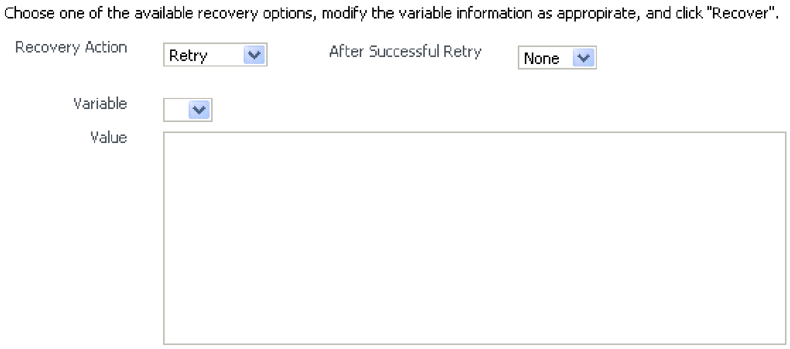
- An instance was initiated on the Test Web Service page shown in Section 8.1, "Initiating a SOA Composite Application Test Instance."
- An invalid social security number that begins with `0` was entered.

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: Retry

After Successful Retry: None

6. From the **Recovery Action** list, select **Retry**.
7. From the **Chain Action Upon Successful Retry** list, select **None**. 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. From the **Variable** list, select a variable. 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. In the **Value** field, enter the correct value. 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.

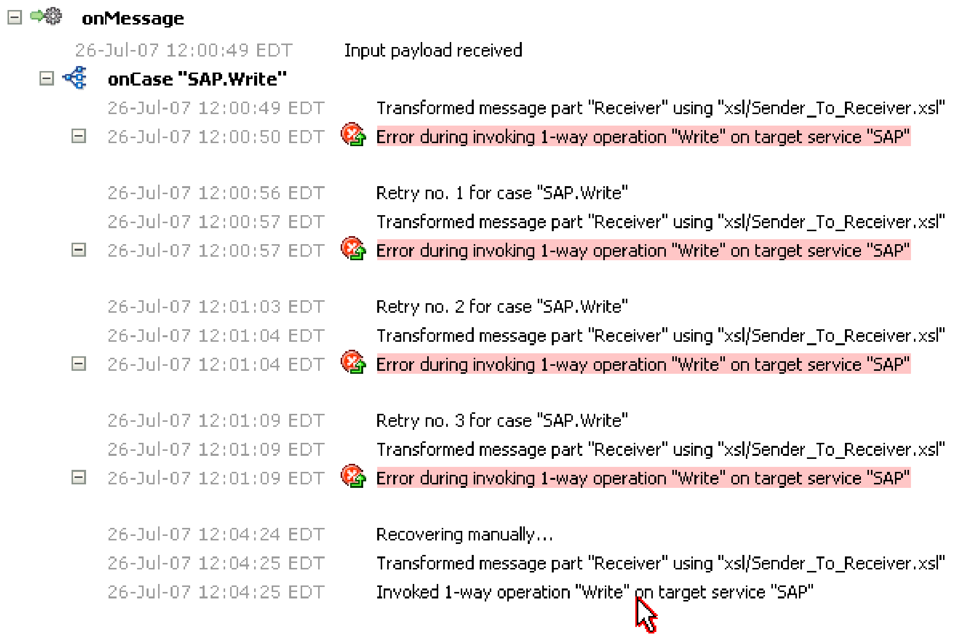
   ```
   chmod 777 sap
   ```

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:

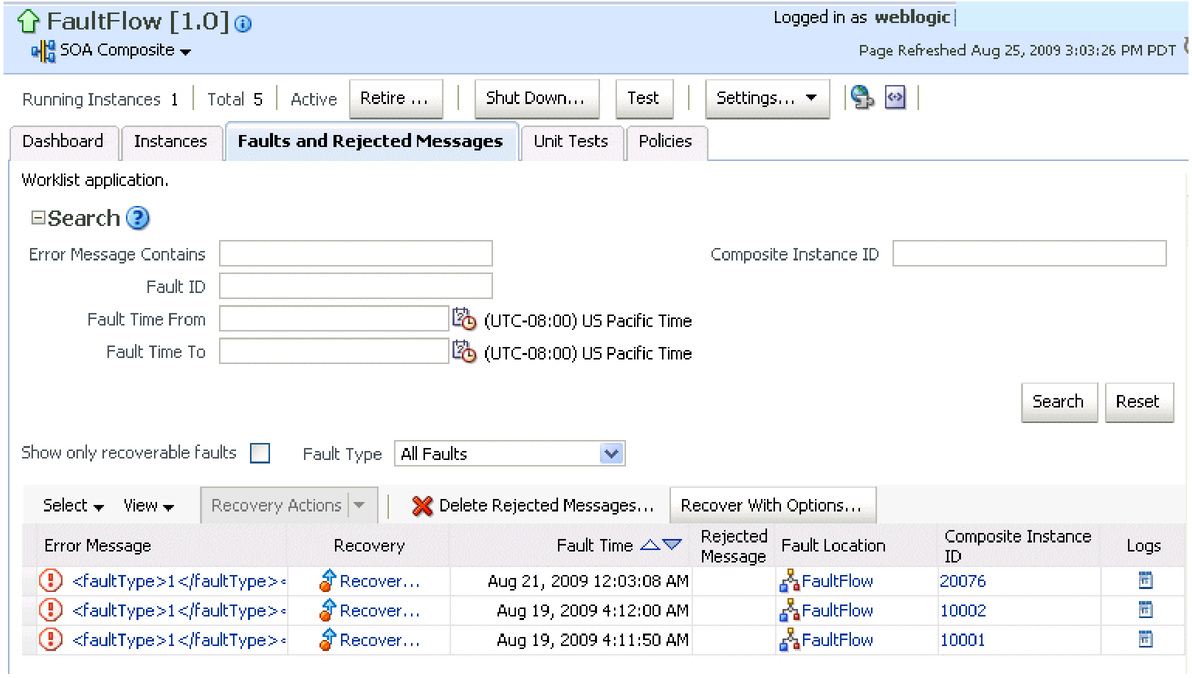
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select **Deployed Composites**. 3. In the **Composite** section, select a specific SOA composite application.	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.



Worklist application.

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

Show only recoverable faults ☐ Fault Type All Faults

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.

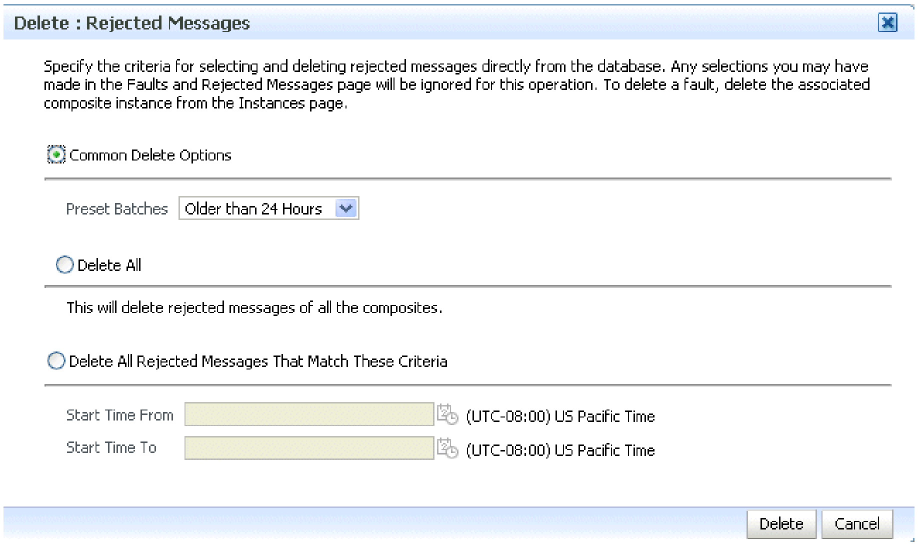
Action	Description	Action is Available for...
Retry	Retries the instance directly. An example of a scenario in which to use this recovery action is when the fault occurred because the service provider was not reachable due to a network error. The network error is now resolved.	BPEL process and Oracle 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.

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 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.

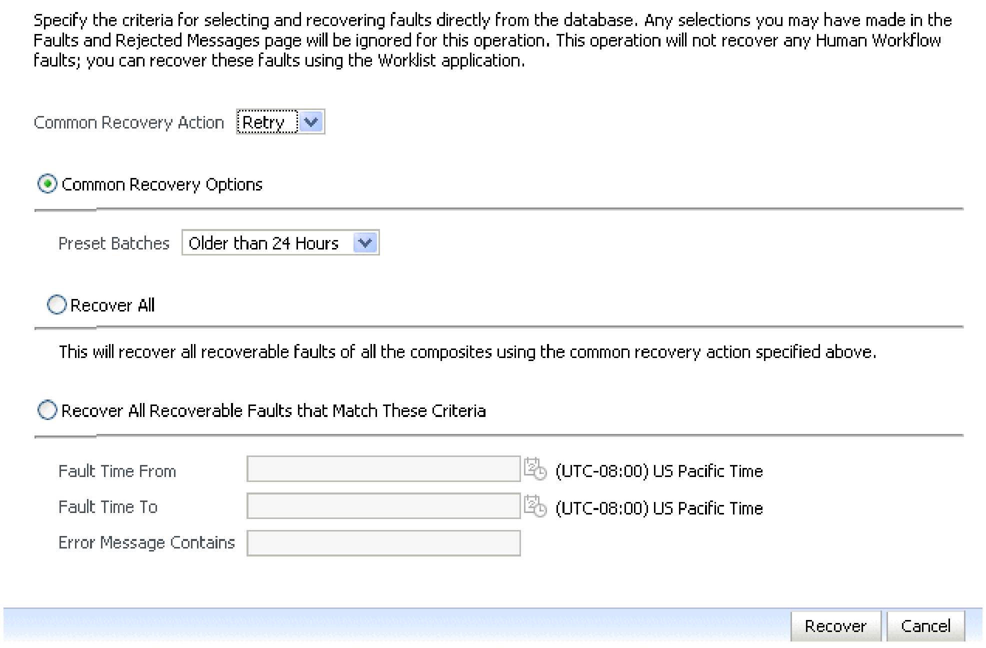
○ Delete All Rejected Messages That Match These Criteria

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

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

6. 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 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: Retry

● Common Recovery Options

Preset Batches: Older than 24 Hours

○ 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:

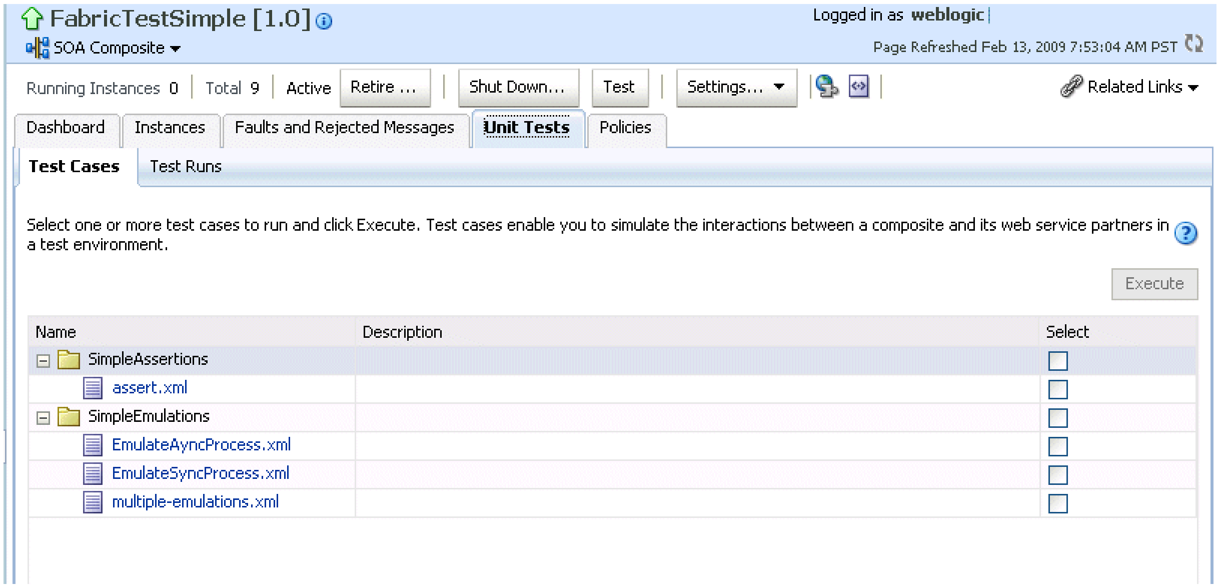
> **Note:** Before testing SOA composite applications from Oracle Enterprise Manager Fusion Middleware Control Console, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for instructions on creating test cases.

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...
1. Select **Home**. 2. Select **Deployed Composites**. 3. In the **Composite** section, select a specific SOA composite application. 4. Click the **Unit Tests** tab.	1. Under **soa-infra**, select a specific SOA composite application beneath the partition. 2. Click the **Unit Tests** tab.	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**.



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.

Name	Description	Select
SimpleAssertions		☐
assert.xml		☐
SimpleEmulations		☐
EmulateAyncProcess.xml		☐
EmulateSyncProcess.xml		☐
multiple-emulations.xml		☐

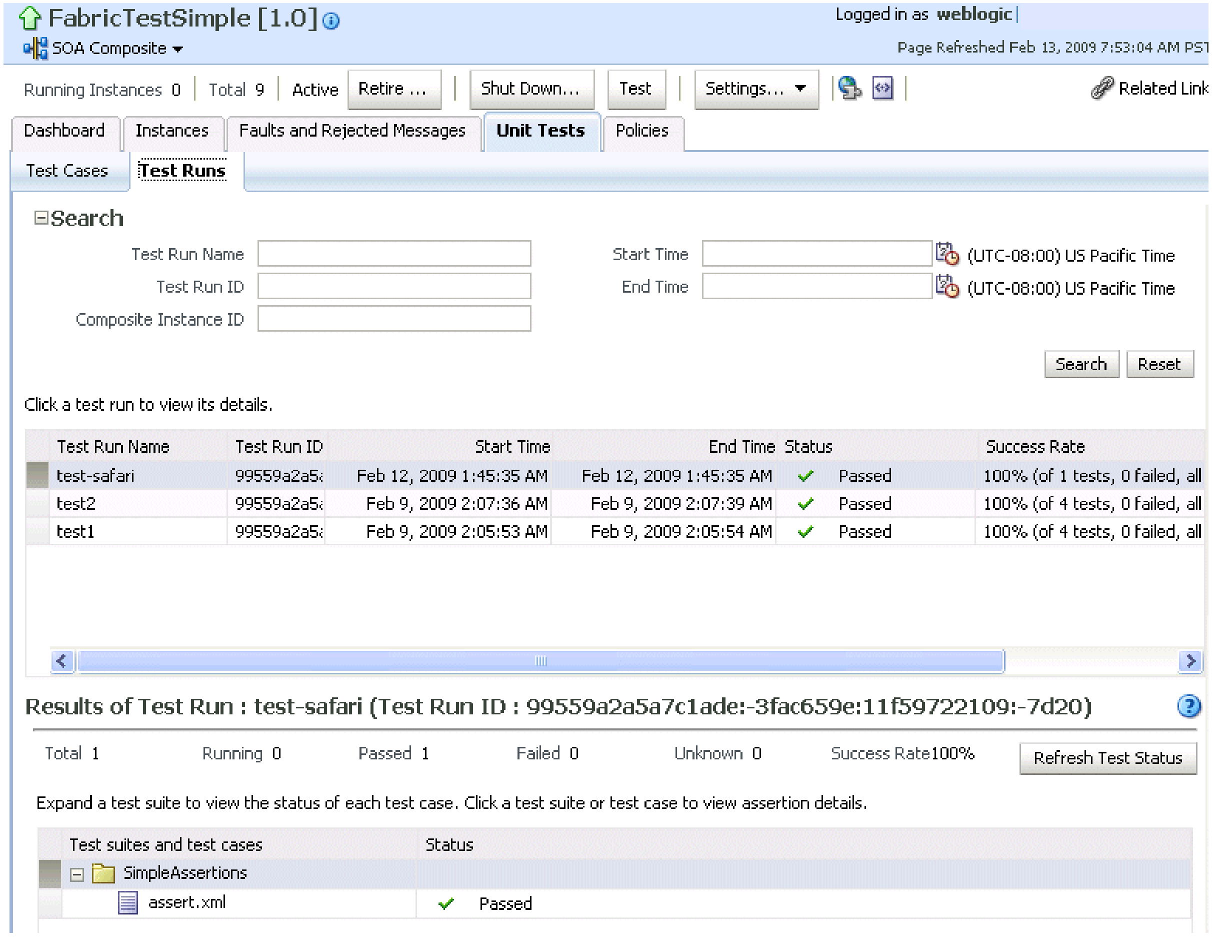
You are prompted to create a test.

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.



Click a test run to view its details.

Test Run Name	Test Run ID	Start Time	End Time	Status	Success Rate
test-safari	99559a2a5	Feb 12, 2009 1:45:35 AM	Feb 12, 2009 1:45:35 AM	✓ Passed	100% (of 1 tests, 0 failed, all
test2	99559a2a5	Feb 9, 2009 2:07:36 AM	Feb 9, 2009 2:07:39 AM	✓ Passed	100% (of 4 tests, 0 failed, all
test1	99559a2a5	Feb 9, 2009 2:05:53 AM	Feb 9, 2009 2:05:54 AM	✓ Passed	100% (of 4 tests, 0 failed, all

Results of Test Run : test-safari (Test Run ID : 99559a2a5a7c1ade:-3fac659e:11f59722109:-7d20)

Total 1 Running 0 Passed 1 Failed 0 Unknown 0 Success Rate 100%

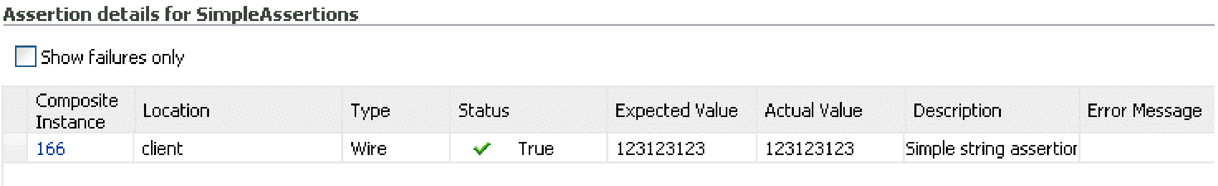
Expand a test suite to view the status of each test case. Click a test suite or test case to view assertion details.

Test suites and test cases	Status
SimpleAssertions	
assert.xml	✓ Passed

4. 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.

5. 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	

6. 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.

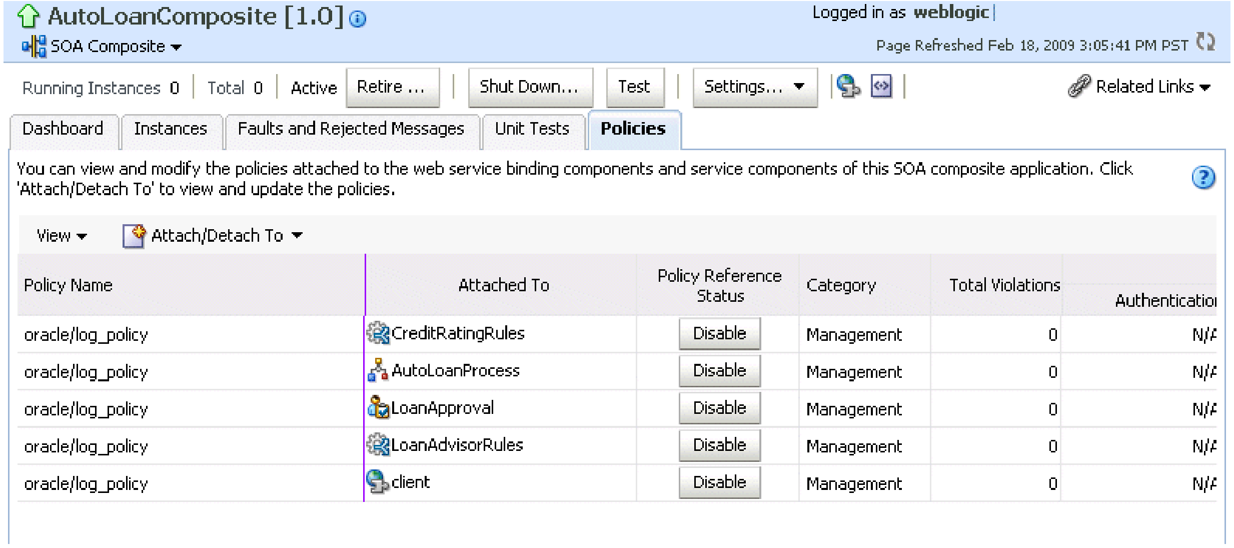
Note: Before attaching policies, see *Oracle Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use in your environment.

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...
1. Select **Home**. 2. Select **Deployed Composites**. 3. In the **Composite** section, select a specific SOA composite application. 4. Click the **Policies** tab.	1. Under **soa-infra**, select a specific SOA composite application beneath the partition. 2. Click the **Policies** tab.	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.



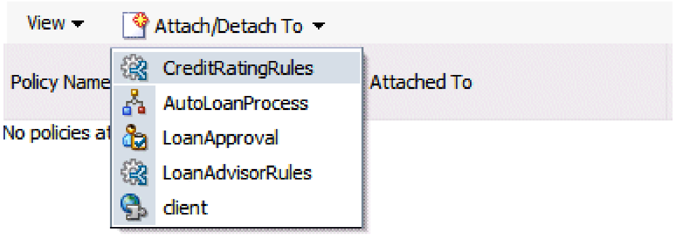
You can view and modify the policies attached to the web service binding components and service components of this SOA composite application. Click 'Attach/Detach To' to view and update the policies.

Policy Name	Attached To	Policy Reference Status	Category	Total Violations	Authenticatio
oracle/log_policy	CreditRatingRules	Disable	Management	0	N/
oracle/log_policy	AutoLoanProcess	Disable	Management	0	N/
oracle/log_policy	LoanApproval	Disable	Management	0	N/
oracle/log_policy	LoanAdvisorRules	Disable	Management	0	N/
oracle/log_policy	client	Disable	Management	0	N/

2. Click **Attach/Detach To**.

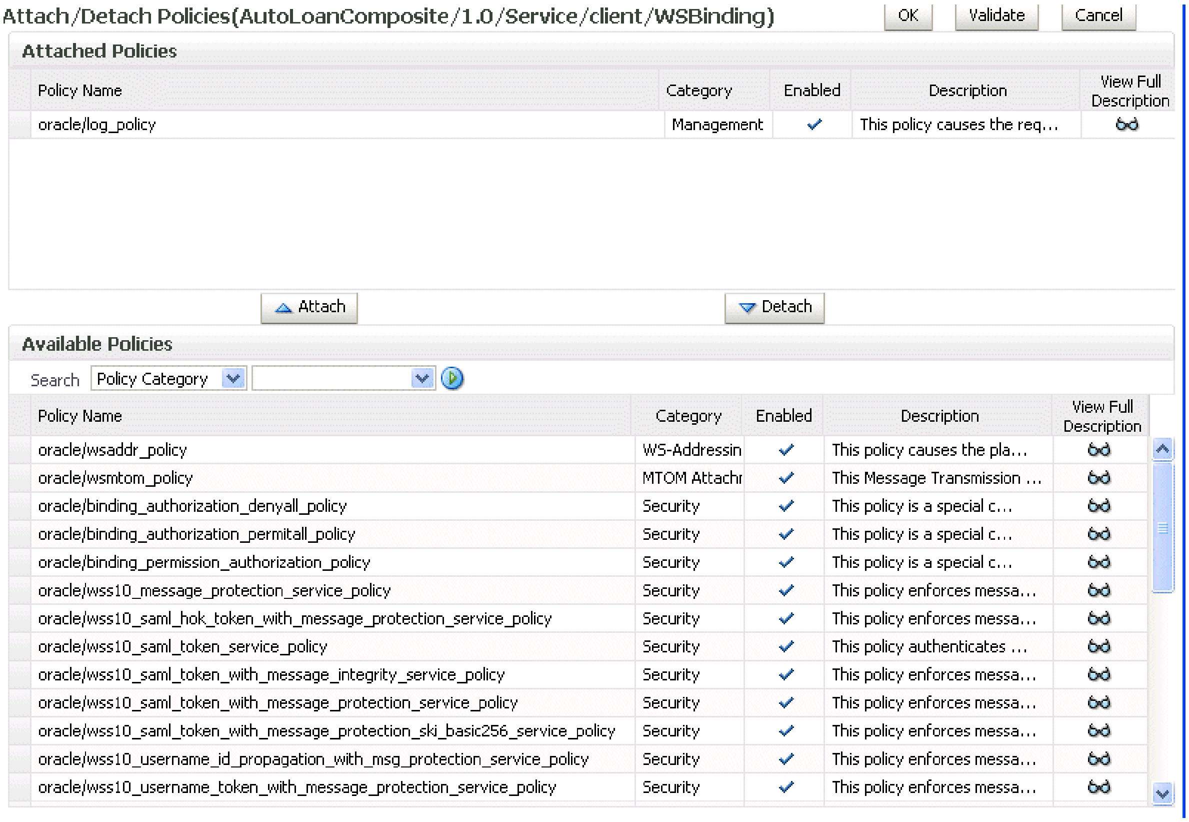
   If multiple services or components are available, you are prompted to select the service or component for which to perform the attachment or detachment.

3. Select the component to which to attach or detach a policy.



   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)

Attached Policies

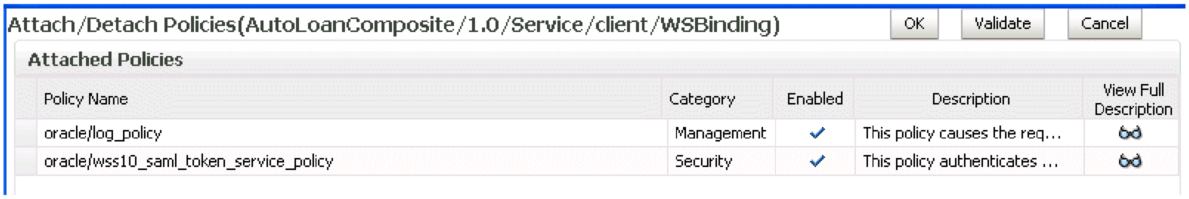
Policy Name	Category	Enabled	Description	View Full Description
oracle/log_policy	Management	✓	This policy causes the req...	👓

Available Policies

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.



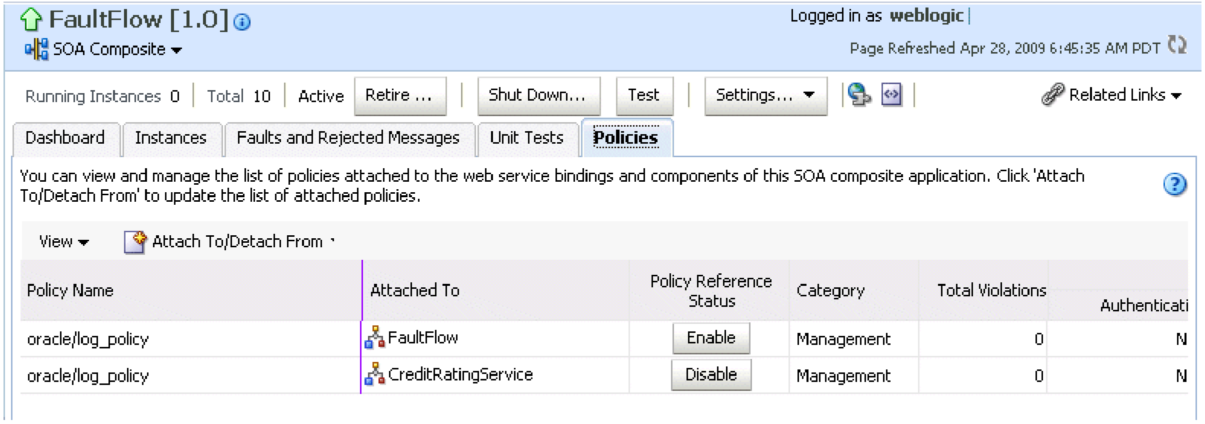
Attach/Detach Policies(AutoLoanComposite/1.0/Service/client/WSBinding)

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.



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.

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 Application Server Web Services Security Guide* 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 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 Application Server Web Services Security Guide*.

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

---

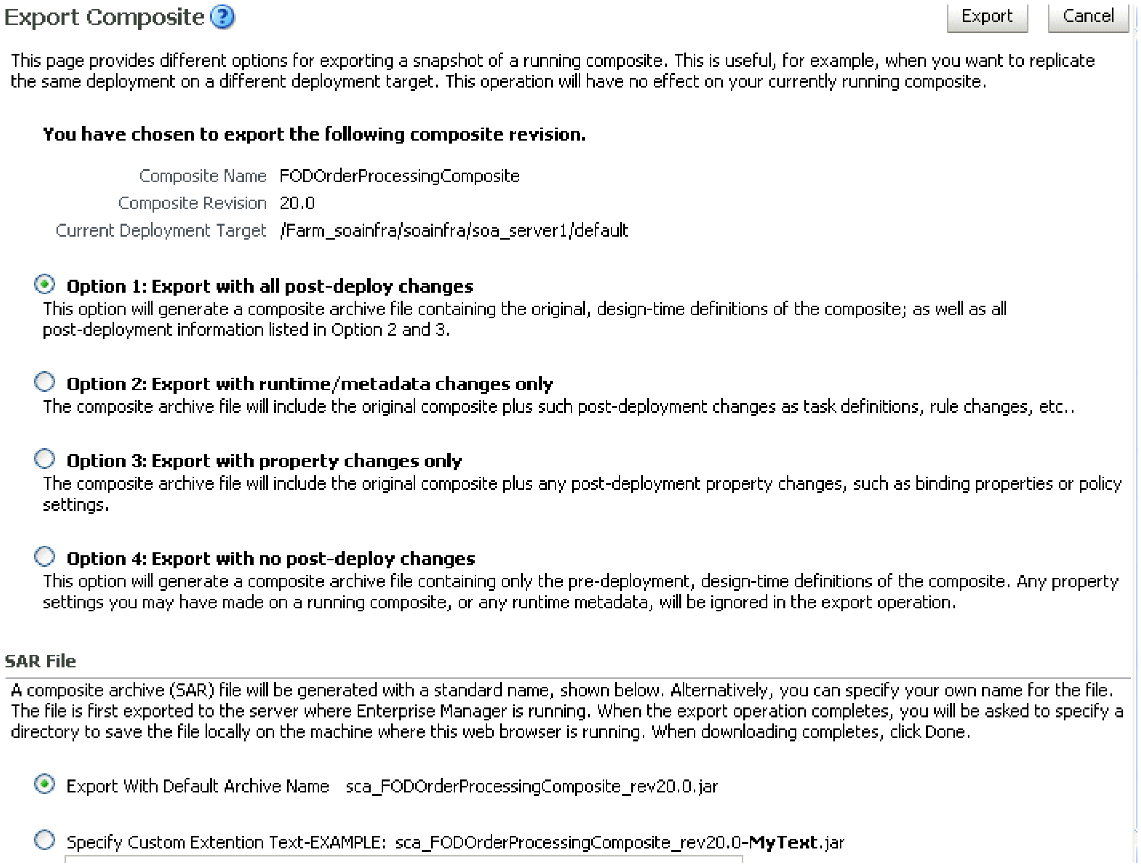
Notes:

- 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 SOA archive (SAR).

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.



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 Extention 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 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: ■ Start all ■ Shut down all ■ Retire all ■ Activate all ■ Undeploy all	Yes	Yes

> **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

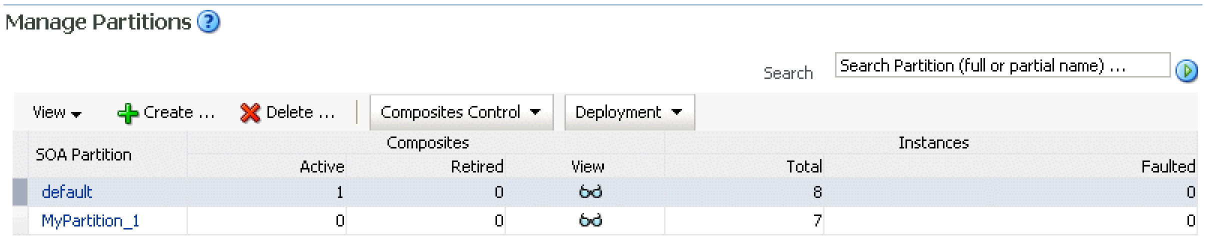
You can create and delete partitions on the Manage Partitions page. A default partition named **default** is automatically included with Oracle SOA Suite. You can delete the **default** partition. Note that you cannot rename existing partitions; only creation and deletion of partitions is supported.

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:

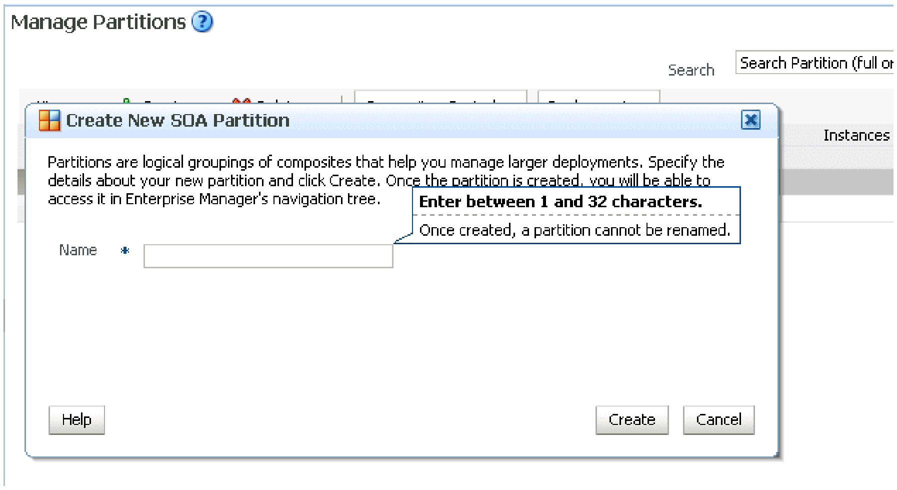
- The name of each partition, the number of active and retired SOA composite application revisions in each partition, the name of the composites contained in each partition (under the **View** link), and the total number of running and faulted instances in each partition.
- A utility for searching for 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.



SOA Partition	Composites			Instances	
	Active	Retired	View	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.



Partitions are logical groupings of composites that help you manage larger deployments. Specify the details about your new partition and click Create. Once the partition is created, you will be able to access it in Enterprise Manager's navigation tree.

Enter between 1 and 32 characters.

Once created, a partition cannot be renamed.

   a. In the **Name** field, enter a partition name, and click **Create**.

Note: The name must conform to the following conventions:

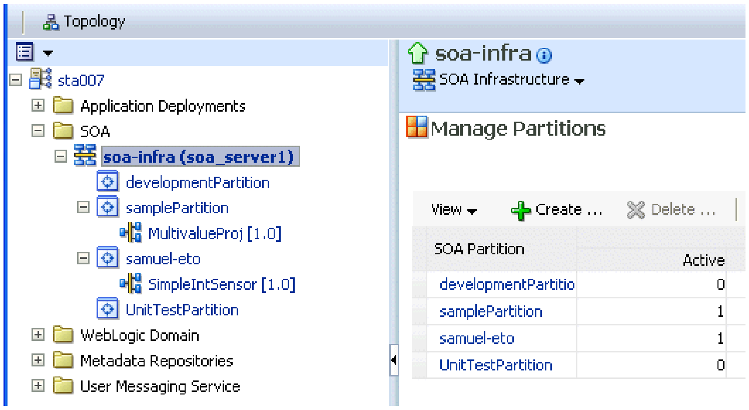
- ASCII letters and numbers are permitted.
- Underscores (_) are permitted.
- Hyphens (-) are permitted (except as the first character).
- Non-ASCII letters are permitted.
- Spaces are *not* permitted.

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 clicking **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.



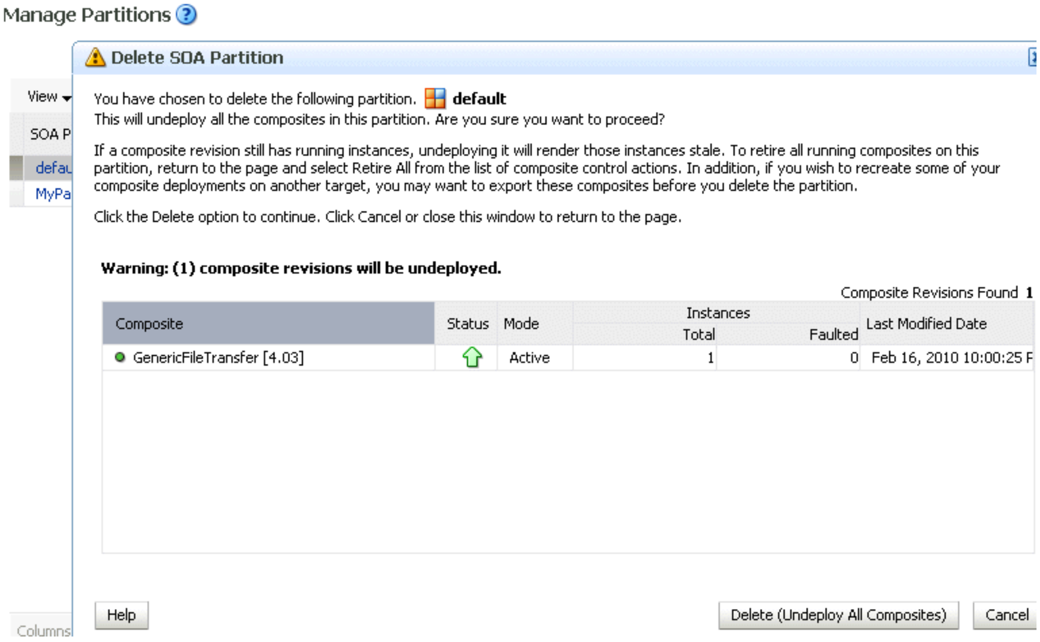
SOA Partition	Active
developmentPartitio	0
samplePartition	1
samuel-eto	1
UnitTestPartition	0

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 re-create 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.



You have chosen to delete the following partition. **default**
This will undeploy all the composites in this partition. Are you sure you want to proceed?

If a composite revision still has running instances, undeploying it will render those instances stale. To retire all running composites on this partition, return to the page and select Retire All from the list of composite control actions. In addition, if you wish to recreate some of your composite deployments on another target, you may want to export these composites before you delete the partition.

Click the Delete option to continue. Click Cancel or close this window to return to the page.

Warning: (1) composite revisions will be undeployed.

Composite Revisions Found **1**

Composite	Status	Mode	Instances		Last Modified Date
			Total	Faulted	
● GenericFileTransfer [4.03]	⇧	Active	1	0	Feb 16, 2010 10:00:25 F

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:

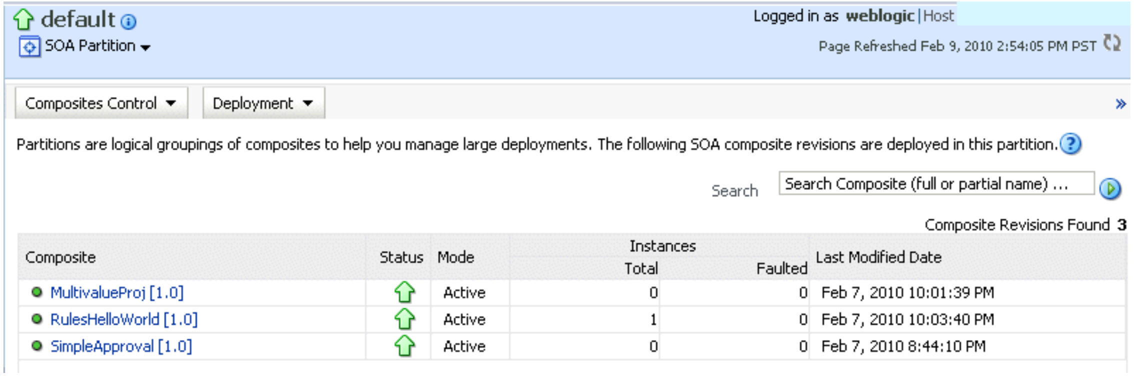
From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Manage Partitions**.	1. Under **soa-infra**, select a specific partition.

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.

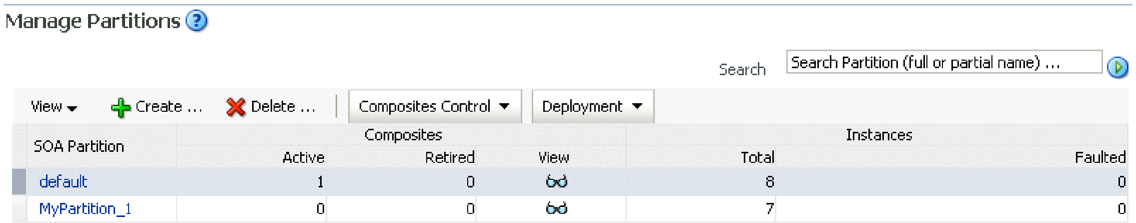

default
SOA Partition
Logged in as weblogic | Host
Page Refreshed Feb 9, 2010 2:54:05 PM PST
Composites Control
Deployment
Search
Search Composite (full or partial name) ...

Partitions are logical groupings of composites to help you manage large deployments. The following SOA composite revisions are deployed in this partition.

Composite Revisions Found **3**

Composite	Status	Mode	Instances		Last Modified Date
			Total	Faulted	
● MultivalueProj [1.0]	⇧	Active	0	0	Feb 7, 2010 10:01:39 PM
● RulesHelloWorld [1.0]	⇧	Active	1	0	Feb 7, 2010 10:03:40 PM
● SimpleApproval [1.0]	⇧	Active	0	0	Feb 7, 2010 8:44:10 PM

On the Manage Partitions page, these lists display above the **SOA Partition** table:



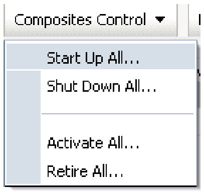
SOA Partition	Composites			Instances	
	Active	Retired	View	Total	Faulted
default	1	0	👓	8	0
MyPartition_1	0	0	👓	7	0

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.



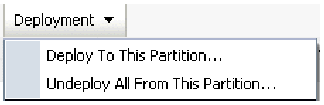
a. Select an operation to perform.

   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.


Deployment
Deploy To This Partition...
Undeploy All From This Partition...

8.11 Disabling and Enabling BPEL and BPMN Business Monitors

The term business monitoring comprises different types of sensors that can be defined for some types of SOA components, such as the following:

- BPEL sensors— Enable you to create sensors in BPEL faults, activities, and variables.
- BPEL Monitors— Enable you to capture BPEL process metrics that are sent to Oracle BAM Server, and then used for analysis and graphic display.
- BPMN measurements—Enable you to measure a business indicator at a certain point in the process or in a section of the process.

At the SOA composite application level, you set the same status for all sensors defined for all types of service components comprising the selected composite. You cannot selectively enable or disable sensors defined for a specific type of service component for just one composite. However, you can globally disable service component-type specific sensors for all composites in the respective BPEL Service Engine Properties page or BPMN Service Engine Properties page.

By default, BPEL and BPMN sensors defined in SOA composite applications are enabled. Disabling sensors means that sensor values are not captured during run time. For example, this results in the values not being displayed in the Sensor Values section of the BPEL audit trail.

To disable sensors at the service engine level:

1. Access the BPEL Service Engine Properties page by following the steps in Section 11.1, "Configuring BPEL Process Service Engine Properties."
2. Select the **Disable BPEL Monitors and Sensors** check box.
3. Click **Apply**.

4. Access the BPMN Service Engine Properties page by following the steps in Section 40.1, "Configuring BPMN Process Service Engine Properties"

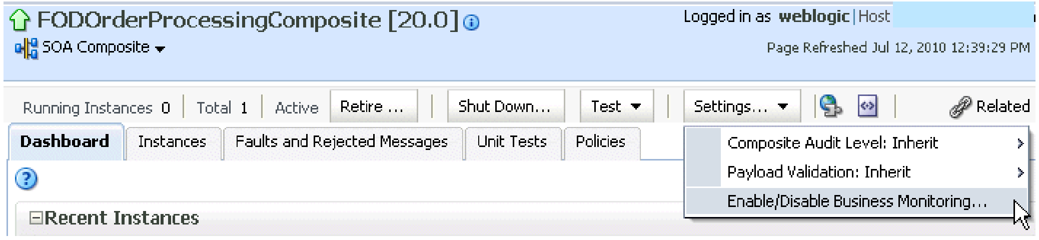
Note: The BPMN Service Engine Properties page only displays if Oracle BPM Suite is installed.

---

5. Select the **Disable BPMN Measurements** check box.
6. Click **Apply**.

To disable or enable sensors at the SOA composite application level:

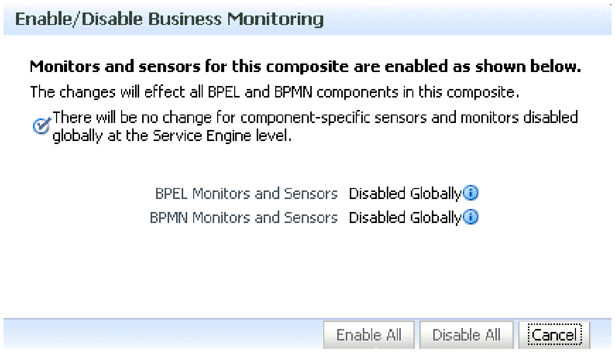
1. Go to the home page of the SOA composite application in which you want to disable or enable sensors.
2. From the **Settings** menu, select **Enable/Disable BPEL Business Monitoring**. This selection only displays for composites that have at least one BPEL or BPMN service component, regardless of whether those components include sensors.


FODOrderProcessingComposite [20.0]
SOA Composite
Logged in as weblogic | Host
Page Refreshed Jul 12, 2010 12:39:29 PM
Running Instances 0
Total 1
Active
Retire ...
Shut Down...
Test
Settings...
Related
Dashboard
Instances
Faults and Rejected Messages
Unit Tests
Policies
Recent Instances
Composite Audit Level: Inherit
Payload Validation: Inherit
Enable/Disable Business Monitoring...

A dialog is invoked that displays the current status of sensors and enables you to change that status. The dialog displays only the options applicable to the component types present in the selected composite. For example, if the composite contains only BPEL components but not BPMN, you see only the option to set the status of BPEL sensors.

The following steps describe the types of dialogs that can display and the available actions.

   a. If sensors are disabled at both service engine levels, the message **Disabled Globally** is displayed for each. You cannot select **Enable All** or **Disable All** in this dialog. Both buttons are disabled.



Enable/Disable Business Monitoring

Monitors and sensors for this composite are enabled as shown below.

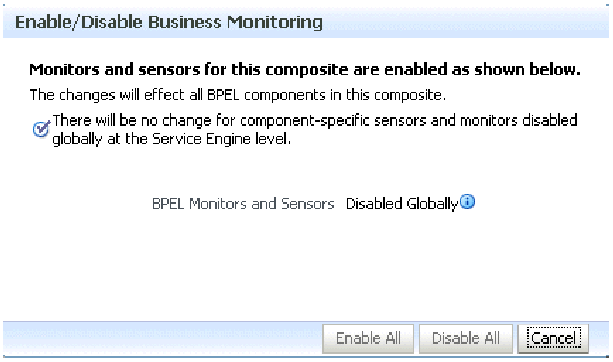
The changes will effect all BPEL and BPMN components in this composite.

There will be no change for component-specific sensors and monitors disabled globally at the Service Engine level.

BPEL Monitors and Sensors Disabled Globally

BPMN Monitors and Sensors Disabled Globally

   In addition, if sensors are disabled at the BPEL service engine level and the BPMN service engine does not appear because Oracle BPM Suite is not installed, you cannot select **Enable All** or **Disable All** in this dialog. Both buttons are disabled.



Enable/Disable Business Monitoring

Monitors and sensors for this composite are enabled as shown below.

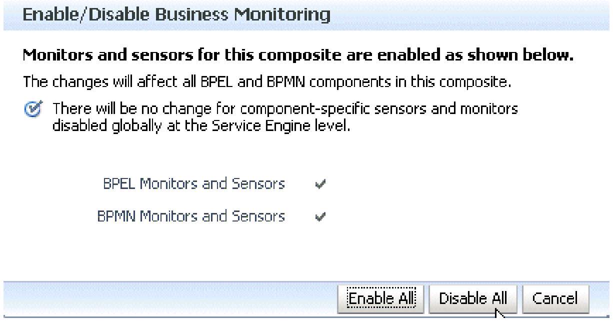
The changes will effect all BPEL components in this composite.

There will be no change for component-specific sensors and monitors disabled globally at the Service Engine level.

BPEL Monitors and Sensors Disabled Globally

b. If sensors are not disabled at the composite level, check marks are displayed. If sensors are also not disabled at both the BPEL and BPMN service engine levels, the message **Disabled Globally** does *not* display.

Click **Disable All** to disable all types of sensors defined for service components that comprise the selected composite. (If sensors are disabled at the service engine level, they remain disabled.)



Enable/Disable Business Monitoring

Monitors and sensors for this composite are enabled as shown below.

The changes will affect all BPEL and BPMN components in this composite.

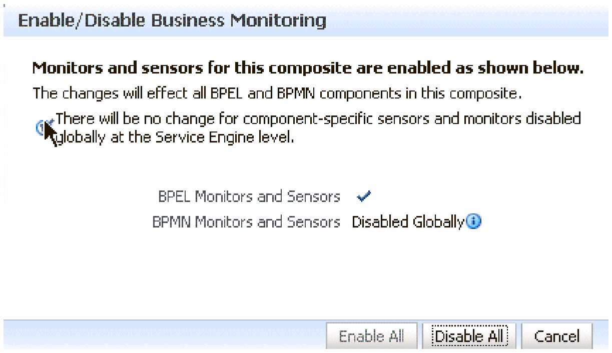
There will be no change for component-specific sensors and monitors disabled globally at the Service Engine level.

BPEL Monitors and Sensors ✓

BPMN Monitors and Sensors ✓

c. If sensors are disabled at a specific service engine level, the sensor status you set for those types of sensors at the composite application level only takes effect when the corresponding **Disable BPEL Monitors and Sensors** or **Disable BPMN Measurements** check box in the service engine Properties page is unselected.

For example, if sensors are disabled at the BPMN service engine level (as shown below), and you select **Enable All** for all sensors at the selected composite level, that status is only applied to other types of sensors, such as BPEL. BPMN sensors and monitors remain disabled. However, if you later change the BPMN service engine setting, BPMN sensors are automatically enabled in this composite.



Enable/Disable Business Monitoring

Monitors and sensors for this composite are enabled as shown below.

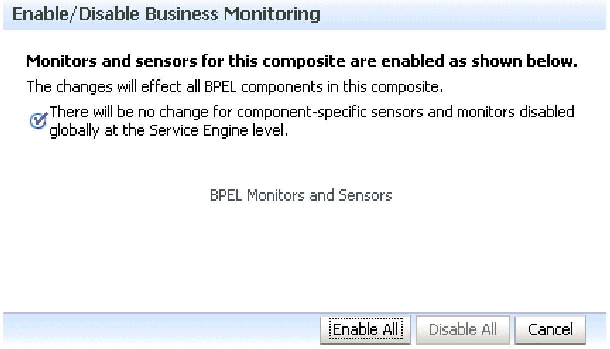
The changes will effect all BPEL and BPMN components in this composite.

There will be no change for component-specific sensors and monitors disabled globally at the Service Engine level.

BPEL Monitors and Sensors ✓

BPMN Monitors and Sensors Disabled Globally

d. If sensors are disabled at the composite level, no check mark is displayed. Click **Enable All** to enable all types of sensors defined for service components that comprise the selected composite. (Sensors disabled at the service engine level remain disabled until you change the service engine level setting.) Note that since the composite does not include BPMN service components, BPMN does not display.


Enable/Disable Business Monitoring

Monitors and sensors for this composite are enabled as shown below.

The changes will effect all BPEL components in this composite.

✓ There will be no change for component-specific sensors and monitors disabled globally at the Service Engine level.

After you select an action, an inline message displays in the page confirming that sensors were enabled or disabled.

For more information about BPEL sensors and monitors, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

For more information about BPMN measurements, see *Oracle Fusion Middleware Modeling and Implementation Guide for Oracle Business Process Management*.

9

Managing Database Growth

This chapter describes how to manage the growth of data in your database through use of both a SOA composite application instance purge script and component database table partitioning.

This chapter includes the following topics:

Note: Table partitioning is an advanced database task and must only be performed by an experienced database administrator (DBA).

9.1 Introduction to Managing Database Growth

When the amount of data in the Oracle SOA Suite database grows very large, maintaining the database can become difficult. To address this challenge, two methods for managing database growth are provided:

- Deleting large numbers of instances with the purge script
- Partitioning component database tables

9.1.1 Deleting Large Numbers of Instances with the Purge Script

Deleting thousands of instances in Oracle Enterprise Manager Fusion Middleware Control Console takes time and may result in transaction time-outs. As an alternative, you can use the purge script for instance and rejected message deletion. The purge script is located in `RCU_HOME/rcu/integration/soainfra/sql/soa_purge`.

Because database partitioning is a task for an experienced DBA, the purge script is adequate for most Oracle SOA Suite installations. Consider using table partitioning when the schemas grow so large that the purge script does not meet your performance needs.

For more information about the purge script, see Section 9.3, "Deleting Large Numbers of Instances with the Purge Script."

9.1.2 Partitioning the Component Database Tables

Oracle SOA Suite has been instrumented with partition keys that enable DBAs to take advantage of Oracle RDBMS partitioning features and capabilities. This action enables the schema tables to be range-partitioned on time intervals. This is useful when you must reduce the database maintenance window of large tables. (Though not discussed in this chapter, this also provides for the possibility of archiving partitioned data.)

The task of partitioning the Oracle SOA Suite tables must be performed by an experienced DBA. Since partitioning tables is considered a core DBA skill, this chapter does not provide detailed, step-by-step instructions on how to partition tables. Rather, it provides the DBA with the knowledge and understanding of Oracle SOA Suite schemas and their associated scripts. With this knowledge, the DBA can customize any partitioning strategy for their environment, and incorporate any tuning parameters in response to the performance of their database. Tuning is never a one-size-fits-all proposition or a one-off configuration change. Rather, it is an iterative process of monitoring and tuning.

The partitioning schemes discussed in this chapter can only be used with Oracle SOA Suite 11*g* Release 1 (11.1.1.4).

The following components are associated with their own database schemas:

- Oracle BPEL Process Manager
- Oracle Mediator
- Human workflow
- Oracle B2B
- SOA Infrastructure
- Oracle BPM Suite

For more information about table partitioning, see the Oracle database administration documentation library located at the following URL:

`http://www.oracle.com/technology/documentation/database.html`

Notes:

- A hash subpartition is an option the DBA may want to explore, especially for tables with large object (LOB) segments. This can assist with high water (HW) enqueue contention.
- A global hash index on primary keys that are monotonically increasing (like `CIKEY`) may relieve block contention.

9.1.2.1 Referential Integrity and Equipartioning

For performance reasons, the Oracle BPEL Process Manager, Oracle Mediator, human workflow, Oracle B2B, SOA Infrastructure, and Oracle BPM Suite schemas have no foreign key constraints to enforce integrity. This fact discounts the use of the 11*g* RDBMS feature known as referential partitioning. This feature provides significant benefits because it equipartitions master and detail tables across foreign key constraints. Equipartioning means that the associated dependent table rows are in a database partition with the same partition key interval as their master table rows.

One benefit of this feature is that the state (for example, completed, faulted, and so on) of each detail row in the equipartition can be inferred from its associated master table row.

Although the 11*g* RDBMS referential partitioning feature cannot be used, similar behavior can be mimicked to achieve some of the same benefits. The Oracle BPEL Process Manager, Oracle Mediator, human workflow, Oracle B2B, SOA Infrastructure, and Oracle BPM Suite components ensure that the partition key of every detail table row is the same as the partition key of its master table row (that is, the date (timestamp) that is the partition key is pushed down). To then complete the setup, the DBA must ensure that the master and detail tables are range-partitioned on the same intervals. Some examples are provided in subsequent sections of this chapter.

Note: You may decide that referential integrity of aged partitions is not a concern for your site. For example, the site may have ample disk space, allowing data to significantly age, or there may be no apparent, adverse impact of allowing unreferenced data to be stored in the dependent tables.

9.1.2.2 Partition Key Selection Overview

The following factors were considered when selecting the schema partition keys:

- Convey or imply state (for example, completed) for referential integrity
- Allow range partitioning on time intervals for maintenance operations
- Be static to avoid row movement that may lead to unreferenced data
- Be static to avoid row movement when table maintenance operations are performed
- Provide performance benefits for console queries through partition pruning

9.2 Developing a Purging and Partitioning Methodology

This sections summarizes the main points into an action plan that you can follow if you want to purge and/or partition the dehydration store. Note that purging and partitioning are optional. Oracle SOA Suite does not require it; it is only needed if the data is consuming too much space or you have some other reason for removing the data.

There are three main strategies for reducing the size of the schemas:

- Purge script
- Purge script + partitioning (or, more correctly, dropping table partitions)
- Partitioning all tables

In the first two cases, the same purge script is used - although if you are partitioning, you must edit the purge script to comment out your partitioned tables.

The purge script uses standard SQL `DELETE` statements to remove rows from the BPEL tables. For most sites, this is sufficient. However, some sites accumulate so much data that the purge script takes too long to run. In this case partitioning becomes the better solution. The trade off is that partitioning involves significantly more database maintenance. Moreover, partitioning is an advanced technique and requires a knowledgeable and skilled DBA. By contrast, running the purge script is straightforward and does not require significant DBA knowledge.

Try to profile the input messages, database growth rate, and how much data is purged in the purge process. If the input rate and purge rate match, then regular purging is sufficient. Otherwise, consider partitioning.

If you do use partitioning, Oracle recommends that you add disk space and eventually drop the partition. However, this creates additional requirements for managing disk capacity, deciding on the correct partition size, and so on. Do not use partitioning and then rely on the purge script to reclaim disk space.

Note: If you only use the purge script in your environment, you can skip the remainder of this section. Only continue with this section if you plan on using partitioning.

9.3 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 scripts for deletion.

The following sections provide examples of how to use the script:

- Section 9.3.1, "Looped Purge Script"
- Section 9.3.2, "Looped Purge in Parallel Script with dbms_scheduler"
- Section 9.3.3, "Executing the Purge Scripts"

Notes:

- If you use the `purge_soainfra_oracle.sql` PL/SQL script provided in releases *before* 11*g* Release 1 (11.1.1.4), note that it cannot be used on a Microsoft SQL Server or IBM DB2 database.
- The purge script provided in pre-11.1.1.4 releases has been deprecated. If you are an existing user of this script, you can continue to use it against your database in 11*g* Release 1 (11.1.1.4). However, this script is no longer shipped with 11*g* Release 1 (11.1.1.4). Oracle recommends that you use the new purge script provided with 11*g* Release 1 (11.1.1.4).
- When upgrading from 11*g* Release 1 (11.1.1.3) to 11*g* Release 1 (11.1.1.4), ensure that you run the purge setup scripts from the new 11.1.1.4 RCU location, as this contains the latest purge details. For more information about upgrade, see *Oracle Fusion Middleware Upgrade Guide for Oracle SOA Suite, WebCenter, and ADF*.

9.3.1 Looped Purge Script

The master purge script includes a looping construct that allows for a batched purge. You can also provide this script with a `max_runtime` parameter that stops looping after the value for this parameter is exceeded.

The master script drives the purge of SOA database tables. You can use the `delete_instances` procedure to purge SOA database tables.

Note: Set `max_runtime` to a higher value if there are many instances to purge. In this case, you should expect to wait for a longer time before the script exits. Alternatively, use a smaller batch size if you want the purge script to exit sooner.

9.3.1.1 delete_instances Procedure

Use the `delete_instances` procedure to delete instances. Example 9–1 shows the syntax.

Example 9–1 delete_instances Procedure Syntax

```
procedure delete_instances (
                   min_creation_date in timestamp,
                   max_creation_date in timestamp,
                   batch_size in integer,
                   max_runtime in integer,
                   retention_period in timestamp,
                   purge_partitioned_component in boolean
                   );
```

Table 9–1 describes the script parameters.

Table 9–1 delete_instances Procedure Parameter Descriptions

Parameter	Description
`min_creation_date`	Beginning creation date for the composite instances.
`max_creation_date`	Ending creation date for the composite instances.
`batch_size`	Batch size used to loop the purge. The default value is `20000`.
`max_runtime`	Expiration time at which the purge script exits the loop. The default value is `60`.
`retention_period`	Retention period is only used by the BPEL process service engine (in addition to using the creation time parameter). This parameter checks for and deletes records in the `cube_instance` table. The value for this parameter must be greater then or equal to `MAX_CREATION_DATE`. The default value is `null`.
`purge_partitioned_component`	Users can invoke the same purge to delete partitioned data. The default value is `false`.

Note: If you do not provide a value for `retention_period`, the value for this property defaults to the value of `max_creation_date` (this is, if `retention_period` equals `null`, then `retention_period` = `max_creation_date`). This consequence also applies to the script parameters described in Section 9.3.2, "Looped Purge in Parallel Script with dbms_scheduler."

9.3.2 Looped Purge in Parallel Script with dbms_scheduler

This script is functionally the same as the looped purge script described in Section 9.3.1, "Looped Purge Script." However, this script uses the `dbms_scheduler` package to spawn multiple purge jobs, with each job working on subset data.

You can use the following procedure to purge SOA database tables.

Note: If you have a multiple CPU host, use of the parallel script can be beneficial. However, Oracle recommends that you enable the parallel script only during off hours. In addition, when purging data during off hours, Oracle recommends that you drop indexes before purging large amounts of data and then add the indexes back in. This speeds up the purge process, and also keeps indexes from becoming unbalanced.

9.3.2.1 delete_instances Procedure in Parallel

Use the `delete_instances` procedure in parallel to delete instances. Example 9–2 shows the syntax.

Example 9–2 delete_instances Procedure in Parallel Syntax

```
PROCEDURE delete_instances_in_parallel (
                   min_creation_date in timestamp,
                   max_creation_date in timestamp,
                   batch_size in integer,
                   max_runtime in integer,
                   retention_period in integer,
                   DOP in integer
                   max_count integer,
                   purge_partitioned_component in boolean)
```

Table 9–2 describes the script parameters.

Table 9–2 delete_instances in Parallel Procedure Parameter Descriptions

Parameter	Description
`min_creation_date`	Beginning creation date for the composite instances.
`max_creation_date`	Ending creation date for the composite instances.
`batch_size`	Batch size used to loop the purge. The default value is `20000`.
`max_runtime`	Expiration time at which the purge script exits the loop. The default value is `60`.
`retention_period`	Retention period is only used by the BPEL process service engine only (in addition to using the creation time parameter). The default value is `null`.
`DOP`	Defines the number of parallel jobs to schedule. The default value is `4`.
`max_count`	Defines the number of rows processed (*not* the number of rows deleted). A big `temp` table is created and then jobs are scheduled to purge based on the data. This is the maximum purge row count to use; it defaults to one million. The default value is `1000000`.
`purge_partitioned_component`	Users can invoke the same purge to delete partitioned data. The default value is `false`.

9.3.3 Executing the Purge Scripts

This section describes how to execute the purge scripts.8

1. In SQL*Plus, connect to the database `AS SYSDBA`:

   ```
   CONNECT SYS AS SYSDBA
   ```

2. Execute the following SQL commands:

   ```
   GRANT EXECUTE ON DBMS_LOCK to USER;
   GRANT CREATE ANY JOB TO USER;
   ```

   where *`USER`* is the `soainfra` account to execute the scripts. These privileges are required to run the scripts.

3. Load the purge scripts by executing the main purge script in *`RCU_HOME`*`/rcu/integration/soainfra/sql/soa_purge`.

   For a parallel purge, the debug logs from the jobs spawned by a parallel purge are logged into files created in the directory named `SOA_PURGE_DIR`. This directory must be accessible to the Oracle database.

4. Create `SOA_PURGE_DIR` and grant write permissions to the `soainfra` user.

   ```
   mkdir -p /tmp/purgelog
   CREATE OR REPLACE DIRECTORY SOA_PURGE_DIR AS 'SERVER_DIRECTORY'
   ```

   where *`SERVER_DIRECTORY`* is the name of the directory to create (for example, `'/tmp/purgelog/'`). Note the required single quotes around the directory path.

5. If you want to execute the scripts in debug mode, run `common/debug_on.sql` and set `serverout` to `on` in SQL*Plus. This step is optional.

   ```
   SET SERVEROUTPUT ON
   ```

   The logs from the spawned jobs are logged into the directory created in Step 4 (separate files per job). The rest of the logs are displayed on `stdout` (or the spool file, if configured).

   There are two options for purging:

   - Looped purge
   - Parallel purge

6. Execute the purge scripts as shown below. Examples are provided for both options.

   a. For looped purge:

   ```
   DECLARE

      MAX_CREATION_DATE timestamp;
      MIN_CREATION_DATE timestamp;
      batch_size integer;
      max_runtime integer;
      retention_period timestamp;

     BEGIN

      MIN_CREATION_DATE := to_timestamp('2010-01-01','YYYY-MM-DD');
      MAX_CREATION_DATE := to_timestamp('2010-01-31','YYYY-MM-DD');
       max_runtime := 60;
       retention_period := to_timestamp('2010-01-31','YYYY-MM-DD');
      batch_size := 10000;
        soa.delete_instances(
        min_creation_date => MIN_CREATION_DATE,
        max_creation_date => MAX_CREATION_DATE,
        batch_size => batch_size,
        max_runtime => max_runtime,
        retention_period => retention_period,
   ```

```
      purge_partitioned_component => false);
   END;
   /
```

b. For parallel purge:

```
DECLARE

   max_creation_date timestamp;
   min_creation_date timestamp;
   retention_period timestamp;
  BEGIN

   min_creation_date := to_timestamp('2010-01-01','YYYY-MM-DD');
   max_creation_date := to_timestamp('2010-01-31','YYYY-MM-DD');
   retention_period := to_timestamp('2010-01-31','YYYY-MM-DD');

    soa.delete_instances_in_parallel(
     min_creation_date => min_creation_date,
     max_creation_date => max_creation_date,
     batch_size => 10000,
     max_runtime => 60,
     retention_period => retention_period,
     DOP => 3,
     max_count => 1000000,
     purge_partitioned_component => false);

 END;
```

9.4 Partitioning Component Tables

The run time and schema code for the following components has been modified to store the flow creation date column with their transactional tables.

- Oracle BPEL Process Manager
- Oracle Mediator
- Human workflow
- Oracle B2B
- SOA Infrastructure (includes component instances)
- Oracle BPM Suite

The `CPST_CREATED_DATE` column contains the flow creation date time populated by the instance tracking code. This is available as the normalized message property `oracle.integration.platform.instance.CommonConstants.COMPOSITE_INSTANCE_CREATED_TIME`.

All SOA components are partitioned on the same partition key. These partitioned components use the same time range and partition ID.

9.4.1 Understanding the Verification Scripts

A verification script is provided for a DBA to determine when to drop a partition and its equipartitioned dependent table.

Note: The verification script does not drop any partitions; it just ensures that partitions are eligible to be dropped.

9.4.2 Component Tables

This section lists the component tables, the groups to which they belong, and their partition key.

Note the following table partitioning constraints:

- You have the choice of partitioning only at the granularity of the components. All the tables from each component must be partitioned or none of them should be partitioned. For example, you can partition the Oracle BPEL Process Manager tables and leave the other components unpartitioned. In such a case, however, all the tables related to the BPEL component must be partitioned.
- Regardless of the group and component, all tables that are partitioned use the same time range and the partition ID.

Table 9–3 through Table 9–8 are divided into three groups.

- Group 1: This includes tables that are directly related to the end-to-end flow trace of a composite. A majority of the tables fall into this group.
- Group 1A: This includes a small set of tables that are not directly related to the flow trace (for example, `REJECTED_MESSAGE`).
- Group 2: This includes a small of set of tables that have a dependency on multiple tables from Group 1 and 1A tables. You must first execute the group 1 verification script and drop the group 1 partitions before executing the group 2 verification script.

Note: Groups 1 and 1A are combined in the verification scripts. Executing the verification scripts does not require you to have knowledge of this classification.

Table 9–3 Component: SOA Infrastructure

Table	Range Partition Key	Group
`COMPOSITE_INSTANCE`	`PARTITION_DATE`	1
`REFERENCE_INSTANCE`	`CPST_PARTITION_DATE`	1
`COMPOSITE_INSTANCE_FAULT`	`CPST_PARTITION_DATE`	1
`COMPOSITE_SENSOR_VALUE`	`CPST_PARTITION_DATE`	1
`COMPONENT_INSTANCE`	`CPST_PARTITION_DATE`	1
`REJECTED_MESSAGE`	`CREATED_TIME`	1A
`REJECTED_MSG_NATIVE_PAYLOAD`	`RM_PARTITION_DATE`	1A
`INSTANCE_PAYLOAD`	`CREATED_TIME`	2

Table 9–3 (Cont.) Component: SOA Infrastructure

Table	Range Partition Key	Group
COMPOSITE_ INSTANCE_ASSOC	CREATED_TIME	2

Table 9–4 Component: Oracle BPEL Process Manager

Table	Range Partition Key	Group
CUBE_INSTANCE	CPST_INST_CREATED_TIME	1
CI_INDEXES	CI_PARTITION_DATE	1
CUBE_SCOPE	CI_PARTITION_DATE	1
DOCUMENT_CI_REF	CI_PARTITION_DATE	1
AUDIT_TRAIL	CI_PARTITION_DATE	1
AUDIT_DETAILS	CI_PARTITION_DATE	1
DLV_SUBSCRIPTION	CI_PARTITION_DATE	1
WORK_ITEM	CI_PARTITION_DATE	1
AUDIT_COUNTER	CI_PARTITION_DATE	1
WI_FAULT	CI_PARTITION_DATE	1
DLV_MESSAGE	RECEIVE_DATE	1A
HEADERS_ PROPERTIES	DLV_PARTITION_DATE	1A
DOCUMENT_DLV_ MSG_REF	DLV_PARTITION_DATE	1A
XML_DOCUMENT	DOC_PARTITION_DATE	2

Table 9–5 Component: Oracle Mediator

Table Name	Range Partition Key	Group
MEDIATOR_ INSTANCE	COMPOSITE_CREATION_DATE	1
MEDIATOR_CASE_ INSTANCE	MI_PARTITION_DATE	1
MEDIATOR_CASE_ DETAIL	MI_PARTITION_DATE	1
MEDIATOR_AUDIT_ DOCUMENT	MI_PARTITION_DATE	1
MEDIATOR_ DEFERRED_MESSAGE	CREATION_TIME	1A
MEDIATOR_PAYLOAD	CREATION_TIME	2

Table 9–6 Component: Human Workflow

Table	Range Partition Key	Group
WFTASK	COMPOSITECREATEDTIME	1
WFTask_TL	COMPOSITECREATEDTIME	1

Table 9–6 (Cont.) Component: Human Workflow

Table	Range Partition Key	Group
WFTaskHistory	COMPOSITECREATEDTIME	1
WFTaskHistory_TL	COMPOSITECREATEDTIME	1
WFComments	COMPOSITECREATEDTIME	1
WFMessageAttribute	COMPOSITECREATEDTIME	1
WFAttachment	COMPOSITECREATEDTIME	1
WFAssignee	COMPOSITECREATEDTIME	1
WFReviewer	COMPOSITECREATEDTIME	1
WFCollectionTarget	COMPOSITECREATEDTIME	1
WFRoutingSlip	COMPOSITECREATEDTIME	1
WFNotification	COMPOSITECREATEDTIME	1
WFTaskTimer	COMPOSITECREATEDTIME	1
WFTaskError	COMPOSITECREATEDTIME	1
WFHeaderProps	COMPOSITECREATEDTIME	1
WFEvidence	COMPOSITECREATEDTIME	1
WFTaskAssignmentStatistic	COMPOSITECREATEDTIME	1
WFTaskAggregation	COMPOSITECREATEDTIME	1

Table 9–7 Component: Oracle B2B

Table	Range Partition Key	Group
B2B_BUSINESS_MESSAGE	CPST_INST_CREATED_TIME	1
B2B_APP_MESSAGE	CPST_INST_CREATED_TIME	1
B2B_WIRE_MESSAGE	CPST_INST_CREATED_TIME	1
B2B_DATA_STORAGE	CPST_INST_CREATED_TIME	1
B2B_EXT_BUSINESS_MESSAGE	CPST_INST_CREATED_TIME	1

Table 9–8 Component: Oracle BPM Suite

Table	Range Partition Key	Group
BPM_AUDIT_QUERY	CI_PARTITION_DATE	1
BPM_MEASUREMENT_ACTIONS	CI_PARTITION_DATE	1
BPM_MEASUREMENT_ACTION_EXCEPS	CI_PARTITION_DATE	1
BPM_CUBE_AUDITINSTANCE	CI_PARTITION_DATE	1
BPM_CUBE_TASKPERFORMANCE	CI_PARTITION_DATE	1

Table 9–8 (Cont.) Component: Oracle BPM Suite

Table	Range Partition Key	Group
`BPM_CUBE_PROCESSPERFORMANCE`	`CI_PARTITION_DATE`	1

9.4.3 Executing the Verification Scripts

A verification script is provided for the DBA to determine when to drop a partition and its equipartitioned dependent table. The verification script is located in *`RCU_HOME`*`/rcu/integration/soainfra/sql/verify`.

1. Create a directory with the SQL command `PART_DIR`. For example:

   ```
   CREATE DIRECTORY PART_DIR AS '/tmp/verify'
   ```

2. Provide the `soainfra` user with write privileges on this directory. The log and SQL files are generated in this directory.
3. For executing the stored procedure, the client script `soa_exec_verify.sql` can be used. Edit `soa_exec_verify.sql` and enter the partition names that require verification in the array `mySoa_drv_list`.
   a. To execute function `verify_soa.verify_1`, pass `1` as the parameter.
   b. To execute function `verify_soa_verify_2`, pass `2` as the parameter.
4. Review the logs and SQL files generated in the `PART_DIR` directory.

Note: Verification scripts are not provided for business rules.

9.4.4 Verifying and Dropping Partitions

1. Execute function `verify_soa.verify_1`.
2. Check the log file in the `PART_DIR` folder with the name `SOA_`*`PARTITION_NAME`*`_LOG_1` for any failures.
3. Drop the partitions that can be dropped by using the script generated in the `PART_DIR` folder with the name `SOA_`*`PARTITION_NAME`*`_RESULT_1.sql`.
4. Execute `verify_soa.verify_2`.
5. Check the log file in the `PART_DIR` folder with the name `SOA_`*`PARTITION_NAME`*`_LOG_2` for any failures.
6. Drop the droppable partitions using the script generated in the `PART_DIR` folder with the name `SOA_`*`PARTITION_NAME`*`_RESULT_2.sql`.

Note: There is an issue caused by the existence of foreign key constraints in the Oracle B2B table. When dropping the partition, the B2B partition purge is invoked, the foreign key constraints must be disabled before dropping the partition and enabled afterward. To perform this action, execute the PL/SQL procedures `b2b_disable_constraints` and `b2b_enable_constraints` at the appropriate steps in the above procedure. Because foreign keys are enabled and disabled in these procedures, it is not recommended to run them on a live system.

9.4.5 Partial Partitioning of Components

If you have an environment in which some components are partitioned, while other components are not partitioned, the nonpartitioned data set must be purged using the purge scripts described in Section 9.3, "Deleting Large Numbers of Instances with the Purge Script."

For example, assume human workflow is not partitioned, while other components are partitioned. The verification script reports that all SOA partitions can be dropped. However, the human workflow tables continue to hold workflow data until it is purged using the purge scripts.

10

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 10.1, "Introduction to Programmatically Managing SOA Composite Applications"
- Section 10.2, "Facades API Interfaces"
- Section 10.3, "Facades API Examples"

10.1 Introduction to Programmatically Managing SOA Composite Applications

You can programmatically manage your SOA composite applications during run time 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*.

10.2 Facades API Interfaces

Table 10–1 provides an overview of the Facades API interfaces.

Table 10–1 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 10–1 (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.

10.3 Facades API Examples

This section provides several examples of using the Facades API to perform composite management.

10.3.1 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
```

10.3.2 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 11, "Configuring BPEL Process Service Components and Engines"
- Chapter 12, "Monitoring BPEL Process Service Components and Engines"
- Chapter 13, "Managing BPEL Process Service Components and Engines"

11

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 11.1, "Configuring BPEL Process Service Engine Properties"
- Section 11.2, "Configuring Automatic Recovery for Oracle BPEL Process Manager"
- Section 11.3, "Configuring Automatic Recovery Attempts for Invoke and Callback Messages"
- Section 11.4, "Setting the Audit Level at the BPEL Process Service Component Level"

11.1 Configuring BPEL Process Service Engine Properties

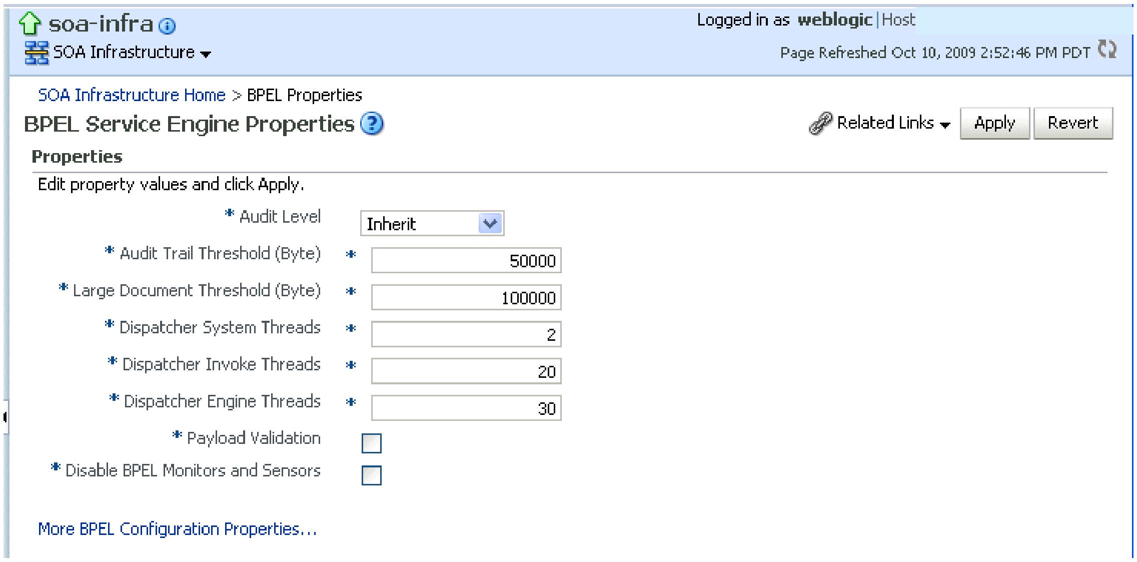
You can configure BPEL process service engine properties. The properties are used by the BPEL process service engine during processing of BPEL service components.

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...
1. Select **SOA Administration** > **BPEL Properties**.	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.


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Oct 10, 2009 2:52:46 PM PDT
SOA Infrastructure Home > BPEL Properties
Related Links
Apply
Revert

BPEL Service Engine Properties

Properties

Edit property values and click Apply.

* Audit Level: Inherit

* Audit Trail Threshold (Byte): 50000

* Large Document Threshold (Byte): 100000

* Dispatcher System Threads: 2

* Dispatcher Invoke Threads: 20

* Dispatcher Engine Threads: 30

* Payload Validation ☐

* Disable BPEL Monitors and Sensors ☐

More BPEL Configuration Properties...

2. Make changes to the service engine properties that are appropriate to your environment.

Property	Description
Audit Level	Select one of the following options: ■ **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	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. The default value is `2` threads. Any value less than `1` thread is changed to the default.

Property	Description
Dispatcher Invoke Threads	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. The default value is `20` threads. Any value less than `1` thread is changed to the default.
Dispatcher Engine Threads	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. The default value is `30` threads. Any value less than `1` thread is changed to the default.
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.
Disable BPEL Monitors and Sensors	Select this check box to disable all BPEL monitors and sensors defined for all BPEL components across all deployed SOA composite applications.

3. Click **Apply**.

4. 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.
   - **MaxRecoverAttempt** — The number of automatic recovery attempts to submit in the same recoverable instance. For more information, see Section 11.3, "Configuring Automatic Recovery Attempts for Invoke and Callback Messages."

  - **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.

11.2 Configuring Automatic Recovery for Oracle BPEL Process Manager

Oracle SOA Suite provides an automatic recovery feature in Oracle Enterprise Manager Fusion Middleware Control Console that enables you to configure and recover:

- All activities (for example, wait activities and OnAlarm branches of pick activities) that have an associated expiration date and are scheduled with the SOA Infrastructure to be rescheduled
- All activities that are not complete over a provided threshold time
- All invoke and callback messages that are unresolved

To configure automatic recovery:

1. In the navigator, right-click **soa-infra** and select **SOA Administration** > **BPEL Properties**.
2. Click **More BPEL Configuration Properties**.
3. In the **Name** column, click **RecoveryConfig**.
4. Expand **RecurringScheduleConfig**.

   This section enables you to configure recurring recovery attempts.
5. Set the following properties to values appropriate to your environment, and click **Apply**.

Property	Description
maxMessageRaiseSize	The maximum number of messages to submit for each recurring recovery attempt. Use this property to limit the impact of recovery on the server. Note that this value specifies the maximum number of messages to filter from activity, invoke, and callback queries; that is, 50 messages from each of the activity, invoke, and callback tables. The default value is `50`. A negative value causes all messages selected from the database to be submitted for recovery. A `0` value causes no messages to be selected from the database (effectively disabling recovery).
startWindowTime	The start time for the daily recovery window, specified in a 24-hour notation. Therefore, 2:00 pm is specified as `14:00`. The leading zero does not need to be specified for single digit hour values (`1:00`-`9:00`). The default value is midnight (`00:00`). Any invalid parsed time value is defaulted to midnight.

Property	Description
stopWindowTime	The stop time for the daily recovery window, specified in a 24-hour notation. Therefore, 2:00 pm is specified as `14:00`. The leading zero does not need to be specified for single digit hour values (`1:00`-`9:00`). If you do not want daily recovery, set the start and stop window times to be the same value. If the stop window time is earlier than the start window time, both the start and stop window times are changed to their respective default values. The default value is midnight (`04:00`), effectively setting recurring recovery to run until `04:00`. Any invalid parsed time values default to `00:00`.
subsequentTriggerDelay	The number of seconds between recovery attempts during daily recurring startup recovery periods. If the next recovery trigger falls outside of the current recovery period, that trigger is not scheduled until the next recurring recovery period (tomorrow). The default value is `300` (five minutes). A negative value causes the default to be selected.
threshHoldTimeInMinutes	This is the threshold time in minutes to ignore for automatic recovery processing. For automatic invoke and callback recovery, this value is used for picking messages with a received date less than the threshhold time. For automatic activities recovery, this value is used for picking activities with a modification date less than the threshhold time. This property prevents the message contention scenario in which a BPEL process service engine picks up a message for recovery while another thread on the service engine is in the middle of processing the message. This property ensures that the recovery part of the service engine only attempts recovery on messages older than the value for **threshHoldTimeInMinutes**. The default value is `10` minutes. A negative value causes the default to be selected.

6. Expand **StartupScheduleConfig**.

   This section enables you to configure server startup recovery attempts.

7. Set the following properties to values appropriate to your environment, and click **Apply**.

Property	Description
maxMessageRaiseSize	The maximum number of messages to submit for each startup recovery attempt. Use this property to limit the impact of recovery on the server. Note that this value specifies the maximum number of messages to filter from activity, invoke, and callback queries; that is, `50` messages from each of the activity, invoke, and callback tables. The default value is `50`. A negative value causes all messages selected from the database to be submitted for recovery. A zero value causes no messages to be selected from the database (effectively disabling recovery).

Property	Description
startupRecoveryDuration	Specifies the number of seconds that the startup recovery period lasts. After the server starts, it goes into a startup recovery period. During this period, pending activities and undelivered callback and invocation messages are resubmitted for processing. The default value is `600` (ten minutes). A negative or zero value disables startup recovery.
subsequentTriggerDelay	The number of seconds between recovery attempts during the server startup recovery period. If the next recovery trigger falls outside the server startup period, that trigger is not scheduled and the server moves into the recurring recovery period. The default value is `300` (five minutes). A negative value causes the default to be selected.

> **Note:** In a cluster, it is possible for different nodes to concurrently attempt an automatic recovery of the same items. The first node to lock the item attempts the recovery, while other nodes may raise an exception that can be safely ignored.

11.3 Configuring Automatic Recovery Attempts for Invoke and Callback Messages

You can configure the number of automatic recovery attempts to submit in the same recoverable instance. The value you provide specifies the maximum number of times invoke and callback messages are recovered. If the value is `0` (the default value), it recovers all messages. Once the number of recovery attempts on a message exceeds the specified value, a message is marked as nonrecoverable.

To configure automatically recovery attempts for invoke and callback messages:

1. In the navigator, right-click **soa-infra** and select **SOA Administration** > **BPEL Properties**.
2. Click **More BPEL Configuration Properties**.
3. Go to **MaxRecoverAttempt**.
4. In the **Value** field, enter a value.
5. Click **Apply**.

For information about recovering invoke and callback messages, see Section 13.4, "Performing BPEL Process Service Engine Message Recovery."

11.4 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."

12

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 12.1, "Viewing the Audit Trail and Process Flow of a BPEL Process Service Component"
- Section 12.2, "Monitoring BPEL Process Service Component Instances and Faults"
- Section 12.3, "Monitoring BPEL Process Service Component Instances"
- Section 12.4, "Monitoring Sensor Data and Values in BPEL Process Service Components"
- Section 12.5, "Monitoring BPEL Process Service Engine Instances and Faults"
- Section 12.6, "Monitoring BPEL Process Service Engine Request and Thread Statistics"
- Section 12.7, "Monitoring BPEL Process Service Engine Instances"
- Section 12.8, "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"

12.1 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**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Under **soa-infra**, 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.

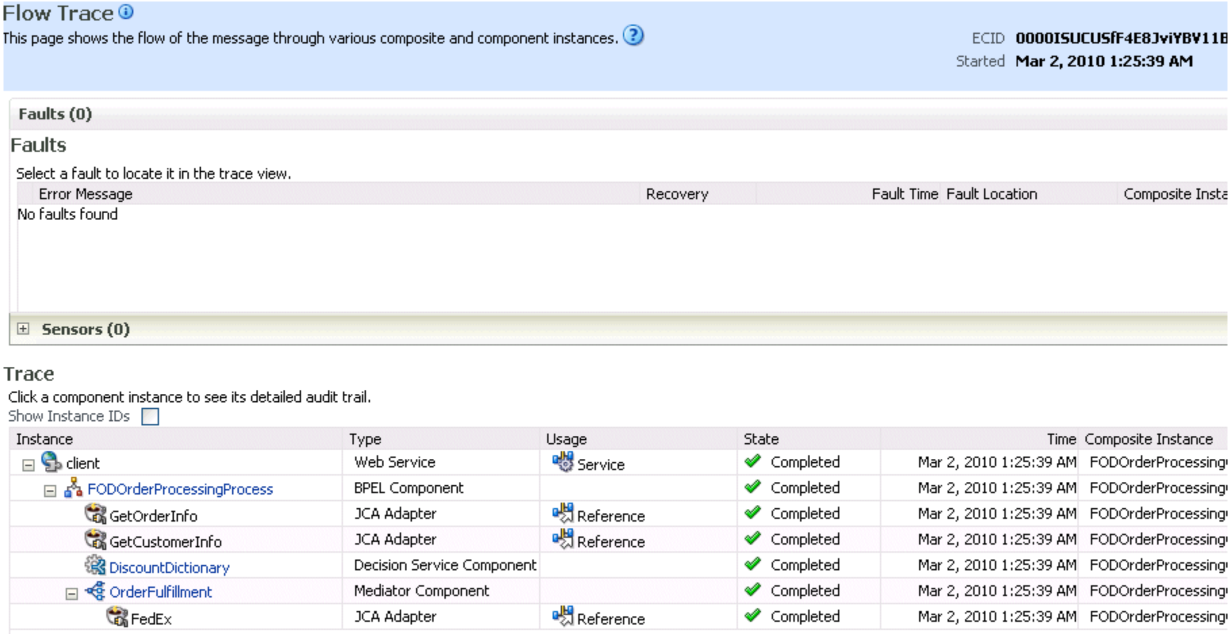
   The Flow Trace page displays the following details:

   - 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 0000ISUCUSfF4E8JviYBV11B

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 Insta
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	FODOrderProcessing
FODOrderProcessingProcess	BPEL Component		✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing
GetOrderInfo	JCA Adapter	Reference	✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing
GetCustomerInfo	JCA Adapter	Reference	✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing
DiscountDictionary	Decision Service Component		✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing
OrderFulfillment	Mediator Component		✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing
FedEx	JCA Adapter	Reference	✓ Completed	Mar 2, 2010 1:25:39 AM	FODOrderProcessing

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.

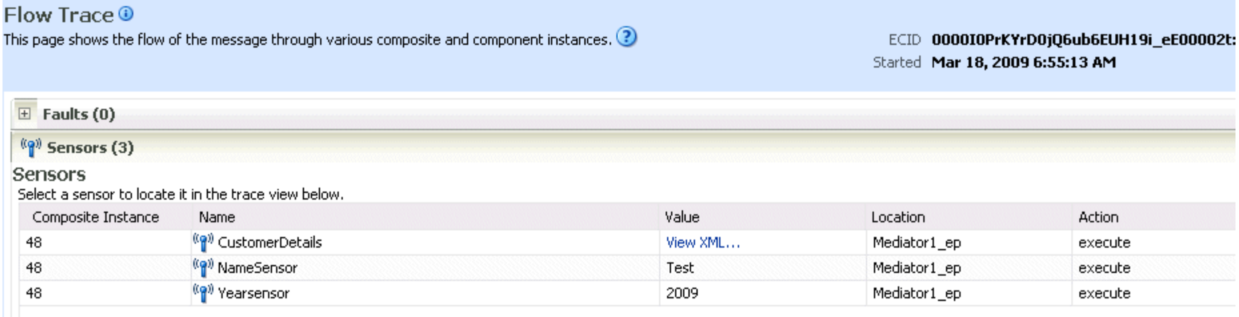
Note the following restrictions with ECIDs:

- 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 0000I0PrKYrD0jQ6ub6EUH19i_eE00002t

Started Mar 18, 2009 6:55:13 AM

Faults (0)

Sensors (3)

Sensors

Select a sensor to locate it in the trace view below.

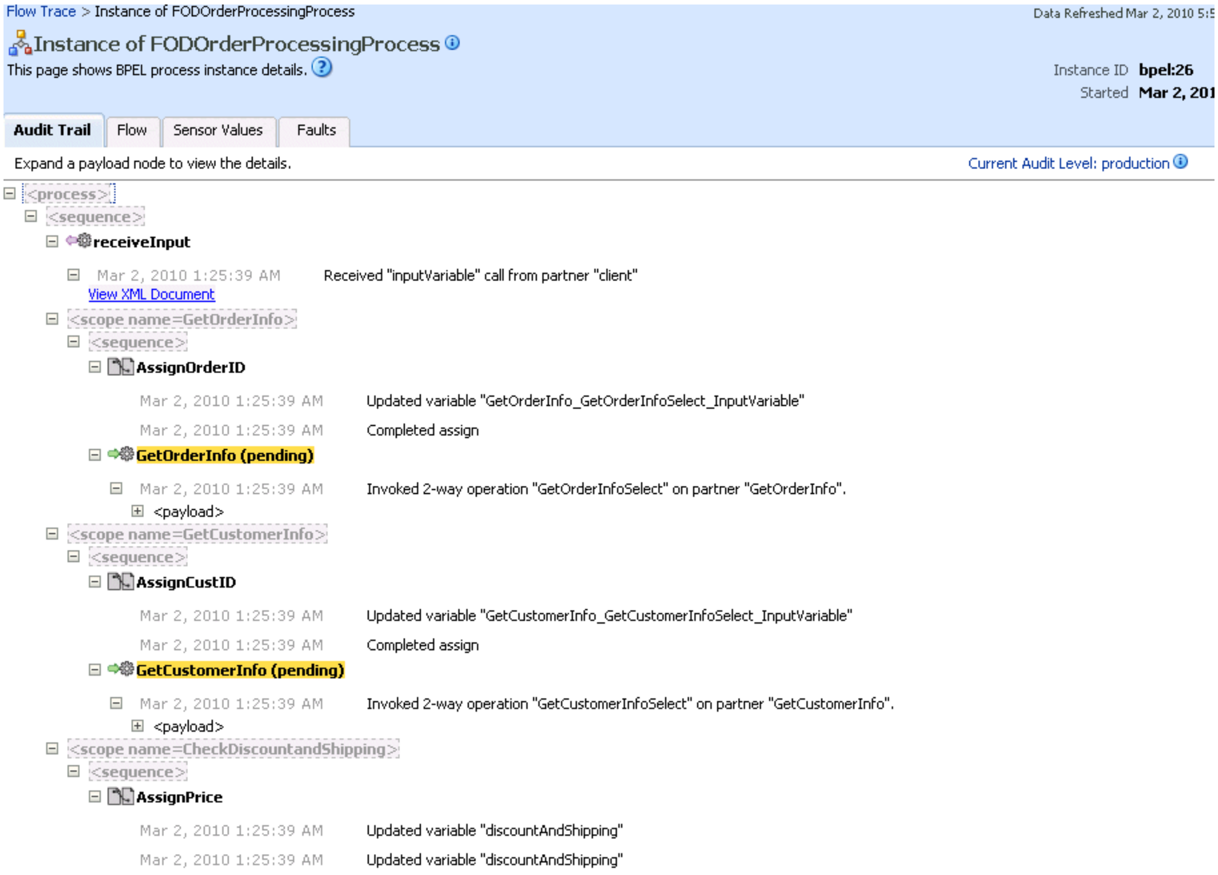
Composite Instance	Name	Value	Location	Action
48	CustomerDetails	View XML...	Mediator1_ep	execute
48	NameSensor	Test	Mediator1_ep	execute
48	Yearsensor	2009	Mediator1_ep	execute

6. Select a sensor in the **Sensors** section.

   This highlights the row in the **Trace** section in which the composite sensor data was collected.

7. 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 5:5
Instance of FODOrderProcessingProcess
This page shows BPEL process instance details.
Instance ID bpel:26
Started Mar 2, 201
Audit Trail
Flow
Sensor Values
Faults
Expand a payload node to view the details.
Current Audit Level: production

```
<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.

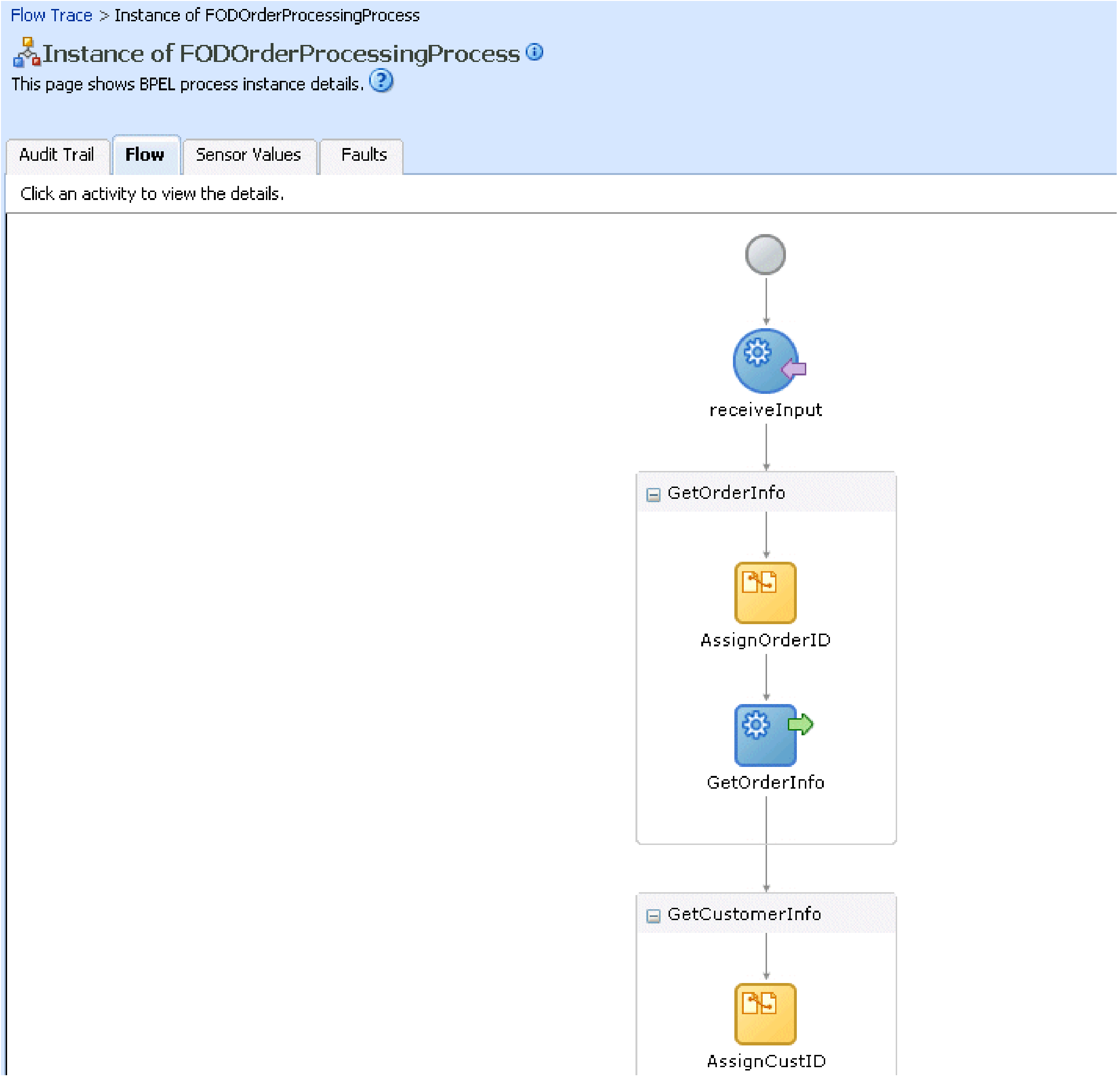
The **Audit Trail** tab displays execution details about the activities in the BPEL process.

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.

> **Note:** Canceled onMessage branches of pick or scope activities that did not execute are displayed in the audit trail. However, the flow diagram does not show these same canceled onMessage branches. This is the expected behavior.

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.

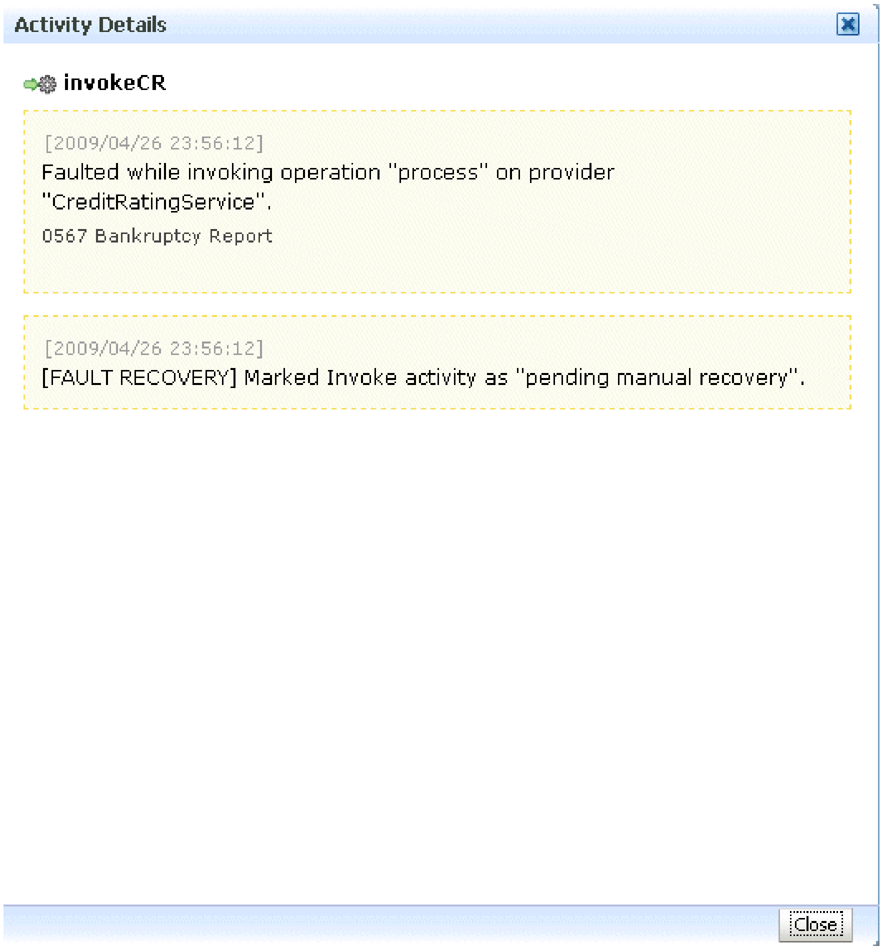


Flow Trace > Instance of FODOrderProcessingProcess
Instance of FODOrderProcessingProcess
This page shows BPEL process instance details.
Audit Trail
Flow
Sensor Values
Faults
Click an activity to view the details.
receiveInput
GetOrderInfo
AssignOrderID
GetOrderInfo
GetCustomerInfo
AssignCustID

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.



[2009/04/26 23:56:12]
Faulted while invoking operation "process" on provider "CreditRatingService".
0567 Bankruptcy Report

[2009/04/26 23:56:12]
[FAULT RECOVERY] Marked Invoke activity as "pending manual recovery".

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).

