

Practices for Lesson 12: The User Messaging Service

Chapter 12

Practices for Lesson 12

Practices Overview

In this practice, you perform the following tasks:

- Configure the email driver to enable the user messaging service
- Deploy a pair of applications. The first is a composite application, which includes a BPEL process that invokes both a human task activity and an email activity. Each of these activities uses the user messaging service to send emails. The second application is an ADF task form that allows the human task participant to examine an incoming order, and to either approve or reject the order.
- Instantiate the composite application, complete the human task, and access the emails generated by the application

Practice 12-1: Configuring the Email Driver

Overview

In this practice, you enable email notifications to work in the SOA Server for Human Tasks and BPEL Email notification.

Note: The Email Driver sends and receives messages. It supports all relevant email protocols, SMTP for sending emails, and IMAP and POP3 for receiving emails, to be able to communicate with every standard mail server. Support is implemented for enabling the security protocols, TLS or SSL, to protect email contents on the wire. The Email Driver uses JavaMail v1.4, which is the standard Java component that implements the required protocols and clients, to create, access, send, and receive emails. The Email Driver uses a multi-threaded design to be able to poll multiple mail boxes (over IMAP or POP3 protocol). One limitation is that if there is only one mail box to poll, this leads to only one thread working on that box.

Assumptions

- None

Tasks

1. Seed the LDAP server.
 - a. Open a Terminal window and execute the following commands:

```
$ cd /practices/practice12/ldap
$ /practices/scripts/ldapadd.sh new_groups.ldif
Password: ldap-admin-password (Refer to the course password document.)
$ /practices/scripts/ldapadd.sh new_users.ldif
Password: ldap-admin-password (Refer to the course password document.)
```
2. Update the workflow notification email addresses.
 - a. Access Enterprise Manager.
 - b. In the Target Navigation pane, expand the SOA folder. Right-click soa-infra and select SOA Administration > Workflow Properties.
 - c. On the Workflow Notification Properties page, set the following values:

Notification Mode	ALL
Email: From Address	demoadmin@example.com
Email: Actionable Address	demoadmin@example.com
Email: Reply To Address	no.reply@yourdomain.com (default)

- d. Verify your work and click Apply.

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

Workflow Notification Properties

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

* Notification Mode

Notification Service

* Email : From Address

* Email : Actionable Address

* Email : Reply To Address

[More Workflow Notification Configuration Properties...](#)

- e. In the Confirmation window, click Yes.
- f. On the SOA Infrastructure > Workflow Notification Properties page, verify that you get a confirmation that the changes have been applied.

Changes have been applied.

- 3. Configure the email driver.
- a. Click the "Go to the Messaging Driver page" link.

[Go to the Messaging Driver page](#)

- b. On the **usermessagingserver** page, under Associated Drivers in the Local tabbed page, click the **Configure Driver** icon in the row for User Messaging Email Driver.

Associated Drivers		Driver Type	Cluster Name	Status	Configuration Level	Configure Driver
Local	All					
ame	domain_edg_domain/edg_domain/soa_server1/usermessagingdriver-email	User Messaging Email Driver	soa_cluster1		Unconfigured	

- c. In the Email Driver Properties pane, click Create.
- d. In the Common Configuration section, name the configuration `soaEmail`.
- e. In the Driver-Specific Configuration section, set the following field values:

E-Mail Receiving Protocol	POP3
Outgoing Mail Server	mail.example.com

Outgoing Mail Server Port	25 [This is the default.]
Default From Address	demoadmin@example.com
Incoming Mail Server	mail.example.com
Incoming Mail Server Port	110
Incoming Mail IDs	demoadmin@example.com
Incoming User IDs	demoadmin

- f. For the Incoming Passwords field, set the following:
 - Type of Password: **Indirect Password, Create New User [default]**
 - Indirect Username/Key: **demoadmin**
 - Password: *<see the course password document for the password for the demoadmin user>*
- g. Click OK.
- h. Verify that you receive a confirmation that the operation succeeded.

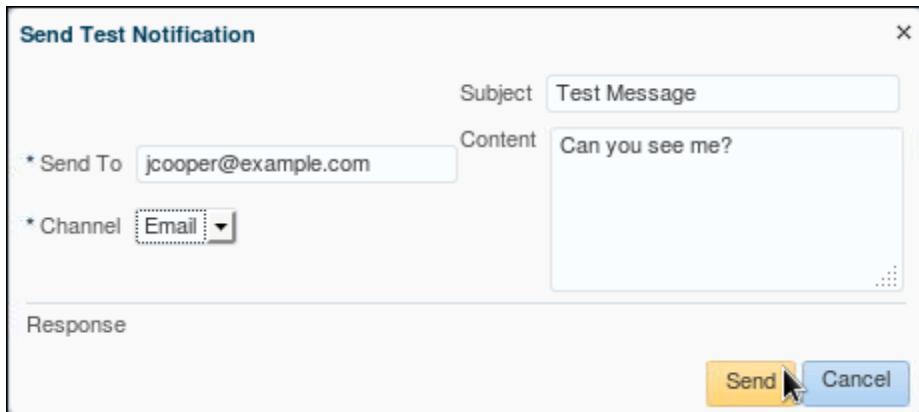


The screenshot shows the Oracle Enterprise Manager interface for the User Messaging Service. The top navigation bar includes 'usermessagingserver' and a help icon. Below the bar, a sub-navigation bar shows 'User Messaging Service'. The main content area has a yellow header bar with a green checkmark icon and the text 'Confirmation'. Below this, a message says 'Operation succeeded.' The main panel is titled 'Email Driver Properties' and contains a sub-header: 'The email driver supports multiple configurations, both at domain and cluster levels. Create'. Below this is a table with the following data:

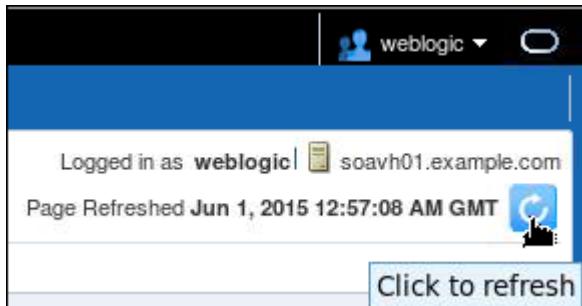
Email Driver Properties		
Name	Driver Type	Configuration Level
soaEmail	email	Cluster: soa_cluster1

Testing Your Changes

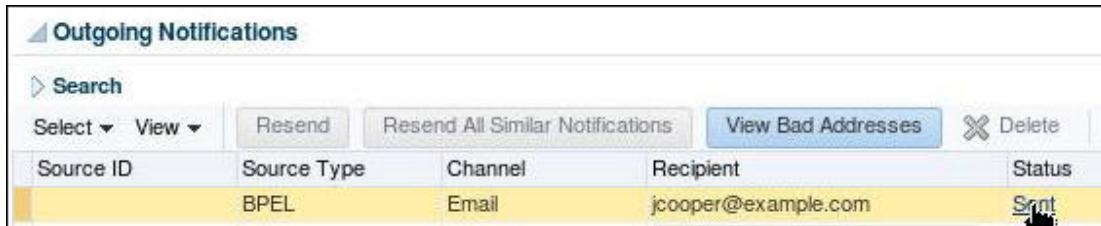
4. Stop and restart soa_cluster1 to cause your changes to take effect.
5. Test the email driver.
 - a. In the Enterprise Manager Target Navigation pane, right-click soa-infra and select Service Engines > Human Workflow.
 - b. On the Human Workflow Engine page, click the Notification Management tab.
 - c. Click Send Test Notification.
 - d. In the Send Test Notification dialog box, supply the following values:
 - Send To: jcooper@example.com
 - Subject: Test Message
 - Content: Can you see me?
 - Channel: Email
 - e. Verify your settings and click Send.



- f. The response SENT is displayed in the lower-left section of the Send Test Notification pane.
- 6. Review the sent message status.
 - a. Refresh the Notification Management page.



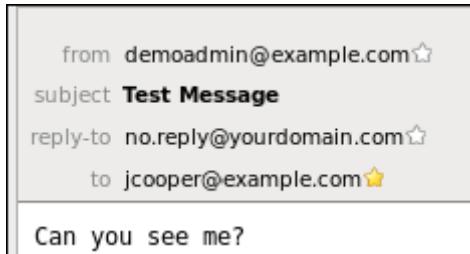
- b. In the Outgoing Notifications section, click the Sent link of the top-most message.



The Status Description dialog box is displayed.



- 7. View the email message that was sent to jcooper.
 - a. Right-click the Thunderbird desktop icon on your desktop and select Open.
 - b. In the Thunderbird window, in the All Folders pane, click the jcooper@example.com account name.
 - c. Click Get Mail on the Thunderbird toolbar.
 - An email appears in the inbox.
 - d. In the Inbox, click the email to see the message body.



- e. Close or minimize Thunderbird.

Practice 12-2: Deploying the Composite Application

1. Deploy the Approval application from a script.
 - a. In a Terminal window, enter the following commands:

```
$ cd /practices/practice12/scripts
$ ./antDeploy.sh
```
 - b. Provide the `weblogic` username and password when prompted.
The script deploys the application.