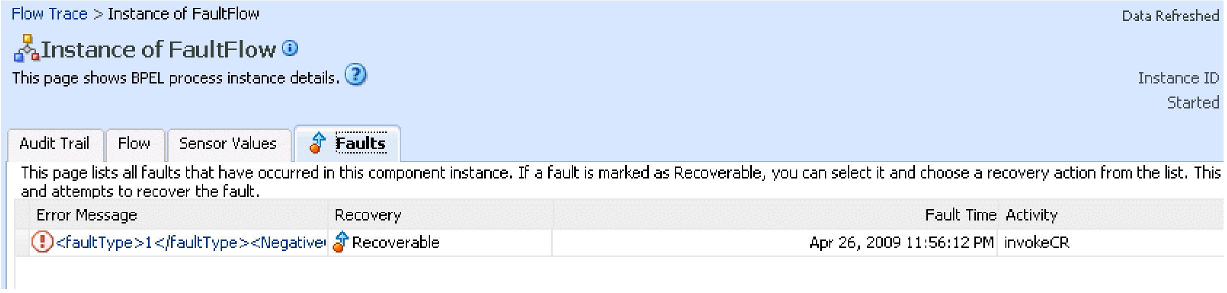
    If a fault occurs when processing activities, the activity location of the fault is not usually shown in the **Activity** column.

    - For Oracle BPEL Process Manager, this column only shows a receive activity that has timed out. In all other cases, this column is empty.
    - For Oracle BPM, this column is always empty.

This is the expected behavior.

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.



This page shows BPEL process instance details.

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

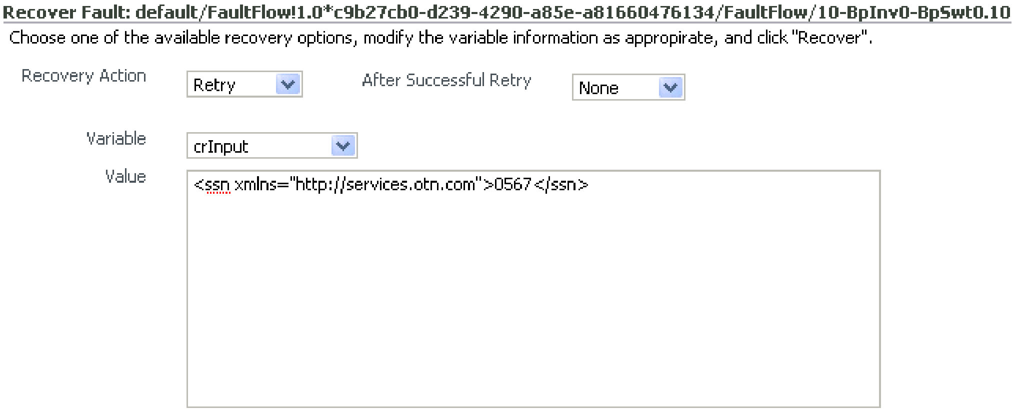
14. Select a fault for recovery that has been identified as recoverable through one of the following methods. The page refreshes to display a fault recovery section at the bottom of the page.

    - 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 appropirate, and click "Recover".

Recovery Action: Retry

After Successful Retry: None

Variable: crInput

Value: <ssn xmlns="http://services.otn.com">0567</ssn>

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.

12.1.1 Flow Traces for Composite-to-Composite Invocations on Multiple Servers

When you have multiple SOA composite applications on multiple servers invoking one another, the BPEL process flow trace cannot be rendered to show the correct parent-child relationship. For example, assume you have the following scenario:

- Composite 1 invokes composite 2, which invokes composite 3.
- Each composite includes a BPEL process service component.
- Composite 1 and composite 3 are on server 1, while composite 2 is on server 2.

In this environment, the parent ID of component 3 is set to component 2. However, because composite 2 is on a separate server, the flow trace does not show composite 3 as having a parent. Therefore, composite 3 is placed at the root of the flow trace.

12.1.2 Monitoring BPEL 2.0 Activities in the Audit Trail and Process Flow

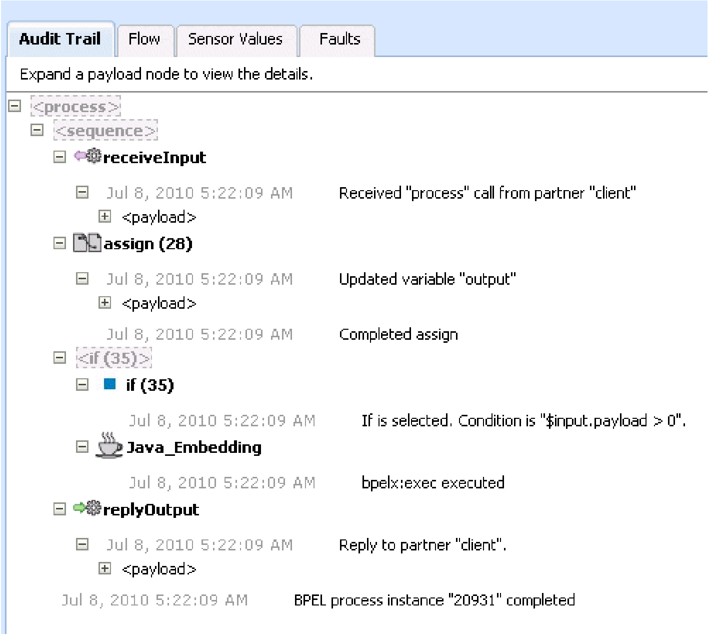
You can view the audit trail and process flow for BPEL service component instances that support version 2.0 of the BPEL specification. The following BPEL 2.0 activities can be viewed:

- Process structural flow-related activities — These activities are similar to other workflow or programming languages for sequencing, iteration, and branching:
    - forEach — This activity is the same as the Oracle extension flowN activity in BPEL 1.1. This activity supports processing multiple sets of activities in both parallel and serial fashion.
    - if — This activity is the same as the switch activity in BPEL 1.1.
    - repeatUntil — This activity provides for repeated execution of a contained activity until the given Boolean condition evaluates to true.
- Exception handling and recovery activities:
    - compensateScope — This activity starts compensation on a specified inner scope that has completed successfully.
    - rethrow — This activity rethrows the fault that was originally caught by the immediately enclosing fault handler.

- Other activities
    - exit — This activity is the same as the terminate activity in BPEL 1.1.
    - dehydrate — This activity enables you to dehydrate an instance. This activity is also available in BPEL 1.1.

For example, Figure 12–1 shows an **if** activity in the audit trail of a BPEL process.

Figure 12–1 if Activity in the Audit Trail of a BPEL Process

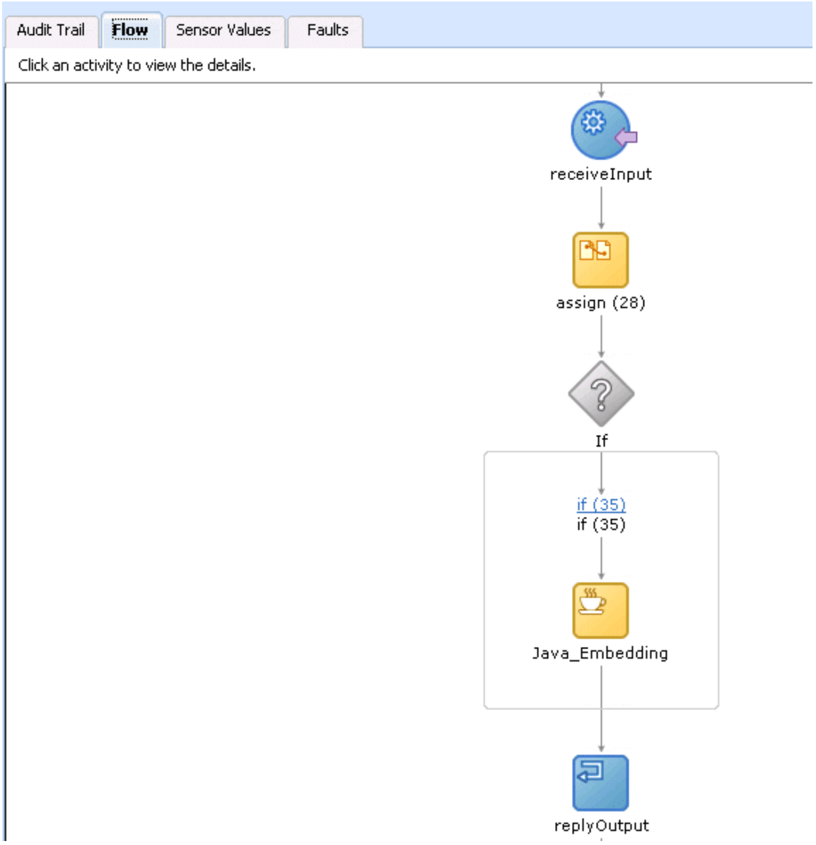


Expand a payload node to view the details.

```
⊟ <process>
  ⊟ <sequence>
    ⊟ receiveInput
      ⊟ Jul 8, 2010 5:22:09 AM     Received "process" call from partner "client"
        ⊞ <payload>
    ⊟ assign (28)
      ⊟ Jul 8, 2010 5:22:09 AM     Updated variable "output"
        ⊞ <payload>
        Jul 8, 2010 5:22:09 AM     Completed assign
    ⊟ <if (35)>
      ⊟ if (35)
          Jul 8, 2010 5:22:09 AM     If is selected. Condition is "$input.payload > 0".
      ⊟ Java_Embedding
          Jul 8, 2010 5:22:09 AM     bpelx:exec executed
    ⊟ replyOutput
      ⊟ Jul 8, 2010 5:22:09 AM     Reply to partner "client".
        ⊞ <payload>
    Jul 8, 2010 5:22:09 AM     BPEL process instance "20931" completed
```

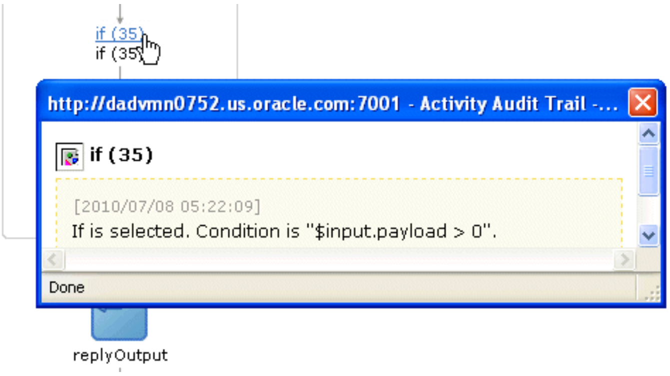
Figure 12–2 shows the same **if** activity in the flow of the BPEL process.

Figure 12–2 if Activity in the Flow of a BPEL Process



Clicking the **if** activity displays the condition defined for this activity.

Figure 12–3 if Activity Condition


if (35)
if (35)
http://dadvmn0752.us.oracle.com:7001 - Activity Audit Trail -...
if (35)
Done
replyOutput

```
[2010/07/08 05:22:09]
If is selected. Condition is "$input.payload > 0".
```

For more information about BPEL 2.0, see the *Web Services Business Process Execution Language Version 2.0* specification located at the following URL:

`http://www.oasis-open.org`

For more information about designing BPEL process service components that support version 2.0 of the BPEL specification, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

12.2 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:

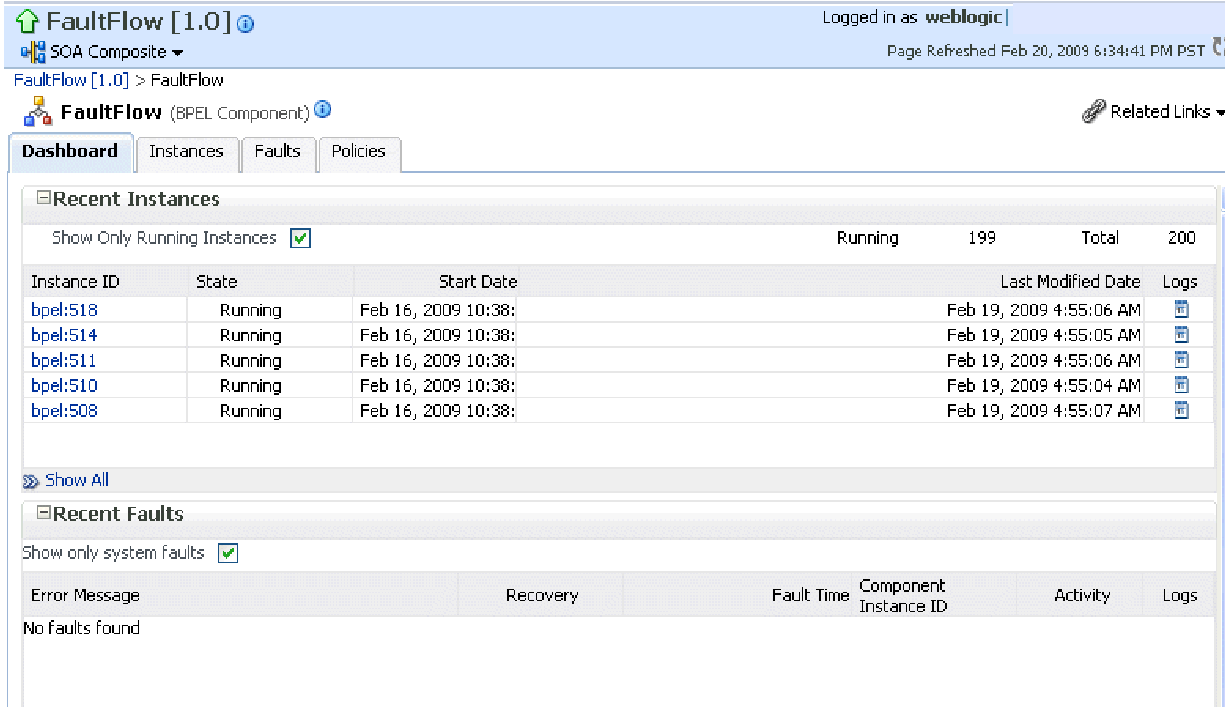
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



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 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.

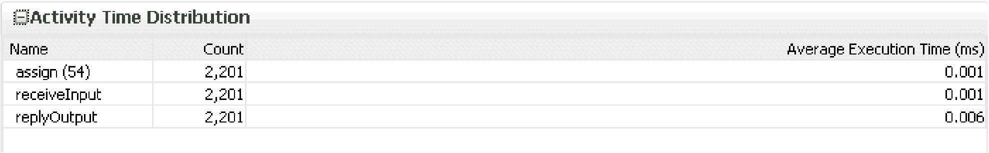
    b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.

    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.

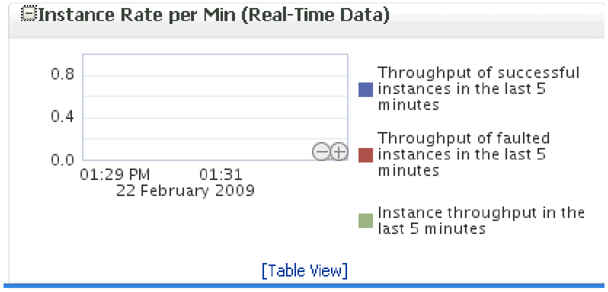
    The lower part of the Dashboard page displays the following details:

    - Details about the time distribution for activities, including the activity name, the total number of activities for all instances, and the average execution time.



Name	Count	Average Execution Time (ms)
assign (54)	2,201	0.001
receiveInput	2,201	0.001
replyOutput	2,201	0.006

- A graphical representation of the number of successful, faulted, and incoming (pending) instances of the BPEL process service component over a specific time range. Click **Table View** to display throughput details for the last five minutes, including the throughput for successful instances, the total faults throughput, and the instance throughput.


Instance Rate per Min (Real-Time Data)
0.8
0.4
0.0
01:29 PM
01:31
22 February 2009
Throughput of successful instances in the last 5 minutes
Throughput of faulted instances in the last 5 minutes
Instance throughput in the last 5 minutes
[Table View]

For more information, see Section 1.2.3, "Understanding SOA Composite Application Instances" and *Oracle Application Server Administrator's Guide* for details about viewing and searching log files.

12.3 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:

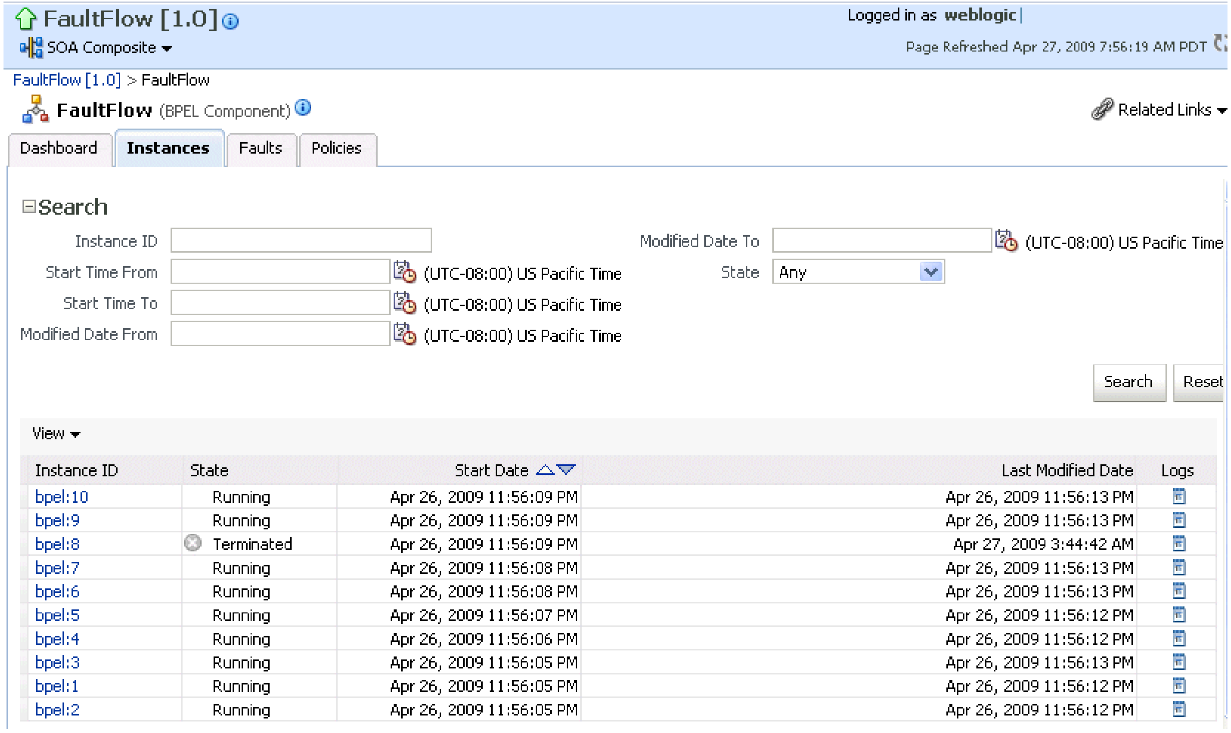
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



State: Any

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	

4. In the **Instance ID** column, click an instance ID for a service component to view its audit trail, process flow, sensor values, and faults.
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."

12.4 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:

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**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Under **soa-infra**, select a specific SOA composite application.

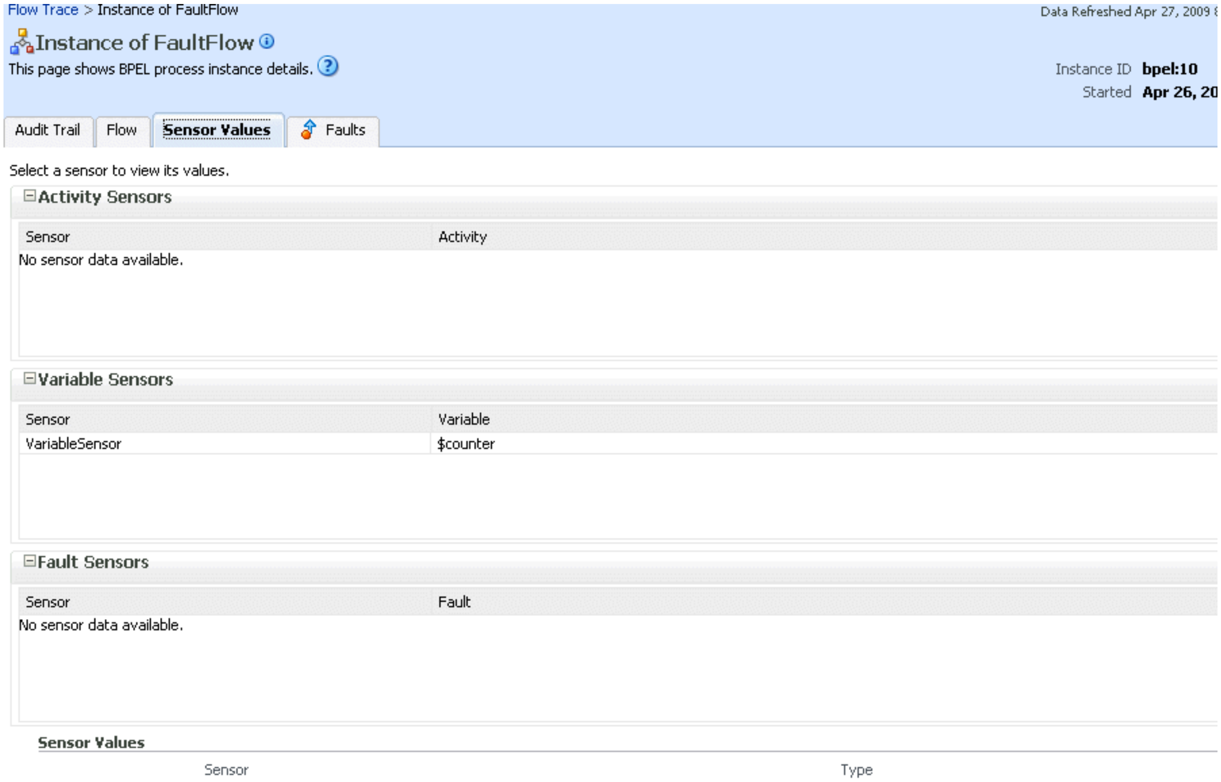
2. Use one of the following methods to select an instance of the application:
   - For recent instances of this application, click the instance number of an instance in the **Instance ID** column of the **Recent Instances** section.

- For all instances of this application, click the **Instances** tab, then click a specific instance in the **Instance ID** 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).



Flow Trace > Instance of FaultFlow

Data Refreshed Apr 27, 2009

Instance of FaultFlow

This page shows BPEL process instance details.

Instance ID **bpel:10**

Started **Apr 26, 20**

Select a sensor to view its values.

Activity Sensors

Sensor	Activity
No sensor data available.	

Variable Sensors

Sensor	Variable
VariableSensor	$counter

Fault Sensors

Sensor	Fault
No sensor data available.	

Sensor Values

Sensor	Type

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

12.4.1 Behavior of Activity Sensors in Compensate and CompensateScope Activities in BPEL 2.0

Assume you have an activity sensor in a BPEL 2.0 compensateScope activity with the evaluation time set to completion and have also configured the activity's variable sensor to point to a variable. You may expect that when the sensor is triggered, the compensation activity completes and the variable shows the state that it is in at the completion of the compensation activities.

However, note that the compensateScope activity (and also a compensate activity) ends immediately after passing control to the compensation activities. As a result, the activity's variable sensor shows the state that it is in at the beginning of the compensation activities, rather than at the end.

This is the expected behavior.

As a workaround for obtaining the variable state upon completion of compensation, add an empty activity after the compensate or compensateScope activity and set the activity sensor on the empty activity with an evaluation time set to activation.

12.5 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.

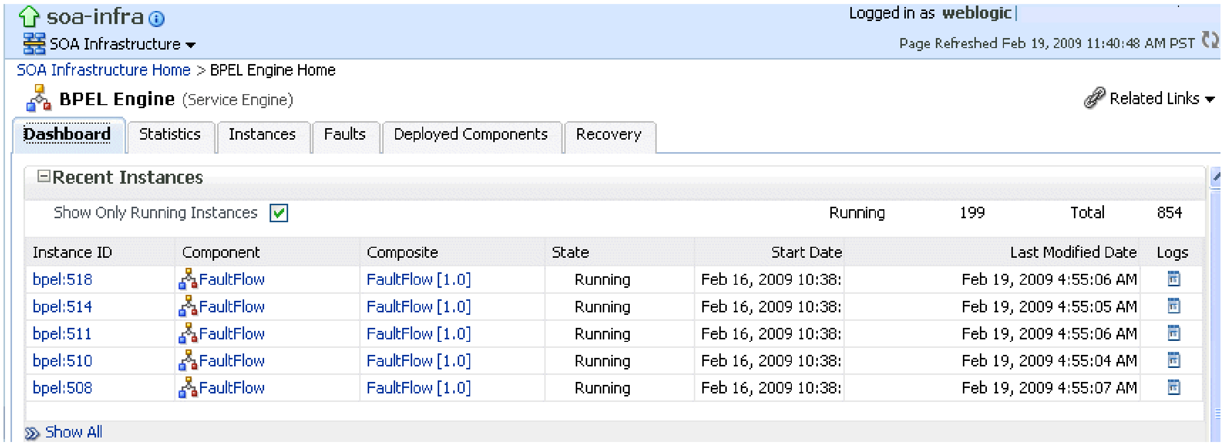
To monitor BPEL process service engine instances and faults:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Service Engines** > **BPEL**.	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.



Show Only Running Instances ☑ Running 199 Total 854

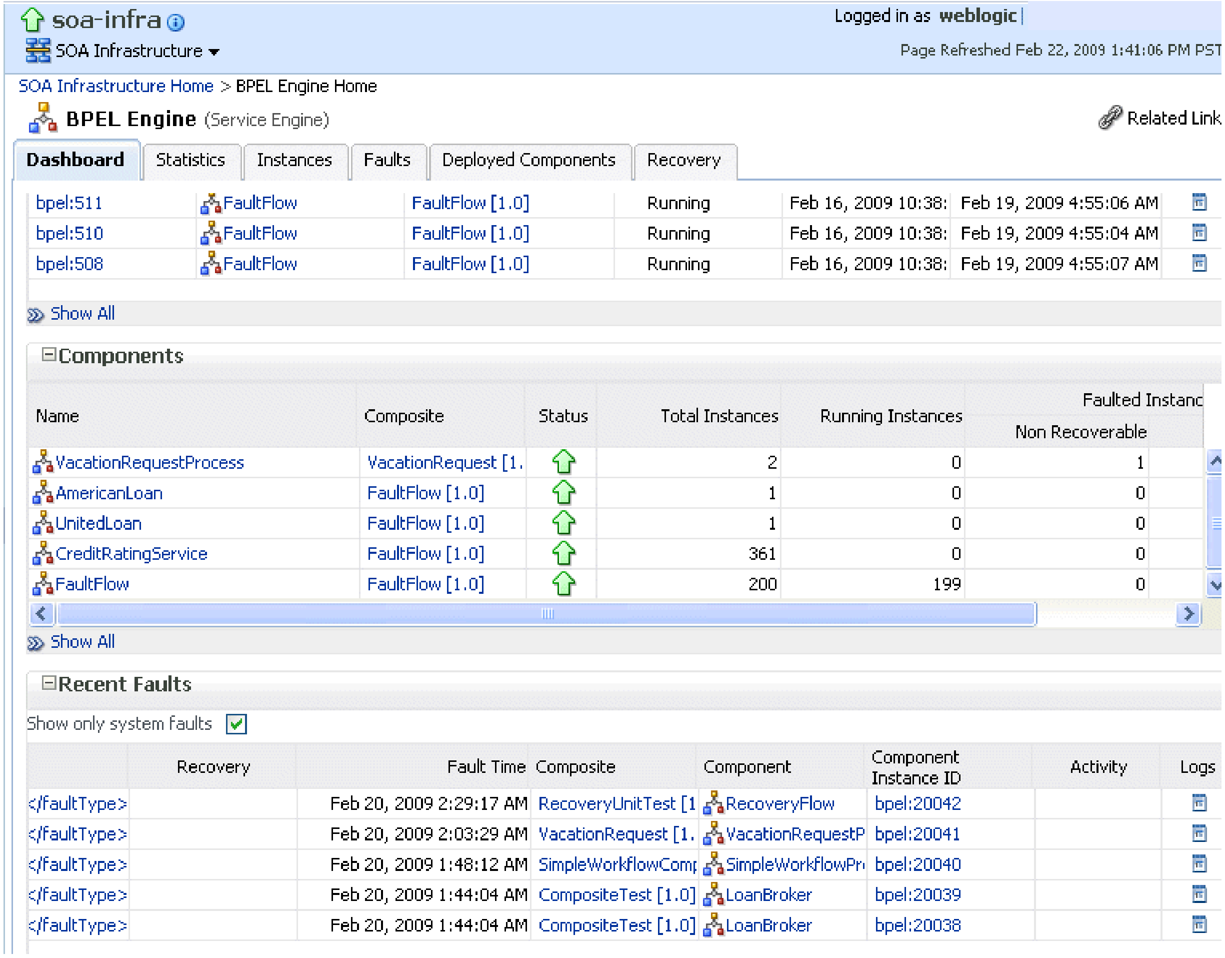
Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpel:518	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:06 AM	
bpel:514	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 10:38:	Feb 19, 2009 4:55:05 AM	
bpel:511	FaultFlow	FaultFlow [1.0]	Running	Feb 16, 2009 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	

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.



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	

Name	Composite	Status	Total Instances	Running Instances	Faulted Instanc
					Non Recoverable
VacationRequestProcess	VacationRequest [1.	⇧	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 only system faults ☑

	Recovery	Fault Time	Composite	Component	Component Instance ID	Activity	Logs
</faultType>		Feb 20, 2009 2:29:17 AM	RecoveryUnitTest [1	RecoveryFlow	bpel:20042		
</faultType>		Feb 20, 2009 2:03:29 AM	VacationRequest [1.	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."

12.6 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:

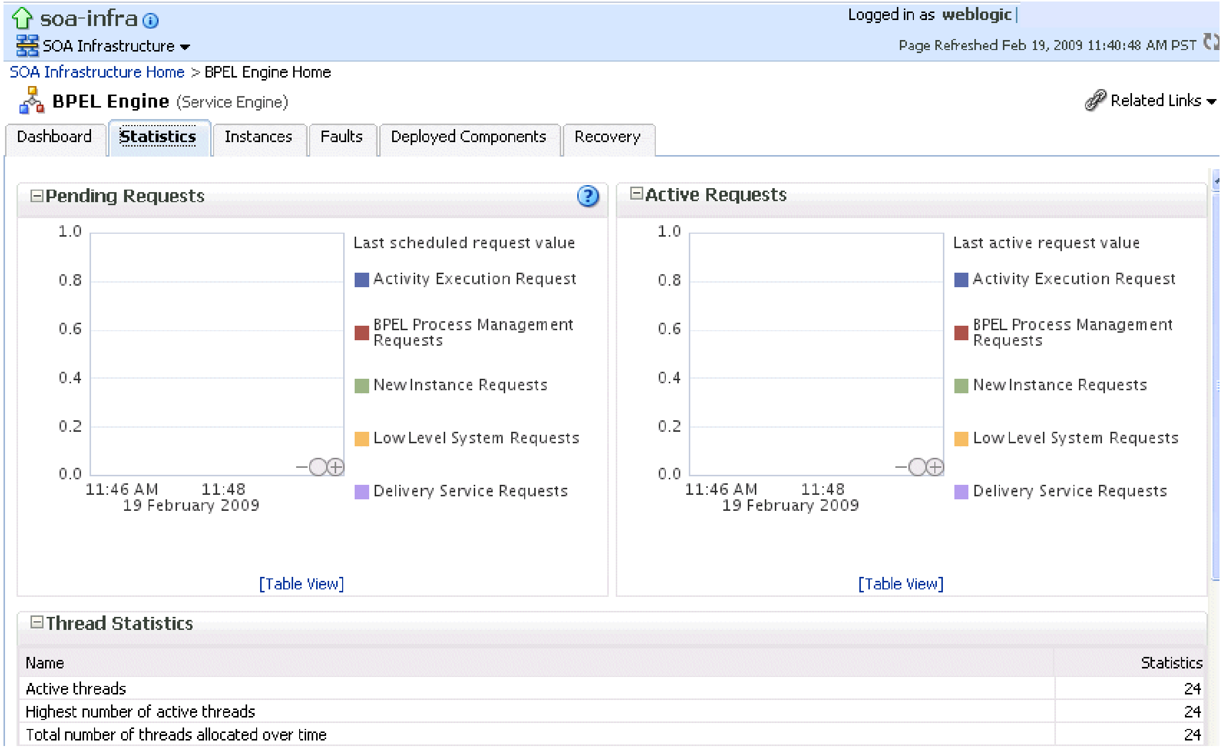
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Service Engines** > **BPEL**.	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.

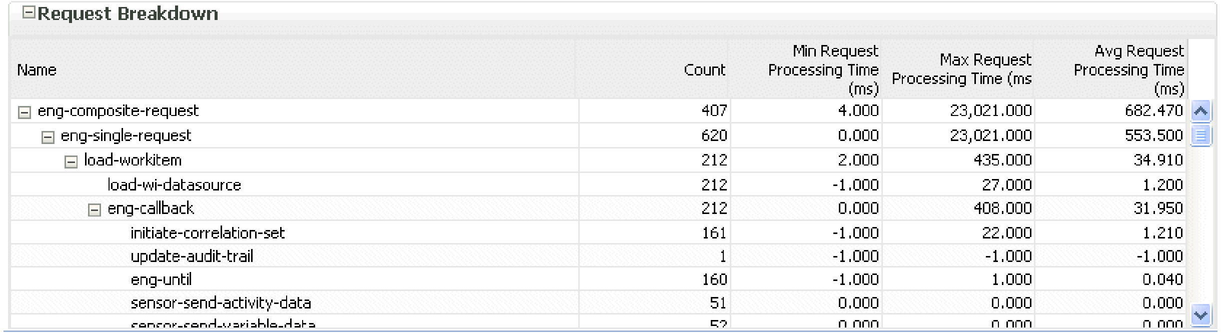
   - Pending requests in the service engine
   - Active requests in the service engine
   - Thread statistics for the service engine



soa-infra
SOA Infrastructure
Logged in as weblogic
Page Refreshed Feb 19, 2009 11:40:48 AM PST
SOA Infrastructure Home > BPEL Engine Home
BPEL Engine (Service Engine)
Related Links
Dashboard
Statistics
Instances
Faults
Deployed Components
Recovery
Pending Requests
1.0
0.8
0.6
0.4
0.2
0.0
11:46 AM
11:48
19 February 2009
Last scheduled request value
Activity Execution Request
BPEL Process Management Requests
New Instance Requests
Low Level System Requests
Delivery Service Requests
[Table View]
Active Requests
1.0
0.8
0.6
0.4
0.2
0.0
11:46 AM
11:48
19 February 2009
Last active request value
Activity Execution Request
BPEL Process Management Requests
New Instance Requests
Low Level System Requests
Delivery Service Requests
[Table View]
Thread Statistics

Name	Statistics
Active threads	24
Highest number of active threads	24
Total number of threads allocated over time	24

The lower part of the Statistics page displays details about the count and minimum, maximum, and average request processing times.



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

12.7 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:

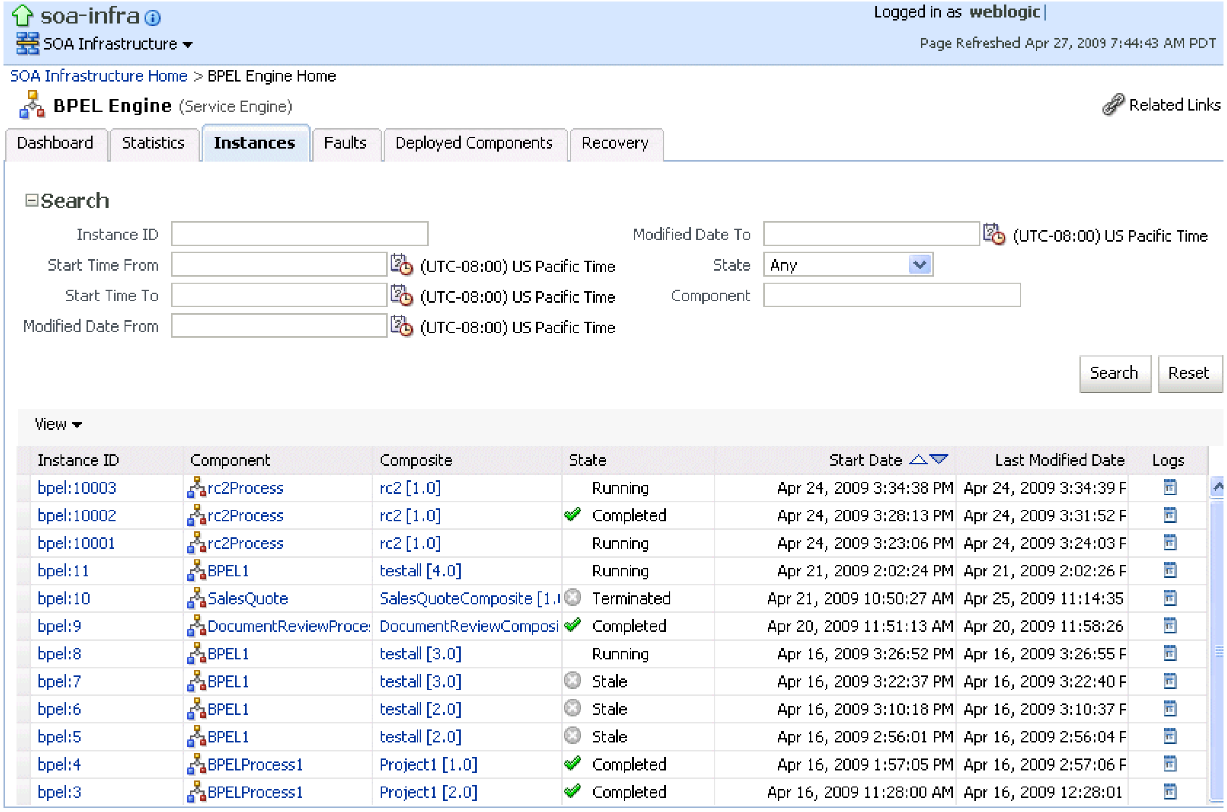
1. Access this page through one of the following options:

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.



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: Any

Component

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.	⊗ 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:
   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.

For more information, see Section 1.2.4, "Understanding Service Components and Service Component Instances."

12.8 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:

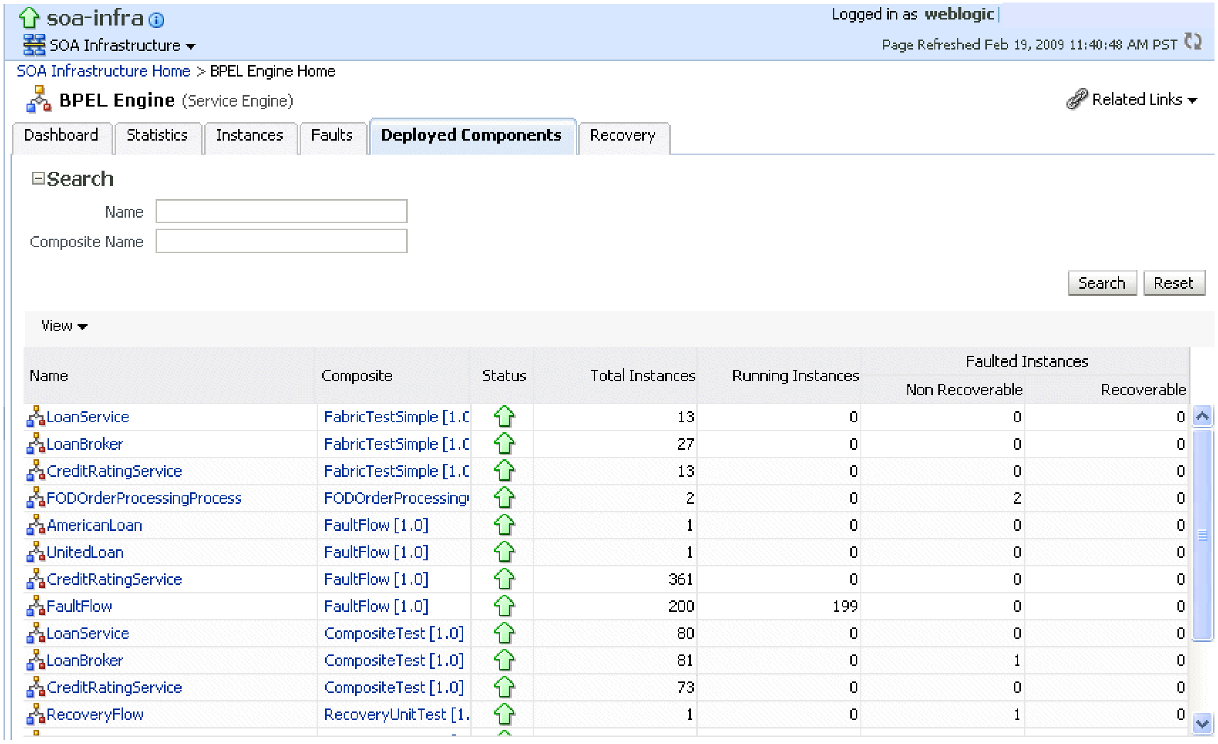
1. Access this page through one of the following options:

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 **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.



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.	⇧	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.

13

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 13.1, "Recovering from BPEL Process Service Component Faults"
- Section 13.2, "Managing BPEL Process Service Component Policies"
- Section 13.3, "Recovering from BPEL Process Service Engine Faults"
- Section 13.4, "Performing BPEL Process Service Engine Message Recovery"

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"

13.1 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:

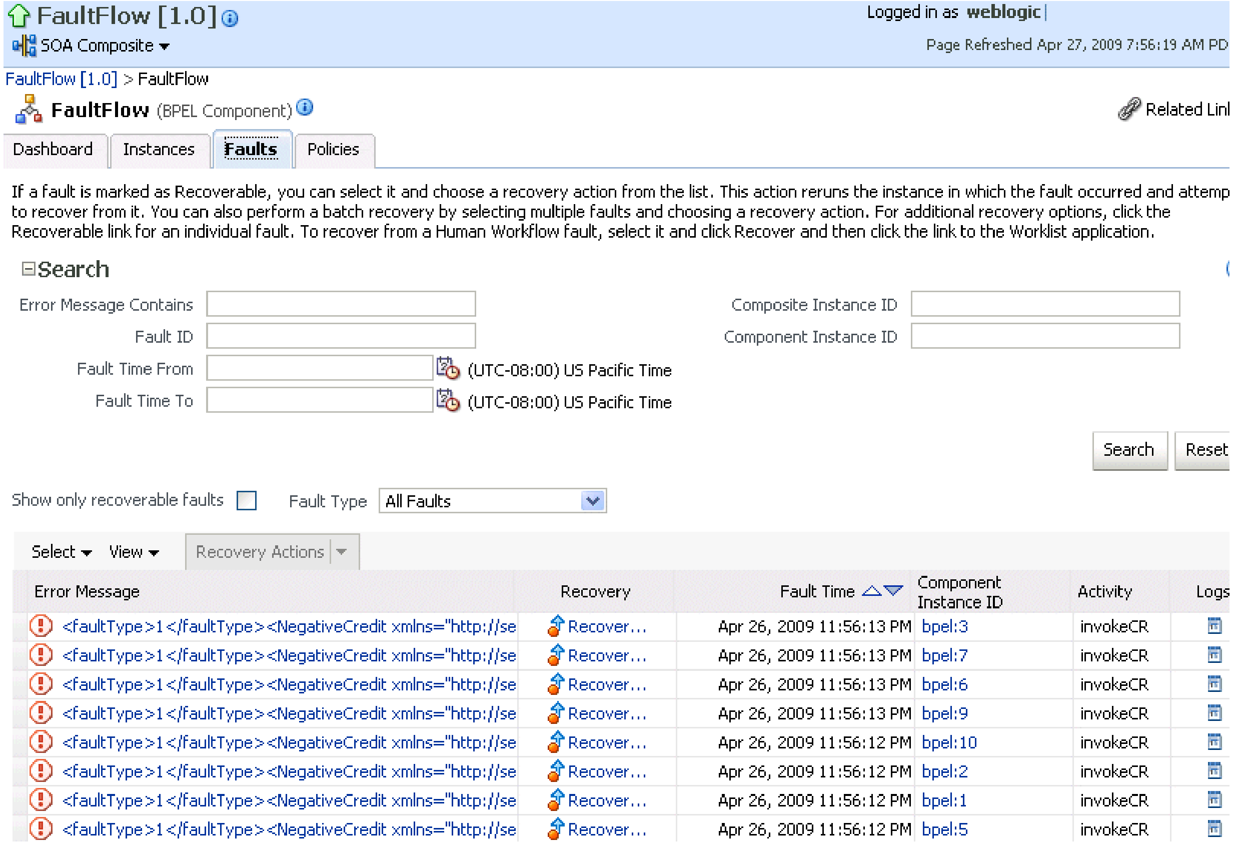
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



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 attemp 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.

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

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	There are three options from which to choose for single-fault recovery: 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	There are two options from which to choose for bulk-fault recovery: **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 *not* 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	**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 Application Server Administrator's Guide* for details about viewing and searching log files

13.2 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 Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use in your environment.

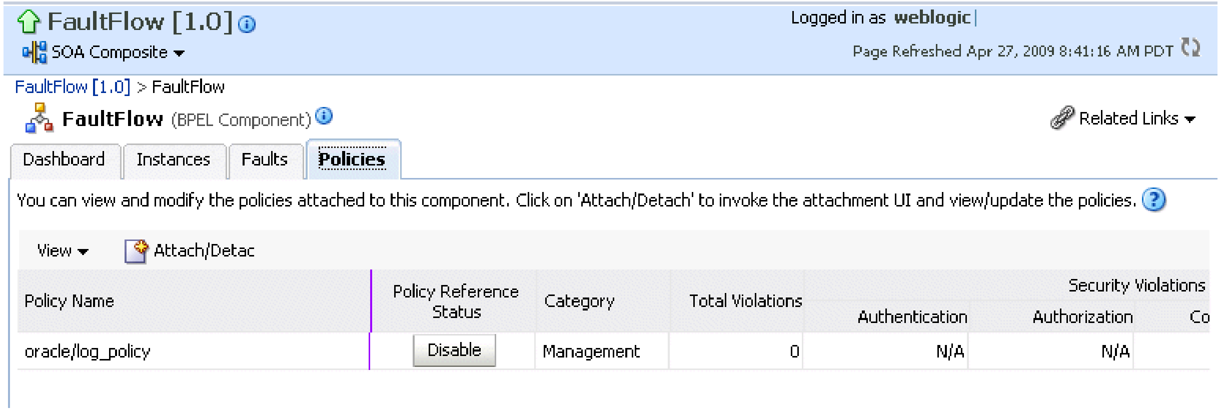
To manage BPEL process service component policies:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



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.

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 Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use for your environment

13.3 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:

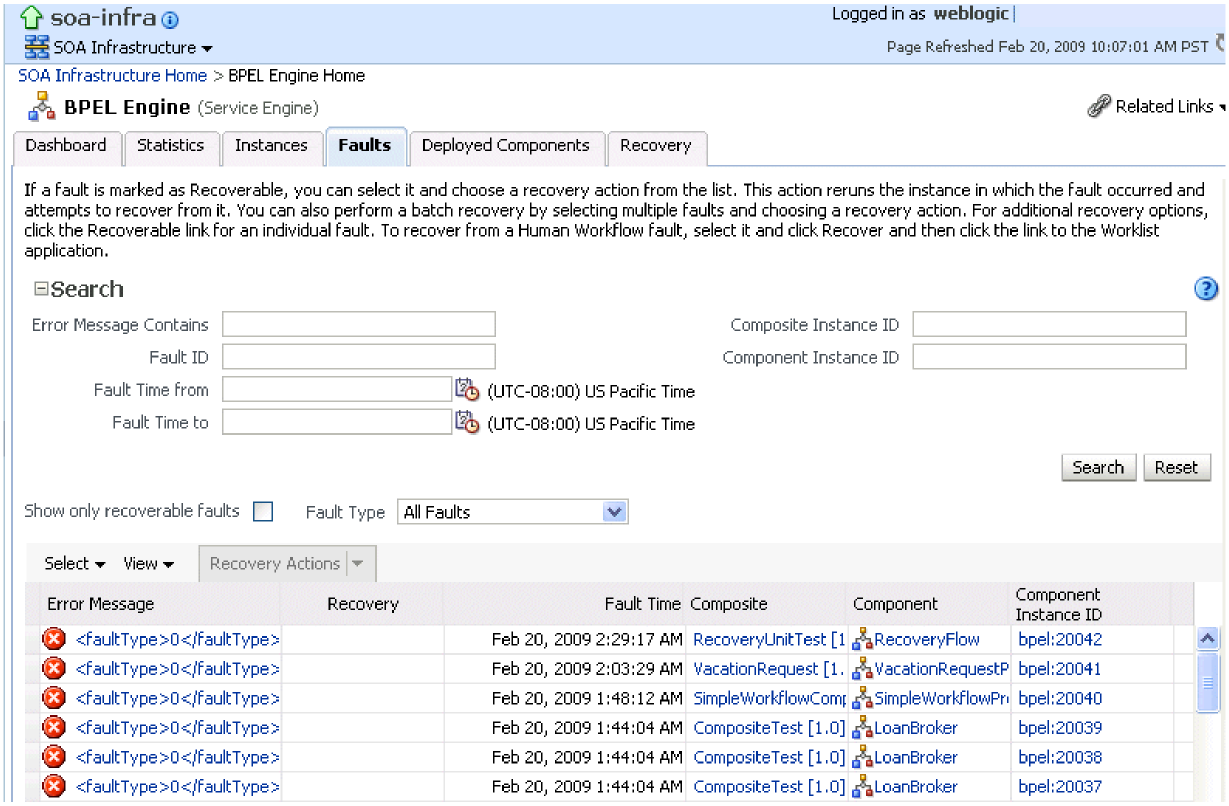
1. Access this page through one of the following options:

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.



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.

Show only recoverable faults ☐ Fault Type All Faults

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID
<faultType>0</faultType>		Feb 20, 2009 2:29:17 AM	RecoveryUnitTest [1	RecoveryFlow	bpel:20042
<faultType>0</faultType>		Feb 20, 2009 2:03:29 AM	VacationRequest [1.	VacationRequestP	bpel:20041
<faultType>0</faultType>		Feb 20, 2009 1:48:12 AM	SimpleWorkflowComp	SimpleWorkflowPr	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 13.1, "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"

13.4 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.

You can also manage messages that have failed automatic recovery attempts by the BPEL process service engine. To ensure that automatic recovery of these messages is not attempted multiple times, these messages are placed in the exhausted state. You can then perform one of the following actions on these messages:

- Return them to the automatic recovery queue
- Never attempt a recovery on them again
- Attempt to recover them immediately

For example, assume you have a BPEL process that writes to a database adapter. If the database is down, these messages are sent to a recovery queue. Automatic recovery of these messages fails while the database is down. Such messages are marked with the exhausted state so that automatic recovery is not attempted on them again. When the database begins running again, you can reset these messages (return them to the automatic recovery queue) so that an automatic recovery is attempted on them again.

To perform BPEL process service engine message recovery:

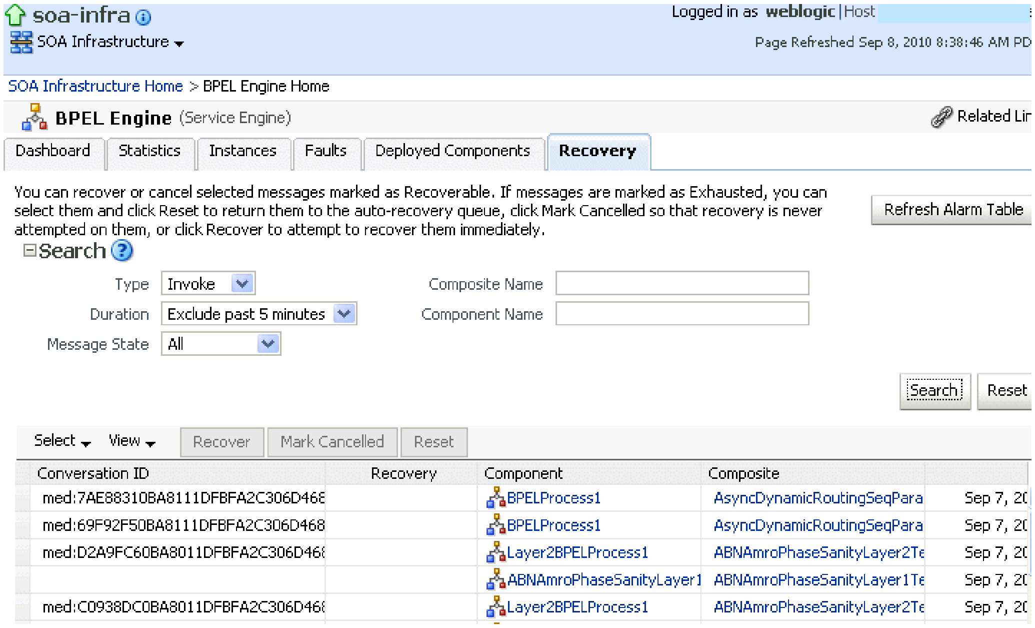
1. Access this page through one of the following options:

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 **Refresh Alarm Table** button for resynchronizing lost, in-memory, Quartz-scheduled jobs in the database. For example, assume a timer on a wait activity or on an onAlarm branch of a pick activity was initiated, but the transaction was rolled back. You can resynchronize these jobs with the BPEL instances residing in the wait activity/onAlarm branch in the database.
   - A utility for searching for a specific message failure by specifying a criteria and clicking **Search**. Click the **Help** icon for details.
   - Message failures 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. Depending on the state, you can recover these messages immediately, cancel these messages, or reset these messages for automatic recovery.



Logged in as **weblogic** | Host

Page Refreshed Sep 8, 2010 8:38:46 AM PD

SOA Infrastructure Home > BPEL Engine Home

BPEL Engine (Service Engine)

You can recover or cancel selected messages marked as Recoverable. If messages are marked as Exhausted, you can select them and click Reset to return them to the auto-recovery queue, click Mark Cancelled so that recovery is never attempted on them, or click Recover to attempt to recover them immediately.

Search

Type: Invoke
Duration: Exclude past 5 minutes
Message State: All
Composite Name:
Component Name:

Conversation ID	Recovery	Component	Composite	
med:7AE88310BA8111DFBFA2C306D46		BPELProcess1	AsyncDynamicRoutingSeqPara	Sep 7, 2
med:69F92F50BA8111DFBFA2C306D468		BPELProcess1	AsyncDynamicRoutingSeqPara	Sep 7, 2
med:D2A9FC60BA8011DFBFA2C306D46		Layer2BPELProcess1	ABNAmroPhaseSanityLayer2T	Sep 7, 2
		ABNAmroPhaseSanityLayer1	ABNAmroPhaseSanityLayer1T	Sep 7, 2
med:C0938DC0BA8011DFBFA2C306D46		Layer2BPELProcess1	ABNAmroPhaseSanityLayer2T	Sep 7, 2

Notes:

- You can recover callback messages in resolved and undelivered states. These messages can display for recovery when you execute a search criteria in which you select **Callback** from the **Type** list and either **Resolved** or **Undelivered** from the **Message State** list. When a callback message first enters the BPEL process service engine, its state is undelivered. When this message is resolved to the target BPEL process instance either through matching a conversation ID or a correlation, the state is switched to resolved. In both of these states, the messages have not yet been consumed. Messages in these two states can be recovered (redelivered into the BPEL process service engine for consumption). In other situations, the callback messages can become stranded in both of these states. Messages in these states can also be recovered. However, there is no guarantee that stranded callback messages always remain in an undelivered state.
- If you select **Invoke** from the **Type** list and **Undelivered** from the **Message State** list, and then click **Recover**, a recovery is performed. However, the **Last Modified Date** column remains empty for this instance on the Dashboard page of the Oracle BPEL Process Manager service component or service engine. This is the expected behavior. The last modified date does not display because the initial Oracle BPEL Process Manager instance (for example, **bpel:70004**) is created by the first invocation (that is, it is created, but has not yet been modified). The recovery of the undelivered invocation message always creates a *new* instance (for example, **bpel:70005**). The previously created instance (**bpel:70004**) is not used and remains permanently in the same status (the **Last Modified Date** column is empty). This information is provided for auditing purposes only.
- The **Message States** list is applicable only to callback and invoke message type recovery, and not for activity message type recovery.

---

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 you select messages in the exhausted state and click this button, an attempt is made to recover them immediately. Should this recovery attempt also fail, the message is returned to the exhausted state. You must then select the message and click **Reset** to return the message to the automatic recovery queue. 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.

Action	Description
Mark Cancelled	Marks the message so it is never delivered. If you select messages in the exhausted state and click this button, recovery is never attempted on them.
Reset	Select to reset exhausted messages to the undelivered state. This returns the message to the automatic recovery queue. The messages that displayed in the exhausted state disappear from the messages table. If you select **Undelivered** from the **Message State** list and click **Search**, these messages are displayed. Note that callback messages in the exhausted state can also be reset to the resolved state and still remain recoverable.

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 period, 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.

For information about configuring the maximum number of times to attempt an invoke and callback message recovery, see Section 11.3, "Configuring Automatic Recovery Attempts for Invoke and Callback Messages."

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:

14

Configuring Oracle Mediator Service Components and Engines

This chapter describes how to configure Oracle Mediator service components and service engines.

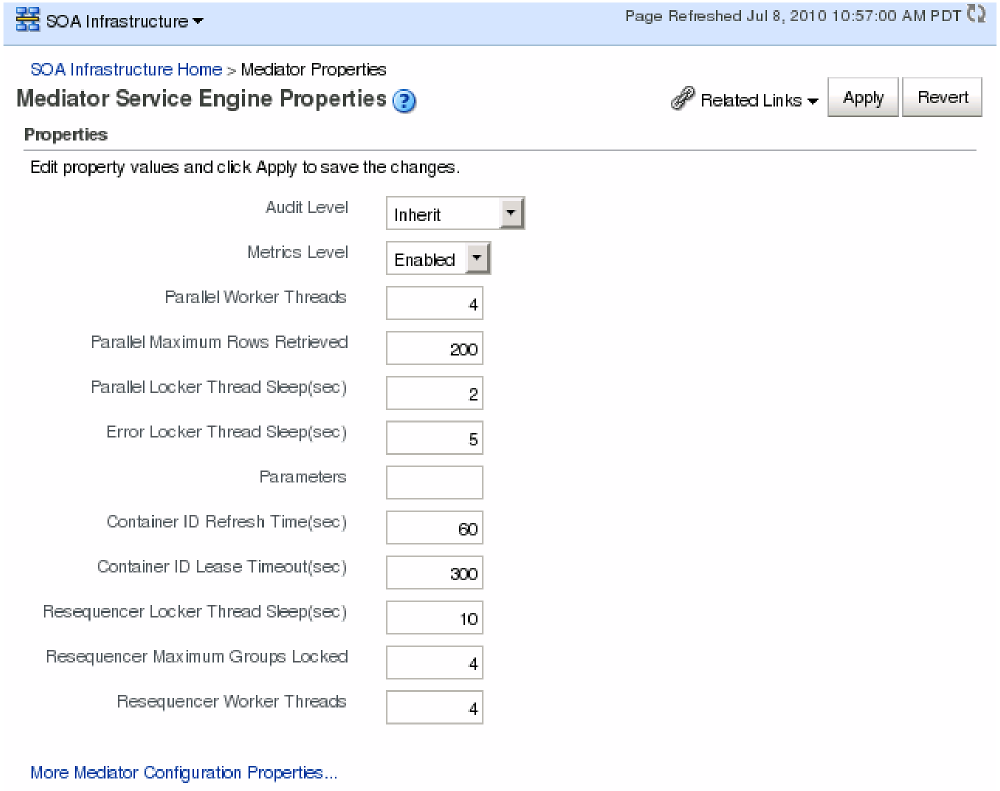
This chapter includes the following topics:

- Section 14.1, "Introduction to Configuring Oracle Mediator"
- Section 14.2, "Configuring Audit-Level Flags"
- Section 14.3, "Configuring Metrics-Level Flag"
- Section 14.4, "Configuring Parameters for Parallel Infrastructure"
- Section 14.5, "Configuring Parameters for Error/Retry Infrastructure"
- Section 14.6, "Configuring Parameters for Heartbeat Framework"

14.1 Introduction to Configuring Oracle Mediator

You can configure the properties of the Oracle 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 Oracle Mediator Service Engine Properties page, shown in the following figure.


SOA Infrastructure
Page Refreshed Jul 8, 2010 10:57:00 AM PDT
SOA Infrastructure Home > Mediator Properties
Related Links
Apply
Revert
More Mediator Configuration Properties...

Mediator Service Engine Properties

Properties

Edit property values and click Apply to save the changes.

Audit Level	Inherit
Metrics Level	Enabled
Parallel Worker Threads	4
Parallel Maximum Rows Retrieved	200
Parallel Locker Thread Sleep(sec)	2
Error Locker Thread Sleep(sec)	5
Parameters	
Container ID Refresh Time(sec)	60
Container ID Lease Timeout(sec)	300
Resequencer Locker Thread Sleep(sec)	10
Resequencer Maximum Groups Locked	4
Resequencer Worker Threads	4

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.

14.2 Configuring Audit-Level Flags

You can configure the Oracle 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 for Oracle 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 Oracle 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.

14.3 Configuring Metrics-Level Flag

You can set the Oracle 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

14.4 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.

14.5 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.

14.6 Configuring Parameters for Heartbeat Framework

The heartbeat infrastructure is a part of the Oracle Mediator Service Engine and is used to detect the absence of a Oracle Mediator Service Engine instance due to failure or shutdown of a node. The heartbeat infrastructure creates a unique identifier for each instance of the Oracle Mediator Service Engine and performs the necessary house-keeping tasks, if an Oracle Mediator Service Engine fails. The heartbeat infrastructure consists of a heartbeat thread. The heartbeat thread periodically updates the time stamp associated with each Oracle Mediator Service Engine's unique identifier. By updating the time stamp associated with it, an Oracle Mediator Service Engine announces its presence to the other Oracle 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 Oracle 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 an Oracle 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.

15

Monitoring Oracle Mediator Service Components and Engines

This chapter describes how to monitor Oracle Mediator service components and engines.

This chapter includes the following topics:

- Section 15.1, "Monitoring Oracle Mediator Service Component Instances and Faults"
- Section 15.2, "Monitoring Oracle Mediator Service Engine Instances and Faults"

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"

15.1 Monitoring Oracle Mediator Service Component Instances and Faults

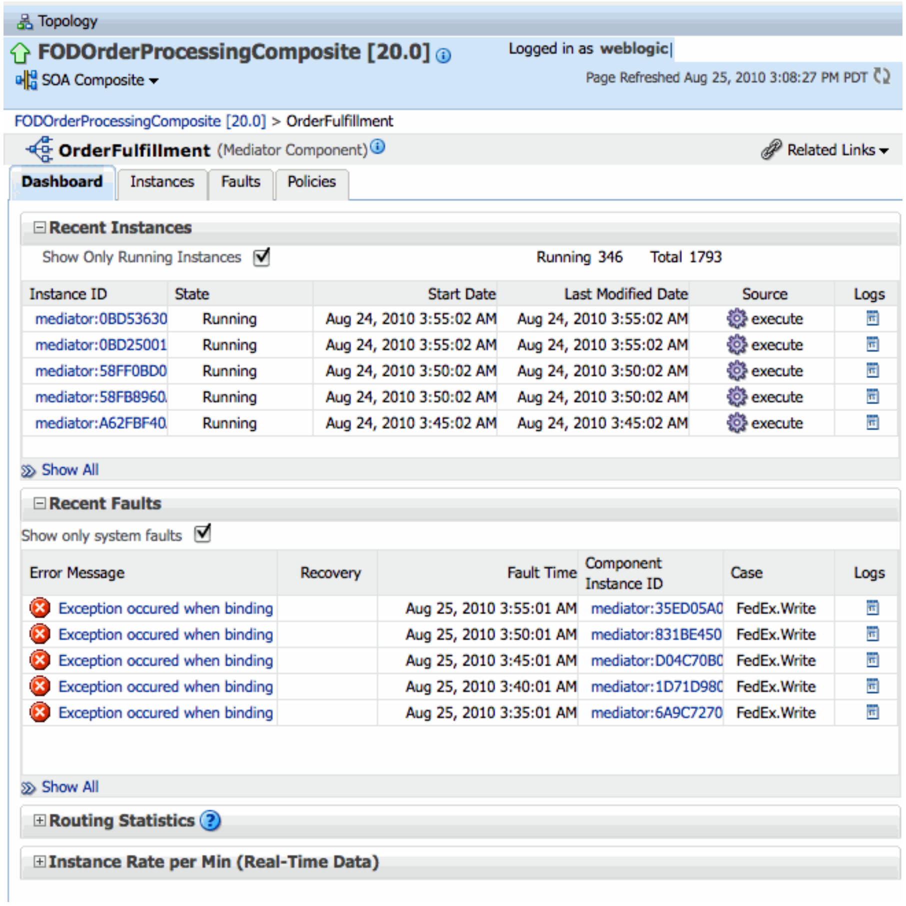
You can monitor Oracle Mediator service component recent instances and faults. Each service component in a SOA composite application has its own instance ID. These IDs are different from the overall instance ID of the SOA composite application of which each service component is a part.

To monitor Oracle Mediator service component instances and faults:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Expand **soa-infra**, and then select a specific SOA composite application.

2. In the **Component Metrics** section, select the Oracle Mediator service component.
3. Click **Dashboard**.



Topology
FODOrderProcessingComposite [20.0]
SOA Composite
Logged in as weblogic
Page Refreshed Aug 25, 2010 3:08:27 PM PDT
FODOrderProcessingComposite [20.0] > OrderFulfillment
OrderFulfillment (Mediator Component)
Related Links
Dashboard
Instances
Faults
Policies

Recent Instances

Show Only Running Instances ☑ Running 346 Total 1793

Instance ID	State	Start Date	Last Modified Date	Source	Logs
mediator:0BD53630	Running	Aug 24, 2010 3:55:02 AM	Aug 24, 2010 3:55:02 AM	execute	▤
mediator:0BD25001	Running	Aug 24, 2010 3:55:02 AM	Aug 24, 2010 3:55:02 AM	execute	▤
mediator:58FF0BD0	Running	Aug 24, 2010 3:50:02 AM	Aug 24, 2010 3:50:02 AM	execute	▤
mediator:58FB8960	Running	Aug 24, 2010 3:50:02 AM	Aug 24, 2010 3:50:02 AM	execute	▤
mediator:A62FBF40	Running	Aug 24, 2010 3:45:02 AM	Aug 24, 2010 3:45:02 AM	execute	▤

Show All

Recent Faults

Show only system faults ☑

Error Message	Recovery	Fault Time	Component Instance ID	Case	Logs
Exception occured when binding		Aug 25, 2010 3:55:01 AM	mediator:35ED05A	FedEx.Write	▤
Exception occured when binding		Aug 25, 2010 3:50:01 AM	mediator:831BE450	FedEx.Write	▤
Exception occured when binding		Aug 25, 2010 3:45:01 AM	mediator:D04C70B	FedEx.Write	▤
Exception occured when binding		Aug 25, 2010 3:40:01 AM	mediator:1D71D98	FedEx.Write	▤
Exception occured when binding		Aug 25, 2010 3:35:01 AM	mediator:6A9C7270	FedEx.Write	▤

Show All

Routing Statistics

Instance Rate per Min (Real-Time Data)

The Dashboard page displays the following information:

- Recent instances of the Oracle Mediator service component, including the instance ID, the state of the instance (for example, completed successfully or faulted), the start time, the last modification time, the source event or operation that triggered the instance, and logs describing the instance.
- Recent faults in the Oracle Mediator 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 component, the activity in which the fault occurred, and logs describing the fault.
- Routing statistics for the Oracle Mediator service component, including the number of successfully processed messages, faulted messages, and incoming messages, as well as the average processing times for successful messages and faulted messages.
- The instance processing rate per minute (or throughput) for the past five minutes, including total throughput, throughput for successful message, and throughput for faulted messages. This appears in graphic format, and you can also view the information as a table.

4. In the **Recent Instances** section, perform the following tasks:

   a. In the **Instance ID** column, click an instance ID to view its instance details, including an audit trail and faults.

   b. In the **Logs** column, click a log icon to access the Log Messages page with messages specific to that instance.

   c. Click **Show Only Running Instances** to view only those instances that are in the running state.

   d. Click **Show All** below the section to access the Instances page of the service component and view all instances of the 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 **Recover Now** to perform fault recovery.

   b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.

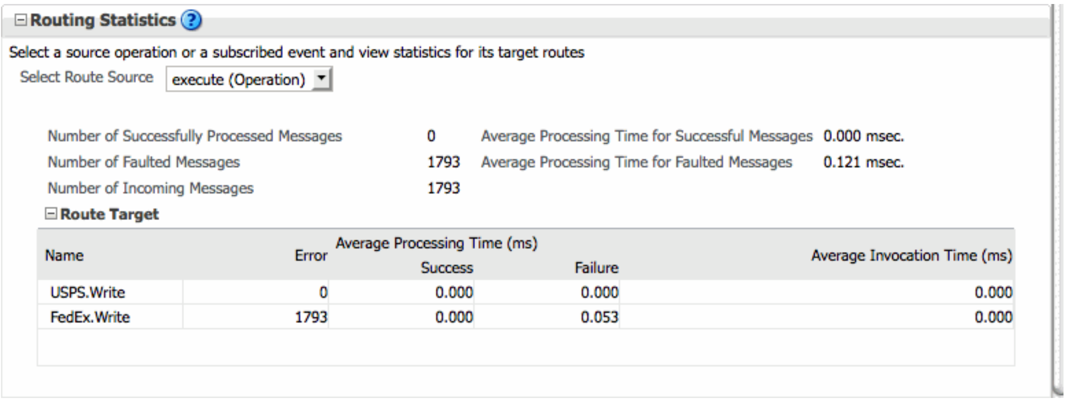
   c. In the **Logs** column, click a specific log to access the Log Messages page with filtered messages specific to that instance.

   d. Click **Show only system faults** to display only the fault that were caused by a system error. System faults are related to system failure issues, such as a database or network being inaccessible.

   e. Click **Show All** below the section to access the Faults page of the service component and view all component faults.

6. Expand the **Routing Statistics** section and select an operation or event in the **Select Route Source** field.

   View the statistics for the selected operation or event. To view additional information, expand the **Route Target** section.



⊟**Routing Statistics** ?

Select a source operation or a subscribed event and view statistics for its target routes

Select Route Source: execute (Operation)

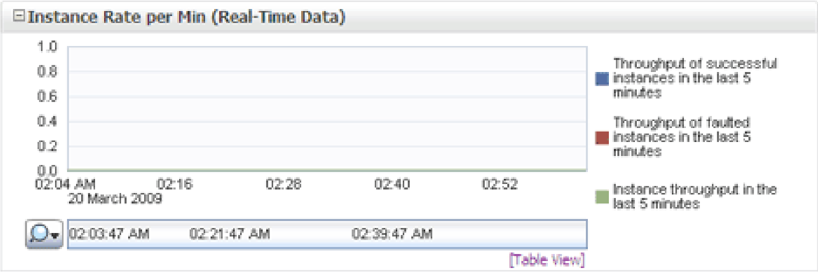
Number of Successfully Processed Messages	0	Average Processing Time for Successful Messages	0.000 msec.
Number of Faulted Messages	1793	Average Processing Time for Faulted Messages	0.121 msec.
Number of Incoming Messages	1793		

⊟**Route Target**

Name	Error	Average Processing Time (ms)		Average Invocation Time (ms)
		Success	Failure	
USPS.Write	0	0.000	0.000	0.000
FedEx.Write	1793	0.000	0.053	0.000

7. Expand the **Instance Rate per Min (Real-Time Data)** section to view a graphical representation of the number of successful, faulted, and incoming (pending) instances of the BPEL process service component over a specific time range.

   Click **Table View** to display the same information in a tabular format.


Instance Rate per Min (Real-Time Data)
1.0
0.8
0.6
0.4
0.2
0.0
02:04 AM
20 March 2009
02:16
02:28
02:40
02:52
🟦 Throughput of successful instances in the last 5 minutes
🟥 Throughput of faulted instances in the last 5 minutes
🟩 Instance throughput in the last 5 minutes
02:03:47 AM
02:21:47 AM
02:39:47 AM
[Table View]

For more information, see Section 1.2.3, "Understanding SOA Composite Application Instances". For information about viewing and searching log files, see *Oracle Application Server Administrator's Guide*.

15.1.1 About the 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 Oracle Mediator component instances:

- **Instance ID** - The unique ID of a specific Oracle Mediator component instance.
- **State** - The state of the specific Oracle Mediator component instance. The possible states are described below.
  - **Stale** - The composite for which this Oracle Mediator instance was created is undeployed.
  - **Terminated by User** - The instance was aborted manually through Enterprise Manager, or automatically by a fault policy.
  - **Faulted** - The instance is faulted and cannot be recovered.
  - **Completed successfully** - Everything is fine with this instance and it ran successfully.
  - **Recovery required** - The instance is faulted and can be recovered manually through Oracle Enterprise Manager.

    For more information about recovering a fault, refer to Section 16.2, "Managing Oracle Mediator Faults".
  - **Running** - One or more routing rules of the Oracle Mediator component are still running.
- **Start Date** - The date when the specific Oracle Mediator component instance was started.
- **Last Modified Date** - The date when the specific Oracle Mediator component instance was last modified.
- **Source** - The operation or event that triggered the Oracle Mediator component instance.
- **Logs** - The location of the log file containing the log messages related to the Oracle Mediator component instance.

Recent Faults

The Recent Faults section provides the following information about the recent faults that occurred while the Oracle Mediator component was running:

- **Error Message** - The detailed error message associated with the faulted instance.
- **Recovery** - An indicator of 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 fault occurred in the Oracle Mediator component instance.
- **Component Instance ID** - The unique ID of the Oracle Mediator component instance.
- **Case** - The routing source case where the fault occurred.
- **Logs** - The log file containing the log message related to the fault. Click this link to see more details about the fault and potential causes of the fault.

For more details about the information available on Faults tab, refer to Section 16.2, "Managing Oracle Mediator Faults".

Routing Statistics

The Routing Statistics section provides the following information about the routing data of a source operation or subscribed event.

- **Number of Successfully Processed Messages** - The number of messages successfully processed for the selected route source.
- **Number of Faulted Messages** - The number of messages that threw faults for the selected route source.
- **Number of Incoming Messages** - The total number of incoming messages for the selected route source.
- **Average Processing Time for Successful Messages** - The average time taken to process each successful message for the selected route source.
- **Average Processing Time for Faulted Massages** -The average time taken to process each faulted message.

The Route Target table in the Routing Statistics section displays statistics of the target routes for the Oracle Mediator component. This section provides the following information about an Oracle Mediator component instance:

- **Name** - The name of the route target of the Oracle Mediator component.
- **Error** - The number of errors that occurred during routing.
- **Average Processing Time** - The average processing time for the instances of the Oracle Mediator component. This field has two subfields, Success and Failure. The Success subfield shows the average processing time for the instances of the Oracle Mediator component that were processed successfully. The Failure subfield shows the average processing time for the instances of the specific Oracle Mediator component that failed to process successfully.
- **Average Invocation Time** - The average invocation time for the instances of the Oracle Mediator Component.

Instance Rate Per Min Section

The Instance Rate per Min (Realtime Data) section provides information about the execution rate of the Oracle 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 view the instance rate for last five minutes in tabular form by clicking **Table View**.

15.1.2 Viewing Oracle Mediator Instance Information

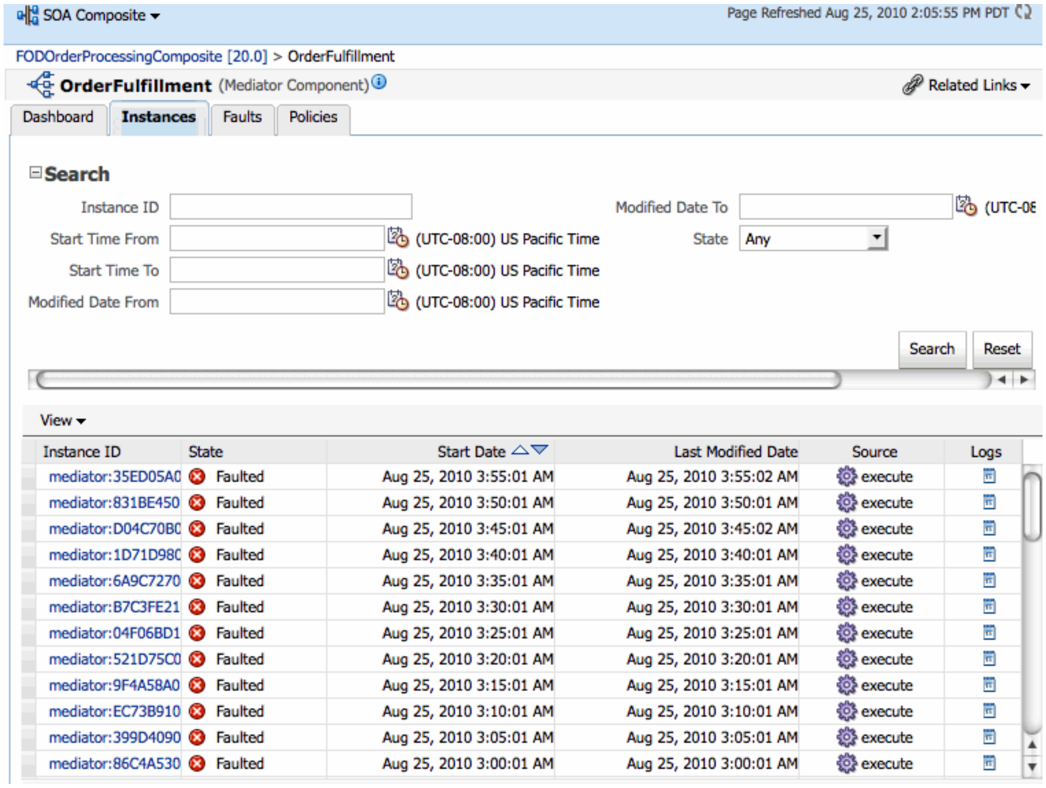
The Instances tab on the Oracle Mediator Component Home page lets you search for an Oracle Mediator component instance and view information about an Oracle Mediator component instance based on the criteria specified.

To view the instance statistics of an Oracle Mediator component:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Expand **soa-infra**, and then select a specific SOA composite application.

2. In the **Component Metrics** section, select the Oracle Mediator service component.
3. Click **Instances**.


SOA Composite
Page Refreshed Aug 25, 2010 2:05:55 PM PDT
FODOrderProcessingComposite [20.0] > OrderFulfillment
OrderFulfillment (Mediator Component)
Related Links
Dashboard
Instances
Faults
Policies
Search
Instance ID
Start Time From
Start Time To
Modified Date From
Modified Date To
(UTC-08:00) US Pacific Time
State
Search
Reset
View

State: Any

Instance ID	State	Start Date	Last Modified Date	Source	Logs
mediator:35ED05A	Faulted	Aug 25, 2010 3:55:01 AM	Aug 25, 2010 3:55:02 AM	execute	
mediator:831BE450	Faulted	Aug 25, 2010 3:50:01 AM	Aug 25, 2010 3:50:01 AM	execute	
mediator:D04C70B	Faulted	Aug 25, 2010 3:45:01 AM	Aug 25, 2010 3:45:02 AM	execute	
mediator:1D71D98	Faulted	Aug 25, 2010 3:40:01 AM	Aug 25, 2010 3:40:01 AM	execute	
mediator:6A9C7270	Faulted	Aug 25, 2010 3:35:01 AM	Aug 25, 2010 3:35:01 AM	execute	
mediator:B7C3FE21	Faulted	Aug 25, 2010 3:30:01 AM	Aug 25, 2010 3:30:01 AM	execute	
mediator:04F06BD1	Faulted	Aug 25, 2010 3:25:01 AM	Aug 25, 2010 3:25:01 AM	execute	
mediator:521D75C0	Faulted	Aug 25, 2010 3:20:01 AM	Aug 25, 2010 3:20:01 AM	execute	
mediator:9F4A58A0	Faulted	Aug 25, 2010 3:15:01 AM	Aug 25, 2010 3:15:01 AM	execute	
mediator:EC73B910	Faulted	Aug 25, 2010 3:10:01 AM	Aug 25, 2010 3:10:01 AM	execute	
mediator:399D4090	Faulted	Aug 25, 2010 3:05:01 AM	Aug 25, 2010 3:05:01 AM	execute	
mediator:86C4A530	Faulted	Aug 25, 2010 3:00:01 AM	Aug 25, 2010 3:00:01 AM	execute	

4. To perform a search, enter criteria into any of the available fields, and then click **Search**. For the date and time fields, you can click the calendar icon next to the field to select a date or time.

   For information about the fields displayed on the Instances tab, see **Recent Instances** in "About the Sections in the Dashboard Tab" on page 15-4.

15.1.3 Monitoring Oracle Mediator Faults

The Faults tab of the Oracle Mediator Component home page lets you search for faults based on the specified criteria, to view information about faulted instances, and to recover or abort multiple faults.

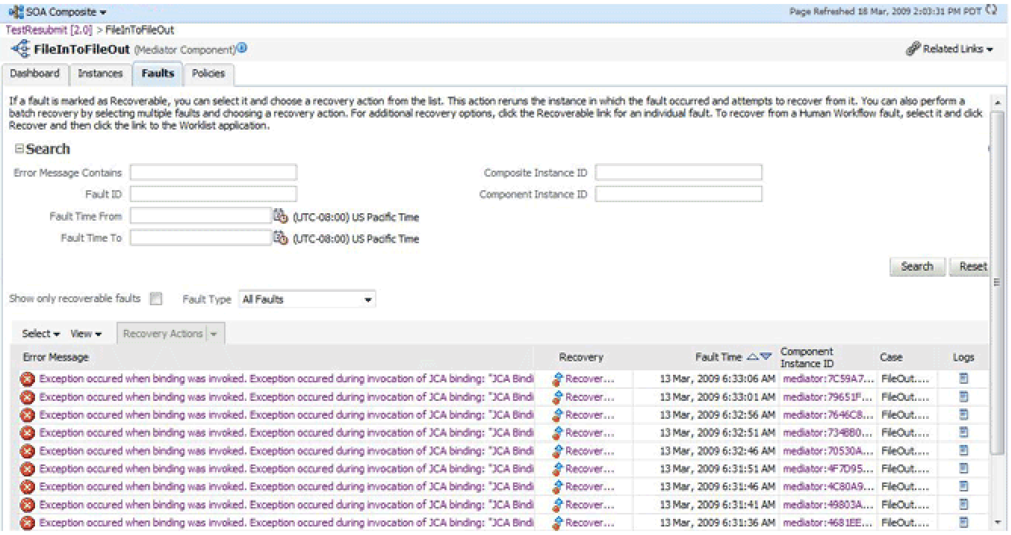
To view the faults for an Oracle Mediator component:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Expand **soa-infra**, and then select a specific SOA composite application.

2. In the **Component Metrics** section, select the Oracle Mediator service component.

3. Click **Faults**.



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.

Error Message	Recovery	Fault Time	Component Instance ID	Case	Logs
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:33:06 AM	mediator:7C59A7...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:33:01 AM	mediator:79651F...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:32:56 AM	mediator:7646C8...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:32:51 AM	mediator:734B80...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:32:46 AM	mediator:70530A...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:31:51 AM	mediator:4F7D95...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:31:46 AM	mediator:4C80A9...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:31:41 AM	mediator:49803A...	FileOut....	
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bindi	Recover...	13 Mar, 2009 6:31:36 AM	mediator:4681EE...	FileOut....	

4. To perform a search, enter criteria into any of the available fields, and then click **Search**. For the date and time fields, you can click the calendar icon next to the field to select a date or time.

   For information about the fields displayed on the Faults tab, see **Recent Faults** in "About the Sections in the Dashboard Tab" on page 15-4.

15.1.4 Monitoring Oracle Mediator Routing Statistics

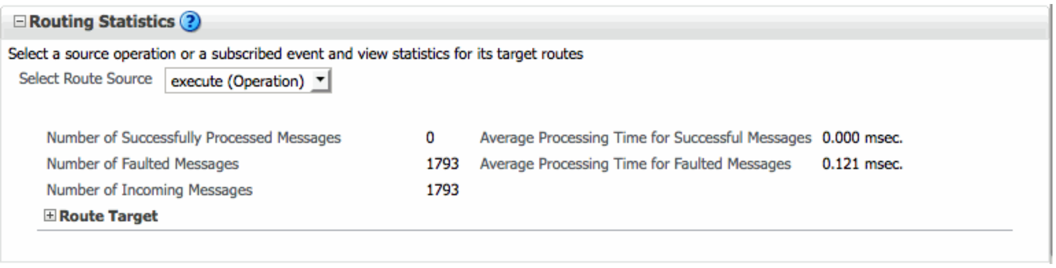
The Routing Statistics section of the Dashboard tab in the Oracle Mediator Component home page displays the routing data of a source operation or subscribed event.

To view the routing statistics of an Oracle Mediator component:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Expand **soa-infra**, and then select a specific SOA composite application.

2. In the **Component Metrics** section, select the Oracle Mediator service component.
3. Click **Dashboard**.
4. In the **Routing Statistics** section, select a routing source from the **Select Route Source** list.



Routing Statistics

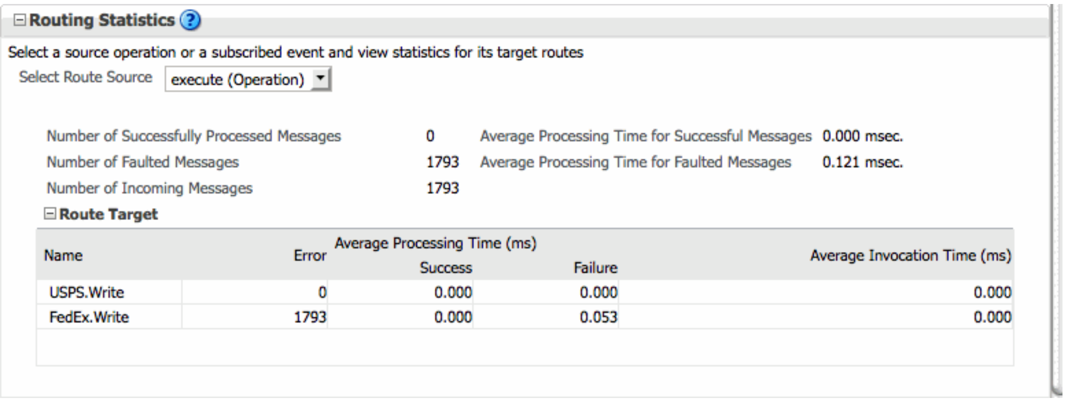
Select a source operation or a subscribed event and view statistics for its target routes

Select Route Source: execute (Operation)

Number of Successfully Processed Messages	0	Average Processing Time for Successful Messages	0.000 msec.
Number of Faulted Messages	1793	Average Processing Time for Faulted Messages	0.121 msec.
Number of Incoming Messages	1793		

Route Target

5. 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: execute (Operation)

Number of Successfully Processed Messages	0	Average Processing Time for Successful Messages	0.000 msec.
Number of Faulted Messages	1793	Average Processing Time for Faulted Messages	0.121 msec.
Number of Incoming Messages	1793		

Route Target

Name	Error	Average Processing Time (ms)		Average Invocation Time (ms)
		Success	Failure	
USPS.Write	0	0.000	0.000	0.000
FedEx.Write	1793	0.000	0.053	0.000

6. View the routing statistics for all targets in the Route Target table.

   For information about the fields displayed in the Routing Statistics section, see **Routing Statistics** in "About the Sections in the Dashboard Tab" on page 15-4.

15.2 Monitoring Oracle Mediator Service Engine Instances and Faults

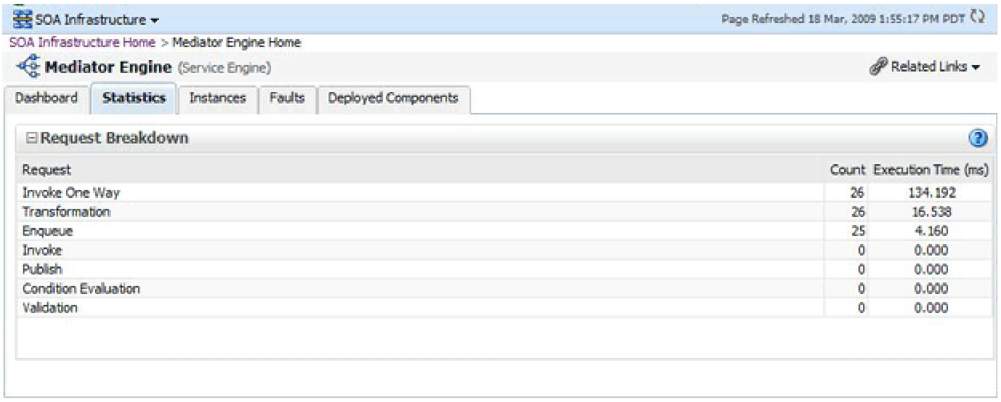
You can assess the efficiency level of the Oracle Mediator Service Engine by monitoring the request breakdown statistics.

15.2.1 Monitoring Request Breakdown Statistics

To view the request breakdown statistics of the currently deployed Oracle Mediator components:

1. Open the SOA Infrastructure Home page.
2. From the **SOA Infrastructure** menu, select **Service Engines** and then select **Mediator**.

   The Oracle Mediator Service Engine Home page is displayed.
3. Click the **Statistics** tab.
4. View the Request Breakdown statistics.


SOA Infrastructure
Page Refreshed 18 Mar, 2009 1:55:17 PM PDT
SOA Infrastructure Home > Mediator Engine Home
Mediator Engine (Service Engine)
Related Links
Dashboard
Statistics
Instances
Faults
Deployed Components
Request Breakdown

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

15.2.1.1 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 the Oracle Mediator Service Engine.
- Transformation - Transforming messages in the Oracle 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 the Oracle Mediator Service Engine.
- Publish - Publishing events from the Oracle Mediator Service Engine.
- Condition Evaluation - Filter conditions evaluation by the Oracle Mediator Service Engine.
- Validation - Message validations by the Oracle Mediator Service Engine.

16

Managing Oracle Mediator Service Components and Engines

This chapter describes how to manage Oracle Mediator service components and engines.

This chapter includes the following topics:

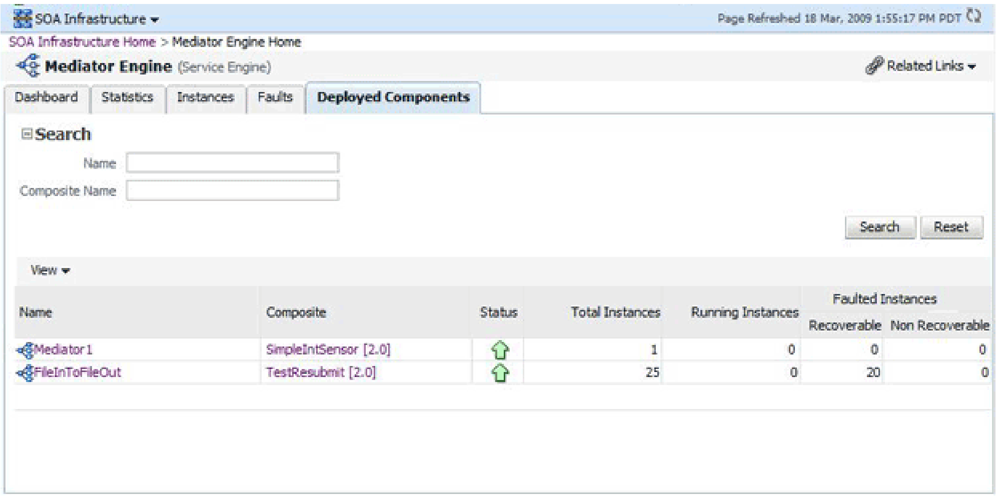
- Section 16.1, "Viewing the Deployed Oracle Mediator Service Components"
- Section 16.2, "Managing Oracle Mediator Faults"
- Section 16.3, "Managing Oracle Mediator Policies"

16.1 Viewing the Deployed Oracle Mediator Service Components

The Deployed Components tab of the Oracle Mediator Service Engine home page let you search for and view the Oracle Mediator components of a composite application based on the criteria you specify.

To manage deployed Oracle 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 Oracle Mediator service components currently deployed in SOA composite applications.
5. Use the **Search** section to search for and display specific deployed Oracle Mediator service components.



Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
Mediator1	SimpleIntSensor [2.0]	⇧	1	0	0	0
FileInToFileOut	TestResubmit [2.0]	⇧	25	0	20	0

16.1.1 What You May Need to Know About the Information in the Deployed Components Tab

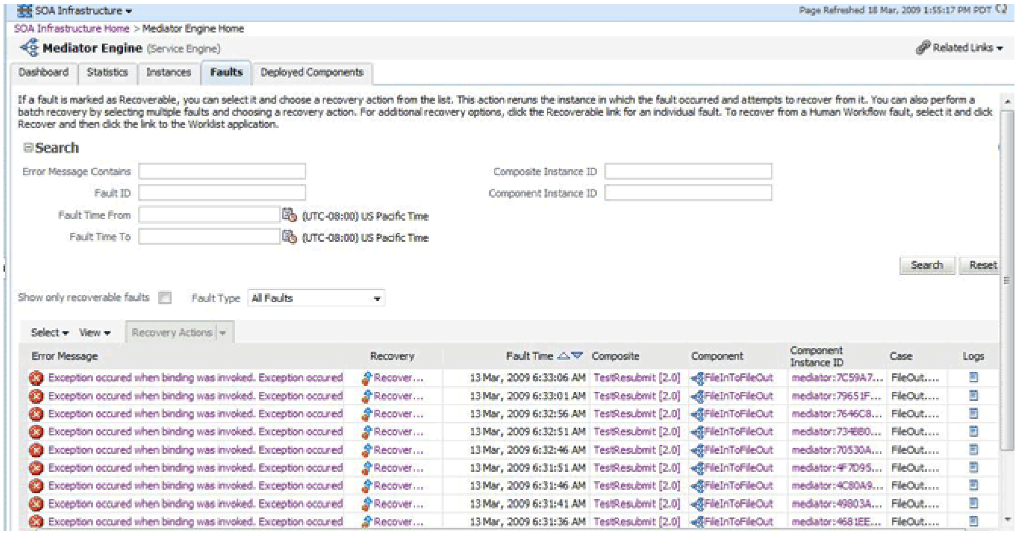
The Deployed Components tab of the Oracle Mediator Service Engine Home page provides the following information about deployed components:

- 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.

16.2 Managing Oracle Mediator Faults

To manage Oracle 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 Oracle Mediator service components.


SOA Infrastructure
Page Refreshed 18 Mar, 2009 1:55:17 PM PDT
SOA Infrastructure Home > Mediator Engine Home
Mediator Engine (Service Engine)
Related Links
Dashboard
Statistics
Instances
Faults
Deployed Components

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
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

Show only recoverable faults ☐ Fault Type All Faults

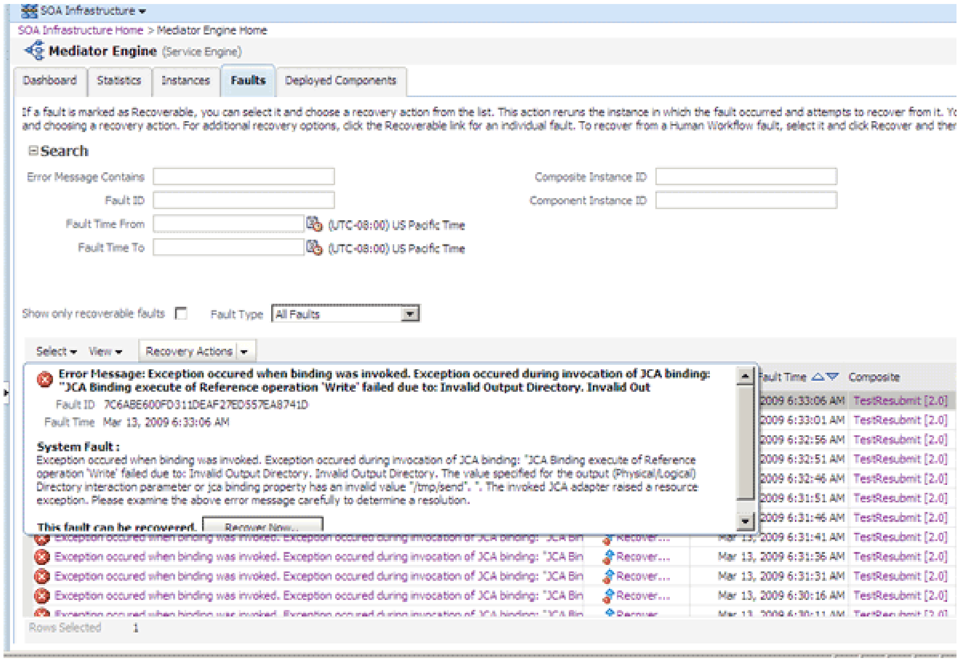
Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Case	Logs
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:33:06 AM	TestResubmit [2.0]	FileInToFileOut	mediator:7C59A7...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:33:01 AM	TestResubmit [2.0]	FileInToFileOut	mediator:79651F...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:32:56 AM	TestResubmit [2.0]	FileInToFileOut	mediator:7646C8...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:32:51 AM	TestResubmit [2.0]	FileInToFileOut	mediator:734BB0...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:32:46 AM	TestResubmit [2.0]	FileInToFileOut	mediator:70530A...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:31:51 AM	TestResubmit [2.0]	FileInToFileOut	mediator:4F7D95...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:31:46 AM	TestResubmit [2.0]	FileInToFileOut	mediator:4C80A9...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:31:41 AM	TestResubmit [2.0]	FileInToFileOut	mediator:49803A...	FileOut....	
Exception occured when binding was invoked. Exception occured	Recover...	13 Mar, 2009 6:31:36 AM	TestResubmit [2.0]	FileInToFileOut	mediator:4681EE...	FileOut....	

5. Use the **Search** section to search for and display specific faults in Oracle 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...**.


SOA Infrastructure
SOA Infrastructure Home > Mediator Engine Home
Mediator Engine (Service Engine)
Dashboard
Statistics
Instances
Faults
Deployed Components

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. Yo
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 ther

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

Show only recoverable faults ☐ Fault Type All Faults

Error Message: Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binding execute of Reference operation 'Write' failed due to: Invalid Output Directory. Invalid Out

Fault ID 7C6ABE600FD311DEAF27ED557EA8741D

Fault Time Mar 13, 2009 6:33:06 AM

System Fault :
Exception occured when binding was invoked. Exception occured 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 "/tmp/send". ". The invoked JCA adapter raised a resource exception. Please examine the above error message carefully to determine a resolution.

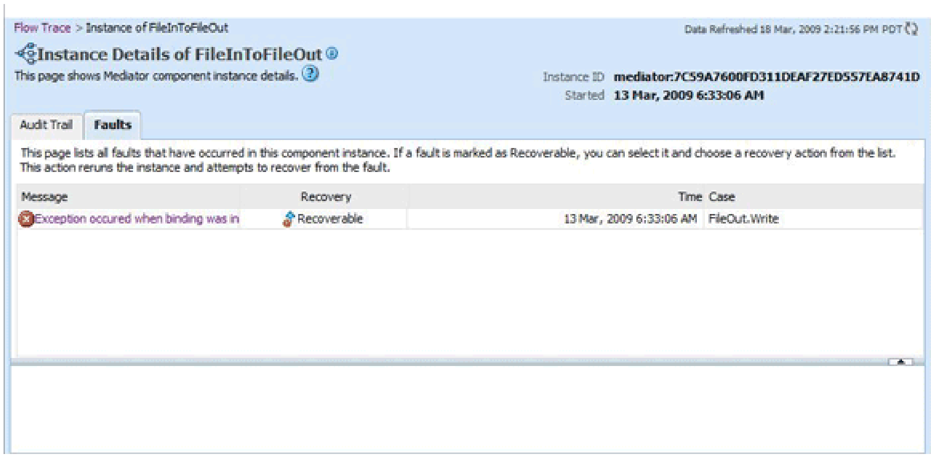
This fault can be recovered.

Error Message	Recovery	Fault Time	Composite
		2009 6:33:06 AM	TestResubmit [2.0]
		2009 6:33:01 AM	TestResubmit [2.0]
		2009 6:32:56 AM	TestResubmit [2.0]
		2009 6:32:51 AM	TestResubmit [2.0]
		2009 6:32:46 AM	TestResubmit [2.0]
		2009 6:31:51 AM	TestResubmit [2.0]
		2009 6:31:46 AM	TestResubmit [2.0]
	Recover...	2009 6:31:41 AM	TestResubmit [2.0]
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bin	Recover...	Mar 13, 2009 6:31:36 AM	TestResubmit [2.0]
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bin	Recover...	Mar 13, 2009 6:31:31 AM	TestResubmit [2.0]
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bin	Recover...	Mar 13, 2009 6:30:16 AM	TestResubmit [2.0]
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Bin	Recover...	Mar 13, 2009 6:30:11 AM	TestResubmit [2.0]

Rows Selected 1

The Faults tab of the Mediator Instance Details page of the specific Oracle Mediator component instance, where the fault occurred, is displayed.

This page can also be displayed by clicking **Recovery** column of a fault.



Flow Trace > Instance of FileInToFileOut

Data Refreshed 18 Mar, 2009 2:21:56 PM PDT

Instance Details of FileInToFileOut

This page shows Mediator component instance details.

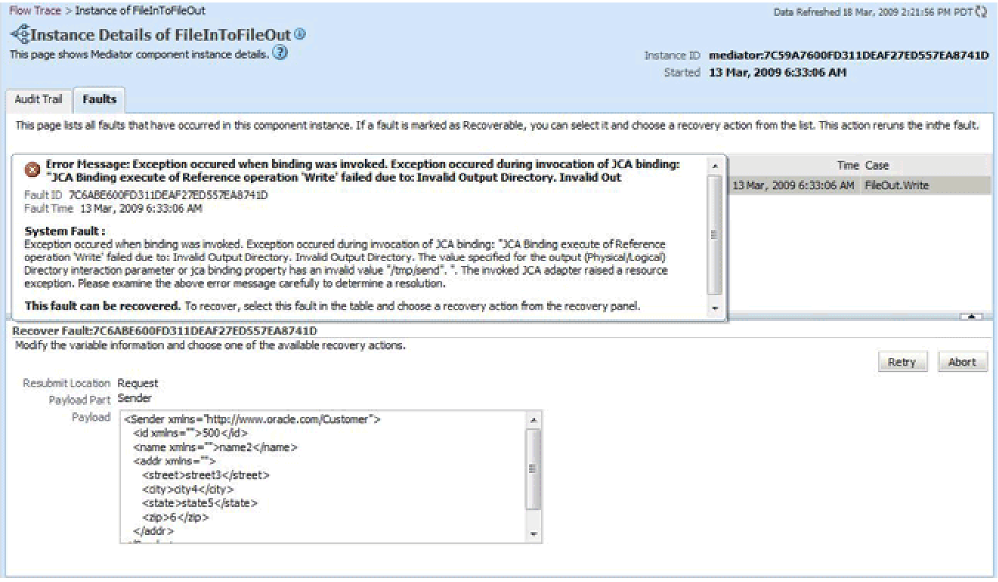
Instance ID **mediator:7C59A7600FD311DEAF27ED557EA8741D**

Started **13 Mar, 2009 6:33:06 AM**

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.

Message	Recovery	Time	Case
Exception occured when binding was in	Recoverable	13 Mar, 2009 6:33:06 AM	FileOut.Write

8. Select the fault by clicking Message. The details of the fault are displayed in the lower pane.



Flow Trace > Instance of FileInToFileOut

Data Refreshed 18 Mar, 2009 2:21:56 PM PDT

Instance Details of FileInToFileOut

This page shows Mediator component instance details.

Instance ID **mediator:7C59A7600FD311DEAF27ED557EA8741D**

Started **13 Mar, 2009 6:33:06 AM**

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 inthe fault.

Error Message: Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binding execute of Reference operation 'Write' failed due to: Invalid Output Directory. Invalid Out

Fault ID 7C6ABE600FD311DEAF27ED557EA8741D

Fault Time 13 Mar, 2009 6:33:06 AM

System Fault :

Exception occured when binding was invoked. Exception occured 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 "/tmp/send". ". 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	Case
13 Mar, 2009 6:33:06 AM	FileOut.Write

Recover Fault:7C6ABE600FD311DEAF27ED557EA8741D

Modify the variable information and choose one of the available recovery actions.

Resubmit Location Request

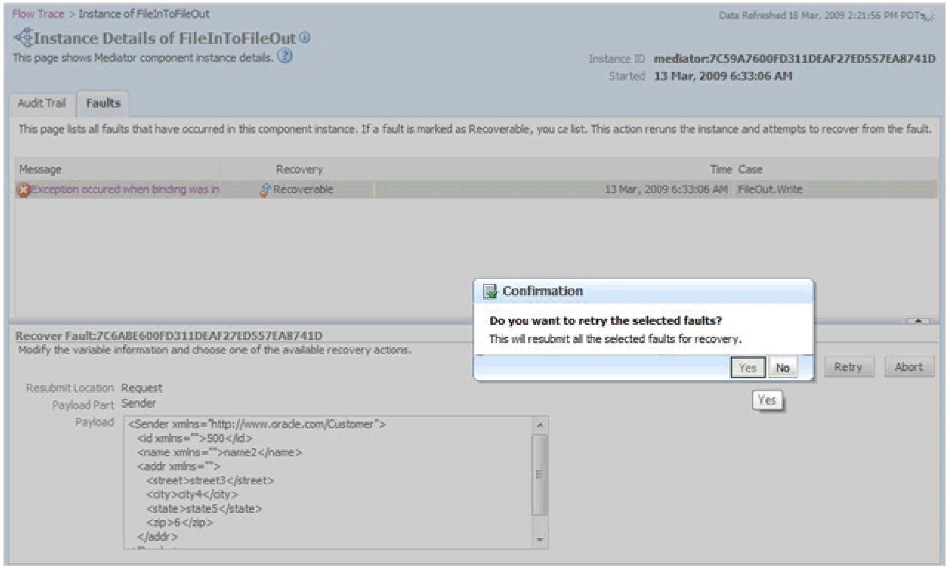
Payload Part Sender

Payload

```
<Sender xmlns="http://www.oracle.com/Customer">
  <id xmlns="">500</id>
  <name xmlns="">name2</name>
  <addr xmlns="">
    <street>street3</street>
    <city>city4</city>
    <state>state5</state>
    <zip>6</zip>
  </addr>
```

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:



Data Refreshed 18 Mar, 2009 2:21:56 PM PDT

Instance Details of FileInToFileOut

This page shows Mediator component instance details.

Instance ID mediator:7C59A7600FD311DEAF27ED557EA8741D
Started 13 Mar, 2009 6:33:06 AM

This page lists all faults that have occurred in this component instance. If a fault is marked as Recoverable, you ca list. This action reruns the instance and attempts to recover from the fault.

Message	Recovery	Time	Case
Exception occured when binding was in	Recoverable	13 Mar, 2009 6:33:06 AM	FileOut.Write

Recover Fault:7C6ABE600FD311DEAF27ED557EA8741D

Modify the variable information and choose one of the available recovery actions.

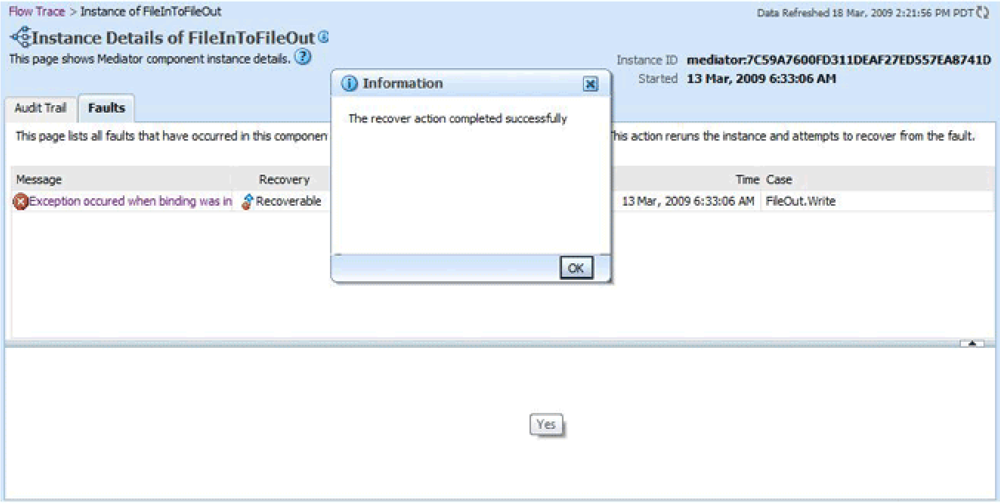
Resubmit Location Request
Payload Part Sender
Payload

```
<Sender xmlns="http://www.oracle.com/Customer">
  <id xmlns="">500</id>
  <name xmlns="">name2</name>
  <addr xmlns="">
    <street>street3</street>
    <city>city4</city>
    <state>state5</state>
    <zip>6</zip>
  </addr>
```

Do you want to retry the selected faults?

This will resubmit all the selected faults for recovery.

You will get the following Information dialog that displays the status of the recovery action.



Data Refreshed 18 Mar, 2009 2:21:56 PM PDT

Instance Details of FileInToFileOut

This page shows Mediator component instance details.

Instance ID mediator:7C59A7600FD311DEAF27ED557EA8741D
Started 13 Mar, 2009 6:33:06 AM

This page lists all faults that have occurred in this componen his action reruns the instance and attempts to recover from the fault.

Message	Recovery	Time	Case
Exception occured when binding was in	Recoverable	13 Mar, 2009 6:33:06 AM	FileOut.Write

The recover action completed successfully

16.2.1 What You May Need to Know About the Information in the Faults Tab

The Faults tab of the Oracle 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 Oracle Mediator Service Engine Home page provides the following information about faults:

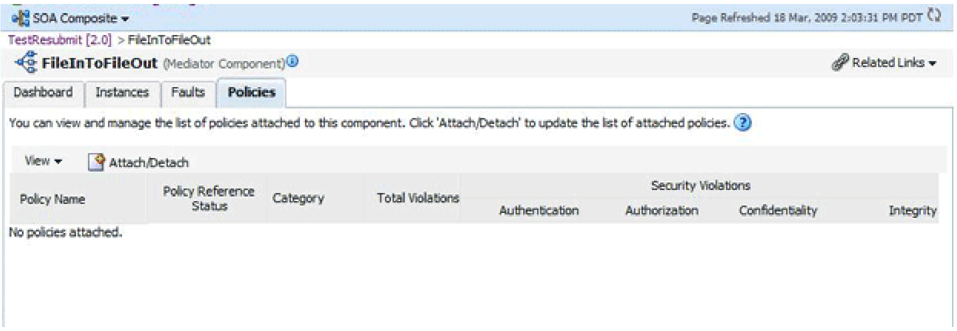
- Fault ID - The ID of the fault. This number is automatically generated and uniquely identifies a fault. This column does not automatically display in this table. To display this column, select **Columns**, then **Fault ID** from the View menu. The fault ID also displays when you click an error message.
- 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 Oracle 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.

16.3 Managing Oracle 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 Oracle Mediator policies:

1. Open the Oracle Mediator Component Home page.
2. Click **Policies**.
3. View the policies attached to a Oracle Mediator component.


SOA Composite
Page Refreshed 18 Mar, 2009 2:03:31 PM PDT
TestResubmit [2.0] > FileInToFileOut
FileInToFileOut (Mediator Component)
Related Links
Dashboard
Instances
Faults
Policies
View
Attach/Detach

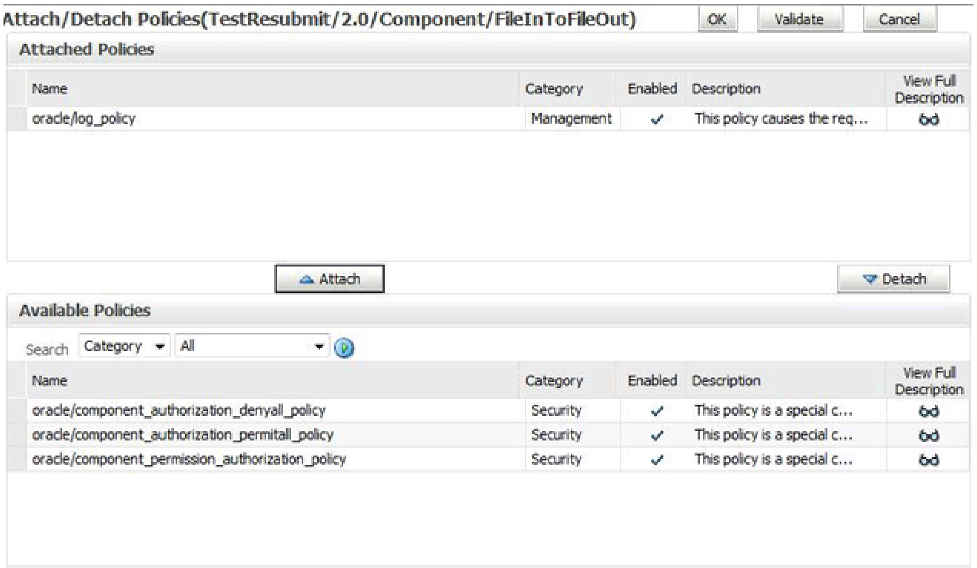
You can view and manage the list of policies attached to this component. Click 'Attach/Detach' to update the list of attached policies.

Policy Name	Policy Reference Status	Category	Total Violations	Security Violations			
				Authentication	Authorization	Confidentiality	Integrity

No policies attached.

4. 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.


Attach/Detach Policies(TestResubmit/2.0/Component/FileInToFileOut)
OK
Validate
Cancel
Attach
Detach
Search
Category
All

Attached Policies

Name	Category	Enabled	Description	View Full Description
oracle/log_policy	Management	✓	This policy causes the req...	👓

Available Policies

Name	Category	Enabled	Description	View Full Description
oracle/component_authorization_denyall_policy	Security	✓	This policy is a special c...	👓
oracle/component_authorization_permitall_policy	Security	✓	This policy is a special c...	👓
oracle/component_permission_authorization_policy	Security	✓	This policy is a special c...	👓

5. Click a policy in the lower pane to select it and click **Attach** to attach it to the Oracle Mediator component. Click a policy to in the upper pane to select it and click **Detach** to detach it from the Oracle Mediator component.

16.3.1 What You May Need to Know About the Information in the Policies Tab

The Policies tab of the Oracle Mediator Component Home page provides the following information about an Oracle 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.

17

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, see “Resequencing in Oracle Mediator” in the Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite.

This chapter includes the following topics:

- Section 17.1, "Configuring Resequenced Messages"
- Section 17.2, "Monitoring Resequenced Messages"

17.1 Configuring Resequenced Messages

For Oracle Mediator components configured to resequence messages, you must configure the following:

- The worker thread count
- The maximum number of groups that can be locked by a thread
- The sleep interval

If the Oracle Mediator component is configured to use best effort resequencing and the messages to process in each batch are based on a time window rather than a maximum number of rows, you can also configure the buffer window.

To configure resequenced messages:

1. Access the Oracle Mediator Service Engine Properties page or the MBean Browser using one of the methods described in Chapter 14, "Configuring Oracle Mediator Service Components and Engines".
2. Enter a value for the following Oracle Mediator properties:
   - `ResequencerWorkerThreadCount`: The number of threads used by resequencers.
   - `ResequencerMaxGroupsLocked`: The maximum number of group rows that are retrieved for each locking cycle.
   - `ResequencerLockerThreadSleep`: The length of time in seconds for the deferred locker to sleep when there are no messages in the database.
3. To configure the buffer window for the time window in best effort resequencing, enter the following in the `Parameters` property:

   ```
   buffer.window=x
   ```

Where "x" is the percentage of the configured time window to add to the buffer. For example, `buffer.window=20` means that 20% of the length of the time window is added as a buffer.

4. Click **Apply**.

17.2 Monitoring Resequenced Messages

You can monitor the resequenced messages from the following pages:

- Section 17.2.1, "Oracle Mediator Component Home Page"
- Section 17.2.2, "Mediator Instance Window"

17.2.1 Oracle Mediator Component Home Page

You can use the following tabs of the Oracle Mediator Component Home page for monitoring resequenced messages:

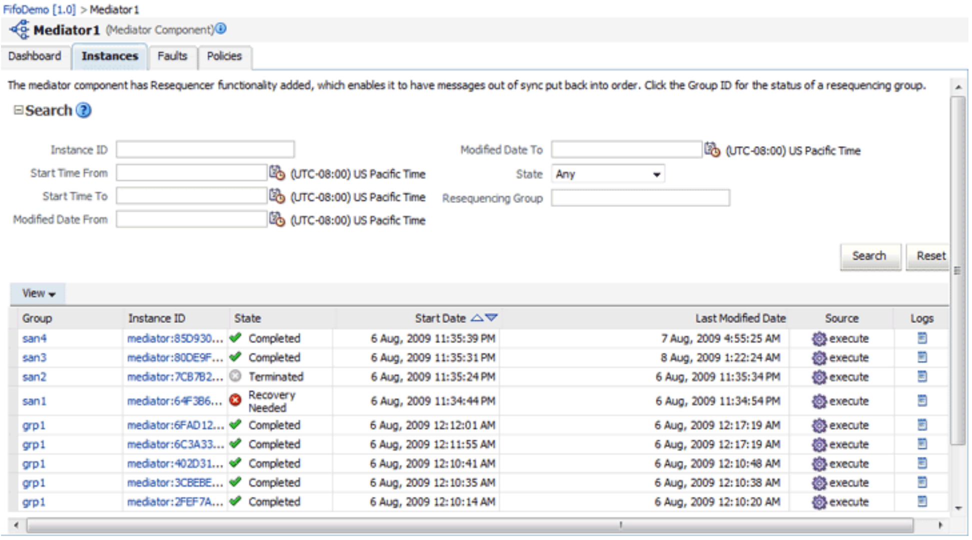
- Section 17.2.1.1, "Dashboard Tab"
- Section 17.2.1.2, "Instances Tab"
- Section 17.2.1.3, "Faults Tab"

17.2.1.1 Dashboard Tab

The Dashboard tab of the Oracle 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 17.2.1.4, "Mediator Resequencing Group Dialog" and for more information on the Dashboard tab, refer to Section 15.1.2, "Viewing Oracle Mediator Instance Information".

17.2.1.2 Instances Tab

The Instances tab of the Oracle Mediator Component Home page provides an additional field, **Resequencing Group**, to search for an Oracle Mediator component instance, while specifying a search criterion. The Instances table that displays information of Oracle 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 17.2.1.4, "Mediator Resequencing Group Dialog" and for more information on the Instances tab, refer to Section 15.1.2, "Viewing Oracle Mediator Instance Information".

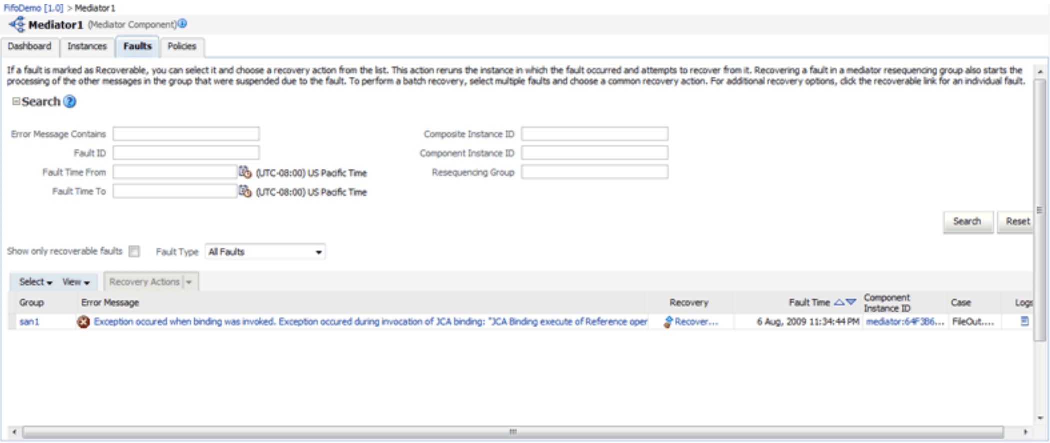


The mediator component has Resequencer functionality added, which enables it to have messages out of sync put back into order. Click the Group ID for the status of a resequencing group.

Group	Instance ID	State	Start Date	Last Modified Date	Source	Logs
san4	mediator:85D930...	✓ 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	

17.2.1.3 Faults Tab

The Faults tab of the Oracle Mediator Component Home page provides an additional field, **Resequencing Group**, to search for an Oracle Mediator Component instance, while specifying a search criterion. The Faults table that displays information of Oracle 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 17.2.1.4, "Mediator Resequencing Group Dialog" and for more information on the Faults tab, refer to Section 16.2, "Managing Oracle Mediator Faults".



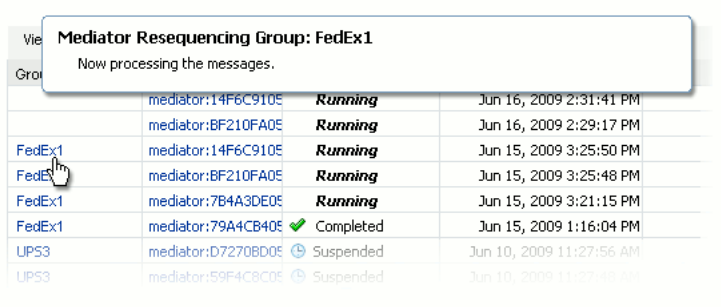
If a fault is marked as Recoverable, you can select it and choose a recovery action from the list. This action reruns the instance in which the fault occurred and attempts to recover from it. Recovering a fault in a mediator resequencing group also starts the processing of the other messages in the group that were suspended due to the fault. To perform a batch recovery, select multiple faults and choose a common recovery action. For additional recovery options, click the recoverable link for an individual fault.

Show only recoverable faults ☐ Fault Type All Faults

Group	Error Message	Recovery	Fault Time	Component Instance ID	Case	Logs
san1	Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binding execute of Reference oper	Recover...	6 Aug, 2009 11:34:44 PM	mediator:64F3B6...	FileOut....	

17.2.1.4 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.



Mediator Resequencing Group: FedEx1

Now processing the messages.

	mediator:14F6C9105	***Running***	Jun 16, 2009 2:31:41 PM
	mediator:BF210FA05	***Running***	Jun 16, 2009 2:29:17 PM
FedEx1	mediator:14F6C9105	***Running***	Jun 15, 2009 3:25:50 PM
FedE	mediator:BF210FA05	***Running***	Jun 15, 2009 3:25:48 PM
FedEx1	mediator:7B4A3DE05	***Running***	Jun 15, 2009 3:21:15 PM
FedEx1	mediator:79A4CB405	✓ Completed	Jun 15, 2009 1:16:04 PM
UPS3	mediator:D7270BD05	Suspended	Jun 10, 2009 11:27:56 AM
UPS3	mediator:59F4C8C05	Suspended	Jun 10, 2009 11:27:48 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:

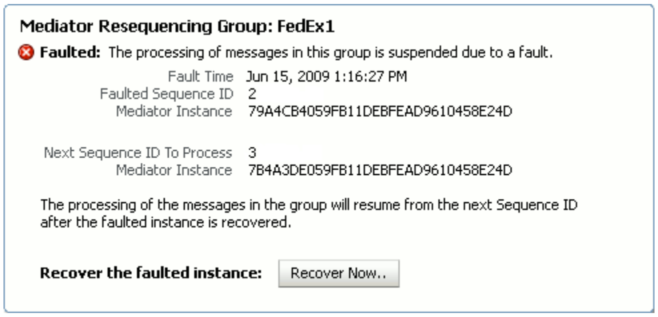
- Group Is Faulted
- Group Is Timed-out
- Group Is Faulted Due to a System Error

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 Oracle 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.

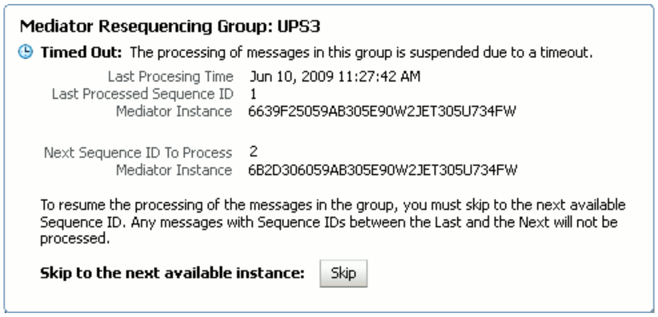
Recover the faulted instance:

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 Oracle 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 Procesing 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.

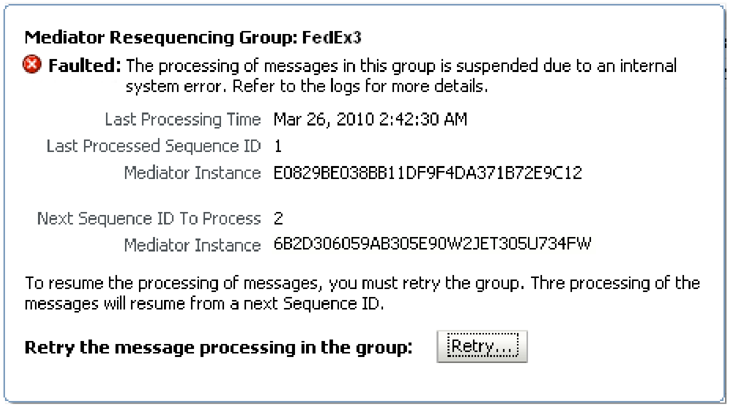
Skip to the next available instance:

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 Oracle 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

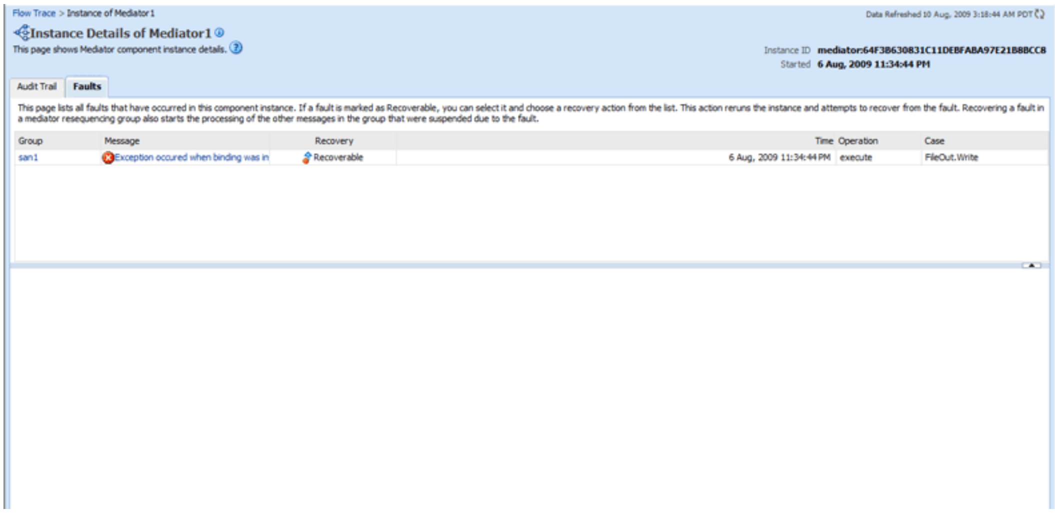
To resume the processing of messages, you must retry the group. Thre processing of the messages will resume from a next Sequence ID.

Retry the message processing in the group:

17.2.2 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 Mediator1
Instance Details of Mediator1
Audit Trail
Faults

Data Refreshed 10 Aug, 2009 3:18:44 AM PDT

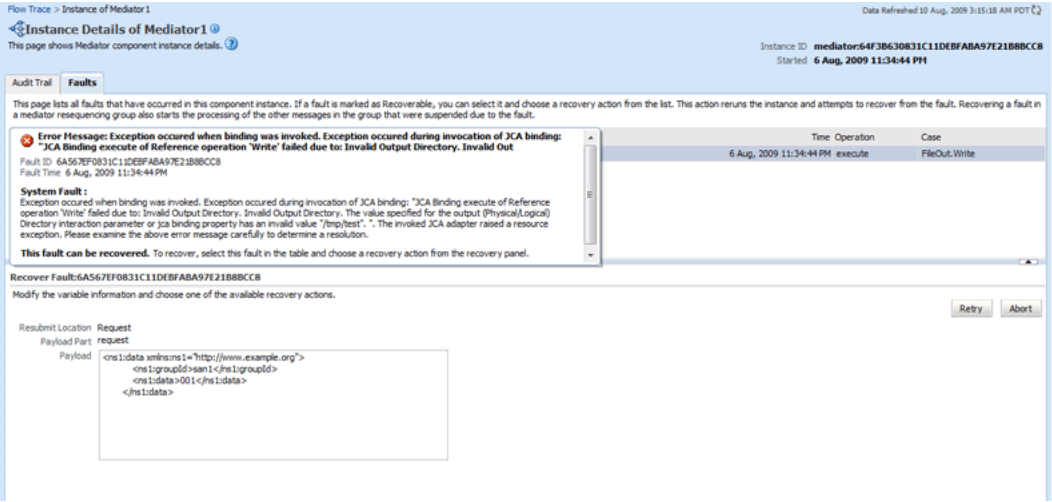
This page shows Mediator component instance details.

Instance ID **mediator:64F3B630831C11DEBFABA97E21B8BCC8**
Started **6 Aug, 2009 11:34:44 PM**

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 occured 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 Oracle 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
Instance Details of Mediator1
Audit Trail
Faults
Retry
Abort

Data Refreshed 10 Aug, 2009 3:15:18 AM PDT

This page shows Mediator component instance details.

Instance ID **mediator:64F3B630831C11DEBFABA97E21B8BCC8**
Started **6 Aug, 2009 11:34:44 PM**

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 occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binding execute of Reference operation 'Write' failed due to: Invalid Output Directory. Invalid Out

Fault ID 6A567EF0831C11DEBFABA97E21B8BCC8
Fault Time 6 Aug, 2009 11:34:44 PM

System Fault :
Exception occured when binding was invoked. Exception occured 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 "/tmp/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:6A567EF0831C11DEBFABA97E21B8BCC8

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>
```

18

Managing Cross-References

Cross-references enable you to associate identifiers for equivalent entities created in different applications. This chapter describes how to manage cross-references.

For more information about cross-references, refer to Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite.

This chapter includes the following topics:

- Section 18.1, "Deleting Cross-Reference Values"

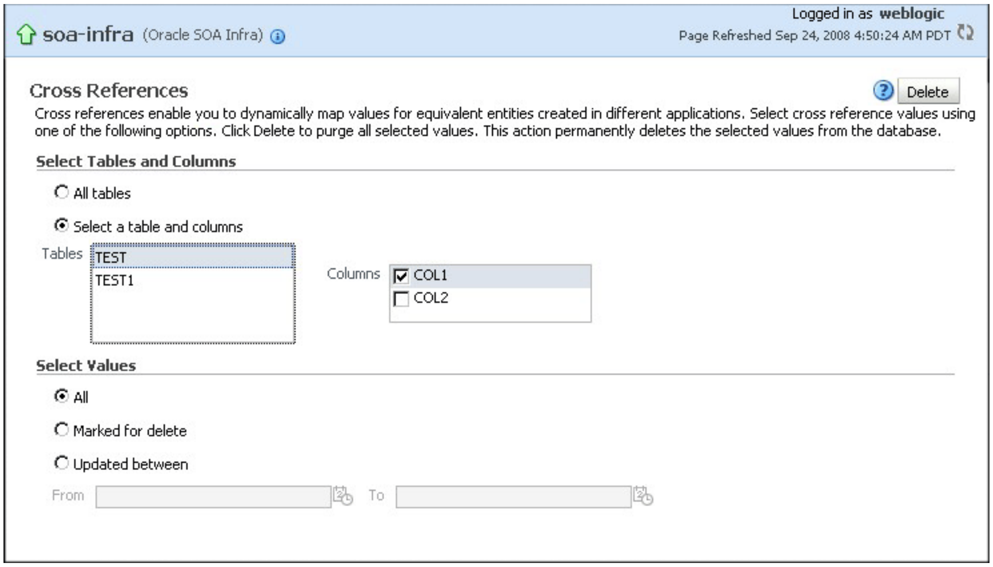
18.1 Deleting Cross-Reference Values

You can use the Cross References page to select tables and columns from which you want to delete the values.

To delete values from cross-reference tables and columns:

1. Open the SOA Infrastructure Home page.
2. From the **SOA Infrastructure** menu, select **SOA Administration** and then **Cross References**.

   The Cross References page is displayed.



soa-infra (Oracle SOA Infra)

Logged in as **weblogic**

Page Refreshed Sep 24, 2008 4:50:24 AM PDT

Cross References

Cross references enable you to dynamically map values for equivalent entities created in different applications. Select cross reference values using one of the following options. Click Delete to purge all selected values. This action permanently deletes the selected values from the database.

Select Tables and Columns

○ All tables

● Select a table and columns

Tables: TEST, TEST1

Columns: ☑ COL1 ☐ COL2

Select Values

● All

○ Marked for delete

○ Updated between

From To

3. In the **Select Tables and Columns** section, select one of the following options:
   - **All tables**: To delete values from all tables.

- **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 19, "Configuring Business Rules Engine"
- Chapter 20, "Monitoring Decision Service Components and Engines"
- Chapter 21, "Tracing Rule Execution in Fusion Middleware Control Console"

19

Configuring Business Rules Engine

This chapter describes how to configure Business Rules Engines.

This chapter includes the following topics:

- Section 19.1, "Configuring the Business Rules Engine"

19.1 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 20, "Monitoring Decision Service Components and Engines".

20

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 20.1, "Monitoring Business Rules Service Engine Instances and Faults"
- Section 20.2, "Monitoring Business Rules Service Engine Statistics"
- Section 20.3, "Monitoring Business Rules Service Engine Instances"
- Section 20.4, "Monitoring Business Rules Service Engine Faults"
- Section 20.5, "Monitoring Business Rules Service Engine Deployed Components"
- Section 20.6, "Monitoring Decision Service Component Instances from a Composite Application"
- Section 20.7, "Monitoring Decision Service Component Logs"

20.1 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.

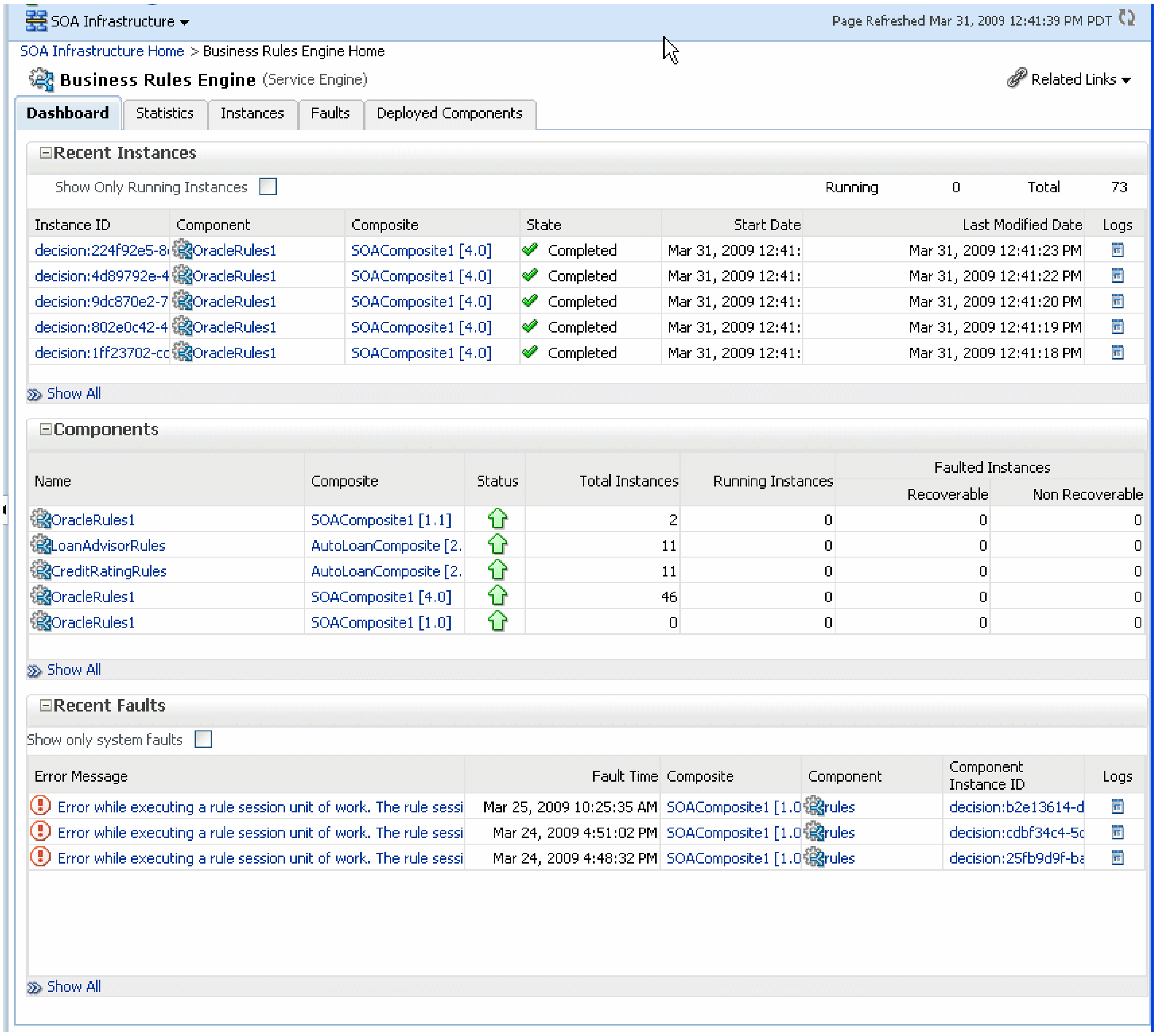
1. Access the Business Rules Engine home page through one of the following options:

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".


SOA Infrastructure ▾
Page Refreshed Mar 31, 2009 12:41:39 PM PDT
SOA Infrastructure Home > Business Rules Engine Home
Business Rules Engine (Service Engine)
Related Links ▾
Dashboard
Statistics
Instances
Faults
Deployed Components
Recent Instances
Show Only Running Instances ☐
Running 0 Total 73

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	▤
decision:4d89792e-4	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:22 PM	▤
decision:9dc870e2-7	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:20 PM	▤
decision:802e0c42-4	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:19 PM	▤
decision:1ff23702-cc	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 31, 2009 12:41:	Mar 31, 2009 12:41:18 PM	▤

Name	Composite	Status	Total Instances	Running Instances	Faulted Instances	
					Recoverable	Non Recoverable
OracleRules1	SOAComposite1 [1.1]	⇧	2	0	0	0
LoanAdvisorRules	AutoLoanComposite [2.	⇧	11	0	0	0
CreditRatingRules	AutoLoanComposite [2.	⇧	11	0	0	0
OracleRules1	SOAComposite1 [4.0]	⇧	46	0	0	0
OracleRules1	SOAComposite1 [1.0]	⇧	0	0	0	0

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	▤
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	▤
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-ba	▤

3. 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".

20.2 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:

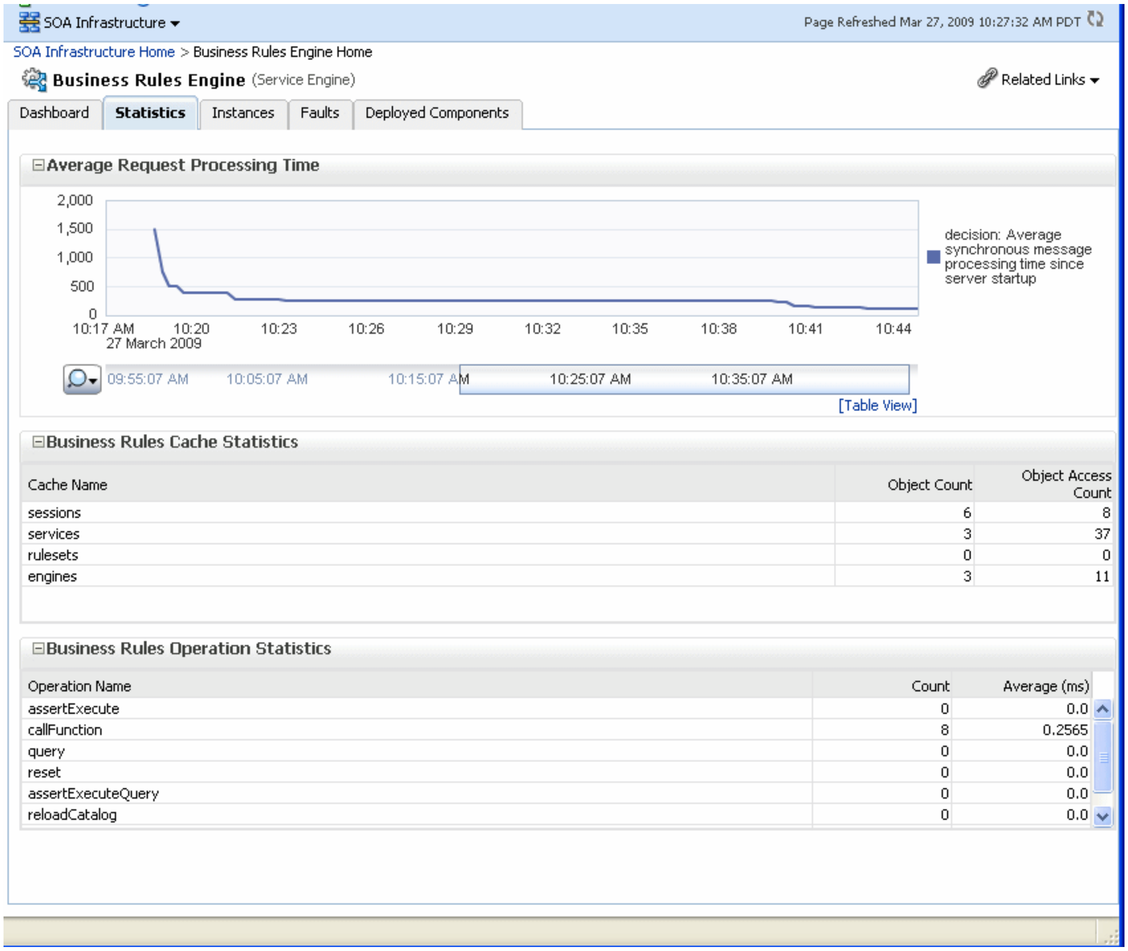
From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
Select **Service Engines > Business Rules**.	1. Select **soa-infra**. 2. Right-click and select **Service Engines** > **Business Rules**.

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 11*g* 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.


SOA Infrastructure
Page Refreshed Mar 27, 2009 10:27:32 AM PDT
SOA Infrastructure Home > Business Rules Engine Home
Business Rules Engine (Service Engine)
Related Links
Dashboard
Statistics
Instances
Faults
Deployed Components
Average Request Processing Time
2,000
1,500
1,000
500
0
10:17 AM
27 March 2009
10:20
10:23
10:26
10:29
10:32
10:35
10:38
10:41
10:44
decision: Average synchronous message processing time since server startup
09:55:07 AM
10:05:07 AM
10:15:07 AM
10:25:07 AM
10:35:07 AM
[Table View]

Business Rules Cache Statistics

Cache Name	Object Count	Object Access Count
sessions	6	8
services	3	37
rulesets	0	0
engines	3	11

Business Rules Operation Statistics

Operation Name	Count	Average (ms)
assertExecute	0	0.0
callFunction	8	0.2565
query	0	0.0
reset	0	0.0
assertExecuteQuery	0	0.0
reloadCatalog	0	0.0

20.3 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:

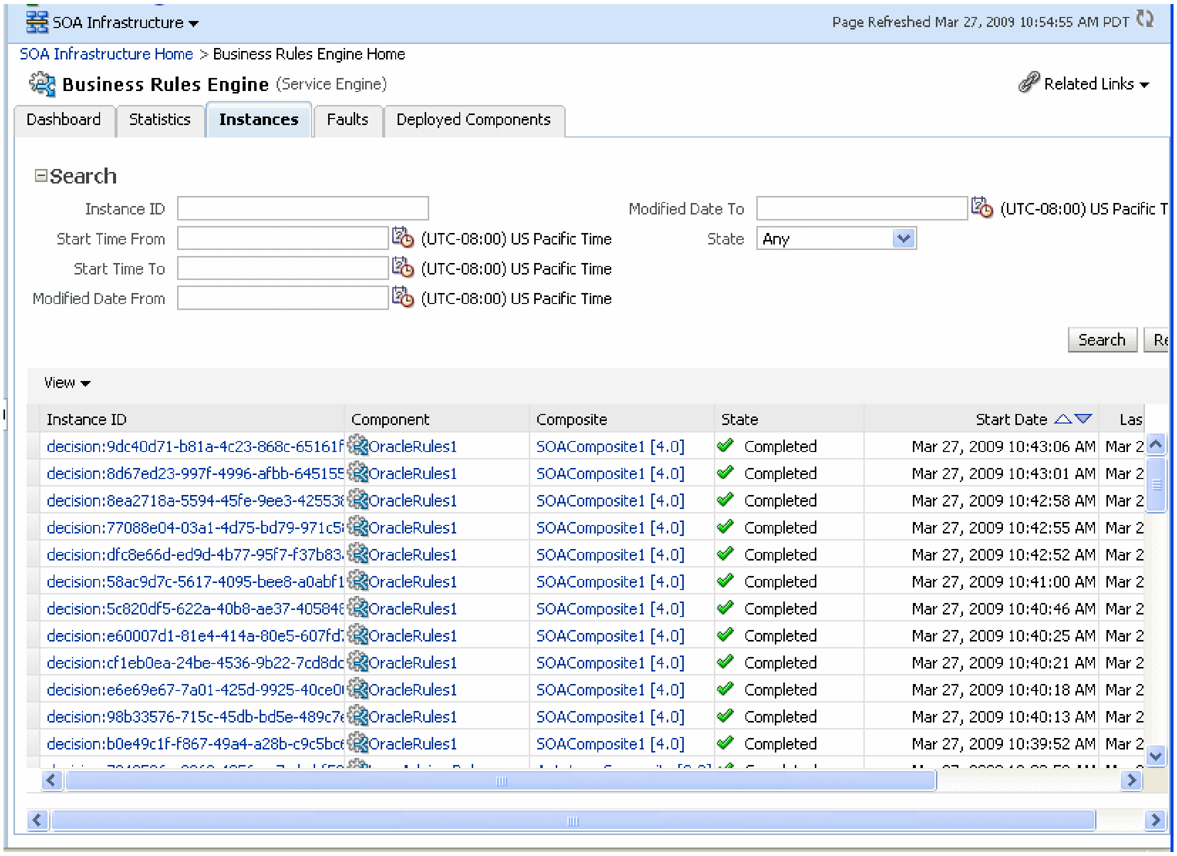
From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
Select **Service Engines > Business Rules**.	**1.** Select **soa-infra**. **2.** Right-click and select **Service Engines** > **Business Rules**.

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).


SOA Infrastructure
Page Refreshed Mar 27, 2009 10:54:55 AM PDT
SOA Infrastructure Home > Business Rules Engine Home
Business Rules Engine (Service Engine)
Related Links
Dashboard
Statistics
Instances
Faults
Deployed Components
Search
Search
Re
View

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 T
State	Any

Instance ID	Component	Composite	State	Start Date	Las
decision:9dc40d71-b81a-4c23-868c-65161f	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:43:06 AM	Mar 2
decision:8d67ed23-997f-4996-afbb-64515	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:43:01 AM	Mar 2
decision:8ea2718a-5594-45fe-9ee3-42553	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:42:58 AM	Mar 2
decision:77088e04-03a1-4d75-bd79-971c5	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:42:55 AM	Mar 2
decision:dfc8e66d-ed9d-4b77-95f7-f37b83	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:42:52 AM	Mar 2
decision:58ac9d7c-5617-4095-bee8-a0abf1	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:41:00 AM	Mar 2
decision:5c820df5-622a-40b8-ae37-40584	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:40:46 AM	Mar 2
decision:e60007d1-81e4-414a-80e5-607fd	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:40:25 AM	Mar 2
decision:cf1eb0ea-24be-4536-9b22-7cd8dc	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:40:21 AM	Mar 2
decision:e6e69e67-7a01-425d-9925-40ce0	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:40:18 AM	Mar 2
decision:98b33576-715c-45db-bd5e-489c7	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:40:13 AM	Mar 2
decision:b0e49c1f-f867-49a4-a28b-c9c5bc	OracleRules1	SOAComposite1 [4.0]	✓ Completed	Mar 27, 2009 10:39:52 AM	Mar 2

3. 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.

---

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.

For more information, see Section 1.2.4, "Understanding Service Components and Service Component Instances".

20.4 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:

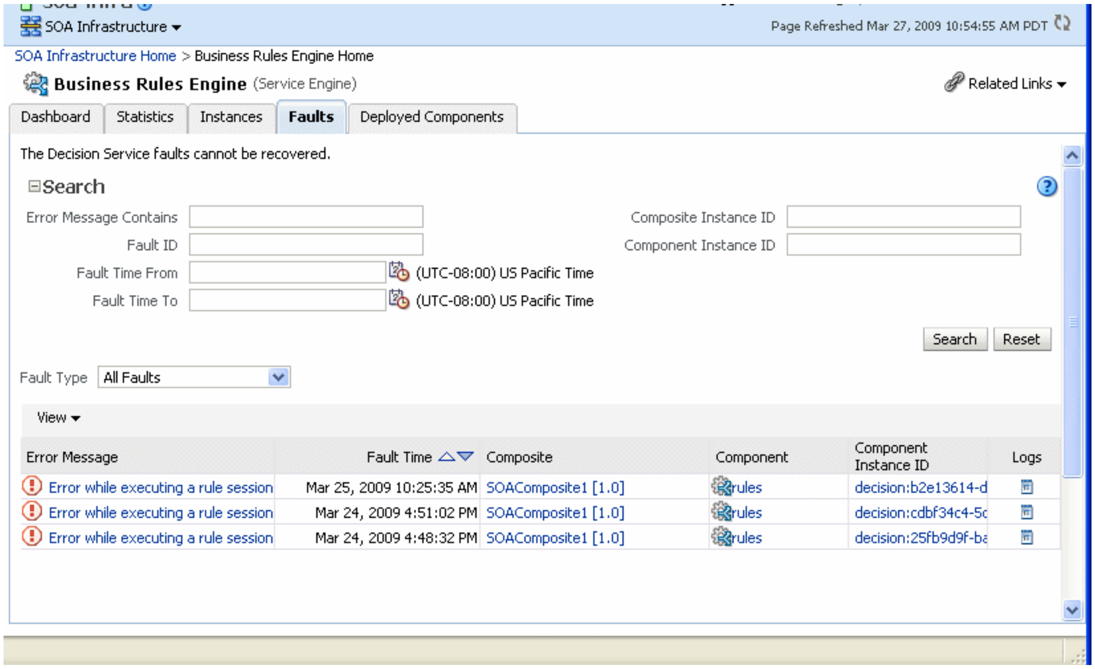
From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
Select **Service Engines** > **Business Rules**.	1. Right-click **soa-infra**. 2. Select **Service Engines** > **Business Rules**.

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 Decision Service faults cannot be recovered.

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	

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".

20.5 Monitoring Business Rules Service Engine Deployed Components

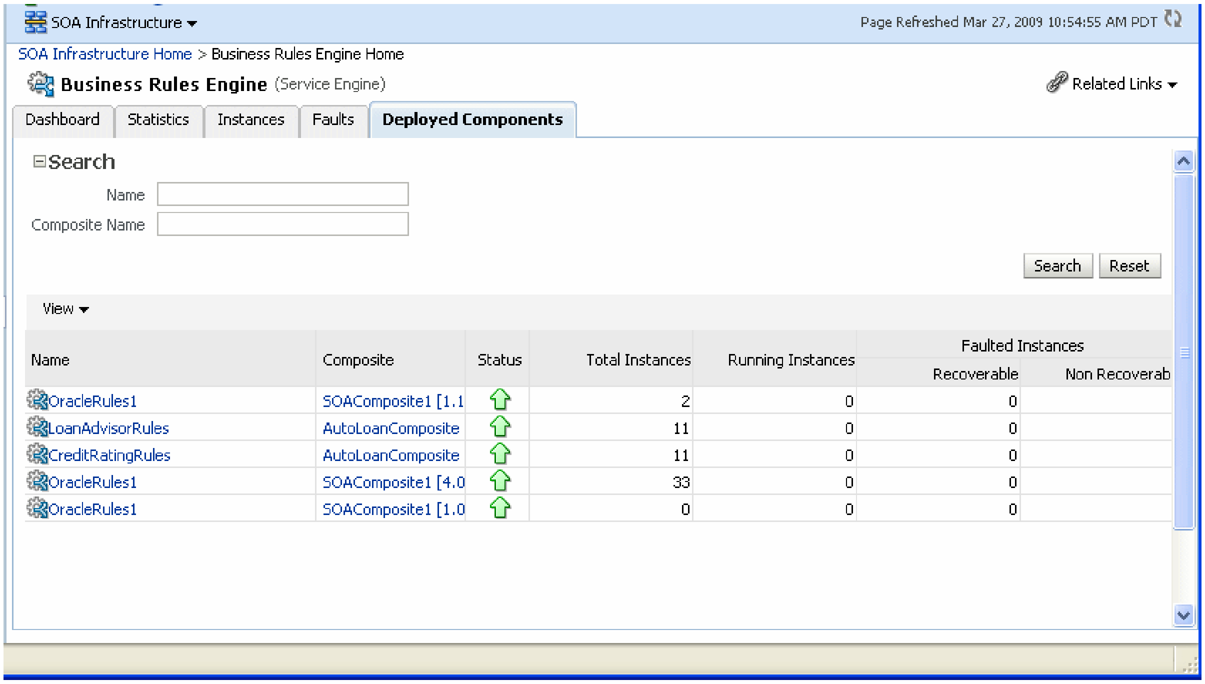
Using the Business Rules Engine home page **Deployed Components** tab, you can monitor all Decision Service components deployed across SOA composite applications. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

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**.	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
Page Refreshed Mar 27, 2009 10:54:55 AM PDT
SOA Infrastructure Home > Business Rules Engine Home
Business Rules 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 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".

20.6 Monitoring Decision Service Component Instances from a Composite Application

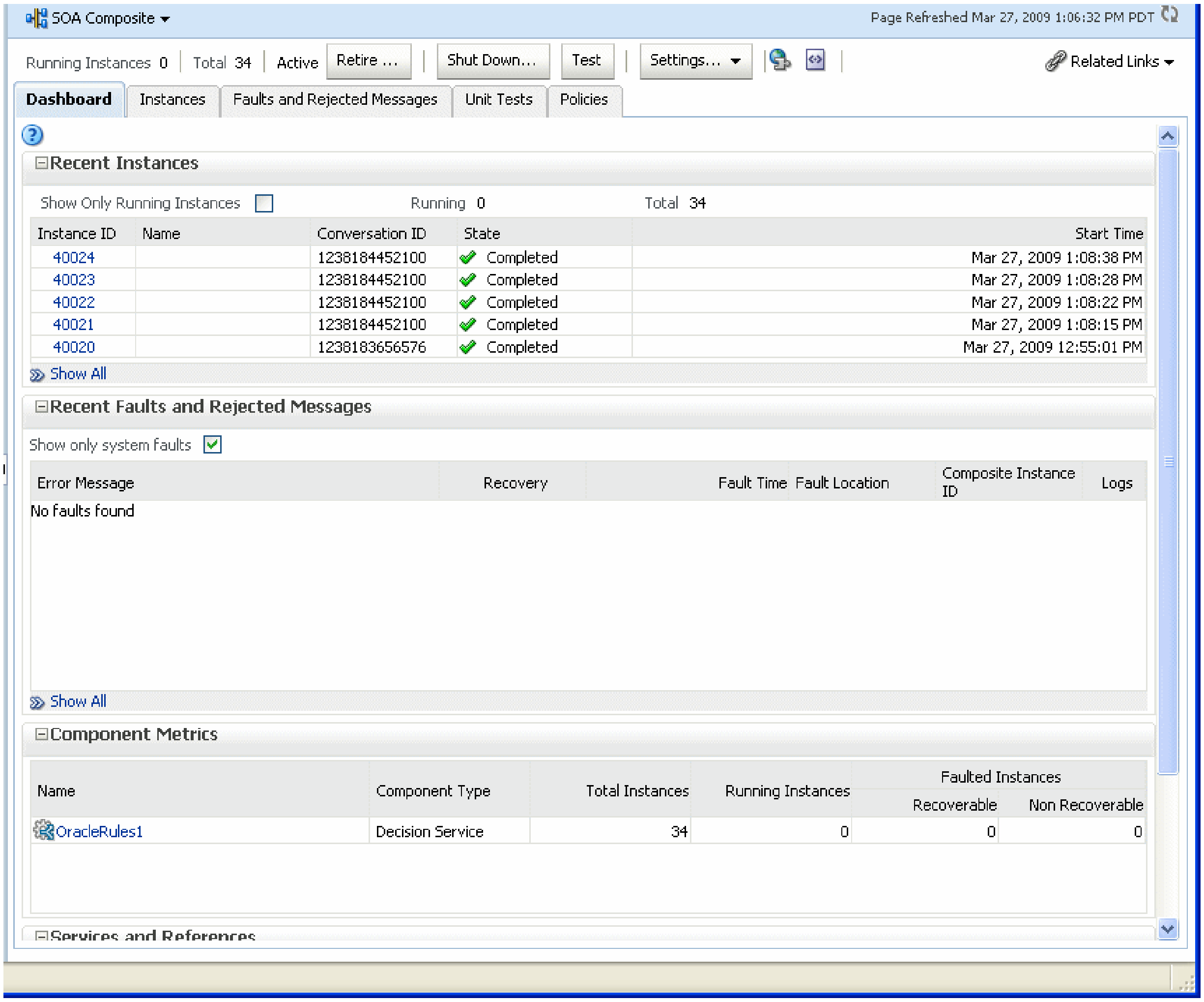
You can monitor Decision Service component instances from a composite application. Each Decision Service component instance has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this Decision Service component is a part. Decision Service 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...	From the SOA Folder in the Navigator...
1. In the navigator, select **soa-infra**.	1. Expand **soa-infra**.
2. From the **SOA Infrastructure** menu, Select **Home**.	2. Select a specific SOA composite application that includes a Decision Service component.
3. Click **Deployed Composites** tab.	
4. In the **Composite** table select a specific SOA composite application that includes a Decision Service component.	



Page Refreshed Mar 27, 2009 1:06:32 PM PDT

Running Instances 0 | Total 34 | Active

Recent Instances

Show Only Running Instances ☐ Running 0 Total 34

Instance ID	Name	Conversation ID	State	Start Time
40024		1238184452100	✓ Completed	Mar 27, 2009 1:08:38 PM
40023		1238184452100	✓ Completed	Mar 27, 2009 1:08:28 PM
40022		1238184452100	✓ Completed	Mar 27, 2009 1:08:22 PM
40021		1238184452100	✓ Completed	Mar 27, 2009 1:08:15 PM
40020		1238183656576	✓ Completed	Mar 27, 2009 12:55:01 PM

Recent Faults and Rejected Messages

Show only system faults ☑

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
No faults found					

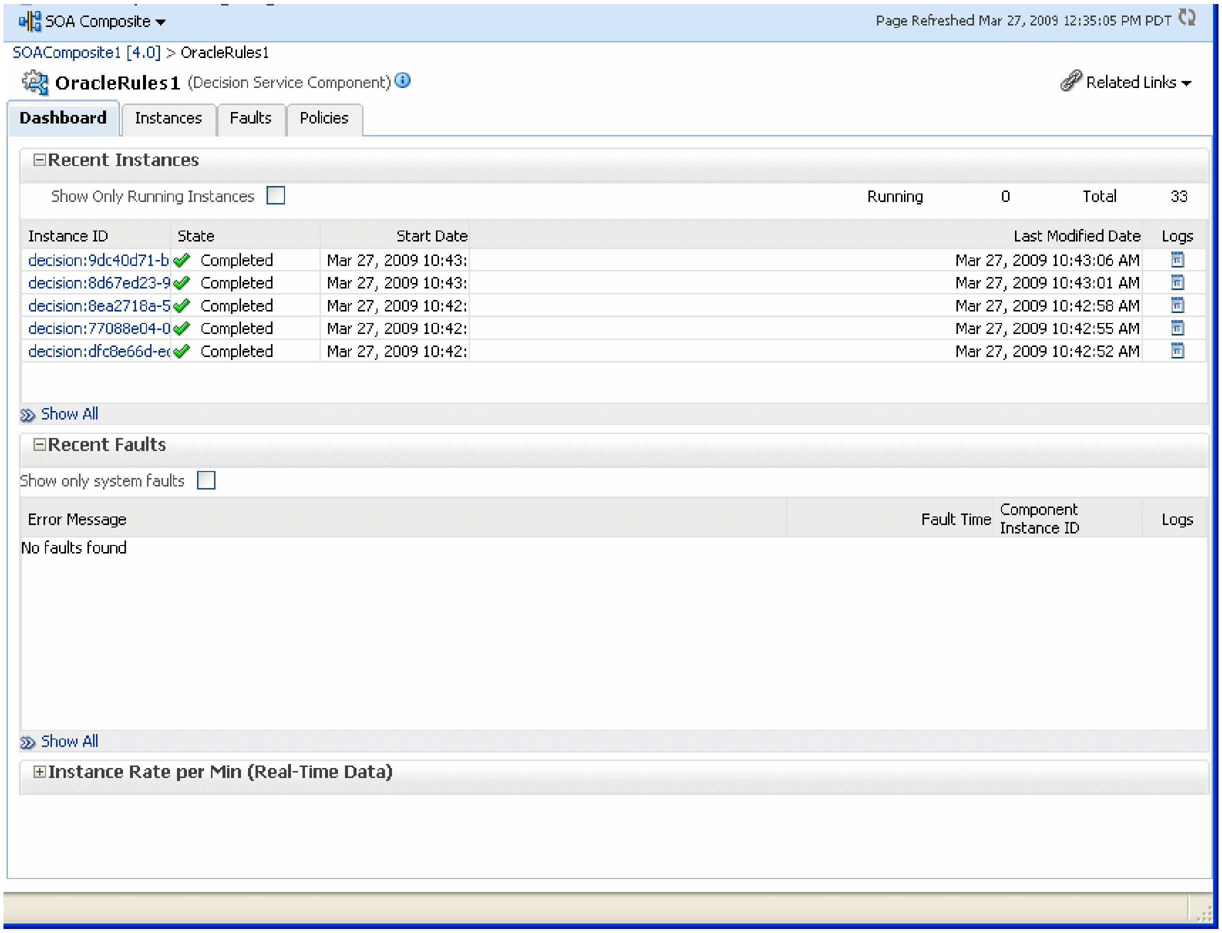
Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recoverable
OracleRules1	Decision Service	34	0	0	0

Services and References

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.



Page Refreshed Mar 27, 2009 12:35:05 PM PDT

SOAComposite1 [4.0] > OracleRules1

OracleRules1 (Decision Service Component)

Recent Instances

Show Only Running Instances ☐ Running 0 Total 33

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	
decision:8d67ed23-9	✓ Completed	Mar 27, 2009 10:43:	Mar 27, 2009 10:43:01 AM	
decision:8ea2718a-5	✓ Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:58 AM	
decision:77088e04-0	✓ Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:55 AM	
decision:dfc8e66d-e	✓ Completed	Mar 27, 2009 10:42:	Mar 27, 2009 10:42:52 AM	

Show All

Recent Faults

Show only system faults ☐

Error Message	Fault Time	Component Instance ID	Logs
No faults found			

Show All

Instance Rate per Min (Real-Time Data)

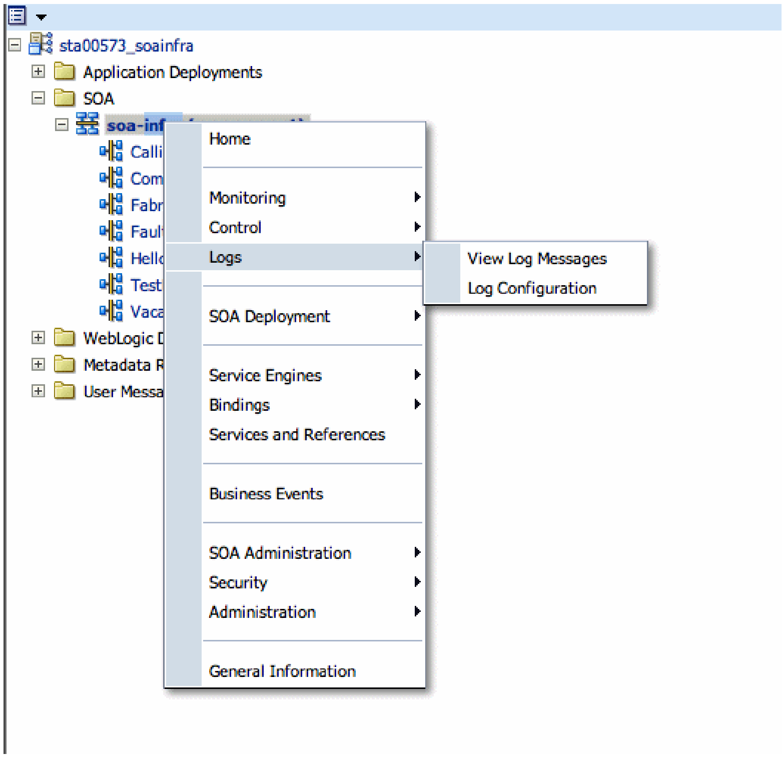
For more information, see Section 1.2.3, "Understanding SOA Composite Application Instances".

20.7 Monitoring Decision Service Component Logs

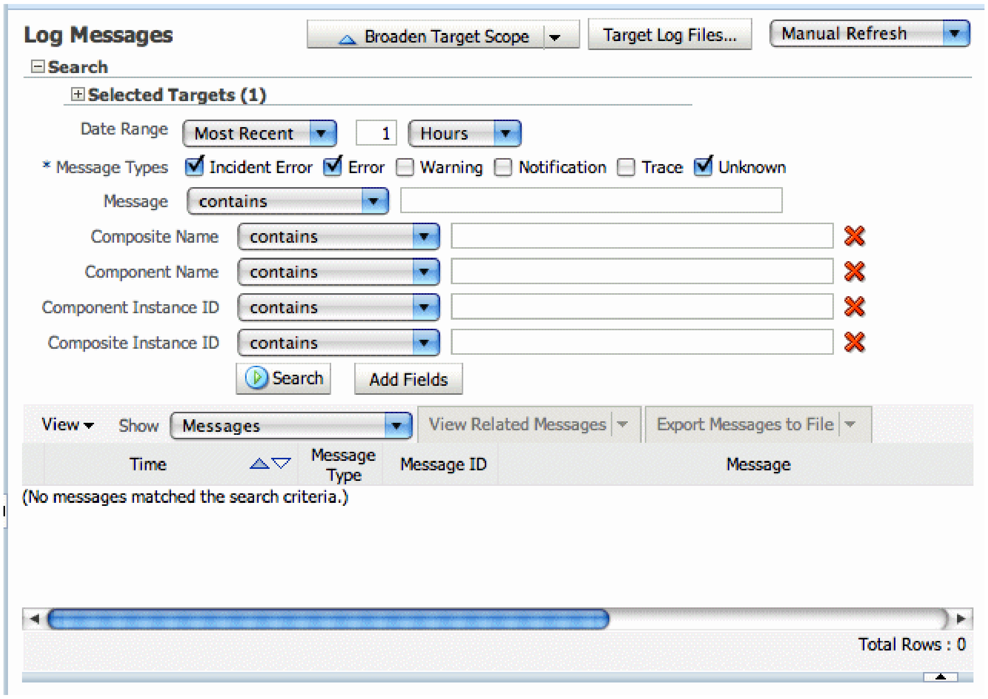
You can monitor Decision Service component logs. Decision Service Components are also called Business Rules components in the Oracle Fusion Middleware documentation.

20.7.1 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.



Date Range: Most Recent 1 Hours

* Message Types: ☑ Incident Error ☑ Error ☐ Warning ☐ Notification ☐ Trace ☑ Unknown

Message: contains

Composite Name: contains

Component Name: contains

Component Instance ID: contains

Composite Instance ID: contains

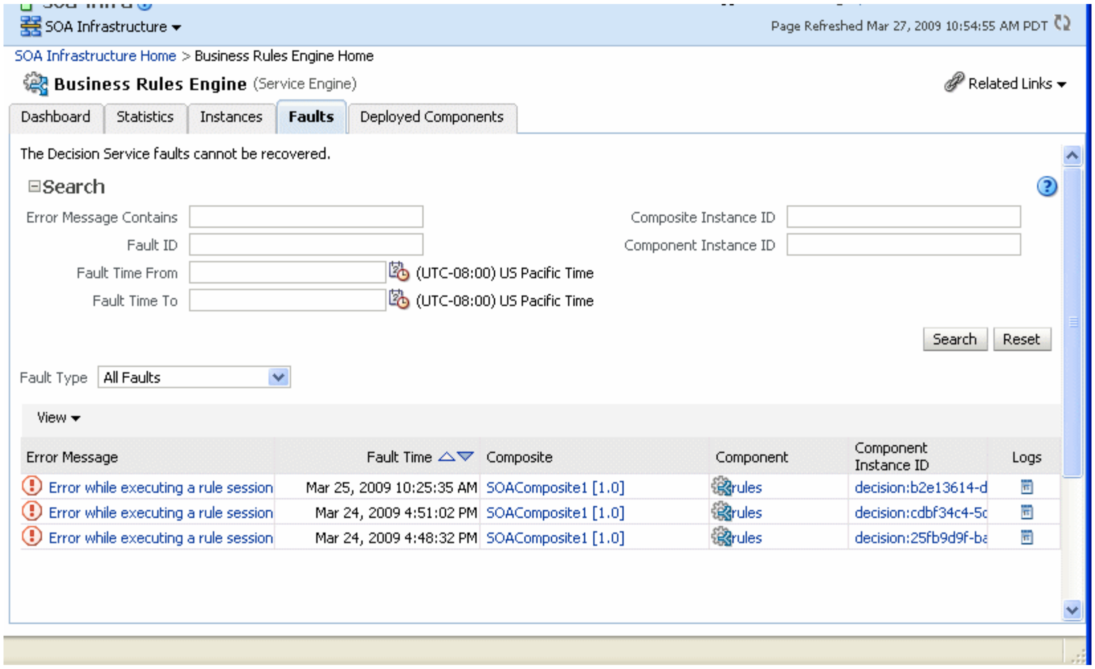
Show: Messages

(No messages matched the search criteria.)

Total Rows : 0

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

Page Refreshed Mar 27, 2009 10:54:55 AM PDT

SOA Infrastructure Home > Business Rules Engine Home

Business Rules Engine (Service Engine)

The Decision Service faults cannot be recovered.

Search

Error Message Contains

Composite Instance ID

Fault ID

Component Instance ID

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

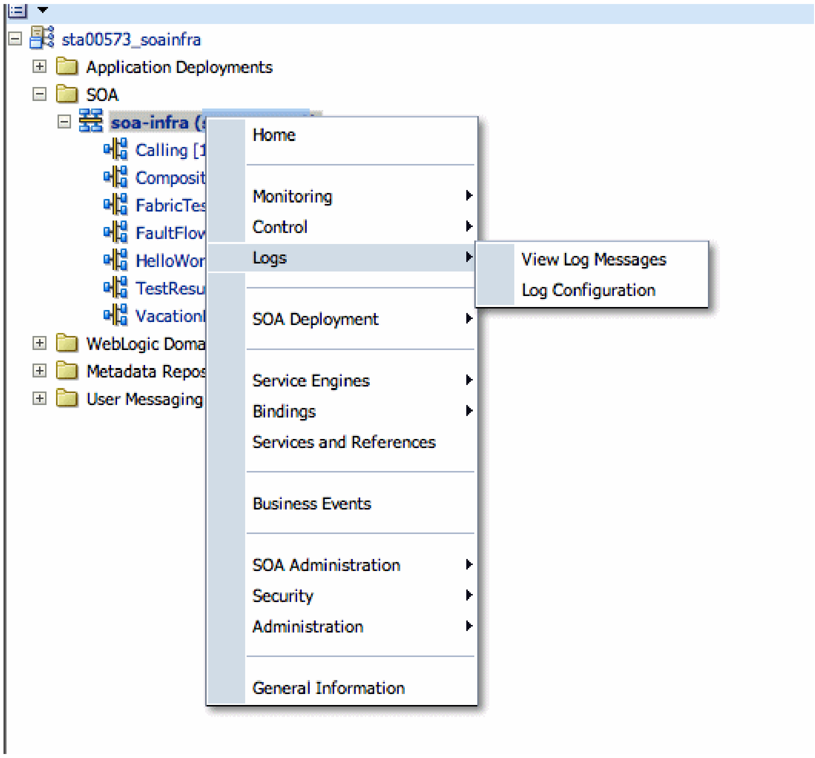
Fault Time To (UTC-08:00) US Pacific Time

Fault Type: All Faults

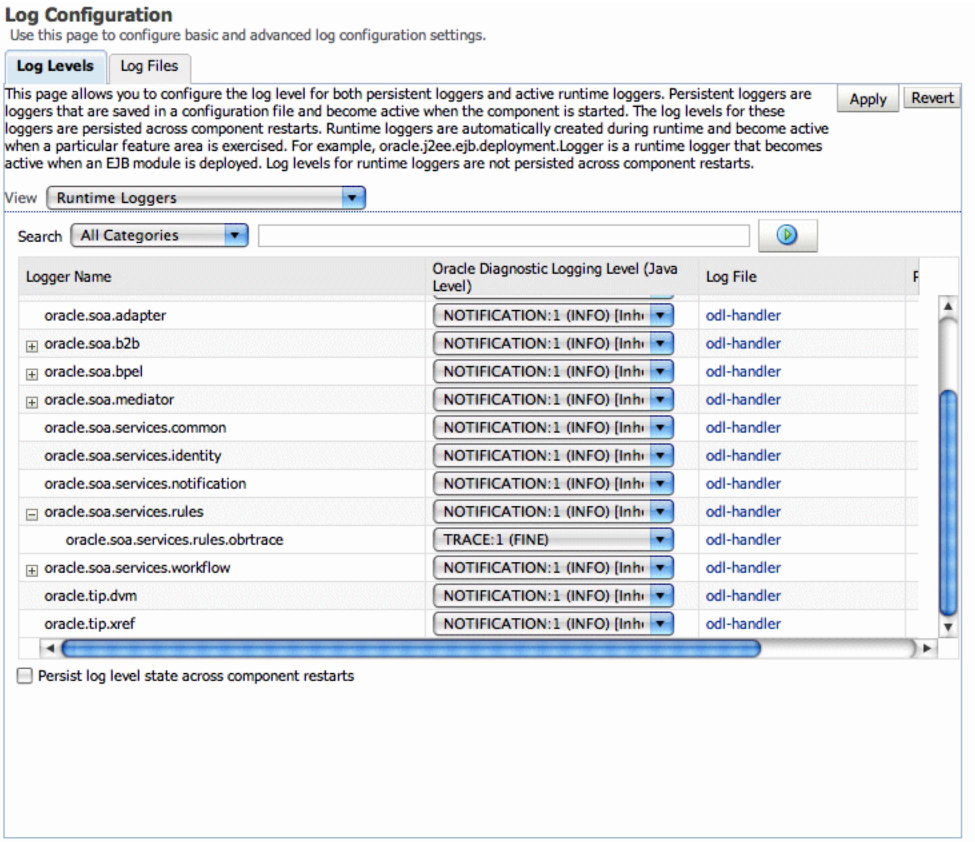
Error Message	Fault Time	Composite	Component	Component Instance ID	Logs
Error while executing a rule session	Mar 25, 2009 10:25:35 AM	SOAComposite1 [1.0]	rules	decision:b2e13614-d	
Error while executing a rule session	Mar 24, 2009 4:51:02 PM	SOAComposite1 [1.0]	rules	decision:cdbf34c4-5c	
Error while executing a rule session	Mar 24, 2009 4:48:32 PM	SOAComposite1 [1.0]	rules	decision:25fb9d9f-ba	

20.7.2 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**.



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
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.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	F
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

21

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 21.1, "The Oracle Enterprise Manager Fusion Middleware Control Console"
- Section 21.2, "Decision Tracing"
- Section 21.3, "Rule Execution Tracing Using Fusion Middleware Control Console"

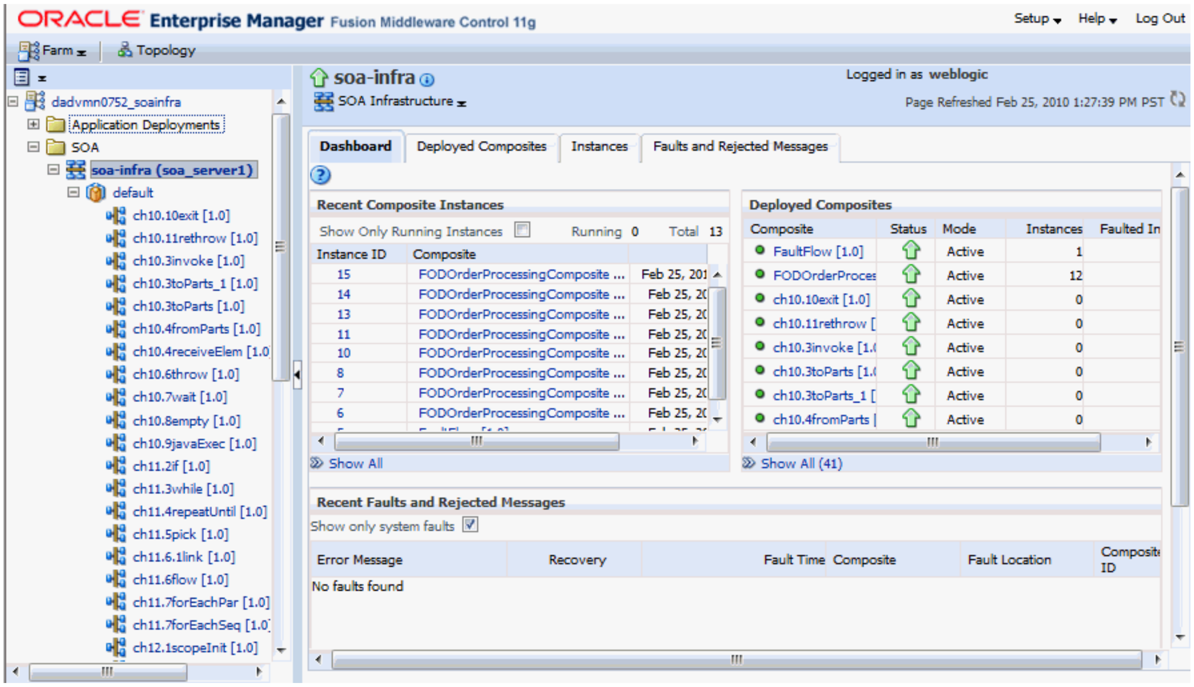
21.1 The Oracle Enterprise Manager Fusion Middleware Control Console

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 21–1 displays Oracle Enterprise Manager Fusion Middleware Control Console.

Figure 21–1 Oracle Enterprise Manager Fusion Middleware Control Console



Logged in as weblogic

Page Refreshed Feb 25, 2010 1:27:39 PM PST

Recent Composite Instances

Show Only Running Instances ☐ Running 0 Total 13

Instance ID	Composite	
15	FODOrderProcessingComposite ...	Feb 25, 201
14	FODOrderProcessingComposite ...	Feb 25, 2(
13	FODOrderProcessingComposite ...	Feb 25, 2(
11	FODOrderProcessingComposite ...	Feb 25, 2(
10	FODOrderProcessingComposite ...	Feb 25, 2(
8	FODOrderProcessingComposite ...	Feb 25, 2(
7	FODOrderProcessingComposite ...	Feb 25, 2(
6	FODOrderProcessingComposite ...	Feb 25, 2(

Deployed Composites

Composite	Status	Mode	Instances	Faulted In
FaultFlow [1.0]	⇧	Active	1	
FODOrderProces	⇧	Active	12	
ch10.10exit [1.0]	⇧	Active	0	
ch10.11rethrow [	⇧	Active	0	
ch10.3invoke [1.(	⇧	Active	0	
ch10.3toParts [1.(	⇧	Active	0	
ch10.3toParts_1 [	⇧	Active	0	
ch10.4fromParts [	⇧	Active	0	

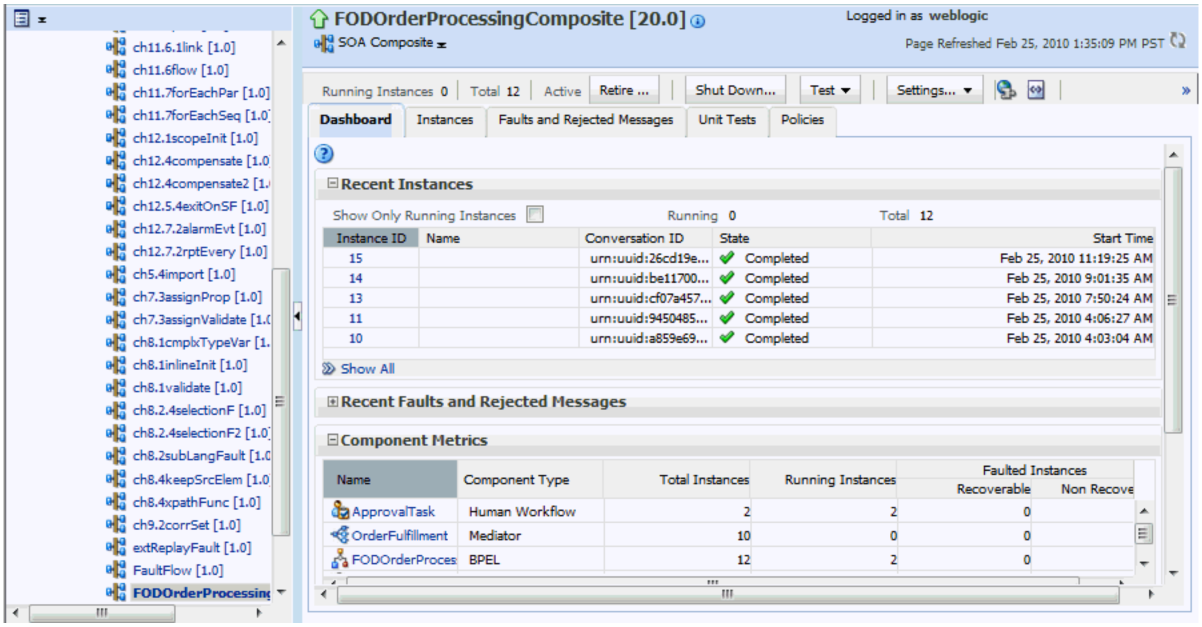
Recent Faults and Rejected Messages

Show only system faults ☑

Error Message	Recovery	Fault Time	Composite	Fault Location	Composite ID
No faults found					

You can click the composite names to view the related instance details, component metrics, and services as shown in Figure 21–2.

Figure 21–2 SOA Composite



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Page Refreshed Feb 25, 2010 1:35:09 PM PST

Running Instances 0 Total 12 Active

Recent Instances

Show Only Running Instances ☐ Running 0 Total 12

Instance ID	Name	Conversation ID	State	Start Time
15		urn:uuid:26cd19e...	✓ Completed	Feb 25, 2010 11:19:25 AM
14		urn:uuid:be11700...	✓ Completed	Feb 25, 2010 9:01:35 AM
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

Recent Faults and Rejected Messages

Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recove
ApprovalTask	Human Workflow	2	2	0	
OrderFulfillment	Mediator	10	0	0	
FODOrderProces	BPEL	12	2	0	

21.2 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

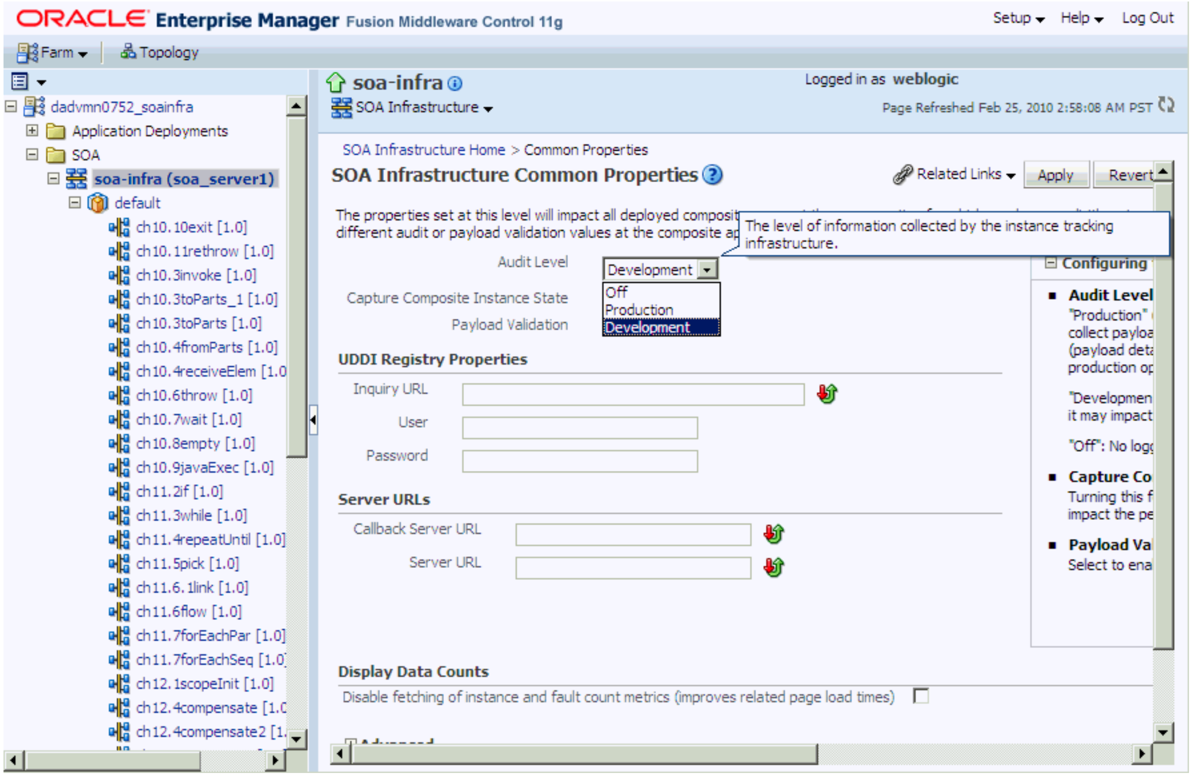
Decision trace levels are similar to the audit levels supported in SOA Suite:

- **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 21–3 displays the options to set different trace levels at the SOA Infra level by using Fusion Middleware Control Console.

Figure 21–3 Decision Trace Levels



The properties set at this level will impact all deployed composit
different audit or payload validation values at the composite ap

The level of information collected by the instance tracking infrastructure.

Audit Level: Development

Capture Composite Instance State

Payload Validation

Disable fetching of instance and fault count metrics (improves related page load times) ☐

Figure 21–5, "Setting the Decision Trace Level at the Composite Level" displays how to set the composite trace level.

21.3 Rule Execution Tracing Using Fusion Middleware Control Console

You can use Oracle Enterprise Manager Fusion Middleware Control Console to launch rule execution tracing.

21.3.1 Tracing Rule Execution in the Development Level

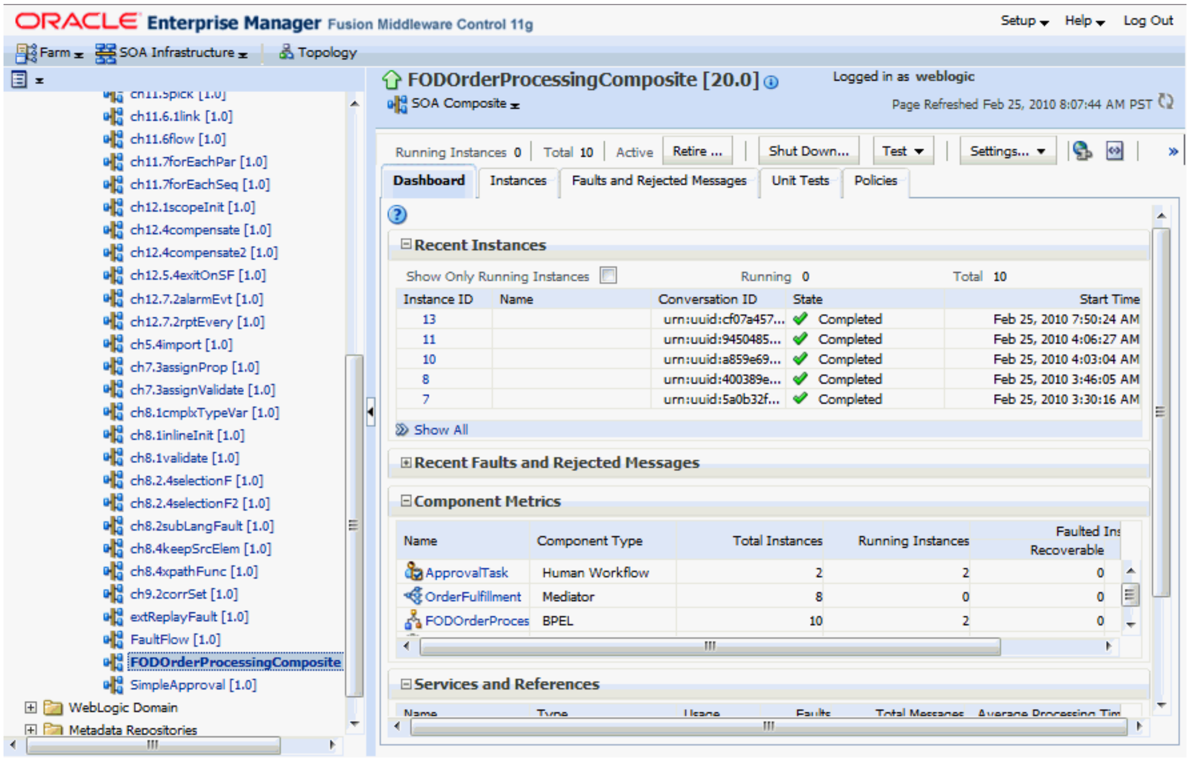
Setting the decision trace level as Development enables you to view all the details pertaining to a rule that has been executed.

To perform a Development-level rule execution trace:

1. Open the composite application in Fusion Middleware Control Console, as shown in Figure 21–4. 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 21–4 Opening the SOA Composite



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Page Refreshed Feb 25, 2010 8:07:44 AM PST

Running Instances 0 | Total 10 | Active

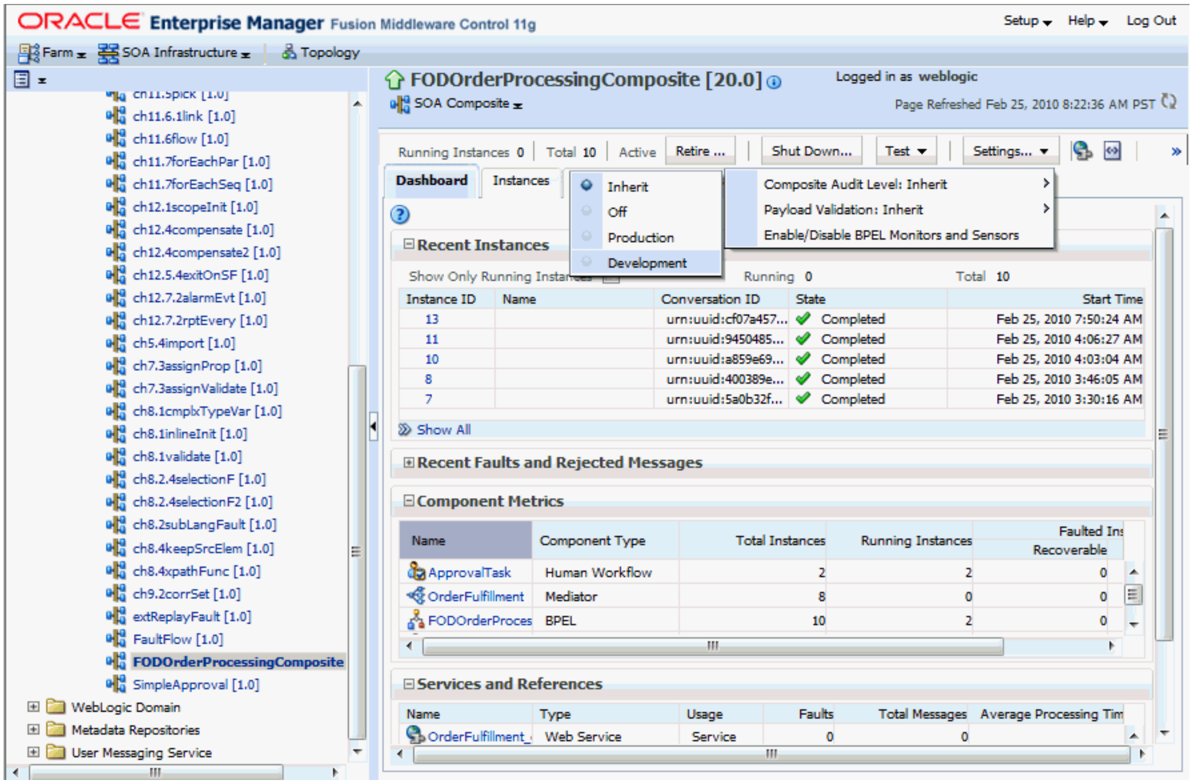
Show Only Running Instances ☐ Running 0 Total 10

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

Name	Component Type	Total Instances	Running Instances	Faulted Ins Recoverable
ApprovalTask	Human Workflow	2	2	0
OrderFulfillment	Mediator	8	0	0
FODOrderProces	BPEL	10	2	0

2. Click the **Settings** list, select **Composite Audit Level**, and then **Development** as shown in Figure 21–5 to set the trace level as Development at the composite level.

Figure 21–5 Setting the Decision Trace Level at the Composite Level

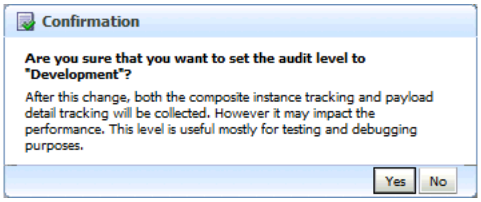


Instance ID	Name	Conversation ID	State	Start Time
13		urn:uuid:cf07a457...	Completed	Feb 25, 2010 7:50:24 AM
11		urn:uuid:9450485...	Completed	Feb 25, 2010 4:06:27 AM
10		urn:uuid:a859e69...	Completed	Feb 25, 2010 4:03:04 AM
8		urn:uuid:400389e...	Completed	Feb 25, 2010 3:46:05 AM
7		urn:uuid:5a0b32f...	Completed	Feb 25, 2010 3:30:16 AM

Name	Component Type	Total Instances	Running Instances	Faulted Ins Recoverable
ApprovalTask	Human Workflow	2	2	0
OrderFulfillment	Mediator	8	0	0
FODOrderProces	BPEL	10	2	0

Name	Type	Usage	Faults	Total Messages	Average Processing Tim
OrderFulfillment_	Web Service	Service	0	0	

3. Click **Yes** in the Confirmation dialog box.

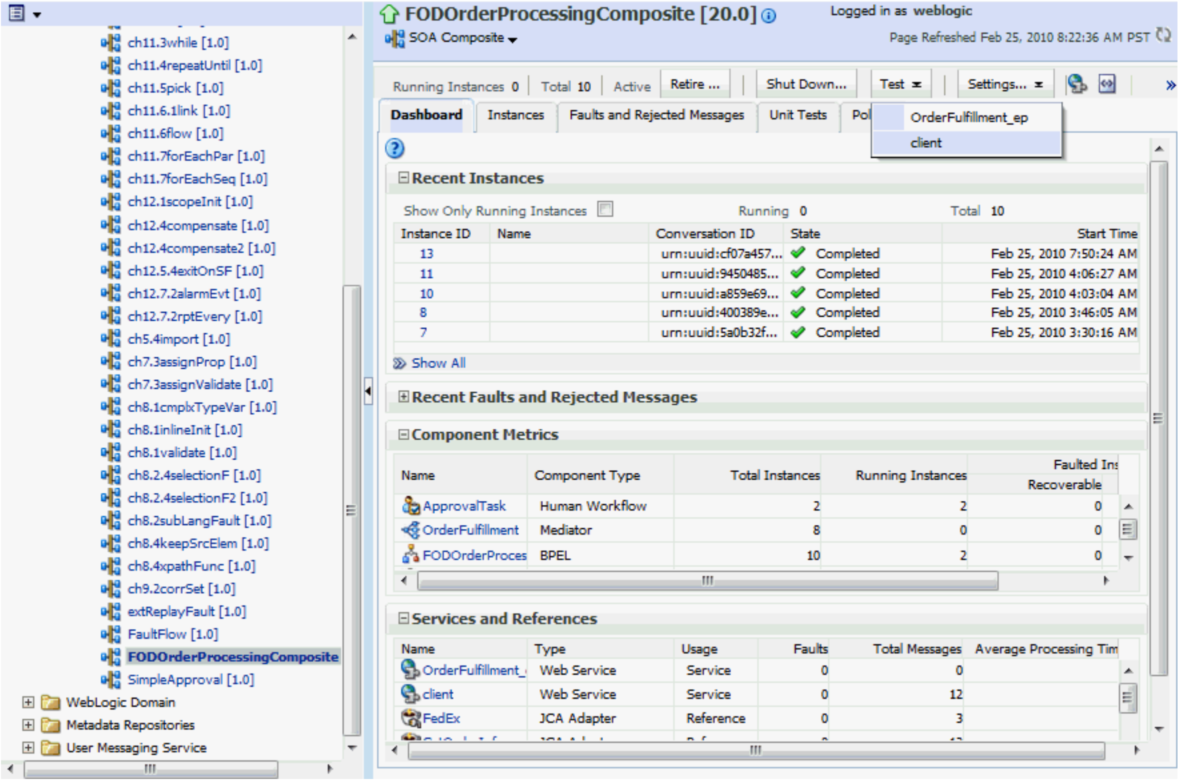


Are you sure that you want to set the audit level to "Development"?

After this change, both the composite instance tracking and payload detail tracking will be collected. However it may impact the performance. This level is useful mostly for testing and debugging purposes.

4. Click **Test** and then **client** to invoke a test instance of the composite as shown in Figure 21–6 to view the decision traces corresponding to different input parameters, such as the OrderID.

Figure 21–6 Invoking a Test Instance of the Composite



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

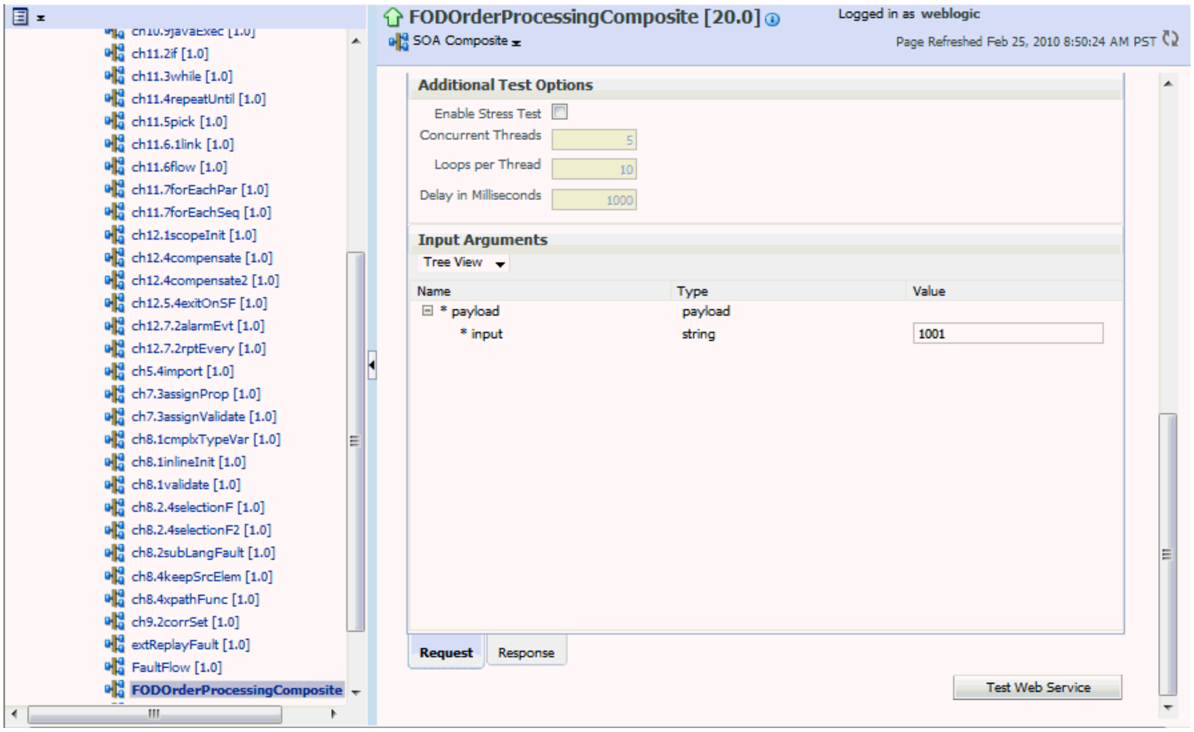
Name	Component Type	Total Instances	Running Instances	Faulted Ins Recoverable
ApprovalTask	Human Workflow	2	2	0
OrderFulfillment	Mediator	8	0	0
FODOrderProces	BPEL	10	2	0

Name	Type	Usage	Faults	Total Messages	Average Processing Tim
OrderFulfillment_	Web Service	Service	0	0	
client	Web Service	Service	0	12	
FedEx	JCA Adapter	Reference	0	3	

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 21–7.

   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 21–7 Entering Input Parameter Value



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Additional Test Options

Enable Stress Test ☐

Concurrent Threads 5

Loops per Thread 10

Delay in Milliseconds 1000

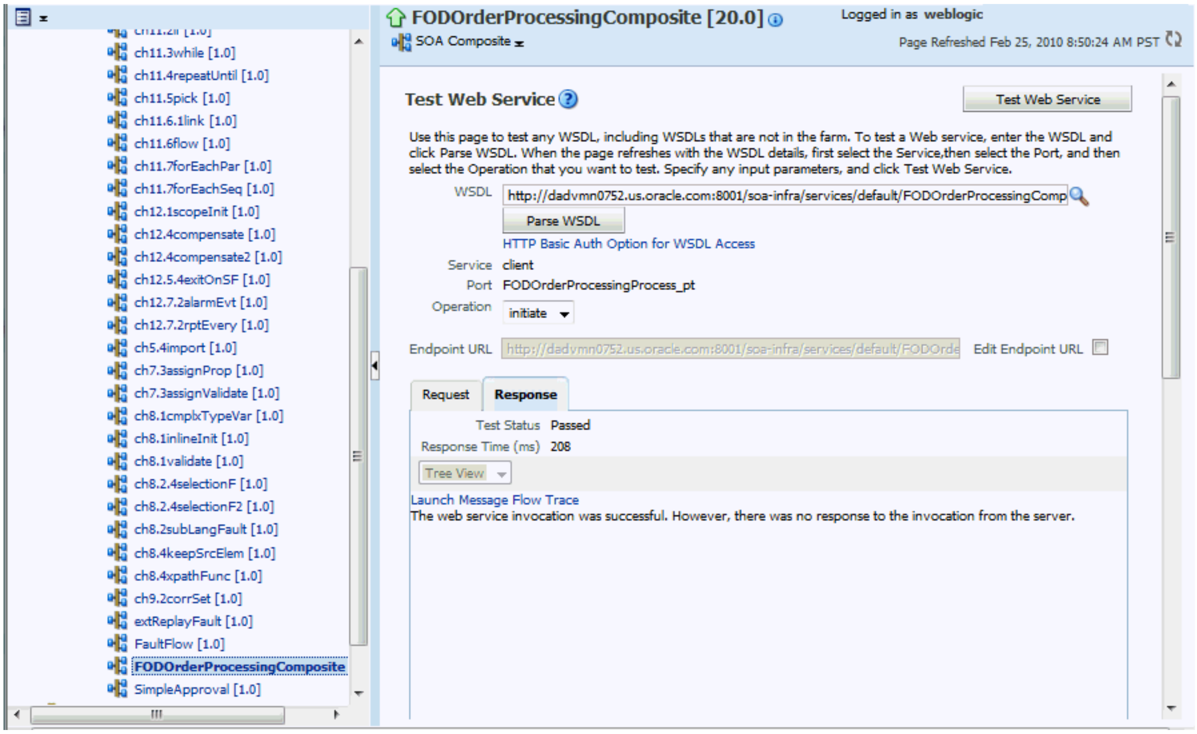
Input Arguments

Tree View

Name	Type	Value
* payload	payload	
* input	string	1001

6. Click **Launch Message Flow Trace** under the **Response** tab to open the Flow Trace window as shown in Figure 21–8.

Figure 21–8 Launching the Decision Trace



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Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the page refreshes with the WSDL details, first select the Service,then select the Port, and then select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL http://dadvmn0752.us.oracle.com:8001/soa-infra/services/default/FODOrderProcessingComp

Service client

Port FODOrderProcessingProcess_pt

Operation initiate

Endpoint URL http://dadvmn0752.us.oracle.com:8001/soa-infra/services/default/FODOrde

Edit Endpoint URL ☐

Test Status Passed

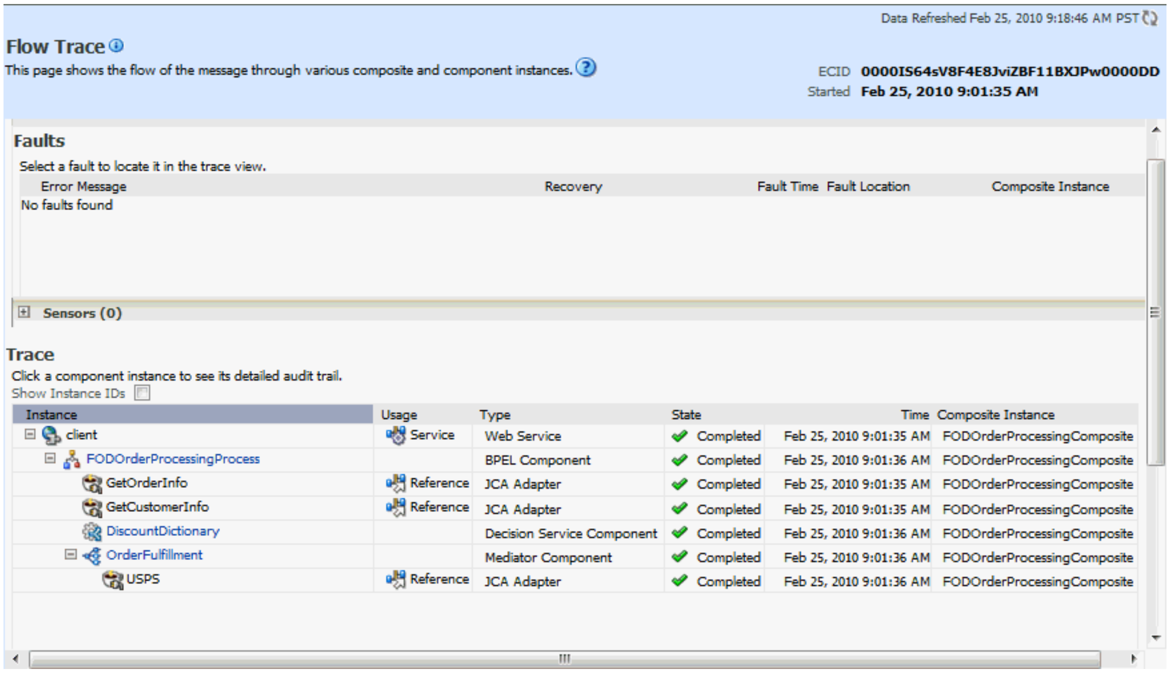
Response Time (ms) 208

Launch Message Flow Trace

The web service invocation was successful. However, there was no response to the invocation from the server.

7. Click the Decision Service Component instance called **DiscountDictionary** in the Trace section as shown in Figure 21–9 to view the actual rule execution trace.

Figure 21–9 Opening the Instance Detail Window for the Decision Service Component



Data Refreshed Feb 25, 2010 9:18:46 AM PST

Flow Trace

This page shows the flow of the message through various composite and component instances.

ECID **0000IS64sV8F4E8JviZBF11BXJPw0000DD**

Started **Feb 25, 2010 9:01:35 AM**

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 ☐

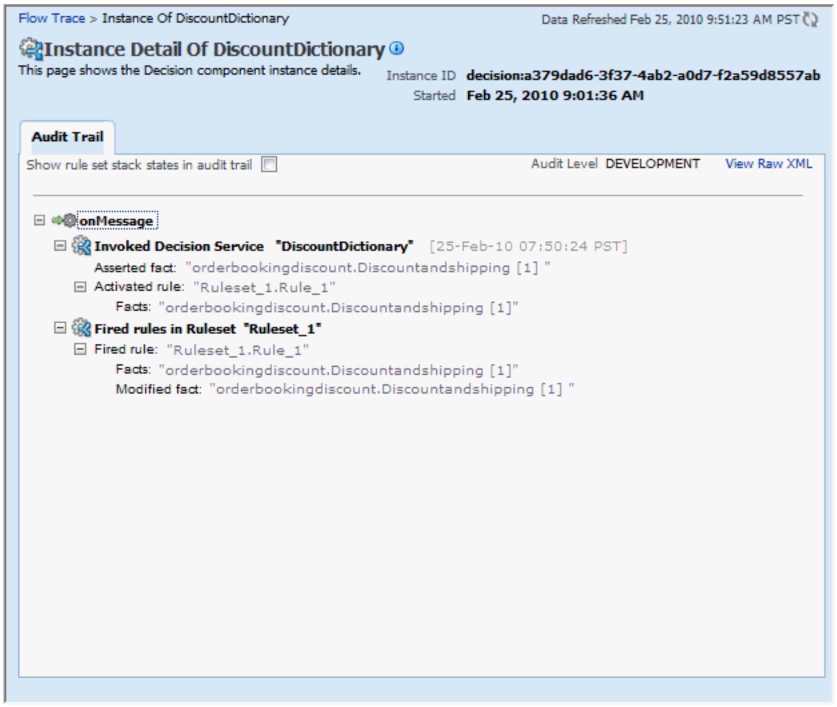
Instance	Usage	Type	State	Time	Composite Instance
⊟ client	Service	Web Service	✓ Completed	Feb 25, 2010 9:01:35 AM	FODOrderProcessingComposite
⊟ FODOrderProcessingProcess		BPEL Component	✓ Completed	Feb 25, 2010 9:01:36 AM	FODOrderProcessingComposite
GetOrderInfo	Reference	JCA Adapter	✓ Completed	Feb 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 21–10 displays execution trace for the Decision Service Component called DiscountDictionary.

Figure 21–10 Viewing the Rule Execution Trace



Flow Trace > Instance Of DiscountDictionary

Data Refreshed Feb 25, 2010 9:51:23 AM PST

Instance Detail Of DiscountDictionary

This page shows the Decision component instance details.

Instance ID **decision:a379dad6-3f37-4ab2-a0d7-f2a59d8557ab**

Started **Feb 25, 2010 9:01:36 AM**

Audit Trail

Show rule set stack states in audit trail ☐

Audit Level DEVELOPMENT

View Raw XML

⊟ **onMessage**

⊟ **Invoked Decision Service "DiscountDictionary"** [25-Feb-10 07:50:24 PST]

Asserted fact: "orderbookingdiscount.Discountandshipping [1] "

⊟ Activated rule: "Ruleset_1.Rule_1"

Facts: "orderbookingdiscount.Discountandshipping [1]"

⊟ **Fired rules in Ruleset "Ruleset_1"**

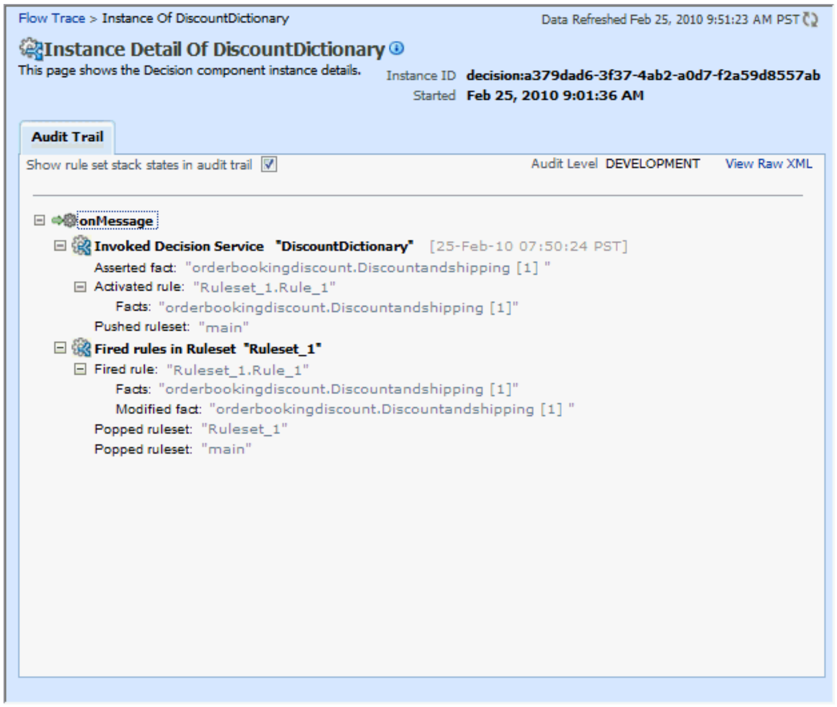
⊟ Fired rule: "Ruleset_1.Rule_1"

Facts: "orderbookingdiscount.Discountandshipping [1]"

Modified fact: "orderbookingdiscount.Discountandshipping [1] "

8. Click the **Show rule set stack states in audit trail** checkbox to view further details of the rule execution as shown in Figure 21–11.

Figure 21–11 Viewing Detailed Rule Execution Trace



Flow Trace > Instance Of DiscountDictionary

Data Refreshed Feb 25, 2010 9:51:23 AM PST

Instance Detail Of DiscountDictionary

This page shows the Decision component instance details.

Instance ID **decision:a379dad6-3f37-4ab2-a0d7-f2a59d8557ab**

Started **Feb 25, 2010 9:01:36 AM**

Audit Trail

Show rule set stack states in audit trail ☑

Audit Level DEVELOPMENT

View Raw XML

⊟ **onMessage**

⊟ **Invoked Decision Service "DiscountDictionary"** [25-Feb-10 07:50:24 PST]

Asserted fact: "orderbookingdiscount.Discountandshipping [1] "

⊟ Activated rule: "Ruleset_1.Rule_1"

Facts: "orderbookingdiscount.Discountandshipping [1]"

Pushed ruleset: "main"

⊟ **Fired rules in Ruleset "Ruleset_1"**

⊟ Fired rule: "Ruleset_1.Rule_1"

Facts: "orderbookingdiscount.Discountandshipping [1]"

Modified fact: "orderbookingdiscount.Discountandshipping [1] "

Popped ruleset: "Ruleset_1"

Popped ruleset: "main"

In Figure 21–11, 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."

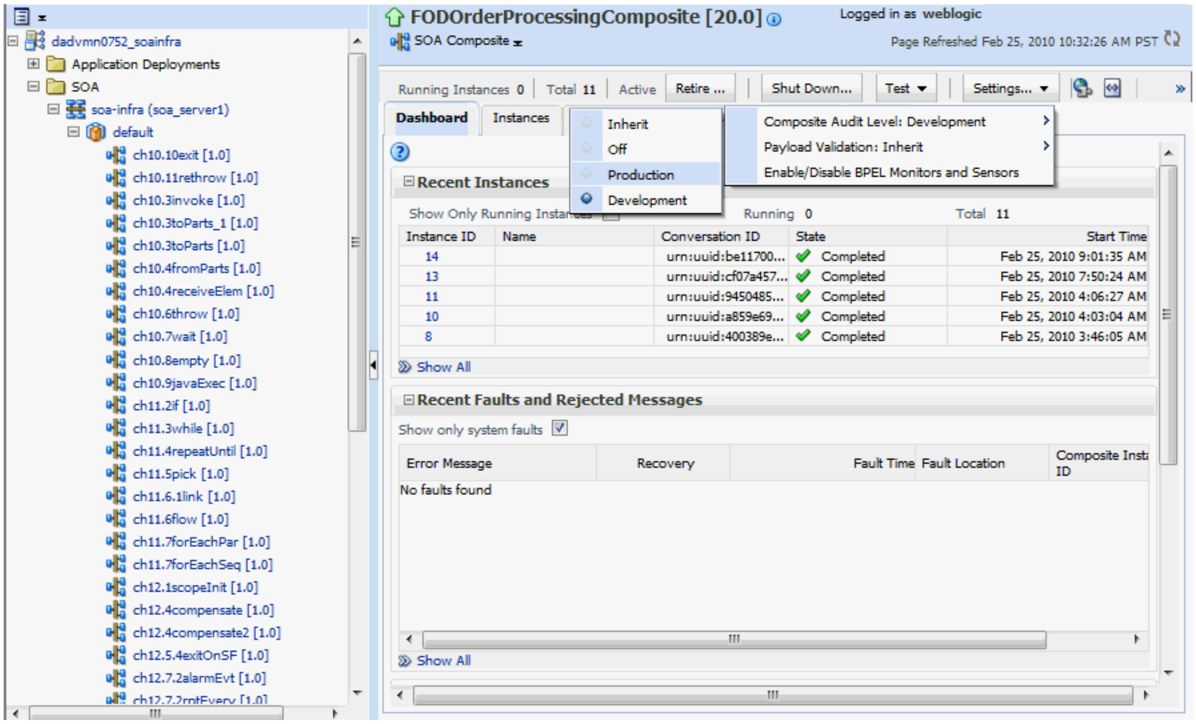
21.3.2 Tracing Rule Execution in the Production Level

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 21–12.

Figure 21–12 Setting the Decision Trace Level as Production



Logged in as weblogic

Page Refreshed Feb 25, 2010 10:32:26 AM PST

Running Instances 0 | Total 11 | Active

Composite Audit Level: Development

Payload Validation: Inherit

Show Only Running Instances ☐ Running 0 Total 11

Instance ID	Name	Conversation ID	State	Start Time
14		urn:uuid:be11700...	✓ Completed	Feb 25, 2010 9:01:35 AM
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

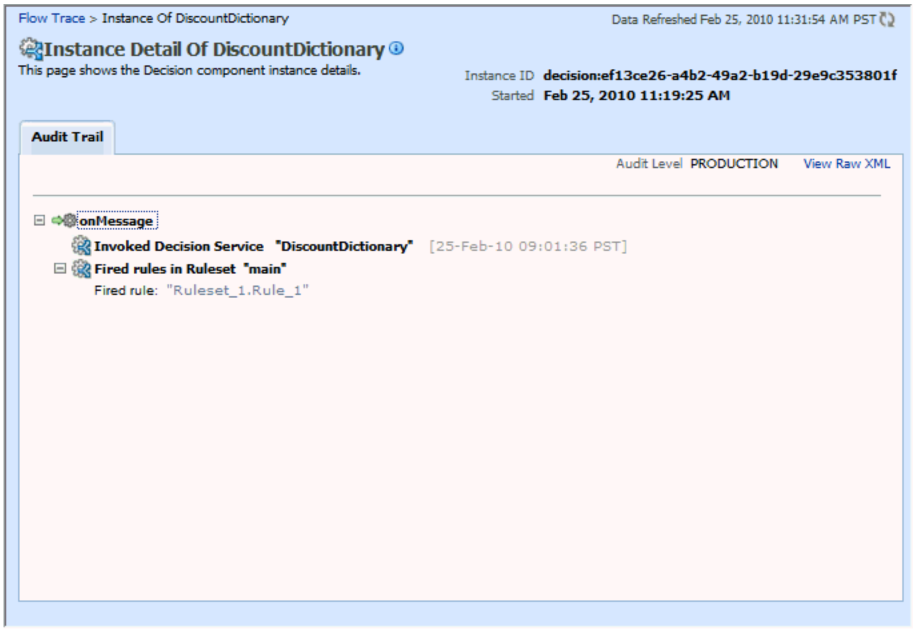
Show only system faults ☑

Error Message	Recovery	Fault Time	Fault Location	Composite Insta ID
No faults found				

You can also set this trace level at the SOA Infra level.

Figure 21–13 displays the Flow Trace window that displays the trace report.

Figure 21–13 Viewing Production Level Rule Execution Trace


Flow Trace > Instance Of DiscountDictionary
Instance Detail Of DiscountDictionary
Audit Trail
View Raw XML
onMessage

Data Refreshed Feb 25, 2010 11:31:54 AM PST

This page shows the Decision component instance details.

Instance ID decision:ef13ce26-a4b2-49a2-b19d-29e9c353801f

Started Feb 25, 2010 11:19:25 AM

Audit Level PRODUCTION

Invoked Decision Service "DiscountDictionary" [25-Feb-10 09:01:36 PST]

Fired rules in Ruleset "main"

Fired rule: "Ruleset_1.Rule_1"

In Figure 21–13, 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:

22

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 22.1, "Configuring Human Workflow Notification Properties"
- Section 22.2, "Configuring Human Workflow Task Service Properties"
- Section 22.3, "Configuring Oracle HTTP Server for Task Form Attachments"
- Section 22.4, "Configuring the Pluggable Notification Service"
- Section 22.5, "Configuring Multiple Send Addresses"
- Section 22.6, "Configuring Notification Retries"
- Section 22.7, "Configuring the Identity Service"
- Section 22.8, "Seeding Users, Groups, and Application Roles using LDAP Tools"
- Section 22.9, "Enabling Case Agnostic Group Names in Human Tasks"
- Section 22.10, "Configuring Security Policies for Human Workflow Web Services"

22.1 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.

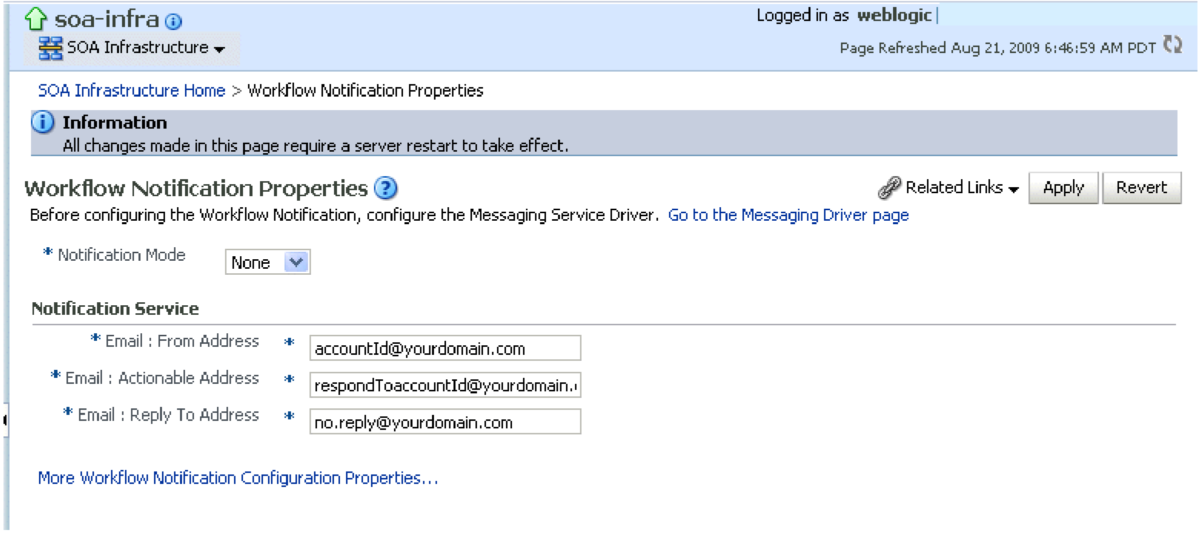
> **Note:** In the following procedures, you must configure your channel drivers before configuring your workflow notification properties. Ensure that you know all necessary driver addresses before beginning (for example, the incoming IMAP and outgoing SMTP e-mail servers).

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.


soa-infra
SOA Infrastructure
Logged in as weblogic
Page Refreshed Aug 21, 2009 6:46:59 AM PDT
SOA Infrastructure Home > Workflow Notification Properties
Information
Workflow Notification Properties
Related Links
Apply
Revert
Go to the Messaging Driver page
Notification Service
More Workflow Notification Configuration Properties...

All changes made in this page require a server restart to take effect.

Before configuring the Workflow Notification, configure the Messaging Service Driver.

* Notification Mode: None

* Email : From Address: accountId@yourdomain.com

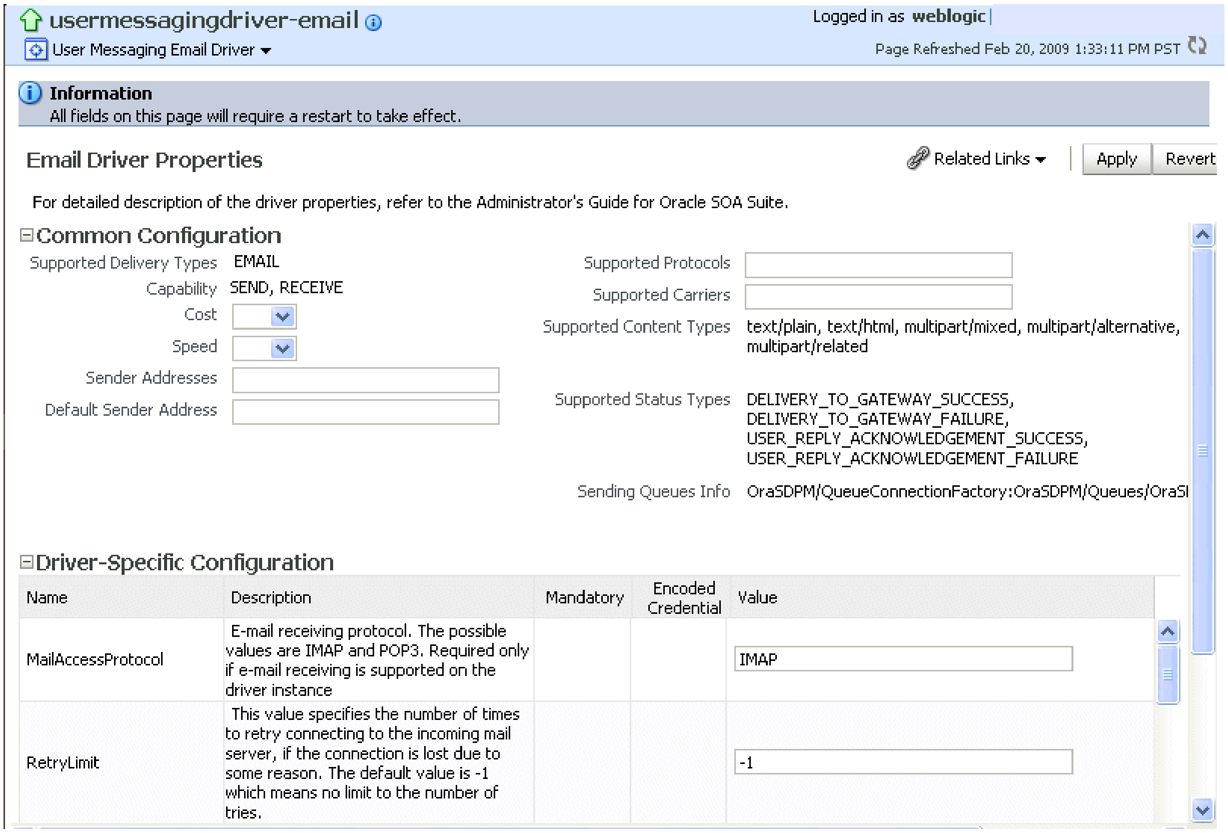
* Email : Actionable Address: respondToaccountId@yourdomain.

* Email : Reply To Address: no.reply@yourdomain.com

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 28.4.1, "How to Configure a Driver" for instructions.


usermessagingdriver-email
User Messaging Email Driver
Logged in as weblogic
Page Refreshed Feb 20, 2009 1:33:11 PM PST
Related Links
Apply
Revert

Information
All fields on this page will require a restart to take effect.

Email Driver Properties

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			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.			-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	Enter the outgoing e-mail address from which end users receive notifications. 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. **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.	`workflow.notifications@mycompany.com`
Email: Actionable Address	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. 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.	`workflow.actions@mycompany.com`
Email: Reply To Address	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.	`workflow.no.reply@mycompany.com`

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+Xem4NYS2o7dKDtqNLs42d4YIs8ySO8Gn0ZVYFsb1SQVenRukRE+
IcE7c4XDb+tPazvP v9T2iA0qylDg0bTaVxX13HhsrCYAg= : [[NID]]
UNRESOLVED : [[NID]] :
xT9l06rbaGRAey+BtgQyJIXk62mkFtCe7ocKxwNLIsPzyE5/7AnGwXlBodEgQxr6
jorvsw2F54k/C1 r5mvyAJpAp4I4IekOHi4qhQ3eSbBHdzET1IL4F3qV/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*

22.2 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.

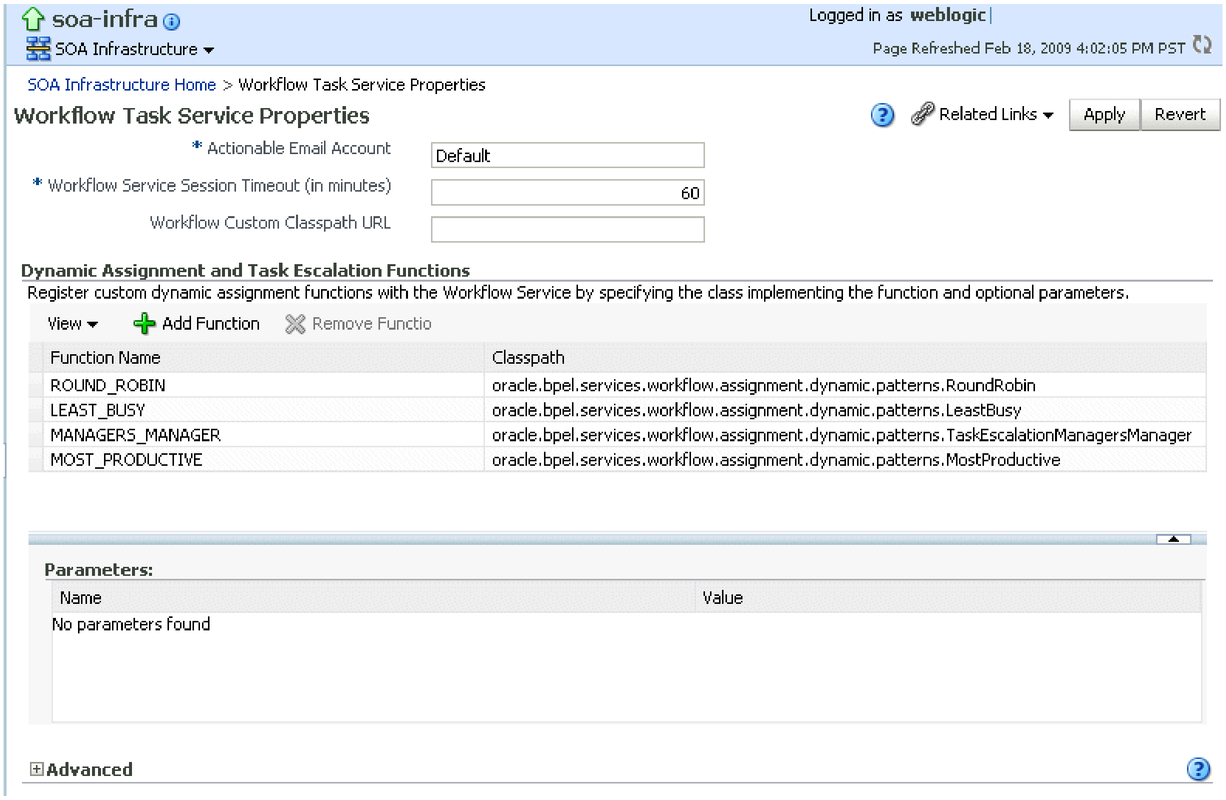
Dynamic assignment functions select a particular user or group from either a group, or from a list of users or groups. The selection is made according to criteria specific to the particular dynamic assignment function.

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.



Workflow Task Service Properties

* Actionable Email Account	Default
* Workflow Service Session Timeout (in minutes)	60
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.

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 22.1, "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 22.5, "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 `TaskQueryService` 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, `WorkflowLabels.properties`. 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 '/' 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.

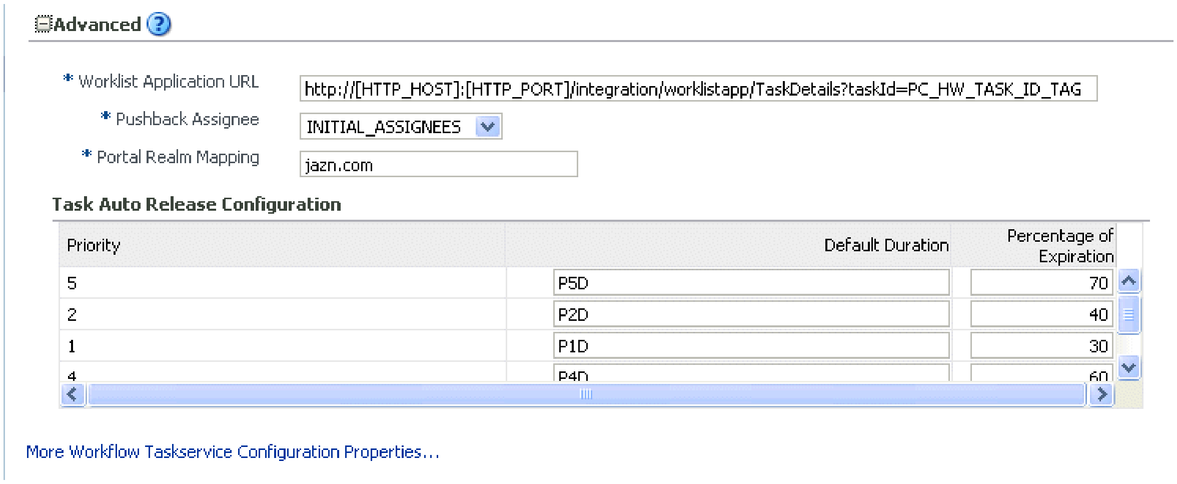
Function	Type	Description
ROUND_ROBIN	Dynamic assignment	This function picks each user or group in turn. This function uses the initialization parameter `MAX_MAP_SIZE`. This parameter specifies the maximum number of sets of users or groups for which the function can maintain `ROUND_ROBIN` counts. The 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 `ROUND_ROBIN` 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 `DEAFULT_TIME_PERIOD`. 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 `MOST_PRODUCTIVE` 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:



* Worklist Application URL: http://[HTTP_HOST]:[HTTP_PORT]/integration/worklistapp/TaskDetails?taskId=PC_HW_TASK_ID_TAG

* Pushback Assignee: INITIAL_ASSIGNEES

* Portal Realm Mapping: jazn.com

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 `PC_HW_TASK_ID_TAG` 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 `createContext` (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	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. 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).

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 22.1, "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*.

22.3 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>
```