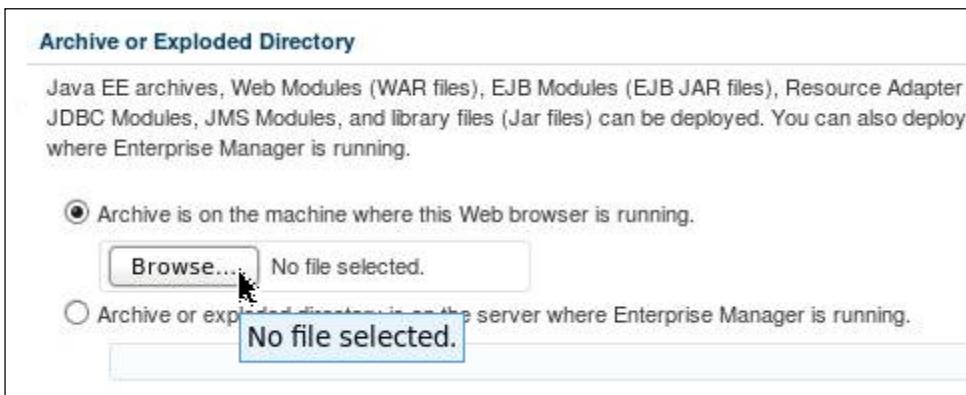
```
[deployComposite] ---->Composite deployment produced 0 warning/severe messages
[deployComposite] ---->Deploying composite success.

BUILD SUCCESSFUL
Total time: 15 seconds
```

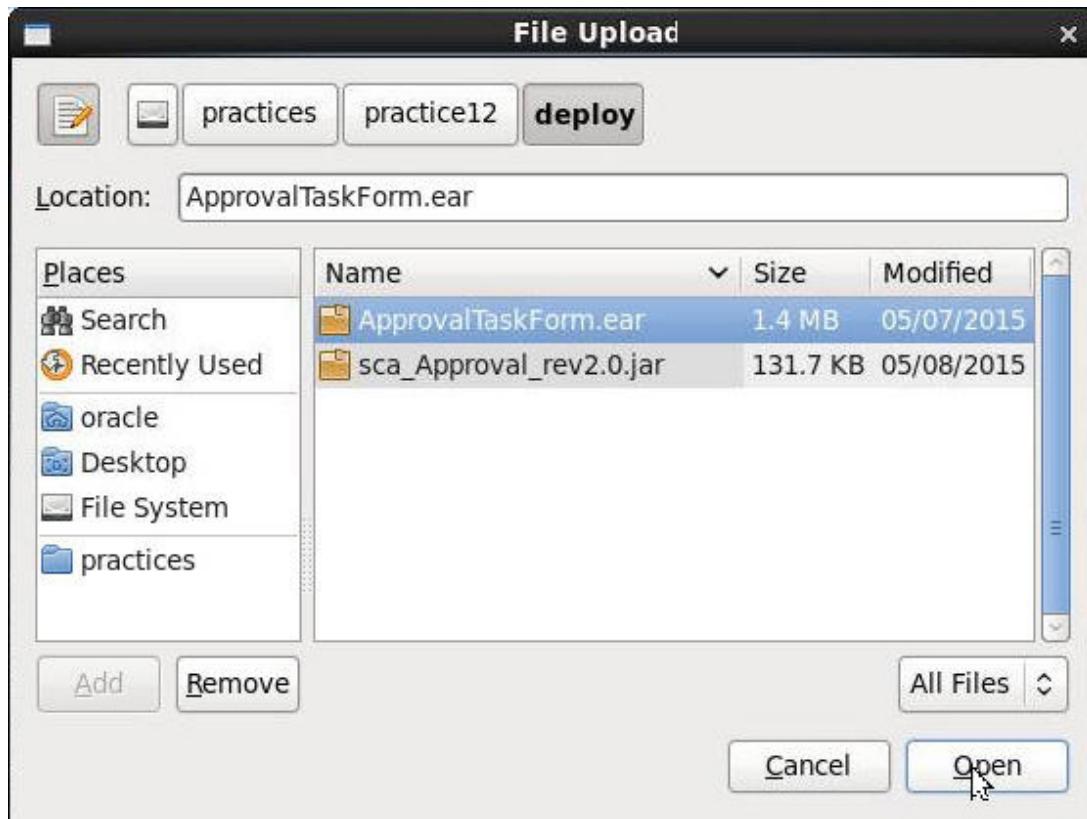
2. Deploy the ApprovalTaskForm application from Enterprise Manager.
 - a. Access Oracle Enterprise Manager.
 - b. In the Target Navigation pane, expand the WebLogic Domain > `edg_domain`.
 - c. Right-click `soa_cluster1` and select Deployments.
 - d. In the Deployments pane, click Deploy.



- e. On the Select Archive screen, in the Archive or Exploded Directory section, below the "Archive is on the machine where this Web browser is running" option, click Browse.



- f. Navigate to /practices/practice12/deploy/ApprovalTaskForm.ear.
- g. Click Open.



- h. Click Next.
- i. On the Select Target screen, select the check box next to `soa_cluster1`.
- j. Click Next.
- k. On the Application Attributes screen, verify the selected values and click Deploy.

Web Module	Context Root
ApprovalTaskForm.war	/workflow/ApprovalTaskForm

Namespace	* Repository	Type	* Partition	Location	Edit
/soa/shared	mds-soa	Database	soa-infra	jdbc/mds/MDS_LocalTxDataSource	

Note: Verify that deployment has been successful.

Practice 12-3: Instantiating the Composite That Generates Email

1. Initiate the composite application.
 - a. Access Oracle Enterprise Manager.
 - b. In the Target Navigation pane, expand the SOA > soa-infra > default nodes in the tree. Click the “Approval [2.0]” link.
 - c. On the “Approval [2.0]” home page, click Test.
 - d. In the Request section, use the Browse button to replace the sample XML data with the contents of the `/practices/practice12/input/approval_input.xml` file.
 - e. Click Test Web Service.
The Response tab is displayed.
 - f. On the Response tab, click the Launch Flow Trace button.
2. On the Flow Trace page, examine the Trace tree that is shown in the following image and answer the questions that follow the image:

Trace				
Actions ▾ View ▾		Show Instance IDs <input type="checkbox"/>		
Instance	Type	Usage	State	
approval_client_ep	Service	Service	Completed	Completed
Approval	BPEL		Running	Running
ManualApproval	Workflow		Running	Running

Note: If the process Flow Trace tree does not resemble the preceding image, wait a few seconds and refresh the page before you continue. You may need to refresh the page a few times.

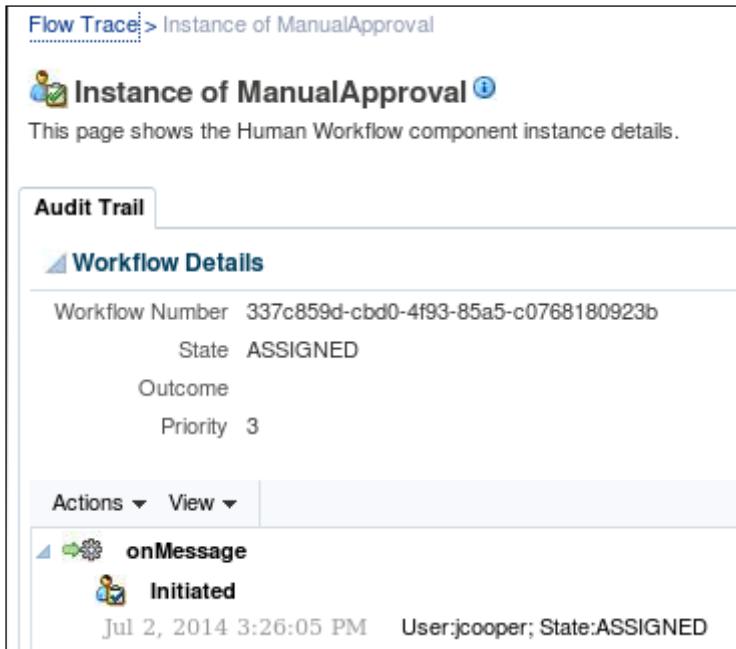
Using the Flow Trace tree, answer the following questions:

- a. Has the entire process completed? Explain your answer.
- b. In this case, what does the last row in the Trace tree that contains the ManualApproval Human Workflow component indicate?

Q	Answers to Step 3
a.	No, the process is still running. If you look in the Trace tree, you can see that the rows containing Approval and ManualApproval indicate their state as Running.
b.	The ManualApproval row indicates that the process is executing the Human Workflow component, which is not yet complete because it is still in the Running state.

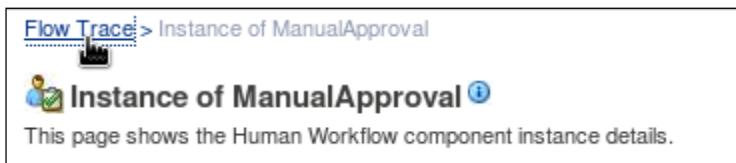
3. To examine the ManualApproval component state, perform the following steps:
 - a. In the web browser window with the Trace Flow page, click the ManualApproval Human Task component link.
 - b. On the “Instance of ManualApproval” page, view the information and answer the following questions:
 - 1) What is the state of the human workflow task?
 - 2) Who is the task assignee?

Q	Answers to Step 4b
a.	The task is in the ASSIGNED state. The following image shows the Instance of ManualApproval.
b.	The assignee is j cooper (refer to the following image).



The screenshot shows the 'Instance of ManualApproval' page. At the top, it says 'Flow Trace > Instance of ManualApproval'. Below that is the title 'Instance of ManualApproval'. A sub-header says 'This page shows the Human Workflow component instance details.' There are two tabs: 'Audit Trail' (selected) and 'Workflow Details'. Under 'Workflow Details', the 'Workflow Number' is 337c859d-cbd0-4f93-85a5-c0768180923b, the 'State' is 'ASSIGNED', the 'Outcome' is blank, and the 'Priority' is 3. Below this is a 'Actions' dropdown and a 'View' dropdown. Under 'Audit Trail', there is a section for 'onMessage' with an 'Initiated' event. It shows the event details: 'onMessage' (green gear icon), 'Initiated' (blue person icon), 'Jul 2, 2014 3:26:05 PM', 'User:jcooper', and 'State:ASSIGNED'.

- c. On the “Instance of ManualApproval” page, click the Flow Trace locator link at the top of the page.



The screenshot shows the 'Instance of ManualApproval' page. At the top, it says 'Flow Trace > Instance of ManualApproval'. Below that is the title 'Instance of ManualApproval'. A sub-header says 'This page shows the Human Workflow component instance details.' The 'Flow Trace' link at the top left is highlighted with a blue box.

- To determine why the application is still running, click the Approval BPEL Component link in the web browser window with the Trace Flow page.
- On the “Instance of Approval” page, view the process details and answer the following questions:
 - What is the name of the last activity that was executed?
 - Explain what the execution state of the last activity represents at this time.

Note: Do not close the “Instance of Approval” page yet.