22.4 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.

22.4.1 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.

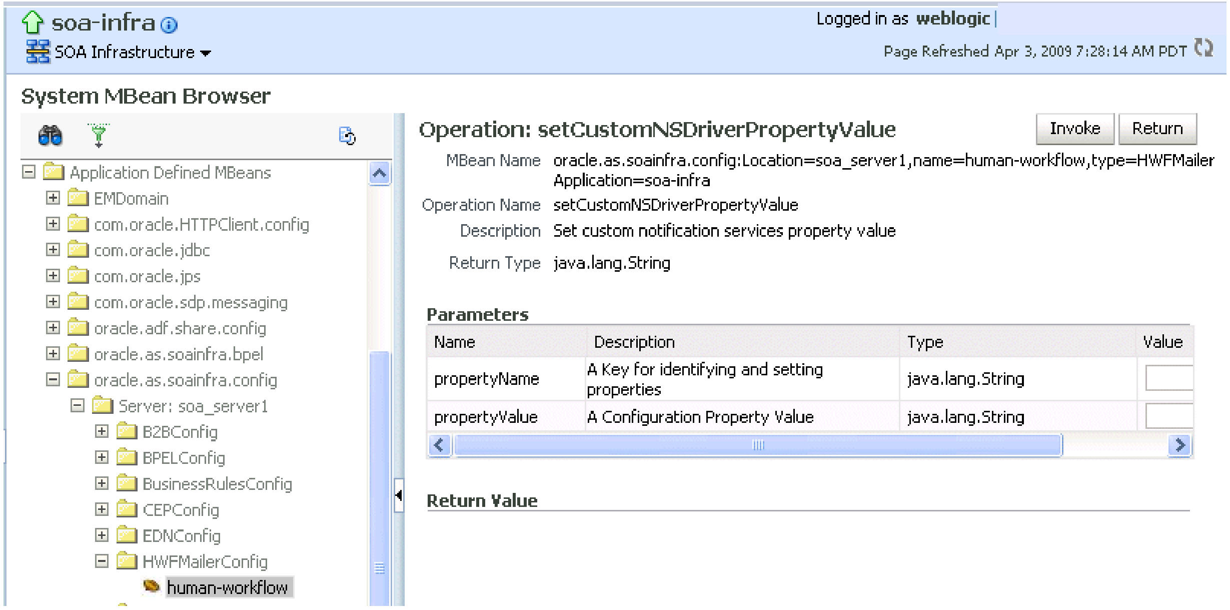
22.4.2 Pluggable Notification Service Registration

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**.



System MBean Browser

- Application Defined MBeans
  - EMDomain
  - com.oracle.HTTPClient.config
  - com.oracle.jdbc
  - com.oracle.jps
  - com.oracle.sdp.messaging
  - oracle.adf.share.config
  - oracle.as.soainfra.bpel
  - oracle.as.soainfra.config
    - Server: soa_server1
      - B2BConfig
      - BPELConfig
      - BusinessRulesConfig
      - CEPConfig
      - EDNConfig
      - HWFMailerConfig
        - human-workflow

Operation: setCustomNSDriverPropertyValue

MBean Name oracle.as.soainfra.config:Location=soa_server1,name=human-workflow,type=HWFMailer Application=soa-infra

Operation Name setCustomNSDriverPropertyValue

Description Set custom notification services property value

Return Type java.lang.String

Parameters

Name	Description	Type	Value
propertyName	A Key for identifying and setting properties	java.lang.String	
propertyValue	A Configuration Property Value	java.lang.String	

Return Value

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.

22.5 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.

22.6 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.

22.7 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 22.7.1, "Adding an Authentication Provider"
- Section 22.7.2, "Creating Users and Groups in the Authentication Provider"
- Section 22.7.3, "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`

22.7.1 Adding an Authentication Provider

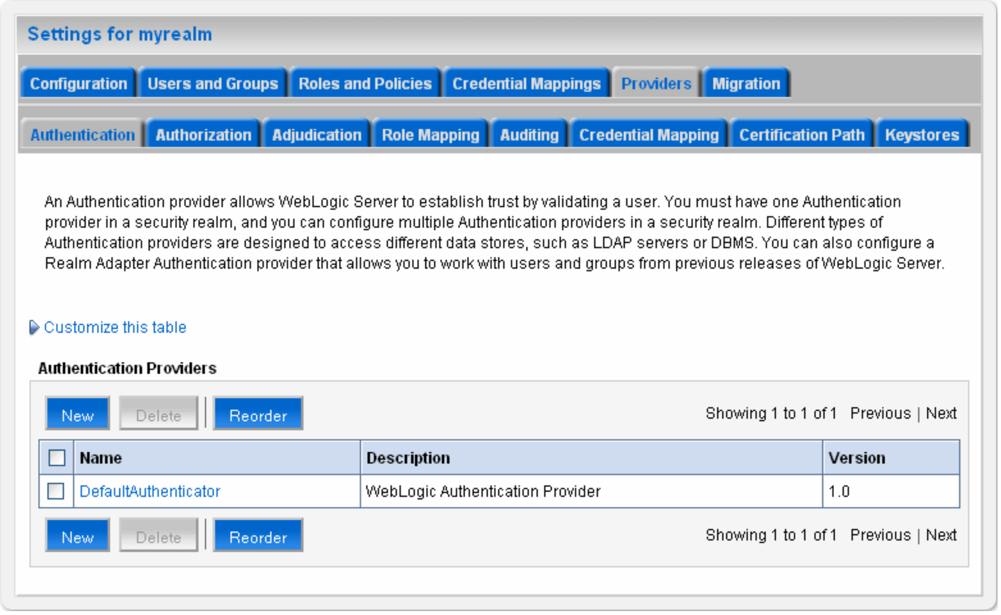
You can add an authentication provider to a security realm using the Oracle WebLogic Server Administration Console.

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 22–1 Security Realm Authentication Providers



An Authentication provider allows WebLogic Server to establish trust by validating a user. You must have one Authentication provider in a security realm, and you can configure multiple Authentication providers in a security realm. Different types of Authentication providers are designed to access different data stores, such as LDAP servers or DBMS. You can also configure a Realm Adapter Authentication provider that allows you to work with users and groups from previous releases of WebLogic Server.

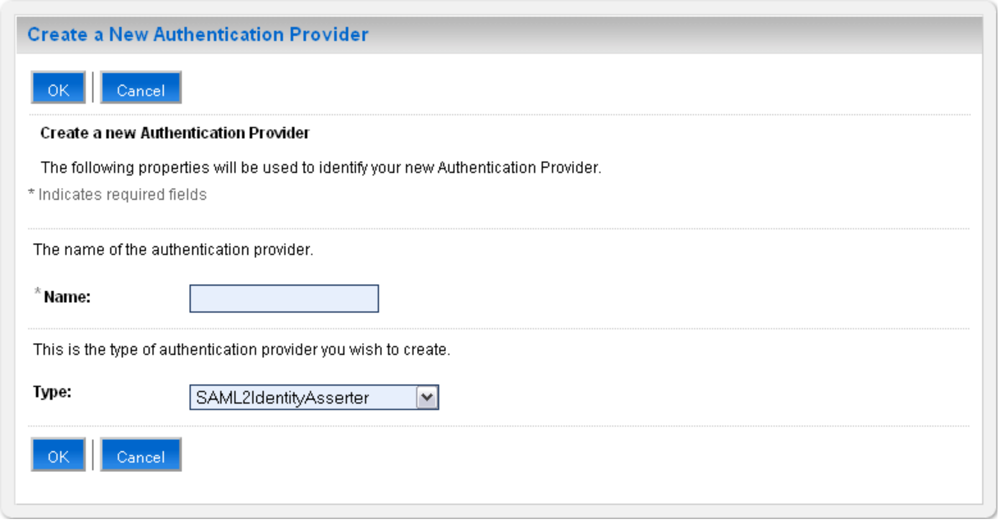
Authentication Providers

☐	Name	Description	Version
☐	DefaultAuthenticator	WebLogic Authentication Provider	1.0

4. Click **New** to add a new authentication provider.

   The Create a New Authentication Provider page appears.

Figure 22–2 Create a New Authentication Provider



Create a new Authentication Provider

The following properties will be used to identify your new Authentication Provider.

* Indicates required fields

The name of the authentication provider.

* Name:

This is the type of authentication provider you wish to create.

Type: SAML2IdentityAsserter

5. In the **Name** field, type a name for the provider, 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.

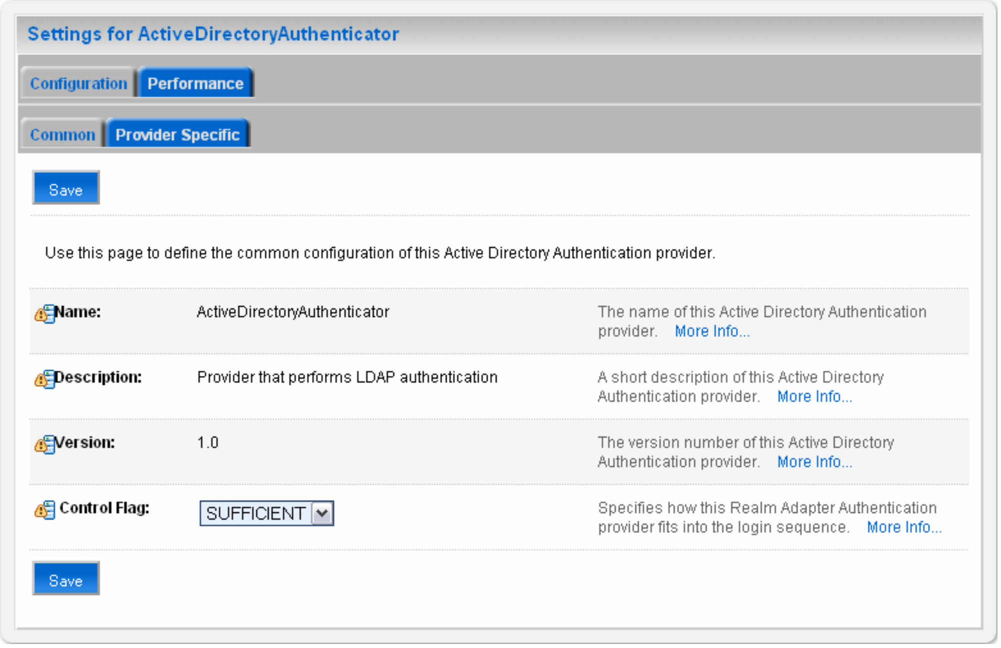
   Note: When using Oracle Internet Directory as the authentication provider, you must set the **orclsslinteropmode** attribute to `0` (zero) using Oracle Directory Services Manager. See Section 22.7.3, "Configuring the Directory Service" for more information.

   ---

6. On the **Providers** > **Authentication** page, click the authenticator that you just created.

   The settings for the authentication provider appears.

Figure 22–3 Settings for the Authentication Provider



Settings for ActiveDirectoryAuthenticator

Use this page to define the common configuration of this Active Directory Authentication provider.

Name:	ActiveDirectoryAuthenticator	The name of this Active Directory Authentication provider. More Info...
Description:	Provider that performs LDAP authentication	A short description of this Active Directory Authentication provider. More Info...
Version:	1.0	The version number of this Active Directory Authentication provider. More Info...
Control Flag:	SUFFICIENT	Specifies how this Realm Adapter Authentication provider fits into the login sequence. More Info...

7. From the **Control Flag** drop-down list, choose **SUFFICIENT**, 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 22–1 lists information you must specify. Use the default setting for the rest of the fields.

Table 22–1 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 22–1 (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"/>
```

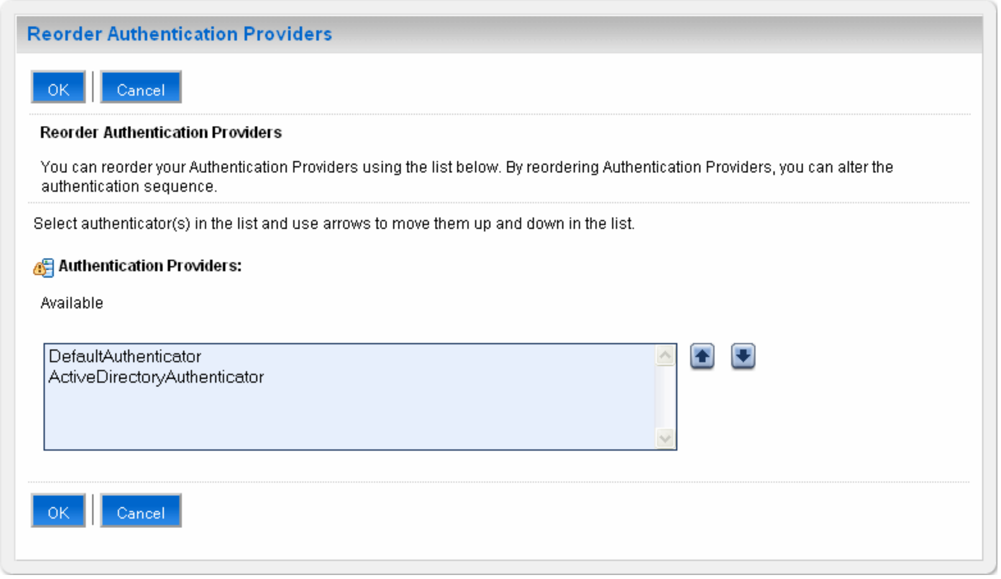
where *`desired_attr`* can be one of `CN`, `UID`, or `MAIL`.

10. Click **Security Realms** > **Providers** > **Authentication** to return to the list of authentication providers.

11. Click **Reorder**.

    The Reorder Authentication Providers page appears.

Figure 22–4 Reorder Authentication Providers



Reorder Authentication Providers

Reorder Authentication Providers

You can reorder your Authentication Providers using the list below. By reordering Authentication Providers, you can alter the authentication sequence.

Select authenticator(s) in the list and use arrows to move them up and down in the list.

Authentication Providers:

Available

DefaultAuthenticator
ActiveDirectoryAuthenticator

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.

22.7.2 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.

22.7.2.1 Creating Users and Groups Using WebLogic Console

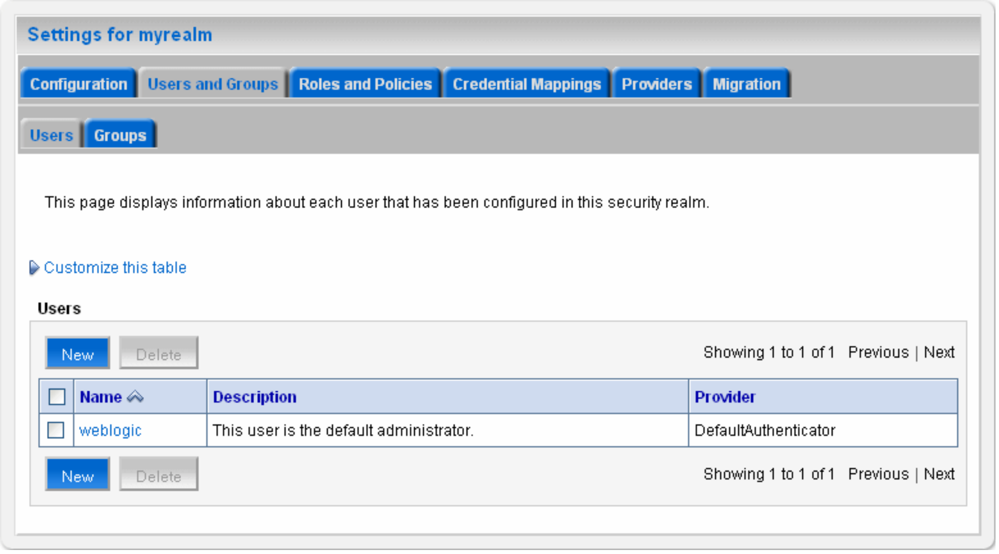
You can create users and groups for a specific provider, and define user and group membership, using the Oracle WebLogic Server Administration Console.

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 22–5 WebLogic Console Users and Groups



This page displays information about each user that has been configured in this security realm.

☐	Name	Description	Provider
☐	weblogic	This user is the default administrator.	DefaultAuthenticator

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 22–2 lists information you must specify.

Table 22–2 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.

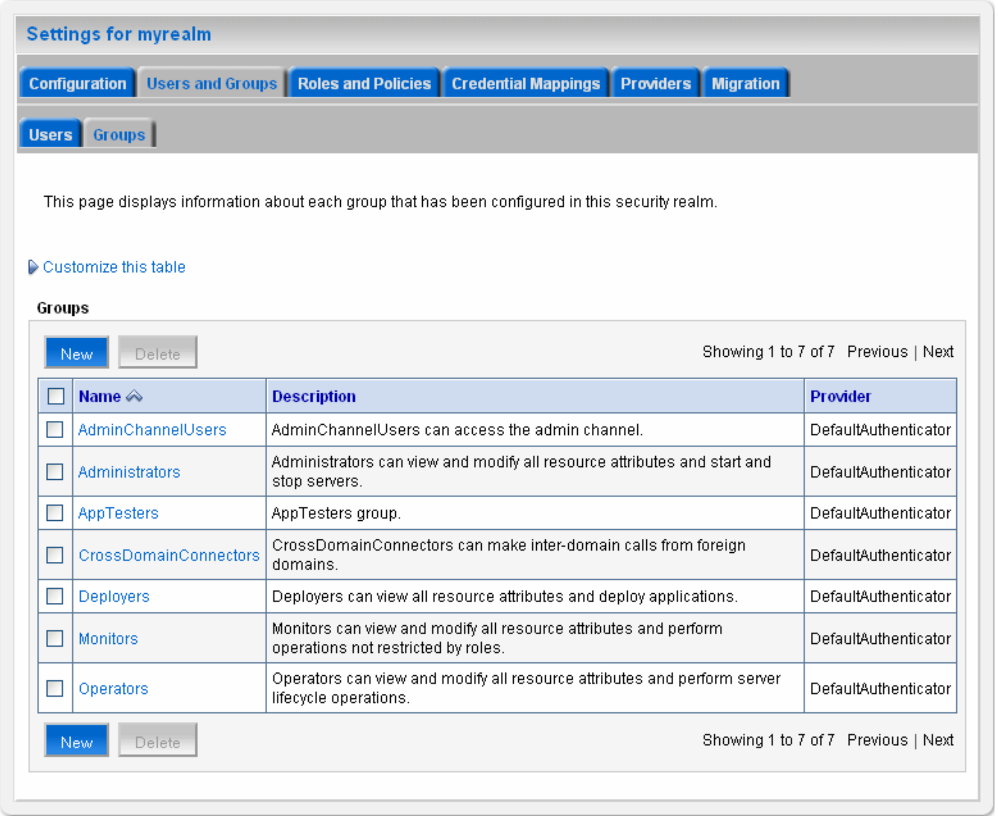
   You can press Ctrl-Click to select multiple groups to move.
9. Click **Save**.

To create a group using WebLogic Console:

1. Click **Users and Groups** > **Groups**.

   The Groups page appears.

Figure 22–6 WebLogic Console Groups



This page displays information about each group that has been configured in this security realm.

☐	Name	Description	Provider
☐	AdminChannelUsers	AdminChannelUsers can access the admin channel.	DefaultAuthenticator
☐	Administrators	Administrators can view and modify all resource attributes and start and stop servers.	DefaultAuthenticator
☐	AppTesters	AppTesters group.	DefaultAuthenticator
☐	CrossDomainConnectors	CrossDomainConnectors can make inter-domain calls from foreign domains.	DefaultAuthenticator
☐	Deployers	Deployers can view all resource attributes and deploy applications.	DefaultAuthenticator
☐	Monitors	Monitors can view and modify all resource attributes and perform operations not restricted by roles.	DefaultAuthenticator
☐	Operators	Operators can view and modify all resource attributes and perform server lifecycle operations.	DefaultAuthenticator

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 22–3 lists information you must specify.

Table 22–3 Group Properties

Field	Description
Name	(Required) The name of the new group.
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.

4. 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.
5. Click **Membership** to add the group to other groups.
6. 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.
7. Click **Save**.

22.7.2.2 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:

1. 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.
2. Click the **Connect to a directory** link and choose **Create a New Connection** in the drop-down menu. The New Connection dialog appears.
3. Select **OID** as the directory type, enter values in the required fields, and click **Connect**.

   Table 22–4 lists information you can specify.

Table 22–4 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 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.

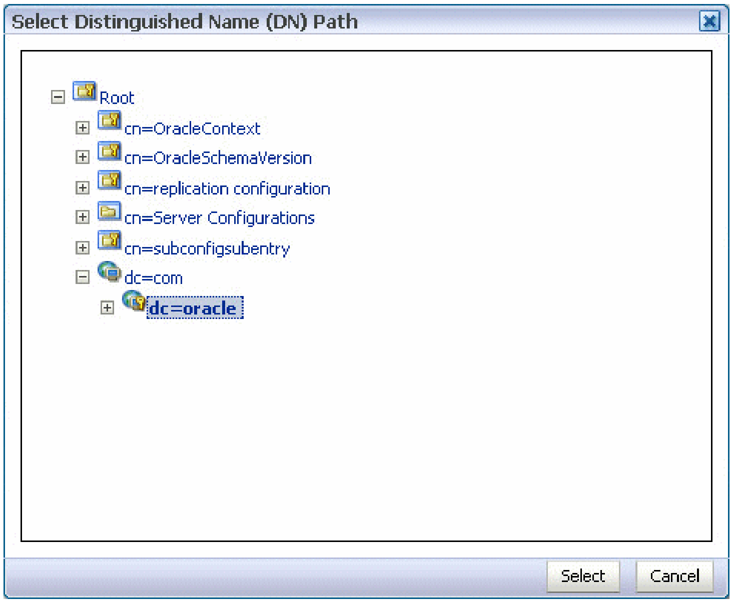
4. Click the **Data Browser** tab. You can use this tab to create and remove entries.

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. Enter 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 22–7 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. Enter and select values for the required fields, and click **Next**.

   Table 22–5 lists information you can specify.

Table 22–5 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.

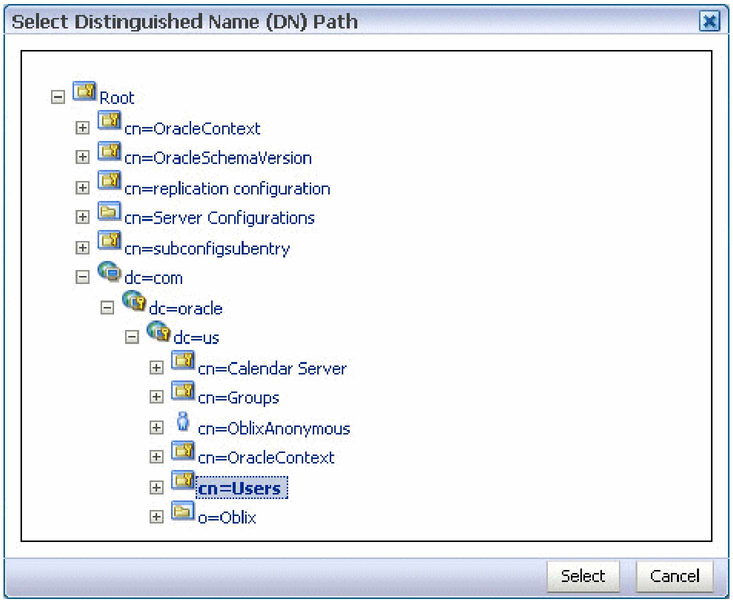
9. Verify the status of the new domain, and click **Finish** to create the new domain.

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. Enter 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 22–8 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. Enter and select values for the required fields, and click **Next**.

   Table 22–6 lists information you can specify.

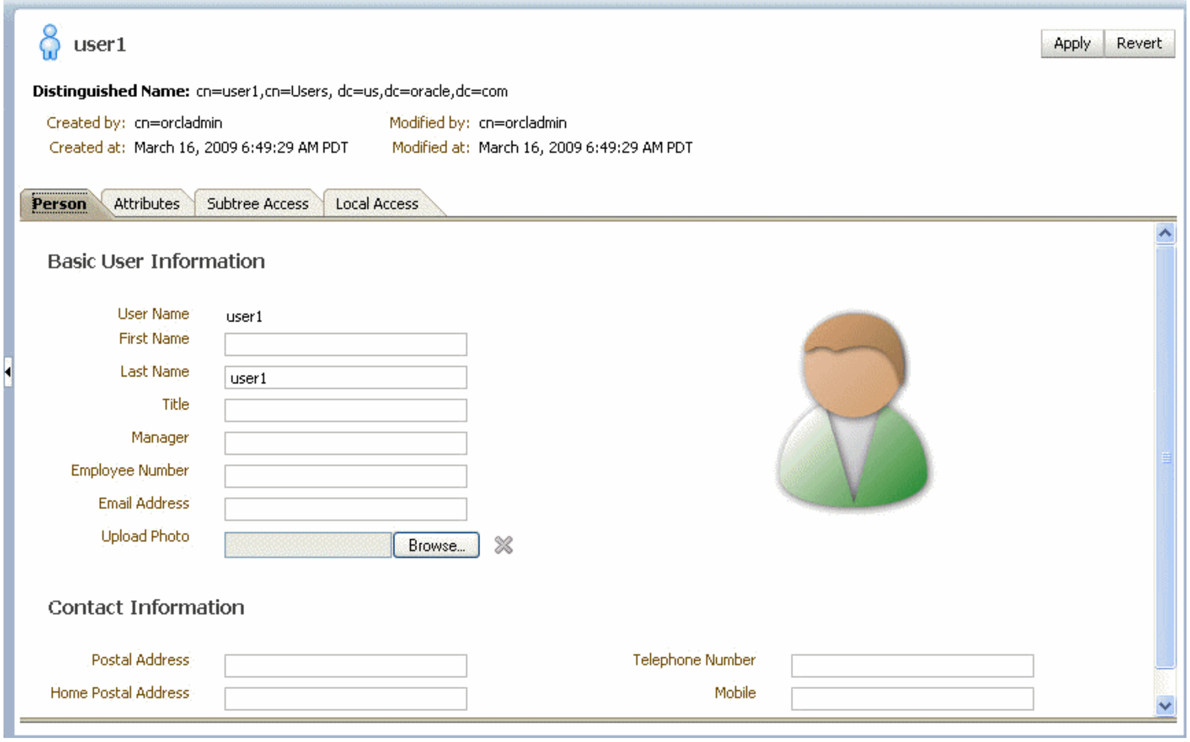
Table 22–6 Mandatory Properties (User)

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 22–9 User Information: Person Tab



user1

Distinguished Name: cn=user1,cn=Users, dc=us,dc=oracle,dc=com

Created by: cn=orcladmin
Created at: March 16, 2009 6:49:29 AM PDT
Modified by: cn=orcladmin
Modified at: March 16, 2009 6:49:29 AM PDT

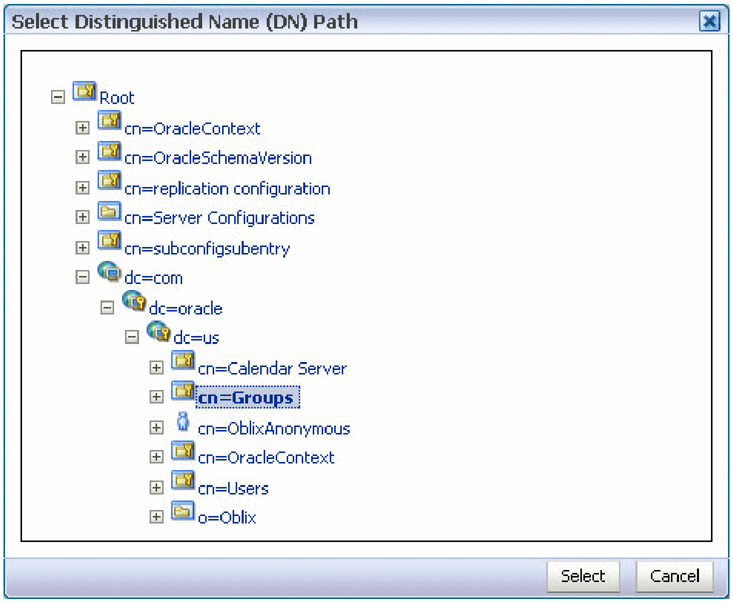
User Name: user1
Last Name: user1

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. Enter 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 22–10 Select Distinguished Name (DN) Path (Group)



Select Distinguished Name (DN) Path

- Root
  - cn=OracleContext
  - cn=OracleSchemaVersion
  - cn=replication configuration
  - cn=Server Configurations
  - cn=subconfigsubentry
  - dc=com
    - dc=oracle
      - dc=us
        - cn=Calendar Server
        - cn=Groups
        - cn=OblixAnonymous
        - cn=OracleContext
        - cn=Users
        - o=Oblix

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. Enter and select values for the required fields, and click **Next**.

   Table 22–7 lists information you can specify.

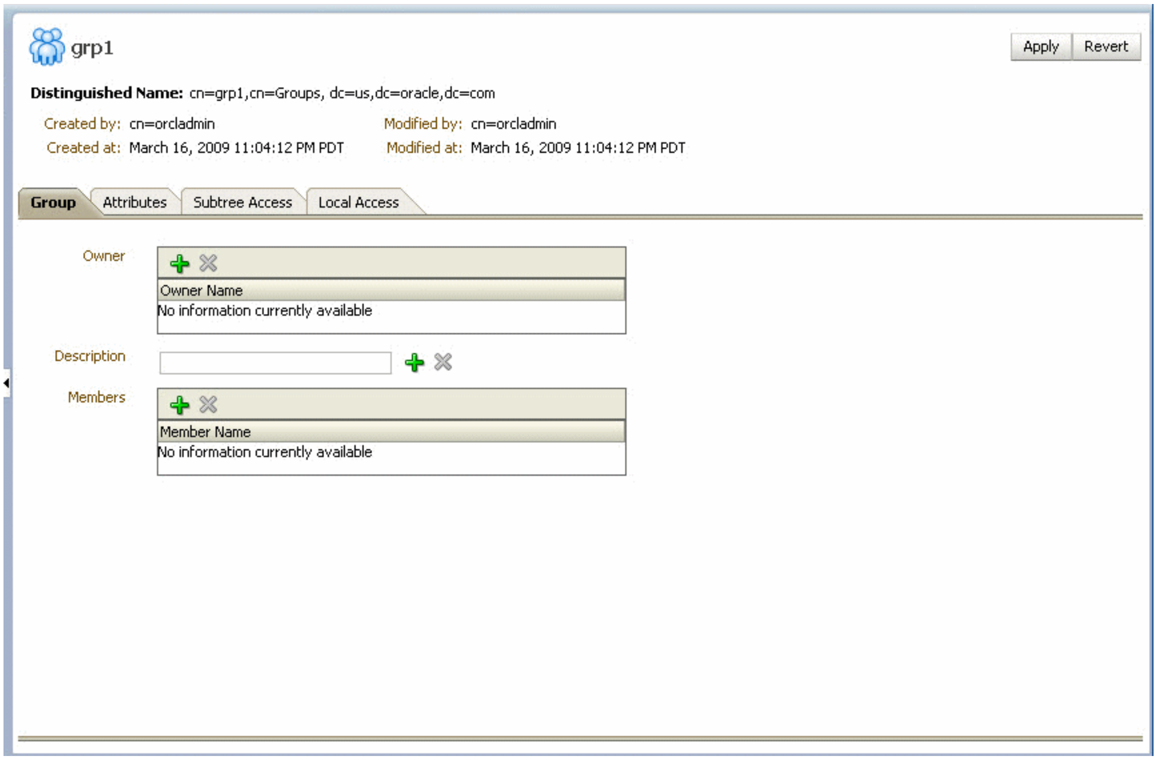
Table 22–7 Mandatory Properties

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 22–11 Group Information: Group Tab



grp1

Distinguished Name: cn=grp1,cn=Groups, dc=us,dc=oracle,dc=com

Created by: cn=orcladmin
Created at: March 16, 2009 11:04:12 PM PDT
Modified by: cn=orcladmin
Modified at: March 16, 2009 11:04:12 PM PDT

Owner

Owner Name
No information currently available

Description

Members

Member Name
No information currently available

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.

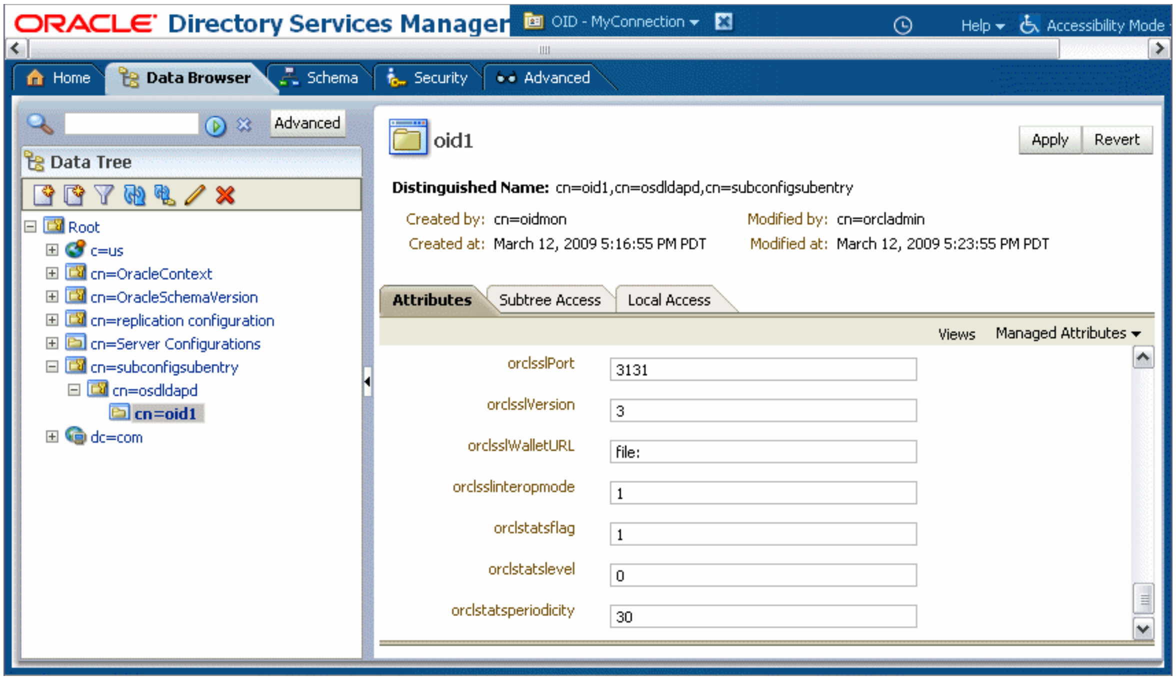
22.7.3 Configuring the Directory Service

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=osdldapd** > **cn=oid1** nodes.

Figure 22–12 Oracle Directory Services Manager Data Browser



Distinguished Name: cn=oid1,cn=osdldapd,cn=subconfigsubentry

Created by: cn=oidmon
Created at: March 12, 2009 5:16:55 PM PDT
Modified by: cn=orcladmin
Modified at: March 12, 2009 5:23:55 PM PDT

orclsslPort: 3131
orclsslVersion: 3
orclsslWalletURL: file:
orclsslinteropmode: 1
orclstatsflag: 1
orclstatslevel: 0
orclstatsperiodicity: 30

4. In the Attributes tab, set the **orclsslinteropmode** attribute to `0`.
5. Click the **Apply** button.

22.7.4 Customizing the Identity Provider

To customize the identity provider (for example, to handle user and role information stored in home grown solutions), visit the following URL:

`http://www.oracle.com/technology/products/id_mgmt/opss/index.html`

22.8 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*.

22.8.1 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*.

22.8.2 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 22.8.1, "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.

22.8.3 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*.

22.8.4 Managing Application Roles in Oracle Enterprise Manager Fusion Middleware Control Console

This section describes how to manage application roles in Oracle Enterprise Manager Fusion Middleware Control Console.

> **Note:** Follow these steps if you want to provide nonadministrators with access to Oracle SOA Composer. This is accomplished by assigning the **SOADesigner** role to users or groups on the Edit Application Role page. The users must exist in the Oracle WebLogic Server realm.

1. In the navigator, select the appropriate Oracle WebLogic Server under **WebLogic Domain** > ***Farm_Domain_name***.
2. Right-click the domain name, and select **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 **Select Application Name to Search** list of the **Search** section of the Application Roles page, select an appropriate application (for example, **soa_server1/soa-infra**).
   b. To the right of the **Role Name** list, click the **Search** icon.

      This action lists all the application roles created for that application.
   c. Select the application role to edit (for example, select **SOADesigner**).
   d. Click **Edit**.

      The Edit Application Role page appears.
   e. Add application roles and groups in the **Roles** section and users in the **Users** section (for example, assign **SOADesigner** to a user to which to provide access to Oracle SOA Composer). The user must be defined in the Oracle WebLogic Server realm.
   f. Click **OK**.
5. Delete application roles by performing the following steps:

   a. In the **Select Application Name to Search** list of the **Search** section of the Application Roles page, select an appropriate application.
   b. To the right of the **Role Name** list, click the **Search** icon.

      This action lists all the application roles created for that application.
   c. Select the application role to delete.
   d. Click the **Delete** button to delete the application role.
   e. Click **Yes** in the Confirmation dialog.

22.9 Enabling Case Agnostic Group Names in Human Tasks

By default, only user names in human tasks are case agnostic (case insensitive). This behavior is controlled by the value of the **caseSensitive** property in the System MBeans Browser for users, which is set to `false` by default. Group names in human tasks must be identical to what is seeded in the user directory. However, if you also want group names in human tasks to be case agnostic, you must set the **caseSensitiveGroups** property to `false`.

To enable case agnostic behavior for group names in human tasks:

1. Right-click **soa-infra**, and select **Administration** > **System Mbean Browser.**

   The System MBean Browser displays on the right side of the page.
2. Expand **Application Defined MBeans** > **oracle.as.soainfra.config** > **Server:** ***server_name*** > **WorkflowIdentityConfig** > **human-workflow** > **WorkflowIdentityConfig.PropertyType** > **caseSensitiveGroups**.
3. Click the **Operations** tab.
4. Click **setValue**.
5. In the **Value** field, enter `false`.
6. Click **Invoke**.

22.10 Configuring Security Policies for Human Workflow Web Services

A policy set, which can contain multiple policy references, enables you to attach policies globally to a range of endpoints of the same type. Attaching policies globally using policy sets enables you to ensure that all subjects are secured in situations in which multiple users, such as a developer, assembler, or deployer, did not explicitly specify the policies to attach. Policies that are attached using a policy set are considered externally attached.

For example, if the developer did not specify policies in annotations or include policy references in deployment descriptors, then the deployer must attach them or risk a potential security risk. By attaching policies globally to a set of subjects by type, the administrator can ensure that all subjects are secured by default independent of, and even before, deployment. For example, the administrator can define a policy set that attaches a security policy to all Web service endpoints in a domain. In this case, any new services added to the domain automatically inherit the security configuration defined in the policy set.

For more information about attaching policies globally using policy sets, see *Oracle Application Server Web Services Security Guide*.

23

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 23.1, "Monitoring Human Task Service Component Instances and Faults"
- Section 23.2, "Viewing the Status of Human Workflow Tasks"
- Section 23.3, "Monitoring Human Task Service Component Instances"
- Section 23.4, "Monitoring Human Workflow Service Engine Instances and Faults"
- Section 23.5, "Monitoring Human Workflow Service Engine Active Requests and Operation Statistics"
- Section 23.6, "Monitoring Human Workflow Service Engine Instances"
- Section 23.7, "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"

23.1 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:

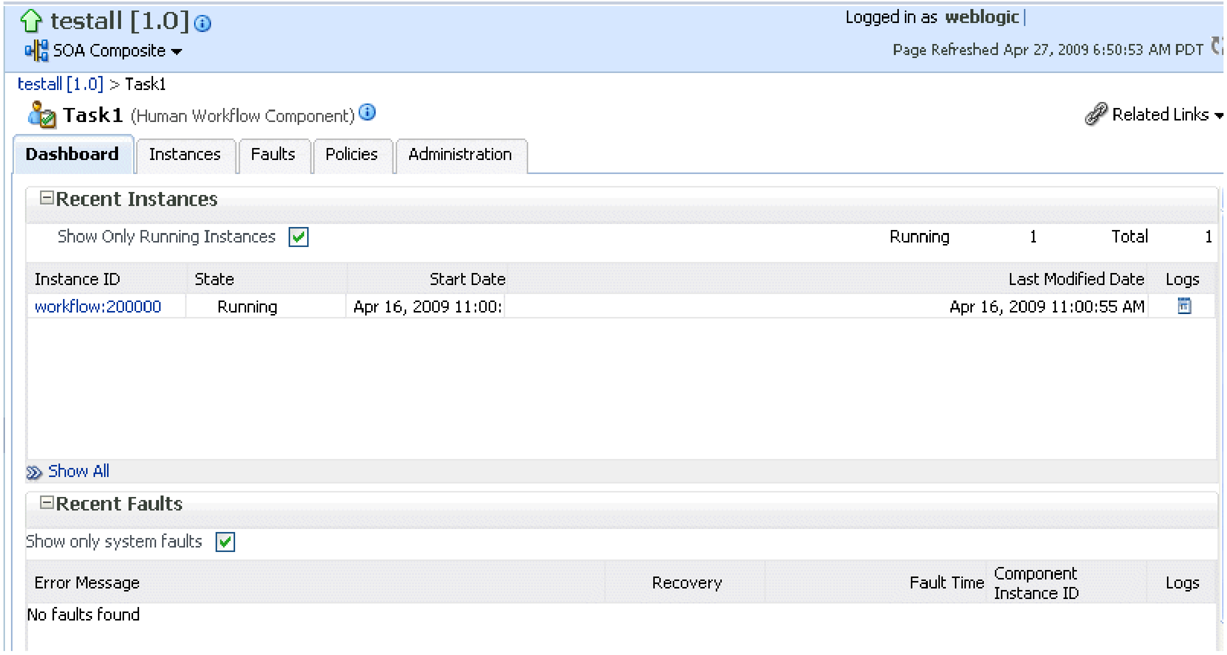
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



Recent Instances

Show Only Running Instances ☑ Running 1 Total 1

Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200000	Running	Apr 16, 2009 11:00:	Apr 16, 2009 11:00:55 AM	

Recent Faults

Show only system faults ☑

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.

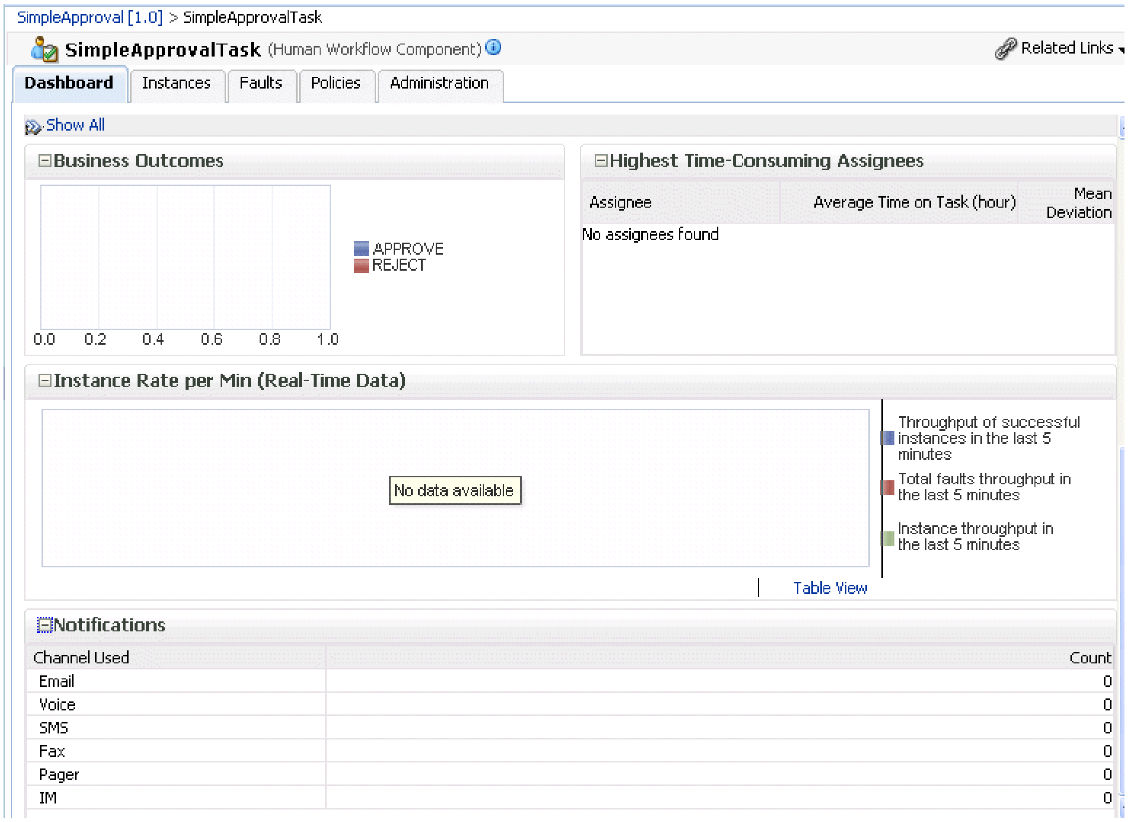
   b. In the **Recovery** column, click a fault identified as **Recoverable** to perform fault recovery at the component instance level.

   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. Click **Table View** to display throughput details for the last five minutes, including the throughput for successful instances, the total faults throughput, and the instance throughput.
- The notification channels used for task approval in the human task service component.


SimpleApproval [1.0] > SimpleApprovalTask
SimpleApprovalTask (Human Workflow Component)
Related Links
Dashboard
Instances
Faults
Policies
Administration
Show All
Business Outcomes
APPROVE
REJECT
0.0
0.2
0.4
0.6
0.8
1.0
Highest Time-Consuming Assignees
Instance Rate per Min (Real-Time Data)
Throughput of successful instances in the last 5 minutes
Total faults throughput in the last 5 minutes
Instance throughput in the last 5 minutes
Table View
Notifications

Assignee	Average Time on Task (hour)	Mean Deviation
No assignees found		

No data available

Channel Used	Count
Email	0
Voice	0
SMS	0
Fax	0
Pager	0
IM	0

For more information, see Section 1.2.3, "Understanding SOA Composite Application Instances" and *Oracle Application Server Administrator's Guide* for details about viewing and searching log files.

23.2 Viewing the Status of Human Workflow Tasks

You can monitor the current status of human workflow tasks being acted upon by participants.

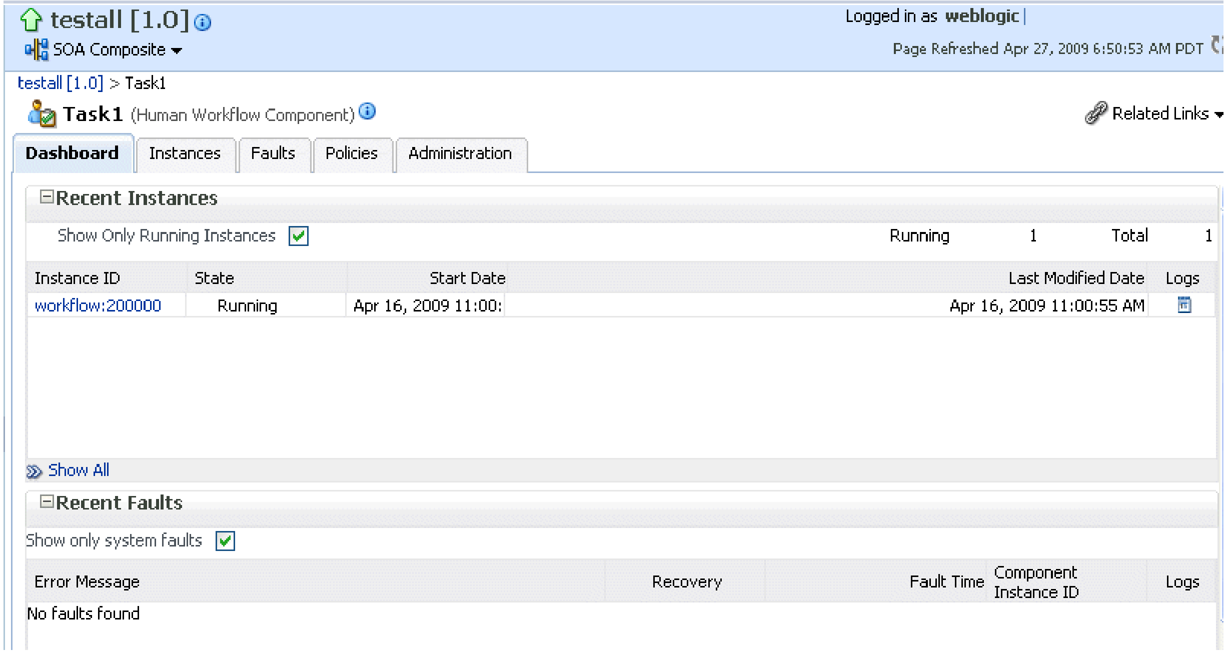
To view the status of human workflow tasks:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



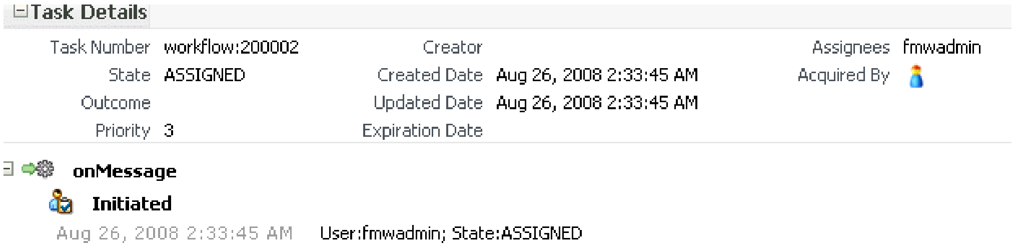
Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200000	Running	Apr 16, 2009 11:00:	Apr 16, 2009 11:00:55 AM	

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:

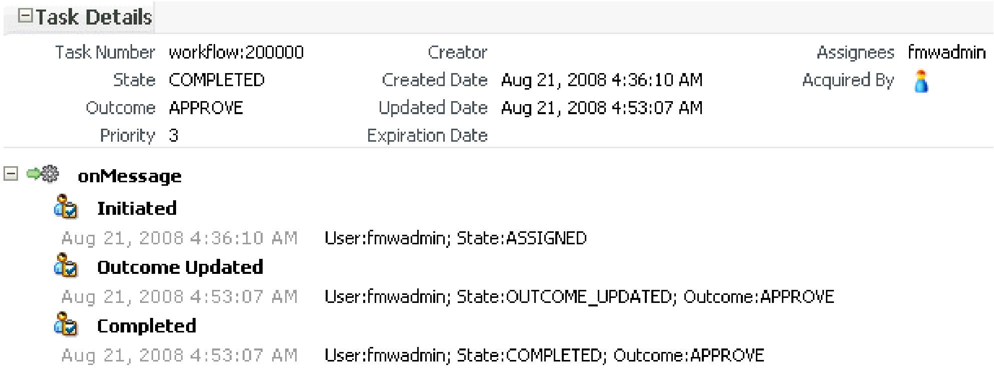
   - Task details about the selected service component instance ID (task number), including the current state (for example, assigned), task outcome (if completed), task priority, creation date, updated date, expiration date, and task assignee.
   - A flow of the current status of a task (for example, assigned or approved).



Task Number workflow:200002
State ASSIGNED
Outcome
Priority 3
Creator
Created Date Aug 26, 2008 2:33:45 AM
Updated Date Aug 26, 2008 2:33:45 AM
Expiration Date
Assignees fmwadmin
Acquired By

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
State COMPLETED
Outcome APPROVE
Priority 3
Creator
Created Date Aug 21, 2008 4:36:10 AM
Updated Date Aug 21, 2008 4:53:07 AM
Expiration Date
Assignees fmwadmin
Acquired By

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."

23.3 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:

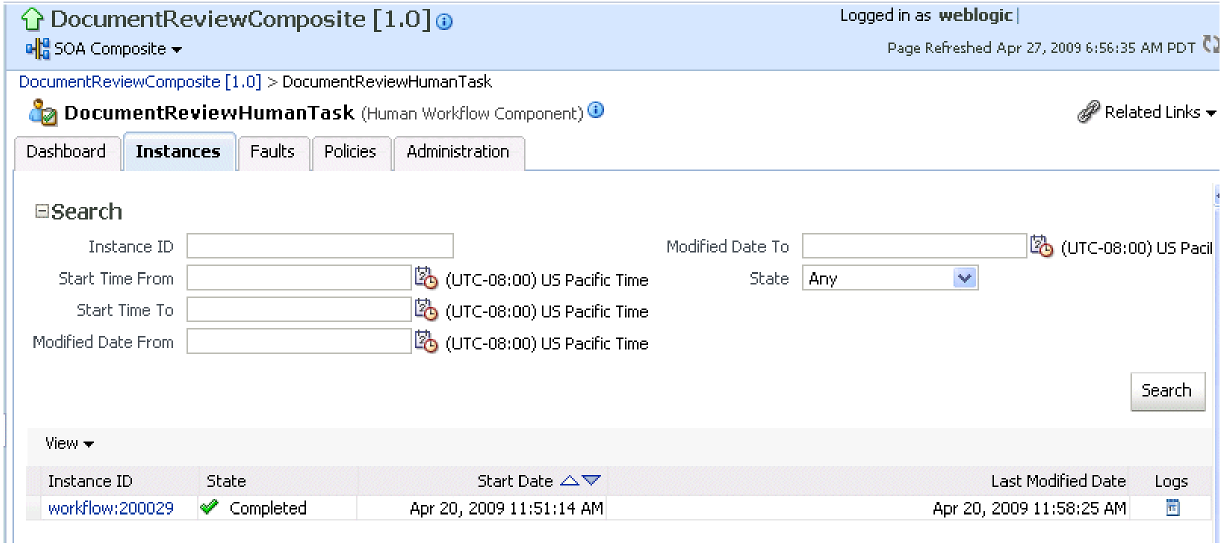
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



Logged in as **weblogic**

Page Refreshed Apr 27, 2009 6:56:35 AM PDT

State: Any

Instance ID	State	Start Date	Last Modified Date	Logs
workflow:200029	✓ Completed	Apr 20, 2009 11:51:14 AM	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 Application Server Administrator's Guide* for details about viewing and searching log files.

23.4 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:

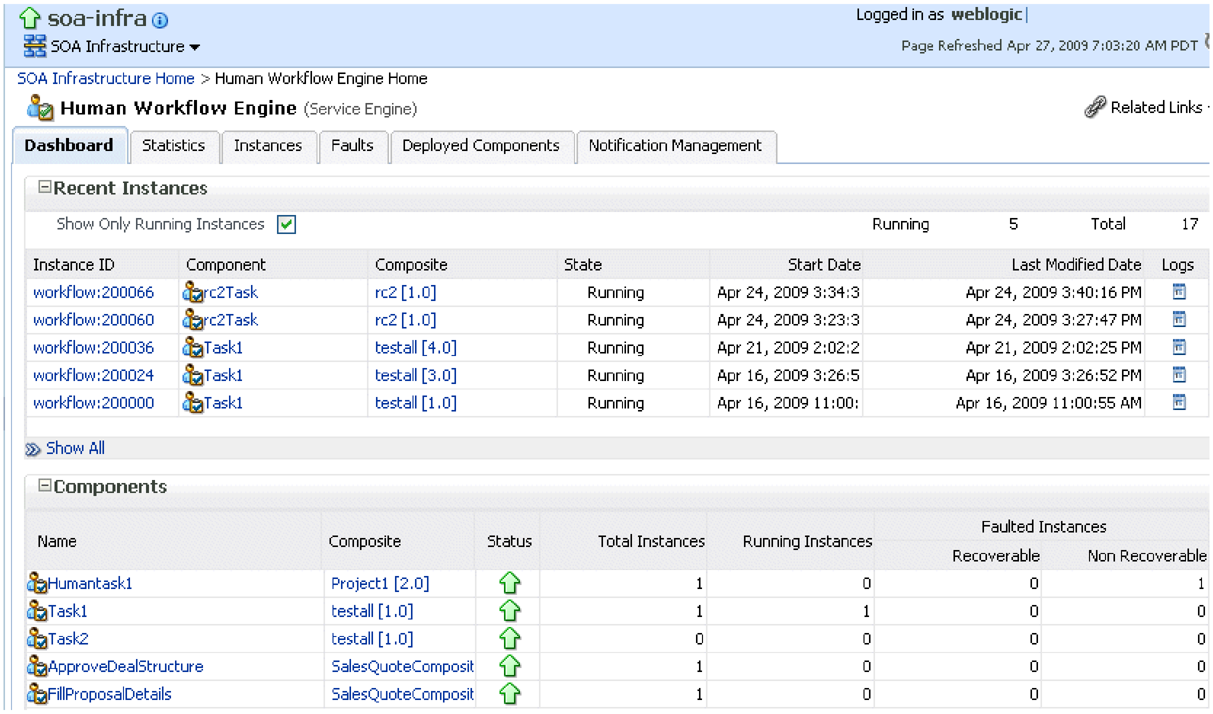
1. Access this page through one of the following options:

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.



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

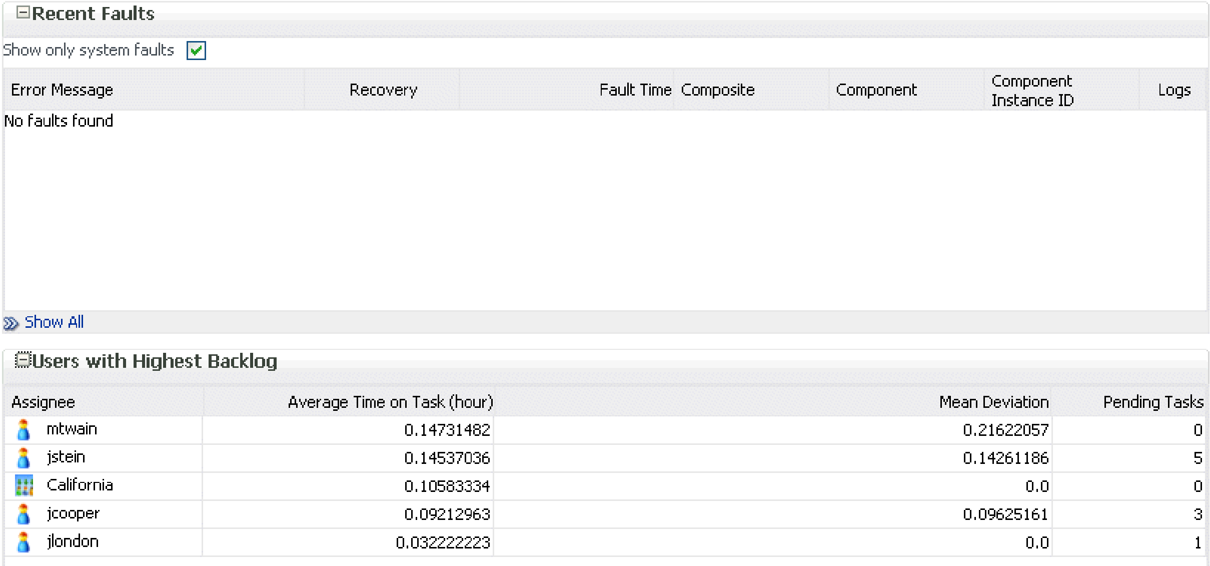
Components

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 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.
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** 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						

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.

23.5 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:

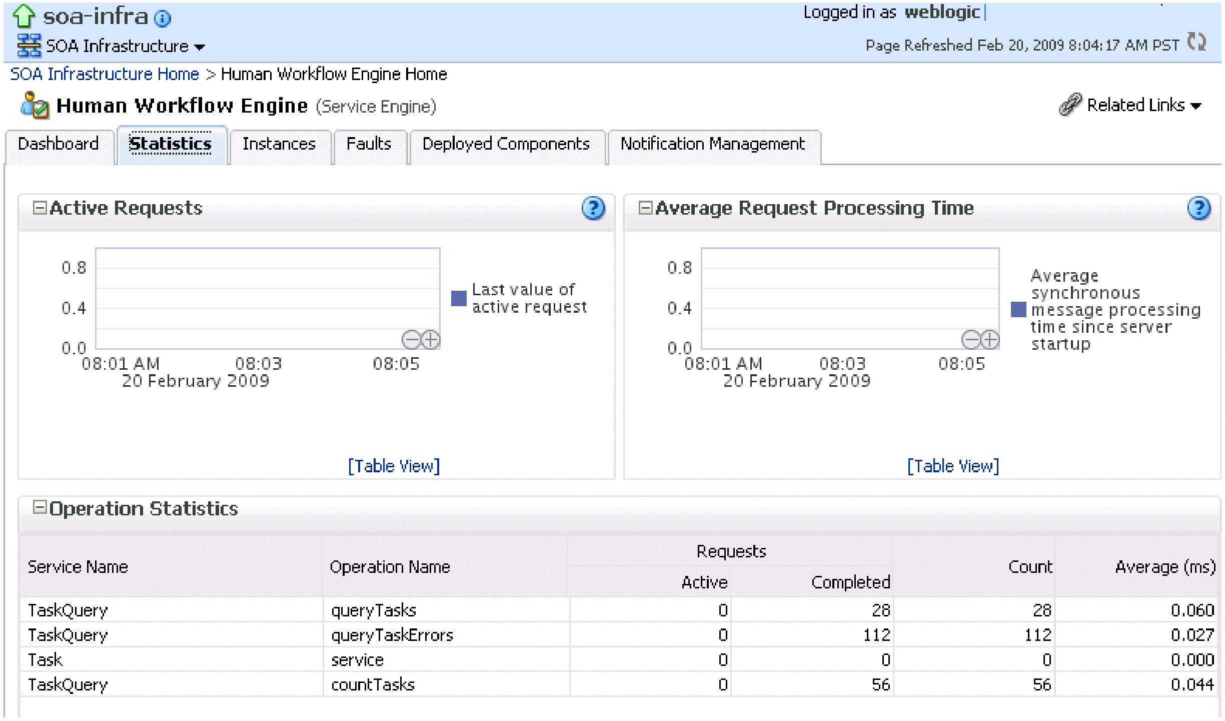
1. Access this page through one of the following options:

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.



Service Name	Operation Name	Requests		Count	Average (ms)
		Active	Completed		
TaskQuery	queryTasks	0	28	28	0.060
TaskQuery	queryTaskErrors	0	112	112	0.027
Task	service	0	0	0	0.000
TaskQuery	countTasks	0	56	56	0.044

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

23.6 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:

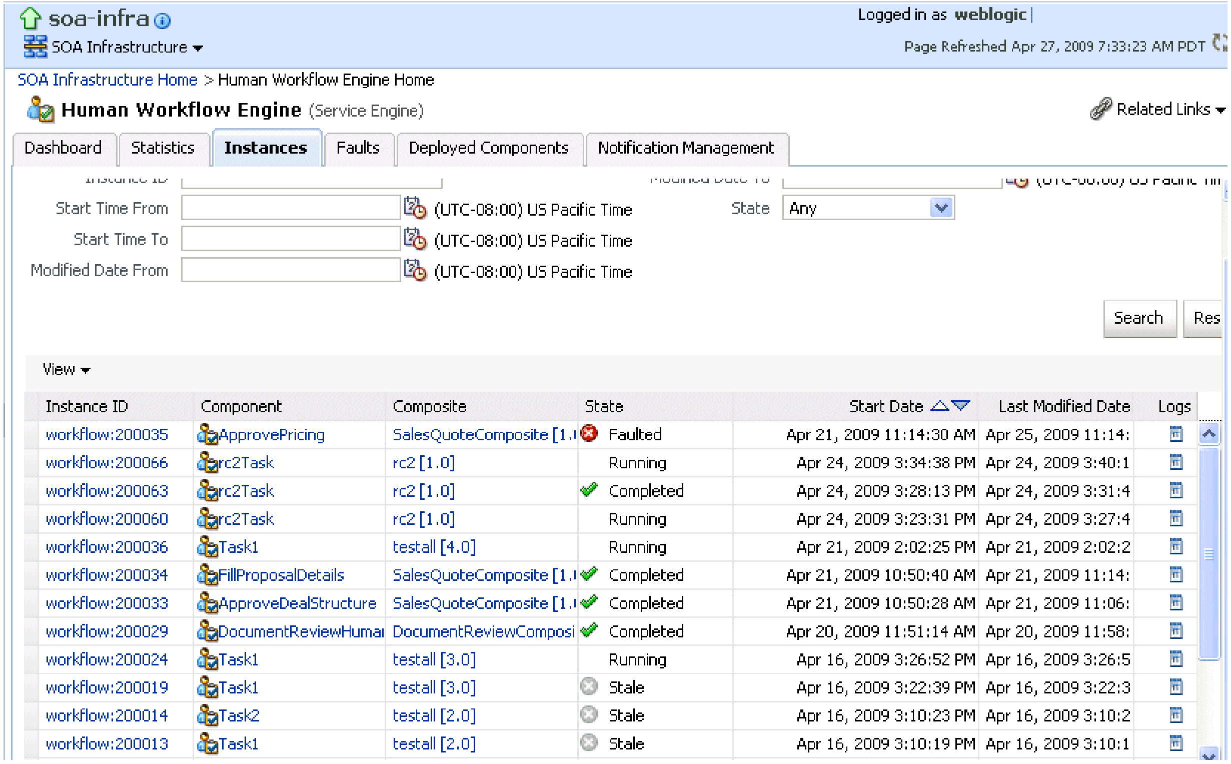
1. Access this page through one of the following options:

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.



State: Any

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
workflow:200035	ApprovePricing	SalesQuoteComposite [1.(	✗ 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.(	✓ Completed	Apr 21, 2009 10:50:40 AM	Apr 21, 2009 11:14:	▤
workflow:200033	ApproveDealStructure	SalesQuoteComposite [1.(	✓ 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 Application Server Administrator's Guide* for details about viewing and searching log files.

23.7 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:

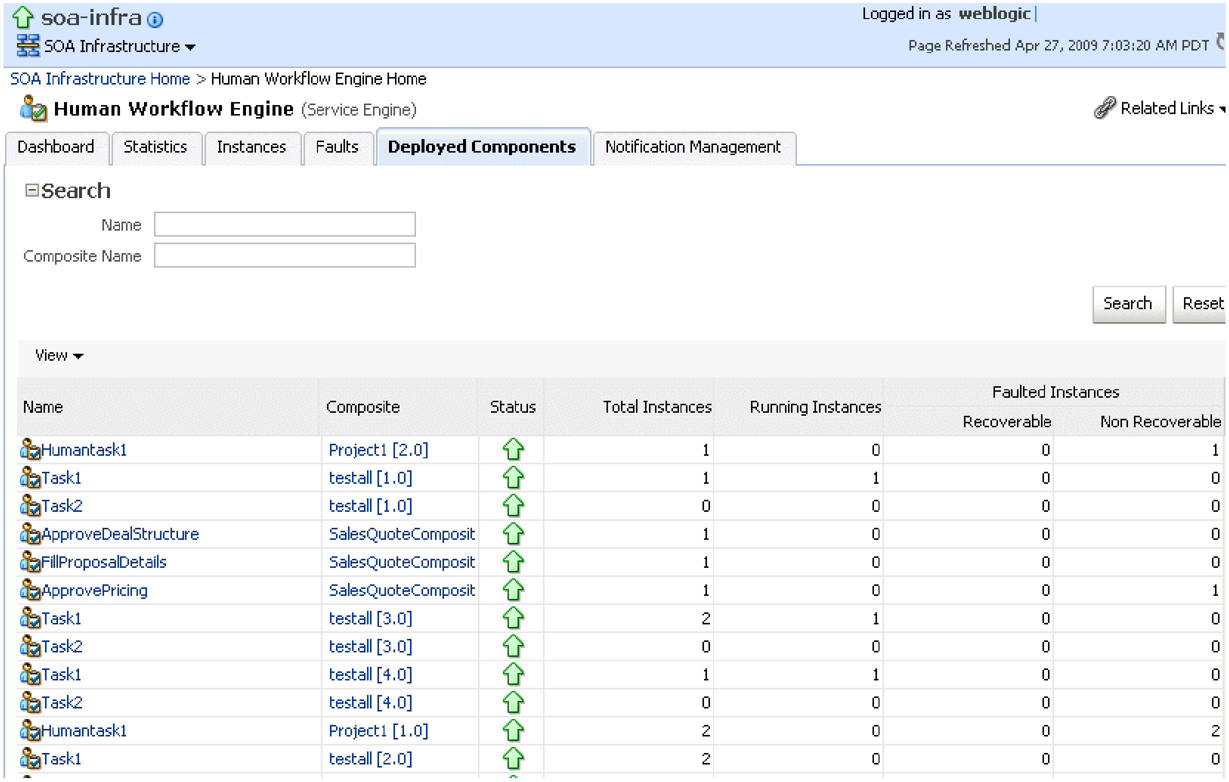
1. Access this page through one of the following options:

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.



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.

24

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 24.1, "Managing Human Task Service Component Policies"
- Section 24.2, "Recovering from Human Workflow Service Engine Faults"
- Section 24.3, "Managing the URI of the Human Task Service Component Task Details Application"
- Section 24.4, "Recovering from Human Task Service Component Faults"
- Section 24.5, "Managing Outgoing Notifications and Incoming E-mail Notifications"
- Section 24.6, "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"

24.1 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.

Notes:

- Before attaching policies, see *Oracle Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use in your environment.
- Human tasks have a port that is protected by default using the SAML policy `oracle/wss10_saml_token_service_policy`. Oracle recommends that you *not* use this policy in a production environment.

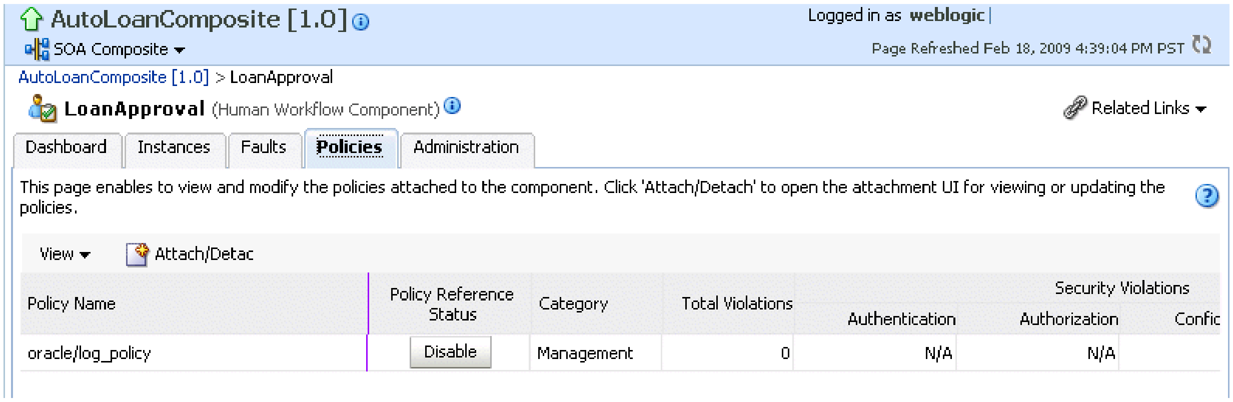
To manage human task service component policies:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



This page enables to view and modify the policies attached to the component. Click 'Attach/Detach' to open the attachment UI for viewing or updating the policies.

Policy Name	Policy Reference Status	Category	Total Violations	Security Violations		
				Authentication	Authorization	Confic
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 Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use for your environment

24.2 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 transactions 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:

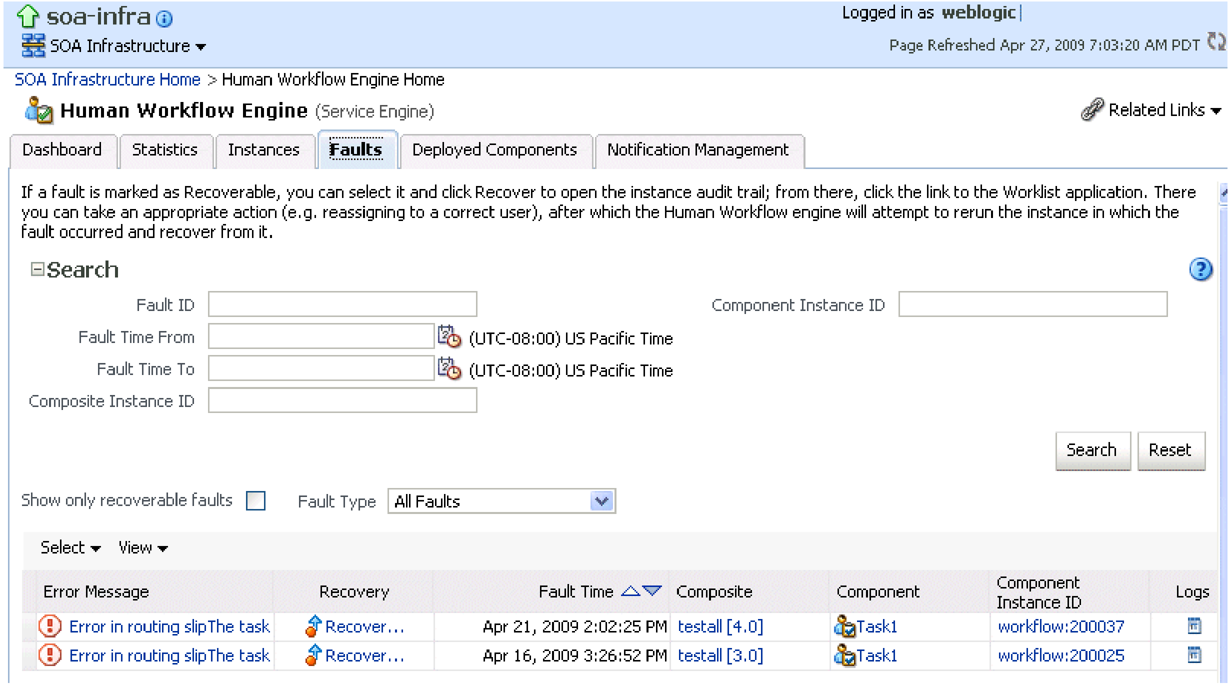
1. Access this page through one of the following options:

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.



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.

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 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 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.

24.3 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:

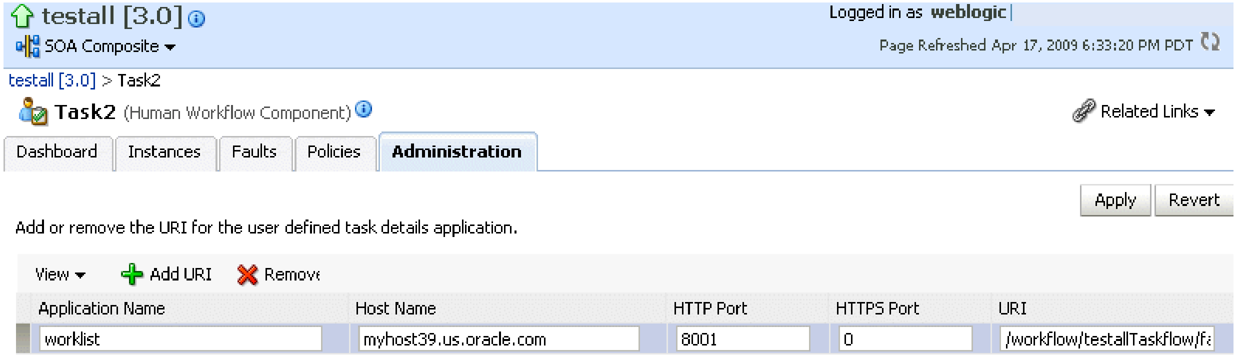
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



Add or remove the URI for the user defined task details application.

Application Name	Host Name	HTTP Port	HTTPS Port	URI
worklist	myhost39.us.oracle.com	8001	0	/workflow/testallTaskflow/f

---

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**.

24.4 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:

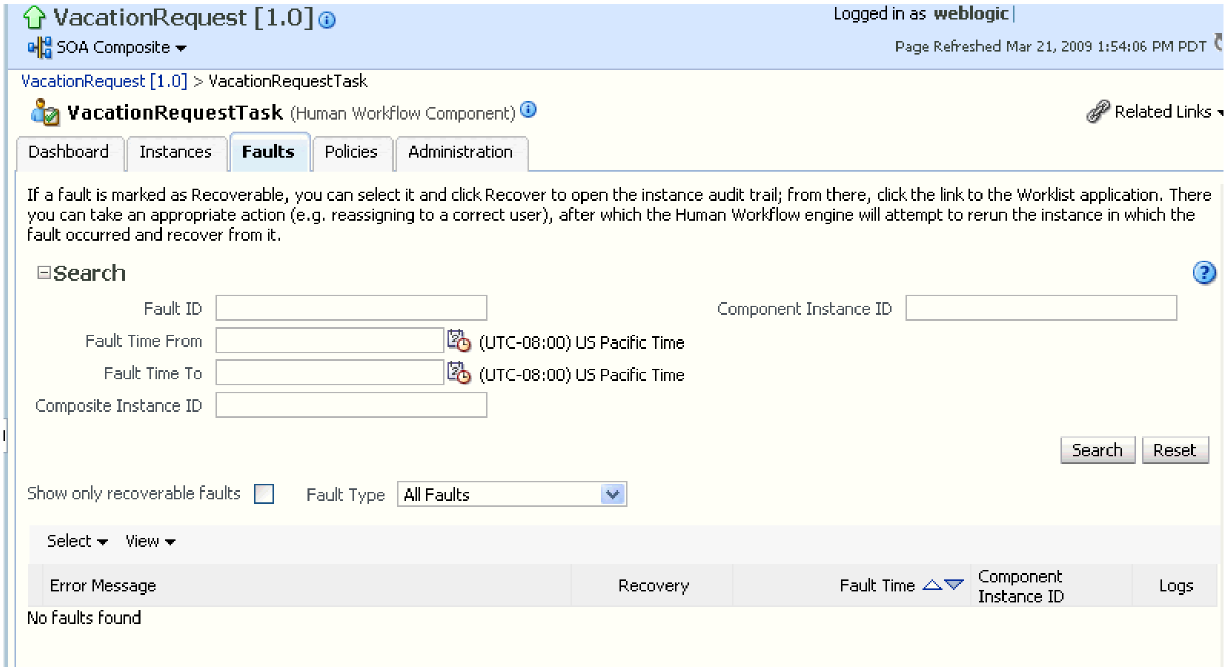
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



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.

No faults found

Human workflow service engine faults identified as recoverable can be recovered from 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 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.

24.5 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:

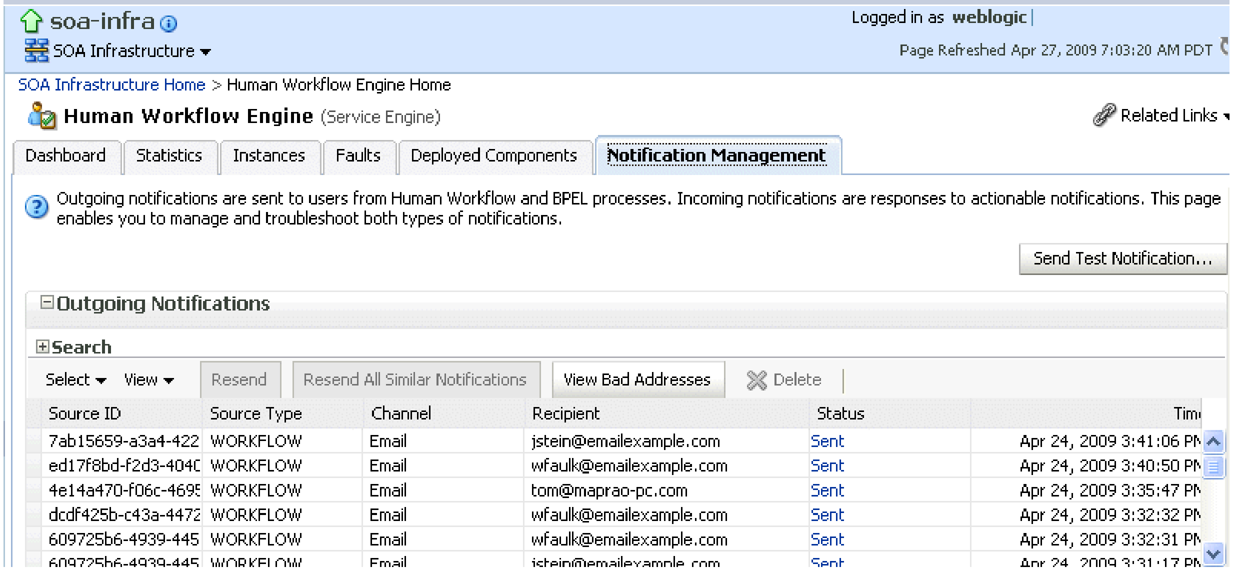
1. Access this page through one of the following options:

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.



Logged in as weblogic

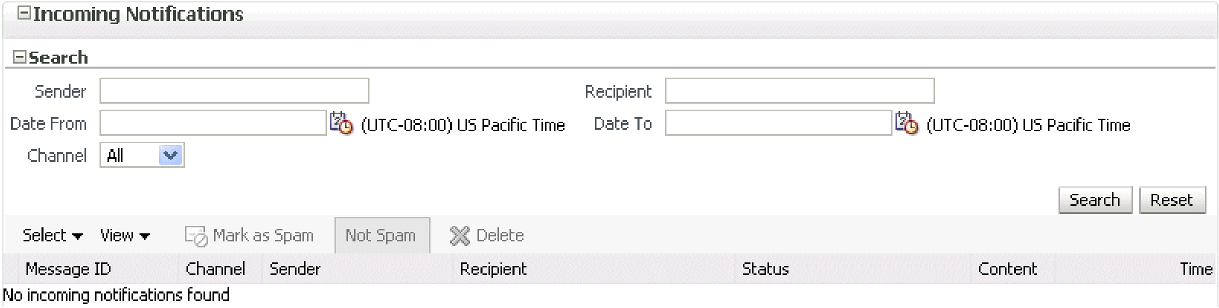
Page Refreshed Apr 27, 2009 7:03:20 AM PDT

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.

Source ID	Source Type	Channel	Recipient	Status	Tim
7ab15659-a3a4-422	WORKFLOW	Email	jstein@emailexample.com	Sent	Apr 24, 2009 3:41:06 PM
ed17f8bd-f2d3-404	WORKFLOW	Email	wfaulk@emailexample.com	Sent	Apr 24, 2009 3:40:50 PM
4e14a470-f06c-469	WORKFLOW	Email	tom@maprao-pc.com	Sent	Apr 24, 2009 3:35:47 PM
dcdf425b-c43a-447	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	jstein@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.



(UTC-08:00) US Pacific Time

Channel: All

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: ■ 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.

4. In the **Recipient** column, click the e-mail address and correct the address.
5. 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*.

24.6 Moving Human Workflow Data from a Test to a Production Environment

You can migrate Human Workflow user metadata, such as views, mapped attribute (previously known as 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 mapped attribute 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.

24.6.1 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, mapped attribute mappings, and vacation rules) from the test environment. See Section 24.6.2.1, "Migration Property File Examples" for instructions on how to specify properties.

   Note the following:

   - You can export mapped attribute mappings.
   - You can export 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 mapped attribute mappings.

     To export attribute labels, use the following values in the `migration.properties` file:

     ```
     objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
     migrateAttributeLabel = true
     ```

To export mapped attribute 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 24.6.3, "ant Script Data Migration Syntax" for instructions on specifying `ant` properties.

4. Ensure that the application is deployed to the production system.

Note: Human workflow artifacts such as task mapped attribute mappings, rules, views, and approval groups are defined based on namespace. The Data Migrator migrates human workflow artifacts based on namespace. Therefore, it is not possible to migrate human workflow artifacts based on a partition.

---

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 it in separate operations.
   - You must import attribute labels before you import mapped attribute mappings.

     To import attribute labels, use the following values in the `migration.properties` file:

     ```
     objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
     migrateAttributeLabel = true
     ```

     To import mapped attribute 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 22.1, "Configuring Human Workflow Notification Properties."

24.6.2 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}
```

Argument	Definition
`operationType`	Specify to perform one of the following actions: ■ `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: ■ `VIEW`: Migrates views. ■ `RULE`: Migrates vacation rules. ■ `TASK_PAYLOAD_FLEX_FIELD_MAPPING`: Migrates mapped attribute mappings.

Argument	Definition
`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: ■ `viewName` for VIEW ■ `taskDefinitionId` for `TASK_PAYLOAD_FLEX_FIELD_MAPPING` Specify `ALL` to identify all objects of this type.
`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`.
`group`	Specify this property only if you specified the `RULE` value of the `objectType` property. It identifies the group name (for example, `LoanAgentGroup`).
`grantPermission`	Specify this property only if you specified the `VIEW` value of the `objectType` property. ■ `true`: Migrates view definitions and grants. ■ `false`: Migrates only view definitions.
`migrateAttributeLabel`	Specify one of the following values: ■ `true`: Migrates only attribute labels. Payload mappings are *not* migrated. ■ `false`: Does not migrate attribute labels and payload mappings.
`override`	Specify whether to override the data on the target SOA server: ■ `true`: Overrides the existing workflow user-configurable data on the target SOA server. ■ `false`: Does not override the target SOA server instance that has the workflow user-configurable data.
`skip`	Specify error handling details. ■ `true`: Errors are skipped and the migration utility continues processing. ■ `false`: Any encountered error halts the migration.
`migrateToActiveVersion`	Specify a value for mapping task definition IDs. ■ `true`: Maps task definition IDs to the active version in the target SOA server instance. ■ `false`: Does not map task definitions.

24.6.2.1 Migration Property File Examples

This section provides examples how to configure the `migration.properties` file.

24.6.2.1.1 Exporting All Attribute Labels The following example exports all attribute labels.

```
operationType = EXPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
```

```
skip = true
migrateToActiveVersion = true
```

24.6.2.1.2 Importing All Attribute Labels The following example imports all attribute labels.

```
operationType = IMPORT
objectType = TASK_PAYLOAD_FLEX_FIELD_MAPPING
name = ALL
user = jcooper
group =
grantPermission = true
migrateAttributeLabel = true
override = true
skip = true
migrateToActiveVersion = true
```

24.6.2.1.3 Exporting Specific Attribute Labels The following example exports specific 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 = true
```

24.6.2.1.4 Importing Specific Attribute Labels The following example imports specific 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 = true
```

24.6.2.1.5 Exporting Task Payload Mapped Attribute Mappings for All Task Definition IDs The following example exports task payload mapped attribute 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 = true
```

24.6.2.1.6 Importing Task Payload Mapped Attribute Mappings for All Task Definition IDs

The following example imports task payload mapped attribute mappings for all task definition IDs. Task payload mapped attribute mappings use attribute labels. As a prerequisite, find out the attribute labels involved in the task payload mapped attribute mappings to import. These attribute labels must be available in the target SOA server before the import of task payload mapped attribute 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 mapped attribute 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 = true
```

24.6.2.1.7 Exporting Task Payload Mapped Attribute Mappings for a Specific Task Definition ID

The following example exports task payload mapped attribute 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 = true
```

24.6.2.1.8 Importing Task Payload Mapped Attribute Mappings for a Specific Task Definition ID

The following example imports task payload mapped attribute mappings for a specific task definition ID. Task payload mapped attribute mappings make use of attribute labels. As a prerequisite, find out the attribute labels that are involved in the task payload mapped attribute mappings to import. These attribute labels must be available in the target SOA server before the import of task payload mapped attribute 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 mapped attribute 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 = true
```

24.6.2.1.9 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
```

24.6.2.1.10 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
```

24.6.2.1.11 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
```

24.6.2.1.12 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
```

24.6.2.1.13 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
```

24.6.2.1.14 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
```

24.6.2.1.15 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
```

24.6.2.1.16 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
```

24.6.2.1.17 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
```

24.6.2.1.18 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
```

24.6.2.1.19 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
```

24.6.2.1.20 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
```

24.6.3 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 25, "Configuring Oracle Business Activity Monitoring"
- Chapter 26, "Monitoring Oracle Business Activity Monitoring"
- Chapter 27, "Managing Oracle Business Activity Monitoring"

25

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:

25.1 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*.

At runtime, the Oracle BAM application checks the configuration property values. If they are set to `DEFAULT`, Oracle BAM dynamically determines the values of all the parameters by querying the JRF API, that in turn queries the MBean Server. This feature enables you to set up Oracle BAM on any port number and work out of the box with out any configuration changes. By default all of the parameters are set to `DEFAULT`.

If the administrator provides the configuration values during configuration then Oracle BAM honors them as the values going forward. If for some reason the parameters are not present, Oracle BAM first looks for host and port details in JRF. If Oracle BAM is not able to access JRF, hard-coded default values are provided from the code.

The most commonly used Oracle BAM Server and Web applications properties are configured in Oracle Enterprise Manager Fusion Middleware Control Console. See Section 25.3, "Configuring Oracle BAM Server Basic Properties" and Section 25.2, "Configuring Oracle BAM Web Basic Properties" for more information.

Security configuration is discussed in Section 25.9, "Configuring Security", and adding and managing Oracle BAM roles (permissions) and user accounts is discussed in Section 27.3, "Managing Oracle BAM Users."

Oracle User Messaging Service (UMS) must be configured so that alerts are delivered to Oracle BAM users. See Section 25.5, "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 25.7, "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 25.10, "Configuring Advanced Properties" for more information. Also, see Section 25.11, "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 25.6, "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*.

25.2 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 27.2, "Managing Oracle BAM Availability" for information about restarting Oracle BAM.

The following topics describe how to configure each property:

- Section 25.2.1, "Configuring Oracle BAM Web Applications Properties"
- Section 25.2.2, "Configuring Application URL"
- Section 25.2.3, "Configuring Report Loading Indicator"
- Section 25.2.4, "Configuring Server Name"

For information about configuring advanced properties, see Section 25.10, "Configuring Advanced Properties" and Section 25.11, "Oracle BAM Configuration Property Reference."

25.2.1 Configuring Oracle BAM Web Applications Properties

The Oracle BAM Web applications properties are configured in the OracleBamWeb Properties page in Fusion Middleware Control Console.

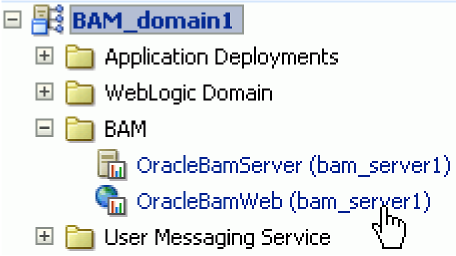
To configure Oracle BAM Web applications properties:

1. Go to the OracleBamWeb Properties page in Fusion Middleware Control Console by selecting the **OracleBamWeb** node.

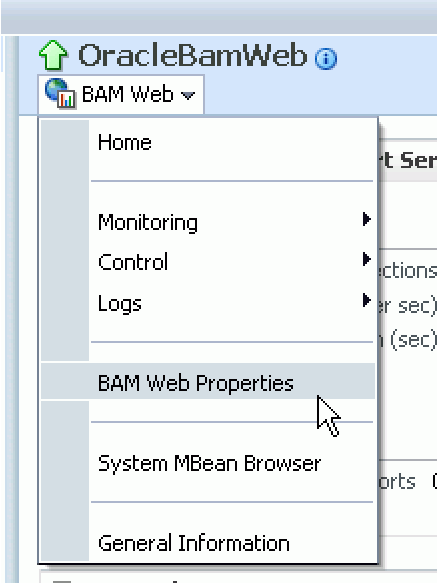
   Open Fusion Middleware Control Console in your Web browser at:

   `http://host_name:port_number/em`

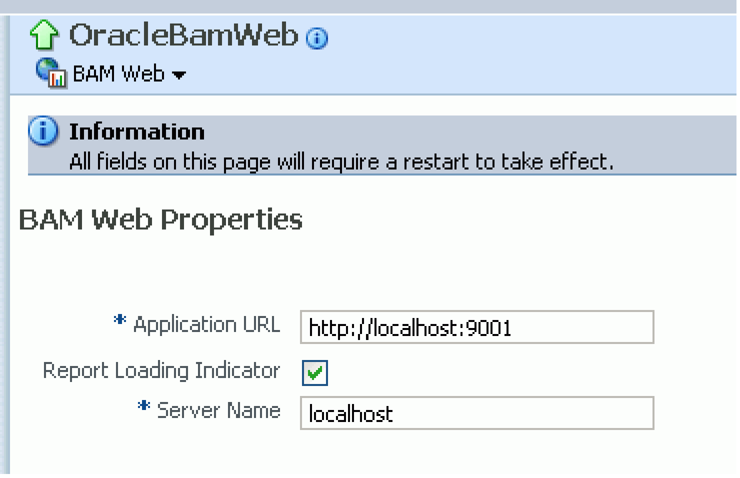
   In the navigation tree, the Oracle BAM Web node is named **OracleBamWeb** in the **BAM** folder.



2. Select **BAM Web Properties** in the **BAM Web** menu.



   The BAM Web Properties page opens.



Information
All fields on this page will require a restart to take effect.

BAM Web Properties

* Application URL: http://localhost:9001
Report Loading Indicator: ☑
* Server Name: localhost

3. Enter the desired values in each of the fields provided.

   See the following sections for information about configuring each of the properties:

   - Section 25.2.2, "Configuring Application URL"
   - Section 25.2.3, "Configuring Report Loading Indicator"
   - Section 25.2.4, "Configuring Server Name"

4. Click **Apply**.

   You must restart the Oracle BAM application after any property changes.

25.2.2 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.

25.2.3 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.

25.2.4 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.

25.3 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 27.2, "Managing Oracle BAM Availability" for information about restarting Oracle BAM.

The following topics describe how to configure each property:

- Section 25.3.1, "Configuring Oracle BAM Server Properties"
- Section 25.3.2, "Configuring Data Source JNDI"
- Section 25.3.3, "Configuring Application URL"
- Section 25.3.4, "Configuring Viewset Sharing"
- Section 25.3.5, "Configuring Report Cache Persistence Manager"
- Section 25.3.6, "Configuring Oracle Data Integrator Integration Properties"
- Section 25.3.7, "Configuring Outbound Email Account"

For information about configuring advanced properties, see Section 25.10, "Configuring Advanced Properties" and Section 25.11, "Oracle BAM Configuration Property Reference."

25.3.1 Configuring Oracle BAM Server Properties

Oracle BAM Server properties are configured in the OracleBamServer Properties page in Oracle Enterprise Manager Fusion Middleware Control Console.

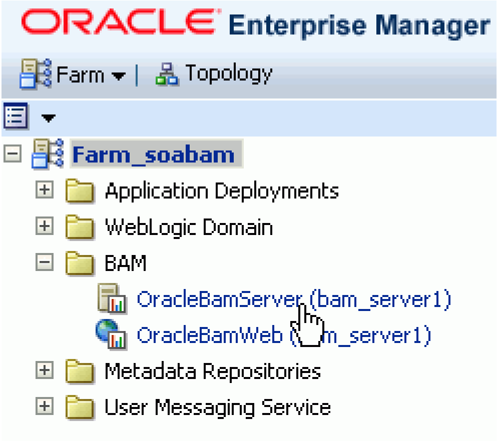
To configure Oracle BAM Server properties:

1. Go to the Oracle BAM Server home page by selecting the **OracleBamServer** node in Fusion Middleware Control Console.

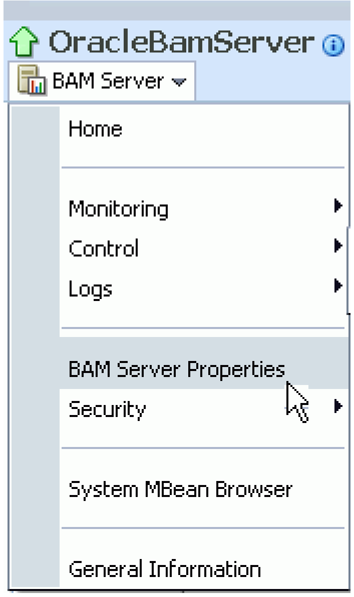
   Open Fusion Middleware Control Console in your Web browser at:

   ```
   http://host_name:port_number/em
   ```

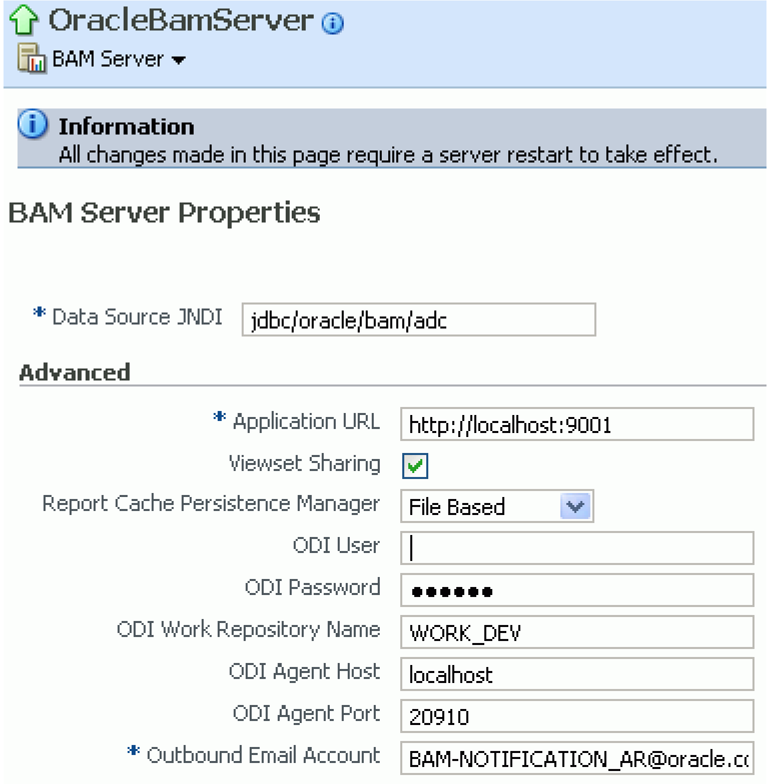
   In the navigation tree, the Oracle BAM Server node is named **OracleBamServer**, and it is found in the **BAM** folder.



2. Select **BAM Server Properties** from the **BAM Server** menu.



The BAM Server Properties page opens.



Information
All changes made in this page require a server restart to take effect.

BAM Server Properties

* Data Source JNDI	jdbc/oracle/bam/adc

Advanced

* Application URL	http://localhost:9001
Viewset Sharing	☑
Report Cache Persistence Manager	File Based
ODI User	
ODI Password	●●●●●●
ODI Work Repository Name	WORK_DEV
ODI Agent Host	localhost
ODI Agent Port	20910
* Outbound Email Account	BAM-NOTIFICATION_AR@oracle.c

3. Enter the desired values in each of the fields provided.

   See the following sections for information about configuring each of the properties:

   - Section 25.3.2, "Configuring Data Source JNDI"
   - Section 25.3.3, "Configuring Application URL"
   - Section 25.3.4, "Configuring Viewset Sharing"
   - Section 25.3.5, "Configuring Report Cache Persistence Manager"
   - Section 25.3.6, "Configuring Oracle Data Integrator Integration Properties"
   - Section 25.3.7, "Configuring Outbound Email Account"

4. Click **Apply**.

   You must restart the Oracle BAM application after any property changes.

25.3.2 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 Data Sources for Oracle WebLogic Server*

25.3.3 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 25.2.2, "Configuring Application URL" for information about configuring this property for Oracle BAM Web applications.

25.3.4 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 25.11, "Oracle BAM Configuration Property Reference" for information about configuring advanced properties.

25.3.5 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.

25.3.6 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.

25.3.7 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 25.5, "Configuring Oracle User Messaging Service" for details.

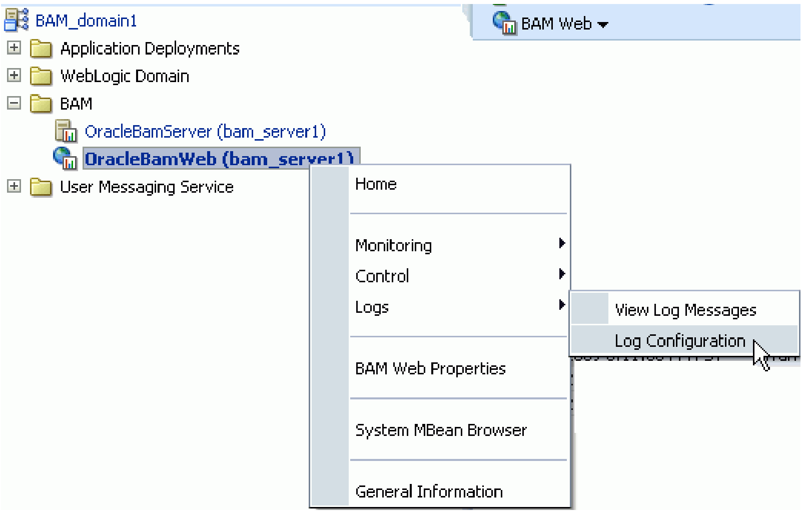
Oracle BAM Event Engine has another configuration property, TimeoutPeriodToGetFailedStatusesInMins, which is the time interval for which the Event Engine waits after delivering an e-mail notification, to see if it receives any failure notification from Oracle UMS. The default value for this property 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 25.11, "Oracle BAM Configuration Property Reference" for information about configuring TimeoutPeriodToGetFailedStatusesInMins.

25.4 Configuring the Logger

Use the Log Configuration page to configure logging levels. For information about viewing the logs, see Section 26.6, "Monitoring Oracle BAM Logs." Also, see Section 3.4, "Configuring Log Files" and *Oracle Application Server Administrator's Guide* for general information about logging and log levels.

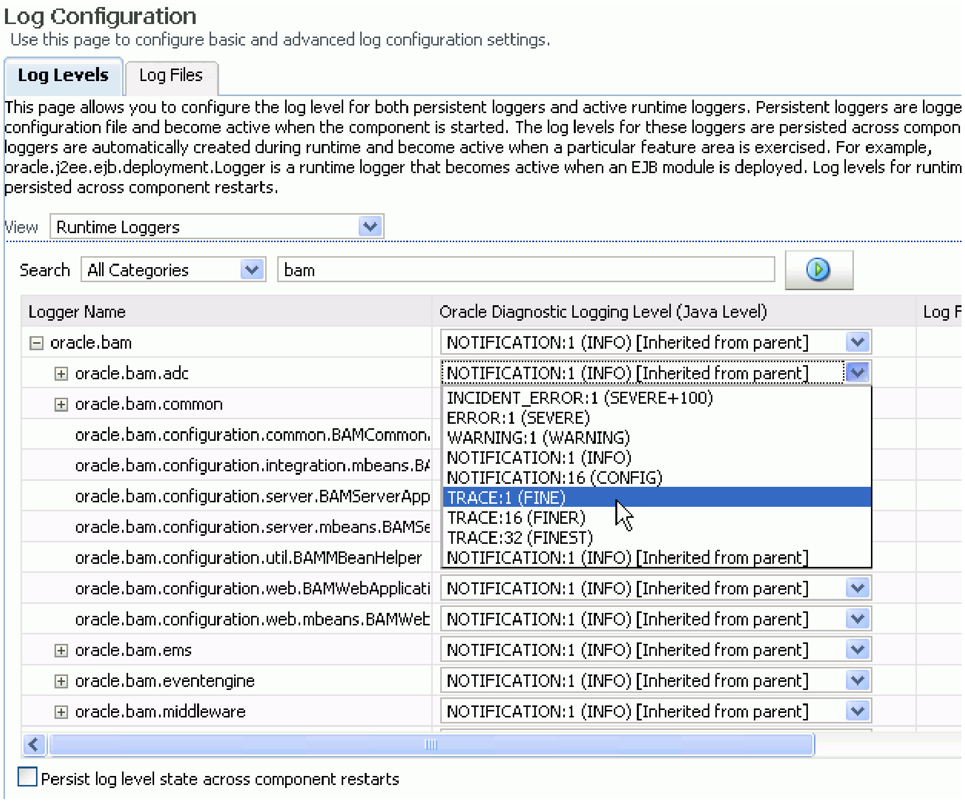
To open the Log Configuration page, right click the **OracleBamServer** node or **OracleBamWeb** node in the navigation tree and select **Logs > Log Configuration** as shown in Figure 25–1.

Figure 25–1 Logs Shortcut Menu



For each logger, select the desired notification level as shown in Figure 25–2.

Figure 25–2 Setting Log Levels



Log Configuration

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

This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are logge configuration file and become active when the component is started. The log levels for these loggers are persisted across compon 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 runtim persisted across component restarts.

View: Runtime Loggers

Search: All Categories | bam

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log F
oracle.bam	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.adc	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.common		
oracle.bam.configuration.common.BAMCommon.		
oracle.bam.configuration.integration.mbeans.BA		
oracle.bam.configuration.server.BAMServerApp		
oracle.bam.configuration.server.mbeans.BAMSe		
oracle.bam.configuration.util.BAMMBeanHelper		
oracle.bam.configuration.web.BAMWebApplicati	NOTIFICATION:1 (INFO) [Inherited from parent]	
oracle.bam.configuration.web.mbeans.BAMWet	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

25.5 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.

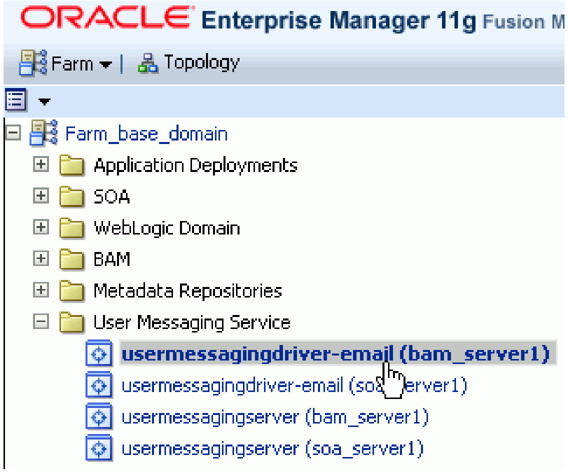
To configure the outbound e-mail account see Section 25.3.7, "Configuring Outbound Email Account."

To configure the service:

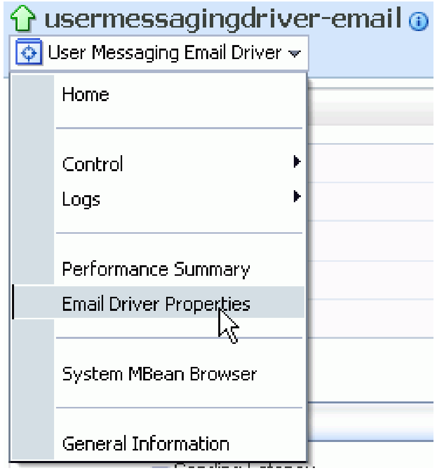
1. Open Fusion Middleware Control Console in your Web browser at:

   `http://host_name:port_number/em`

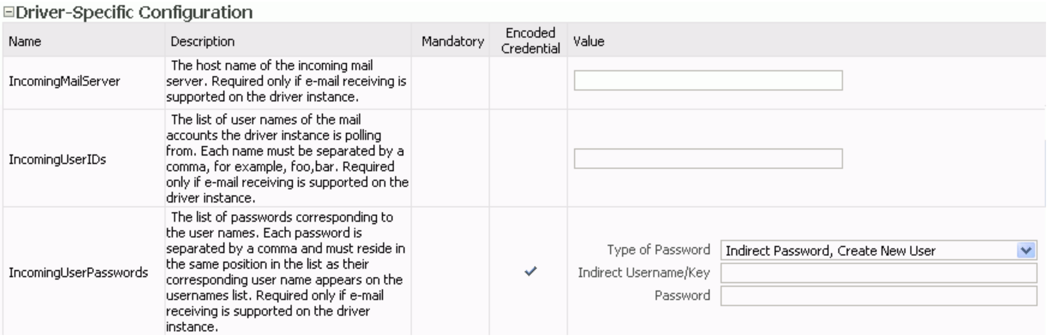
2. Go to the usermessagingdriver-email (User Messaging Email Driver) page in Fusion Middleware Control Console by expanding the **User Messaging Service** folder, then selecting the **usermessagingdriver-email (bam_server1)** node.


ORACLE Enterprise Manager 11g Fusion M
Farm
Topology
Farm_base_domain
Application Deployments
SOA
WebLogic Domain
BAM
Metadata Repositories
User Messaging Service
usermessagingdriver-email (bam_server1)
usermessagingdriver-email (soa_server1)
usermessagingserver (bam_server1)
usermessagingserver (soa_server1)

3. From the User Messaging Email Driver shortcut menu, select **Email Driver Properties**.



4. 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.			
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.			
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: Indirect Password, Create New User Indirect Username/Key: Password:

See Section 28.4, "Configuring User Messaging Service Drivers" for more information. Table 28–7, " Custom Email Properties" contains specific information about the properties you must configure.

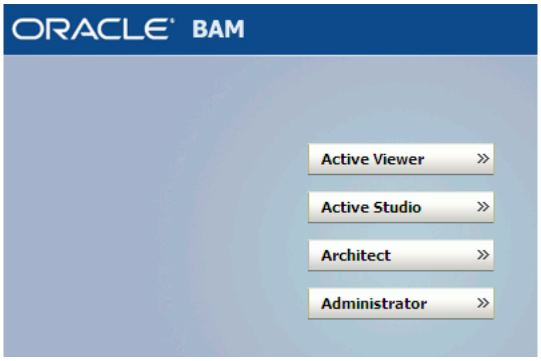
5. Click **Apply** to save the changes.
6. Enter the e-mail account in the Outbound Email Account property in the Oracle BAM Server configuration. See Section 25.3.7, "Configuring Outbound Email Account" for details.

25.6 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:

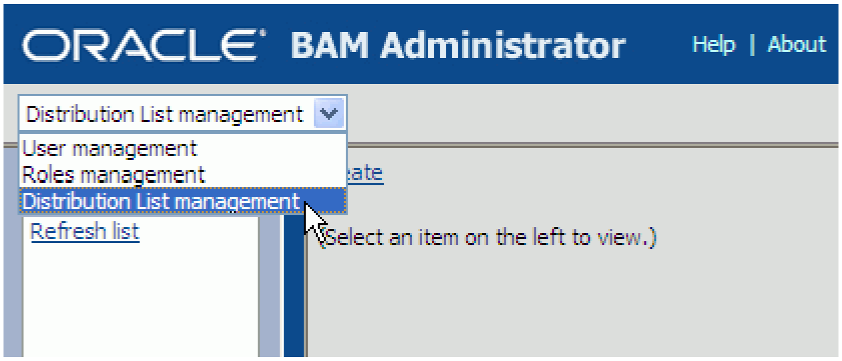
1. Go to the Oracle BAM start page, log in, and select **Administrator**.



The Oracle BAM start page is located at:

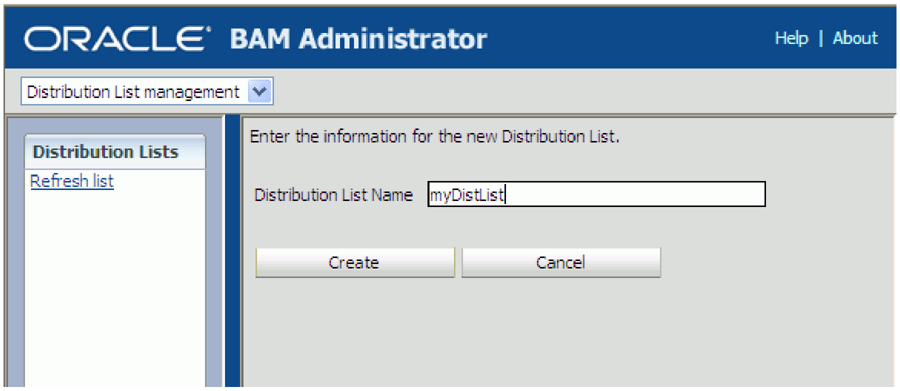
`http://host_name:port_number/OracleBAM/`

2. Select **Distribution List management** from the list.



(Select an item on the left to view.)

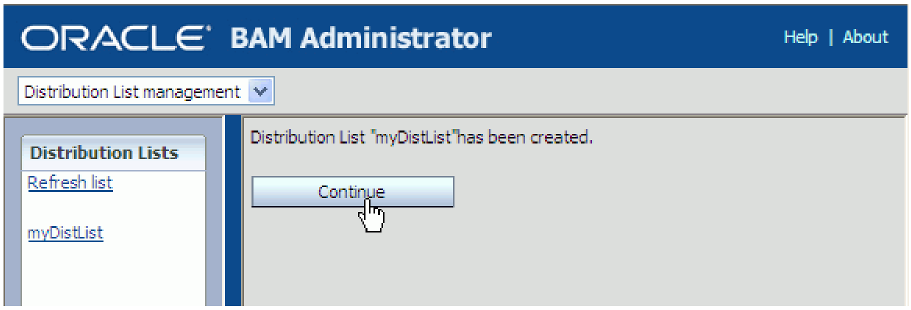
3. Click **Create**.
4. Enter a unique **Distribution List Name** and click **Create**.



Enter the information for the new Distribution List.

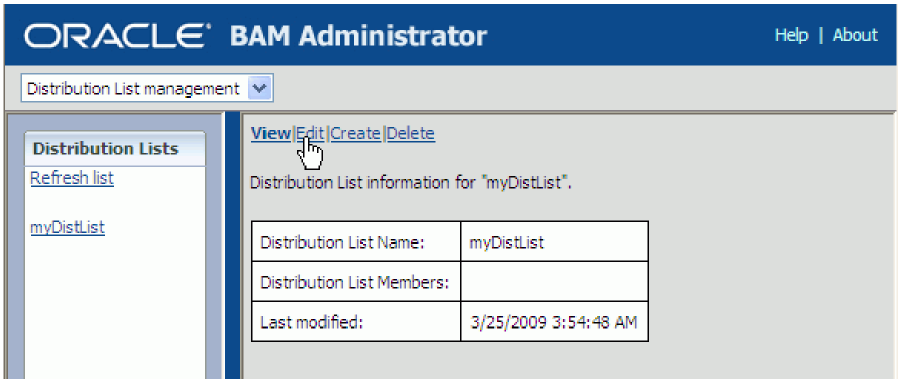
Distribution List Name: myDistList

5. Click **Continue** to save the distribution list name.



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**.

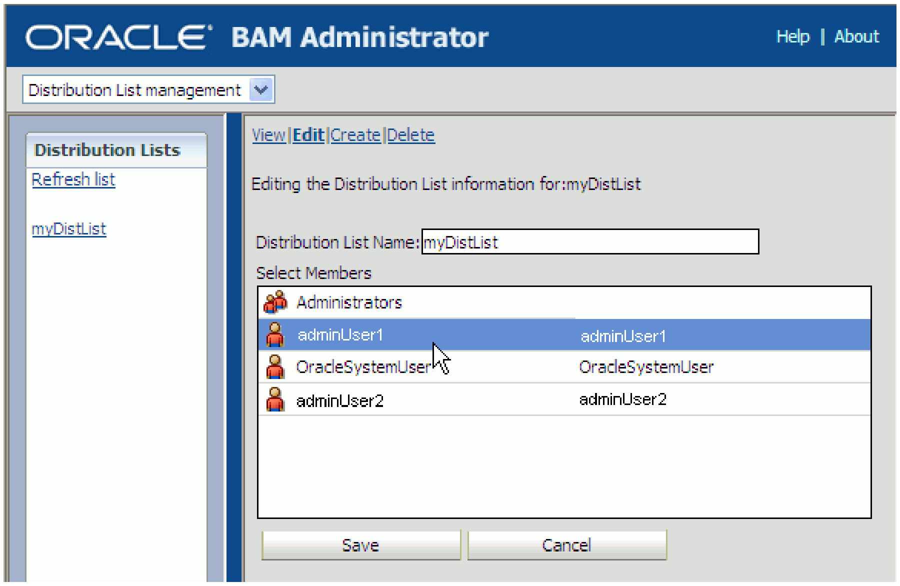


Distribution List information for "myDistList".

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.



Editing the Distribution List information for:myDistList

Distribution List Name: myDistList

Administrators	
adminUser1	adminUser1
OracleSystemUser	OracleSystemUser
adminUser2	adminUser2

8. Click **Save**.

   The users are added to the distribution list.

25.7 Configuring Oracle BAM Adapter

Oracle BAM Adapter properties, including the adapter batching properties, are configured in Oracle WebLogic Server Administration Console. See Section 25.7.1, "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 25.7.2, "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 25.7.3, "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 25.7.4, "Configuring Credential Mapping" for more information.

The `oracle.bam.adapter` logger should be configured to troubleshoot issues with Oracle BAM Adapter. See Section 25.4, "Configuring the Logger" for information about logger configuration.

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.

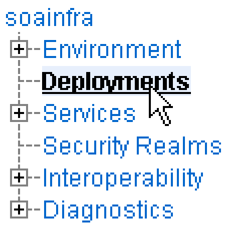
Oracle BAM Adapter does not support transactional behavior. Even though there is a section in Oracle WebLogic Server Administration Console for configuring transaction support, Oracle BAM Adapter must remain at the No Transaction level.

25.7.1 Configuring Oracle BAM Adapter Properties

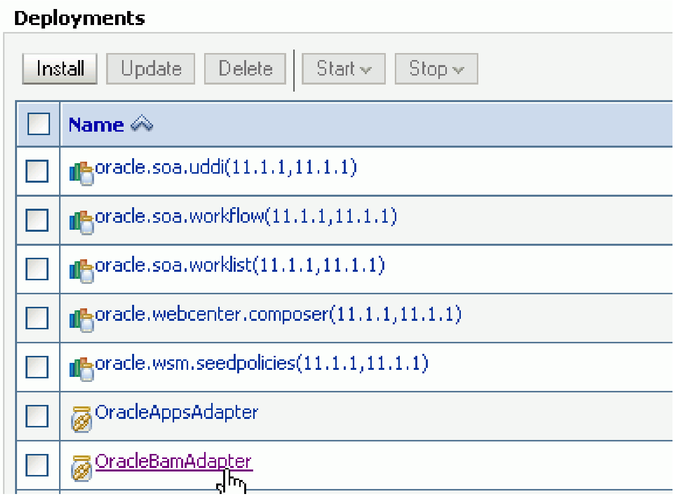
Oracle BAM Adapter properties are configured in Oracle WebLogic Server Administration Console.

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**.

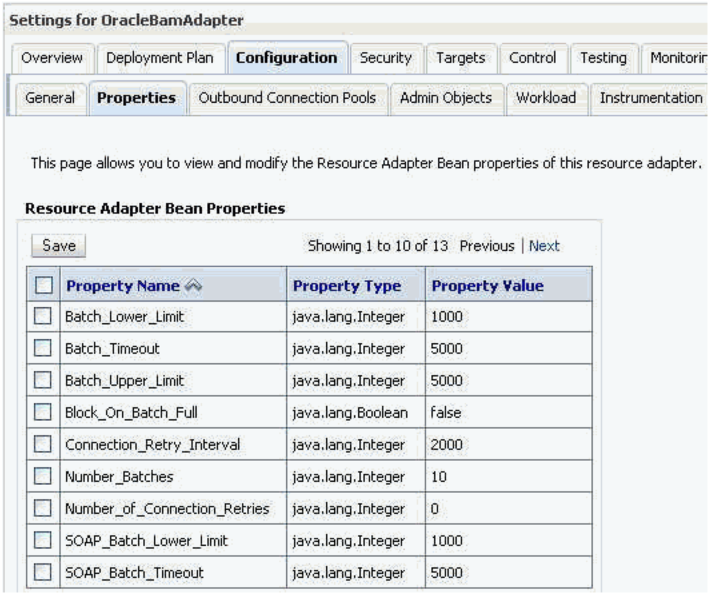


3. In the **Deployments** summary table, search for **OracleBamAdapter** and click it.


Deployments

☐	Name
☐	oracle.soa.uddi(11.1.1,11.1.1)
☐	oracle.soa.workflow(11.1.1,11.1.1)
☐	oracle.soa.worklist(11.1.1,11.1.1)
☐	oracle.webcenter.composer(11.1.1,11.1.1)
☐	oracle.wsm.seedpolicies(11.1.1,11.1.1)
☐	OracleAppsAdapter
☐	OracleBamAdapter

4. In the Settings for OracleBamAdapter page, select the **Configuration** tab, and then the **Properties** tab in the second row.



Settings for OracleBamAdapter

Overview | Deployment Plan | **Configuration** | Security | Targets | Control | Testing | Monitorir
General | **Properties** | Outbound Connection Pools | Admin Objects | Workload | Instrumentation

This page allows you to view and modify the Resource Adapter Bean properties of this resource adapter.

Resource Adapter Bean Properties

Save
Showing 1 to 10 of 13 Previous | Next

☐	Property Name	Property Type	Property Value
☐	Batch_Lower_Limit	java.lang.Integer	1000
☐	Batch_Timeout	java.lang.Integer	5000
☐	Batch_Upper_Limit	java.lang.Integer	5000
☐	Block_On_Batch_Full	java.lang.Boolean	false
☐	Connection_Retry_Interval	java.lang.Integer	2000
☐	Number_Batches	java.lang.Integer	10
☐	Number_of_Connection_Retries	java.lang.Integer	0
☐	SOAP_Batch_Lower_Limit	java.lang.Integer	1000
☐	SOAP_Batch_Timeout	java.lang.Integer	5000

5. Enter the new values, select the checkboxes for each updated value, and click **Save**.

   See Table 25–1, " Oracle BAM Adapter Configuration Properties" for information about each property.

   Also, see Section 25.8, "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`

   ---

6. Restart the SOA domain server.

   It needs to be restarted because that is where the Oracle BAM Adapter is deployed.

Table 25–1 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 25–1 (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.

25.7.1.1 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 25.7.1, "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*.

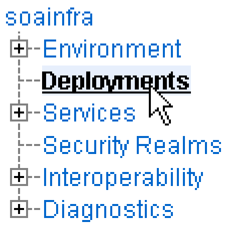
25.7.2 Configuring Oracle BAM Connection Factories

Some configuration in the Oracle WebLogic Server Administration Console is necessary before using Oracle BAM Adapter.

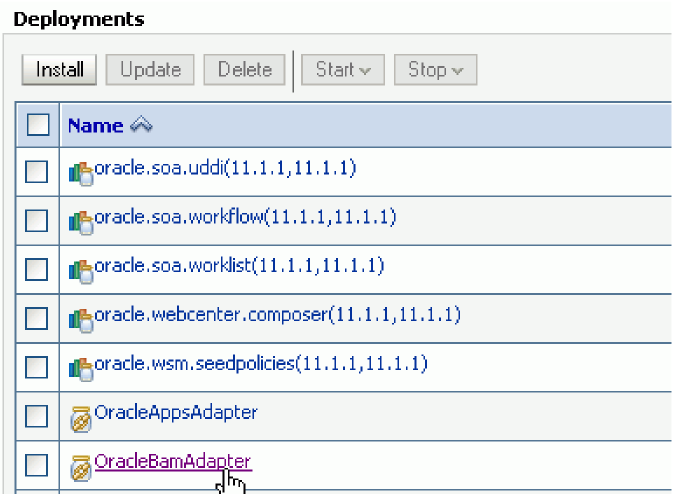
Use the Oracle WebLogic Server Administration Console to configure the Oracle BAM connection factories for connections with Oracle BAM Server.

To configure Oracle BAM connection factories:

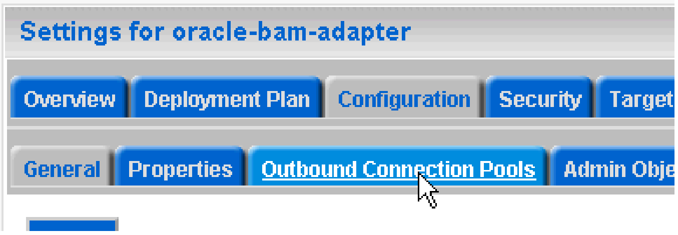
1. Go to the Oracle WebLogic Server Administration Console (`http://`*`host_name`*`:`*`port_number`*`/console`), and log on.
2. In the **Domain Structure** menu, select **Deployments**.



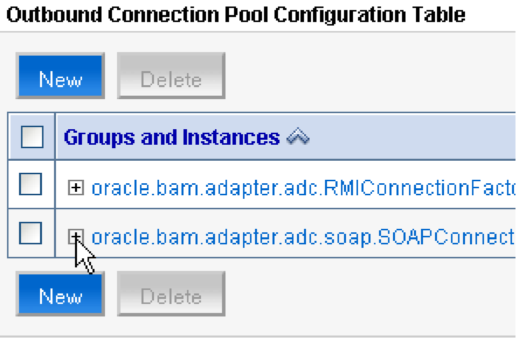
3. In the **Deployments** summary table, search for **OracleBamAdapter** and click it.


Deployments
Install
Update
Delete
Start
Stop
Name
oracle.soa.uddi(11.1.1,11.1.1)
oracle.soa.workflow(11.1.1,11.1.1)
oracle.soa.worklist(11.1.1,11.1.1)
oracle.webcenter.composer(11.1.1,11.1.1)
oracle.wsm.seedpolicies(11.1.1,11.1.1)
OracleAppsAdapter
OracleBamAdapter

4. In the Settings for OracleBamAdapter page, select the **Configuration** tab, and then the **Outbound Connection Pools** tab in the second row.

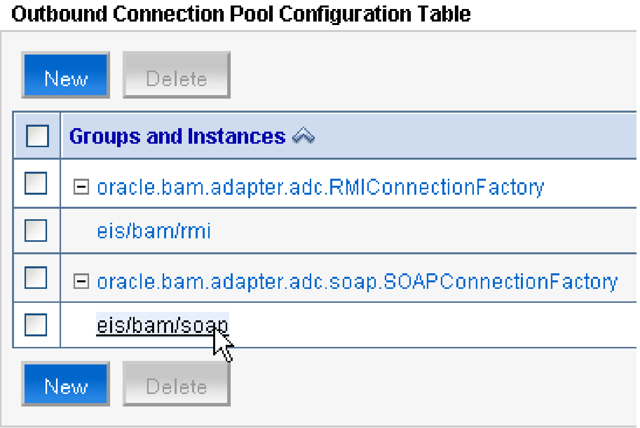


5. Configure the connection factory interface that you intend to use in Oracle JDeveloper, by expanding the appropriate **Group and Instance** target and clicking the Java Naming and Directory Interface (JNDI) name.


Outbound Connection Pool Configuration Table
New
Delete
Groups and Instances
oracle.bam.adapter.adc.RMIConnectionFact
oracle.bam.adapter.adc.soap.SOAPConnect
New
Delete

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.

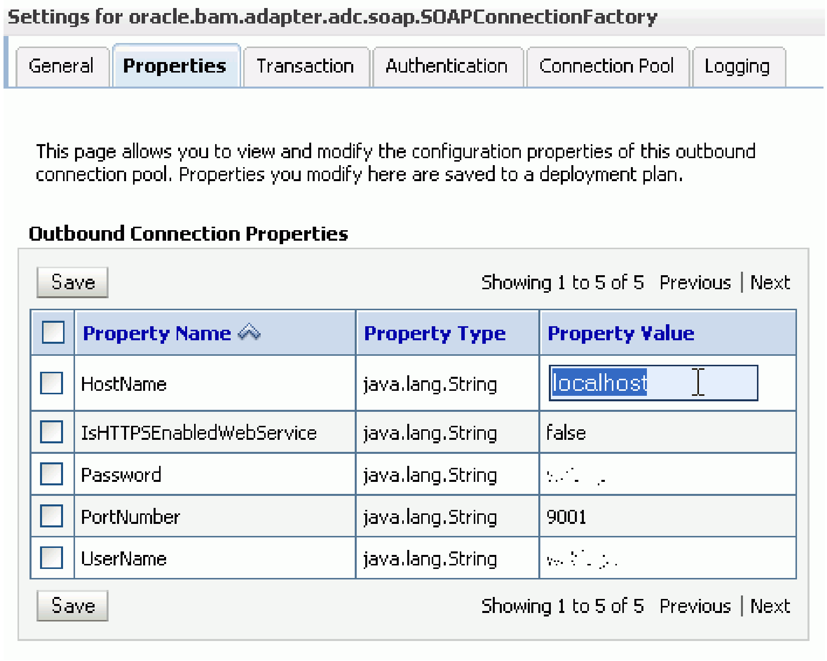
To configure the connection factory for SOAP-based calls, click to expand the **oracle.bam.adapter.adc.SOAPConnectionFactory** group and select the JNDI name that the user uses in Oracle JDeveloper. The **eis/bam/soap** connection factory is provided out of the box.



Outbound Connection Pool Configuration Table

☐	Groups and Instances
☐	⊟ oracle.bam.adapter.adc.RMIConnectionFactory
☐	eis/bam/rmi
☐	⊟ oracle.bam.adapter.adc.soap.SOAPConnectionFactory
☐	eis/bam/soap

6. Configure each of the properties by clicking in the table cells and entering the values.



Settings for oracle.bam.adapter.adc.soap.SOAPConnectionFactory

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

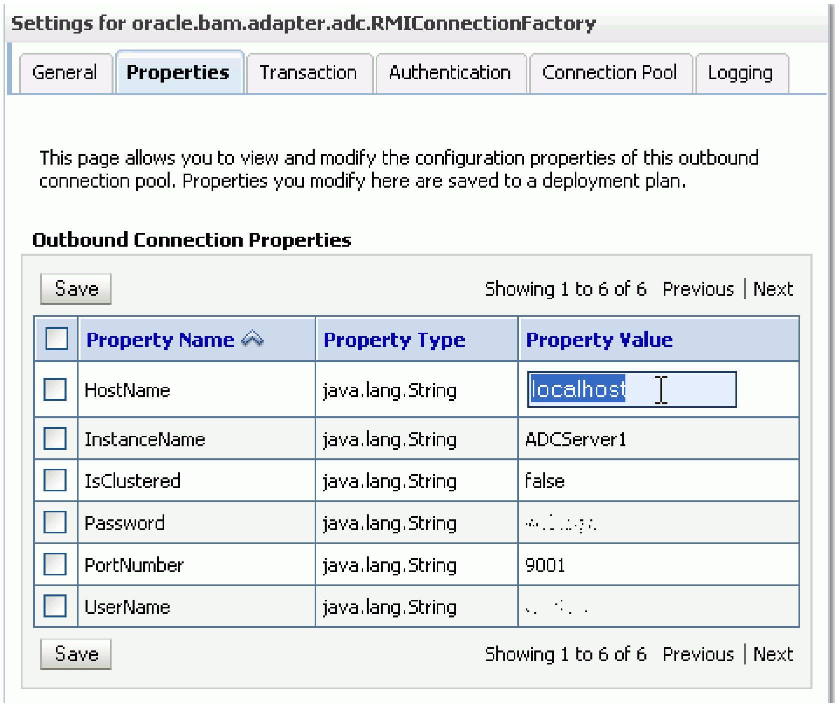
☐	Property Name	Property Type	Property Value
☐	HostName	java.lang.String	localhost
☐	IsHTTPSEnabledWebService	java.lang.String	false
☐	Password	java.lang.String	[redacted]
☐	PortNumber	java.lang.String	9001
☐	UserName	java.lang.String	[redacted]

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 27.3.3, "Adding Members to Application Roles" and Section 27.3.4, "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 25.7.2.1, "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

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

☐	Property Name	Property Type	Property Value
☐	HostName	java.lang.String	localhost
☐	InstanceName	java.lang.String	ADCServer1
☐	IsClustered	java.lang.String	false
☐	Password	java.lang.String	[redacted]
☐	PortNumber	java.lang.String	9001
☐	UserName	java.lang.String	[redacted]

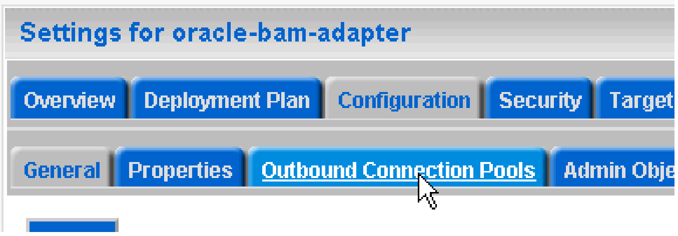
7. Select the checkboxes next to the values you have updated and click **Save**.

> **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`

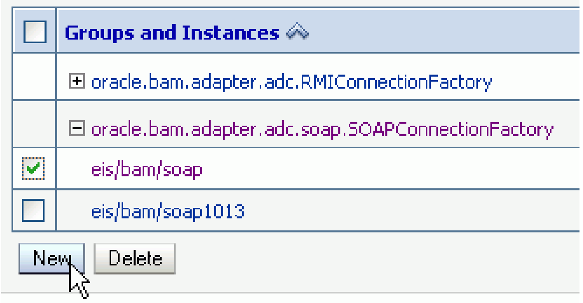
25.7.2.1 Configuring HTTPS for Oracle BAM Adapter

To configure HTTPS:

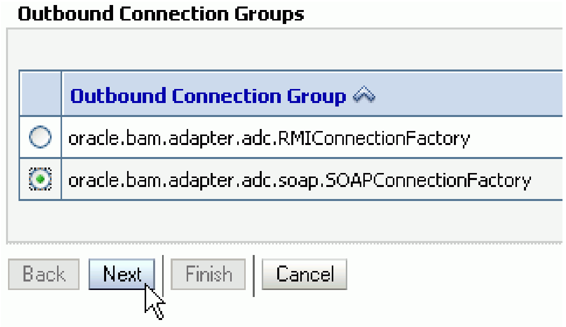
1. Locate the oracle.bam.adapter.adc.soap.SOAPConnectionFactory connection factory in the Oracle WebLogic Server Administration Console as described in Section 25.7, "Configuring Oracle BAM Adapter".



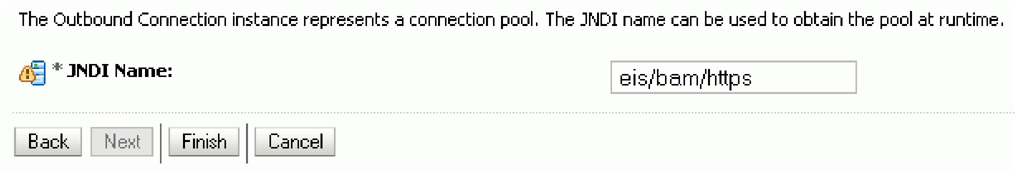
2. Click to expand the **oracle.bam.adapter.adc.soap.SOAPConnectionFactory** node, select the **eis/bam/soap** option, and click **New**.


☐ Groups and Instances
⊞ oracle.bam.adapter.adc.RMIConnectionFactory
⊟ oracle.bam.adapter.adc.soap.SOAPConnectionFactory
☑ eis/bam/soap
☐ eis/bam/soap1013
New
Delete

3. Select the **oracle.bam.adapter.adc.soap.SOAPConnectionFactory** option and click **Next**.


Outbound Connection Groups
Outbound Connection Group
○ oracle.bam.adapter.adc.RMIConnectionFactory
● oracle.bam.adapter.adc.soap.SOAPConnectionFactory
Back
Next
Finish
Cancel

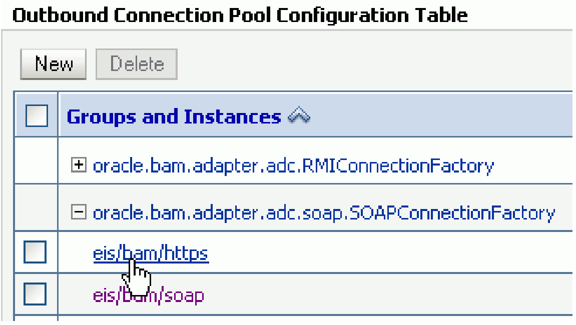
4. Enter a JNDI name for this connection factory and click **Finish**.



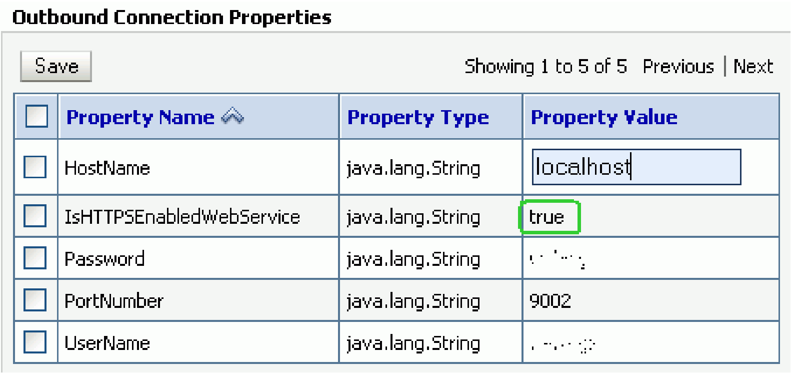
The Outbound Connection instance represents a connection pool. The JNDI name can be used to obtain the pool at runtime.

* JNDI Name: eis/bam/https

5. Select the **eis/bam/https** connection pool instance in the **Groups and Instances** list.


Outbound Connection Pool Configuration Table
New
Delete
☐ Groups and Instances
⊞ oracle.bam.adapter.adc.RMIConnectionFactory
⊟ oracle.bam.adapter.adc.soap.SOAPConnectionFactory
☐ eis/bam/https
☐ eis/bam/soap

6. Complete the configuration properties as shown in Section 25.7, "Configuring Oracle BAM Adapter," and change the **IsHTTPSEnabledWebService** value to `true`.



Outbound Connection Properties

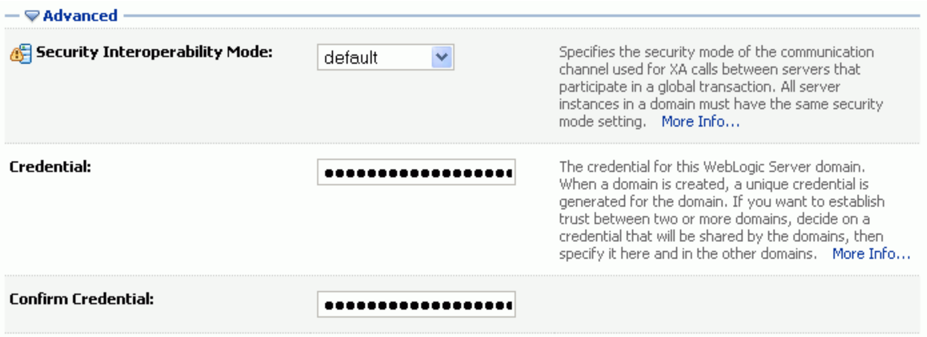
☐	Property Name	Property Type	Property Value
☐	HostName	java.lang.String	localhost
☐	IsHTTPSEnabledWebService	java.lang.String	true
☐	Password	java.lang.String	[illegible]
☐	PortNumber	java.lang.String	9002
☐	UserName	java.lang.String	[illegible]

25.7.3 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:

1. 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.



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: ●●●●●●●●●●●●●●●●●●●

2. 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.

3. 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*.

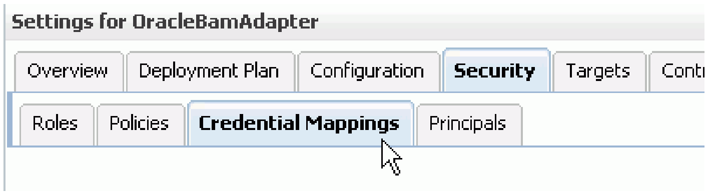
25.7.4 Configuring Credential Mapping

Configure Oracle BAM Adapter to securely store user name and password properties using Oracle WebLogic Server credential mapping functionality.

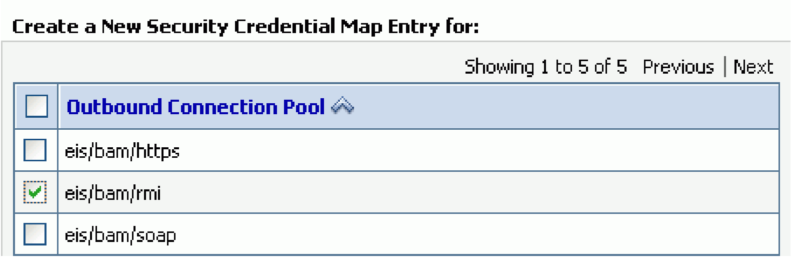
Note: Use plain text user names and passwords only in nonproduction mode. Do not mix using credential mapping and plain text user information; apply one at a time to avoid confusion.

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`).



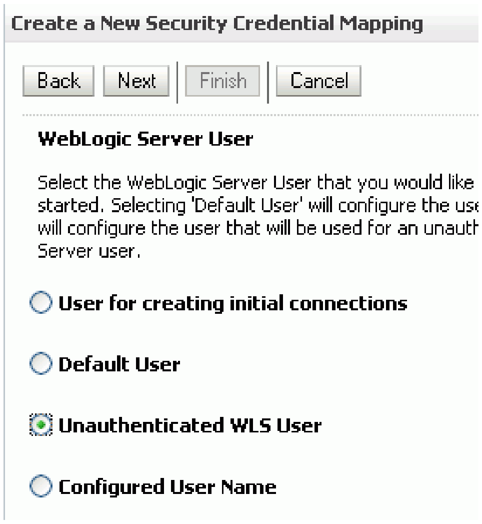
Create a New Security Credential Map Entry for:

Showing 1 to 5 of 5 Previous | Next

☐	Outbound Connection Pool
☐	eis/bam/https
☑	eis/bam/rmi
☐	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).



WebLogic Server User

Select the WebLogic Server User that you would like started. Selecting 'Default User' will configure the use will configure the user that will be used for an unautl Server user.

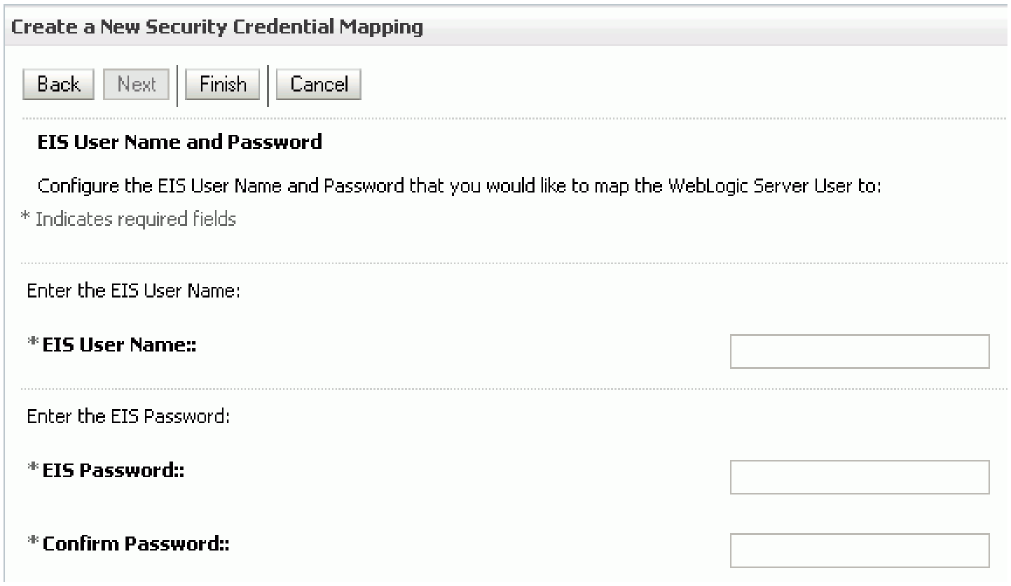
○ User for creating initial connections

○ Default User

● Unauthenticated WLS User

○ Configured User Name

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

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::**

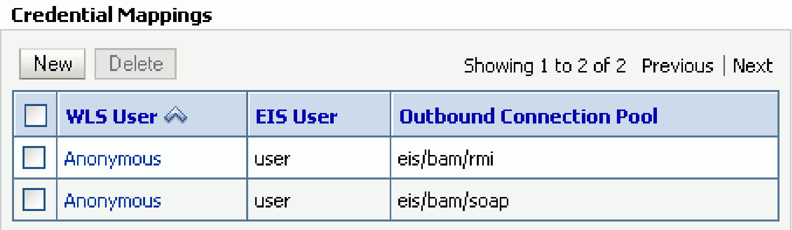
Enter the EIS Password:

*** EIS Password::**

*** Confirm Password::**

5. 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

☐	WLS User	EIS User	Outbound Connection Pool
☐	Anonymous	user	eis/bam/rmi
☐	Anonymous	user	eis/bam/soap

6. For these changes to take effect, Oracle WebLogic Server must be restarted.

25.8 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.

For Oracle BAM Adapter, the batching properties are configured using the Oracle BAM Adapter configuration page in the Oracle WebLogic Server Administration Console.

Oracle BAM batching properties are located in the `BAMWebConfig.xml` file for configuring batching to send data from Oracle BAM Web applications (that is, to send data using Oracle BAM Architect), and to send data from the Oracle BAM `DataObjectOperation` Web service using the batch method.

Oracle BAM configuration files are located in the following directory:

```
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 27.2, "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 25–2 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 `BatchIsFullException` 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.

Table 25–2 (Cont.) Active Data Cache API and SOAP (Oracle BAM Adapter) Batching

Oracle BAM ADC API Property	SOAP Property	Default	Description
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.
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 25–2 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 25.7.2, "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.

25.9 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 25.9.1, "Configuring Credential Mapping"
- Section 25.9.2, "Configuring Oracle BAM User Permissions"
- Section 25.9.3, "Configuring Secure Socket Layer"
- Section 25.9.4, "Configuring Oracle Internet Directory"
- Section 25.9.5, "Securing Oracle BAM JMS Resources"
- Section 25.9.6, "Calling Secure Web Services"

25.9.1 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 25.7.4, "Configuring Credential Mapping."

25.9.2 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 27.3, "Managing Oracle BAM Users" for more information.

25.9.3 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 `BAMICommandConfig.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>`

25.9.4 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;
   ```

25.9.5 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.

25.9.6 Calling Secure Web Services

Currently, the Oracle BAM Alerts **Call a Web Service** action supports invoking Web services protected by one-way SSL. In one-way SSL, the Web service to be invoked presents a digital certificate to its client (the Oracle BAM Alert action client in this case), and the client verifies whether certificate presented to it can be trusted. If the client trusts the server certificate, then further communication between client and server continues over a secure SSL channel.

To accomplish one-way SSL, the Alert Web service client must be pointed to a trust store in which it can look up, to determine if the certificate presented to it exists in it or not. This can be done by adding following properties in `BAMCommonConfig.xml`.

```
<SSL.TrustStore.Location>wls.home/lib/DemoTrust.jks</SSL.TrustStore.Location>
<SSL.TrustStore.Type>JKS</SSL.TrustStore.Type>
<SSL.TrustStore.Password></SSL.TrustStore.Password>
<SSL.TrustStore.Provider>SUN</SSL.TrustStore.Provider>
```

By default, if these properties are not specified in the configuration file, the values mentioned above are used. You can provide different values to these properties to override the default TrustStore configuration. Currently you must edit the configuration files to set these properties, as they are not exposed in Oracle Enterprise Manager Fusion Middleware Control.

The default truststore is JKS (Java Key Store), which is file based. Certificates can be added and deleted using the Java `keytool` command line utility.

See "Call a Web Service" in *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for information about configuring the Call a Web Service alert action.

25.9.6.1 Protecting Oracle BAM Web Services, An Example

The following is an example illustrating how to invoke SSL protected Oracle BAM Web services. It is specific to the **Call a Web Service** alert action calling the Oracle BAM `ManualRuleFire` Web service. The steps in this section do not need to be done if you are invoking external one-way SSL-protected non-BAM Web services.

> **Note:** After this configuration the entire Oracle BAM application will be behind the SSL layer and must be accessed using the SSL port number and HTTPS protocol.

To configure properties for calling secure Web services:

1. Open Oracle WebLogic Server Administration Console and go to **servers -> BAM_Server -> General tab**
2. Check **SSL Listen Port** and specify the SSL_PORT to use.
3. Modify the Oracle BAM configuration properties.
   a. These properties must be modified in `BAMCommonConfig.xml`:

   ```
   <Communication_Protocol>t3s</Communication_Protocol>
   <ListenPort>SSLListenPort</ListenPort>
   <ApplicationURL>http://SSL_HOST:SSL_PORT</ApplicationURL>
   ```

   b. This property must be modified in `BAMWebConfig.xml`:

```
<ServerPort>SSL_PORT</ServerPort>
```

4. Restart Oracle WebLogic Server.
5. Open Oracle BAM Active Studio or Oracle BAM Architect, and go to **Alerts**.
6. Create an alert with **Call a Web Service** action using a secure Web Service, such as

   `https://host_name:SSL_port_number/OracleBAMWS/WebServices/ManualRuleFire?wsdl`

   as the WSDL URL for the action.
7. Map the parameters and save the alert.

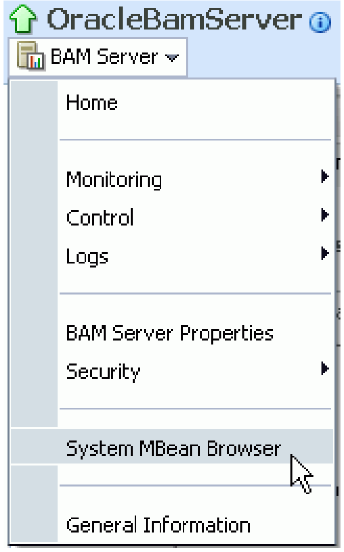
25.10 Configuring Advanced Properties

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 25.11, "Oracle BAM Configuration Property Reference" for a listing of all properties available for Oracle BAM configuration.

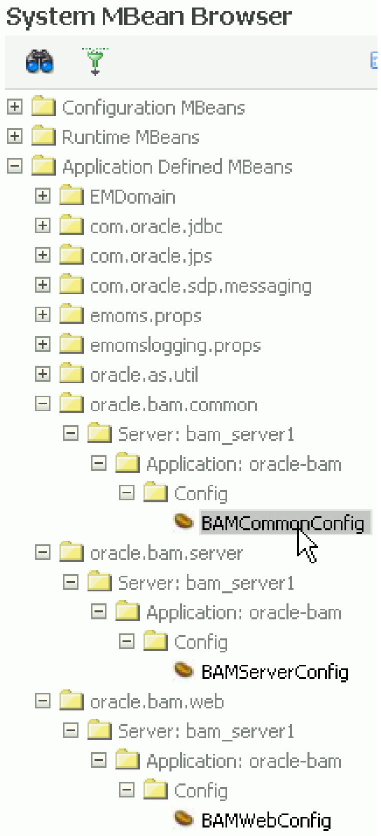
To configure the advanced properties using the System MBean Browser:

1. Select **System MBean Browser** in the OracleBAMWeb or OracleBAMServer menu.

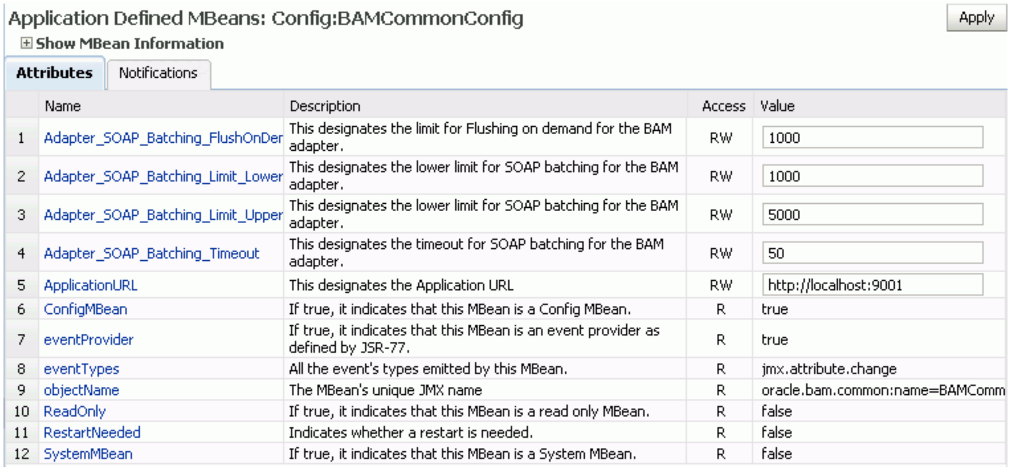


2. Select the path to the appropriate Application Defined MBeans page:
   - For properties common to all Oracle BAM components select **Application Defined MBeans > oracle.bam.common > Server: bam_server1 > Application: oracle-bam > Config > BAMCommonConfig** (see Figure 25–3).
   - For Oracle BAM Server-specific 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 25–3 System MBean Browser Navigation Tree



The associated configuration properties are displayed in the System MBean Browser.



	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 Config MBean.	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 27.2, "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 `BAMICommandConfig.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 `BAMICommandConfig.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`.

25.11 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 25.10, "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 25–3 Oracle BAM Configuration Properties

Property Name	Description
ActiveDataCache.API.Batching.ThreadPool.CoreSize	Indicates how many threads to keep in the Oracle BAM ADC API ThreadPools when idle. Default: 5
ActiveDataCache.API.Batching.ThreadPool.KeepAliveTimeInSecs	Amount of time (in seconds) to keep an idle thread in the Oracle BAM ADC API ThreadPools. Default: 20
ActiveDataCache.API.Batching.ThreadPool.MaxSize	Maximum number of threads in the Oracle BAM ADC API ThreadPools. Default: 100

Table 25–3 (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 `true`, then batching calls block until room is freed up in the batch for the operation. If set to `false`, a `BatchIsFullException` exception is thrown. Default: `false`

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ActiveDataCache_Datasets_Batching_Limit_Lower	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). See `ActiveDataCache_Datasets_Batching_Timeout` for the exception to this rule. See Section 25.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 1000
ActiveDataCache_Datasets_Batching_Limit_PendingCalls	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. See Section 25.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 10
ActiveDataCache_Datasets_Batching_Limit_Upper	The maximum amount of elements in a batch before it is sent out. A batch will never contain more than this maximum. See Section 25.8, "Configuring Oracle BAM Batching Properties" for more information. Default: 5000
ActiveDataCache_Datasets_Batching_MaximumRetries	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. Default: 2147483647
ActiveDataCache_Datasets_Batching_MaxRetryInterval	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. Default: 3600000
ActiveDataCache_Datasets_Batching_RetryInterval	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. Default: 30000

Table 25–3 (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: `false`
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 `ActiveDataCache_Datasets_Batching_Limit_Lower`). 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 25.8, "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 `true`, then batching calls block until room is freed up in the batch for the operation. If set to `false`, a `BatchIsFullException` exception is thrown. Default: `false`
Adapter_SOAP_Batching_Limit_Lower	The minimum amount of elements in a batch before it is sent out. See Section 25.8, "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 25.8, "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 25.8, "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 `ExternalDataManager` at one time. Default: 100

Table 25–3 (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.activedata`
ADCDataSource	The data source for the Active Data Cache. See Section 25.3.2, "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 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ADCPushInterval	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. Note that you can override the default `ADCPushInterval` 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 `ADCPushInterval` value for that particular report. Default: 1000
ADCPushThreadPoolSize	Indicates the size of the threadpool for Oracle BAM ADC push functionality. Default: 10
ADCRetryCount	Number of times to retry the Oracle BAM Active Data Cache connection. Default: 2
ADCSecurityFiltersEnabled	Indicates whether Oracle BAM ADC security filters are to be enabled. Default: true
ADCViewsetTimeoutSec	Specifies the time-out for retrieving a viewset. Default: 0
ADCWaitTime	Interval between Active Data Cache connection attempts. Default: 20
ApplicationURL	URL for Oracle BAM Web applications and Oracle BAM Server. See Section 25.3.3, "Configuring Application URL" and Section 25.2.2, "Configuring Application URL" for more information. Default: DEFAULT
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`

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
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 JNDI communication. For SSL using t3: `<Communication_Protocol>t3s</Communication_Protocol>` See Section 25.9.3, "Configuring Secure Socket Layer." Default: DEFAULT
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
DisplayUIStackTrace	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. This property enables user interface stack traces (by setting this property value to `true`). This property is used for temporary diagnostic purposes only because exposing a stack with internal details is a potential security threat. Default: false

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
DistributionListGroupType	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: *none*
ElementsCountLimit	The number of change lists that are cached before rewriting the cache file. The default value is 50. When the 51st change list is received, it is cached by replacing the 1st change list. Default: 50
ElementsSizeLimit	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 500
EmailIDForSender	E-mail address that appears in the From header of notifications sent by the Event Engine. See Section 25.3.7, "Configuring Outbound Email Account" for more information. Default: `BAM-NOTIFICATION_AR@oracle.com`
EMSConnectionRecoveryDuration	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.
EnableADCDatasetLockTimeout	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Indicates whether data set lock timeout is enabled. Default: false
EnableDataTruncationMsg	Indicates whether to enable the data truncation message. Default: false
EnableGetAllViewsInOneRoundTrip	Allows all views to be retrieved in one round trip. Default: true
EventEngine.Action.ThreadPool.CoreSize	Indicates how many threads to keep in the Event Engine Action ThreadPools when idle. Default: 4
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

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
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
EventEngineCheckADCIntervalSecs	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 5

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	**Description**
EventEngineMaxConnections	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 25
EventEngineMaxShutdownWaitInterval	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 10
EventEngineSaveLastFireIntervalSecs	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 10
FileHandleCacheSize	Used by Oracle BAM Report Cache to cache file *handles* of the files used for caching when file-based persistence is used (see Section 25.3.5, "Configuring Report Cache Persistence Manager" for information about persistence management). 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. The value for this property sets the number of file handles that are cached by default. To disable file handle caching, set this property value to zero (0). 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 `FileHandleCacheSize` to an appropriate smaller value. Default: 100
FractionInIntegerDivision	Setting this property to `true` will show fractions in Integer divisions in calculations. Saved reports must be re-saved after a server restart (following configuration change) to see this behavior. Default: false
GenericSatelliteChannelName	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: `invmjms:topic/oracle.bam.messaging.systemobjectnotification`

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description

GenericSatelliteSystemObjectNames	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services.
	Default values:
	`SystemObjectName=SysIterReport,MonitorColumnName=SysIterLastModified,MessageColumn1=SysIterID,MessageColumn2=SysIterLastModified;`
	`SystemObjectName=SysIterUser,MonitorColumnName=SpecificTimeZoneOffset,MessageColumn1=SysIterID;`
	`SystemObjectName=SysIterUser,MonitorColumnName=AdjustTimeZoneSetting,MessageColumn1=SysIterID;`
	`SystemObjectName=SysIterUser,MonitorColumnName=AdjustDaylightSavingsSetting,MessageColumn1=SysIterID;`
	`SystemObjectName=SysIterDataset,MonitorColumnName=SysIterLastModified,MessageColumn1=SysIterID;`

HelpAppLocation	This property is no longer used in Oracle BAM.
iActiveDataCloseReportsTimeout	Timeout to close reports. Default: 500
iActiveDataMaxDiffCounter	The maximum difference counter for iActiveData. Default: 10
iActiveDataMinIntervalsToWait	The minimum interval to wait for iActiveData. Default: 5
iActiveDataReloadOnSecsBehindThreshold	The threshold value for reloading iActiveData. The Default: 10
iActiveDataRestartInterval	The restart interval for iActiveData. Default: 3000
iActiveDataRestartTimeout	The restart timeout value for iActiveData. Default: 10000
iActiveDataScriptsCleanupFactor	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. Default: 1048576

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
ICommand_Default_User_Name	Specifies default security credentials for running ICommand operations. See *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite* for more information.
ICommand_Default_Password	Specifies default security credentials for running ICommand operations. See *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite* 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 25.9.3, "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
MTTimerThreadPoolSize	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 25–3 (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 25.3.6, "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 25.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: 20910
ODIPassword	The encoded Oracle Data Integrator password. See Section 25.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: SUNOPSIS
ODIUser	The user that executes the scenarios in Oracle Data Integrator. See Section 25.3.6, "Configuring Oracle Data Integrator Integration Properties" for more information. Default: SUPERVISOR
ODIWorkRepositoryName	The name of the Oracle Data Integrator work repository database. See Section 25.3.6, "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 25–3 (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: `invmjms:topic/oracle.bam.messaging.reportcache.activedata`
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 25.3.5, "Configuring Report Cache Persistence Manager" for more information. Default: `FileBasedPersistenceManager`
ReportLoadingSetting	The report loading indicator to be enabled. See Section 25.2.3, "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: `oracle.bam.common.statistics.noop.SensorFactoryImpl`
ServerName	The Oracle BAM Server host name. See Section 25.2.4, "Configuring Server Name" for more information. Default: DEFAULT
ServerPort	The Oracle BAM Server port number. Default: DEFAULT

Table 25–3 (Cont.) Oracle BAM Configuration Properties

Property Name	Description
UpdatesActiveDataSize	`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
UpsertsActiveDataSize	`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
UseDBFailover	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: true
ViewSetExpiryTimeout	This property is for Oracle BAM internal use only. Do not change it unless instructed to do so by Oracle Support Services. Default: 120
ViewSetSharing	See Section 25.3.4, "Configuring Viewset Sharing" for more information. Default: true

26

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 26.1, "Introduction to Monitoring Oracle BAM"
- Section 26.2, "Monitoring Oracle BAM Server Components"
- Section 26.3, "Monitoring Oracle BAM Web Applications"
- Section 26.4, "Monitoring Oracle BAM Web Services"
- Section 26.5, "Monitoring Oracle BAM Performance"
- Section 26.6, "Monitoring Oracle BAM Logs"

26.1 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 26.2, "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 26.3, "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 26.5, "Monitoring Oracle BAM Performance" for more information.

Also, you can configure and monitor Oracle BAM logs using Fusion Middleware Control Console. See Section 26.6, "Monitoring Oracle BAM Logs" for more information.

26.2 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.

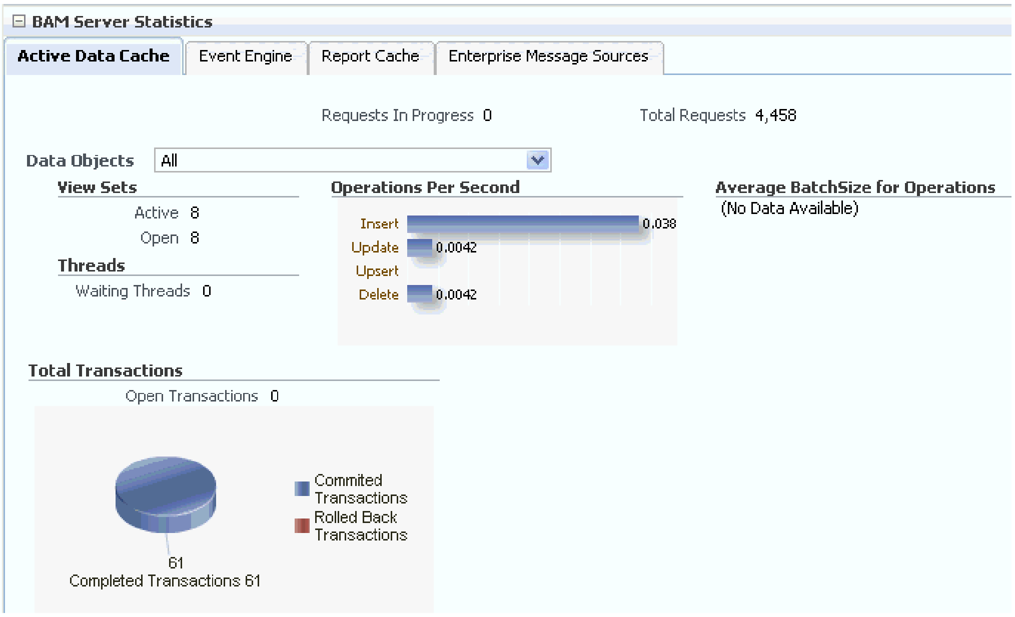
26.2.1 Monitoring Oracle BAM Active Data Cache

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.



Requests In Progress 0

Total Requests 4,458

Data Objects: All

View Sets

Active 8

Open 8

Threads

Waiting Threads 0

Operations Per Second

Average BatchSize for Operations

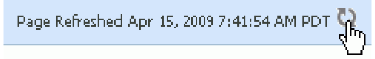
(No Data Available)

Total Transactions

Open Transactions 0

Completed Transactions 61

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.



Page Refreshed Apr 15, 2009 7:41:54 AM PDT

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.

26.2.2 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.

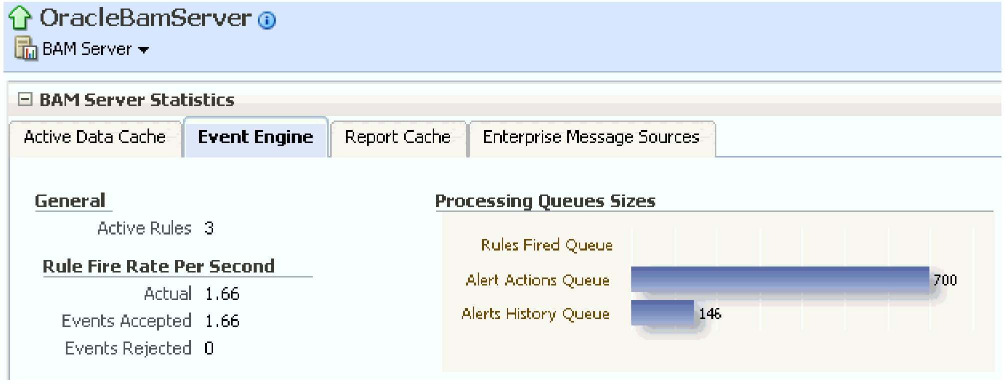
The Event Engine is responsible for tracking events based on date, time, or data changes. The Event Engine design employs a satellite concept, in which there are four different systems (satellites) within which event clauses can be registered and tracked.

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 use 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 3

Actual 1.66
Events Accepted 1.66
Events Rejected 0

Rules Fired Queue
Alert Actions Queue 700
Alerts History Queue 146

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 X 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 it, 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.

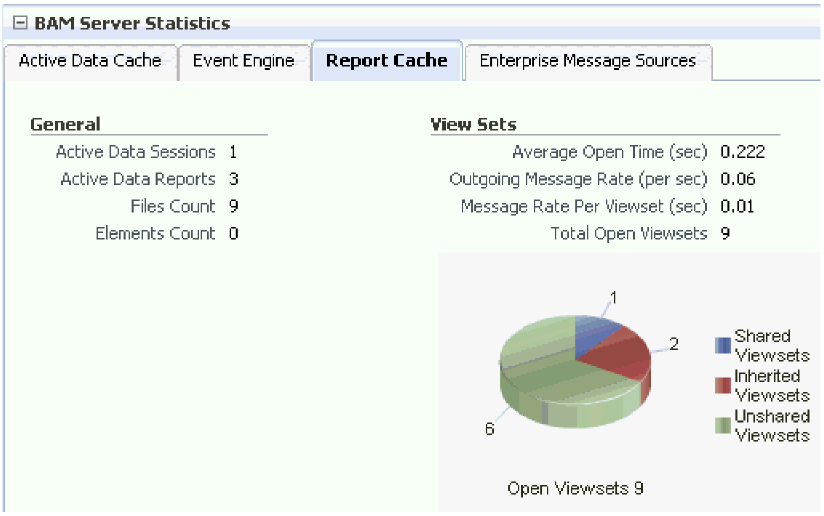
Rules Fired Queue displays the number of events that were fired that are waiting to be processed. The Event Engine maintains internal in-memory queue for fired events where all the events are placed temporarily, before being pulled out from here for further processing, as soon as the Event Engine resources 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.

26.2.3 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.



General

Active Data Sessions	1
Active Data Reports	3
Files Count	9
Elements Count	0

View Sets

Average Open Time (sec)	0.222
Outgoing Message Rate (per sec)	0.06
Message Rate Per Viewset (sec)	0.01
Total Open Viewsets	9

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 25.3.5, "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 25.3.5, "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.

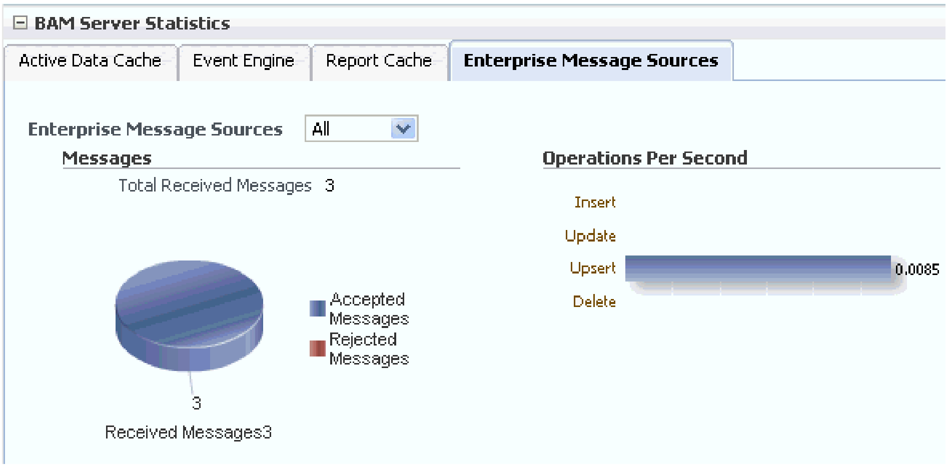
Note: Viewset counts may not match between Active Data Cache, Report Cache, and Report Server metrics. See "Viewset Count Variation" on page 26-3 for more information.

26.2.4 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*.



Enterprise Message Sources: All

Total Received Messages 3

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

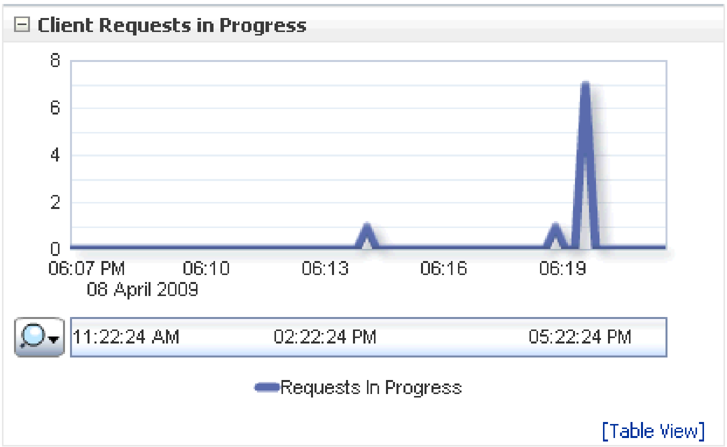
Monitor the rate of insert, update, upsert, and delete operations performed by the selected EMS.

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 26.5, "Monitoring Oracle BAM Performance" for more information.

26.2.5 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).



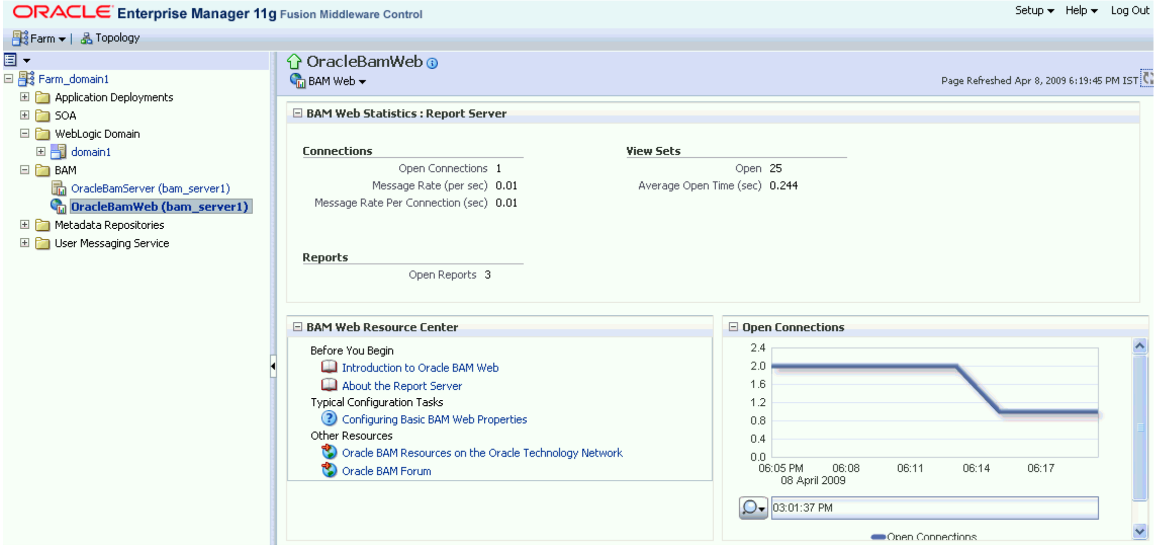
There are a lot of internal requests made when opening a single report (for permissions, the report metadata, the views data, and so on); however, the user may or may not see those internal requests displayed in this chart.

26.3 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 26–1 BAM Web Statistics



Connections

Open Connections 1

Message Rate (per sec) 0.01

Message Rate Per Connection (sec) 0.01

View Sets

Open 25

Average Open Time (sec) 0.244

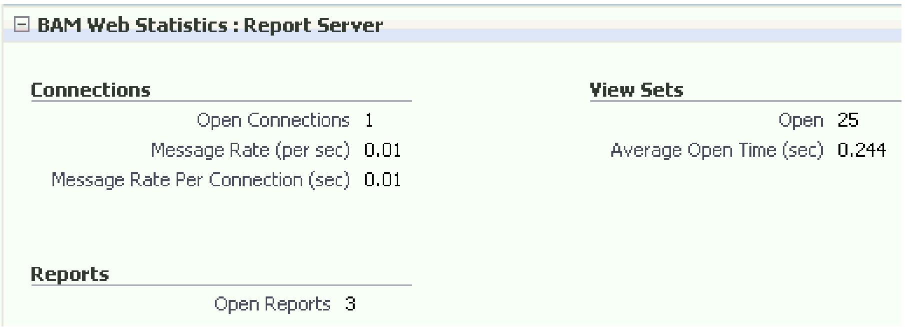
Reports

Open Reports 3

26.3.1 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

Open Connections 1

Message Rate (per sec) 0.01

Message Rate Per Connection (sec) 0.01

View Sets

Open 25

Average Open Time (sec) 0.244

Reports

Open Reports 3

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 26-3 for more information.