Q	Answers.
a.	The name of the last activity that was executed is <code>receiveCompletedTask_ManualApproval2</code> .
b.	<code>receiveCompletedTask_ManualApproval2</code> is in a <i>pending</i> state. The activity is waiting for an asynchronous callback message from the human workflow task that indicates that it has been completed. The implications are that the human workflow process is not complete.

The screenshot shows the Oracle BPM Worklist application interface. At the top, there are tabs for 'Audit Trail', 'Flow', and 'Sensors', with 'Audit Trail' being the active tab. Below the tabs are buttons for 'Actions', 'View', and 'Highlight Faults'. A message box displays a task entry: 'receiveCompletedTask_ManualApproval1 (pending)' with a timestamp 'Jul 2, 2014 3:26:16 PM' and a note 'Waiting for "onTaskCompleted" from "ManualApproval.TaskService_1". Asynchronous callback.'.

Viewing the Email Messages and the Worklist Application

6. View the email message that is sent to the task assignee `jcooper`.
 - a. Right-click the Thunderbird desktop icon on the desktop of host02 and select Open.
 - b. In the Thunderbird window, in the All Folders pane, click the `jcooper@example.com` account name.
 - c. Click Get Mail on the Thunderbird toolbar.
An email appears in the Inbox.
 - d. In the Inbox, click the Worklist Application link.

The email message is as follows:

From: Me <demoadmin@example.com>

Subject: **Action Required: Manual Approval**

Reply to: no.reply@yourdomain.com

To: Me <jcooper@example.com>

Task Manual Approval requires your attention.
Access this task in the [Worklist Application](#)

A browser window opens the URL
<http://soa.example.com:4443/integration/worklistapp>.

Tip: If for any reason you need to access the worklist application manually, supply the fully qualified host name as shown in the preceding URL. Use only the Firefox browser.

- e. On the Oracle BPM Worklist application page, enter `jcooper` as the Username. Supply the password and click Login.
- f. On the Worklist home page, the Inbox is selected and the task with the title "Manual Approval" should be present in the top-right pane on the page. Click the "Manual Approval" task entry to display the order details.

Manual Approval

Approve Reject

Details  

Contents

Customer Id	1
Order Id	100
Pay Method	credit
Ship Method	two_day
Order Total	135
Status	initial

Order - Credit Card

Card Type	VISTA
Card Number	1234-1234-1234-1234

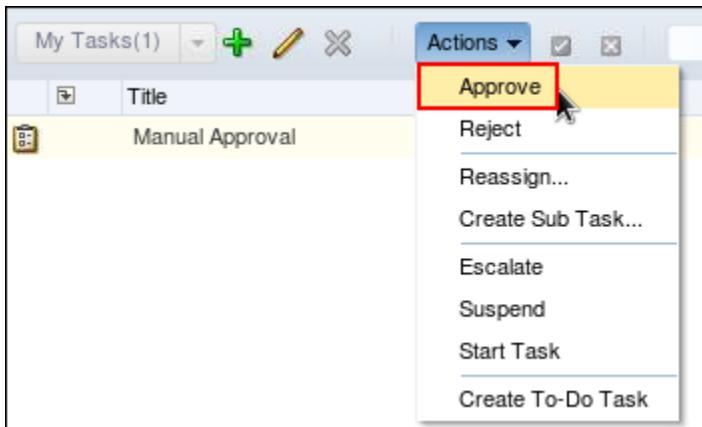
Order - Items

In Stock	true
----------	------

Order - Items [Create/Insert](#) [Delete](#)

Prod Id	Prod Name	Price	Qty	Item Total
SKU301	Music Player 1Gb	45	3	135

7. Click Approve (on either the task form as shown in the preceding screenshot or the toolbar shown as follows) to approve the order and allow the process to complete.



8. Return to the Flow Trace and click Approval. Examine the steps of the business process and verify that they completed successfully.

Trace

Actions ▾ View ▾ Show Instance IDs

Instance	Type	Usage	State
approval_client_ep	Service	Service	Completed
Approval	BPEL		Completed
ManualApproval	Workflow		Completed
CustomerLookup	Reference	Reference	Completed
NotificationService1	Reference	Reference	Completed

9. Return to the email program. Select the `sking` user and click the “Get Mail” toolbar button.
Note: It may take a few moments for the email to arrive in the Inbox.
10. Verify that the customer email was sent correctly.



From: Me <demoadmin@example.com> 

Subject: **Your order status: APPROVED**

Reply to: no.reply@yourdomain.com 

To: Me <sking@example.com> 

Other Actions 

Your order status is APPROVED. Thank you for shopping with us. For more information, contact customer support at 1-800-MUSICFANS.

Practices for Lesson 13: Performance Tuning and Troubleshooting

Chapter 13

Practices for Lesson 13

Practices Overview

In the first part of the practices for this lesson, which focuses on performance tuning tools, the key tasks are to explore and view the following:

- The Topology Viewer that is available in the Oracle Fusion Middleware Control Console
- The performance information pages that are available for WebLogic Server instances, SOA server instance, SOA applications, and SOA application components

The second part and the remaining practices of this lesson involve deploying and executing a composite application that fails due to various problems. Your task is to diagnose the causes of the problems and fix them. For example, your tasks include:

- Deploying a troublesome composite application
- Diagnosing the cause of faults in the troublesome composite application
- Determining the cause of faults in a Human Workflow scenario

Part 1: Performance Tuning

General Notes

The practice environment has not provided the tools to generate a large system load for honing performance tuning skills. In addition, performance tuning is a multi-layered discipline that requires an iterative monitoring and tweaking process that can take a long time to get the desired results. Therefore, the purpose of this practice is to familiarize yourself with the various pages in the Oracle Fusion Middleware Control Console that enable you to monitor the performance of the Oracle SOA Suite components and applications.

Practice 13-1: Deploying an EAR Application

Overview

The goal of this practice is to deploy an EAR application that is examined by using the Routing Topology in the next practice.

Assumptions

- Oracle SOA Suite has been installed and is running.

Tasks

To deploy an EAR application, perform the following tasks:

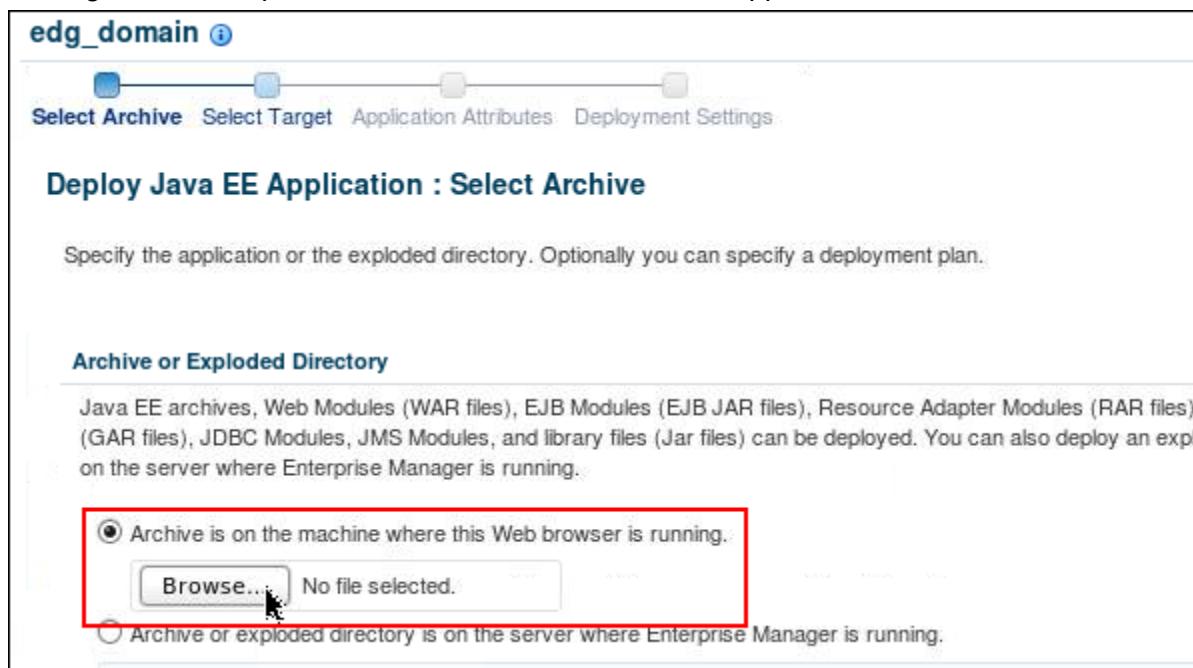
1. Log in to Enterprise Manager.
2. In the Target Navigation pane, click WebLogic Domain > edg_domain.
3. On the edg_domain home page, select WebLogicDomain > Deployments.



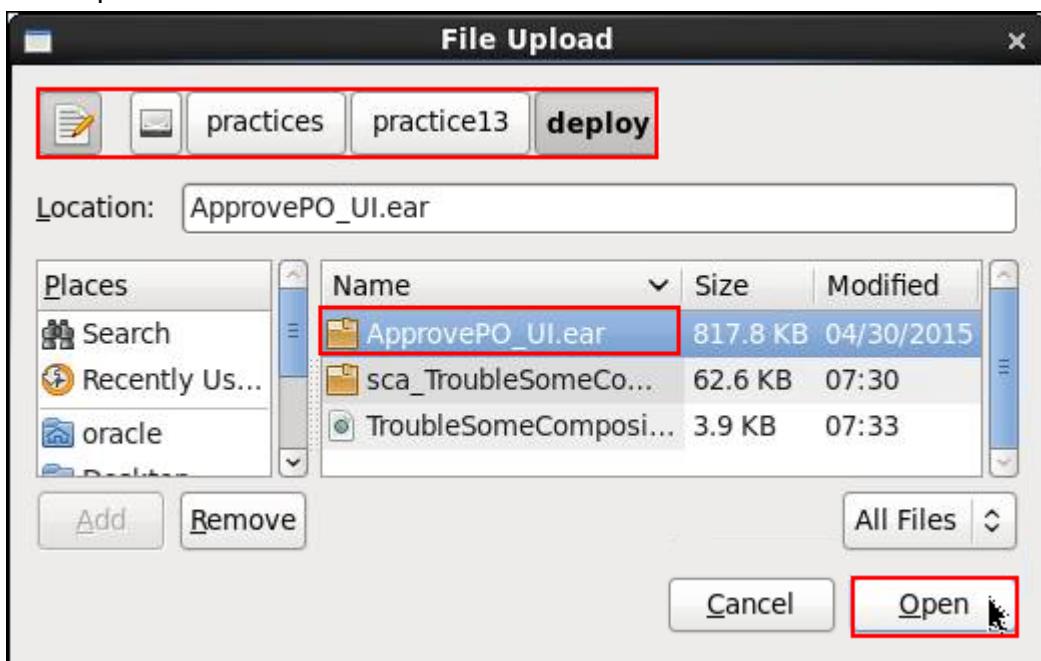
4. On the Deployments page, at the top of the applications table, click Deploy.



5. On the Select Archive page, for the “Archive is on the machine where this Web browser is running.” selected option, click Browse to search for the application file.



6. In the File upload window:
- Navigate to /practices/practice13/deploy
 - Select the ApprovePO_UI.ear file
 - Click Open



- d. On the Select Archive page, click Next.

edg_domain ⓘ

Deploy Java EE Application : Select Archive

Java EE archives, Web Modules (WAR files), EJB Modules (EJB JAR files), JDBC Modules, JMS Modules, and library files (Jar files) can be present on the server where Enterprise Manager is running.

Archive is on the machine where this Web browser is running Archive Location

ApprovePO_UI.ear

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

Back Step 1 of 4 Next Cancel

Use this page to deploy Java EE applications that require Oracle Metadata Services (MDS) or that take advantage of the Oracle Application Development Framework (Oracle ADF).
If your application is a SOA composite, use the SOA Composite deployment wizard.

7. On the Select Target page, select the `soa_cluster1` check box and click Next.

edg_domain ⓘ

Select Archive Select Target Application Attributes Deployment Settings

Deploy Java EE Application : Select Target

Select the WebLogic server or cluster that you want this application to be deployed to.

Select	Name	Type	Deployed Applications
<input type="checkbox"/>	AdminServer	Oracle WebLogic Server	bb
<input type="checkbox"/>	Admin_vHost	virtual host	bb
<input type="checkbox"/>	Soalnt_vHost	virtual host	bb
<input type="checkbox"/>	lbr_server	Oracle WebLogic Server	bb
<input checked="" type="checkbox"/>	soa_cluster1	Oracle WebLogic Cluster	bb

Back Step 2 of 4 Next Cancel

8. On the Application Attributes page, accept the default settings and click Next.

edg_domain ⓘ

Select Archive Select Target Application Attributes Deployment Settings

Deploy Java EE Application : Application Attributes

Archive Type: Java EE Application (EAR file)
Deployment Plan: Create a new plan
Deployment Target: soa_cluster1
Deployment Type: Application

* Application Name:

Context Root of Web Modules

Web Module	Context Root
ApprovePO_UI.war	/workflow/ApprovePO_UI

Back Step 3 of 4 Next Deploy Cancel

9. On the Deployment Settings page, verify the application settings and click Deploy to start the deployment of the application.

edg_domain ①

Select Archive Select Target Application Attributes Deployment Settings

Deploy Java EE Application : Deployment Settings

Archive Type: Java EE Application (EAR file) Application Name: ApprovePO_UI
 Deployment Plan: Create a new plan Version: Not versioned
 Deployment Target: soa_cluster1 Context Root: /workflow/ApprovePO_UI
 Deployment Type: Application Deployment Mode: Install 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 Application Security	✎	Configure application policy migration, credential migration and other security behavior.

10. On the Deployment Result page, verify that the deployment succeeded and click close.

Deployment Succeeded

The Application "ApprovePO_UI" has been successfully deployed.

To configure and manage the application "ApprovePO_UI", use the [Oracle WebLogic Server Administration Console](#).

Summary

Version: Not versioned
 Deployed Archive: /u02/oracle/config/domains/edg_domain/sysman/upload/deploy/ApprovePO_UI/archive/ApprovePO_UI.ear
 Location
 Archive Type: Java EE Application (EAR file)
 Deployment Mode: Install and start application (servicing all requests)
 Deployment Target: soa_cluster1
 Application States: Active (soa_cluster1)
 Context Root: /workflow/ApprovePO_UI

Hide Progress Messages

```
[May 12, 2015 3:42:59 AM GMT] Initiating deploy operation ...
[May 12, 2015 3:42:59 AM GMT] Saving the oracle configuration changes to archive.
[May 12, 2015 3:43:00 AM GMT] Validating deployment plan...
[May 12, 2015 3:43:05 AM GMT] Deployment plan validated.
[May 12, 2015 3:43:05 AM GMT] Archive: /u02/oracle/config/domains/edg_domain/sysman/upload/deploy/ApprovePO_UI/archive/ApprovePO_UI.ear
[May 12, 2015 3:43:05 AM GMT] Deployment plan: /u02/oracle/config/domains/edg_domain/sysman/upload/deploy/ApprovePO_UI/config/plan.xml
[May 12, 2015 3:43:05 AM GMT] Targeting MDS repository: com.bea:Name=mds-owsm,Type=JDBCSystemResource to target soa_cluster1.
[May 12, 2015 3:43:05 AM GMT] Targeting MDS repository: com.bea:Name=mds-owsm,Type=JDBCSystemResource to target soa_cluster1 completed.
[May 12, 2015 3:43:06 AM GMT] [Deployer:149191]Operation "deploy" on application "ApprovePO_UI" is initializing on "soa_server1".
[May 12, 2015 3:43:06 AM GMT] [Deployer:149191]Operation "deploy" on application "ApprovePO_UI" is initializing on "soa_server2".
[May 12, 2015 3:43:08 AM GMT] [Deployer:149192]Operation "deploy" on application "ApprovePO_UI" is in progress on "soa_server1".
```

Close

Practice 13-2: Examining Server Information in the Routing Topology

Overview

The goal of this practice is to become familiar with the Routing Topology that is available in the Oracle Fusion Middleware Control Console.

Assumptions

- Oracle SOA Suite has been installed and is running.
- Any composite application is available to examine its metrics.

Tasks

To explore the information provided by the Routing Topology, perform the following tasks:

1. If required, in a web browser window, log in to Oracle Enterprise Manager Fusion Middleware Control with the URL <http://admin.example.com:8080/em>.
Note: Sign in as the `weblogic` user with the appropriate password.
2. On the Oracle Fusion Middleware Control Console home page, to access the Routing Topology, expand WebLogic Domain, click `edg_domain`, click `WebLogicDomain`, and click Routing Topology.

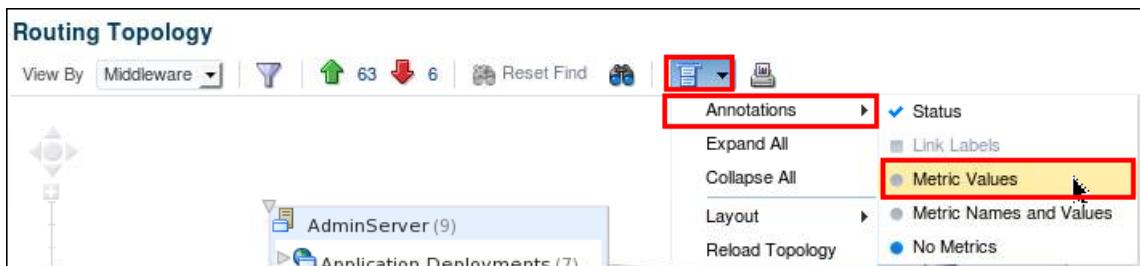


Viewing Metrics for the SOA Server

3. In the Routing Topology window, explore the information that is available by performing the following steps:
 - a. Expand the `soa_cluster1` item from the diagram so that you can see the `soa_server1` component in the viewer. Click the Expand icon for the `soa_server1` component.



- b. After expanding the **soa_server1** component, on the Routing Topology toolbar, click Options, select Annotations, and click Metric Values.



Note: The metric values are loaded, and then refreshed; you will notice the icon on the top-right corner. If the metrics do not appear, try repeating steps a and b.

- c. In the expanded **soa_server1** component, you can verify the metric information for the deployed applications. If you move your mouse over the icon next to the **soa_server1** component name or let the mouse hover over the bottom of the expanded icon view, the **soa_server1** pop-up callout box is displayed.



- d. In the **soa_server1** dialog box, you can see the metrics details. Click the “more” link to view the properties for **soa_server1**.



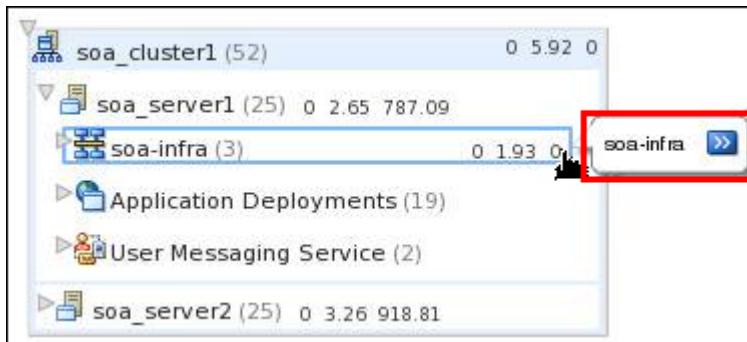
- e. In the “Properties for soa_server1” dialog box, you can see the version and location of soa_server1.



Viewing the Metrics for the SOA Infrastructure

4. To examine the metrics for the SOA Infrastructure, move the cursor over the Routing Topology diagram to the soa-infra visual element.
- When you have located the soa-infra icon, move the mouse over the icon to display the popup callout box.

Note: You can use the Zoom In and Zoom Out options near the top-left side of the viewer window to obtain more or less detail on the page.