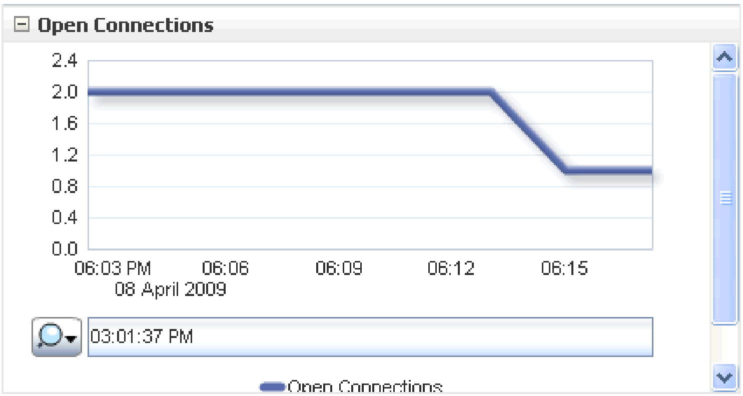
Reports

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.

26.3.2 Monitoring Open Connections

The Oracle BAM **Open Connections** chart is displayed in the lower right corner of the Oracle BAM Server home page.



26.4 Monitoring Oracle BAM Web Services

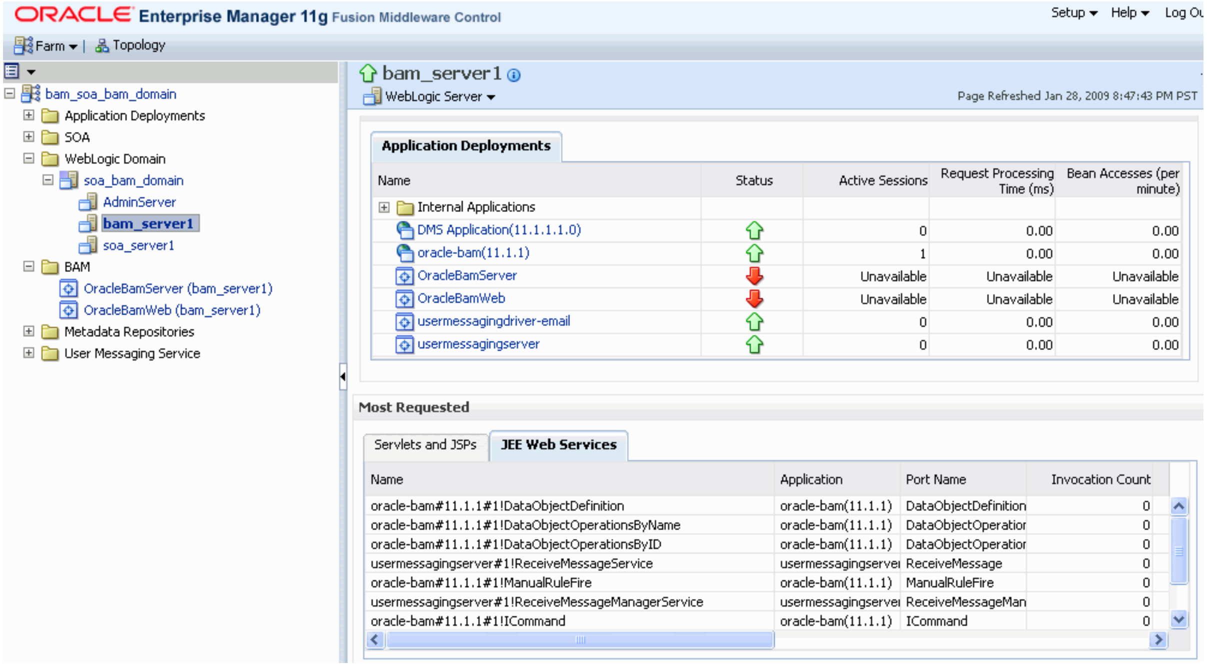
Oracle BAM Web services details are not listed in the Oracle BAM home pages. Oracle BAM Web services counters are available by selecting **WebLogic Domain > soa_bam_domain > bam_server1** in the navigation tree, and selecting the **JEE Web Services** tab in the **Most Requested** region as shown in Figure 26–2.

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 26–2 Oracle BAM Web Services Counters



Name	Status	Active Sessions	Request Processing Time (ms)	Bean Accesses (per minute)
Internal Applications				
DMS Application(11.1.1.1.0)	↑	0	0.00	0.00
oracle-bam(11.1.1)	↑	1	0.00	0.00
OracleBamServer	↓	Unavailable	Unavailable	Unavailable
OracleBamWeb	↓	Unavailable	Unavailable	Unavailable
usermessagingdriver-email	↑	0	0.00	0.00
usermessagingserver	↑	0	0.00	0.00

Name	Application	Port Name	Invocation Count
oracle-bam#11.1.1#1!DataObjectDefinition	oracle-bam(11.1.1)	DataObjectDefinition	0
oracle-bam#11.1.1#1!DataObjectOperationsByName	oracle-bam(11.1.1)	DataObjectOperatio	0
oracle-bam#11.1.1#1!DataObjectOperationsByID	oracle-bam(11.1.1)	DataObjectOperatio	0
usermessagingserver#1!ReceiveMessageService	usermessagingserve	ReceiveMessage	0
oracle-bam#11.1.1#1!ManualRuleFire	oracle-bam(11.1.1)	ManualRuleFire	0
usermessagingserver#1!ReceiveMessageManagerService	usermessagingserve	ReceiveMessageMan	0
oracle-bam#11.1.1#1!ICommand	oracle-bam(11.1.1)	ICommand	0

26.5 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 26–3), the Performance Summary page appears as shown in Figure 26–4.

Figure 26–3 Monitoring Shortcut Menu

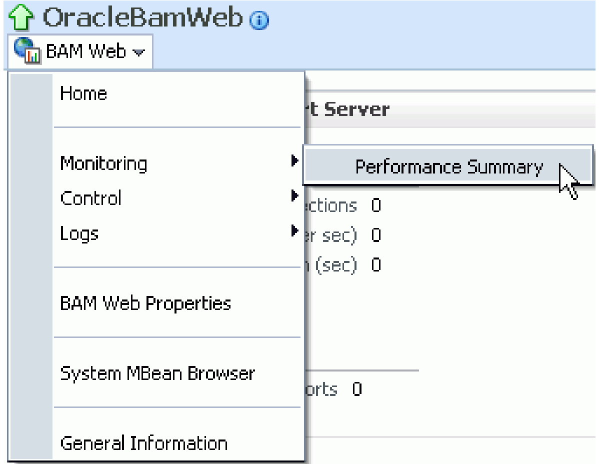
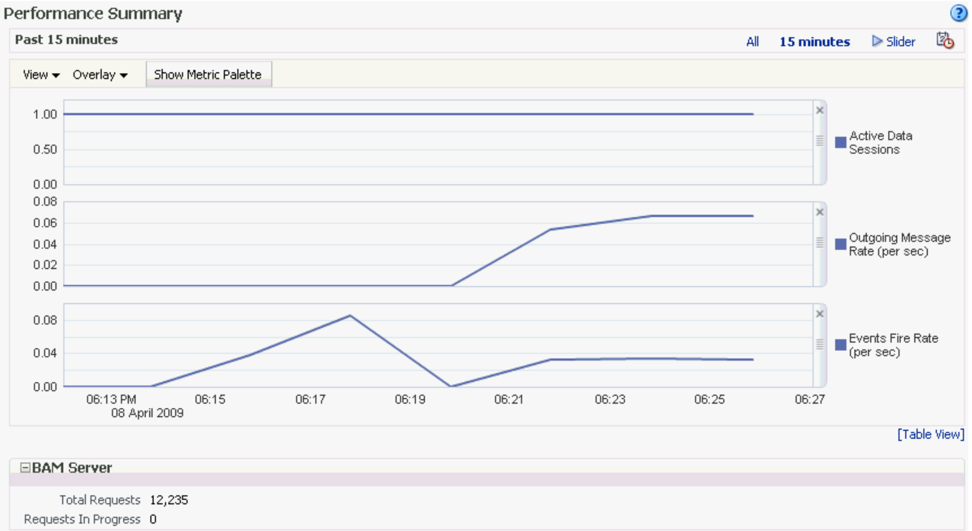


Figure 26–4 Performance Summary Page

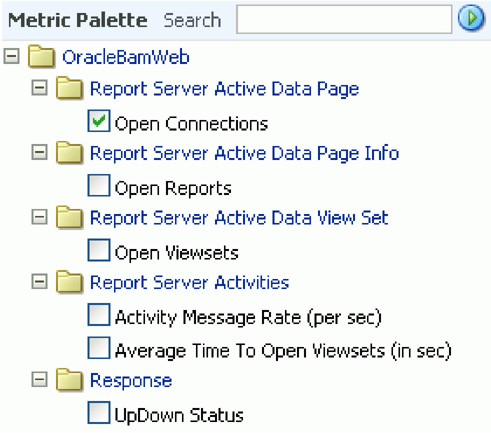


Many metrics are available for capture and display (most of which are also displayed in the Oracle BAM component home pages). Descriptions of each metric are available in the metrics help pages.

To get the most valuable, focused information, use the Metric Palette. Click **Show Metric Palette** to display the Metric Palette, shown in Figure 26–5.

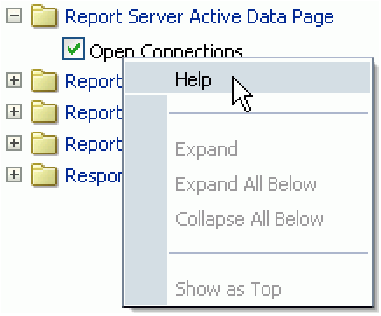
Choose the metrics in which you are most interested. As you select or deselect metrics from the palette, the metrics graph at the left is updated automatically.

Figure 26–5 Metric Palette for Oracle BAM Web Applications


Metric Palette
Search
OracleBamWeb
Report Server Active Data Page
☑ Open Connections
Report Server Active Data Page Info
☐ Open Reports
Report Server Active Data View Set
☐ Open Viewsets
Report Server Activities
☐ Activity Message Rate (per sec)
☐ Average Time To Open Viewsets (in sec)
Response
☐ UpDown Status

Right click the metric label and select **Help**, as shown in Figure 26–6, to find more information about each of the metrics.

Figure 26–6 Metrics Shortcut Menu



26.6 Monitoring Oracle BAM Logs

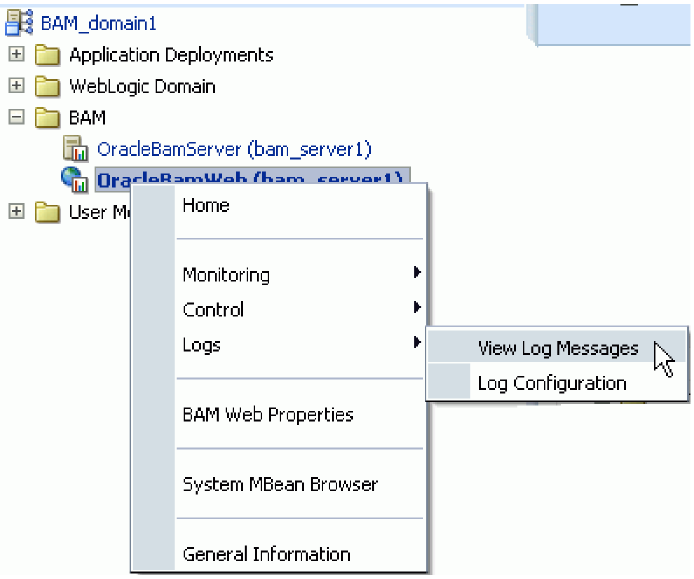
Oracle BAM logs are configured and viewed using Fusion Middleware Control Console.

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 25.4, "Configuring the Logger."

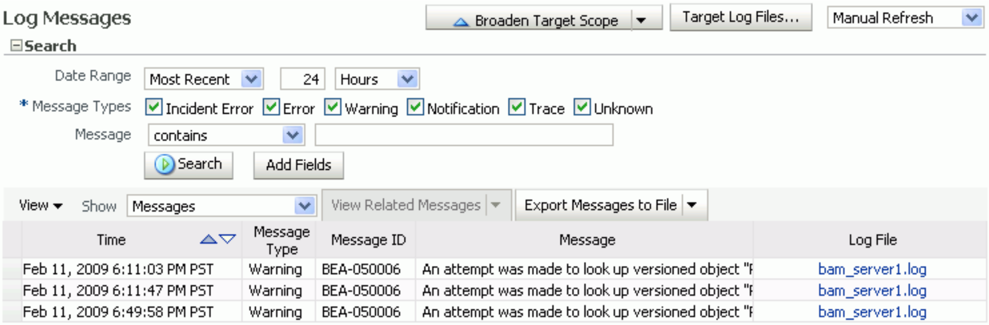
To view the logs, right click the **OracleBamServer** node or **OracleBamWeb** node in the navigation tree and select **Logs > View Log Messages** as shown in Figure 26–7.

Figure 26–7 Logs Shortcut Menu



The log viewer page opens as shown in Figure 26–8. Use this page to query for information about the component. Fields and lists are used to customize the query.

Figure 26–8 Log Messages Page



Search

Date Range: Most Recent 24 Hours

* Message Types: ☑ Incident Error ☑ Error ☑ Warning ☑ Notification ☑ Trace ☑ Unknown

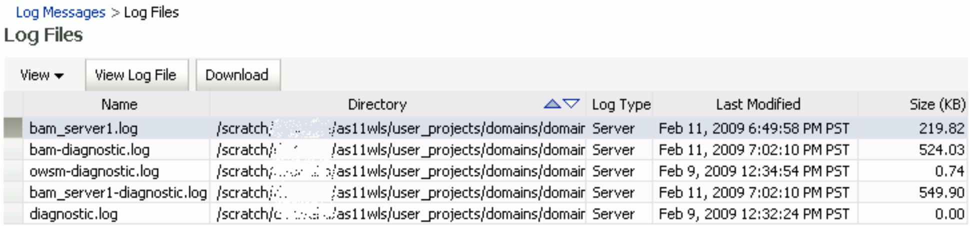
Message: contains

Show: Messages

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 "I	bam_server1.log
Feb 11, 2009 6:11:47 PM PST	Warning	BEA-050006	An attempt was made to look up versioned object "I	bam_server1.log
Feb 11, 2009 6:49:58 PM PST	Warning	BEA-050006	An attempt was made to look up versioned object "I	bam_server1.log

After entering your search criteria, click **Target Log Files**. The Log Files page appears as shown in Figure 26–9. You can view specific log information (shown in Figure 26–10) or download the log.

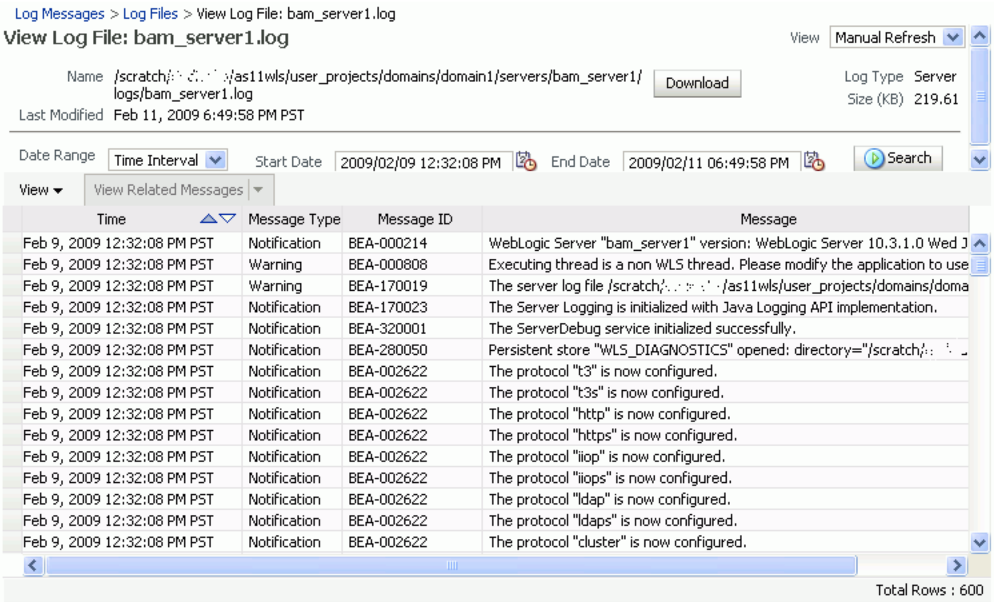
Figure 26–9 Log Files Page



Log Files

Name	Directory	Log Type	Last Modified	Size (KB)
bam_server1.log	/scratch/[redacted]/as11wls/user_projects/domains/domair	Server	Feb 11, 2009 6:49:58 PM PST	219.82
bam-diagnostic.log	/scratch/[redacted]/as11wls/user_projects/domains/domair	Server	Feb 11, 2009 7:02:10 PM PST	524.03
owsm-diagnostic.log	/scratch/[redacted]/as11wls/user_projects/domains/domair	Server	Feb 9, 2009 12:34:54 PM PST	0.74
bam_server1-diagnostic.log	/scratch/[redacted]/as11wls/user_projects/domains/domair	Server	Feb 11, 2009 7:02:10 PM PST	549.90
diagnostic.log	/scratch/[redacted]/as11wls/user_projects/domains/domair	Server	Feb 9, 2009 12:32:24 PM PST	0.00

Figure 26–10 Log File bam_server1.log



Log Messages > Log Files > View Log File: bam_server1.log
View Log File: bam_server1.log
View
Manual Refresh
Download
Search
View
View Related Messages

Name /scratch/[redacted]/as11wls/user_projects/domains/domain1/servers/bam_server1/logs/bam_server1.log

Last Modified Feb 11, 2009 6:49:58 PM PST

Log Type Server

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

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/[redacted]/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/[redacted]
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

27

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 27.1, "Introduction to Managing Oracle BAM"
- Section 27.2, "Managing Oracle BAM Availability"
- Section 27.3, "Managing Oracle BAM Users"

27.1 Introduction to Managing Oracle BAM

Use Oracle Enterprise Manager Fusion Middleware Control Console to manage Oracle BAM availability. See Section 27.2, "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 27.3, "Managing Oracle BAM Users" for more information.

27.2 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 *un*set.

```
$ unsetenv DISPLAY
```

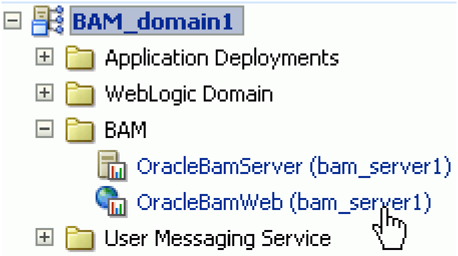
Restarting is required for any configuration changes made in the Oracle BAM configuration properties pages or configuration files.

To start or stop Oracle BAM components in Fusion Middleware Control Console:

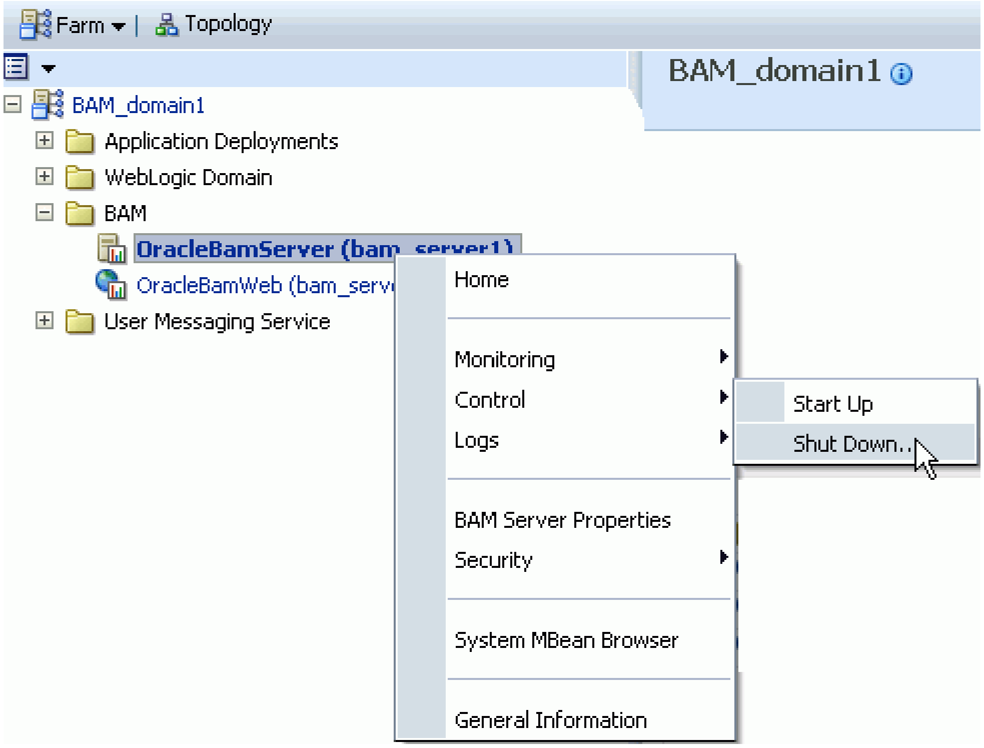
1. Open Fusion Middleware Control Console in your Web browser at:

   `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.

27.3 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.

Note: You can use Oracle WebLogic Server to configure the Active Directory Authentication provider for authenticating Oracle BAM users instead of using the default embedded LDAP (also known as the default authenticator). To use Active Directory, you must also do some additional steps to change the OracleSystemUser default user. See "Changing the OracleSystemUser Default User" in *Oracle Fusion Middleware Security and Administrator's Guide for Web Services* for more information.

---

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 27.3.1, "Defining Users and Groups" and Section 27.3.2, "Using Previously Seeded Group Members" for more information.

See Section 27.3.5, "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 27.3.3, "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 27.3.4, "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 27.3.4, "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 27.3.6, "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 27.3.7, "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 27.3.8, "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.

27.3.1 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 27.3.5, "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.

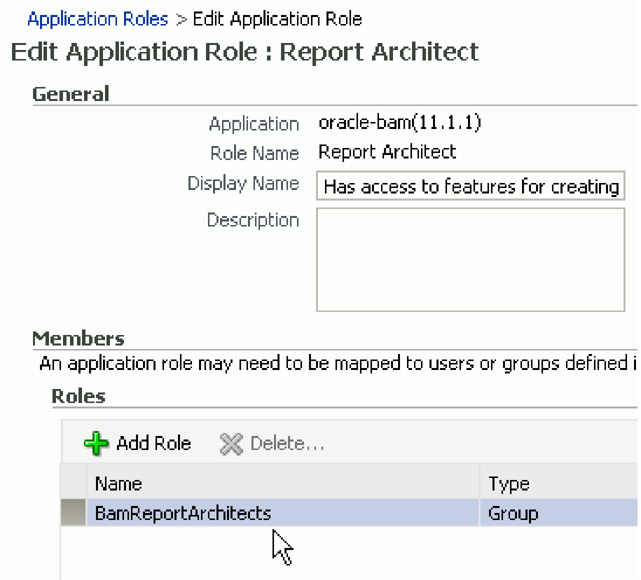
If you attempt to reuse the same user name for a new account, Oracle BAM does not consider the newly added user to be the same user as the one previously deleted. You must delete the original user from Oracle BAM using Oracle BAM Administrator (and optionally transfer the user's Oracle BAM objects to another valid user). Once the inactive user is removed from Oracle BAM you can reuse the user name.

See Section 27.3.8, "Removing Invalid Users from Oracle BAM Administrator" for information about removing users from Oracle BAM.

27.3.2 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

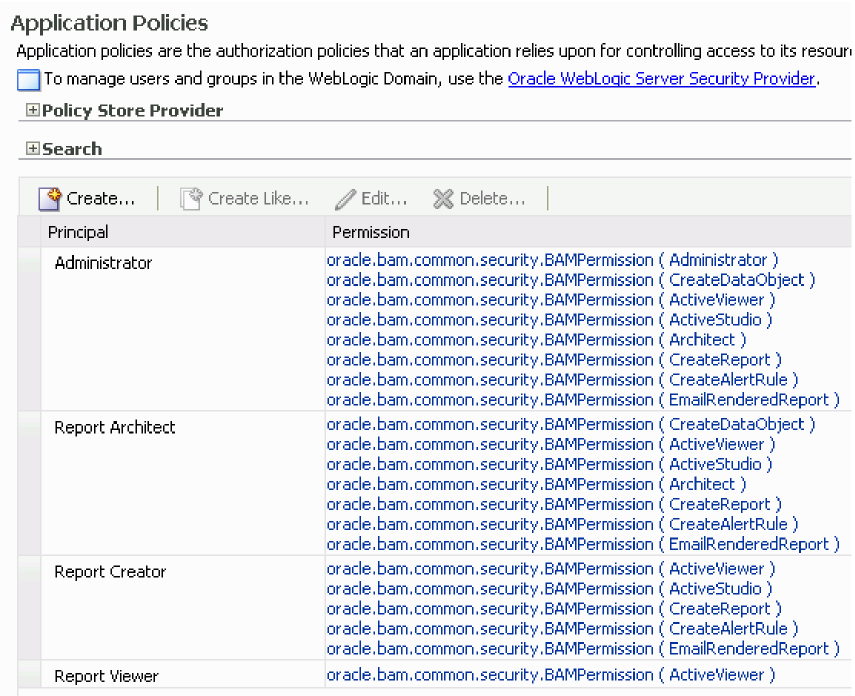
Name	Type
BamReportArchitects	Group

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.

27.3.3 Adding Members to Application Roles

The Oracle BAM application policy defines the Oracle BAM application-level roles described in Section 27.3.4, "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

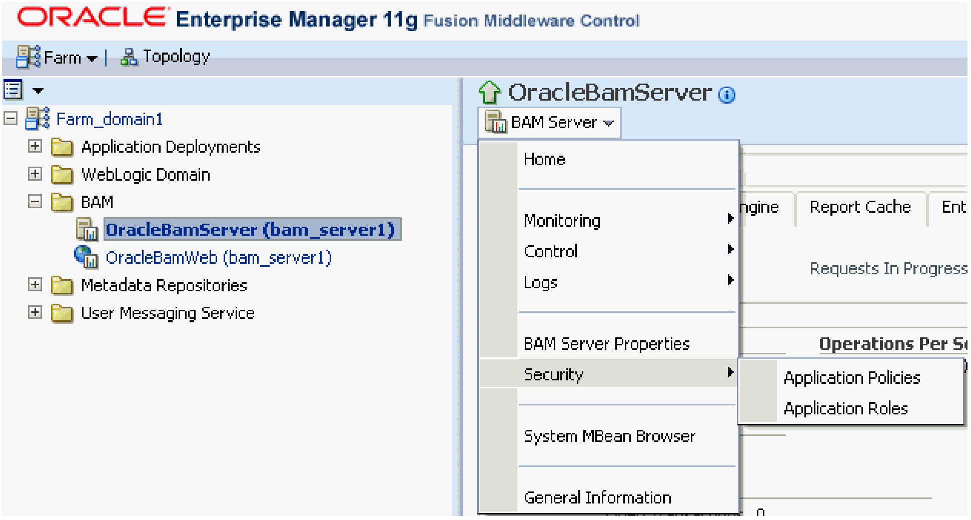
Application policies are the authorization policies that an application relies upon for controlling access to its resour

To manage users and groups in the WebLogic Domain, use the Oracle WebLogic Server Security Provider.

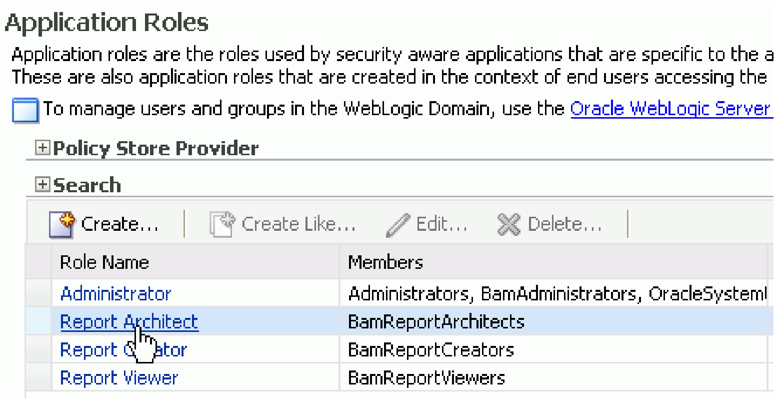
Principal	Permission
Administrator	oracle.bam.common.security.BAMPermission (Administrator) oracle.bam.common.security.BAMPermission (CreateDataObject) oracle.bam.common.security.BAMPermission (ActiveViewer) oracle.bam.common.security.BAMPermission (ActiveStudio) oracle.bam.common.security.BAMPermission (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:

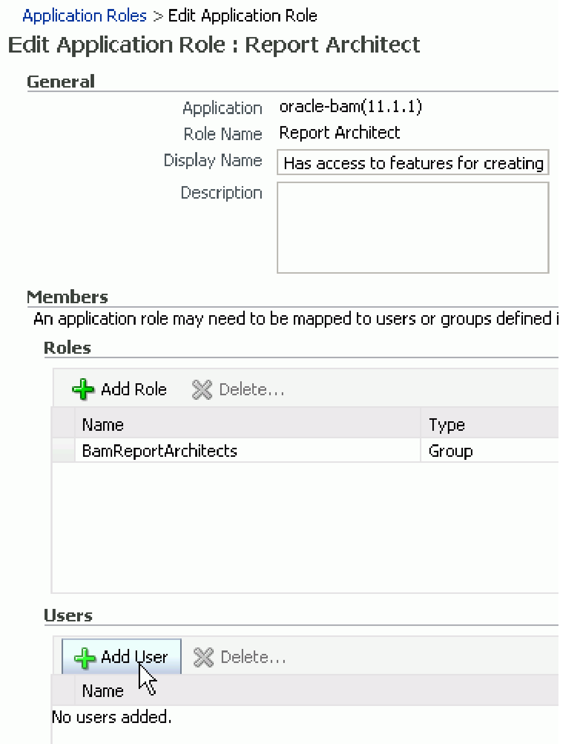


Application roles are the roles used by security aware applications that are specific to the a
These are also application roles that are created in the context of end users accessing the

To manage users and groups in the WebLogic Domain, use the Oracle WebLogic Server

Role Name	Members
Administrator	Administrators, BamAdministrators, OracleSystemI
Report Architect	BamReportArchitects
Report C[illegible]tor	BamReportCreators
Report Viewer	BamReportViewers

Add a member to the role:


Application Roles > Edit Application Role
Edit Application Role : Report Architect
General
Members
Roles
Add Role
Delete...
Users
Add User
Delete...

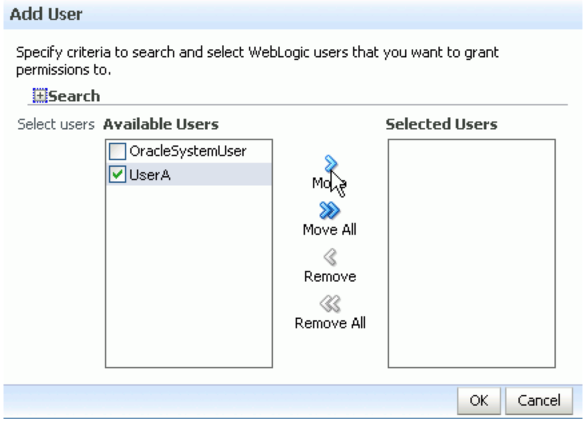
Application oracle-bam(11.1.1)
Role Name Report Architect
Display Name Has access to features for creating
Description

An application role may need to be mapped to users or groups defined i

Name	Type
BamReportArchitects	Group

Name
No users added.

Select an available user and move it to the **Selected Users** list:



Specify criteria to search and select WebLogic users that you want to grant permissions to.

☐ OracleSystemUser
☑ UserA

27.3.4 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

27.3.5 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.

27.3.5.1 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.

27.3.5.2 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**.

27.3.5.3 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**.

27.3.5.4 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**.

27.3.6 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 27.3.6.1, "Using the Registerusers Utility"
- Section 27.3.6.2, "Populating By User Login"

27.3.6.1 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
```

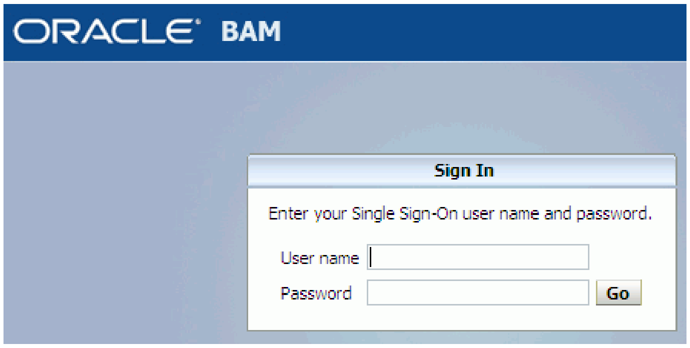
The following is an example of a `UserRegisterConfig.xml` file. The `-host` default is picked up from the `ServerName` element, the `-port` default is picked up from the `ServerPort` element, and the `-protocol` default is picked up from the `Communication_Protocol` element.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<UserRegister>
  <ServerName>localhost</ServerName>
  <ServerPort>7001</ServerPort>
  <Communication_Protocol>t3</Communication_Protocol>
</UserRegister>
```

27.3.6.2 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.



Enter your Single Sign-On user name and password.

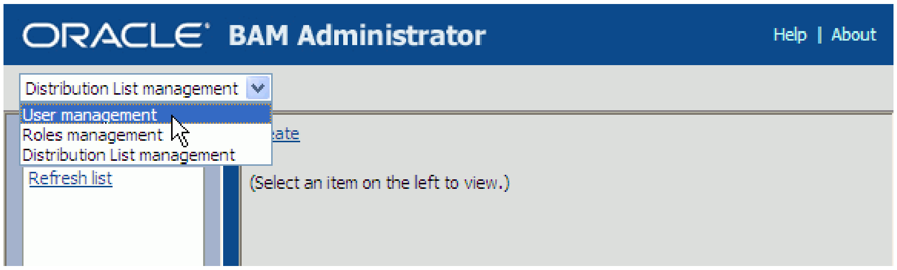
   The Oracle BAM start page can be found at:

   `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 27–1 Oracle BAM Administrator Function List



(Select an item on the left to view.)

4. Verify that each Oracle BAM user appears in the **Users** list (use the **Refresh list** link to show the latest data).

27.3.7 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.

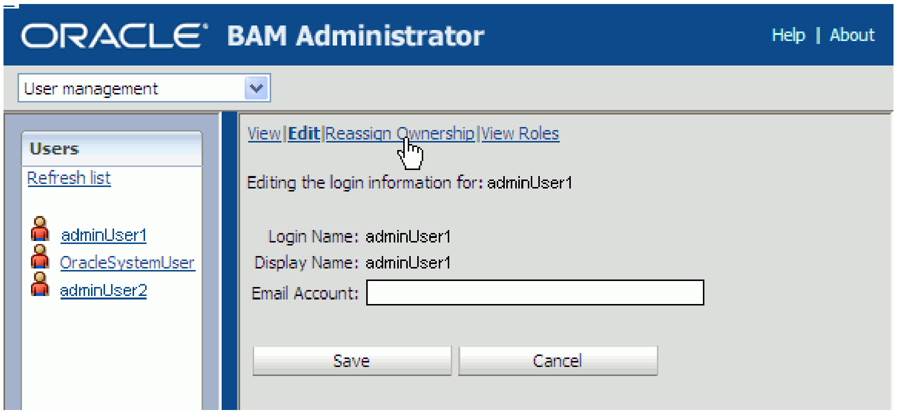
To transfer object ownership:

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 27–1).
3. Select the user in the **Users** list that currently owns the objects you can reassign.
4. Click **Reassign Ownership**.

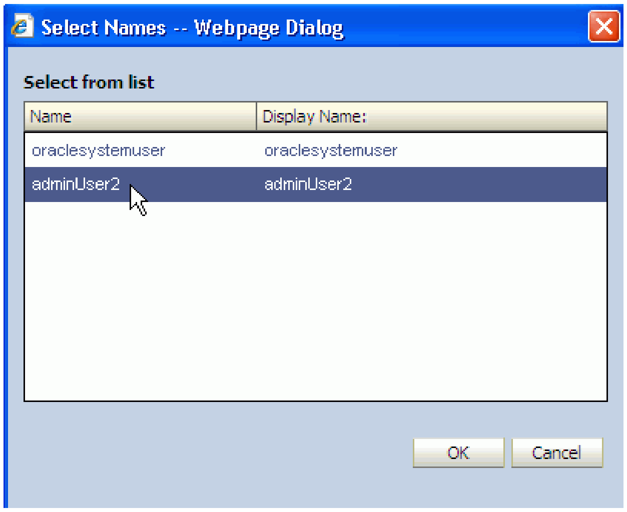


Editing the login information for: adminUser1

Login Name: adminUser1
Display Name: adminUser1
Email Account:

   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.



Name	Display Name:
oraclesystemuser	oraclesystemuser
adminUser2	adminUser2

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.

27.3.8 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 27–1).
3. Select an invalid user in the **Users** list whose objects have been reassigned.

   See Section 27.3.7, "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 28, "Configuring Oracle User Messaging Service"
- Chapter 29, "Monitoring Oracle User Messaging Service"
- Chapter 30, "Managing Oracle User Messaging Service"

28

Configuring Oracle User Messaging Service

This chapter describes how to configure Oracle User Messaging Service (UMS).

This chapter includes the following topics:

28.1 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 e-mail 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 e-mail 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 e-mail.
  - Integration with Oracle BAM—Oracle BAM uses UMS to send e-mail 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.

28.1.1 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 e-mail 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.

28.1.2 Architecture

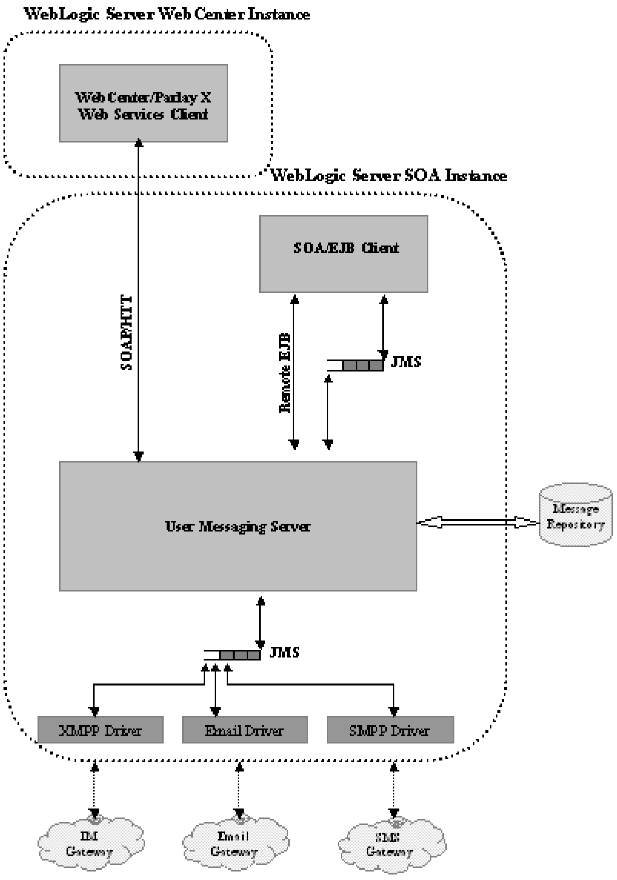
The system architecture of Oracle User Messaging Service is shown in Figure 28–1.

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 28–1 UMS architecture



28.2 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.

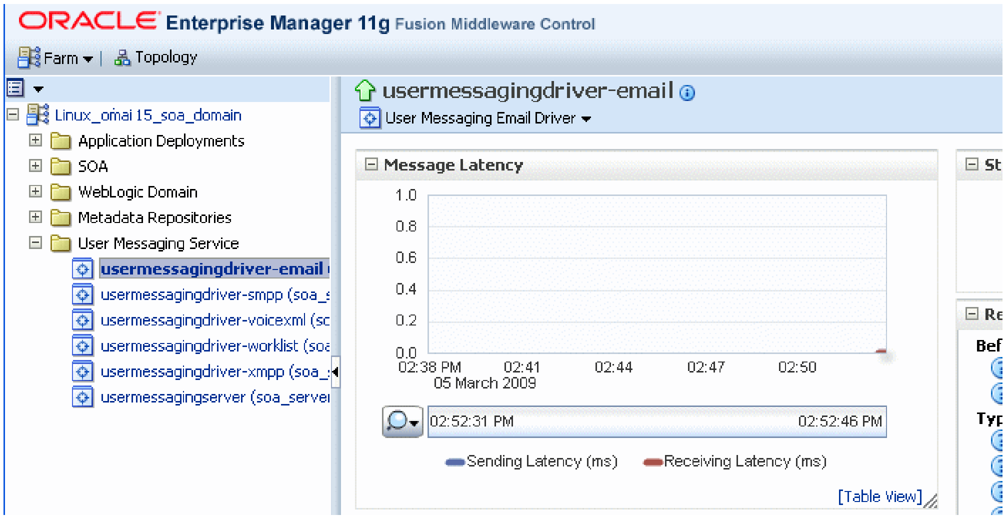
At the application level, there is notification activity for a specific delivery channel (such as SMS or Email). For example, when you build a SOA application that sends e-mail notification, you drag and drop an *Email Activity* component from the

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.

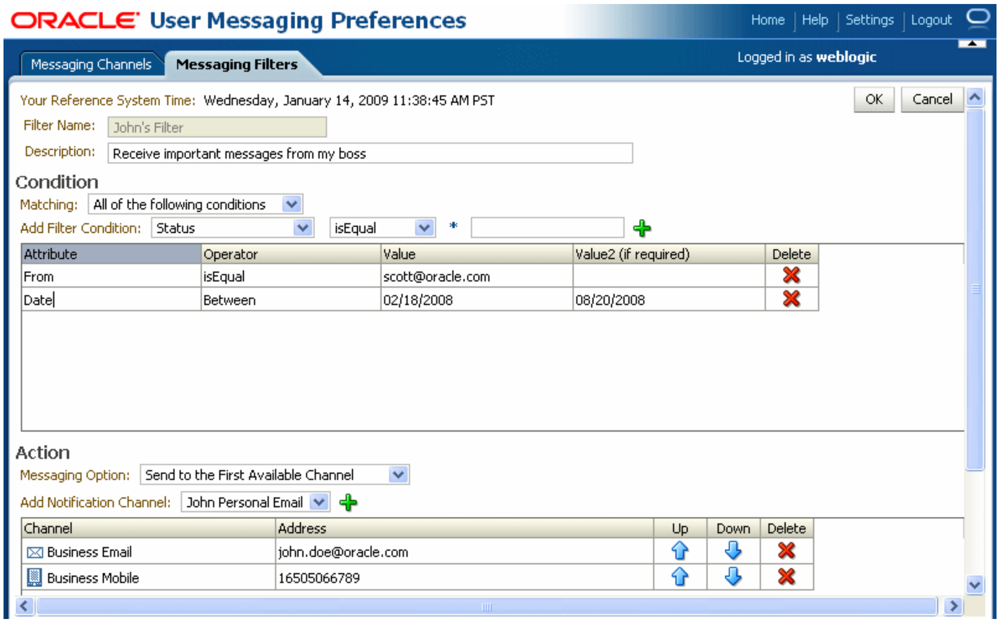
To enable the workflow participants to receive and forward notifications, use Oracle 11g Enterprise Manager to set the Oracle User Messaging Service environment by configuring the appropriate driver instances that reside on the same Oracle WebLogic Server on which you deploy the workflow application (Figure 28–2). Oracle User Messaging Service includes drivers that support messaging through Email, IM, SMS and voice channels. For more information, see Section 28.4, "Configuring User Messaging Service Drivers".

Figure 28–2 Oracle Enterprise Manager 11g Fusion Middleware Control


ORACLE Enterprise Manager 11g Fusion Middleware Control
Farm
Topology
Linux_omai15_soa_domain
Application Deployments
SOA
WebLogic Domain
Metadata Repositories
User Messaging Service
usermessagingdriver-email
usermessagingdriver-smpp (soa_s
usermessagingdriver-voicexml (sc
usermessagingdriver-worklist (soa
usermessagingdriver-xmpp (soa_
usermessagingserver (soa_server
usermessagingdriver-email
User Messaging Email Driver
Message Latency
1.0
0.8
0.6
0.4
0.2
0.0
02:38 PM
05 March 2009
02:41
02:44
02:47
02:50
02:52:31 PM
02:52:46 PM
Sending Latency (ms)
Receiving Latency (ms)
[Table View]
St
Re
Bef
Typ

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 28–3).

Figure 28–3 User Messaging Preferences


ORACLE User Messaging Preferences
Home | Help | Settings | Logout
Logged in as weblogic
Messaging Channels
Messaging Filters
OK
Cancel

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
Business Email	john.doe@oracle.com	↑	↓	✖
Business Mobile	16505066789	↑	↓	✖

28.3 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.

28.3.1 How to Set the Storage Method

Use the Server Properties 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.

28.3.2 How to Add or Remove User Messaging Preferences Business Terms

The Server Properties 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.

28.3.2.1 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**.

28.3.2.2 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.

28.4 Configuring User Messaging Service Drivers

Oracle User Messaging Service includes the following drivers.

- Configuring the Messaging Extension Driver
- 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.

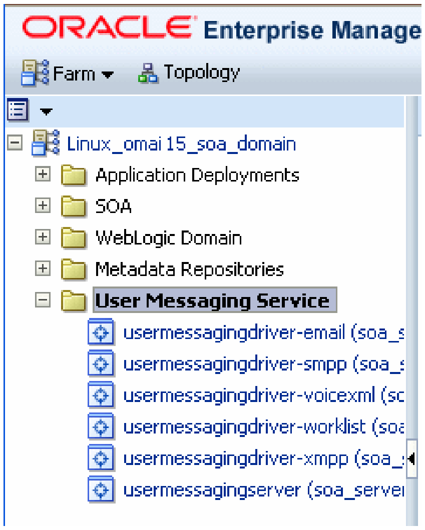
UMS Messaging Drivers are configured per instance. Configuring only one does not populate the configuration values to the drivers on the other cluster nodes.

28.4.1 How to Configure a Driver

To configure a driver:

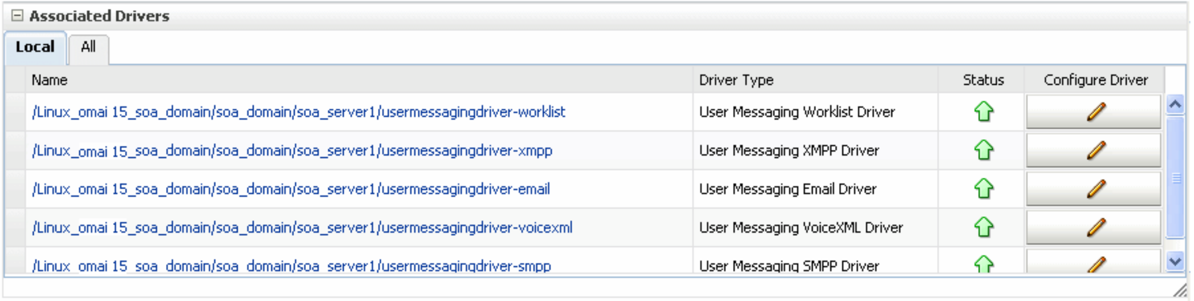
1. Log into the Enterprise Manager Fusion Middleware Control console as an administrator.
2. Expand the *Fusion Middleware* folder (Figure 28–4).

Figure 28–4 Expanding the UMS Folder


ORACLE Enterprise Manage
Farm
Topology
Linux_omai 15_soa_domain
Application Deployments
SOA
WebLogic Domain
Metadata Repositories
User Messaging Service
usermessagingdriver-email (soa_s
usermessagingdriver-smpp (soa_s
usermessagingdriver-voicexml (sc
usermessagingdriver-worklist (soa
usermessagingdriver-xmpp (soa_s
usermessagingserver (soa_server

3. Navigate to the User Messaging Service *Home* page.
4. Click usermessagingserver(soa_server1). The Associated Drivers page appears.

Figure 28–5 Drivers Associated with the UMS Instance

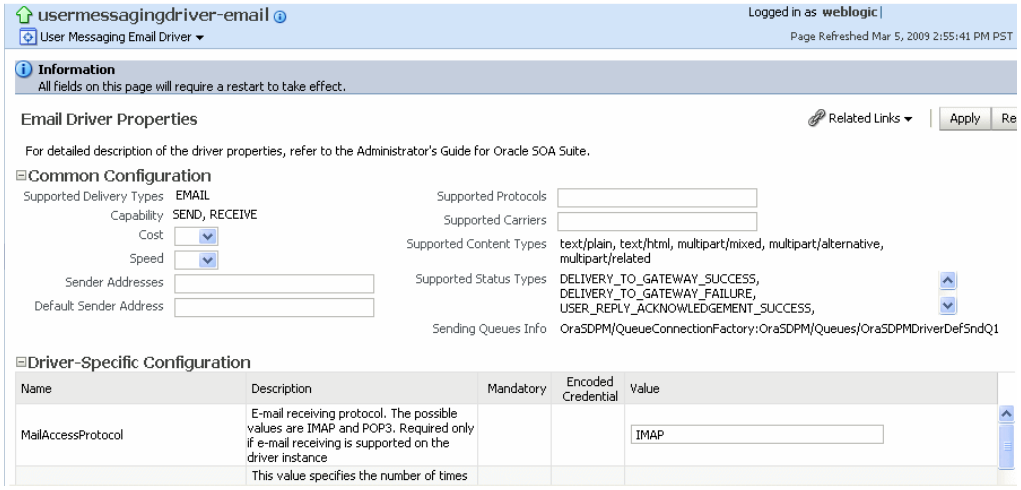


Name	Driver Type	Status	Configure Driver
/Linux_omai 15_soa_domain/soa_domain/soa_server1/usermessagingdriver-worklist	User Messaging Worklist Driver	⇧	✎
/Linux_omai 15_soa_domain/soa_domain/soa_server1/usermessagingdriver-xmpp	User Messaging XMPP Driver	⇧	✎
/Linux_omai 15_soa_domain/soa_domain/soa_server1/usermessagingdriver-email	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 e-mail driver in the list, and then click the adjacent **Configure Driver** icon.

   The configuration page displays (Figure 28–6).

Figure 28–6 The Server Properties Page for a Selected Driver


usermessagingdriver-email
User Messaging Email Driver
Logged in as **weblogic**
Related Links
Apply
Re

Page Refreshed Mar 5, 2009 2:55:41 PM PST

Information
All fields on this page will require a restart to take effect.

Email Driver Properties

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,
Sending Queues Info: OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1

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			IMAP
	This value specifies the number of times			

7. If needed, expand the *Driver-Specific Configuration* section and configure the driver parameters. For more information, see Section 28.4.1.1, "About Driver Properties".

28.4.1.1 About Driver Properties

Oracle User Messaging Service drivers share common properties (listed in Table 28–1) 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 28–1 Common Driver Properties

Name	Description	Mandatory Property?
Capability	Sets the driver's capability to send or receive messages. The values are *SEND*, *RECEIVE*, and *BOTH*.	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
SupportedContentTypes	The content type supported by the driver.	Yes

Table 28–1 (Cont.) Common Driver Properties

Name	Description	Mandatory Property?
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 *true*, the Messaging Engine invokes the driver connection's `getStatus()` operation.	No
SupportsTracking	Supports Tracking operation on a message.	No

28.4.1.2 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 e-mail 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"/>
```

28.4.1.3 Configuring the Messaging Extension Driver

The extension driver extends the messaging capability of the User Messaging Service by enabling support for arbitrary administrator-defined channels (protocols) and delivering the notifications for such channels to an administrator-defined web service listener endpoint.

> **Note:** An instance of this driver is deployed, but not targeted to any servers in the default installation. To enable this driver instance, it must be targeted to the appropriate servers where UMS (`usermessagingserver`) is running.

28.4.1.3.1 Driver Application Archive (ear) `$oracle_home/communications/applications/sdpmessagingdriver-extension.ear`

28.4.1.3.2 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 see the JavaDoc for `driverconfigpropertynames`.

Table 28–2 Extension Driver Common Properties

Name	Description	Mandatory?	Default Value
InstanceName	Instance Name (for internal use only)	Yes	Extension-Driver
Capability	Message sending and receiving capability	Yes	SEND
SupportedDeliveryTypes	Supported Delivery Types	Yes	URI
SupportedContentTypes	Supported Content Types	Yes	text/plain, text/html, text/xml
SupportedStatusTypes	Supported Status Types	No	DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE
Cost	Cost	No	
Speed	Speed	No	
SupportedCarriers	Supported Carriers	No	
SupportedProtocols	Supported Protocols	No	popup

Table 28–2 (Cont.) Extension Driver Common Properties

Name	Description	Mandatory?	Default Value
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	
DefaultSenderAddress	Default Sender Address	No	
SendingQueuesInfo	Driver Sending Queue Info	Yes	`OraSDPM/QueueConnectionFactory:OraSDPM/Queues/OraSDPMDriverDefSndQ1`

28.4.1.3.3 Custom Properties This driver supports multiple configuration groups called *extension endpoint* groups. An *extension endpoint* group holds the configuration for a remote endpoint at which to deliver extension notifications. Each endpoint must have a distinct combination of protocol and mapped domain. The properties of the *extension endpoint* group are listed in Table 28–3:

Table 28–3 Extension Driver Custom Properties

Name	Description	Mandatory?
Group Name	The name of this Extension Endpoint configuration group.	Yes
Endpoint URL	Remote endpoint listener URL.	Yes
Mapped Domain	This extension endpoint will be used to deliver messages where the domain part of the recipient URI matches this value.	No
Protocol	This extension endpoint will be used to deliver messages where the protocol (scheme) part of the recipient URI matches this value.	Yes
Security Policies	Comma-separated list of WS-Security policies to apply to this endpoint.	No
Username	Username to propagate through WS-Security headers.	No
Keystore Alias	Keystore Alias to use for looking up WS-Security policy public keys.	No
Credential Store Key	Key to use for looking up WS-Security username and password from Oracle Web Services Management credential store map.	No

28.4.1.3.4 Extension Driver Security If the remote extension endpoint is secured using WS-Security, then additional configuration of the extension driver is required. There are two typical WS-Security configurations that are supported. The extension driver can either use SAML tokens or username tokens.

1. To use SAML tokens, the *Security Policies* configuration property should contain value `oracle/wss11_saml_token_identity_switch_with_message_protection_client_policy`, and the *Keystore Alias* configuration property should contain a valid alias for keystore entries that will be accepted by the remote extension endpoint.
2. To use username tokens, the *Security Policies* configuration property should contain value `oracle/wss11_username_token_with_message_protection_client_policy`, and the *Credential Store Key* configuration property should contain a valid alias for a credential store entry that will be accepted by the remote extension endpoint.

For more details about using WS-Security policies, see *Oracle Fusion Middleware Security and Administrator's Guide for Web Services*.

28.4.1.3.5 Client API Messageinfo Support Table 28–4 describes whether the protocol or driver implementation honors the following message delivery related properties that are specified through the client API.

Table 28–4 Client API MessageInfo Support

Name	Description	Supported?
Expiration	Expiration means how long later in seconds the message should expire.	False
Delay	Delay means how long later the message should be sent out.	False

28.4.1.3.6 Usage Instructions Perform the following steps to use the extension driver:

1. Implement and deploy a Web Service listener endpoint based on the `MessagingNotifyService` WSDL (`umsnotify.wsdl`):

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
                  xmlns:tns="http://xmlns.oracle.com/ucs/messaging/extension"
                  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
                  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
                  name="MessagingNotifyService"

targetNamespace="http://xmlns.oracle.com/ucs/messaging/extension">

    <wsdl:types>

    <xsd:schema
targetNamespace="http://xmlns.oracle.com/ucs/messaging/extension">
      <xsd:element name="notification">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element name="messageId" type="xsd:string" minOccurs="0"
maxOccurs="1">
              <xsd:annotation>
                <xsd:documentation>Unique message identifier from User
Messaging Service.</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="sender" type="xsd:string">
              <xsd:annotation>
                <xsd:documentation>The sender address.</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="recipient" type="xsd:string">
              <xsd:annotation>
                <xsd:documentation>The recipient address (typically
username).</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="subject" type="xsd:string" minOccurs="0"
maxOccurs="1">
              <xsd:annotation>
                <xsd:documentation>The subject of the message, if
available.</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="contentType" type="xsd:string"
default="text/plain">
              <xsd:annotation>
                <xsd:documentation>The MIME type of the message. e.g.
text/plain, text/html, text/xml.</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="content" type="xsd:string">
              <xsd:annotation>
                <xsd:documentation>The main body of the message. Textual
content only (no binary content).</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
            <xsd:element name="parameters" type="tns:parameter" minOccurs="0"
maxOccurs="unbounded">
              <xsd:annotation>
                <xsd:documentation>Additional key-value pairs. This interface
does not define any specific key-value pair meanings. Use of such parameters is
defined on a private basis by particular implementations of this
interface.</xsd:documentation>
              </xsd:annotation>
            </xsd:element>
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:complexType name="parameter">
        <xsd:sequence>
          <xsd:element name="name" type="xsd:string">
            <xsd:annotation>
              <xsd:documentation>Parameter name</xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="value" type="xsd:string">
            <xsd:annotation>
              <xsd:documentation>Parameter value</xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        </xsd:sequence>
      </xsd:complexType>
      <xsd:element name="notificationResponse">
        <xsd:complexType>
```

```
          <xsd:sequence>
            <xsd:element name="messageId" type="xsd:string" minOccurs="0"
maxOccurs="1">
              <xsd:annotation>
                <xsd:documentation>A message identifier returned in response to
successfully accepting the message. If returned, the identifier should be
unique. Note: A fault is raised if the message cannot be
accepted.</xsd:documentation>
              </xsd:annotation></xsd:element>
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="notificationFault">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element name="code" type="xsd:string"/>
            <xsd:element name="message" type="xsd:string"/>
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
    </xsd:schema>
  </wsdl:types>
  <wsdl:message name="notifyRequest">
    <wsdl:part element="tns:notification" name="parameters" />
  </wsdl:message>
  <wsdl:message name="notifyResponse">
    <wsdl:part element="tns:notificationResponse" name="parameters"/>
  </wsdl:message>
  <wsdl:message name="notifyException">
    <wsdl:part element="tns:notificationFault" name="parameters"/>
  </wsdl:message>
  <wsdl:portType name="Notify">
    <wsdl:operation name="invoke">
      <wsdl:input message="tns:notifyRequest"/>
      <wsdl:output message="tns:notifyResponse"/>
      <wsdl:fault message="tns:notifyException" name="NotifyException"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="NotifySOAPBinding" type="tns:Notify">
    <soap:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="invoke">
      <soap:operation
        soapAction="http://www.oracle.com/ucs/messaging/extension" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
      <wsdl:fault name="NotifyException">
        <soap:fault name="NotifyException" use="literal"/>
      </wsdl:fault>
    </wsdl:operation>
  </wsdl:binding>

  <wsdl:service name="NotifyService">
    <wsdl:port binding="tns:NotifySOAPBinding" name="Notify">
      <soap:address location="http://localhost:8001/NotifyService"/>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

2. Configure the Extension Driver.
    a. Target the pre-deployed extension driver called `usermessagingdriver-extension` or a new deployment to the appropriate servers where UMS (`usermessagingserver`) is running and start the driver.
    b. In Enterprise Manager Fusion Middleware Control, navigate to the `usermessagingserver` Home Page. Click **User Messaging Service > Driver Properties**.
    c. Select and Edit the driver `usermessagingdriver-extension` or Create a new driver with the same name as your new driver deployment.
    d. Under *Driver-Specific Configuration*, add a new Extension Endpoint configuration group and specify the correct properties: *EndpointURL* is the URL to the web service listener endpoint created in Step 1. *Protocol* is the value of the new messaging channel for which you want to add notification support (for example: *popup*).
    e. Under *Common Configuration*, update *Supported Protocols* with a comma-separated list of protocols defined in each Extension Endpoint group.
    f. Click **OK** to save the configuration.

This completes the configuration and integration of a new messaging channel (protocol) in UMS using the Extension Driver.

To send notifications to this new channel (protocol), recipients must be specified for the URI delivery type using the URI addressing format `URI:`*`<scheme>`*`:`*`<scheme-specific-address-value>`*, where *`<scheme>`* is the protocol. The *URI delivery type* is optional. For example, if the extension driver was configured to support the protocol *popup*, an application can compose a message to *popup:john.doe@example.com*.

End users can also declare their messaging preferences by creating a new *Messaging Channel* for the new channel type in the Worklist/UMS Preferences UI. Note that user preferences are only applied when applications send user-based notifications (that is, to recipients of the form *`USER:username`*).

Note: Proper configuration of SSL/TLS in the Oracle WebLogic Server container is a pre-requisite for secure connections between UMS and the email server. See "Configuring SSL" in *Oracle Fusion Middleware Securing Oracle WebLogic Server*.

28.4.1.4 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.

28.4.1.4.1 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 28–5 have been verified.

Table 28–5 Email 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

28.4.1.4.2 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 28–6 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
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

Table 28–6 (Cont.) Common Email Properties

Name	Description	Mandatory	Default Value
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

28.4.1.4.3 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 28–7 Custom Email Properties

Name	Description	Mandatory?	Default 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.	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 *-1* 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 *Disabled*. 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 *Disabled*.	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

Table 28–7 (Cont.) Custom Email Properties

Name	Description	Mandatory?	Default Value
ReceiveFolder	The name of the folder the driver is polling messages from. The default value is *INBOX*.	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 *None*, *TLS* and *SSL*. Default value is *None*.	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 *Indirect Password/Create New User*, *Indirect Password/Use Existing User*, *Use Cleartext Password*) 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
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 *Disabled*.	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, *foo,bar*. Required only if e-mail receiving is supported on the driver instance.	No	N/A

Table 28–7 (Cont.) Custom Email Properties

Name	Description	Mandatory?	Default Value
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 *Indirect Password/Create New User*, *Indirect Password/Use Existing User*, *Use Cleartext Password*) 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 *Disabled*.	No	Disabled. When this property is disabled, that means that plain text is allowed.

28.4.1.4.4 Client API Messageinfo Support these properties are message delivery related which are specified through client API. Table 28–8 describes if the protocol or driver implementation honors such properties.

Table 28–8 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	False
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.4.1.5 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.

28.4.1.5.1 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 28–9 have been verified.

Table 28–9 SMPP Driver Gateway Vendors

Vendor
Syniverse
Clickatell
Logica CMG
OpenSMPP (simulator)

28.4.1.5.2 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 28–10 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
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

Table 28–10 (Cont.) Common SMPP 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

28.4.1.5.3 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 28–11 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 *Logica*.	Yes	The default value is *Logica*.
ReceiverSystemType	The type of receiver system. The default is *Logica*.	Yes	The default value is *Logica*.
TransmitterSystemPassword	The password of the transmitter system. Includes Type of Password (choose from *Indirect Password/Create New User*, *Indirect Password/Use Existing User*, *Use Cleartext Password*) and Password.	Yes	N/A
ReceiverSystemPassword	The password for the receiver system. Includes Type of Password (choose from *Indirect Password/Create New User*, *Indirect Password/Use Existing User*, *Use Cleartext Password*) 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 *IA5*. Choose from the drop-down list: *IA5, UCS2, GSM_DEFAULT*.	No	IA5
EncodingAutoDetect	If enabled, the SMPP driver encodes automatically. Default is *Enabled*.	No	Enabled

Table 28–11 (Cont.) Custom SMPP Properties

Name	Description	Mandatory?	Default Value
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 *1*.	No	1
EnquireInterval	The interval, in seconds, to send an enquire message to the SMS-C. Default is *30* seconds.	No	30
ThrottleDelay	The delay, in seconds, between throttles. Default is *30*.	No	30
BindRetryDelay	The minimum delay, in seconds, between bind entry attempts. Default is *30*.	No	30
ResponseTimer	Time lapse allowed between SMPP request and response, in seconds. Default is *30*.	No	30
RegisteredDeliveryMask	The Registered Delivery Bit Mask. Default is *0xFF*, which does not change the delivery flag value.	No	0xFF
RangeSetNull	Set to *true* to set the *address range* field of BIND_RECEIVER to *null*. Set to *false* (the default value) to set the address range field to *SmsSystemId*. Default is *Disabled*.	No	Disabled
PriorityAllowed	The highest priority allowed for the SMPP driver. The range is 0 (normal) to 3 (highest). Default is *0*.	No	0
BulkSending	Setting this value to *enabled* (the default) enables sending messages in bulk to the SMS-C.	No.	Enabled
PayloadSending	Determines if the `message_payload` 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)

Table 28–11 (Cont.) Custom SMPP Properties

Name	Description	Mandatory?	Default Value
ChunkSize	The size of each SMS message chunk. Default is *160*.	No	160
LongMessageSending	Supports sending long messages. Default is *Disabled*.	No	Disabled
DatagramMessageMode	Supports Datagram Message mode. Default is *Disabled*.	No	Disabled

28.4.1.5.4 Client API MessageInfo Support These properties are message delivery related which are specified through client API. Table 28–12 describes if the protocol or driver implementation honors such properties.

Table 28–12 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	True
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.4.1.6 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.

28.4.1.6.1 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 e-mail network, where recipients are addressed by an XMPP ID (or Jabber ID or JID) with the following form: *`[username]@domain[/resource]`*. Please refer to RFC 3920 for details on the addressing scheme.

In an XMPP network, users identified by their XMPP IDs as mentioned above (which typically consist of a username and the domain of the 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.

28.4.1.6.2 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

In addition to Oracle Beehive, the Gateway Vendors and Versions in Table 28–9 have been verified.

Table 28–13 XMPP Driver Gateway Vendors and Versions

Vendor	Version
Jabberd	v1, v2
ejabberd	v2

28.4.1.6.3 Third-Party Software The XMPP Driver uses or requires the following third-party software (you may optionally choose to install and configure your own XMPP server):

Table 28–14 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

> **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.

28.4.1.6.4 Driver Application Archive (EAR) `$ORACLE_HOME/communications/applications/sdpmessagingdriver-xmpp.ear`

28.4.1.6.5 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 28–15 Common XMPP Properties

Name	Description	Mandatory	Default Value
InstanceName	Instance Name (for internal use only)	Yes	XMPP-IM-Driver
Capability	Message sending and receiving capability	Yes	Both
SupportedDeliveryTypes	Supported Delivery Types	Yes	IM
SupportedContentTypes	Supported Content Types	Yes	text/plain

Table 28–15 (Cont.) Common XMPP Properties

Name	Description	Mandatory	Default Value
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

28.4.1.6.6 XMPP Custom Properties The XMPP Driver includes the custom properties shown below.

Table 28–16 Custom XMPP Properties

Name	Description	Mandatory	Default Values
IMServerHost	Jabber/XMPP server hostname.	No	N/A
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: `myUserName or myUserName@<xmpp-domain>`). **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 *Indirect Password/Create New User*, *Indirect Password/Use Existing User*, *Use Cleartext Password*) and Password.	No	N/A

Table 28–16 (Cont.) Custom XMPP Properties

Name	Description	Mandatory	Default Values
SecurityMode	Security mode to use when making a connection to the server. Available options are: *None* (Security is disabled and only un-encrypted connections will be used), *TLS* (Security through TLS encryption is used whenever it is available), *SSL* (Security through SSL encryption is used). Default is *TLS*.	No	TLS
SASLAuthentication 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

28.4.1.6.7 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 28–17 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	False
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.4.1.7 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.

28.4.1.7.1 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 28–18 has been verified.

Table 28–18 VoiceXML Driver Gateway Vendor and Version

Vendor	Version
Genesys VoiceGenie	6.4.2

28.4.1.7.2 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 28–19 Common VoiceXML Properties

Name	Description	Mandatory	Default Value
InstanceName	Instance Name (for internal use only)	Yes	VoiceXML-Driver
Capability	Message sending and receiving capability	Yes	SEND
SupportedDeliveryTypes	Supported Delivery Types	Yes	VOICE
SupportedContentTypes	Supported Content Types	Yes	text/vxml, text/x-vxml
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

28.4.1.7.3 VoiceXML Custom Properties The VoiceXML Driver includes the custom properties shown below.

Table 28–20 Custom VoiceXML Properties

Name	Description	Mandatory	Default Values
VoiceXMLOutboundServletURI	The URL of the VoiceXML gateway.	Yes	N/A
VoiceXMLOutboundServletUserName	The user name of the VoiceXML gateway.	No	N/A
VoiceXMLOutboundServletPassword	The password of the user of the VoiceXML gateway.	No	N/A
VoiceXMLOutboundServletDNIS	The number that should appear in the recipient's Caller ID display.	No	N/A

Table 28–20 (Cont.) Custom VoiceXML Properties

Name	Description	Mandatory	Default Values
VoiceXMLReceiveURL	The URL of this driver's servlet which handles incoming requests from the VoiceXML Gateway. The format is `http://<host>:<port>/usermessagingdriver-voicexml/receive`. 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 `/sdpmessagingdriver-voicexml`.	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.

28.4.1.7.4 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 28–21 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	False
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.4.1.8 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.

Note: The Worklist channel supports all rich text tags supported by the `af:richTextEditor` for the text/html content type. For more information about Rich Text Editor, see *<af:richTextEditor>*

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`

You can install the Worklist Driver onto an Oracle WebLogic platform, or onto an IBM WebSphere platform. Choose the appropriate installation instructions below.

28.4.1.8.1 Install the Worklist Driver on Oracle WebLogic Platform 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_sdpmessagingsca-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.

28.4.1.8.2 Install the Worklist Driver on IBM WebSphere Platform To enable the messaging worklist feature, the WebSphere SOA cell must be extended using the extension template available at `$ORACLE_HOME/common/templates/was/oracle.ums.driver.worklist_template_11.1.1.jar`. To extend a SOA cell using the Oracle Fusion Middleware Configuration Wizard:

1. Set the environment variable `CONFIG_JVM_ARGS` with the value *`-DTemplateCatalog.enable.selectable.all=true`*. For example, in Linux bash shell: *`exportCONFIG_JVM_ARGS="-DTemplateCatalog.enable.selectable.all=true"`*
   At the Windows command prompt: *`set CONFIG_JVM_ARGS=-DTemplateCatalog.enable.selectable.all=true`*
2. Launch Oracle Fusion Middleware Configuration Wizard (`$ORACLE_HOME/common/bin/was_config.sh` or `%ORACLE_HOME%\common\bin\was_config.cmd`).
3. Click **Select and Configure Existing Cell**.
4. Select the desired SOA cell and click **Next**.
5. Select *Oracle User Messaging Service Worklist Driver* on the *Add Products to Cell* screen and click **Next**.
6. Complete the remaining steps of the Oracle Fusion Middleware Configuration Wizard with default selections, and restart the SOA cell.

28.4.1.8.3 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 28–22 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

Table 28–22 (Cont.) Common Worklist Properties

Name	Description	Mandatory?	Default Value
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

28.4.1.8.4 Custom Properties The following custom property is available:

Table 28–23 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.		

28.4.1.8.5 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 28–24 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	False
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.4.1.9 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.

28.4.1.9.1 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 28–25 Common Proxy Properties

Name	Description	Mandatory	Default Value
InstanceName	Instance Name (for internal use only)	Yes	Proxy-Driver
Capability	Message sending and receiving capability	Yes	SEND
SupportedDeliveryTypes	Supported Delivery Types	Yes	EMAIL, SMS, VOICE, IM, WORKLIST
SupportedContentTypes	Supported Content Types	Yes	*
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

28.4.1.9.2 Proxy Custom Properties The Proxy Driver includes the custom properties shown below.

Table 28–26 Custom Proxy Properties

Name	Description	Mandatory	Default Values
GatewayURL	The URL to the hosted 11*g* UMS Web Service gateway. The URL is in the following format: `http://<host>:<port>/sdpmessaging/parlayx/SendMessageService`	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

28.4.1.9.3 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 28–27 Client API MessageInfo Support

Name	Description	Support
Expiration	*Expiration* means how long the message may exist until it expires.	False
Delay	*Delay* means the amount of time that must elapse before the message is sent.	False

28.5 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*.

28.5.1 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.

28.5.2 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.

28.5.3 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 28–28) should be added to the configuration map in addition to other required properties such as the endpoint address.

Table 28–28 Client security keys

Key	Type	Typical Value
`oracle.sdp.parlayx.ParlayXConstants.POLICIES`	String[]	`oracle/wss11_saml_token_with_message_protection_client_policy`
`javax.xml.ws.BindingProvider.USERNAME_PROPERTY`	String	*`<valid username>`*
`oracle.wsm.security.util.SecurityConstants.Config.KEYSTORE_RECIPIENT_ALIAS_PROPERTY`	String	(optional) keystore alias for target service. See Client Aliases.

Example 28–1 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);
```

28.5.4 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.

28.5.5 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 28–2.

Example 28–2 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.

28.5.6 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`

28.6 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 28–29 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 *EMAIL* or *ALL* using Oracle Fusion Middleware Control.
Email notification is not being sent.	The Outgoing (SMTP) Mail Server settings in the UMS Email Driver are incorrect.	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: ■ `OutgoingMailServer` ■ `OutgoingMailServerPort` Note: Validate the values by using them in any e-mail client for connecting to the SMTP server.
	The SMTP server requires authentication or a secure connection (TLS or SSL).	Check the following settings in the UMS Email Driver using Oracle Fusion Middleware Control: ■ `OutgoingUsername` ■ `OutgoingPassword` ■ `OutgoingMailServerSecurity`

Table 28–29 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions

Notifications are not being sent because of error message: `No matching drivers found for sender address = <address>`	The UMS Driver for the appropriate channel is configured with a specific list of *SenderAddresses*, and the message sent by the application has set a non-matching Sender Address.
	Note: UMS Server matches the outbound message's sender address, if set, against the available drivers' *SenderAddresses* to find a matching driver to use for delivering the message. If a driver has set one or more SenderAddresses, then the UMS Server only sends messages with the matching sender address to it.
		- Check the following settings in the appropriate UMS Driver using Oracle Fusion Middleware Control:
		`SenderAddresses`
		Note: The format for SenderAddresses is a comma-delimited list of `<DeliveryType>:<Address>`.
		For example:
		`EMAIL:sender@example.com, EMAIL:sender@example2.com`
		- 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 *SenderAddresses* to differentiate the driver instances. For example, one instance can be set with a specific value in SenderAddresses to only service outbound messages with that matching sender address, while the other instance can keep the SenderAddresses 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.
		- SenderAddresses that are configured with the incorrect syntax (such as missing `<DeliveryType>:`) are ignored by the UMS Server for the purpose of driver selection.

The e-mail client inconsistently receives notifications.	The Incoming Mail Server settings in the UMS Email Driver are configured with the same e-mail account to which notifications are being sent. If the notification is sent to the same account, the UMS Email Driver may download and process the e-mail before the e-mail client can display it.	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: - `IncomingMailIDs` - `IncomingUserIDs`

Table 28–29 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions
SOA Human Workflow notifications are sent, but are not actionable.	The Actionable E-mail Address is not configured in SOA Workflow Notification Properties.	Set the Actionable E-mail Address in SOA Workflow Notification Properties with the address of the e-mail account configured in the UMS E-mail Driver.
	The Human Workflow task is not set to send actionable notifications.	Set the *actionable* 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 E-mail Driver are incorrect.	Check the following settings in the UMS E-mail Driver using Oracle Fusion Middleware Control: ■ `MailAccessProtocol` (*IMAP* or *POP3*, in uppercase) ■ `ReceiveFolder` ■ `IncomingMailServer` ■ `IncomingMailServerPort` ■ `IncomingMailServerSSL` ■ `IncomingMailServerSSL` ■ `IncomingUserIDs` ■ `IncomingUserPasswords` ■ `ImapAuthPlainDisable` Note: Validate the values by using them in any e-mail client for connecting to an IMAP or POP3 server.
	The mail access protocol is incorrect.	Check the following settings in the UMS E-mail Driver using Oracle Fusion Middleware Control: ■ `MailAccessProtocol` (*IMAP* or *POP3*, in uppercase)
	The e-mail server is SSL-enabled.	Check the following settings in the UMS E-mail Driver using Oracle Fusion Middleware Control: ■ `IncomingMailServerSS`
	The receive folder name is incorrect.	Check the following settings in the UMS E-mail Driver using Oracle Fusion Middleware Control: ■ `ReceiveFolder` Note: Some e-mail servers may expect the value INBOX to be inbox or Inbox (that is, case-sensitive). Based on your e-mail server, use an appropriate value.
	A non-default e-mail client is configured for receiving notifications. When the user clicks the approval link, the default mail client page opens, which may send e-mails to a different e-mail server.	Configure the default e-mail client to receive actionable notifications.

Table 28–29 (Cont.) Troubleshooting UMS

Symptom	Possible Causes	Solutions
SOA BPEL User Notification or Human Workflow notifications are sent to the correct delivery type (e-mail, sms, and so on) but to the wrong address.	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. 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.	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. Note: Addresses from the user profile in the identity management system are available through User Messaging Preferences using pre-defined channel names, such as *Business Email*, *Business Mobile*, *Business Phone*, *Instant Messaging*. Use these pre-defined messaging channels instead for BPEL User Notification and Human Workflow use cases.

29

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:

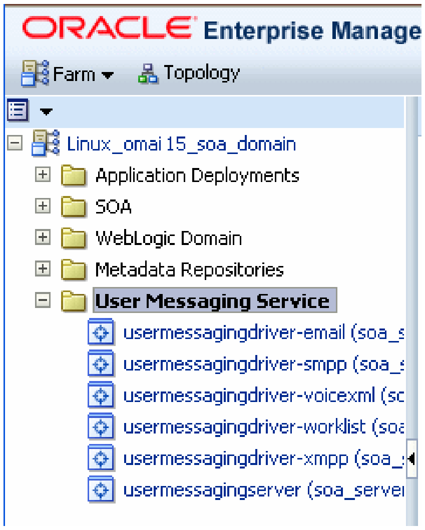
- Section 29.1, "Monitoring Oracle User Messaging Service"
- Section 29.2, "Log Files"
- Section 29.3, "Metrics and Statistics"

29.1 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 29–1 Managing your SOA farm



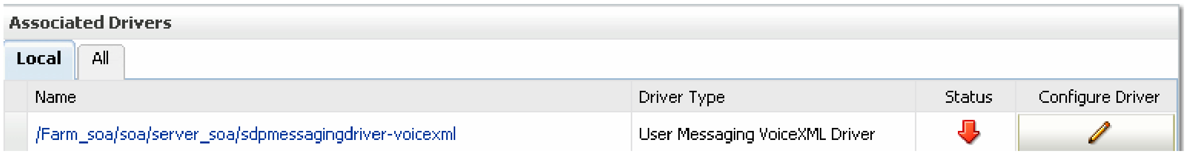
ORACLE Enterprise Manage
Farm
Topology
Linux_omai 15_soa_domain
Application Deployments
SOA
WebLogic Domain
Metadata Repositories
User Messaging Service
usermessagingdriver-email (soa_s
usermessagingdriver-smpp (soa_s
usermessagingdriver-voicexml (sc
usermessagingdriver-worklist (soa
usermessagingdriver-xmpp (soa_s
usermessagingserver (soa_server

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 28, "Configuring Oracle User Messaging Service".

Figure 29–2 Using the Configure Driver icon



Name	Driver Type	Status	Configure Driver
/Farm_soa/soa/server_soa/sdpmessagingdriver-voicexml	User Messaging VoiceXML Driver		

4. Right-click on the server to take the actions listed in Figure 29–3.

Figure 29–3 Available actions

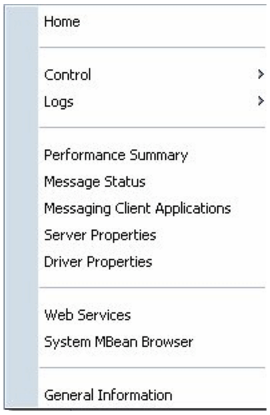
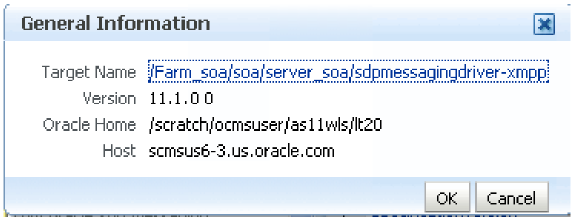


Table 29–1 Server actions

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 *Contains* 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.
Server Properties	Configure message storage method and business terms for message filter creation. See Chapter 28, "Configuring Oracle User Messaging Service" for more information.

Table 29–1 (Cont.) Server actions

Selection	Action
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.  Target Name /Farm_soa/soa/server_soa/sdpmessagingdriver-xmpp Version 11.1.0.0 Oracle Home /scratch/ocmsuser/as11wls/lt20 Host scmsus6-3.us.oracle.com

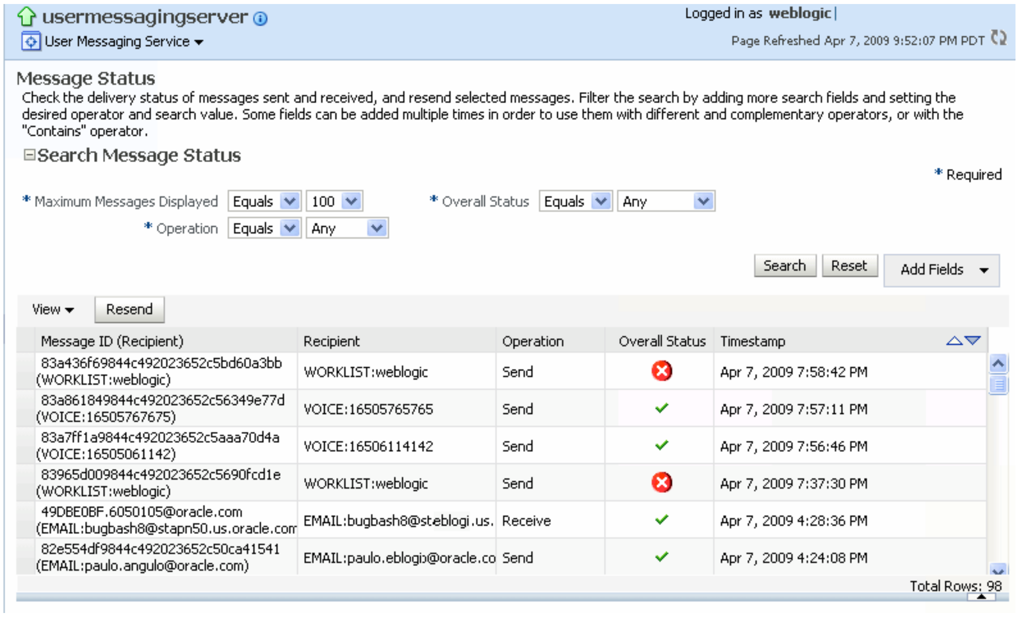
For more information about Oracle Enterprise Manager, see your Oracle Enterprise Manager documentation.

29.1.1 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 29–4 Message Status



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.

* Maximum Messages Displayed Equals 100

* Overall Status Equals Any

* Operation Equals Any

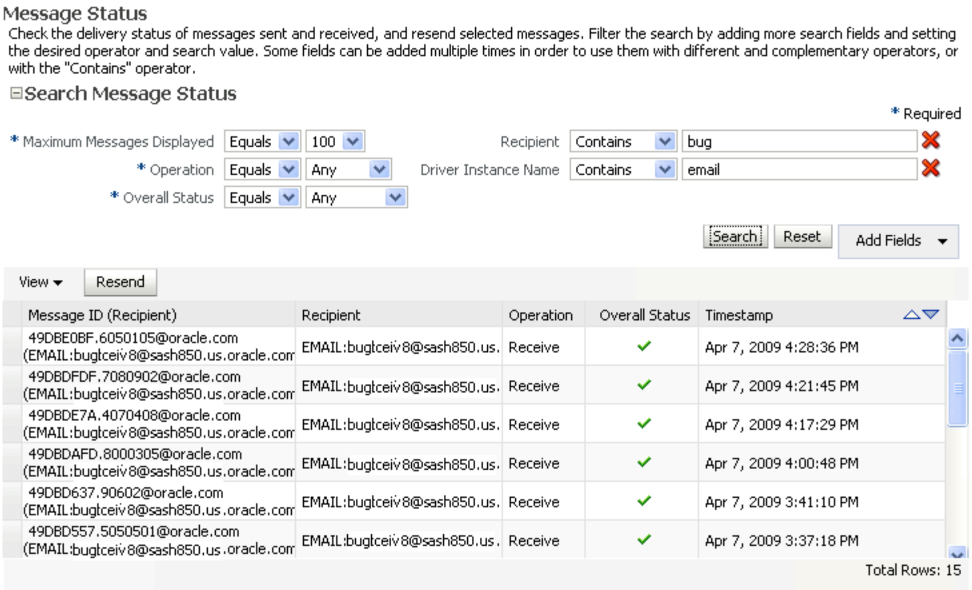
Message ID (Recipient)	Recipient	Operation	Overall Status	Timestamp
83a436f69844c492023652c5bd60a3bb (WORKLIST:weblogic)	WORKLIST:weblogic	Send	✖	Apr 7, 2009 7:58:42 PM
83a861849844c492023652c56349e77d (VOICE:16505767675)	VOICE:16505765765	Send	✓	Apr 7, 2009 7:57:11 PM
83a7ff1a9844c492023652c5aaa70d4a (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

Total Rows: 98

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 29–5 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

* Operation: Equals Any

* Overall Status: Equals Any

Recipient: Contains bug

Driver Instance Name: Contains email

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

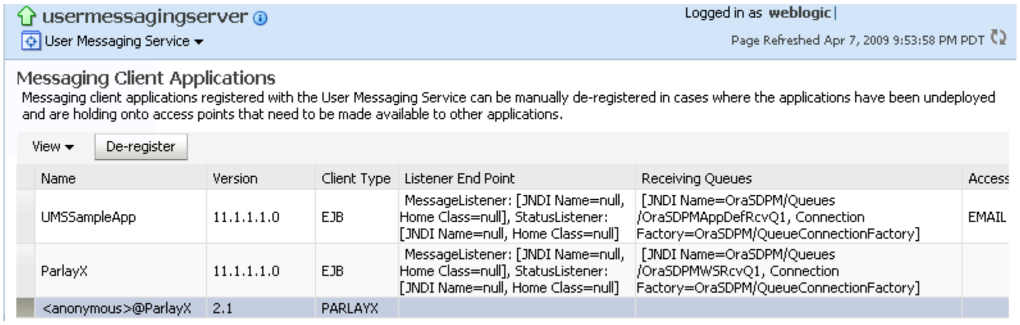
5. If you want to resend a message, select the message in the list and click **Resend**.

29.1.2 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 29–6 Messaging Client Applications page



usermessagingserver

User Messaging Service

Logged in as **weblogic**

Page Refreshed Apr 7, 2009 9:53:58 PM PDT

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 need to be made available to other applications.

Name	Version	Client Type	Listener End Point	Receiving Queues	Access
UMSSampleApp	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.

29.1.3 Monitoring Drivers Using the All Tab

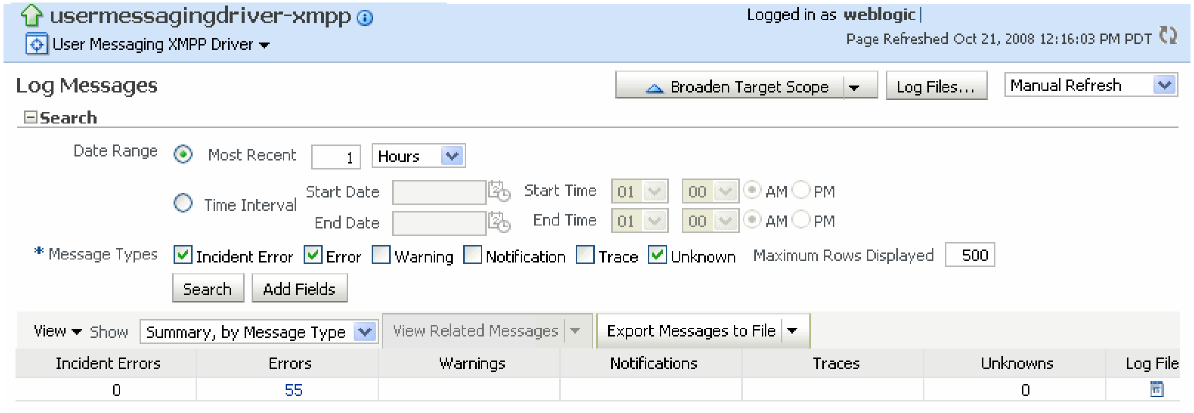
The **All** tab only lists successfully-registered drivers in the domain (not all drivers that exist).

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 **All** 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.

29.2 Log Files

Right-click the driver (or server) for which you want to view log information, then choose **Logs**, **View Log Files**. The *Log Messages* page appears.

Figure 29–7 Querying logs



usermessagingdriver-xmpp

User Messaging XMPP Driver

Logged in as **weblogic**

Page Refreshed Oct 21, 2008 12:16:03 PM PDT

Log Messages

Date Range: ● Most Recent 1 Hours

○ Time Interval: Start Date, Start Time 01 00 ● AM ○ PM; End Date, End Time 01 00 ● AM ○ PM

* Message Types: ☑ Incident Error ☑ Error ☐ Warning ☐ Notification ☐ Trace ☑ Unknown

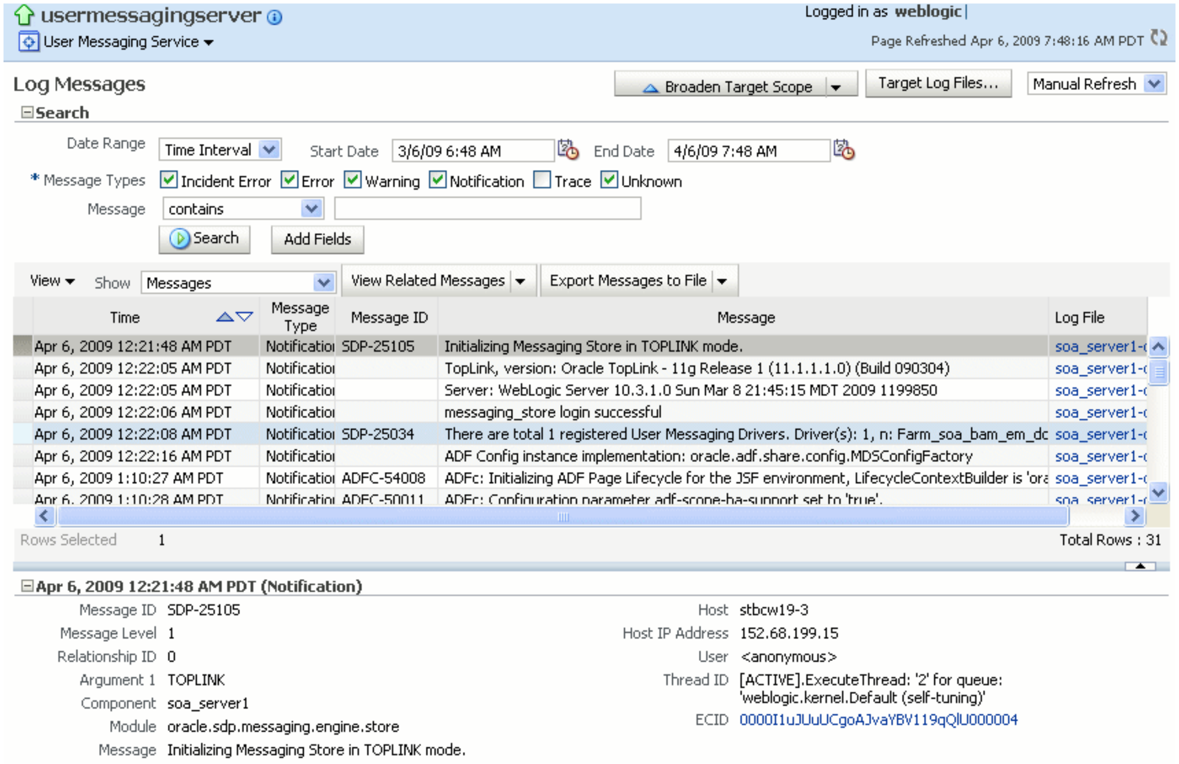
Maximum Rows Displayed 500

Show: Summary, by Message Type

Incident Errors	Errors	Warnings	Notifications	Traces	Unknowns	Log File
0	55				0	

Use this page to query for log information about a driver (or server). Fields and lists are used to customize the query. After entering your search criteria, click **Log Files**. The *Log Files* page appears.

Figure 29–8 Log search results



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

Show: Messages

Time	Message Type	Message ID	Message	Log File
Apr 6, 2009 12:21:48 AM PDT	Notificatio	SDP-25105	Initializing Messaging Store in TOPLINK mode.	soa_server1-
Apr 6, 2009 12:22:05 AM PDT	Notificatio		TopLink, version: Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build 090304)	soa_server1-
Apr 6, 2009 12:22:05 AM PDT	Notificatio		Server: WebLogic Server 10.3.1.0 Sun Mar 8 21:45:15 MDT 2009 1199850	soa_server1-
Apr 6, 2009 12:22:06 AM PDT	Notificatio		messaging_store login successful	soa_server1-
Apr 6, 2009 12:22:08 AM PDT	Notificatio	SDP-25034	There are total 1 registered User Messaging Drivers. Driver(s): 1, n: Farm_soa_bam_em_dc	soa_server1-
Apr 6, 2009 12:22:16 AM PDT	Notificatio		ADF Config instance implementation: oracle.adf.share.config.MDSConfigFactory	soa_server1-
Apr 6, 2009 1:10:27 AM PDT	Notificatio	ADFC-54008	ADFc: Initializing ADF Page Lifecycle for the JSF environment, LifecycleContextBuilder is 'ora	soa_server1-
Apr 6, 2009 1:10:28 AM PDT	Notificatio	ADFC-50011	ADFc: Configuration parameter adf-scope-ha-support set to 'true'.	soa_server1-

Rows Selected 1 Total Rows : 31

Apr 6, 2009 12:21:48 AM PDT (Notification)

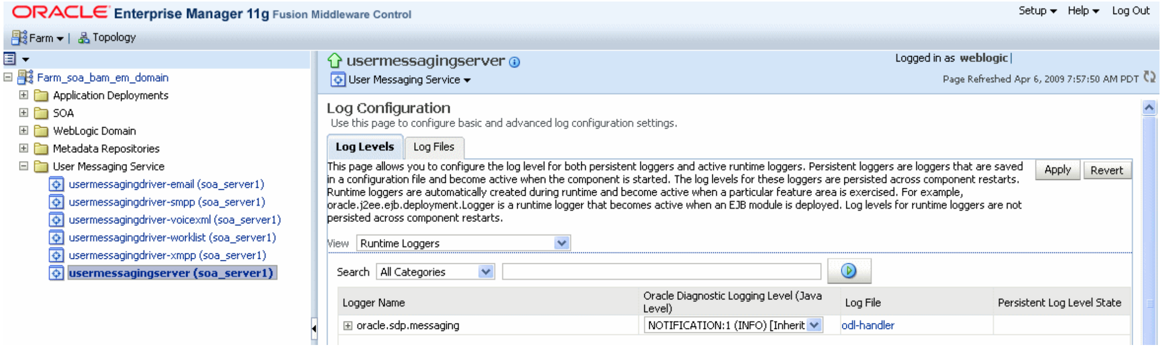
Message ID	SDP-25105	Host	stbcw19-3
Message Level	1	Host IP Address	152.68.199.15
Relationship ID	0	User	<anonymous>
Argument 1	TOPLINK	Thread ID	[ACTIVE].ExecuteThread: '2' for queue: 'weblogic.kernel.Default (self-tuning)'
Component	soa_server1	ECID	0000I1uJUuUCgoAJvaYBV119qQlU000004
Module	oracle.sdp.messaging.engine.store		
Message	Initializing Messaging Store in TOPLINK mode.		

You can view log information or download the log.

29.2.1 Configuring Logging

Use Enterprise Manager to configure log levels.

Figure 29–9 Configuring log levels


ORACLE Enterprise Manager 11g Fusion Middleware Control
Setup
Help
Log Out
Farm
Topology
Farm_soa_bam_em_domain
Application Deployments
SOA
WebLogic Domain
Metadata Repositories
User Messaging Service
usermessagingdriver-email (soa_server1)
usermessagingdriver-smpp (soa_server1)
usermessagingdriver-voicexml (soa_server1)
usermessagingdriver-worklist (soa_server1)
usermessagingdriver-xmpp (soa_server1)
usermessagingserver (soa_server1)
usermessagingserver
User Messaging Service
Logged in as weblogic
Page Refreshed Apr 6, 2009 7:57:50 AM PDT
Log Configuration
Log Levels
Log Files
Apply
Revert

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

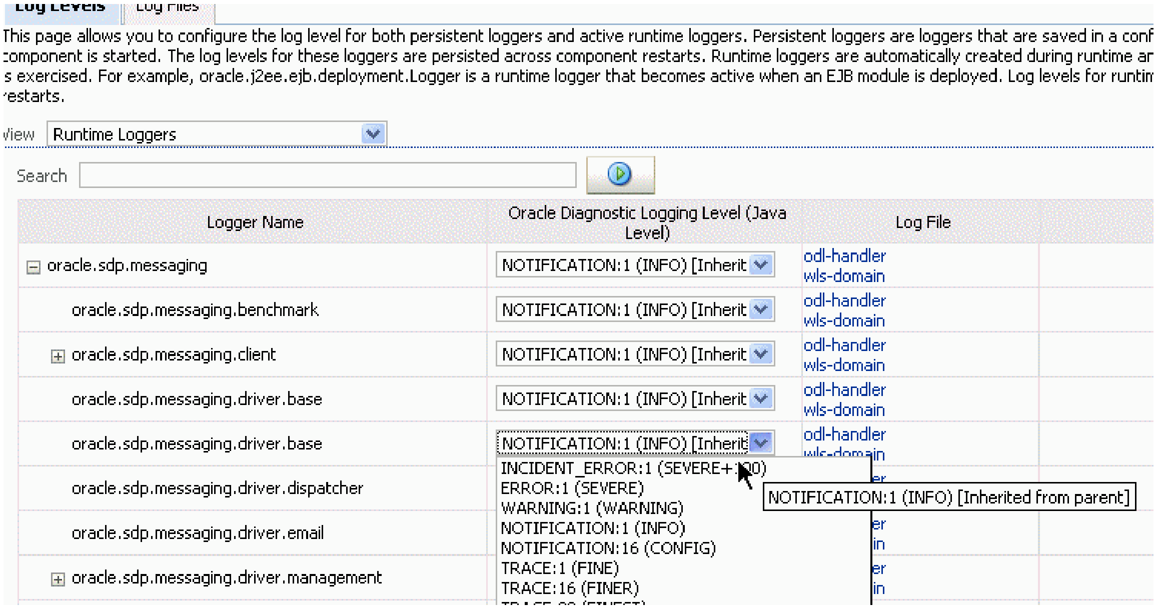
This page allows you to configure the log level for both persistent loggers and active runtime loggers. Persistent loggers are loggers that are saved in a configuration file and become active when the component is started. The log levels for these loggers are persisted across component restarts. Runtime 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	Persistent Log Level State
oracle.sdp.messaging	NOTIFICATION:1 (INFO) [Inherit	odl-handler	

For each logger, set the notification level.

Figure 29–10 Select notification level



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 conf
component is started. The log levels for these loggers are persisted across component restarts. Runtime loggers are automatically created during runtime ar
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 runtim
restarts.

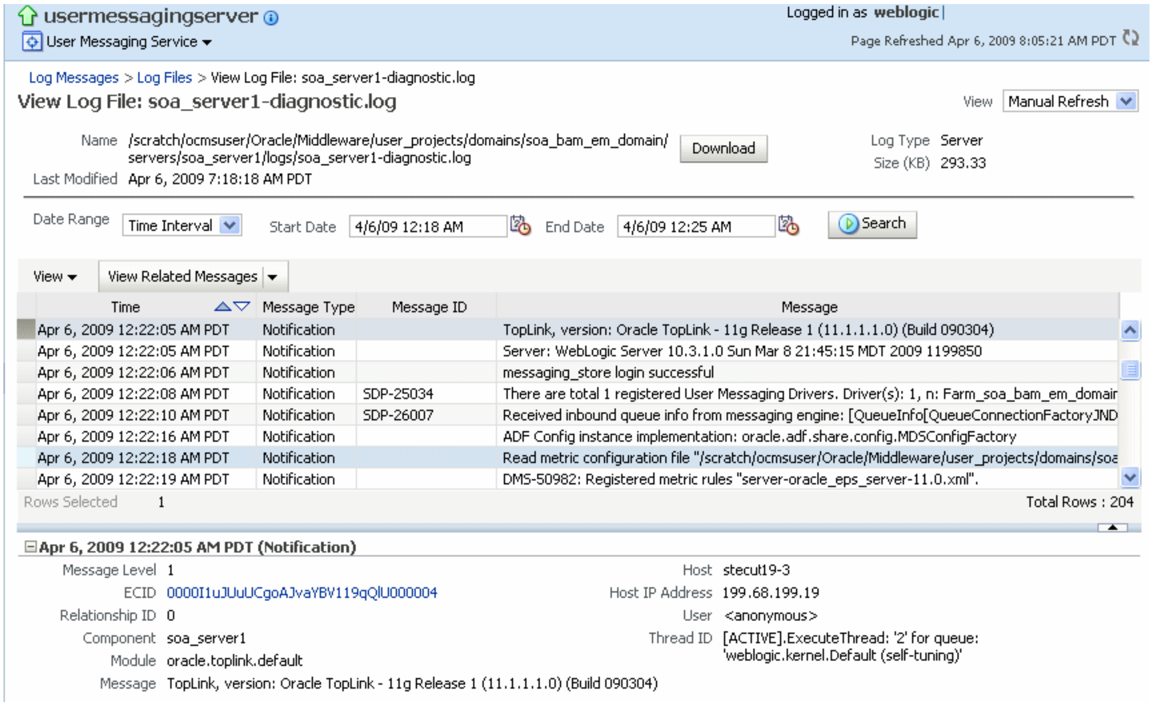
View: Runtime Loggers

Search

Logger Name	Oracle Diagnostic Logging Level (Java Level)	Log File
⊟ oracle.sdp.messaging	NOTIFICATION:1 (INFO) [Inherit	odl-handler wls-domain
oracle.sdp.messaging.benchmark	NOTIFICATION:1 (INFO) [Inherit	odl-handler wls-domain
⊞ 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		er
oracle.sdp.messaging.driver.email		er in
⊞ oracle.sdp.messaging.driver.management		er in

As a result of your configuration actions, notifications appear according to your specification.