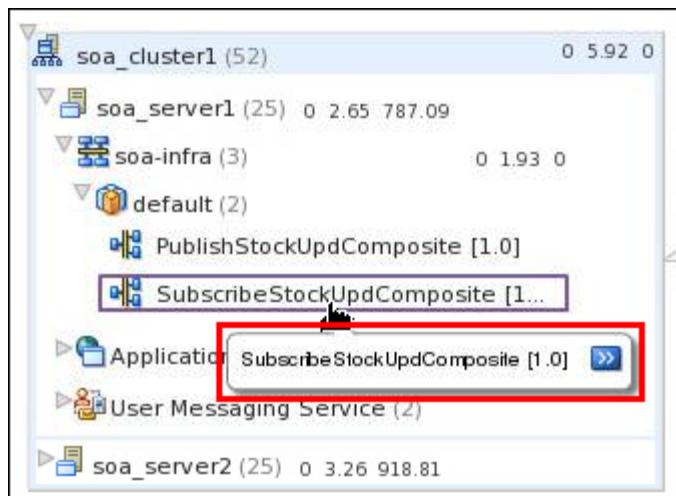
- In the dialog box, you can see the metric information. Feel free to examine the information in the “more” section, and click Close.

Note: The metric information counts displayed in this example may differ from what you observe on your system.

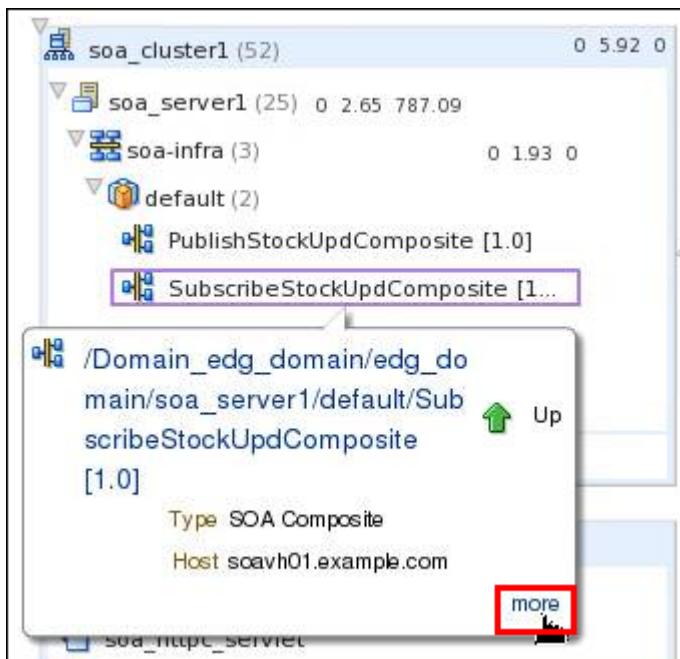


Viewing the Metrics for Composite Applications

5. In this section, you view the metrics for a composite application that is active (up).
 - a. In the Routing Topology window, move the viewer with the mouse or Navigator frame and locate a deployed composite application that is in the active state (or UP), for example, the SusbcribeStockUpdComposite [1.0] application. Move the mouse over the SusbcribeStockUpdComposite [1.0] icon, and click the SusbcribeStockUpdComposite link.



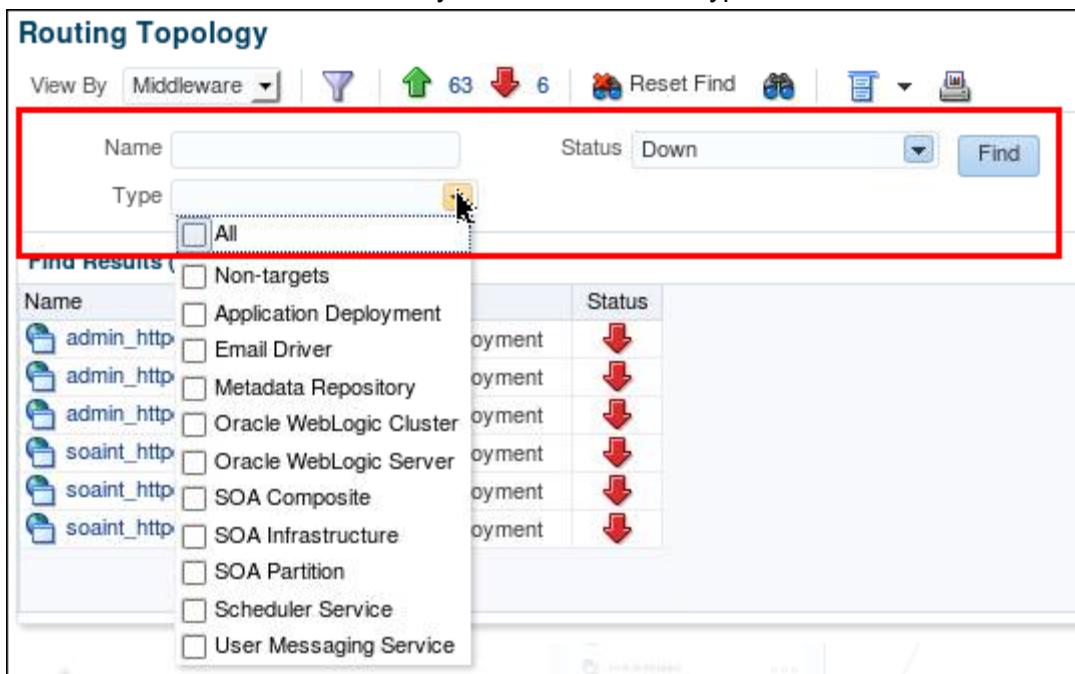
- b. In the dialog box, click the "more" link to view the location details. When you have finished examining the information, click the Close icon.



- c. On the Routing Topology toolbar, click the Down link to display a list of components that have been shutdown (or are down for other reasons).



- d. In this case, the results window is displayed, showing the applications with the down status. You can filter the results by name, status, and type.



- e. When you click the link for any of the applications from the results list, the Routing Topology window is repositioned to show the icon for the selected application. This is another way in which you can navigate the Routing Topology window.

Routing Topology

View By: Middleware |  67 |  6 |  Reset Find |  |  | 

Name: Status: Find

Type:

Find Results (6)

Name	Type	Status
 admin_httpservet	Application Deployment	
 admin_httpservet	Application Deployment	
 admin_httpservet	Application Deployment	
 soaint_httpservet	Application Deployment	
 soaint_httpservet	Application Deployment	
 soaint_httpservet	Application Deployment	

soa-infra (5) 0 3.35 0

Application Deployments (21)  admin_httpservet 

ApprovePO_UI 0 0 0 

DefaultHTTPToTextFlow 0 0 0 

6. Optionally, take five minutes more to explore and examine the other components that are displayed in the Routing Topology window.

Practice 13-3: Observing the Performance of the WebLogic Server JVM Instance

Overview

In this practice, you navigate the Oracle Fusion Middleware Control Console to locate performance information about the WebLogic Server instances, such as the AdminServer and soa_server1 instances, and their Java Virtual Machine (JVM) performance metrics.

Assumptions

- The Oracle WebLogic Server Admin Server and SOA Server instances are running.

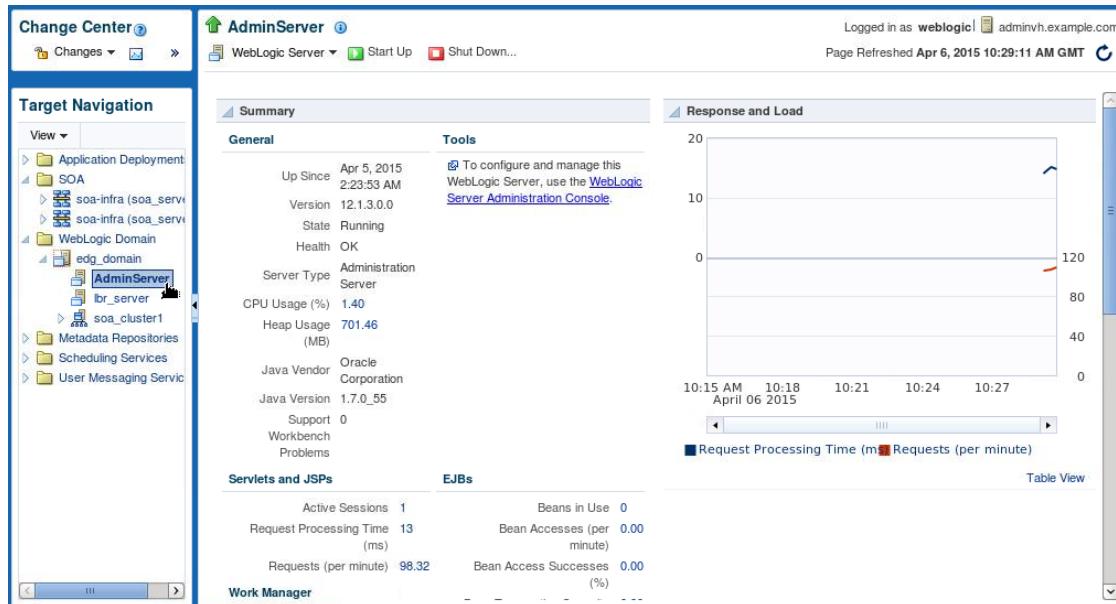
Tasks

- If required, in a web browser window, log in to Oracle Enterprise Manager Fusion Middleware Control with the URL <http://admin.example.com:8080/em>.