Figure 29–11 Viewing log files


usermessagingserver
User Messaging Service
Logged in as weblogic
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

Last Modified: Apr 6, 2009 7:18:18 AM PDT

Log Type: Server

Size (KB): 293.33

Date Range: Time Interval

Start Date: 4/6/09 12:18 AM

End Date: 4/6/09 12:25 AM

Download
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_domair
Apr 6, 2009 12:22:10 AM PDT	Notification	SDP-26007	Received inbound queue info from messaging engine: [QueueInfo[QueueConnectionFactoryJND
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

ECID: 0000I1uJUuUCgoAJvaYBV119qQlU000004

Relationship ID: 0

Component: soa_server1

Module: oracle.toplink.default

Message: TopLink, version: Oracle TopLink - 11g Release 1 (11.1.1.1.0) (Build 090304)

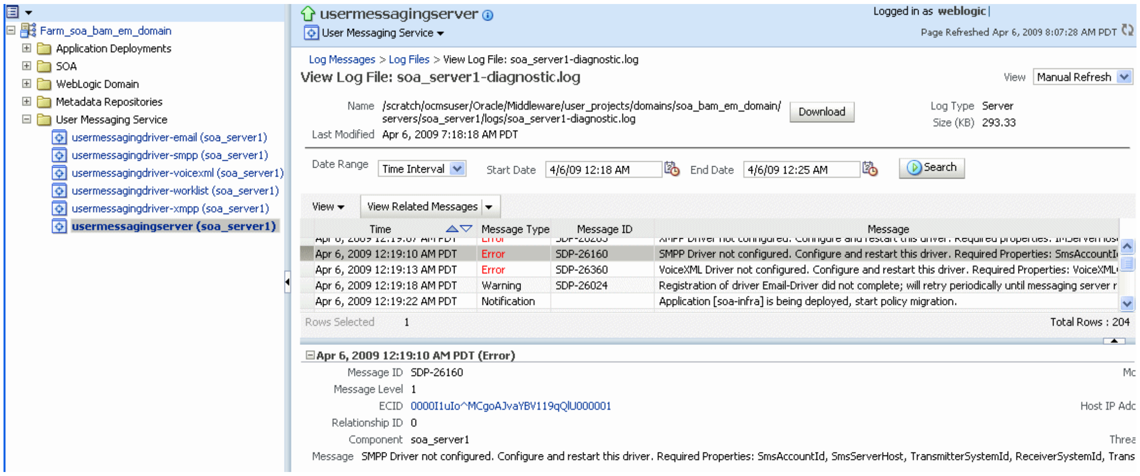
Host: stecut19-3

Host IP Address: 199.68.199.19

User: <anonymous>

Thread ID: [ACTIVE].ExecuteThread: '2' for queue: 'weblogic.kernel.Default (self-tuning)'

Figure 29–12 Error messages


Farm_soa_bam_em_domain
Application Deployments
SOA
WebLogic Domain
Metadata Repositories
User Messaging Service
usermessagingdriver-email (soa_server1)
usermessagingdriver-smpp (soa_server1)
usermessagingdriver-voicexml (soa_server1)
usermessagingdriver-worklist (soa_server1)
usermessagingdriver-xmpp (soa_server1)
usermessagingserver (soa_server1)
usermessagingserver
User Messaging Service
Logged in as weblogic
Page Refreshed Apr 6, 2009 8:07:28 AM PDT
Log Messages > Log Files > View Log File: soa_server1-diagnostic.log
Download
Search
View
View Related Messages

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
Last Modified: Apr 6, 2009 7:18:18 AM PDT
Log Type: Server
Size (KB): 293.33

Date Range: Time Interval
Start Date: 4/6/09 12:18 AM
End Date: 4/6/09 12:25 AM

Time	Message Type	Message ID	Message
Apr 6, 2009 12:19:10 AM PDT	Error	SDP-26160	SMPP Driver not configured. Configure and restart this driver. Required Properties: SmsAccountI
Apr 6, 2009 12:19:13 AM PDT	Error	SDP-26360	VoiceXML Driver not configured. Configure and restart this driver. Required Properties: VoiceXML
Apr 6, 2009 12:19:18 AM PDT	Warning	SDP-26024	Registration of driver Email-Driver did not complete; will retry periodically until messaging server r
Apr 6, 2009 12:19:22 AM PDT	Notification		Application [soa-infra] is being deployed, start policy migration.

Rows Selected 1
Total Rows : 204

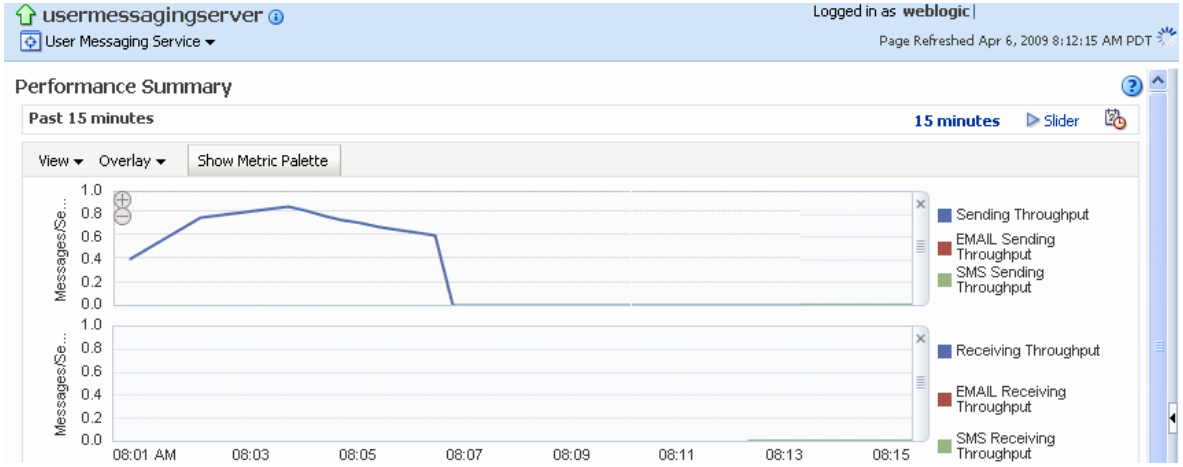
Apr 6, 2009 12:19:10 AM PDT (Error)

Message ID: SDP-26160
Message Level: 1
ECID: 0000I1uIo^MCgoAJvaYBV119qQlU000001
Relationship ID: 0
Component: soa_server1
Message: SMPP Driver not configured. Configure and restart this driver. Required Properties: SmsAccountId, SmsServerHost, TransmitterSystemId, ReceiverSystemId, Trans

29.3 Metrics and Statistics

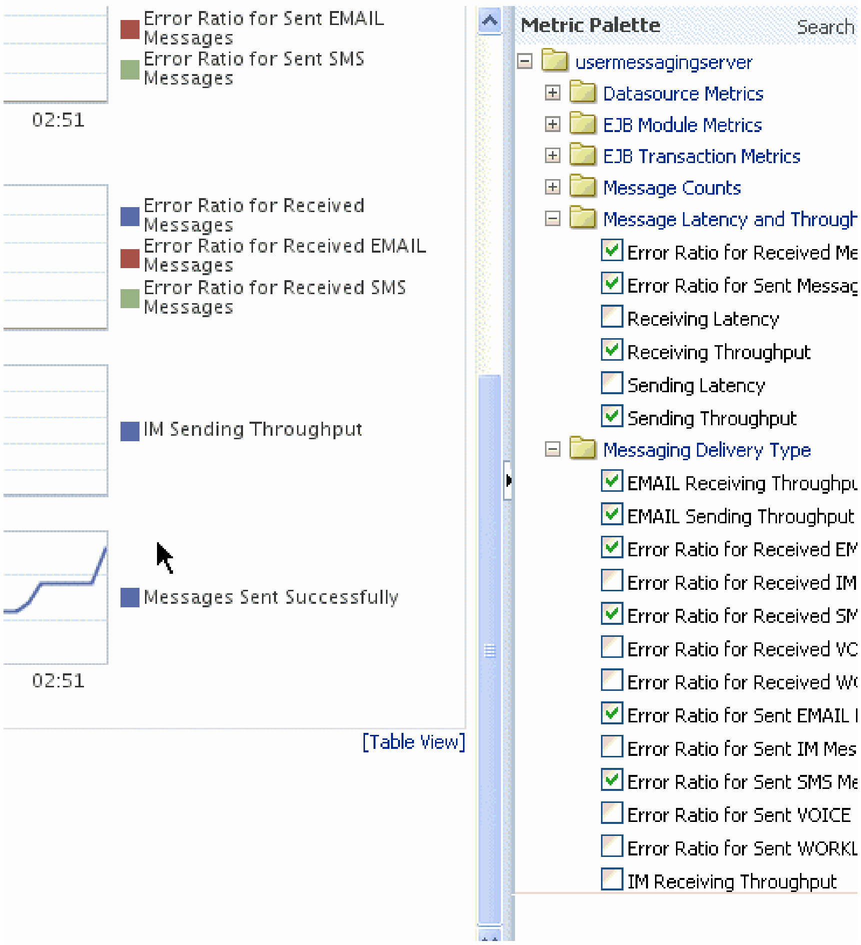
The performance of your applications is reflected in metrics and statistics. When you select the Performance Summary for a driver (or server), the Performance Summary page appears.

Figure 29–13 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 29–14 Metrics Palette


Error Ratio for Sent EMAIL Messages
Error Ratio for Sent SMS Messages
02:51
Error Ratio for Received Messages
Error Ratio for Received EMAIL Messages
Error Ratio for Received SMS Messages
IM Sending Throughput
Messages Sent Successfully
02:51
[Table View]
Metric Palette
Search

- usermessagingserver
  - Datasource Metrics
  - EJB Module Metrics
  - EJB Transaction Metrics
  - Message Counts
  - Message Latency and Througt
    - ☑ Error Ratio for Received Me
    - ☑ Error Ratio for Sent Messag
    - ☐ Receiving Latency
    - ☑ Receiving Throughput
    - ☐ Sending Latency
    - ☑ Sending Throughput
  - Messaging Delivery Type
    - ☑ EMAIL Receiving Throughpu
    - ☑ EMAIL Sending Throughput
    - ☑ Error Ratio for Received EM
    - ☐ Error Ratio for Received IM
    - ☑ Error Ratio for Received SM
    - ☐ Error Ratio for Received VC
    - ☐ Error Ratio for Received W(
    - ☑ Error Ratio for Sent EMAIL I
    - ☐ Error Ratio for Sent IM Mes
    - ☑ Error Ratio for Sent SMS Me
    - ☐ Error Ratio for Sent VOICE
    - ☐ Error Ratio for Sent WORKL
    - ☐ IM Receiving Throughput

30

Managing Oracle User Messaging Service

This chapter describes how to manage Oracle User Messaging Service.

This chapter includes the following topic:

- Section 30.1, "Deploying Drivers"
- Section 30.2, "Undeploying and Unregistering Drivers"

30.1 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 on Oracle WebLogic Platform 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.

30.1.1 Deploy Drivers Using WLST Commands

You can deploy drivers using the WLST command `deployUserMessagingDriver`.

30.1.1.1 deployUserMessagingDriver

Command Category: UMS

Use with WLST: Online

30.1.1.1.1 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.

30.1.1.1.2 Syntax `deployUserMessagingDriver(baseDriver, appName, [targets], [stageMode], [options])`

Argument	Definition
`baseDriver`	Specifies the base messaging driver type. Must be a known driver type, such as 'email', 'proxy', 'smpp', 'voicexml', or 'xmpp'.
`appName`	A short descriptive name for the new deployment. The specified value is prepended with the string *usermessagingdriver-*

`targets`
`stageMode`
`options`
	Optional. Additional arguments that are valid for the *deploy* command can be specified and is passed through when the new driver is deployed.

30.1.1.1.3 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')
```

30.1.2 Deploy Drivers Using Oracle Enterprise Manager

Follow these steps to deploy drivers using Oracle Enterprise Manager.

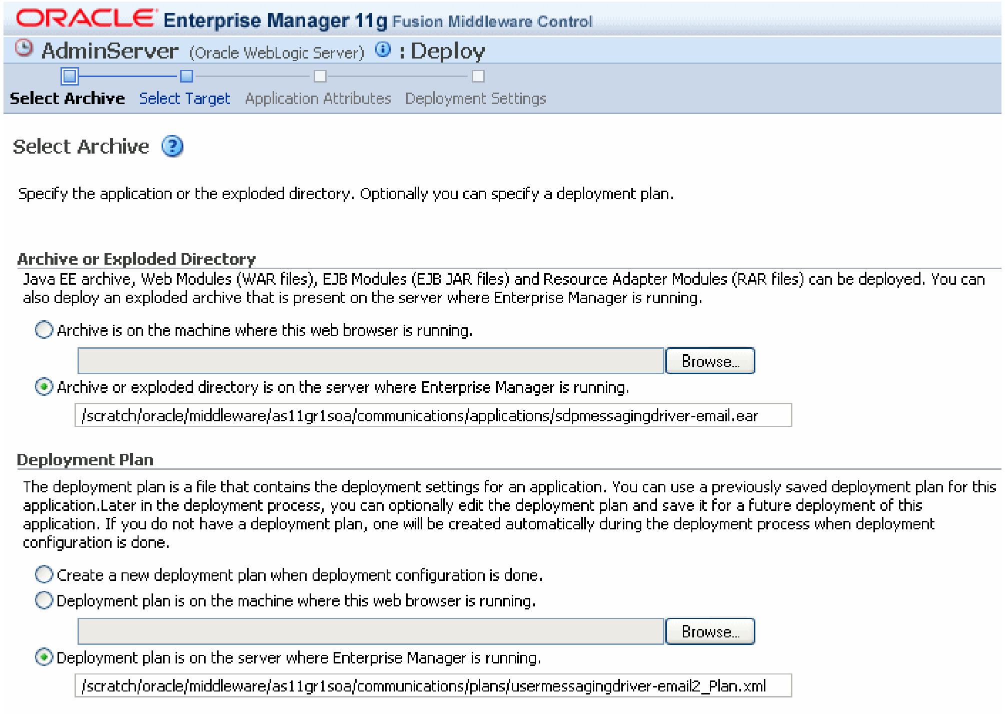
1. Retrieve a deployment template (for example: `ORACLE_HOME/communications/plans`)
2. Copy the plan to a location of your choice (to the same directory or any other directory).
3. Edit the plan:

   Replace *DriverDeploymentName* with whichever name you want to use (ensure you replace all instances of the name).

   Replace DriverShortName with any name you like.

   Replace the *@RunAsPrincipalName@* token with a valid principal for use by UMS. In a default deployment, the system principal *OracleSystemUser* is available for this purpose.
4. Start Oracle Enterprise Manager.
5. Enter the location of the .ear file (Figure 30–1).
6. Enter the location of the Deployment Plan (Figure 30–1).

Figure 30–1 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
Browse...
Browse...

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.

/scratch/oracle/middleware/as11gr1soa/communications/applications/sdpmessagingdriver-email.ear

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.

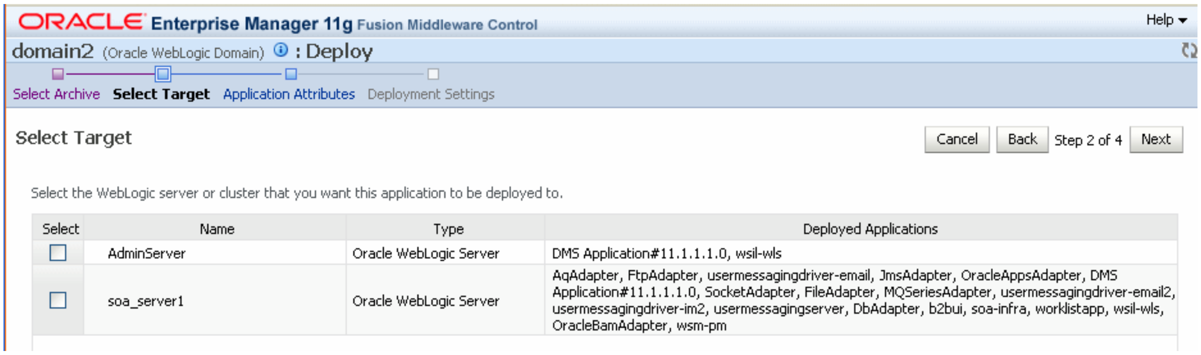
○ Deployment plan is on the machine where this web browser is running.

● Deployment plan is on the server where Enterprise Manager is running.

/scratch/oracle/middleware/as11gr1soa/communications/plans/usermessagingdriver-email2_Plan.xml

The Select Target screen appears.

Figure 30–2 Select Target screen



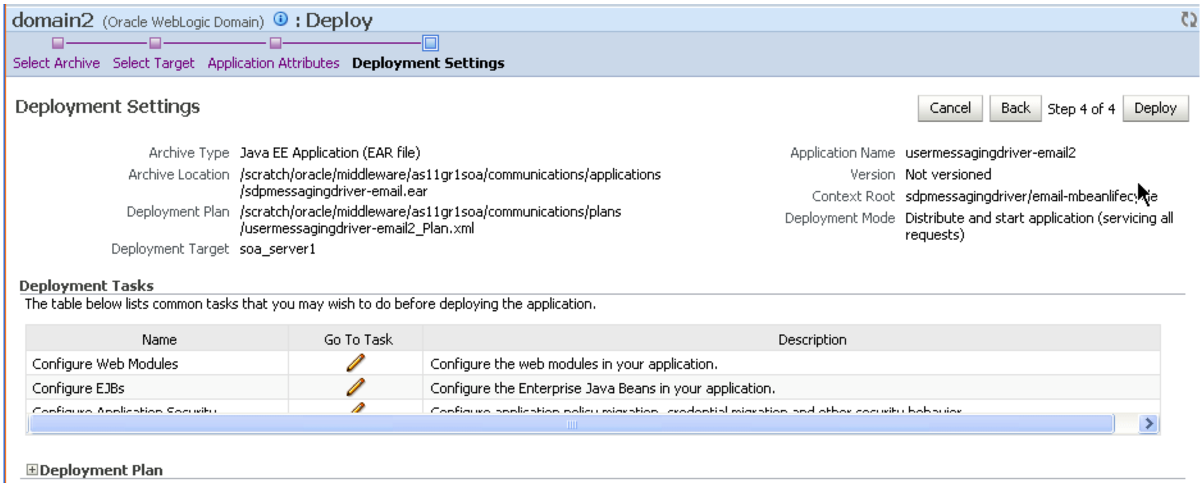
Select Target

Select the WebLogic server or cluster that you want this application to be deployed to.

Select	Name	Type	Deployed Applications
☐	AdminServer	Oracle WebLogic Server	DMS Application#11.1.1.1.0, wsil-wls
☐	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 30–3 Deployment Settings screen



Deployment Settings

Archive Type Java EE Application (EAR file)
Archive Location /scratch/oracle/middleware/as11gr1soa/communications/applications/sdpmessagingdriver-email.ear
Deployment Plan /scratch/oracle/middleware/as11gr1soa/communications/plans/usermessagingdriver-email2_Plan.xml
Deployment Target soa_server1
Application Name usermessagingdriver-email2
Version Not versioned
Context Root sdpmessagingdriver/email-mbeanlifecycle
Deployment Mode Distribute and start application (servicing all requests)

Deployment Tasks

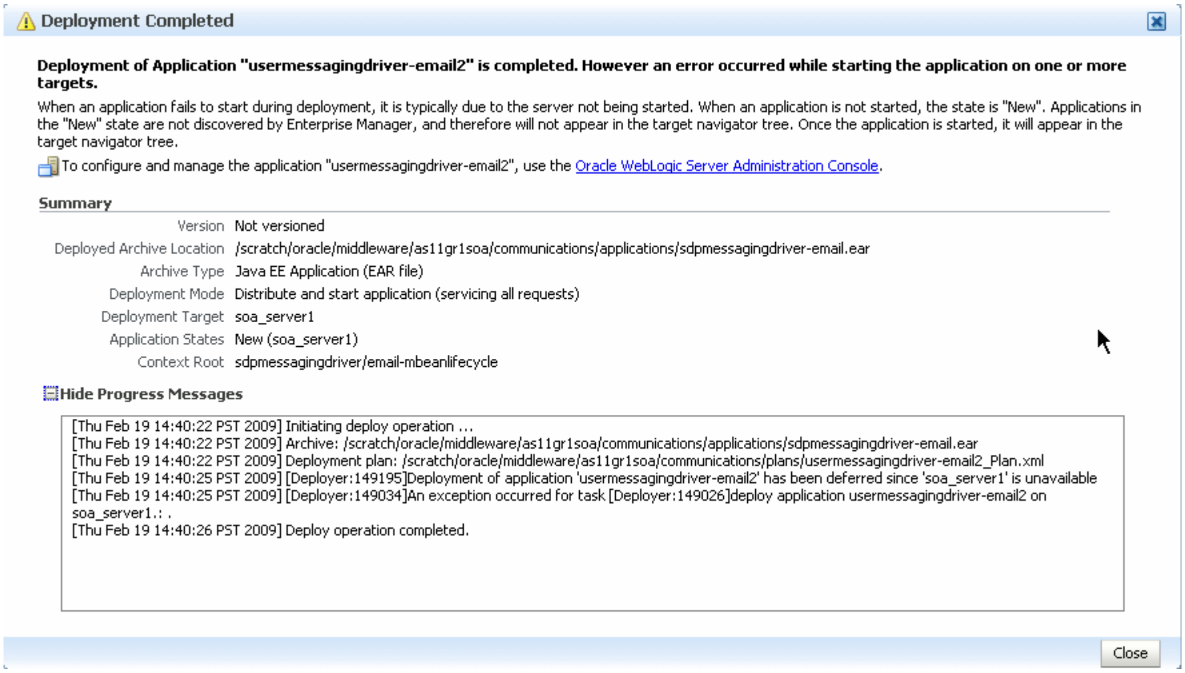
The table below lists common tasks that you may wish to do before deploying the application.

Name	Go To Task	Description
Configure Web Modules	✎	Configure the web modules in your application.
Configure EJBs	✎	Configure the Enterprise Java Beans in your application.
Configure Application Security	✎	Configure application policy migration, credential migration and other security behavior

⊞**Deployment Plan**

9. Click **Deploy**. The Deployment Completed screen appears.

Figure 30–4 Deployment Completed screen



Deployment of Application "usermessagingdriver-email2" is completed. However an error occurred while starting the application on one or more targets.

When an application fails to start during deployment, it is typically due to the server not being started. When an application is not started, the state is "New". Applications in the "New" state are not discovered by Enterprise Manager, and therefore will not appear in the target navigator tree. Once the application is started, it will appear in the target navigator tree.

To configure and manage the application "usermessagingdriver-email2", use the Oracle WebLogic Server Administration Console.

Summary

Version Not versioned
Deployed Archive Location /scratch/oracle/middleware/as11gr1soa/communications/applications/sdpmessagingdriver-email.ear
Archive Type Java EE Application (EAR file)
Deployment Mode Distribute and start application (servicing all requests)
Deployment Target soa_server1
Application States New (soa_server1)
Context Root sdpmessagingdriver/email-mbeanlifecycle

```
[Thu Feb 19 14:40:22 PST 2009] Initiating deploy operation ...
[Thu Feb 19 14:40:22 PST 2009] Archive: /scratch/oracle/middleware/as11gr1soa/communications/applications/sdpmessagingdriver-email.ear
[Thu Feb 19 14:40:22 PST 2009] Deployment plan: /scratch/oracle/middleware/as11gr1soa/communications/plans/usermessagingdriver-email2_Plan.xml
[Thu Feb 19 14:40:25 PST 2009] [Deployer:149195]Deployment of application 'usermessagingdriver-email2' has been deferred since 'soa_server1' is unavailable
[Thu Feb 19 14:40:25 PST 2009] [Deployer:149034]An exception occurred for task [Deployer:149026]deploy application usermessagingdriver-email2 on
soa_server1.: .
[Thu Feb 19 14:40:26 PST 2009] Deploy operation completed.
```

10. To see the result (driver deployed), start the SOA Server.

30.1.3 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.

30.2 Undeploying and Unregistering Drivers

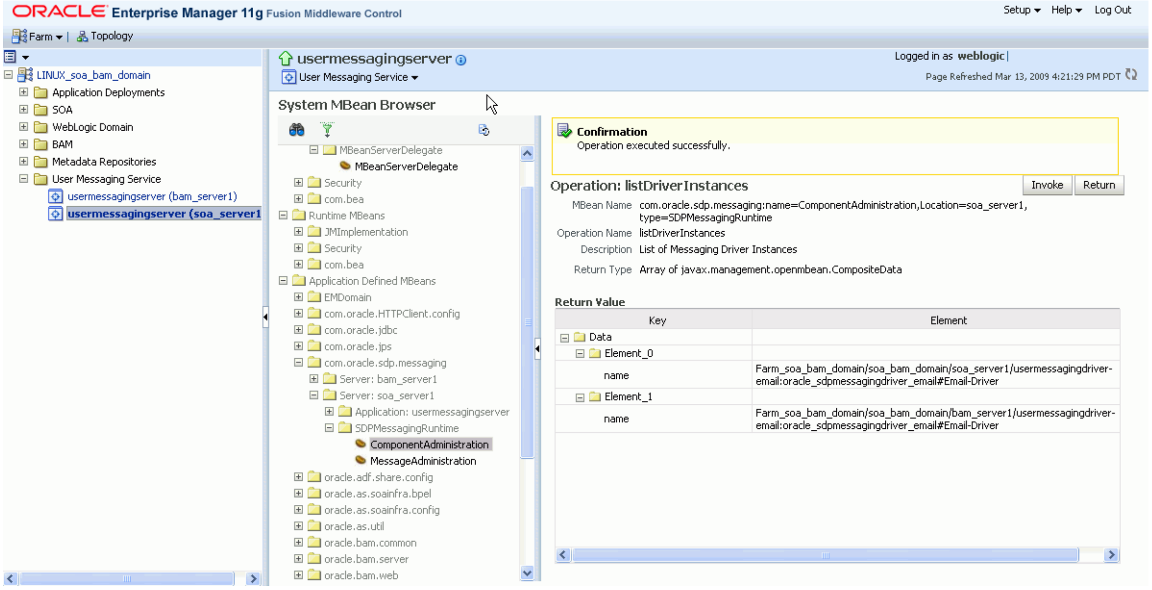
Since Messaging Drivers are standard JEE applications, they can be undeployed from the Oracle WebLogic Server using standard Oracle WebLogic tools such as the Admin Console or WLST.

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*) > **SDPMessagingrun time** > **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 30–5 Listing Driver Instances



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Confirmation

Operation executed successfully.

Operation: listDriverInstances

MBean Name: com.oracle.sdp.messaging:name=ComponentAdministration,Location=soa_server1, type=SDPMessagingRuntime

Operation Name: listDriverInstances

Description: List of Messaging Driver Instances

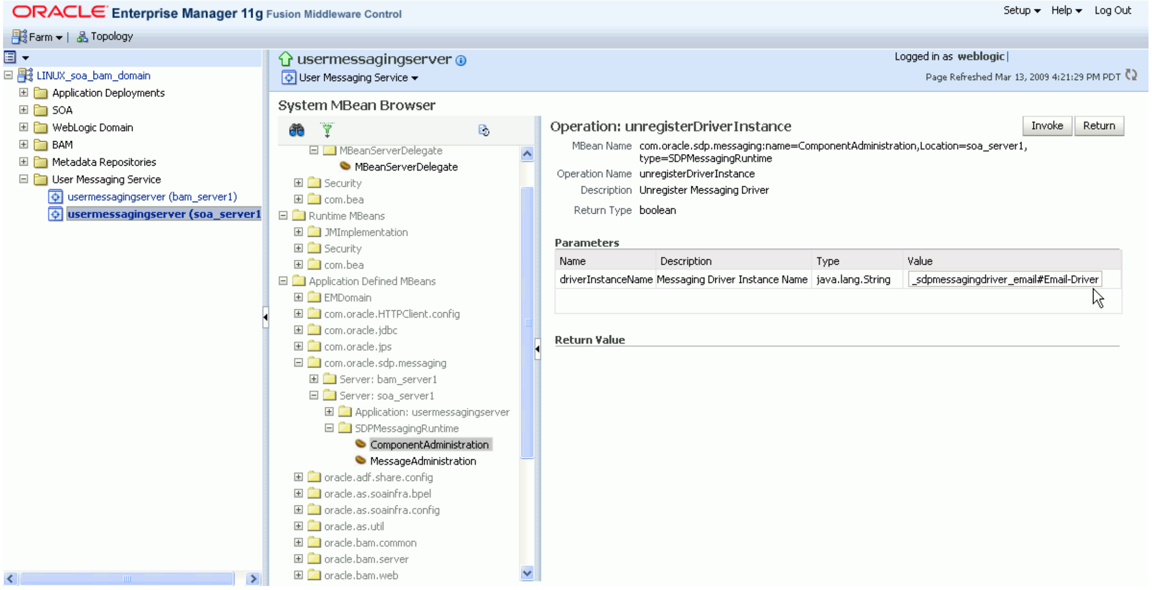
Return Type: Array of javax.management.openmbean.CompositeData

Return Value

Key	Element
Data	
Element_0	
name	Farm_soa_bam_domain/soa_bam_domain/soa_server1/usermessagingdriver-email:oracle_sdpmessagingdriver_email#Email-Driver
Element_1	
name	Farm_soa_bam_domain/soa_bam_domain/bam_server1/usermessagingdriver-email:oracle_sdpmessagingdriver_email#Email-Driver

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/usermessagingdriver-email:oracle_sdpmessagingdriver_email#Email-Driver`).
   c. Click **Invoke**.

Figure 30–6 Unregistering a Driver Instance



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Operation: unregisterDriverInstance

MBean Name: com.oracle.sdp.messaging:name=ComponentAdministration,Location=soa_server1, type=SDPMessagingRuntime

Operation Name: unregisterDriverInstance

Description: Unregister Messaging Driver

Return Type: boolean

Parameters

Name	Description	Type	Value
driverInstanceName	Messaging Driver Instance Name	java.lang.String	_sdpmessagingdriver_email#Email-Driver

Return Value

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 31, "Configuring Oracle JCA Adapters"
- Chapter 32, "Monitoring Oracle JCA Adapters"
- Chapter 33, "Managing Oracle JCA Adapters"

31

Configuring Oracle JCA Adapters

This chapter describes how to configure Oracle JCA Adapters.

This chapter includes the following topics:

- Section 31.1, "Searching for Rejected Messages for an Inbound Adapter"
- Section 31.2, "Deleting Rejected Messages for an Inbound Adapter"
- Section 31.3, "Searching for Faults for an Outbound Adapter"
- Section 31.4, "Configuring the End Point Properties for an Inbound Adapter"
- Section 31.5, "Configuring the End Point Properties for an Outbound Adapter"

31.1 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...
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.	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.

31.2 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...
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.	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.

31.3 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...
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.	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.

31.4 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 31.4.1, "Editing a Predefined Property for an Inbound Adapter"
- Section 31.4.2, "Adding Predefined Properties for an Inbound Adapter"
- Section 31.4.3, "Creating a New Property for an Inbound Adapter"
- Section 31.4.4, "Deleting a Property for an Inbound Adapter"
- Section 31.4.5, "Reverting a Property Value for an Inbound Adapter"

31.4.1 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...
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.	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.

31.4.2 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...
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.	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.

31.4.3 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...
1. Click **Home**. The SOA Infrastructure page is displayed.	1. Under **soa-infra**, click a specific SOA composite application. The SOA Composite home page is displayed.
2. Click the **Deployed Composites** tab. The list of deployed composite applications is displayed.	2. Click the inbound adapter (service) from the Services and References section in the right panel. The Service Home page 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.	

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.

31.4.4 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...
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.	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.

31.4.5 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...
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.	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.

31.5 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 31.5.1, "Editing a Predefined Property for an Outbound Adapter"
- Section 31.5.2, "Adding a Predefined Property for an Outbound Adapter"
- Section 31.5.3, "Creating a New Property for an Outbound Adapter"
- Section 31.5.4, "Deleting a Property for an Outbound Adapter"
- Section 31.5.5, "Reverting a Property Value for an Outbound Adapter"

31.5.1 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...
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.	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.

31.5.2 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...
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.	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.

31.5.3 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...
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.	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.

31.5.4 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...
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.	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.

31.5.5 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...
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.	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.

32

Monitoring Oracle JCA Adapters

This chapter describes how to monitor Oracle JCA Adapters.

This chapter includes the following topics:

32.1 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...
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.	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.

32.2 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...
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.	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.

32.3 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...
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.	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.

32.4 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...
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.	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.

32.5 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...
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.	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.

32.6 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...
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.	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.

32.7 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...
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.	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.

32.8 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...
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.	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.

32.9 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."

33

Managing Oracle JCA Adapters

This chapter describes how to manage Oracle Adapters.

This chapter includes the following topics:

- Section 33.1, "Managing Policies for an Inbound Adapter"
- Section 33.2, "Managing Policies for an Outbound Adapter"

33.1 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...
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.	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.

33.2 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...
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.	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 34, "Configuring Oracle B2B"
- Chapter 35, "Monitoring Oracle B2B"

34

Configuring Oracle B2B

This chapter describes how to configure Oracle B2B using Oracle Enterprise Manager Fusion Middleware Control.

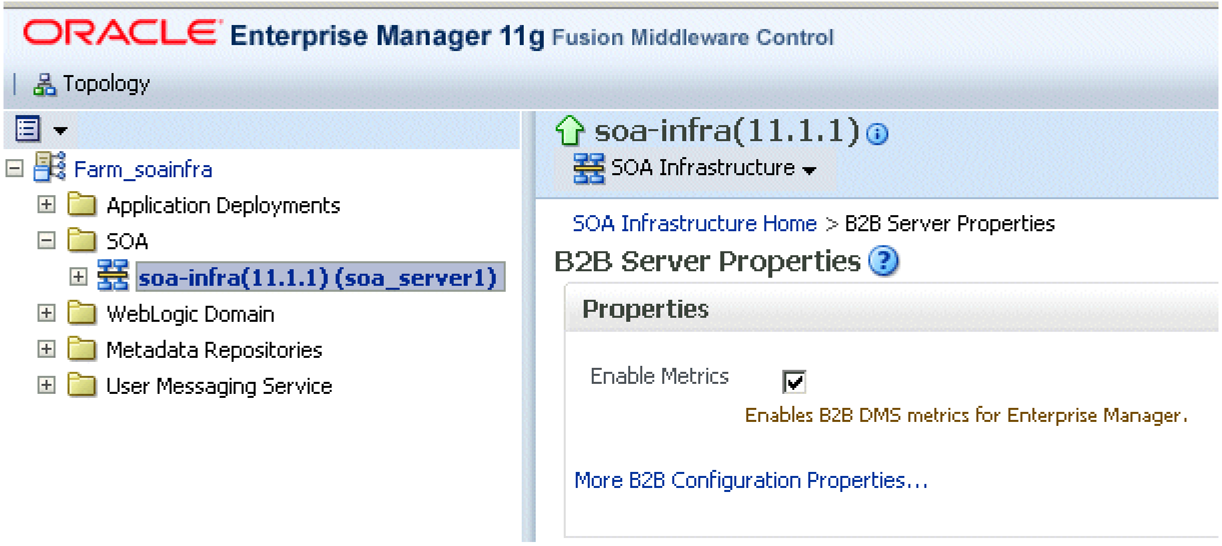
This chapter includes the following topic:

- Section 34.1, "Configuring B2B Server Properties"
- Section 34.2, "Configuring B2B Operations"
- Section 34.3, "Configuring B2B Attributes"

34.1 Configuring B2B Server Properties

You can configure the **Enable Metrics** property on the B2B Server Properties page, shown in Figure 34–1.

Figure 34–1 The Enable Metrics Property



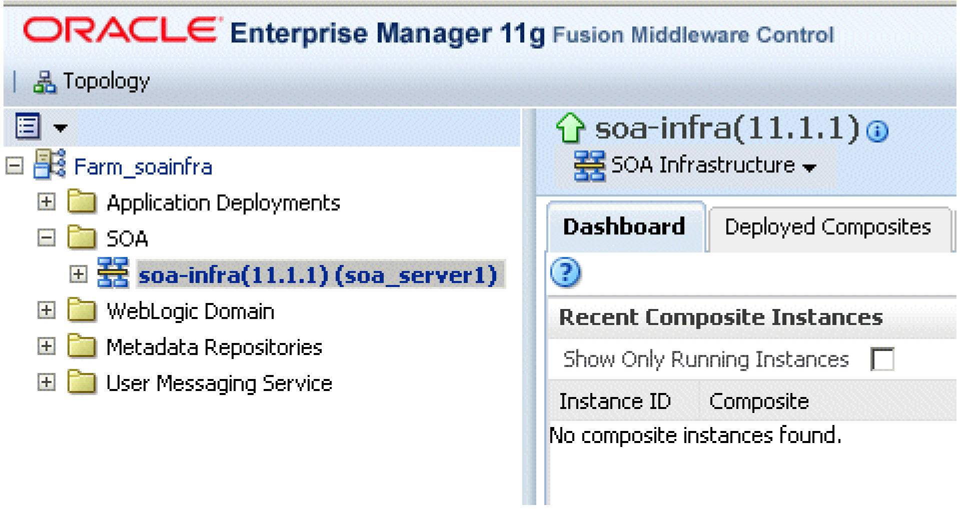
Enable Metrics ☑
Enables B2B DMS metrics for Enterprise Manager.

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)**.



No composite instances found.

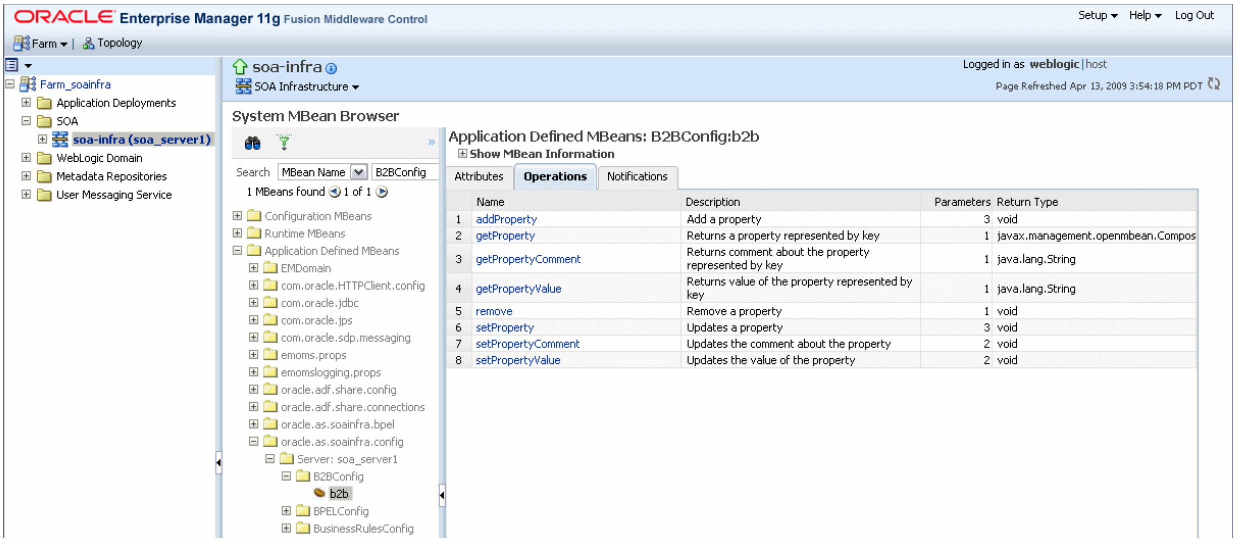
3. From the **SOA Infrastructure** menu, select **SOA Administration** and then **B2B Server Properties**.
4. Select **Enable Metrics** to view data on the B2B Bindings and SOA Composite pages.

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*.

34.2 Configuring B2B Operations

You can configure the properties of B2B operations by setting values using the System MBean Browser, as shown in Figure 34–2.

Figure 34–2 B2BConfig: b2b MBean Browser



	Name	Description	Parameters	Return Type
1	addProperty	Add a property	3	void
2	getProperty	Returns a property represented by key	1	javax.management.openmbean.Compos
3	getPropertyComment	Returns comment about the property represented by key	1	java.lang.String
4	getPropertyValue	Returns value of the property represented by key	1	java.lang.String
5	remove	Remove a property	1	void
6	setProperty	Updates a property	3	void
7	setPropertyComment	Updates the comment about the property	2	void
8	setPropertyValue	Updates the value of the property	2	void

Note: Restarting the SOA Server is required after updating the following MBean properties:

- `b2b.inboundThreadCount`
- `b2b.outboundThreadCount`

To specify B2B operation properties:

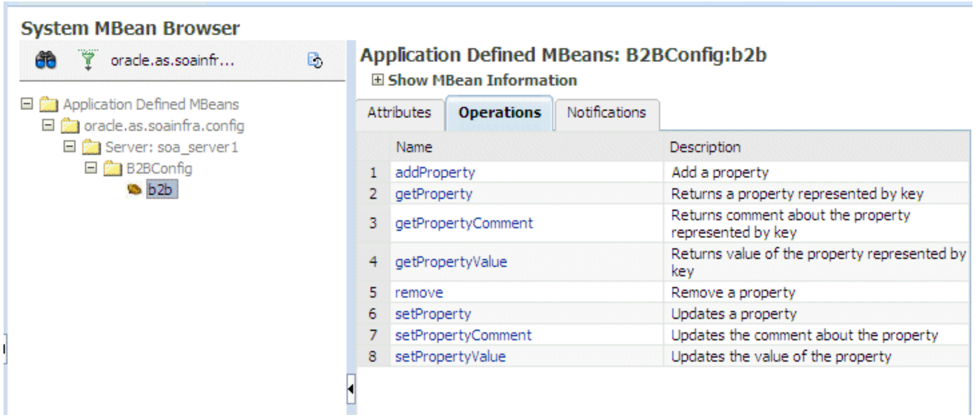
Note (a shortcut): To access the Application Defined MBeans: B2BConfig:b2b page, you can also click the **More B2B Configuration Properties** link on the B2B Server Properties page, shown in Figure 34–1.

---

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.



	Name	Description
1	addProperty	Add a property
2	getProperty	Returns a property represented by key
3	getPropertyComment	Returns comment about the property represented by key
4	getPropertyValue	Returns value of the property represented by key
5	remove	Remove a property
6	setProperty	Updates a property
7	setPropertyComment	Updates the comment about the property
8	setPropertyValue	Updates the value of the property

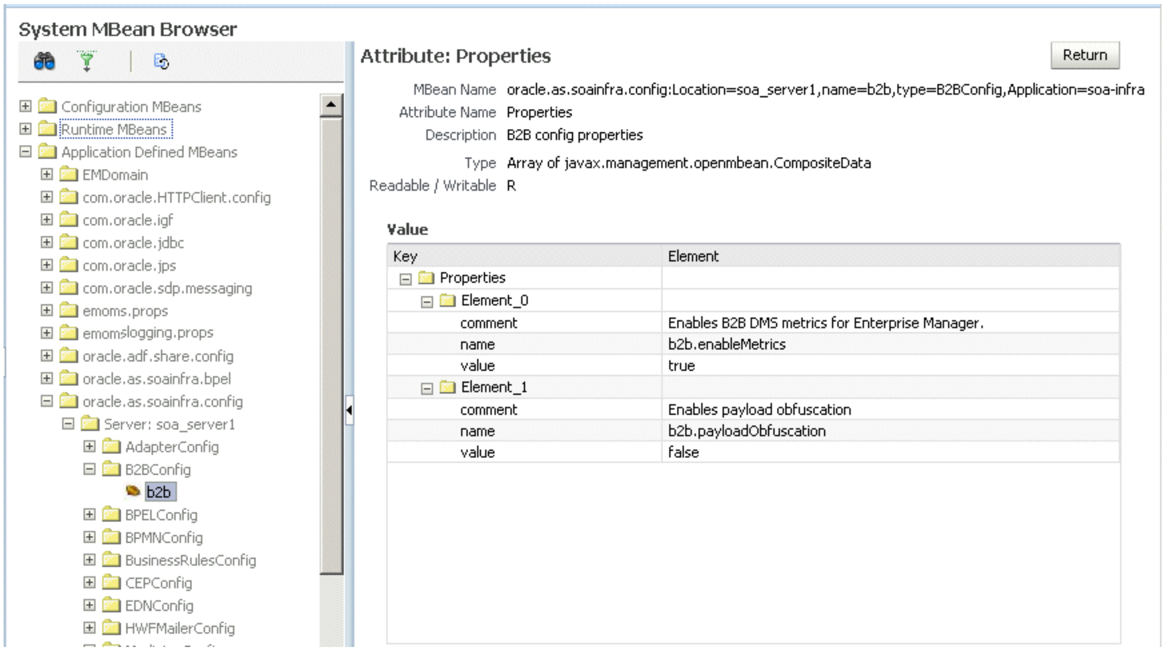
9. Provide the needed information—key, value, and an optional comment—and click **Invoke**.

   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.

34.3 Configuring B2B Attributes

You can configure B2B attributes by setting values using the System MBean Browser, as shown in Figure 34–3.

Figure 34–3 Configuring B2B Attributes



MBean Name oracle.as.soainfra.config:Location=soa_server1,name=b2b,type=B2BConfig,Application=soa-infra
Attribute Name Properties
Description B2B config properties
Type Array of javax.management.openmbean.CompositeData
Readable / Writable R

Value

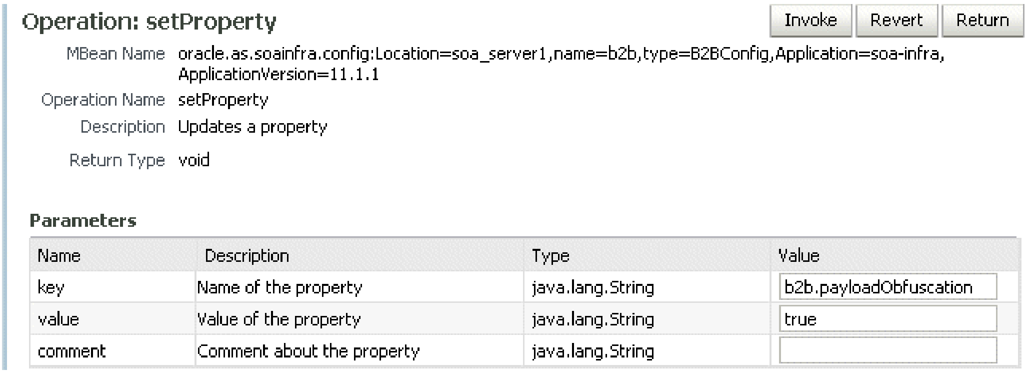
Key	Element
Properties	
Element_0	
comment	Enables B2B DMS metrics for Enterprise Manager.
name	b2b.enableMetrics
value	true
Element_1	
comment	Enables payload obfuscation
name	b2b.payloadObfuscation
value	false

To specify B2B attribute properties:

1. Do Steps 1 through 6 in Section 34.2, "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

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.payloadObfuscatio**n to **true**.
9. Click **Invoke**.
10. Click **Return**.

35

Monitoring Oracle B2B

This chapter describes how to monitor Oracle B2B using Oracle Enterprise Manager Fusion Middleware Control.

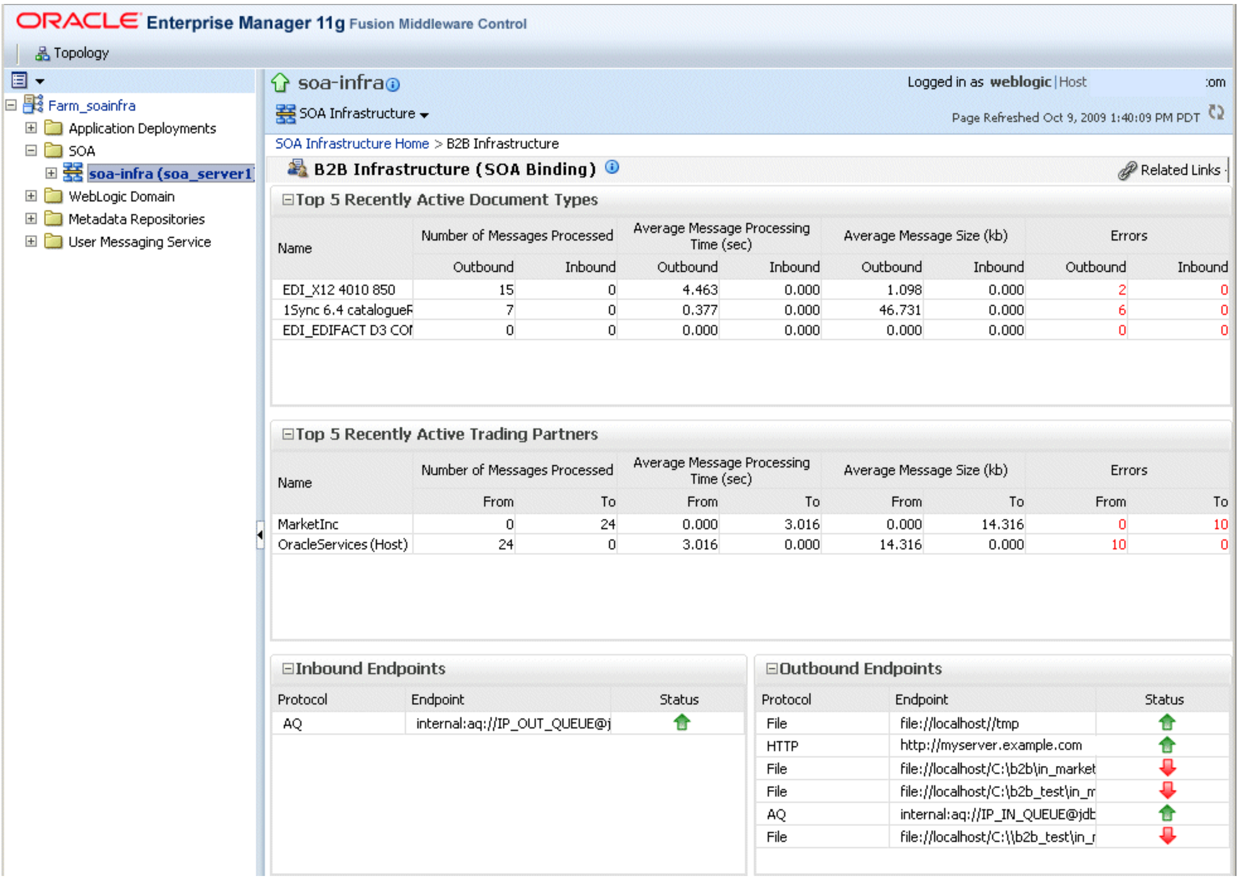
This chapter includes the following topics:

- Section 35.1, "Monitoring the B2B Infrastructure"
- Section 35.2, "Accessing Oracle B2B from the B2B Infrastructure Page"
- Section 35.3, "Viewing the Message Flow of a B2B Binding Component"
- Section 35.4, "Viewing Services and References"
- Section 35.5, "Accessing Oracle B2B Reports from the B2B Composite Flow Trace Page"

35.1 Monitoring the B2B Infrastructure

To monitor the B2B infrastructure, shown in Figure 35–1, EM metrics must be enabled (the default) on the B2B Server Properties page.

Figure 35–1   B2B Infrastructure (SOA Binding)



B2B Infrastructure (SOA Binding)

Top 5 Recently Active Document Types

Name	Number of Messages Processed		Average Message Processing Time (sec)		Average Message Size (kb)		Errors	
	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound
EDI_X12 4010 850	15	0	4.463	0.000	1.098	0.000	2	0
1Sync 6.4 catalogueR	7	0	0.377	0.000	46.731	0.000	6	0
EDI_EDIFACT D3 COI	0	0	0.000	0.000	0.000	0.000	0	0

Top 5 Recently Active Trading Partners

Name	Number of Messages Processed		Average Message Processing Time (sec)		Average Message Size (kb)		Errors	
	From	To	From	To	From	To	From	To
MarketInc	0	24	0.000	3.016	0.000	14.316	0	10
OracleServices (Host)	24	0	3.016	0.000	14.316	0.000	10	0

Inbound Endpoints

Protocol	Endpoint	Status
AQ	internal:aq://IP_OUT_QUEUE@j	⬆

Outbound Endpoints

Protocol	Endpoint	Status
File	file://localhost//tmp	⬆
HTTP	http://myserver.example.com	⬆
File	file://localhost/C:\b2b\in_market	⬇
File	file://localhost/C:\b2b_test\in_m	⬇
AQ	internal:aq://IP_IN_QUEUE@jdb	⬆
File	file://localhost/C:\\b2b_test\in_r	⬇

Use the **B2B Server Properties** link under **Related Links** to change the setting. See Section 34.1, "Configuring B2B Server Properties," for more information on enabling EM metrics.

Table 35–1 describes the information displayed on the B2B Infrastructure (SOA Binding) page.

Table 35–1   B2B Infrastructure (SOA Binding)

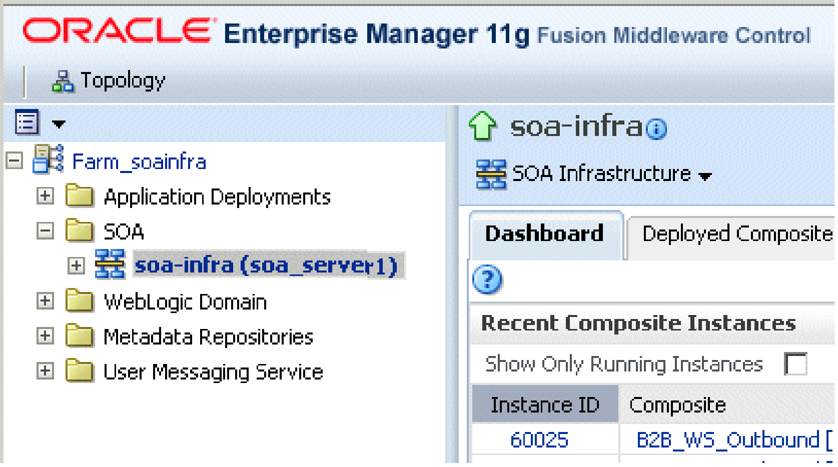
Area/Field	Description
Top 5 Recently Active Document Types	This section shows the active document types with the maximum number of messages exchanged (inbound and outbound combined) during the current session of the server. The document types listed in this section are from Oracle DMS metrics, triggered 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 35–1 (Cont.) B2B Infrastructure (SOA Binding)

Area/Field	Description
Top 5 Recently Active Trading Partners	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. 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.
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)**.



3. From the **SOA Infrastructure** menu, select **Bindings** and then **B2B**.

   See Table 35–1 for a description of the information displayed.

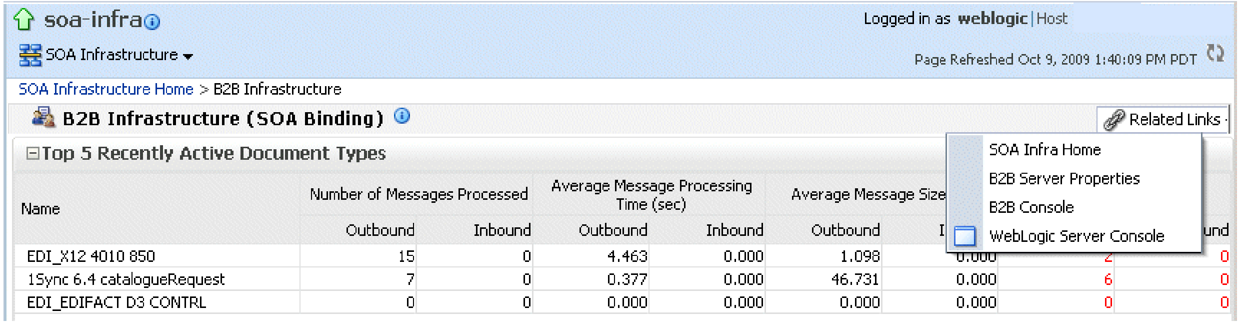
Information displayed in Oracle Enterprise Manager is based on DMS metrics, including inbound and outbound endpoints. Therefore, changes to Oracle B2B run-time data are not necessarily or immediately reflected in the Oracle Enterprise Manager console.

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.

35.2 Accessing Oracle B2B from the B2B Infrastructure Page

Use the **B2B Console** link under **Related Links**, as shown in Figure 35–2, to log in to Oracle B2B.

Figure 35–2 Accessing Oracle B2B from Oracle Enterprise Manager Fusion Middleware Control


soa-infra
Logged in as weblogic | Host
SOA Infrastructure
Page Refreshed Oct 9, 2009 1:40:09 PM PDT
SOA Infrastructure Home > B2B Infrastructure
B2B Infrastructure (SOA Binding)
Related Links
SOA Infra Home
B2B Server Properties
B2B Console
WebLogic Server Console
Top 5 Recently Active Document Types

Name	Number of Messages Processed		Average Message Processing Time (sec)		Average Message Size			
	Outbound	Inbound	Outbound	Inbound	Outbound	I		und
EDI_X12 4010 850	15	0	4.463	0.000	1.098	0.000	2	0
1Sync 6.4 catalogueRequest	7	0	0.377	0.000	46.731	0.000	6	0
EDI_EDIFACT D3 CONTRL	0	0	0.000	0.000	0.000	0.000	0	0

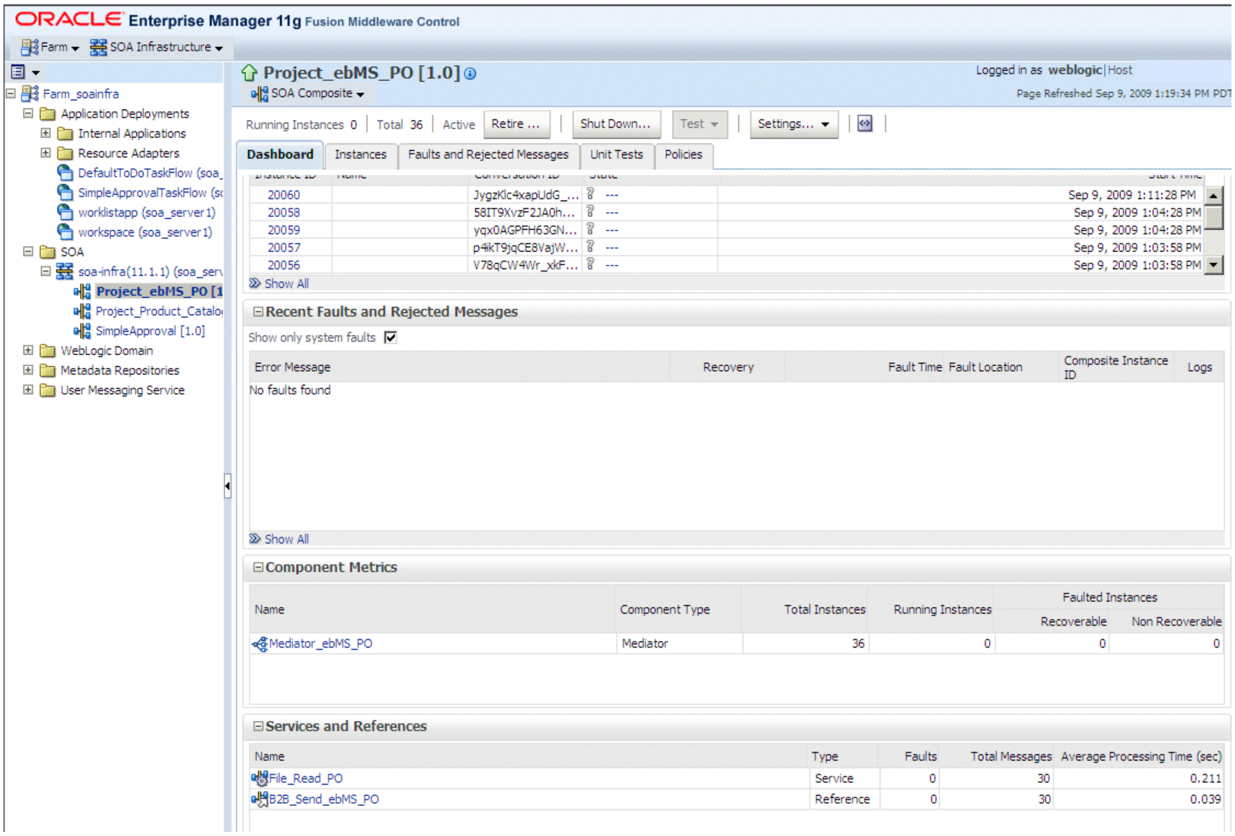
See *Oracle Fusion Middleware User's Guide for Oracle B2B* for information on using the Oracle B2B interface.

35.3 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:

1. Select a SOA composite application with a B2B binding component.

A list of the recent instances is displayed in the **Dashboard** tab.



20060		JygzKlc4xapUdG_...	---	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		p4ikT9jqCE8VajW...	---	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	Logs
No faults found					

Show All

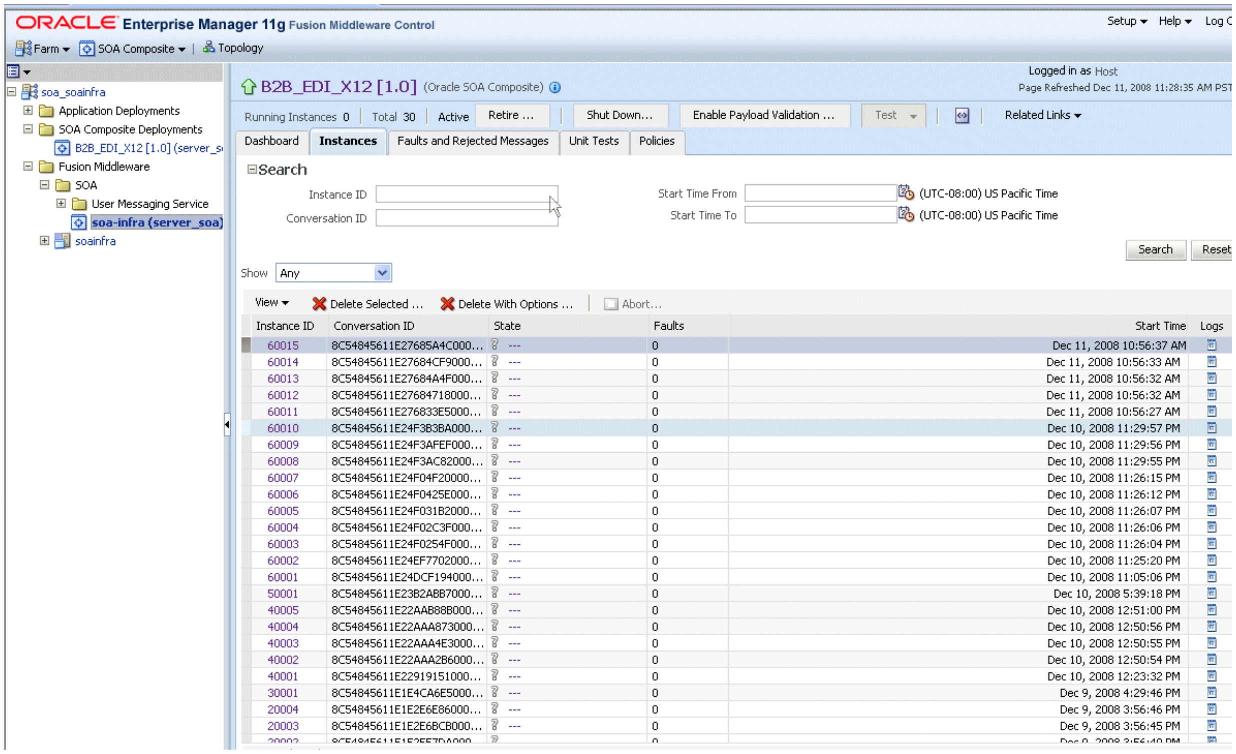
Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recoverable
Mediator_ebMS_PO	Mediator	36	0	0	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.

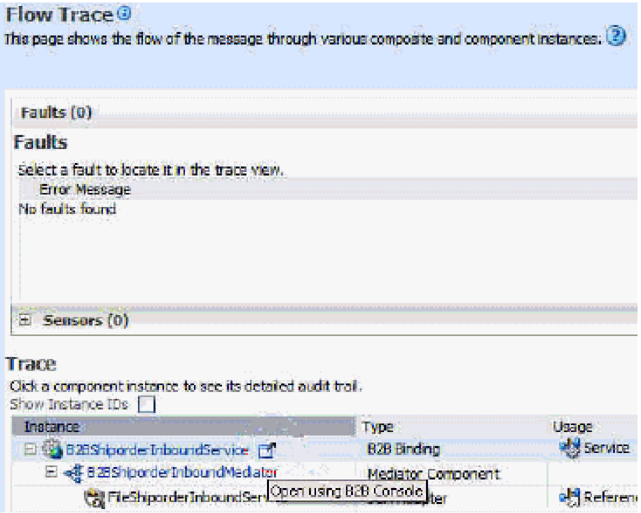


Instance ID	Conversation ID	State	Faults	Start Time	Logs
60015	8C54845611E27685A4C000...	---	0	Dec 11, 2008 10:56:37 AM	
60014	8C54845611E27684CF9000...	---	0	Dec 11, 2008 10:56:33 AM	
60013	8C54845611E27684A4F000...	---	0	Dec 11, 2008 10:56:32 AM	
60012	8C54845611E27684718000...	---	0	Dec 11, 2008 10:56:32 AM	
60011	8C54845611E276833E5000...	---	0	Dec 11, 2008 10:56:27 AM	
60010	8C54845611E24F3B3BA000...	---	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	8C54845611E24F0425E000...	---	0	Dec 10, 2008 11:26:12 PM	
60005	8C54845611E24F031B2000...	---	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	8C54845611E24DCF194000...	---	0	Dec 10, 2008 11:05:06 PM	
50001	8C54845611E23B2ABB7000...	---	0	Dec 10, 2008 5:39:18 PM	
40005	8C54845611E22AAB88B000...	---	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	8C54845611E1E2E6BCB000...	---	0	Dec 9, 2008 3:56:45 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.



Flow Trace

This page shows the flow of the message through various composite and component instances.

Faults (0)

Faults

Select a fault to locate it in the trace view.

Error Message

No faults found

⊞ Sensors (0)

Trace

Click a component instance to see its detailed audit trail.

Show Instance IDs ☐

Instance	Type	Usage
⊟ B2BShiporderInboundService	B2B Binding	Service
⊟ B2BShiporderInboundMediator	Mediator Component	
FileShiporderInboundSer	ter	Referen

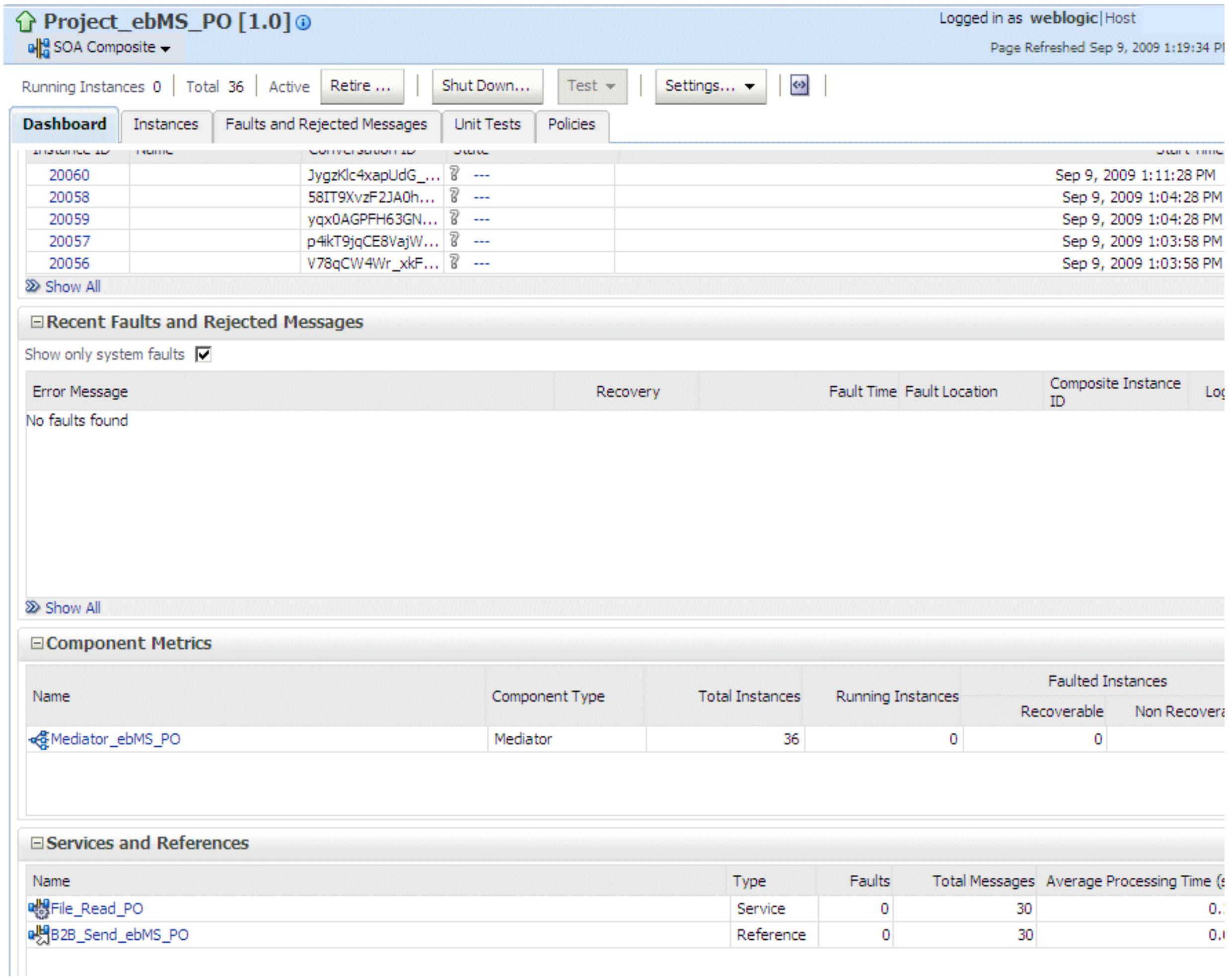
The Trace displays the following details:

- 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.

35.4 Viewing Services and References

The **Dashboard** tab for a composite application, shown in Figure 35–3, lists the services and references used in the composite.

Figure 35–3 Services and References



20060		JygzKlc4xapUdG_...	? ---	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		p4ikT9jqCE8VajW...	? ---	Sep 9, 2009 1:03:58 PM
20056		V78qCW4Wr_xkF...	? ---	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	Lo
No faults found					

Component Metrics

Name	Component Type	Total Instances	Running Instances	Faulted Instances	
				Recoverable	Non Recovera
Mediator_ebMS_PO	Mediator	36	0	0	

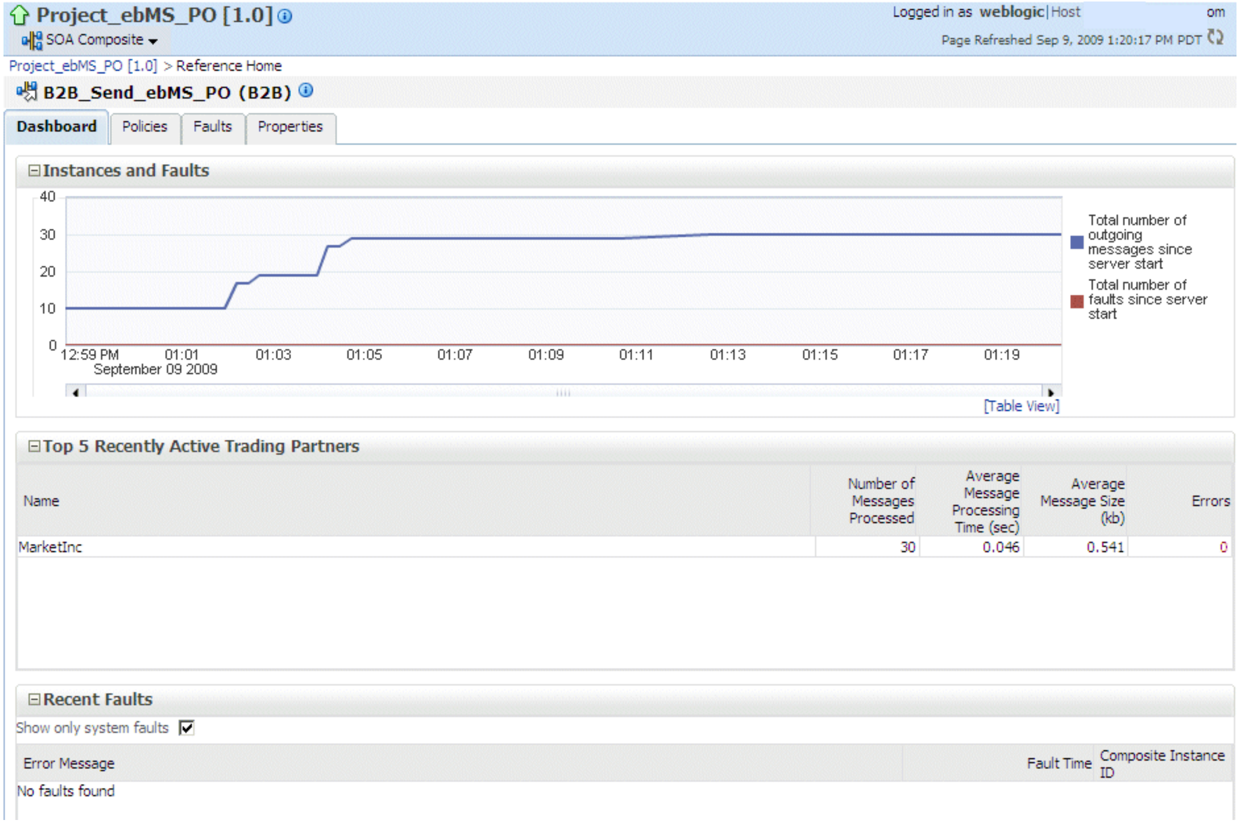
Services and References

Name	Type	Faults	Total Messages	Average Processing Time (
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 35–4.

Figure 35–4 The B2B Reference, B2B_Send_ebMS_PO


Project_ebMS_PO [1.0]
SOA Composite
Logged in as weblogic|Host
om
Page Refreshed Sep 9, 2009 1:20:17 PM PDT
Project_ebMS_PO [1.0] > Reference Home
B2B_Send_ebMS_PO (B2B)
Dashboard
Policies
Faults
Properties
Instances and Faults
40
30
20
10
0
12:59 PM
September 09 2009
01:01
01:03
01:05
01:07
01:09
01:11
01:13
01:15
01:17
01:19
Total number of outgoing messages since server start
Total number of faults since server start
[Table View]
Top 5 Recently Active Trading Partners
Recent Faults
Show only system faults ☑

Name	Number of Messages Processed	Average Message Processing Time (sec)	Average Message Size (kb)	Errors
MarketInc	30	0.046	0.541	0

Error Message	Fault Time	Composite Instance ID
No faults found		

The Instances and Faults area shows the number of outgoing messages and the number of faults since the server was started. See Table 35–1 for a description of the Top 5 Recently Active Trading Partners area.

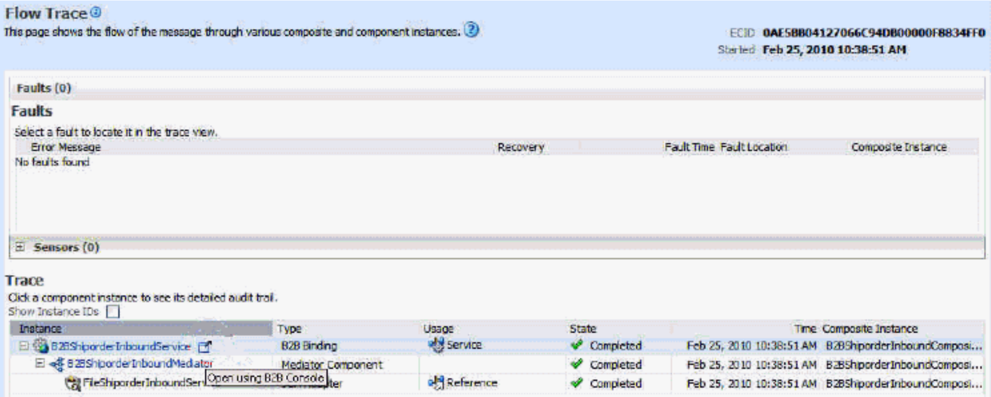
The Recent Faults area lists the faults, including details such as the error message, time of the fault, and the associated composite instance ID. Faults can be on the incoming messages processed by a service binding component or on the outgoing messages processed by a reference binding component.

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 38, "Monitoring Service and Reference Binding Components," for more information.

35.5 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 **0AE5B804127066C94DB00000F8834FF0**

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	ter	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 36, "Managing Business Events"

36

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 36.1, "Overview of the Event Delivery Network"
- Section 36.2, "Subscribing to Business Events"
- Section 36.3, "Managing Business Event Subscribers"
- Section 36.4, "Recovering from Business Event Faults"

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

36.1 Overview of the 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.

36.2 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.

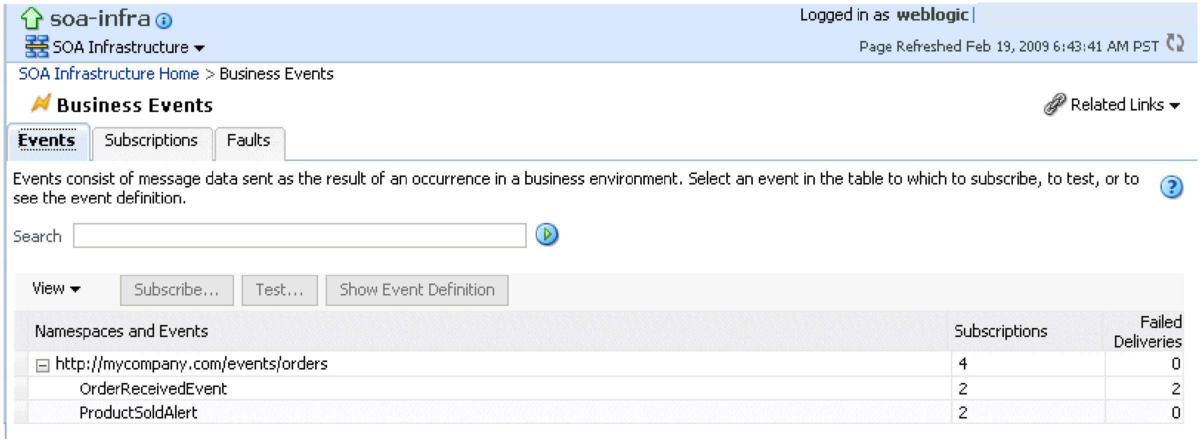
To subscribe to business events:

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 **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.



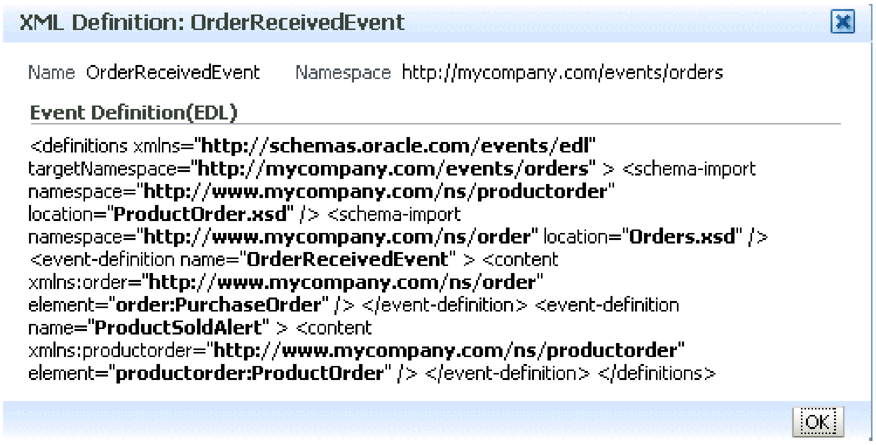
Events consist of message data sent as the result of an occurrence in a business environment. Select an event in the table to which to subscribe, to test, or to see the event definition.

Namespaces and Events	Subscriptions	Failed Deliveries
http://mycompany.com/events/orders	4	0
OrderReceivedEvent	2	2
ProductSoldAlert	2	0

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.



XML Definition: OrderReceivedEvent

Name OrderReceivedEvent Namespace http://mycompany.com/events/orders

Event Definition(EDL)

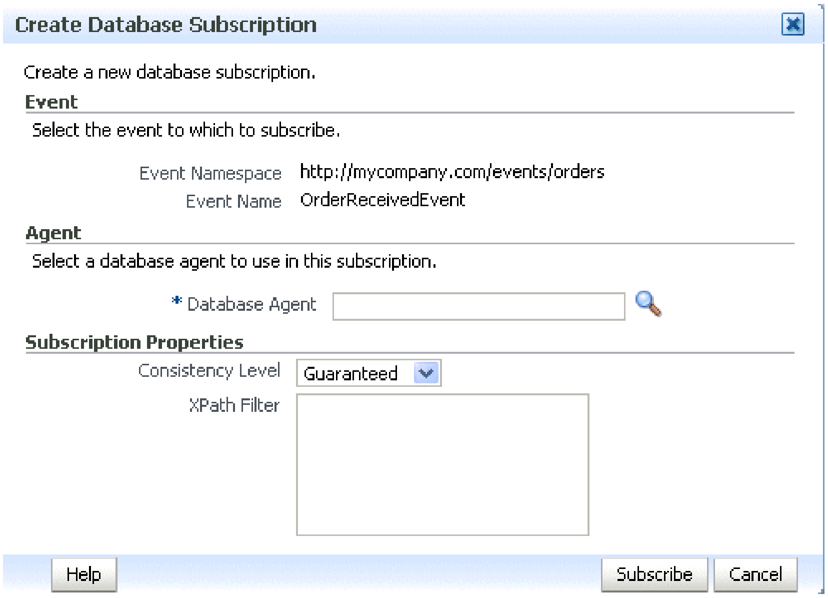
```
<definitions xmlns="http://schemas.oracle.com/events/edl"
targetNamespace="http://mycompany.com/events/orders" > <schema-import
namespace="http://www.mycompany.com/ns/productorder"
location="ProductOrder.xsd" /> <schema-import
namespace="http://www.mycompany.com/ns/order" location="Orders.xsd" />
<event-definition name="OrderReceivedEvent" > <content
xmlns:order="http://www.mycompany.com/ns/order"
element="order:PurchaseOrder" /> </event-definition> <event-definition
name="ProductSoldAlert" > <content
xmlns:productorder="http://www.mycompany.com/ns/productorder"
element="productorder:ProductOrder" /> </event-definition> </definitions>
```

4. Click **OK** to close the dialog.

5. Click **Subscribe** to subscribe a database agent to the event selected in the **Namespaces and Events** table.

> **Note:** The Events page for EDN-JMS implementations does not display the **Subscribe** button for subscribing a database agent to the selected event.

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.



Create Database Subscription

Create a new database subscription.

Event

Select the event to which to subscribe.

Event Namespace http://mycompany.com/events/orders

Event Name OrderReceivedEvent

Agent

Select a database agent to use in this subscription.

* Database Agent

Subscription Properties

Consistency Level Guaranteed

XPath Filter

6. Enter the following values. An asterisk indicates a required field.

Field	Description
Event Namespace	Displays the event namespace.
Event Name	Displays the event name.

Field	Description
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: ■ **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

36.3 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:

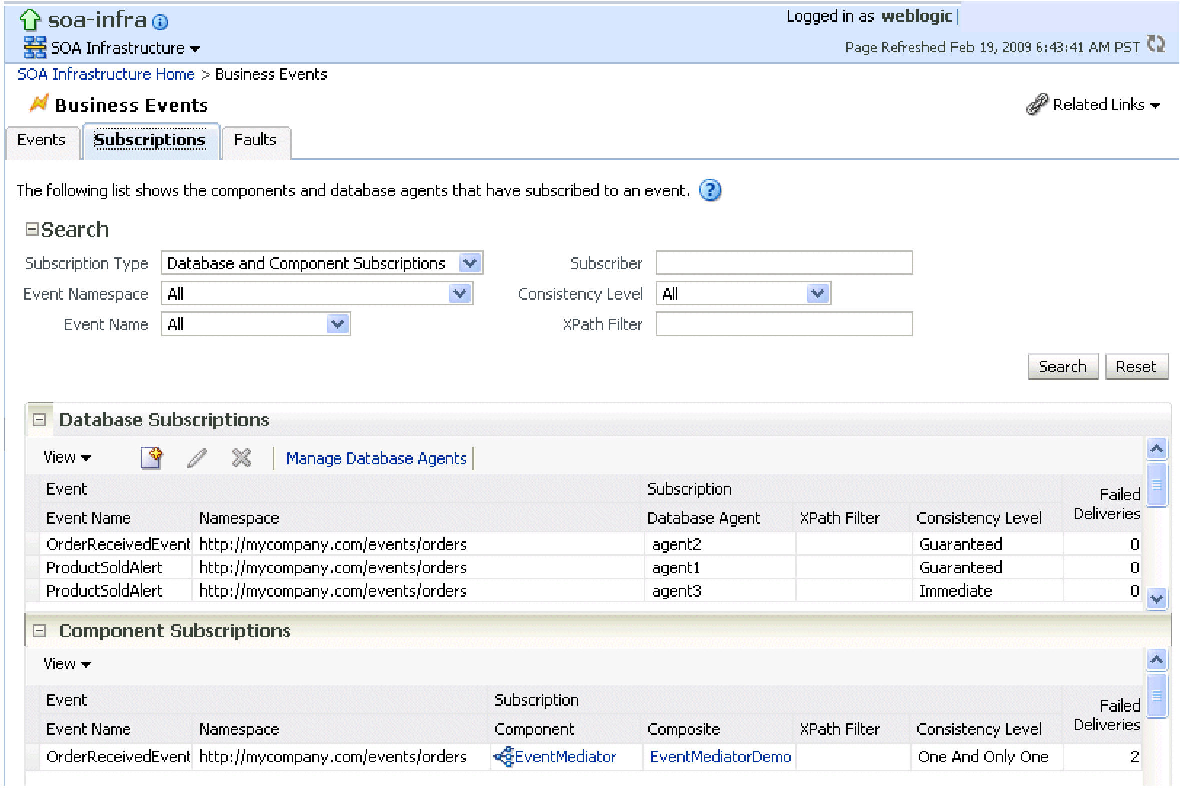
1. Access this page through one of the following options:

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 on 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.



Logged in as **weblogic**

Page Refreshed Feb 19, 2009 6:43:41 AM PST

SOA Infrastructure Home > Business Events

Business Events

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	

Database Subscriptions

Event		Subscription			
Event Name	Namespace	Database Agent	XPath Filter	Consistency Level	Failed Deliveries
OrderReceivedEvent	http://mycompany.com/events/orders	agent2		Guaranteed	0
ProductSoldAlert	http://mycompany.com/events/orders	agent1		Guaranteed	0
ProductSoldAlert	http://mycompany.com/events/orders	agent3		Immediate	0

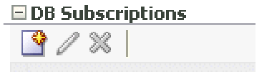
Component Subscriptions

Event		Subscription				
Event Name	Namespace	Component	Composite	XPath Filter	Consistency Level	Failed Deliveries
OrderReceivedEvent	http://mycompany.com/events/orders	EventMediator	EventMediatorDemo		One And Only One	2

Note: For business events implementing EDN - JMS, the **Create Database Agent** icon, **Edit Database Agent** icon, **Delete Database Agent** icon, and **Manage Database Agents** button are not displayed.

---

3. 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*.

36.4 Recovering from Business Event Faults

You can recover from business event faults that are identified as recoverable.

To recover from business event faults:

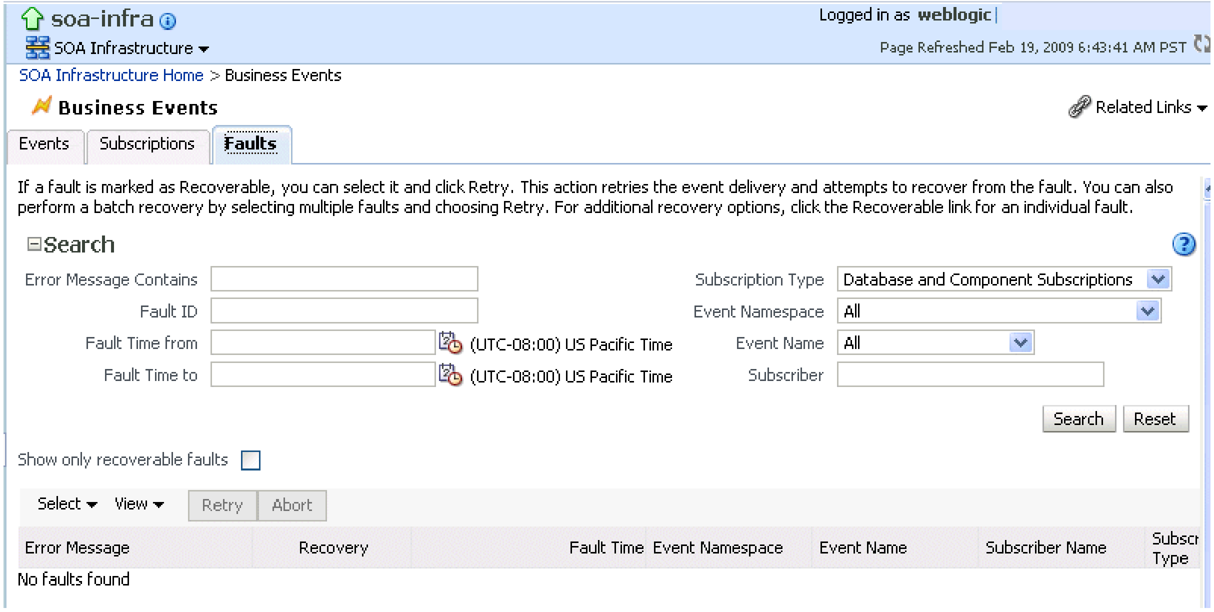
1. Access this page through one of the following options:

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.



If a fault is marked as Recoverable, you can select it and click Retry. This action retries the event delivery and attempts to recover from the fault. You can also perform a batch recovery by selecting multiple faults and choosing Retry. For additional recovery options, click the Recoverable link for an individual fault.

Search

Error Message Contains
Fault ID
Fault Time from (UTC-08:00) US Pacific Time
Fault Time to (UTC-08:00) US Pacific Time
Subscription Type: Database and Component Subscriptions
Event Namespace: All
Event Name: All
Subscriber

Show only recoverable faults ☐

Error Message	Recovery	Fault Time	Event Namespace	Event Name	Subscriber Name	Subscr Type

No faults found

3. From the **View** list, select **Columns** > **Fault ID** to display the fault IDs for each error message.

4. 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.

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 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 37, "Configuring Service and Reference Binding Components"
- Chapter 38, "Monitoring Service and Reference Binding Components"
- Chapter 39, "Managing Service and Reference Binding Components"

37

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 37.1, "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.
- Support is provided for adding MTOM attachments to web services. For more information, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

37.1 Configuring Service and Reference Binding Component Properties

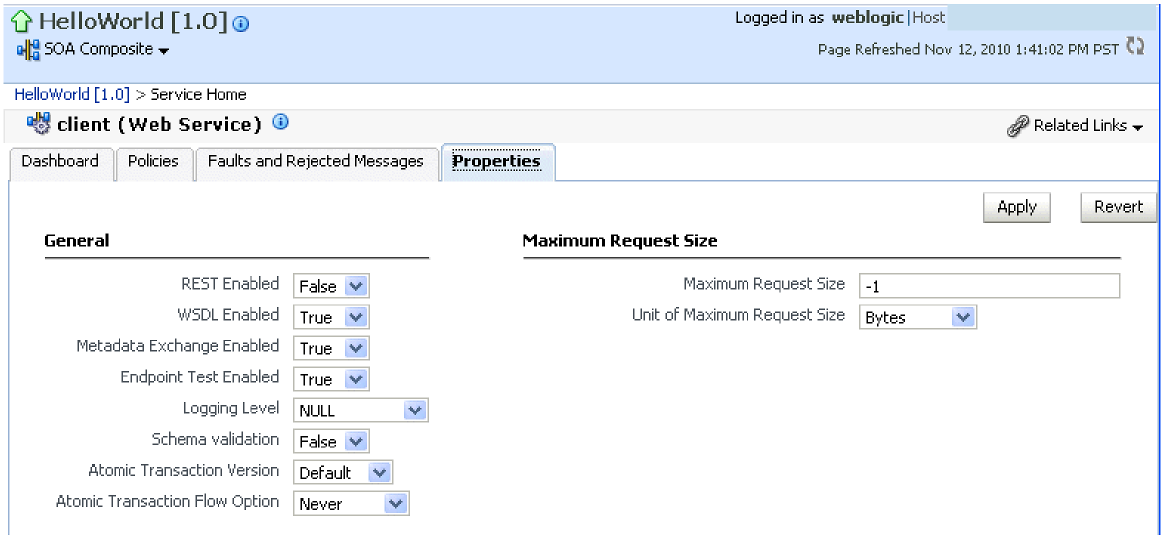
You can configure message header properties for the service and reference binding components included in a deployed SOA composite application.

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**. 2. Select a specific service or reference. 3. Click the **Properties** tab.	1. Right-click **soa-infra**. 2. Select **Services and References**. 3. Select a specific service or reference. 4. Click the **Properties** tab.	1. Select **Services/Reference Properties**. 2. Select a specific service or reference. 3. Click the **Properties** tab.

The following binding component properties appear for a Web service.


HelloWorld [1.0]
SOA Composite
Logged in as weblogic | Host
Page Refreshed Nov 12, 2010 1:41:02 PM PST
HelloWorld [1.0] > Service Home
client (Web Service)
Related Links
Dashboard
Policies
Faults and Rejected Messages
Properties
Apply
Revert

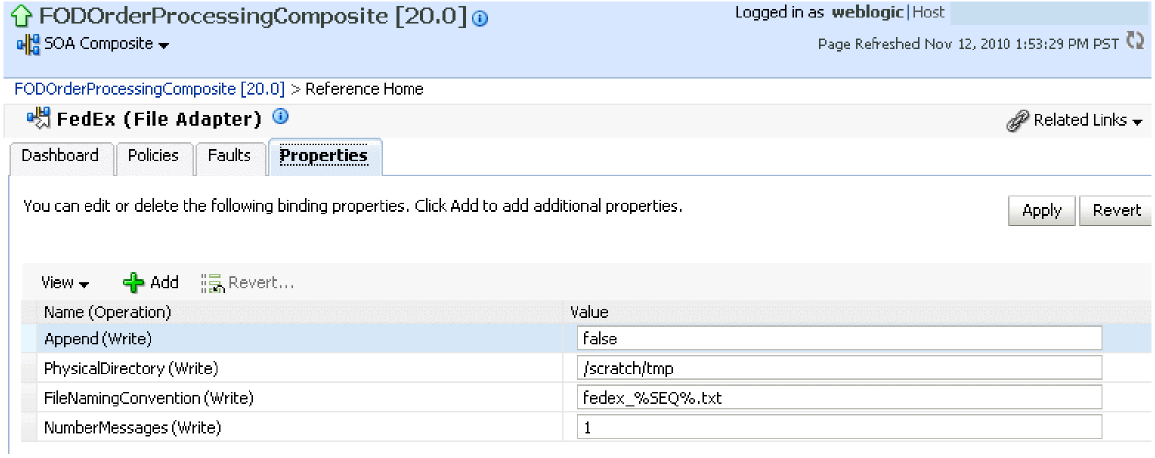
General

REST Enabled: False
WSDL Enabled: True
Metadata Exchange Enabled: True
Endpoint Test Enabled: True
Logging Level: NULL
Schema validation: False
Atomic Transaction Version: Default
Atomic Transaction Flow Option: Never

Maximum Request Size

Maximum Request Size: -1
Unit of Maximum Request Size: Bytes

The following binding component properties appear for a file adapter. Depending upon your selection of JCA adapter, different parameters display for configuring.


FODOrderProcessingComposite [20.0]
SOA Composite
Logged in as weblogic | Host
Page Refreshed Nov 12, 2010 1:53:29 PM PST
FODOrderProcessingComposite [20.0] > Reference Home
FedEx (File Adapter)
Related Links
Dashboard
Policies
Faults
Properties
Apply
Revert
View
Add
Revert...

You can edit or delete the following binding properties. Click Add to add additional properties.

Name (Operation)	Value
Append (Write)	false
PhysicalDirectory (Write)	/scratch/tmp
FileNamingConvention (Write)	fedex_%SEQ%.txt
NumberMessages (Write)	1

2. Change properties based on your selection of binding component. See sections Section 37.1.1, "Configuring Properties for Web Services" and Section 37.1.2, "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.

37.1.1 Configuring Properties for Web Services

Table 37–1 describes the properties available for a Web service binding component.

Table 37–1 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.
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	**Schema Validation**	Enable or disable schema validation.
Service	**Atomic Transaction Version**	Select the WS-AtomicTransaction (WS-AT) supported version (1.0, 1,1, 1,2, or default).
Service	**Atomic Transaction Flow Option**	Select the transaction participation value: ■ **Never** No transaction context is imported (for services) or exported (for references). ■ **Supports** If a transaction exists, a transaction context is imported (for services) or exported (for references). This information is added to the `composite.xml` file. ■ **Mandatory** A transaction context is imported (for services) or exported (for references). For exports, a web service exception message is thrown if there is no active transaction. For imports, a fault is returned to the client if there is no transaction context in the request.
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).

37.1.2 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 37–2 describes the JCA adapter property types.

Table 37–2 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 *not* 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 `jca.retry.*` 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 37.1.2.1, "Oracle AQ Adapter"
- Section 37.1.2.2, "Oracle Database Adapter"
- Section 37.1.2.3, "Oracle File Adapter"
- Section 37.1.2.4, "Oracle FTP Adapter"
- Section 37.1.2.5, "Oracle JMS Adapter"
- Section 37.1.2.6, "Oracle MQ Series Adapter"
- Section 37.1.2.7, "Oracle Socket Adapter"
- Section 37.1.2.8, "Oracle JCA Adapters Endpoint Properties"

37.1.2.1 Oracle AQ Adapter

Table 37–3 describes the properties available for the Oracle AQ Adapter.

Table 37–3 Oracle AQ Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`DequeueTimeOut`	Sets the dequeue timeout interval.
Service	`ConnectionRetryDelay`	Sets the connection retry interval.
Service	`adapter.aq.dequeue.threads`	The number of dequeue threads.

Table 37–3 (Cont.) Oracle AQ Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
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 *cannot* 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.
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 *cannot* 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.

37.1.2.2 Oracle Database Adapter

Table 37–4 describes the properties available for the Oracle Database adapter.

Table 37–4 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 *cannot* 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 *cannot* 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 *cannot* 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 *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	`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 *cannot* 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 `AfterReadStrategy`. Note that you *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	`MarkReadColumn`	Indicates the status column used by `LogicalDeletePollingStrategy` 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, `DB_ADAPTER_SEQUENCING`.

Table 37–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`SequencingTableKeyColumn`	For example, `TABLE_NAME`. This column holds the primary keys of the various sequences stored.
Service	`SequencingTableValueColumn`	For example, `LAST_READ_ID`. This is the column that holds the value of the last processed sequence value.
Service	`SequencingColumn`	This is the monotonically increasing column on the polled table. For example, `SCOTT.EMP.EMP_ID`.
Service	`SequencingColumnType`	This is the type of sequence counter used. For example, the `java.math.BigDecimal`, `java.sql.Timestamp`.
Service	`SequencingTableKey`	For example, the `SCOTT.EMP`. This is the key into the sequencing helper table, usually the name of the table being polled.
Service	`ShouldCacheSequenceValue`	For `SequencingPollingStrategy`, the `lastReadId` can be kept in-memory so it does not have to be read at the start of each polling interval.
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	`SequencingIsXADataSource`	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.

Table 37–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`ReturnSingleResultSet`	Reads from multiple joined tables in a single SQL `select` statement 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.
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 *cannot* 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 *cannot* 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 *cannot* 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 DML operation (merge, insert, update, delete, or 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.

Table 37–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	`OptimizeMerge`	Sets some properties to improve performance of the merge. For one, if multiple objects are merged, the read queries to check for the existence and loads database versions into memory. Comparisons are performed as a single query, using an `in()` clause on the primary key.
Reference	`DetectOmissions`	Indicates whether to differentiate between null and "not there" in the input XML. The difference between `<director />` (omission) and `<director xsi:nil=\"true\"/>` (null).
Reference	`MaxBatchWritingSize`	The JDBC level statements per batch statement.
Reference	`UseDirectSQL`	Enables performance optimization in certain cases.
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). The safest setting is the default (one per table); setting it to `true` 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 *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	`IsTransactional`	Indicates whether the pure SQL being executed is a write statement that must occur within transaction boundaries.
Reference	`QueryTimeout`	Indicates the JDBC level `queryTimeout` setting. Note that you *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	`MaxRows`	Indicates the JDBC level `maxRows` setting. Note that you *cannot* 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.

Table 37–4 (Cont.) Oracle Database Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
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 `queryTimeout` setting.

37.1.2.3 Oracle File Adapter

Table 37–5 describes the properties available for the Oracle File adapter.

Table 37–5 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 `true` 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 `true`, 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 `true`, the file/FTP adapter deletes the file after it has been processed.
Service	`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.
Service	`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.
Service	`PollingFrequency`	This parameter specifies how often does the file/FTP adapter looks for files in the inbound directory. It is specified in seconds.

Table 37–5 (Cont.) Oracle File 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 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.
Service	`Lenient`	If set to `true`, 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 `false`.
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 `EndpointActivation`, `EveryTime`, or `OnceOnly`.
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 `\";\"` as the separator for these directories. If you want, you can change the separator. If you do change it, manually add `DirectorySeparator=\"<<chosen separator>>\"` in the generated JCA file. For example, to use a comma (`,`) as the separator, you must first change the separator to `\",\"` in the physical directory and then add `DirectorySeparator=\",\"` in the JCA file.
Service	`AsAttachment`	If set to `true`, it causes the inbound file to be published as an attachment.

Table 37–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
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 `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 `\"oracle.tip.adapter.file.inbound.listing.TimestampSorterAscending\"` or `\"oracle.tip.adapter.file.inbound.listing.TimestampSorterDescending\"`. You can also plug in your own sorter by writing a class that implements `\"java.util.Comparator\"`.
Service	`SingleThreadModel`	If the value is `true`, 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 `ThreadCount` is set to `\"0\"`, then it behaves in the same manner as the single thread model. If `ThreadCount` is set to `\"-1\"`, 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 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 `String` and is not mandatory. The default value is `1`.
Reference	`FileSize`	Indicates if an opaque schema is being used.

Table 37–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
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 `\"true\"` 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	`UseStaging`	If `\"true\"`, then the outbound file/FTP adapter writes translated data to a staging file and afterward streams the staging file to the target file. If `\"false\"`, then the outbound file/FTP adapter does not use an intermediate staging file.
Reference	`ConcurrentThreshold`	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 `dspMaxThreads` 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	`oracle.tip.adapter.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 "`oracle.tip.adapter.file.Mutex`" abstraction.
Reference	`serializeTranslation`	If set to `\"true\"`, 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 `\"false\"`, then the translation step occurs outside the semaphore.
Reference	`inMemoryTranslation`	This parameter is applicable only if `UseStaging` is `\"false\"`. If set to `\"true\"`, then the translation step occurs in-memory (that is, an in-memory byte array is created). If set to `\"false\"`, 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 `\"true\"`, the file/FTP adapter deletes the file after it has been processed.
Reference	`IgnoreZeroByteFile`	Set it to `true` 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 opaque.
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.

Table 37–5 (Cont.) Oracle File Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	`ExcludeFiles`	Includes 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.
Reference	`Recursive`	If set to `true`, 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, then the file/FTP adapter submits `100` files every minute.
Reference	`DirectorySeparator`	When you choose multiple directories, the generated JCA files use `\";\"` as the separator for these directories. If you want, you can change the separator. If you do so, manually add `DirectorySeparator=\"<<chosen separator>>\"` in the generated JCA file. For example, to use a comma (`,`) as the separator, you must first change the separator to `\",\"` in the physical directory and then add `DirectorySeparator=\",\"` 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 `\"native\"` if the source file is native and to `\"xml\"` 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 `\"native\"` if the target file is native and to `\"xml\"` 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 \"`COPY`\",\"`MOVE`\", or \"`DELETE`\".
Reference	`BatchSize`	Set it to the batch size for the batching transformation.
Reference	`ChunkSize`	Specifies the number of outbound messages.

37.1.2.4 Oracle FTP Adapter

Table 37–6 describes the properties available for the Oracle FTP adapter.

Table 37–6 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 `\"true\"` 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 `\"ascii\"` or `\"binary\"`, depending on the requirement.
Service	`Recursive`	If set to `\"true\"`, 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 `\"true\"` to notify the FTP adapter that the archival directory is on the same FTP server. If set to `\"false\"`, the FTP adapter uses a local file system folder for archival.
Service	`UseNlst`	Set this parameter to `\"true\"` if you need the FTP adapter to use the `\"NLST\"` FTP command instead of the `\"LIST\"` that the adapter uses by default.
Service	`DeleteFile`	If set to `\"true\"`, the file/FTP adapter deletes the file after it has been processed.
Service	`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.
Service	`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.
Service	`PollingFrequency`	This parameter specifies how often the file/FTP adapter checks for files in the inbound directory. It is specified in seconds.

Table 37–6 (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 `EndpointActivation`, `EveryTime`, or `OnceOnly`.
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 `\";\"` as the separator for these directories. If you want, you can change the separator. If you do, manually add `DirectorySeparator=\"<<chosen separator>>\"` in the generated JCA file. For example, to use a comma (`,`) as the separator, you must first change the separator to `\",\"` in the physical directory and then add `DirectorySeparator=\",\"` in the JCA file.
Service	`AsAttachment`	If set to `\"true\"`, 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 37–6 (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 \"`oracle.tip.adapter.file.inbound.listing.TimestampSorterAscending`\", or \"`oracle.tip.adapter.file.inbound.listing.TimestampSorterDescending`\". You can also plug in your own sorter by writing a class that implements \"`java.util.Comparator`\".
Service	`SingleThreadModel`	If the value is `true`, 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 `ThreadCount` is set to `\"0\"`, then it behaves in the same manner as the `SingleThreadModel`. If the `ThreadCount` is set to `\"-1\"`, 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 `recoveryInterval` in case of errors. For example, if the `PhysicalDirectory` is nonexistent, then the adapter uses this value to perform periodic sleep/wake ups to check if the `PhysicalDirectory` 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.debatching.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 `\"100\"`, it causes the file/FTP adapter to reject `100` lines from the file since the actual file is too large.
Service	`useFileSystem`	This parameter is used by the inbound file/FTP adapter during read-only polling in a clustered environment. Setting it to `\"true\"` causes the adapter to use the file system to store metadata about files that have been already processed. Setting it to `\"false\"` causes the adapter to use a database table.

Table 37–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`oracle.tip.adapter.file.timeout.recoverpicked.minutes`	Used by the inbound high-availability adapter when using `\"FILEADAPTER_IN\"` as the coordinator. When a file is first claimed (enqueued) by a node for processing, the `FILE_PROCESSED` column in `FILEADAPTER_IN` is set to `\"0\"`. At a later point in time, when one of the decoupled processor threads picks up the file for processing, the value of `FILE_PROCESSED` column is updated from `\"0\"` to `\"1\"`. When the file is processed completely, the `FILE_PROCESSED` column is updated from `\"1\"` to `\"2\"`. 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 `\"undo\"` the pick operation. The adapter does this by deleting the entries in the `FILEADAPTER_IN` 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 `\"FILEADAPTER_IN\"` as the coordinator. When a file is first claimed by a node for processing, the `FILE_PROCESSED` column in `FILEADAPTER_IN` is set to `\"0\"`. At a later point in time, when the decoupled-processor thread picks up the file for processing, the value of the `FILE_PROCESSED` column is updated from `\"0\"` to `\"1\"`. When the file is processed completely, the `FILE_PROCESSED` column is updated from `\"1\"` to `\"2\"`. If the node crashes when the `FILE_PROCESSED` is still `\"0\"`, 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 `\"undo\"` the `claim(enqueue_` operation. The adapter does this by deleting the entries in the `FILEADAPTER_IN` table that have been claimed (for example, `FILE_PROCESSED ==\"0\"`), 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.
Service	`oracle.tip.adapter.file.highavailability.maxRetry`	The number of times that the inbound file/FTP adapter retries to establish a database connection in distributed polling scenarios.
Service	`oracle.tip.adapter.file.rejectOriginalContent`	Setting to `\"true\"` causes the file/FTP adapter to reject the original actual content. If set to `\"false\"`, the adapter rejects the XML data created because of the translation step.

Table 37–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`notifyEachBatchFailure`	Setting to `\"true\"` causes the file/FTP adapter to call the notification agent's `onBatchFailure` every time an error occurs in a debatching scenario. If set to `\"false\"`, the file/FTP adapter calls `onBatchFailure` only once after all messages in the debatching scenario.
Reference	`PhysicalDirectory`	The directory path for the file/FTP adapter.
Reference	`FileType`	Set it to either `\"ascii\"` or `\"binary\"`, depending on the requirement.
Reference	`NumberMessages`	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 `String` and is not mandatory. The default value is `1`.
Reference	`ElapsedTime`	This parameter is used for outbound batching. When the time specified elapses, the outgoing file is created. The parameter is of type `String` and is not mandatory. The default value is `1`.
Reference	`FileSize`	This parameter is used for outbound batching. The outgoing file is created when the file size condition is met. The parameter is of type String and is not mandatory. The default value is `1000` KB.
Reference	`FileNamingConvention`	This parameter is for the naming convention of 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 `\"true\"` 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	`UseStaging`	If `\"true\"`, then the outbound file/FTP adapter writes translated data to a staging file and afterward streams the staging file to the target file. If `\"false\"`, then the outbound file/FTP adapter does not use an intermediate staging file.
Reference	`ConcurrentThreshold`	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.adapter.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 `\"oracle.tip.adapter.file.Mutex\"` abstraction.

Table 37–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	`serializeTranslation`	If set to `\"true\"`, 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 `\"false\"`, then the translation step occurs outside the semaphore.
Reference	`inMemoryTranslation`	This parameter is applicable only if `UseStaging` is `\"false\"`. If set to `\"true\"`, then the translation step occurs in-memory (that is, an in-memory byte array is created). If set to `\"false\"`, 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 `\"ascii\"` or `\"binary\"`, depending on the requirement.
Reference	`UseRemoteArchive`	Set this parameter to `\"true\"` to notify the FTP adapter that the archival directory is on the same FTP server. If set to `\"false\"`, the FTP adapter uses a local file system folder for archival.
Reference	`DeleteFile`	If set to `\"true\"`, the file/FTP adapter deletes the file after it has been processed.
Reference	`IgnoreZeroByteFile`	Set it to `\"true\"` 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 `\"Opaque\"`.
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.
Reference	`Recursive`	If set to `\"true\"`, 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 `\";\"` as the separator for these directories. If you want, you can change the separator. If you do, manually add `DirectorySeparator=\"<<chosen separator>>\"` in the generated JCA file. For example, to use a comma (`,`) as the separator, you must first change the separator to `\",\"` in the physical directory and then add `DirectorySeparator=\",\"` in the JCA file.

Table 37–6 (Cont.) Oracle FTP Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	`UseNlst`	Set this parameter to `\"true\"` if you need the FTP adapter to use the `\"NLST\"` FTP command instead of `\"LIST\"` 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 `\"native\"` if the source file is native and to `\"xml\"` 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 `\"native\"` if the target file is native and to `\"xml\"` 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 `\"ascii\"` or `\"binary\"`, depending on the requirement.
Reference	`BatchSize`	Set it to the batch size for the batching transformation.
Reference	`SourceIsRemote`	Set it to `\"false\"` 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 `\"false\"` 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.

37.1.2.5 Oracle JMS Adapter

Table 37–7 describes the properties available for the Oracle JMS adapter.

Table 37–7 Oracle JMS Adapter

Service, Reference, or Endpoint	Property Name	Description
Service	`adapter.jms.encoding`	Set the encoding to be used by JMS inbound adapter.
Service	`adapter.jms.receive.timeout`	Set the receive timeout interval.
Service	`adapter.jms.retry.interval`	Set the interval the JMS adapter uses to retry.
Service	`adapter.jms.registration.interval`	Set the registration interval.
Service	`adapter.jms.receive.threads`	Set the number of receive threads.
Service	`JMSReplyTo DestinationProperties`	Set the reply-to destination.
Service	`JMSReplyUse MessageIdForCorrelation`	Specifies whether the message ID is necessary for correlation. Valid values are `true` or `false`.
Service	`JMSReplyUseCorrelation IdForCorrelation`	Specifies whether the correlation ID is necessary for correlation. Valid values are `true` or `false`.
Service	`suppressHeaders`	Specifies whether to bypass headers. Valid values are `true` or `false`.
Service	`JMSReply PropagateJMSExpiration`	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	`minimumDelayBetweenMessages`	This is a throttling parameter (in milliseconds) that adds a brief sleep period between each inbound posted message, thus slowing down the message inflow.
Reference	`requestReply.useCorrelation`	Specifies whether correlation is necessary in a request-reply scenario. Valid values are `true` or `false`.
Reference	`requestReply.cacheReceivers`	Specifies whether correlation is necessary in a request-reply scenario. Valid values are `true` or `false`.
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 `PERSISTENT` and `NON_PERSISTENT`.
Reference	`TimeToLive`	Indicates the message lifetime in milliseconds.
Reference	`Priority`	Indicates the JMS message priority.
Reference	`PayloadEntry`	Specifies the `MapMessage` entry to use as the payload.
Reference	`AttachmentList`	Specifies the `MapMessage` 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.

Table 37–7 (Cont.) Oracle JMS Adapter

Service, Reference, or Endpoint	Property Name	Description
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 `Timeout` to receive a reply message.

37.1.2.6 Oracle MQ Series Adapter

Table 37–8 describes the properties available for the Oracle MQ Series adapter.

Table 37–8 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 `true` if the character set `from` header is used during translation.
Service	`InboundThreadCount`	Indicates the number of threads used in the inbound direction.
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 `\"true\"` if the `characterSet` field of MQMD is use for translation in the inbound direction. If set to `\"false\"`, the translator uses the encoding from the schema file. You can use the `jca.message.encoding` 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.

Table 37–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Service	`Persistence`	Indicates the persistence of the reply/outbound message.
Service	`Feedback`	Indicates the feedback code of the reply/outbound message. Note that you *cannot* 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.
Service	`GetMessageOptions`	Indicates the `Get` message options for an outbound dequeue scenario.
Service	`FilterByMsgId`	Indicates the message ID to use for filtering.
Service	`FilterByCorrelId`	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.

Table 37–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
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.
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 *cannot* 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 *cannot* 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 `true` if partial delivery to the distribution list is allowed. Otherwise, it is set to `false`.
Reference	`SyncSolicitReqRes`	Set to `true` if it is a synchronous request-response (outbound) scenario. Otherwise, it is set to `false`. Note that you *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.

Table 37–8 (Cont.) Oracle MQ Series Adapter Properties

Service, Reference, or Endpoint	Property Name	Description
Reference	`ResponseOpaqueSchema`	Set to `true` 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 `true` 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 *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	`UseMessageEncodingForTranslation`	Set to true if the character set from the header is used during translation.
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 `\"true\"` if the `characterSet` field of MQMD is to be used for translation in the inbound direction. If set to `\"false\"`, the translator uses the encoding from the schema file. You can use the `jca.message.encoding` property to overwrite any encoding specified, either in MQMD or in the schema file.

37.1.2.7 Oracle Socket Adapter

Table 37–9 describes the properties available for the Oracle Socket Adapter.

Note: Properties such as `TransMode` and `XSLT`, which are not listed in Table 37–9, are displayed in the **Properties** tab. However, you cannot edit properties that are not listed in Table 37–9. Making changes to noneditable properties makes the composite invalid and requires remodeling of the composite.

Table 37–9 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 *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Service	`ByteOrder`	Indicates the byte order of the native data as `bigEndian` or `littleEndian`. Note that you *cannot* 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.
Reference	`Encoding`	Indicates the character encoding of the native data. Note that you *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.
Reference	`ByteOrder`	Indicates the byte order of the native data as `bigEndian` or `littleEndian`. Note that you *cannot* edit this property in Oracle Enterprise Manager Fusion Middleware Control Console.

37.1.2.8 Oracle JCA Adapters Endpoint Properties

Table 37–10 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 37–10 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.
Inbound	`rejectUncorrelatedMessages`	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 `true`, the JCA framework rejects a message, which cannot be correlated (when native correlation is active).
Inbound	`jca.retry.count`	Indicates the maximum number of retries before rejection.
Inbound	`jca.retry.interval`	Indicates the time interval between retries (measured in seconds).
Inbound	`jca.retry.backoff`	Indicates the retry interval growth factor (positive integer).
Inbound	`jca.retry.maxInterval`	Indicates the maximum value of retry interval; that is, a cap if backoff is greater than `1`.
Outbound	`jca.retry.count`	Indicates the maximum number of retries before throwing a retryable error condition back to the invoking service engine.
Outbound	`jca.retry.interval`	Indicates the time interval between retries (measured in seconds).
Outbound	`jca.retry.backoff`	Indicates the retry interval growth factor (positive integer).
Outbound	`jca.retry.maxInterval`	Indicates the maximum value of retry intervals; that is, a cap if the backoff is greater than `1`.
Outbound	`jca.retry.maxPeriod`	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>
```