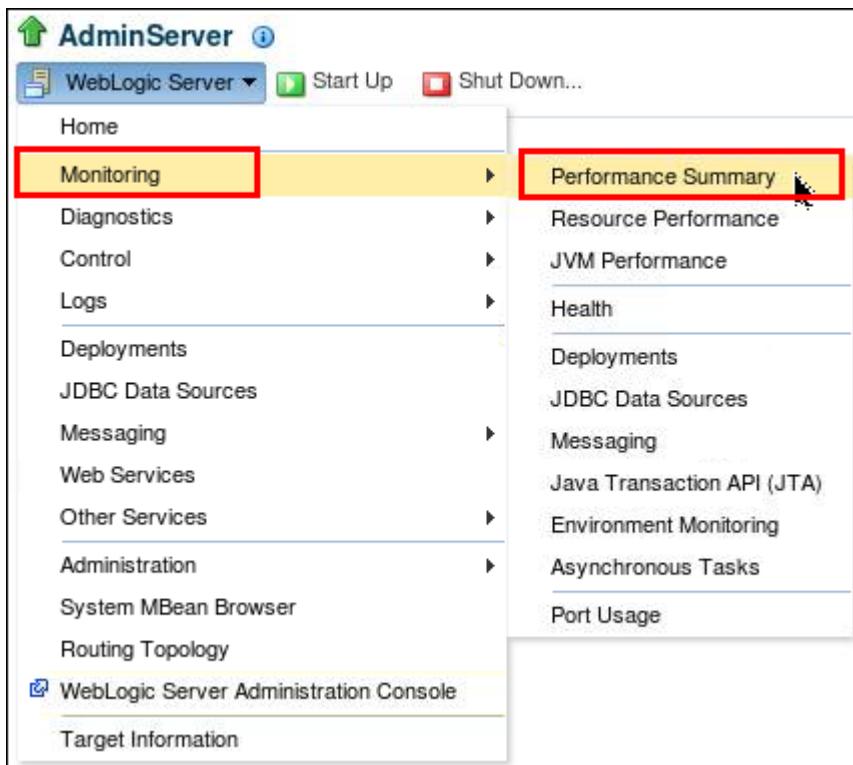
Note: Sign in as the `weblogic` user with the appropriate password.

Viewing Performance Information for the AdminServer

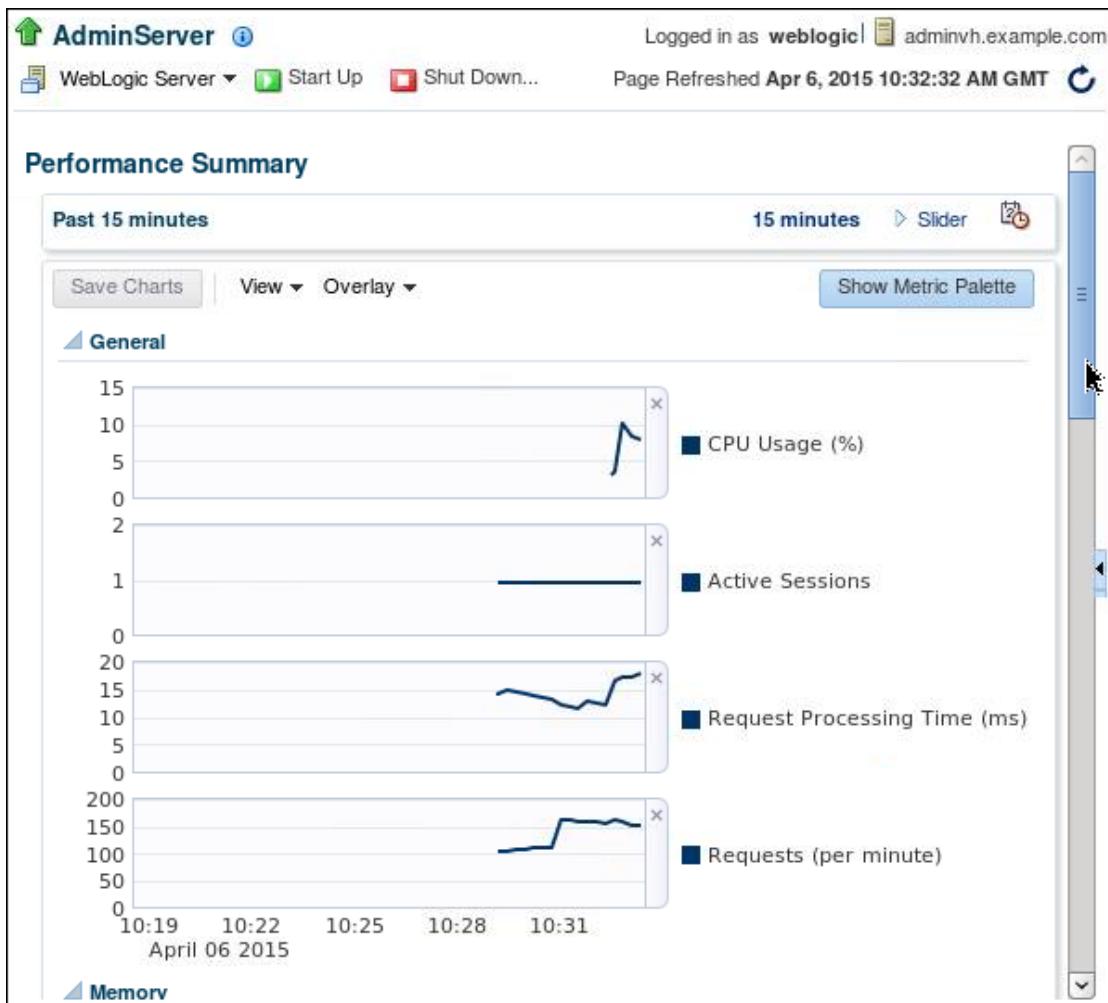
- To view performance information for the AdminServer instance, perform the following steps:
 - On the Oracle Fusion Middleware Control Console page, expand the WebLogic Domain > edg_domain tree, and click the AdminServer entry to view Summary information about the server in the right frame of the page.



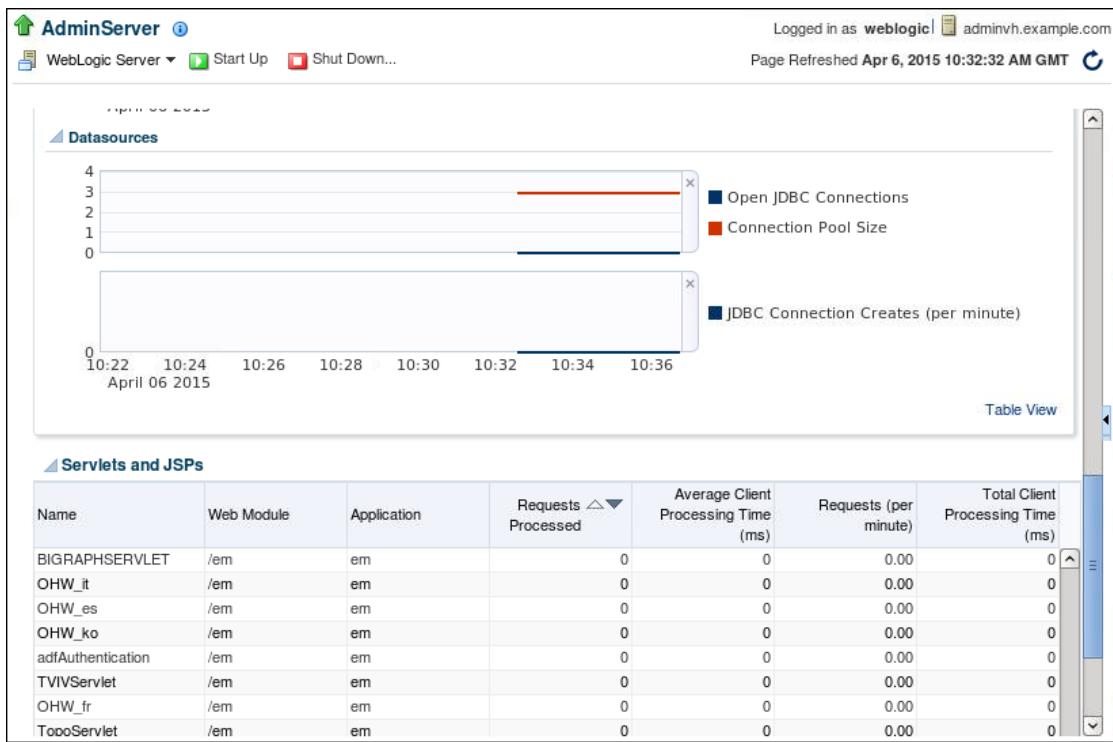
- On the AdminServer home page, click WebLogic Server > Monitoring > Performance Summary.



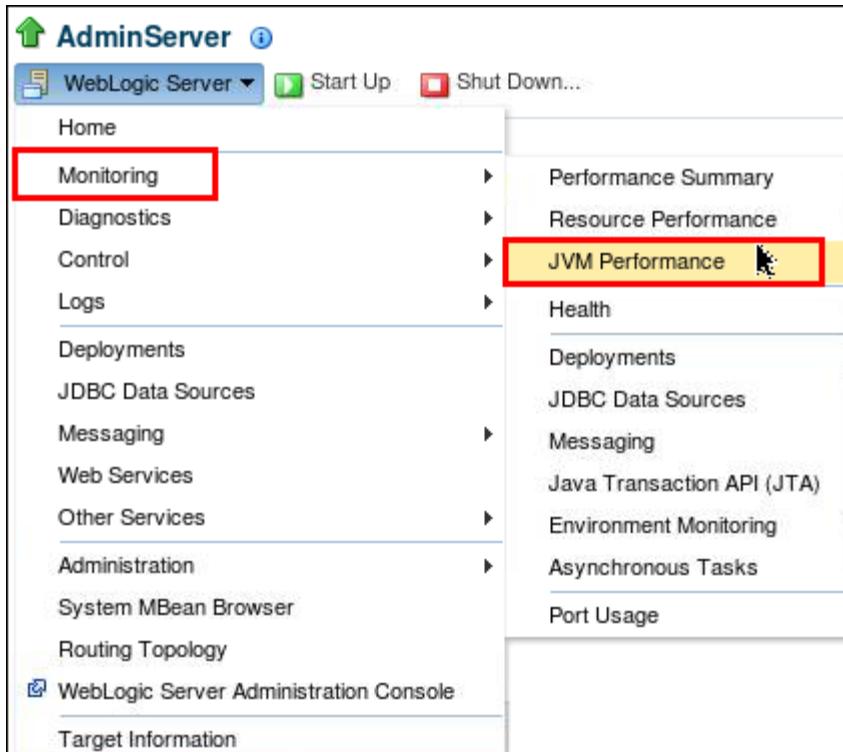
- c. On the Performance Summary page, wait a minute while the graphs are updated in real time.