Notice that the inbound property `jca.retry.maxPeriod` is not supported (like it is in the outbound direction).

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>
```

37.1.3 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.

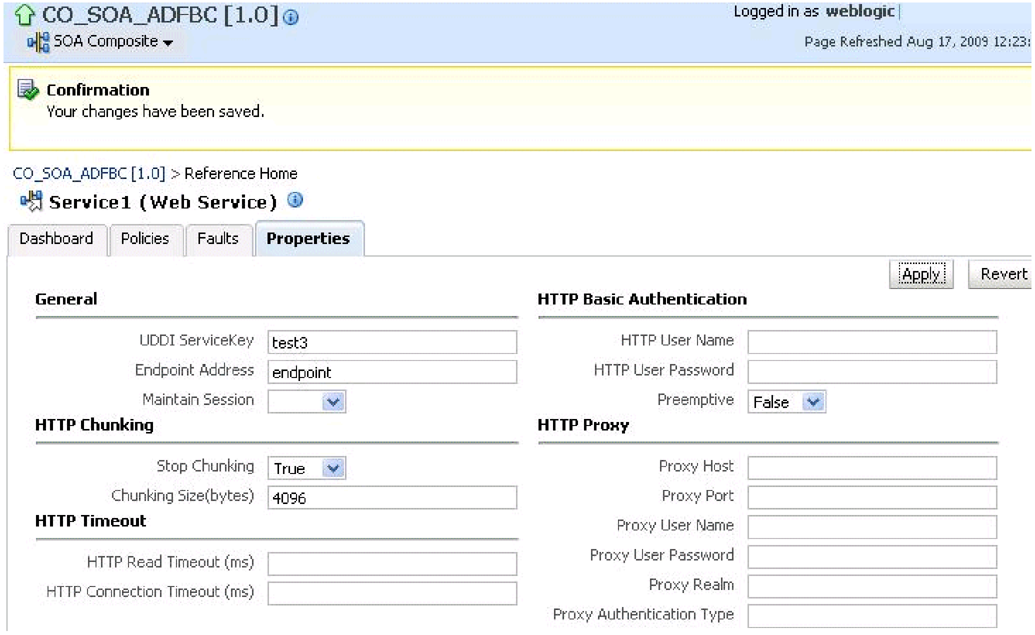
The endpoint location order of precedence is as follows:

- 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 37–1 provides shows both fields.

Figure 37–1 Endpoint Reference and Service Key Properties



Confirmation
Your changes have been saved.

UDDI ServiceKey: test3
Endpoint Address: endpoint
Maintain Session:
Stop Chunking: True
Chunking Size(bytes): 4096
HTTP Read Timeout (ms):
HTTP Connection Timeout (ms):
HTTP User Name:
HTTP User Password:
Preemptive: False
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."

37.1.3.1 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**.

38

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 38.1, "Monitoring Binding Component Instances and Faults"
- Section 38.2, "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*

38.1 Monitoring Binding Component Instances and Faults

You can monitor instances and faults for all binding components included in SOA composite applications.

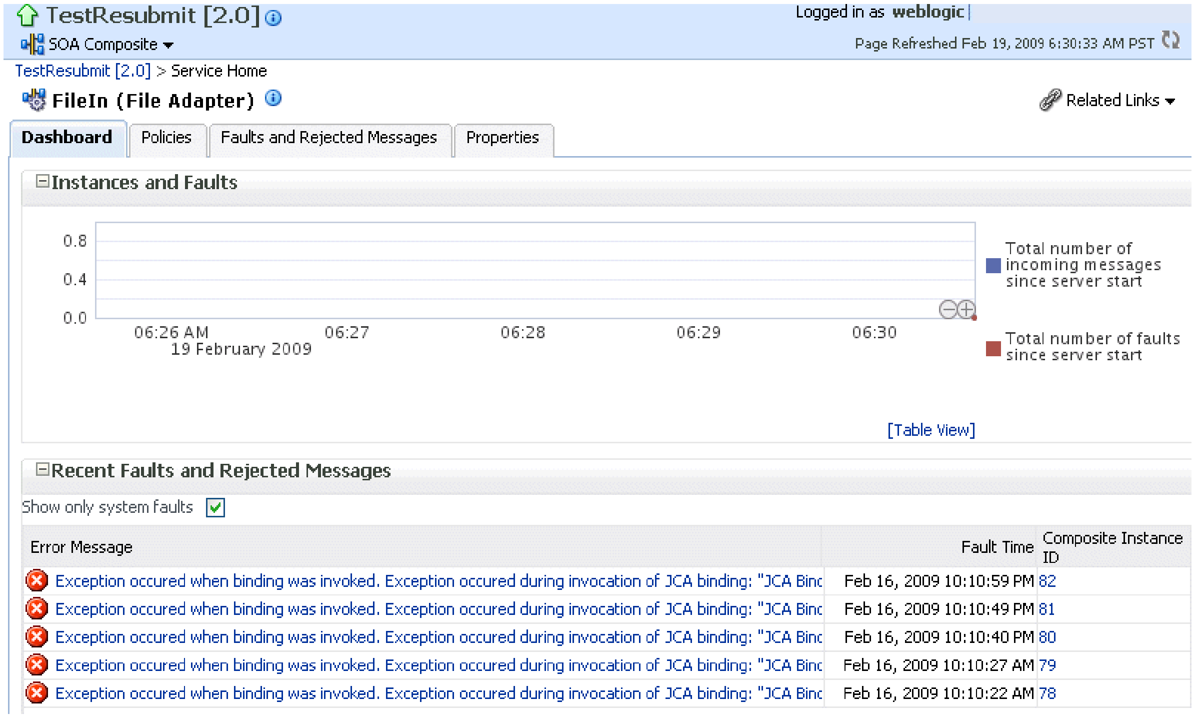
To monitor binding component instances and faults:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.

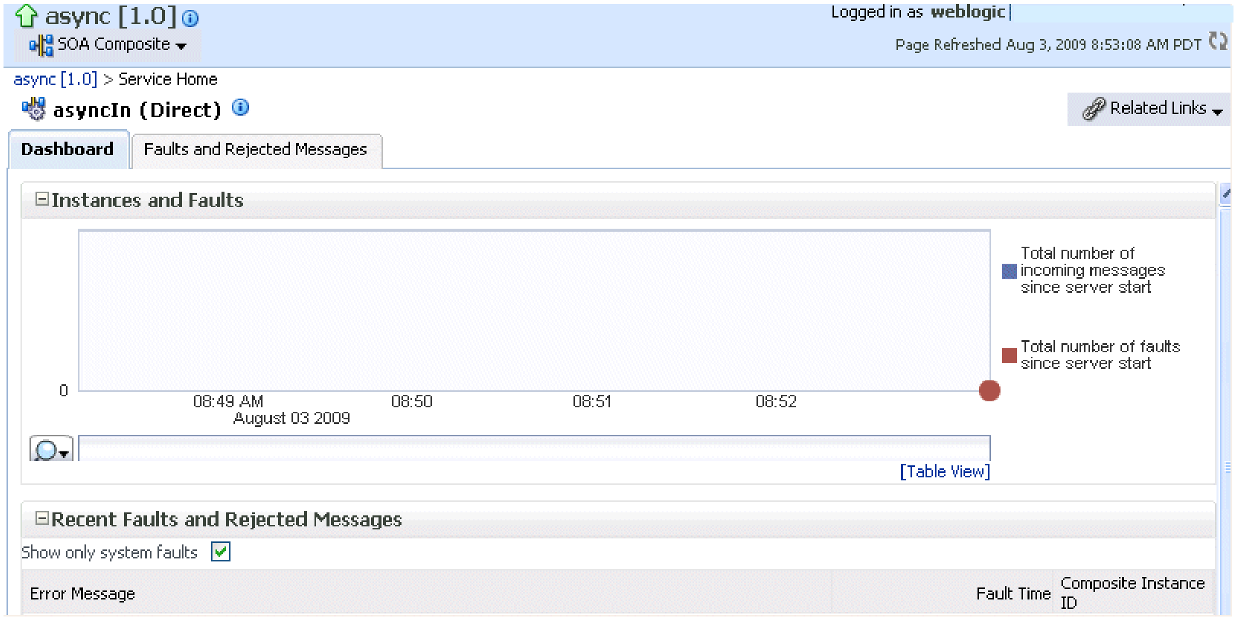
- Recently rejected messages, including the message name, time of the fault, and the type of fault (business or system).


TestResubmit [2.0]
SOA Composite
Logged in as weblogic
Page Refreshed Feb 19, 2009 6:30:33 AM PST
TestResubmit [2.0] > Service Home
FileIn (File Adapter)
Related Links
Dashboard
Policies
Faults and Rejected Messages
Properties
Instances and Faults
0.8
0.4
0.0
06:26 AM
19 February 2009
06:27
06:28
06:29
06:30
Total number of incoming messages since server start
Total number of faults since server start
[Table View]
Recent Faults and Rejected Messages
Show only system faults ☑

Error Message	Fault Time	Composite Instance ID
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:59 PM	82
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:49 PM	81
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:40 PM	80
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:27 AM	79
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA Binc	Feb 16, 2009 10:10:22 AM	78

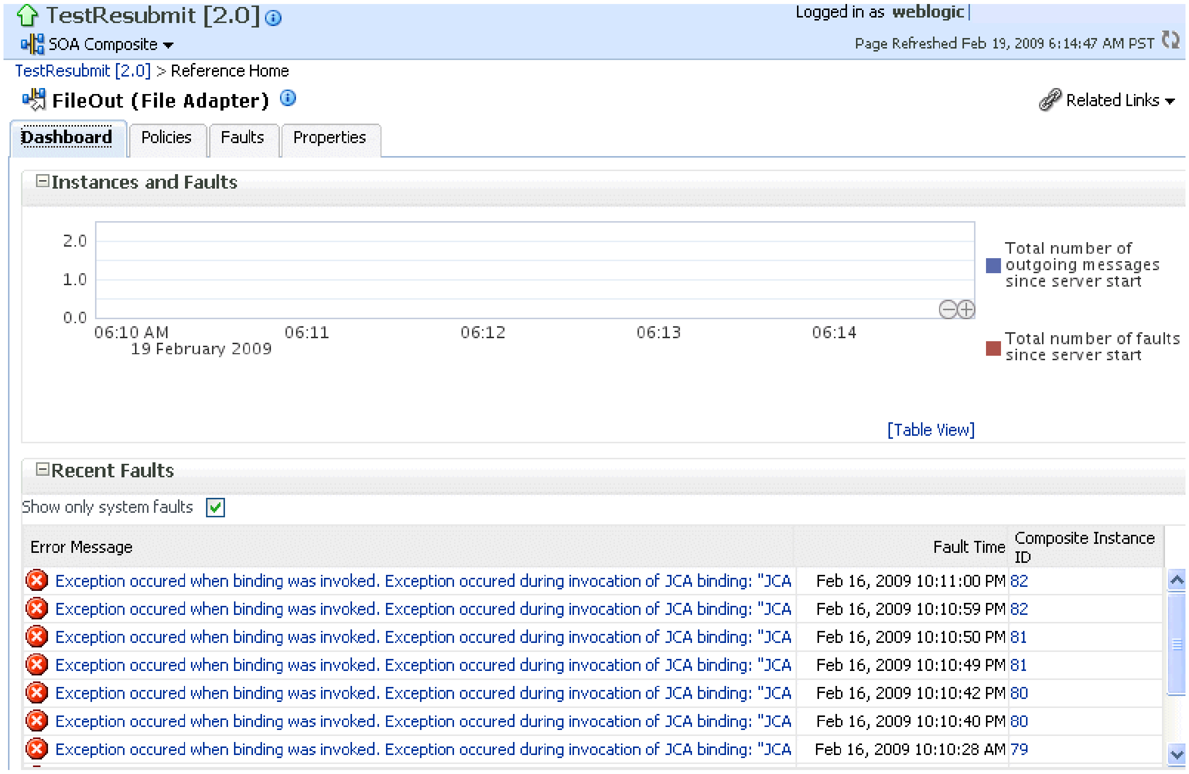
5. If you select a service that invokes a SOA composite application through a remote RMI call (known as direct binding), the Dashboard page displays similar details as described in Step 4. Direct binding enables SOA composite applications to be invoked through an API that supports transaction and security propagation across JVMs.

   The word **Direct** displays in the header to indicate that this is a direct binding component. However, no **Polices** and **Properties** tabs are available for direct binding components.


async [1.0]
SOA Composite
Logged in as weblogic
Page Refreshed Aug 3, 2009 8:53:08 AM PDT
async [1.0] > Service Home
asyncIn (Direct)
Related Links
Dashboard
Faults and Rejected Messages
Instances and Faults
0
08:49 AM
August 03 2009
08:50
08:51
08:52
Total number of incoming messages since server start
Total number of faults since server start
[Table View]
Recent Faults and Rejected Messages
Show only system faults ☑
Error Message
Fault Time
Composite Instance ID

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.



Error Message	Fault Time	Composite Instance ID
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:11:00 PM	82
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:59 PM	82
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:50 PM	81
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:49 PM	81
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:42 PM	80
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:40 PM	80
Exception occured when binding was invoked. Exception occured during invocation of JCA binding: "JCA	Feb 16, 2009 10:10:28 AM	79

38.2 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:

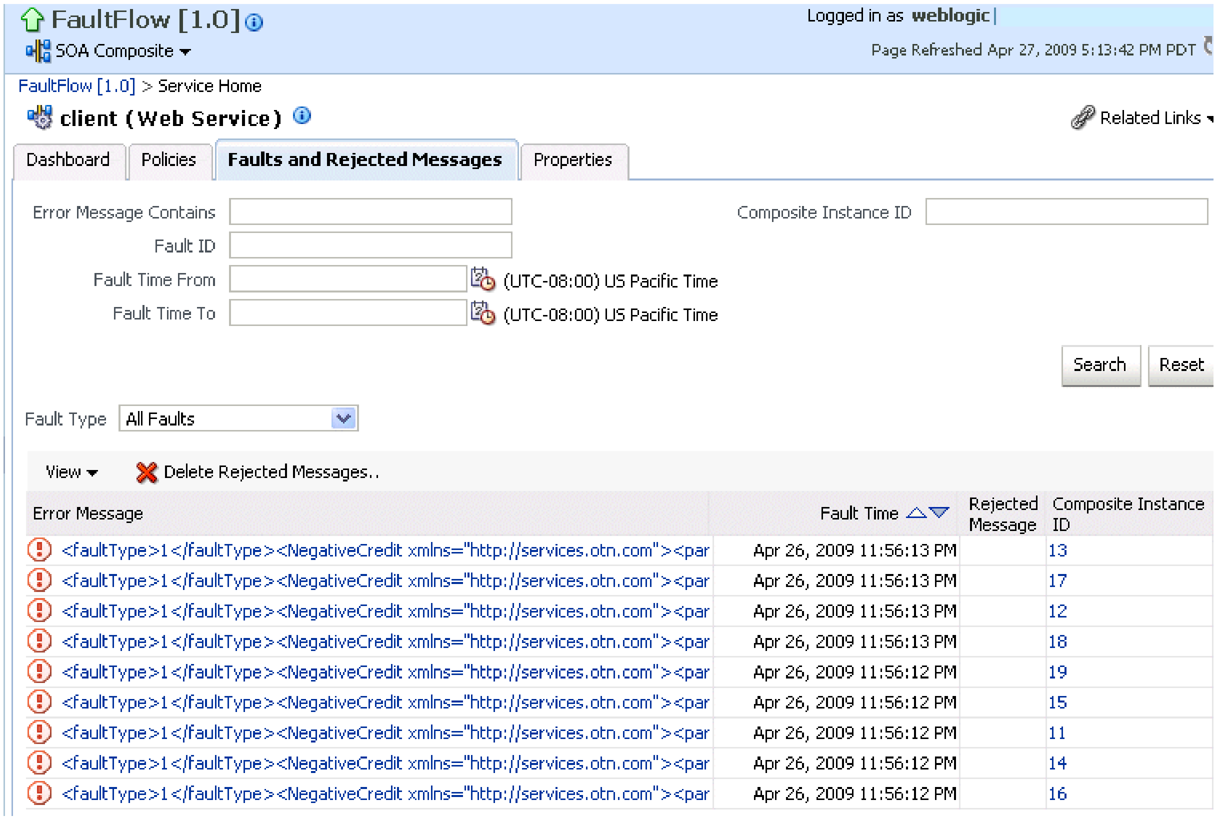
1. Access this page through one of the following options:

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.

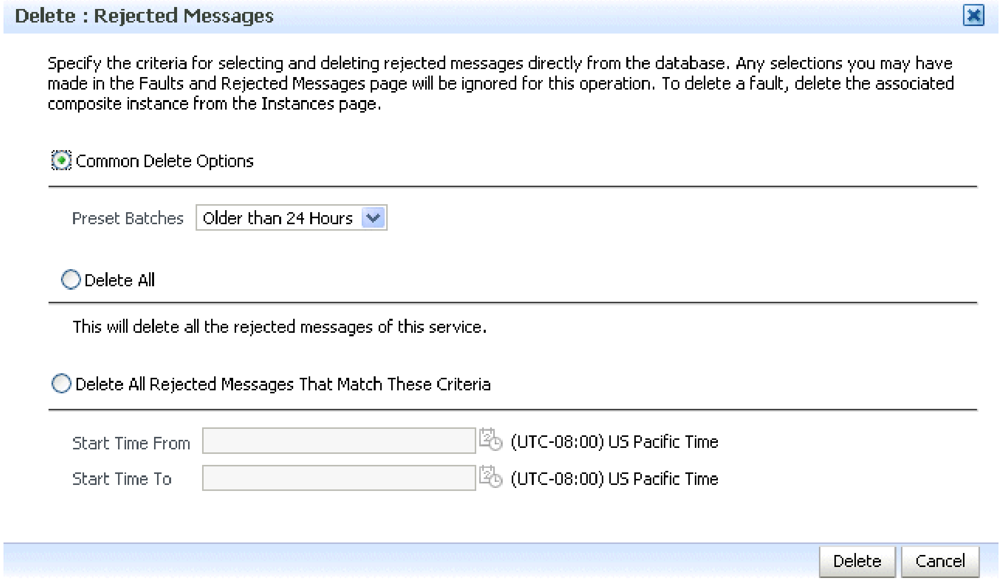
You can perform fault recovery from this page.


FaultFlow [1.0]
SOA Composite
Logged in as weblogic
Page Refreshed Apr 27, 2009 5:13:42 PM PDT
FaultFlow [1.0] > Service Home
client (Web Service)
Related Links
Dashboard
Policies
Faults and Rejected Messages
Properties
Search
Reset
View
Delete Rejected Messages..

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
Fault Type: All Faults

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: Older than 24 Hours

○ Delete All

This will delete all the rejected messages of this service.

○ 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

7. Specify a criteria, and click **Delete**.

39

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 topics:

- Section 39.1, "Managing Binding Component Policies"
- Section 39.2, "Publishing Web Services to the UDDI Registry"

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*

39.1 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 Application Server Web Services Security Guide* 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...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.

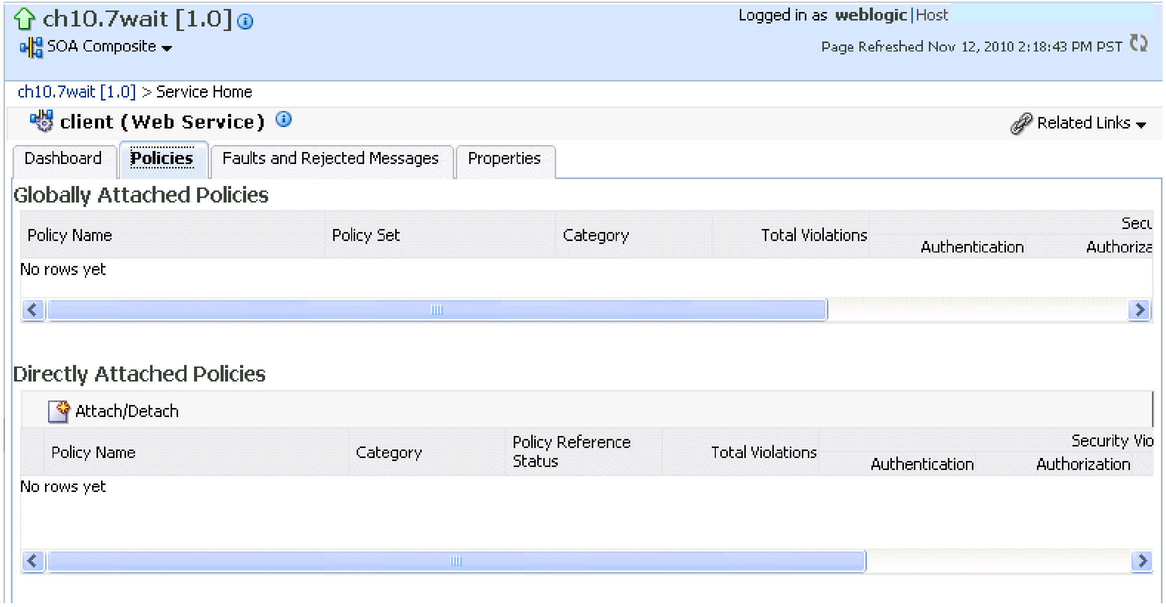
3. In the **Services and References** section, select a service or reference.
4. Click **Policies**.

   The Policies page enables you to view the globally-attached and directly-attached policies, and to detach or detach security policies to and from a service or reference binding component:

   - The **Globally Attached Policies** table displays the globally-attached policy name, the policy set, 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.

     Policy sets provide a means to attach policies globally to a range of endpoints of the same type. Attaching policies globally using policy sets enables an administrator to ensure that all subjects are secured in situations in which the developer, assembler, or deployer did not explicitly specify the policies to attach. Policies that are attached using a policy set are considered externally attached. For information about creating and managing policy sets, see chapter "Creating and Managing Policy Sets" of *Oracle Application Server Web Services Security Guide*.

   - The **Directly Attached Policies** table displays the directly-attached policy name, the policy reference status (enabled or disabled), the category, the violations since the SOA Infrastructure was last restarted, and the authentication, authorization, confidentiality, and integrity failures since the SOA Infrastructure was last restarted.



5. In the **Directly Attached Policies** section, 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:

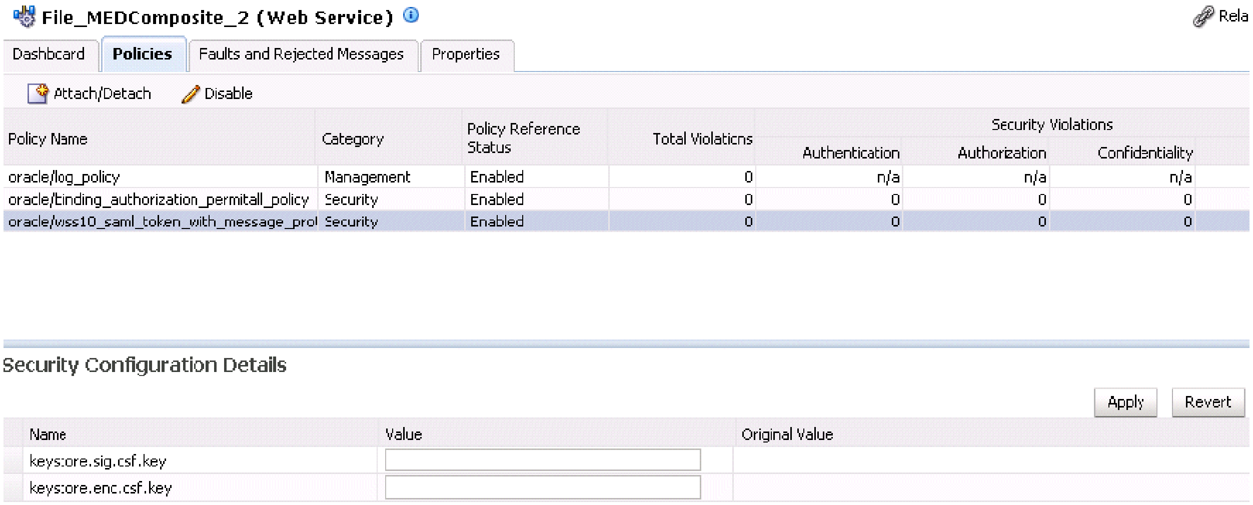
- Section 1.4.3.2, "Understanding Policies"
- Section 8.8, "Managing SOA Composite Application Policies" for the dialogs that display during policy attachment
- *Oracle Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use for your environment

39.1.1 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 39.1, "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.



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

Name	Value	Original Value
keystore.sig.csf.key		
keystore.enc.csf.key		

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 Application Server Web Services Security Guide*.

39.2 Publishing Web Services to the UDDI Registry

You can publish service binding components to the Universal Description, Discovery, and Integration (UDDI) registry from a registered UDDI source.

Notes:

- You *cannot* publish a reference binding component to the UDDI registry.
- You can *only* publish web services to the UDDI registry. For example, you cannot publish a JCA adapter.

For information about the Oracle Service Registry, see

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

For information about Oracle Enterprise Repository, see *Oracle Fusion Middleware Configuration Guide for Oracle Enterprise Repository* and *Oracle Fusion Middleware Integration Guide for Oracle Enterprise Repository*.

For more information about publishing Web services to the UDDI registry, see *Oracle Application Server Web Services Security Guide*.

39.2.1 Configuring the Environment for Publishing Web Services to UDDI

Before you can publish a web service to the UDDI registry, you must configure your environment.

If your SOA Infrastructure installation is behind a firewall, the Oracle Enterprise Manager Fusion Middleware Control Console managed server must have a proxy server configured for outbound URL connections.

1. Configure the proxy server setting in either of the following ways:

   In the following file:

   a. Open the `FMW_Home/user_projects/domains/soainfra/bin/setDomainEnv.sh` file for Linux (or `setDomainEnv.bat` for Windows operating systems).

   b. Enter the following syntax and provide host, port, and proxy host details appropriate to your environment:

   ```
   EXTRA_JAVA_PROPERTIES="${EXTRA_JAVA_PROPERTIES} -DproxySet=true
   -Dhttp.proxyHost=www-myproxy.us.mycompany.com -Dhttp.proxyPort=80
   -Dhttp.nonProxyHosts=localhost|$HOST_IP_
   ADDRESS|$HOSTNAME|*.us.mycompany.com"
   export EXTRA_JAVA_PROPERTIES
   ```

   c. Run `setDomainEnv.sh` or `setDomainEnv.bat`.

   With an environment variable:

   a. Set the `PROXY_SETTINGS` environment variable before starting Oracle WebLogic Server.

   ```
   setenv PROXY_SETTINGS "-DproxySet=true
   -Dhttp.proxyHost=www-myproxy.us.mycompany.com -Dhttp.proxyPort=80
    -Dhttp.nonProxyHosts=localhost|*.us.mycompany.com
     |0:0:0:0:0:0:0:1|fe80:0:0:0:250:56ff:fe31"
   ```

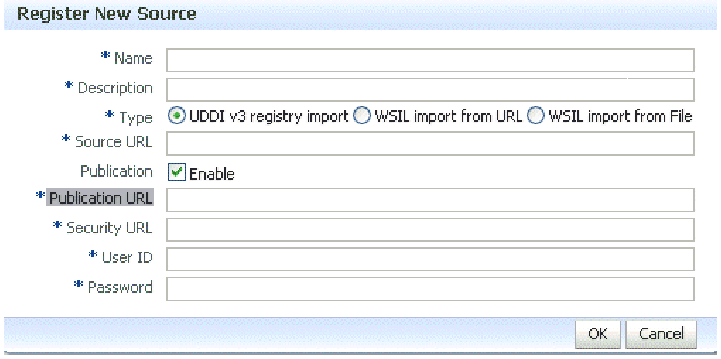
You must set up a UDDI source to use for publication.

1. In the navigator, expand **Weblogic Domain**.
2. Right-click **soainfra** and select **Web Services**> **Registered Services**.

The Registered Sources and Services page appears.

3. In the **Sources** section, click **Register Web Services**.

   The Register New Source dialog appears.



4. Enter the following information:

Field	Description
Name	Enter a descriptive name for the service.
Description	Enter a descriptive name for the UDDI source to which to publish the WSDL.
Type	Select **UDDI v3 registry import**.
Source Location	Enter the source location. For example: `http://myhost.us.mycompany.com:7001/registry/uddi/inquiry`
Publication	Select the **Enable** check box.
Publication URL	Enter the publication URL. For example: `http://myhost.us.mycompany.com:7001/registry/uddi/publishing`
Security URL	Enter the security URL. For example: `http://myhost.us.mycompany.com:7001/registry/uddi/security`
User ID	Enter `admin`.
Password	Enter the user ID password.

5. Click **OK**.

39.2.2 Publishing a Web Service to the UDDI Registry

Note: You can publish web services to default Oracle Service Registry businesses from Oracle Enterprise Manager Fusion Middleware Control Console. To publish to non-default businesses, use the publish option in Oracle Service Registry.

For more information about Oracle Service Registry, including documentation, visit the following URL:

`http://www.oracle.com/technetwork/middleware/registry/overview/index.html`

To publish a web service to the UDDI registry:

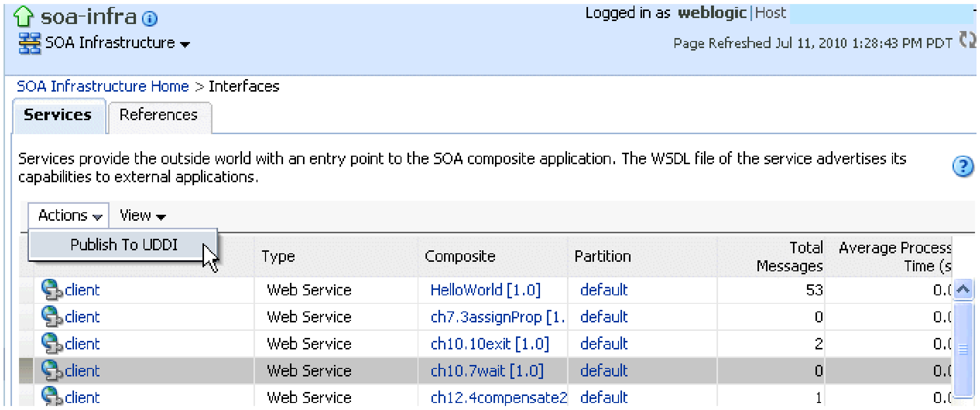
1. Access this page through one of the following options:

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 partition in which the composite is deployed, the total number of messages processed, the average processing time, and the number of faults occurring in the services.

2. In the **Service** table, select a service to publish to the UDDI registry.

3. From the **Actions** list, select **Publish To UDDI**.


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Jul 11, 2010 1:28:43 PM PDT
SOA Infrastructure Home > Interfaces
Services
References
Actions
View
Publish To UDDI

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.

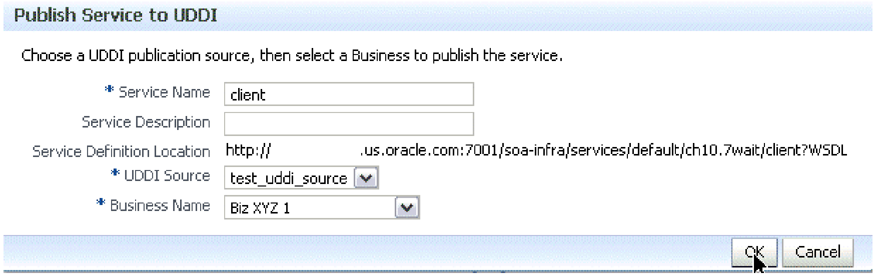
	Type	Composite	Partition	Total Messages	Average Process Time (s
client	Web Service	HelloWorld [1.0]	default	53	0.
client	Web Service	ch7.3assignProp [1.	default	0	0.
client	Web Service	ch10.10exit [1.0]	default	2	0.
client	Web Service	ch10.7wait [1.0]	default	0	0.
client	Web Service	ch12.4compensate2	default	1	0.

The Publish Service to UDDI dialog appears.

4. Enter the following information:

Field	Description
Service Name	Displays the name of the selected service.
Service Description	Enter an optional description of the selected service.
System Definition Location	Displays the WSDL URL to publish to the UDDI registry. For example: `http://myhost.mycompany.com:7001/soa-infra/services/default/HelloWorld/client?WSDL`
UDDI Source	Select the UDDI publishing source from which to register the service.
Business Name	Select a business to publish the service. This is the name of the data structure in the UDDI registry. It is assumed that the business has already been registered in the UDDI registry.

When complete, the Publish Service to UDDI dialog looks similar to the following:



Choose a UDDI publication source, then select a Business to publish the service.

* Service Name	client
Service Description	
Service Definition Location	http:// .us.oracle.com:7001/soa-infra/services/default/ch10.7wait/client?WSDL
* UDDI Source	test_uddi_source
* Business Name	Biz XYZ 1

5. Click **OK**.

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 40, "Configuring Oracle BPMN Process Service Components and Engines"
- Chapter 41, "Monitoring BPMN Process Service Components and Engines"
- Chapter 42, "Managing Oracle BPMN Service Components and Engines"

40

Configuring Oracle BPMN Process Service Components and Engines

The properties you configure are used by the BPMN process service engine during processing of BPMN service components.

This chapter includes the following topics:

- Section 40.1, "Configuring BPMN Process Service Engine Properties"
- Section 40.2, "Integrating Oracle BPM with Oracle Business Activity Monitoring"

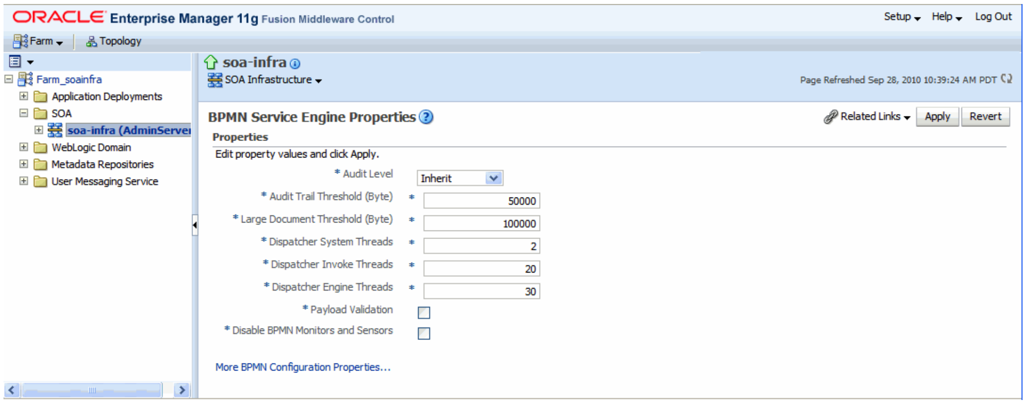
40.1 Configuring BPMN Process Service Engine Properties

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...
1. Select **SOA Administration** > **BPMN Properties**.	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.



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BPMN Service Engine Properties

Properties

Edit property values and click Apply.

* Audit Level	Inherit
* Audit Trail Threshold (Byte)	50000
* Large Document Threshold (Byte)	100000
* Dispatcher System Threads	2
* Dispatcher Invoke Threads	20
* Dispatcher Engine Threads	30
* Payload Validation	☐
* Disable BPMN Monitors and Sensors	☐

2. Make changes to the service engine properties that are appropriate to your environment.

Property	Description
Audit Level	Select one of the following options: ■ **Off**: No logging is performed. Composite instance tracking and payload tracking information are not collected. If measurement is enabled, then this level is overridden to "Minima. ■ **Inherit** (default): Logging is the same as the SOA Infrastructure audit level. This allows 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**: Instance tracking information is collected, but not payload details; no payload details will be available in the flow audit trails. ■ **Production**: Instance tracking information is collected, payload details are collected only for out data associations for asynchronous activities. This level is optimal for most normal operations and testing ■ **Development**: Allows both the composite instance tracking and payload tracking. However it may impact the performance. This level is useful mostly for debugging purposes. **Note:** If you do not want audit entries to be displayed, then you must turn off both the audit level and the metrics. If metrics are enabled, then audit entries are displayed even if the audit level is set to Off.
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 BPMN process component instance before it is stored in a separate table in the dehydration store.
Dispatcher System Threads	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. The default value is `2` threads. Any value less than `1` thread is changed to the default.
Dispatcher Invoke Threads	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. The default value is `20` threads. Any value less than `1` thread is changed to the default.
Dispatcher Engine Threads	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. The default value is `30` threads. Any value less than `1` thread is changed to the default.

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.
Disable BPMN Monitors and Sensors	Select this check box to disable all BPMN monitors and sensors defined for all BPMN components across all deployed SOA composite applications.

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—The expiration time in hours of performance data. This parameter is disabled by default. You can enable it.
    - 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 "CubeTimerMaxErrorCout" times, the cube timer skips the timeout processing for "CubeTimerMaxSkipOnErrorCount" times. It then resumes the normal timeout processing. The time for which the cube timer skips processing can be calculated as CubeTimerMaxErrorCount * CubeUpdateFrequency.

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
- CubeWorkloadExpiration—The expiration time for workload records. It is set to 48 hours by default, which means that if a workload record's age is more than 48 hours, it is purged.

- 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

40.2 Integrating Oracle BPM with Oracle Business Activity Monitoring

When a BPMN composite application is deployed, the following BAM data objects are generated automatically:

- Data object for the following business indicator:

  `TEMPLATE_BI_Partition_Composite_Process`

  Once this is imported, you should rename it to:

  `BI_DEFAULT_`*`Compositename_ProcessName`*

  This is created in target folder. If the data object already exists, only new columns are added, assuming old columns match data types. Otherwise, an error is thrown.
- COMPONENT, INTERVAL, COUNTER data objects if they aren't present in the target folder

The target BAM server is specified by JNDI name parameter.

> **Note:** Data objects can be created only automatically at deployment. You cannot create them manually.

To configure Oracle BPM for use with Oracle Business Activity Monitoring, you perform these tasks:

- Task 1: Configure the BAM Adapter on Oracle BPM Server
- Task 2: Enable BAM on the Oracle BPM Server

40.2.1 Task 1: Configure the BAM Adapter on Oracle BPM Server

You must configure the BAM Adapter to use either SOAP or RMI for communicating with BAM.

To configure the BAM adapter on Oracle BPM server:

1. In the Oracle WebLogic Server console, under Domain Structure, click **Deployments**.
2. Click **OracleBAMAdapter**, then click **Configuration**, then click **Outbound Connection Pools**.
3. Expand oracle.bam.adapter.adc.soap.SOAPConnectionFactory.
4. Click either `eis/bam/soap` or `eis/bam/rmi`.

   The JNDI name used to configure the BAM adapter is used. For example, if you configureD the BAM adapter to use SOAP, then the default JNDI name is `eis/bam/soap`. Similarly, if you configure the BAM adapter to use RMI, then the default JNDI name is `eis/bam/rmi`.

5. Modify properties to match the BAM Server. (Remember to press **Enter** after text entry).
6. Click **Save**.
7. Select the location for the deployment plan—for example, `bam/Plan.xml`, then complete the dialogs.
8. Return to **Deployments**.
9. Select OracleBAMAdapter.
10. Click **Update** and complete the dialogs.

For more information about integrating Oracle Business Activity Monitoring with Oracle SOA Suite composite applications, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

40.2.2 Task 2: Enable BAM on the Oracle BPM Server

To do this, you use the Oracle Fusion Middleware Control console.

To enable BAM on the Oracle BPM server:

1. In the Oracle Fusion Middleware Control console, under WebLogic Domain, select your domain and server.
2. Go to System MBean Browser.
3. Select **oracle.as.soainfra.config**, then **Server**, then **BPMNConfig**, then **bpmn**.
4. Go to **Disable Actions**. If you find BAMAction there, then clear the field.
5. Click **Apply**.

41

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 41.1, "Viewing the Audit Trail and Process Flow of a BPMN Process Service Component"
- Section 41.2, "Monitoring BPMN Process Service Component Instances and Faults"
- Section 41.3, "Monitoring BPMN Process Service Component Instances"
- Section 41.4, "Monitoring BPMN Process Service Engine Instances and Faults"
- Section 41.5, "Monitoring BPMN Process Service Engine Request and Thread Statistics"
- Section 41.6, "Monitoring BPMN Process Service Engine Instances"
- Section 41.7, "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"

41.1 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.
- When several messages are thrown in a short interval, they are not processed in the same order as they were sent. This can be apparent when you are examining the audit trail of a process instance.

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**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Under **soa-infra**, 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.

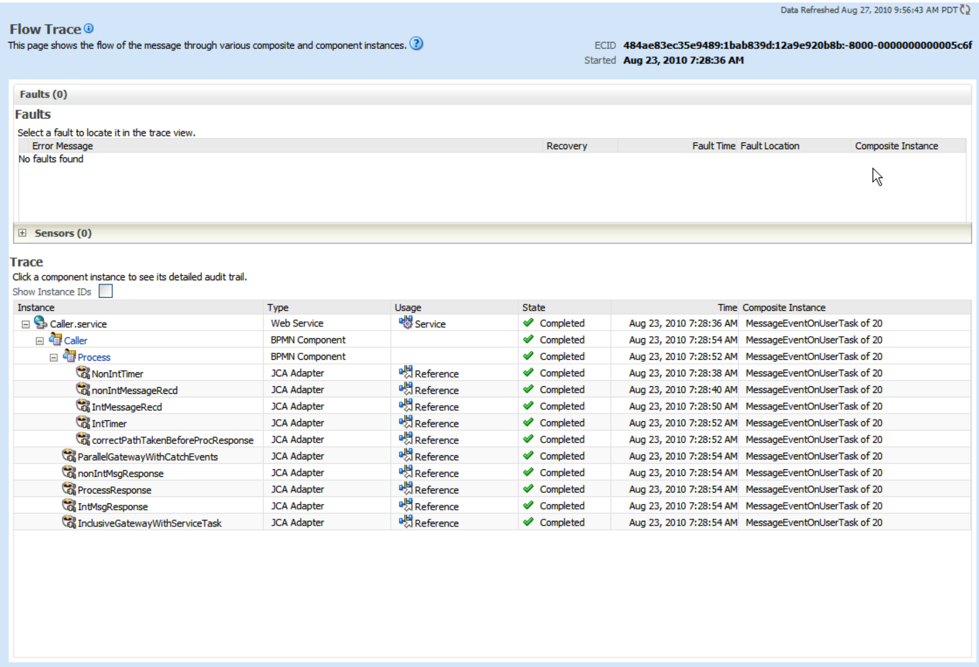
   The Flow Trace page displays the following details:

   - 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.



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Flow Trace

This page shows the flow of the message through various composite and component instances.

ECID **484ae83ec35e9489:1bab839d:12a9e920b8b:-8000-000000000005c6f**

Started **Aug 23, 2010 7:28:36 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
⊟ Caller.service	Web Service	Service	✓ Completed	Aug 23, 2010 7:28:36 AM	MessageEventOnUserTask of 20
⊟ Caller	BPMN Component		✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20
⊟ Process	BPMN Component		✓ Completed	Aug 23, 2010 7:28:52 AM	MessageEventOnUserTask of 20
NonIntTimer	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:38 AM	MessageEventOnUserTask of 20
nonIntMessageRecd	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:40 AM	MessageEventOnUserTask of 20
IntMessageRecd	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:50 AM	MessageEventOnUserTask of 20
IntTimer	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:52 AM	MessageEventOnUserTask of 20
correctPathTakenBeforeProcResponse	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:52 AM	MessageEventOnUserTask of 20
ParallelGatewayWithCatchEvents	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20
nonIntMsgResponse	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20
ProcessResponse	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20
IntMsgResponse	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20
InclusiveGatewayWithServiceTask	JCA Adapter	Reference	✓ Completed	Aug 23, 2010 7:28:54 AM	MessageEventOnUserTask of 20

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.

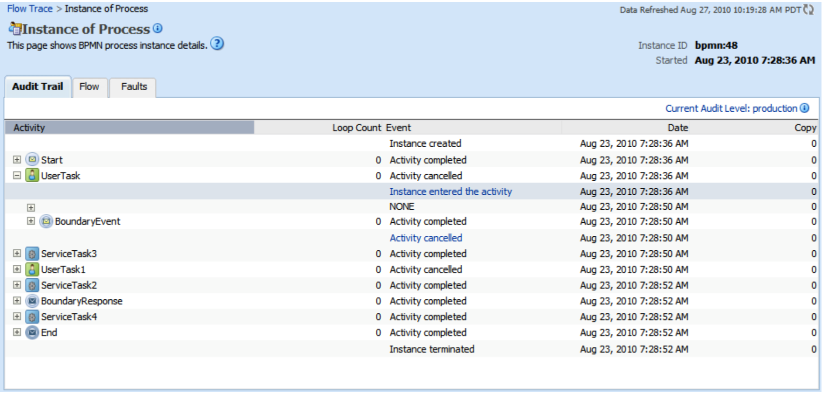
4. Close the fault to clear the selection in the **Trace** section.
5. Expand the **Sensors** section to display composite sensors.
6. Select a sensor in the **Sensors** section.

   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, as shown in Figure 41–1.

Figure 41–1 Instance Page



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Instance of Process

This page shows BPMN process instance details.

Instance ID bpmn:48

Started Aug 23, 2010 7:28:36 AM

Current Audit Level: production

Activity	Loop Count	Event	Date	Copy
		Instance created	Aug 23, 2010 7:28:36 AM	0
Start	0	Activity completed	Aug 23, 2010 7:28:36 AM	0
UserTask	0	Activity cancelled	Aug 23, 2010 7:28:36 AM	0
		Instance entered the activity	Aug 23, 2010 7:28:36 AM	0
		NONE	Aug 23, 2010 7:28:50 AM	0
BoundaryEvent	0	Activity completed	Aug 23, 2010 7:28:50 AM	0
		Activity cancelled	Aug 23, 2010 7:28:50 AM	0
ServiceTask3	0	Activity completed	Aug 23, 2010 7:28:50 AM	0
UserTask1	0	Activity cancelled	Aug 23, 2010 7:28:50 AM	0
ServiceTask2	0	Activity completed	Aug 23, 2010 7:28:52 AM	0
BoundaryResponse	0	Activity completed	Aug 23, 2010 7:28:52 AM	0
ServiceTask4	0	Activity completed	Aug 23, 2010 7:28:52 AM	0
End	0	Activity completed	Aug 23, 2010 7:28:52 AM	0
		Instance terminated	Aug 23, 2010 7:28:52 AM	0

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.
- **Current Audit Level**: Click to display information details, such as the audit level used by this instance.

When you first open the Instance page, the **Audit Trail** page is displayed by default. It provides execution details about the activities in the BPMN process.

Table 41–1 Audit Trail Page

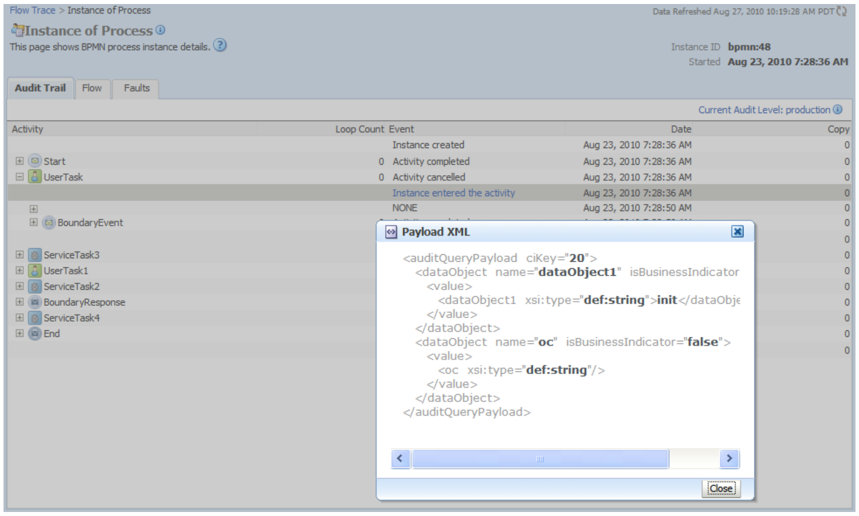
Column	Description
Activity	lists all the BPM constructs available in a process in the order they are executed. These include: ■ Events: start, end, signal, throw, catch message ■ Activities: user task, business rules task, service task, call activity, sub-process ■ Gateways: inclusive, exclusive, parallel, event based, and complex
Loop Count Event	If the activity referred to in a row of audit trail table is a subprocess with the loop characteristic set to either Loop or Multi-instance, this column shows the value of the `loopCounter` variable
Event	When any BPMN construct executes, audit is logged twice: once when it enters that activity, and once when it leaves that activity to move to next activity. If the node is collapsed, it shows you whether the activity is completed, processing, or cancelled.
Date	Time stamp showing when the item was posted

Table 41–1 (Cont.) Audit Trail Page

Column	Description
Copy	If some activities are executed simultaneously—for example, on different paths in a parallel gateway—the copy keeps the number of threads used for this purpose.

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. Figure 41–2 shows the Payload XML page that appears when you click a payload link. This page shows the value of data objects which had out data association at that particular point in the process.

Figure 41–2 Payload XML Page



Flow Trace > Instance of Process

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Instance of Process

This page shows BPMN process instance details.

Instance ID **bpmn:48**

Started **Aug 23, 2010 7:28:36 AM**

Current Audit Level: production

Activity	Loop Count	Event	Date	Copy
		Instance created	Aug 23, 2010 7:28:36 AM	0
Start	0	Activity completed	Aug 23, 2010 7:28:36 AM	0
UserTask	0	Activity cancelled	Aug 23, 2010 7:28:36 AM	0
		Instance entered the activity	Aug 23, 2010 7:28:36 AM	0
		NONE	Aug 23, 2010 7:28:50 AM	0
BoundaryEvent				0
				0
ServiceTask3				0
UserTask1				0
ServiceTask2				0
BoundaryResponse				0
ServiceTask4				0
End				0
				0

Payload XML

```
<auditQueryPayload  ciKey="20">
  <dataObject  name="dataObject1"  isBusinessIndicator
    <value>
      <dataObject1  xsi:type="def:string">init</dataObje
    </value>
  </dataObject>
  <dataObject  name="oc"  isBusinessIndicator="false">
    <value>
      <oc  xsi:type="def:string"/>
    </value>
  </dataObject>
</auditQueryPayload>
```

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.

41.2 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.

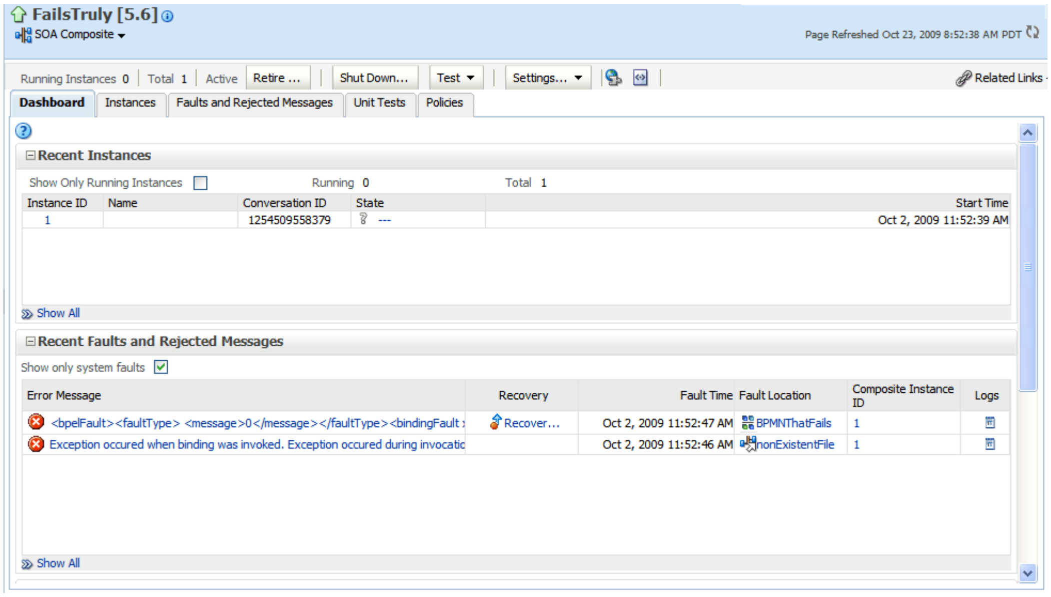
To monitor BPMN process service component instances and faults:

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**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	1. Under **soa-infra**, select a specific SOA composite application.

2. In the **Component Metrics** section, select the BPMN process service component.

3. Click **Dashboard**.



Instance ID	Name	Conversation ID	State	Start Time
1		1254509558379	---	Oct 2, 2009 11:52:39 AM

Error Message	Recovery	Fault Time	Fault Location	Composite Instance ID	Logs
<bpelFault><faultType> <message>0</message></faultType><bindingFault	Recover...	Oct 2, 2009 11:52:47 AM	BPMNThatFails	1	
Exception occured when binding was invoked. Exception occured 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."

41.3 Monitoring BPMN Process Service Component Instances

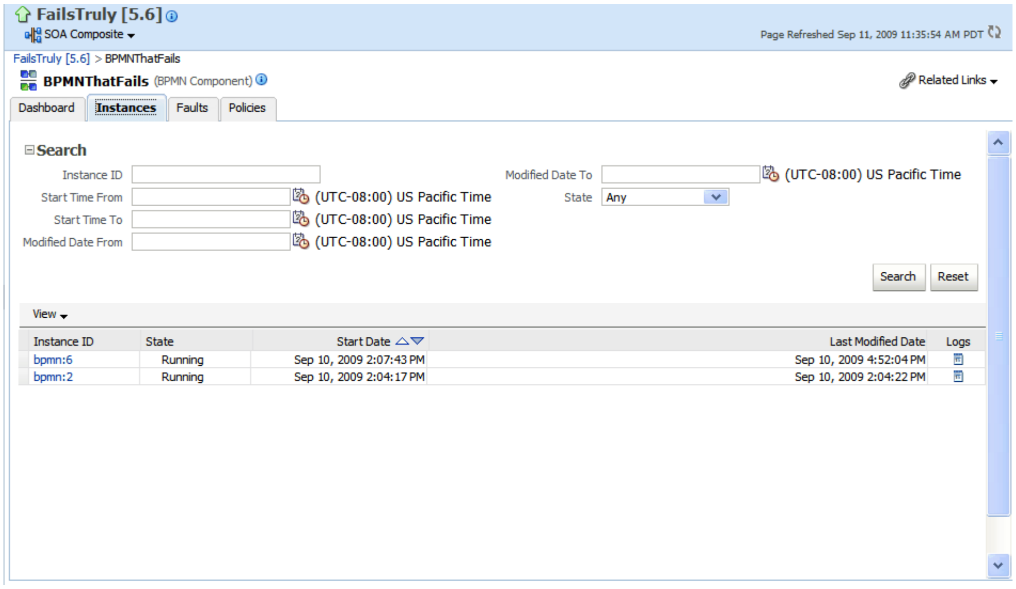
You can monitor BPMN process service component instances. Each service component has its own unique instance ID. This ID is in addition to the instance ID of the overall SOA composite application of which this service component is a part.

To monitor BPMN process service component instances:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.



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."

41.4 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.

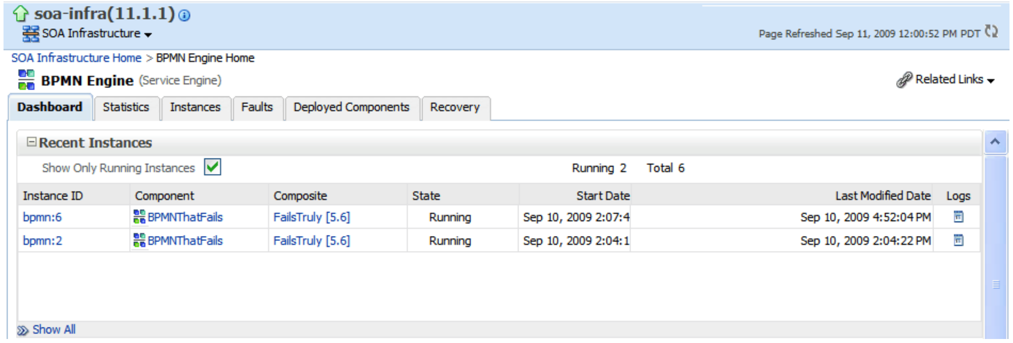
To monitor BPMN process service engine instances and faults:

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 41–3 shows the upper half of the Dashboard page.

Figure 41–3 Dashboard Page: Upper Half



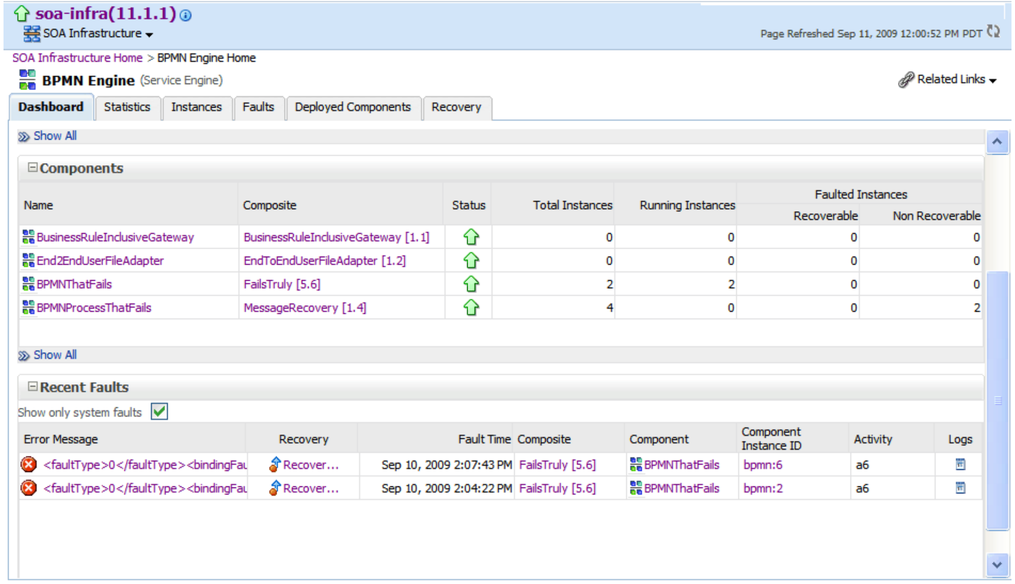
Show Only Running Instances ☑ Running 2 Total 6

Instance ID	Component	Composite	State	Start Date	Last Modified Date	Logs
bpmn:6	BPMNThatFails	FailsTruly [5.6]	Running	Sep 10, 2009 2:07:4	Sep 10, 2009 4:52:04 PM	▤
bpmn: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 41–4 shows the lower half of the Dashboard page.

Figure 41–4 Dashboard Page: Lower Half



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
BPMNThatFails	FailsTruly [5.6]	⇧	2	2	0	0
BPMNProcessThatFails	MessageRecovery [1.4]	⇧	4	0	0	2

Show only system faults ☑

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Activity	Logs
⊗ <faultType>0</faultType><bindingFau	Recover...	Sep 10, 2009 2:07:43 PM	FailsTruly [5.6]	BPMNThatFails	bpmn:6	a6	▤
⊗ <faultType>0</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."

41.5 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.

41.6 Monitoring BPMN Process Service Engine Instances

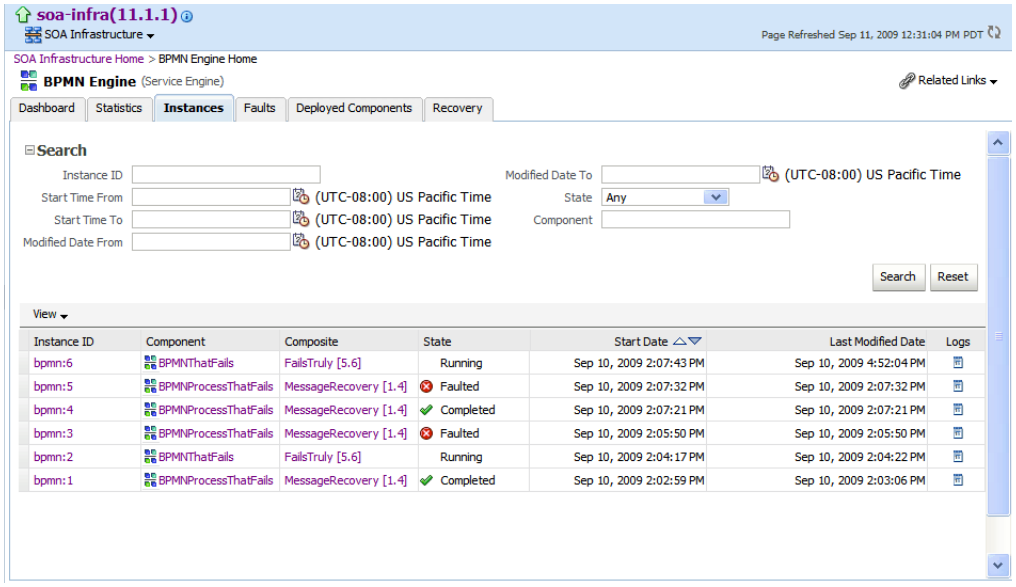
You can monitor all BPMN process service component instances running in the service engine. These BPMN process service components can be part of separate SOA composite applications.

To monitor BPMN process service engine instances:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Service Engines** > **BPMN**.	**1.** Right-click **soa-infra**. **2.** Select **Service Engines** > **BPMN**.

2. Click **Instances**.



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: Any

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."

41.7 Monitoring Deployed BPMN Processes in the Service Engine

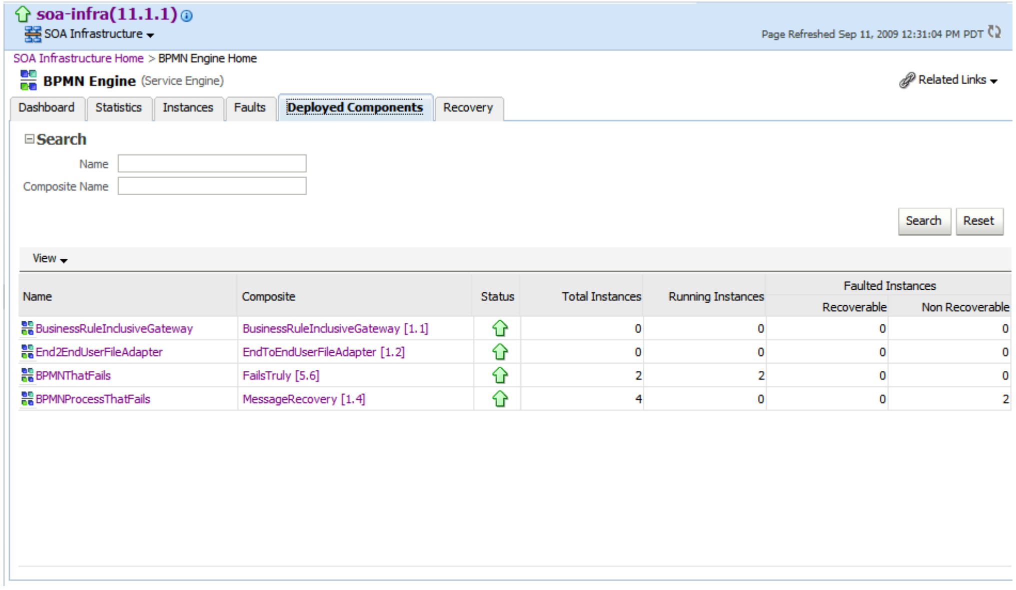
You can monitor all deployed SOA composite applications with BPMN process service components running in the service engine.

To monitor deployed BPMN processes in service engines:

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

From the SOA Infrastructure Menu...	From the SOA Folder in the Navigator...
1. Select **Service Engines** > **BPMN**.	1. Right-click **soa-infra**. 2. Select **Service Engines** > **BPMN**.

2. Click **Deployed Components**.



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
BPMNThatFails	FailsTruly [5.6]	⇧	2	2	0	0
BPMNProcessThatFails	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.

42

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 42.1, "Recovering from BPMN Process Service Component Faults"
- Section 42.2, "Managing BPMN Process Service Component Policies"
- Section 42.3, "Recovering from BPMN Process Service Engine Faults"
- Section 42.4, "Performing BPMN Process Service Engine Message Recovery"

42.1 Recovering from BPMN Process Service Component Faults

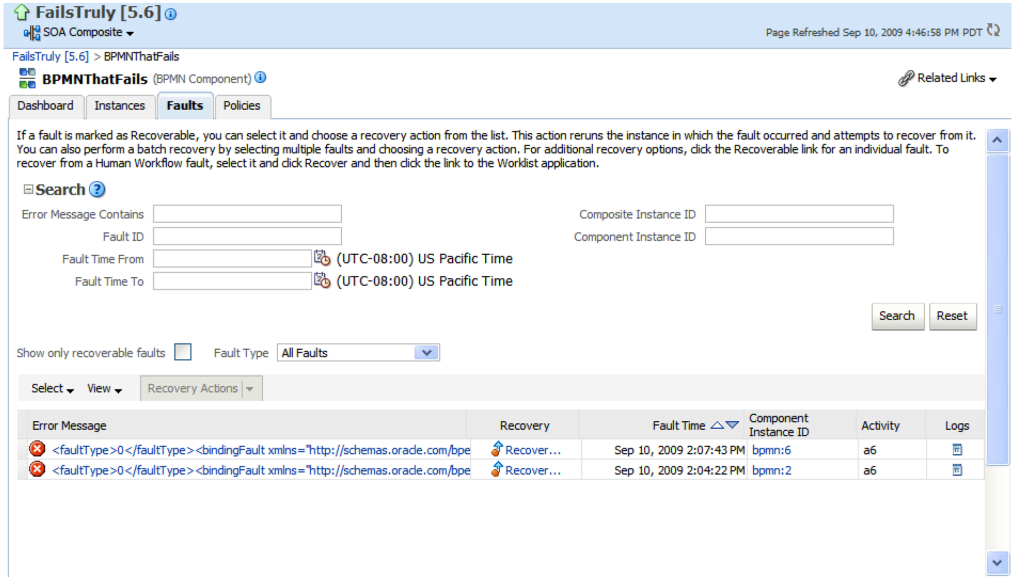
You can monitor and perform individual and bulk fault recoveries for BPMN process service components that are identified as recoverable. For BPMN process faults to be identified as recoverable, there must be a fault policy defined that is bound to the fault (through the `fault-bindings.xml` file) and 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...	From the SOA Folder in the Navigator...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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.**



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.

Error Message	Recovery	Fault Time	Component Instance ID	Activity	Logs
<faultType>0</faultType><bindingFault xmlns="http://schemas.oracle.com/bpe	Recover...	Sep 10, 2009 2:07:43 PM	bpmn:6	a6	
<faultType>0</faultType><bindingFault xmlns="http://schemas.oracle.com/bpe	Recover...	Sep 10, 2009 2:04:22 PM	bpmn:2	a6	

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	There are three options from which to choose for single-fault recovery: 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	There are two options from which to choose for bulk-fault recovery: 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 *not* 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	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*

42.2 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 Application Server Web Services Security Guide* 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...
1. Select **Home**. 2. Select the **Deployed Composites** tab. 3. In the **Composite** section, select a specific SOA composite application.	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 Application Server Web Services Security Guide* for definitions of available policies and details about which ones to use for your environment

42.3 Recovering from BPMN Process Service Engine Faults

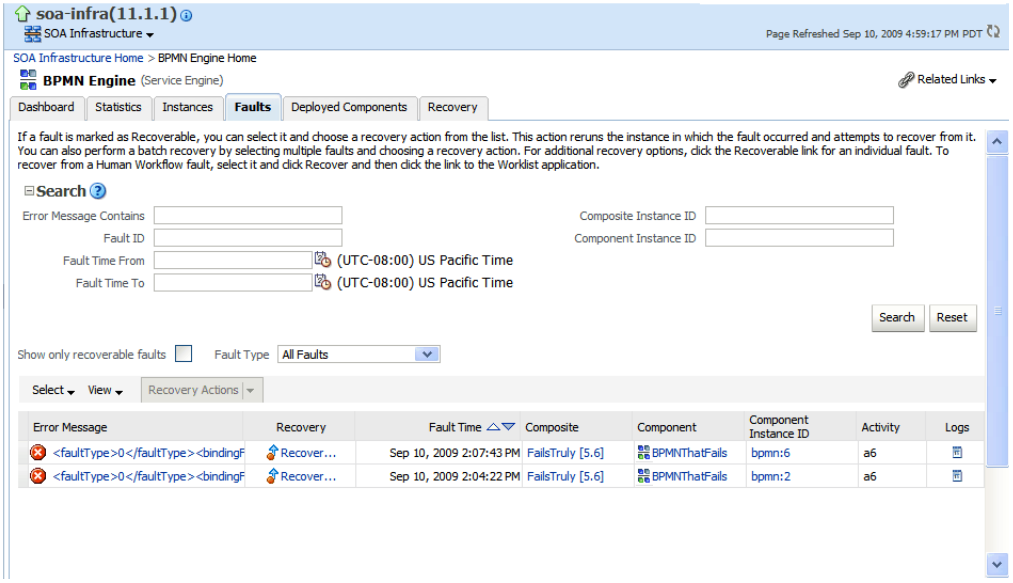
You can monitor and perform individual and bulk recoveries of faults occurring in BPMN process service engines that are identified as recoverable. All BPMN process service component faults, regardless of the SOA composite application instance of which they are a part, can be viewed in the BPMN process 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...	From the SOA Folder in the Navigator...
1. Select **Service Engines** > **BPMN**.	1. Right-click **soa-infra**. 2. Select **Service Engines** > **BPMN**.

2. Select the **Faults** tab.



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.

Error Message	Recovery	Fault Time	Composite	Component	Component Instance ID	Activity	Logs
<faultType>0</faultType><bindingF	Recover...	Sep 10, 2009 2:07:43 PM	FailsTruly [5.6]	BPMNThatFails	bpmn:6	a6	
<faultType>0</faultType><bindingF	Recover...	Sep 10, 2009 2:04:22 PM	FailsTruly [5.6]	BPMNThatFails	bpmn:2	a6	

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 42.1, "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"

42.4 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.

> **Note:** If you encounter the error message "ORA-01000: maximum open cursors exceeded", then do the following:
>
> 1. Shut down the Oracle database.
> 2. Increase the value of OPEN_CURSORS to 1500.
> 3. Restart the Oracle database.

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. If an asynchronous BPMN 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 BPMN 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 BPMN 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.

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"

A

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.

> **Note:** You must run the script for seeding the user demo community locally from within a domain, and not remotely.

A.2 Users

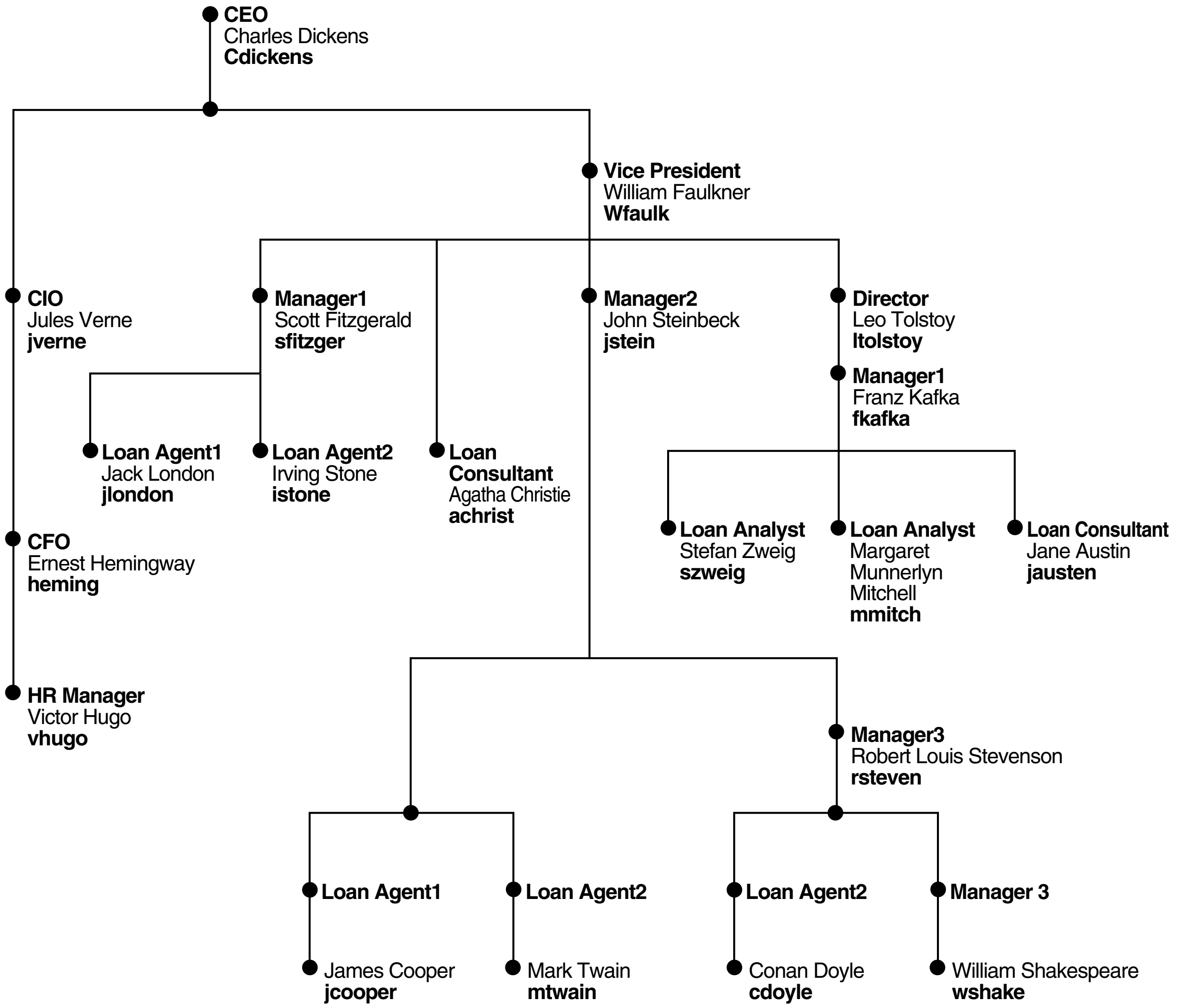
Table A–1 lists the users in the demo community.

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	ltolstoy	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	ltolstoy	Leo	Tolstoy	Director	wfaulk	ltolsoy@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	jlondon, wshake, LoanAnalyticGroup, jcooper, istone, cdoyle, mtwain	szweig, jlondon, 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
SOAAdmin	Administrators	Administrators	BPMWorkflowAdmin	BPMWorkflowCustomize BPMWorkflowAdmin
BPMWorkflowAdmin	SOAAdmin, demoadmin	SOAAdmin, demoadmin, Administrators	BPMWorkflowCustomize	BPMWorkflowCustomize
BPMWorkflowCustomize	LoanAnalyticGroup, BPMWorkflowAdmin	szweig, LoanAnalyticGroup, SOAAdmin, 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	BPMWorkflowCustomizeDemoApp/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
workflow.mapping.publicFlexField	BPMWorkflowAdmin, BPMWorkflowCustomize
workflow.mapping.protectedFlexField	BPMWorkflowAdmin
workflow.admin	BPMWorkflowAdmin
workflow.admin.evidenceStore	BPMWorkflowAdmin

B

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, "Specifying the Proxy Server"
- Section B.3, "Optimizing the Loading of Pages with Instance and Fault Metrics"
- Section B.4, "Resolving Message Failure Caused By Too Many Open Files"
- Section B.5, "Extending Tablespaces to Avoid Problems at Run Time"
- Section B.6, "Resolving Connection Timeouts"
- Section B.7, "Updating the EJB Transaction Timeout Value in the Deployment Archive After SOA Infrastructure Failure"
- Section B.8, "Increasing Database Connection Values"
- Section B.9, "Resolving MaxMessageSizeExceededException Errors Caused By Large Payloads"
- Section B.10, "Accessing Oracle Enterprise Manager Fusion Middleware Control Console on Dual Stack Hosts that Support IPv4 and IPv6"
- Section B.11, "Limitation on Using the Safari Browser to View WSDL File Content"
- Section B.12, "Flow Diagram Does Not Display The First Time on Some Lower End Hosts"

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 and Oracle Business Process Management Suite*.

B.2 Specifying the Proxy Server

To use system properties to specify the proxy server, write your client application in the standard way, and then specify Java system properties when you execute the client application.

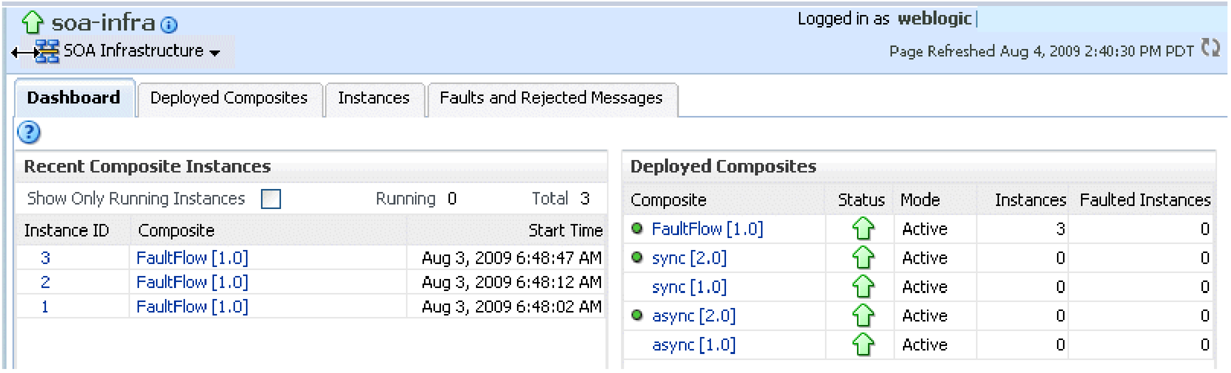
```
setenv PROXY_SETTINGS "-DproxySet=true
-Dhttp.proxyHost=www-myproxy.us.mycompany.com -Dhttp.proxyPort=80
 -Dhttp.nonProxyHosts=localhost|*.us.mycompany.com
  |0:0:0:0:0:0:0:1|fe80:0:0:0:250:56ff:fe31"
```

Note: When you specify values for proxy properties such as `http.proxyHost` and `http.proxyPort`, also specify the `http.nonProxyHosts` property.

B.3 Optimizing the Loading of Pages with Instance and Fault Metrics

Since production systems can include numerous composite instances and faults, there is a possibility of time-outs 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.



Recent Composite Instances

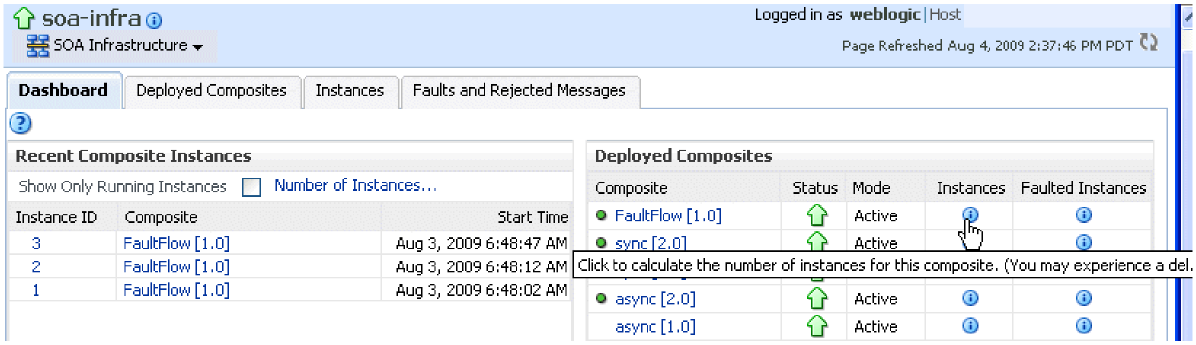
Show Only Running Instances ☐ Running 0 Total 3

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

Deployed Composites

Composite	Status	Mode	Instances	Faulted Instances
● FaultFlow [1.0]	⇧	Active	3	0
● sync [2.0]	⇧	Active	0	0
sync [1.0]	⇧	Active	0	0
● async [2.0]	⇧	Active	0	0
async [1.0]	⇧	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.


soa-infra
SOA Infrastructure
Logged in as weblogic | Host
Page Refreshed Aug 4, 2009 2:37:46 PM PDT
Dashboard
Deployed Composites
Instances
Faults and Rejected Messages

Recent Composite Instances

Show Only Running Instances ☐ Number of Instances...

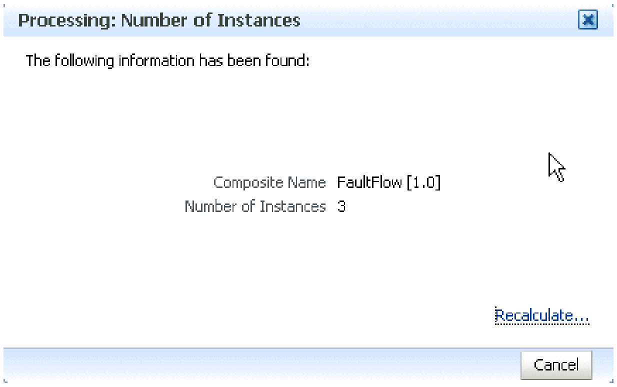
Instance ID	Composite	Start Time
3	FaultFlow [1.0]	Aug 3, 2009 6:48:47 AM
2	FaultFlow [1.0]	Aug 3, 2009 6:48:12 AM
1	FaultFlow [1.0]	Aug 3, 2009 6:48:02 AM

Deployed Composites

Composite	Status	Mode	Instances	Faulted Instances
● FaultFlow [1.0]	⇧	Active	ⓘ	ⓘ
● sync [2.0]	⇧	Active		ⓘ
● async [2.0]	⇧	Active	ⓘ	ⓘ
async [1.0]	⇧	Active	ⓘ	ⓘ

Click to calculate the number of instances for this composite. (You may experience a del.

The values are calculated for the link you selected. When the calculation is complete, a message displays the total values.


Processing: Number of Instances

The following information has been found:

Composite Name FaultFlow [1.0]
Number of Instances 3

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.6, "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.4 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.5 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.6 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.7 Updating the EJB Transaction Timeout Value in the Deployment Archive After SOA Infrastructure Failure

Updating the transaction time out value for the **FacadeFinderBean** property in Oracle WebLogic Server Administration Console under **Deployments** > **expanded SOA Infrastructure Application** > **FacadeFinderBean** > **Configuration tab** can result in the following error after restarting the SOA Infrastructure:

```
java.lang.IllegalArgumentException: Cannot convert value of type [$Proxy223
implementing
 oracle.bpel.services.workflow.verification.IVerificationService,org.springframe
work.aop.SpringProxy,org.springframework.aop.framework.Advised]
to required type
[oracle.bpel.services.workflow.verification.IVerificationService] for
property 'verificationService': no matching editors or conversion strategy found
Message icon - Warning Errors were encountered while performing this operation.
```

The SOA Infrastructure status is also displayed as failed.

This error is not specific to **FacadeFinderBean**; it also applies to any EJB that is part of the SOA Infrastructure application.

To resolve this error, you must manually modify the transaction timeout setting in your deployment archive.

To update the transaction timeout setting:

1. Open the `fabric-ejb.jar` file in your deployment archive.
2. Increase the transaction timeout value in the `META-INF/weblogic-ejb-jar.xml` file to a larger value.
3. Rejar the file.
4. Restart the managed server that includes the SOA Infrastructure by following the instructions in Section 3.2, "Stopping and Starting the Managed Server and SOA Infrastructure."

Note: This issue may also occur while updating any EJBs deployed as part of the SOA Infrastructure application. If this issue occurs, you must update the corresponding contained JAR file for those EJBs in a similar fashion.

B.8 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.9 Resolving MaxMessageSizeExceededException Errors Caused By Large Payloads

If you provide a large payload (for example, 12 MB) to your deployed SOA composite application, then click **View XML Document** in the audit trail to view the payload, you can encounter `MaxMessageSizeExceededException` errors. This error can be resolved by setting the following JVM parameter.

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 `weblogic.MaxMessageSize` property with the following value:

```
EXTRA_JAVA_PROPERTIES="${EXTRA_JAVA_PROPERTIES}
-Dweblogic.MaxMessageSize=20000000"
export EXTRA_JAVA_PROPERTIES
```

3. Restart the server.

B.10 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 etc/hosts File as Follows....
On the IPv4 client:	*`xx.xxx.xxx.xxx`* `myhost10-ipv6` where *`xx.xxx.xxx.xxx`* is the IP address of IPv6.
On the IPv6 client	`fdf5:74cc:db0a::0:1  myhost10-ipv6 myhost10-ipv6.us.oracle.com` **Note**: Replace `fdf5:74cc:db0a::0:1` with a value appropriate to your host environment.

B.11 Limitation on Using the Safari Browser to View WSDL File Content

If you are using the Safari browser, note the following limitation and workaround for viewing WSDL file contents in Oracle Enterprise Manager Fusion Middleware Control Console. Note also that Mozilla Firefox works correctly and does not require this workaround.

1. Go to the home page for a SOA composite application.
2. Click the **Show WSDL and endpoint URI** link at the top of the page.
3. Click the WSDL link that is displayed.

   This opens a blank page that does *not* display the contents of the selected WSDL.

   As a workaround, perform the following additional steps.
4. In the upper right corner of this page, click the **Display a menu for the current page** icon.
5. Select **View Source** from the menu that is displayed.

   This displays the contents of the selected WSDL in another page.

B.12 Flow Diagram Does Not Display The First Time on Some Lower End Hosts

The flow diagram for an instance ID of a deployed SOA composite application in Oracle Enterprise Manager Fusion Middleware Control Console may not display the first time on some lower end hosts. Instead, you receive a `failed to load resource` message.

As a workaround, close the flow trace page and click the instance ID to return to the flow trace page.

C

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 topic:

- Section C.1, "Roles and Privileges"

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

Table C–1 (Cont.) Role Functionality Matrix

Actions	Monitor	Operator	Administrator
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
■ Start/stop (SOA Infrastructure)	Operator	No	Yes	Yes
■ Activate/retire	Operator	No	Yes	Yes
■ Deployment options	Operator	No	Yes	Yes
■ Set as default	Operator	No	Yes	Yes
View **Instances** tab	Monitor	Yes	Yes	Yes
■ Delete options (all)	Administrator	No	No	Yes
■ 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
■ Recovery actions	Operator	No	Yes	Yes
■ Delete rejected messages	Administrator	No	No	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
■ Test composite service action	Operator	No	Yes	Yes
■ Activate/retire action	Operator	No	Yes	Yes
■ Start/stop action	Operator	No	Yes	Yes
■ Property changes (settings)	Operator	No	Yes	Yes
View **Instances** tab	Monitor	Yes	Yes	Yes
■ 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
■ 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
■ 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
■ Send notifications	Administrator	No	No	Yes
Configuration (Properties page)	Monitor	Yes	Yes	Yes
■ **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

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