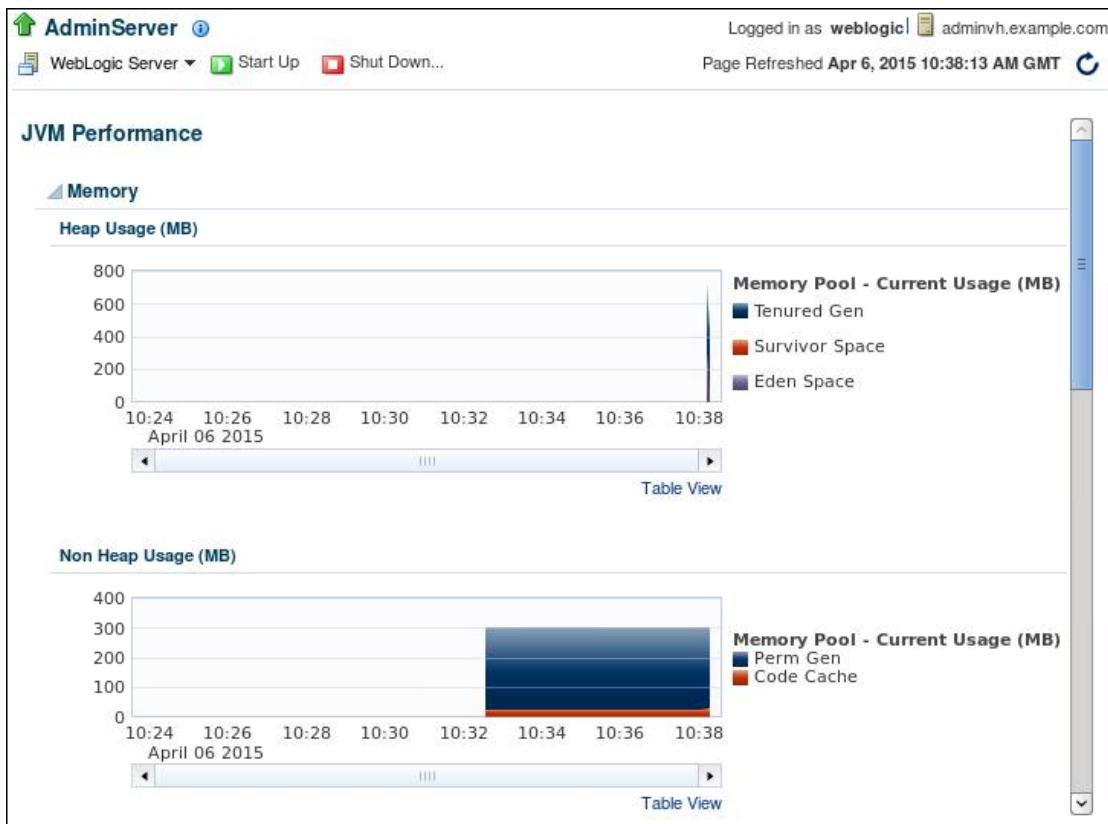
- d. On the Performance Summary page, use the right-hand scroll bar to view information that may not be visible. For example, scrolling down brings the General, Servlets and JSPs, EJBs, and Deployments sections into view.



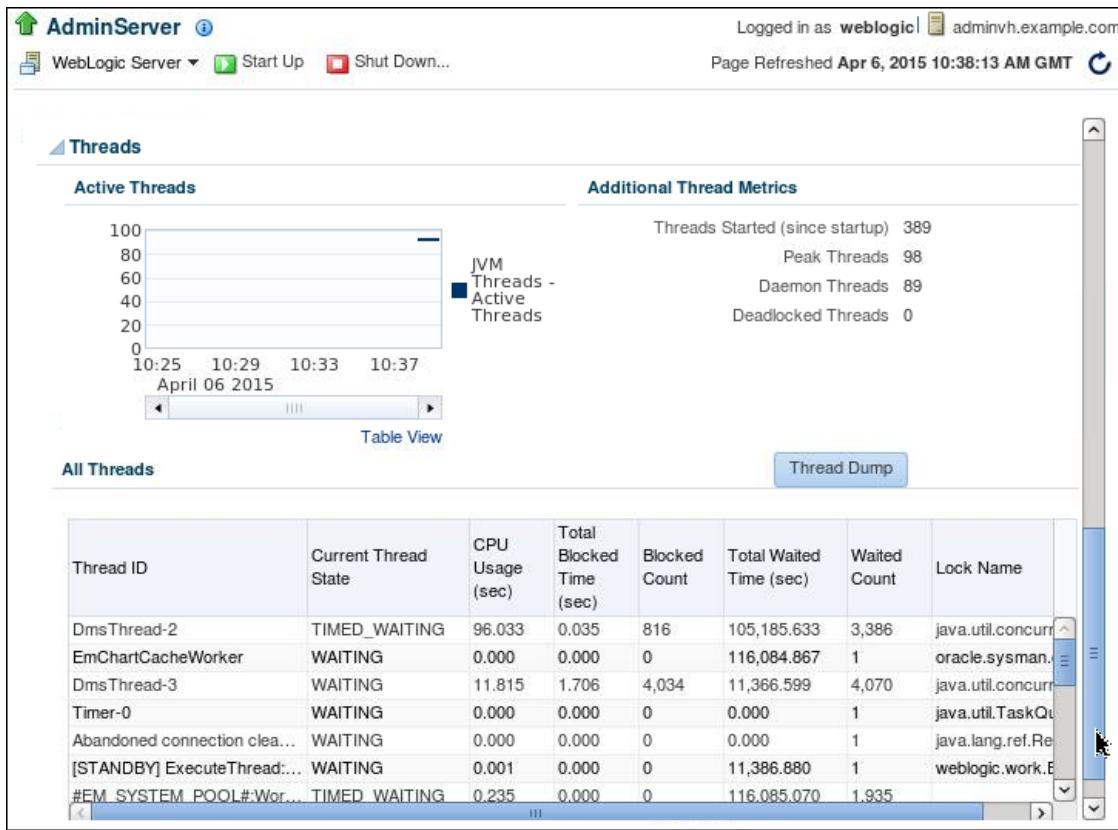
- e. To view the JVM Performance metrics for the AdminServer instance, on the AdminServer page, click WebLogic Server > Monitoring > JVM Performance.



- f. On the JVM Performance page, wait a few minutes while the Memory Heap Usage and Non Heap Usage graphs are updated with useful information.



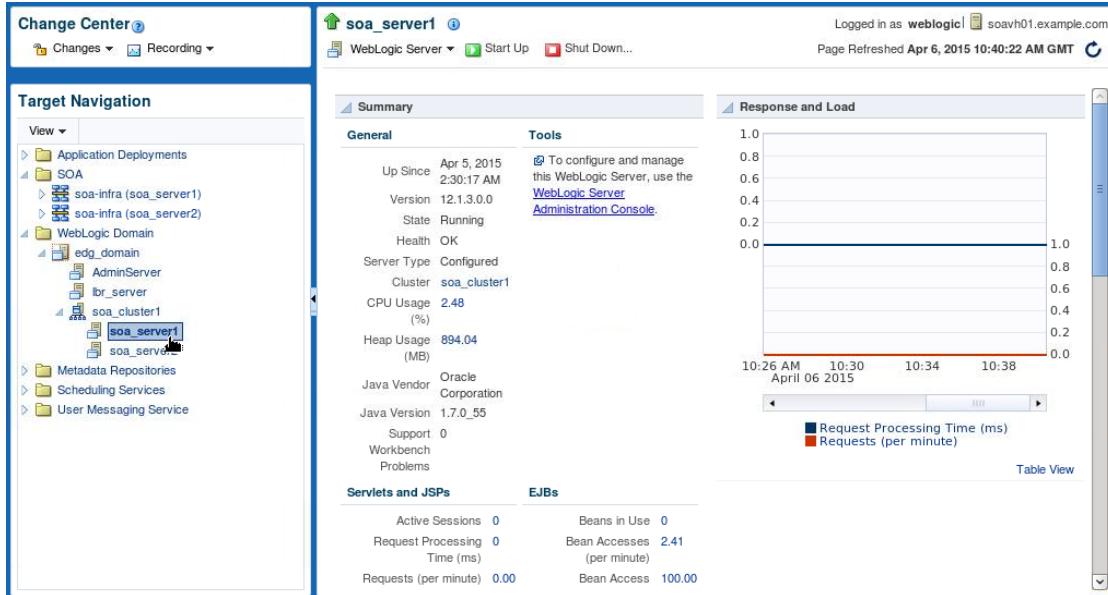
- g. On the JVM Performance page, scroll down the page to examine information about the threads that are executing in the JVM. This information can be useful for monitoring Thread metrics to help you to decide on the settings for threading properties.



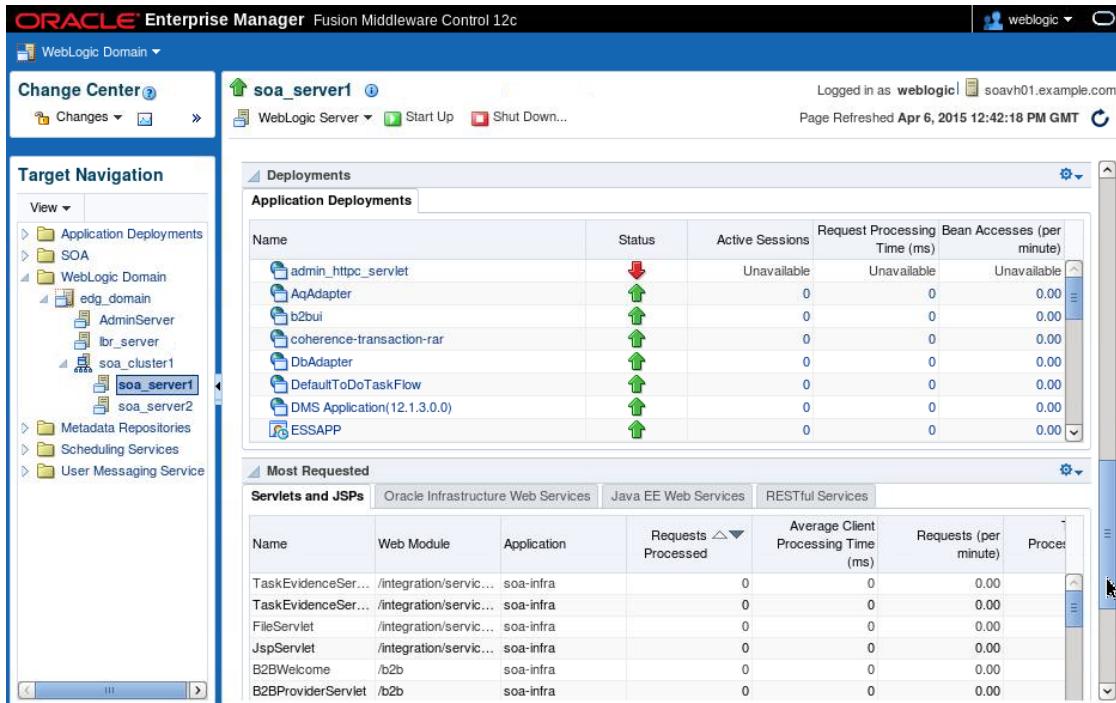
Viewing the Performance Information for the SOA Server Instance

3. To view the performance information for the SOA server instance, perform the following steps:

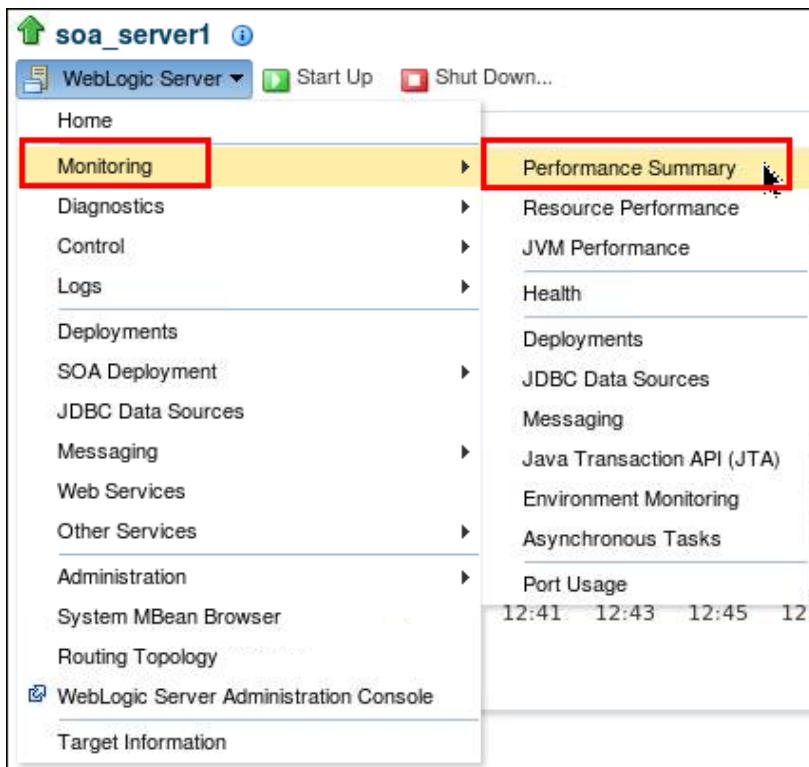
- On the Oracle Fusion Middleware Control Console page, expand WebLogic Domain > edg_domain (if needed) > soa_cluster1, and click the soa_server1 entry to view its Summary information page.



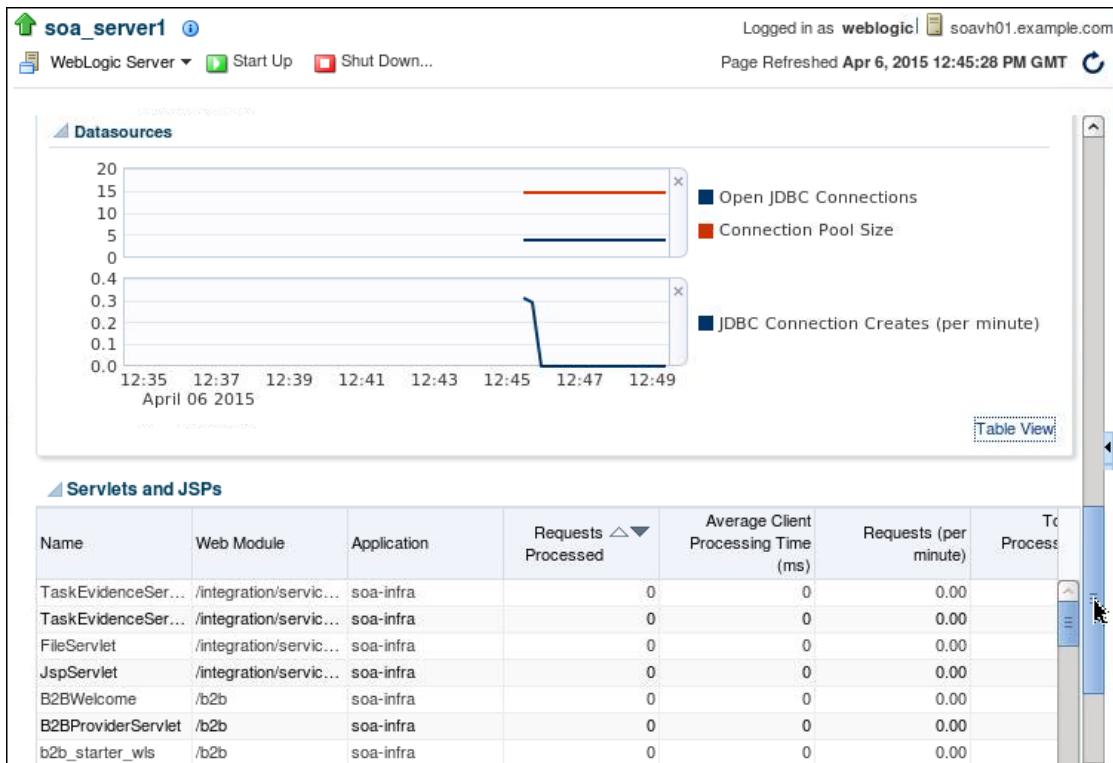
- On the soa_server1 > Summary page, scroll down to view information about application deployments.



- Like the AdminServer, you can view Performance Summary information for the soa_server1 instance by clicking WebLogic Server > Monitoring > Performance Summary on the soa_server1 page.



- d. On the Performance Summary page, you can scroll down and view information about the server and its deployments.



- e. Optionally, you can also click WebLogic Server > Monitoring > JVM Performance to view the JVM performance metrics for the soa_server1 instance.

Practice 13-4: Exploring Metrics for Oracle SOA Suite Components

Overview

In this practice, you navigate the Oracle Fusion Middleware Control Console pages to locate performance metric information for the different layers and the components running in an Oracle SOA Suite instance (for example, the components running within the JVM instance for the `soa_server1` instance), such as the SOA Domain, SOA Infrastructure, composite applications, and service engines.

Assumptions

- The Oracle WebLogic Server AdminServer and SOA Server instances are running.
- Any composite application is available to examine its performance summary.

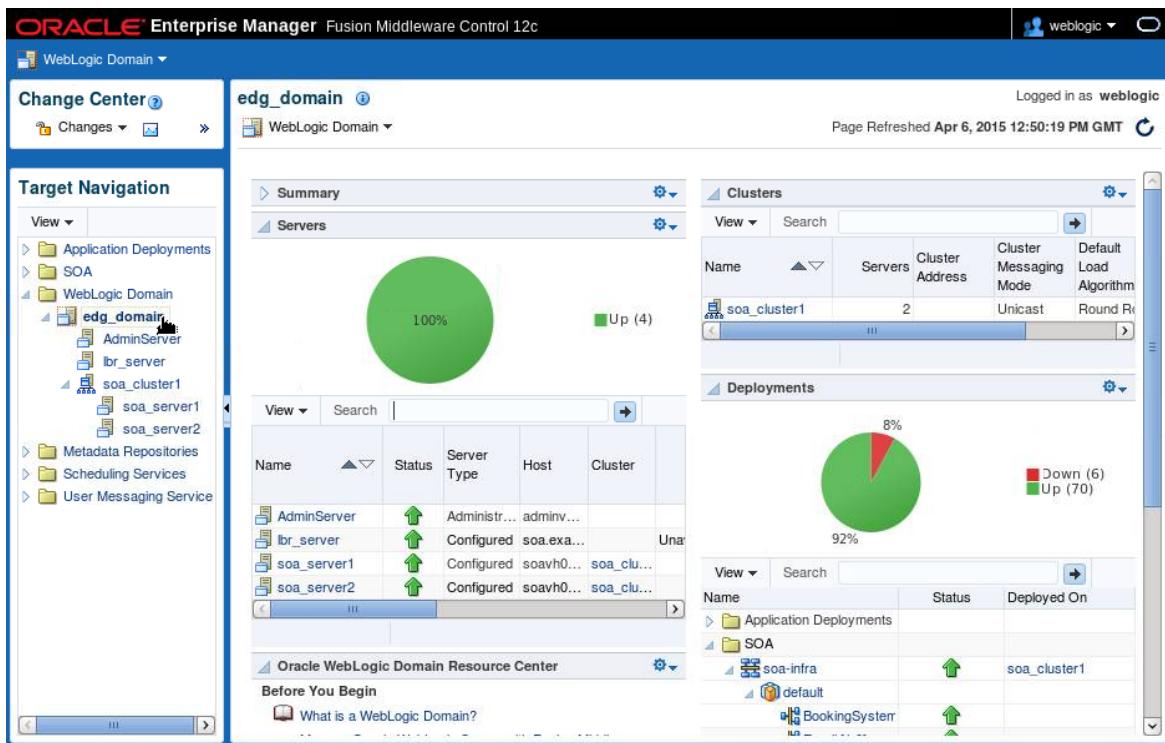
Tasks

1. If required, in a web browser window, log in to Oracle Enterprise Manager Fusion Middleware Control with the URL `http://admin.example.com:8080/em`.

Note: Sign in as the `weblogic` user with the appropriate password.

Monitoring the SOA Domain

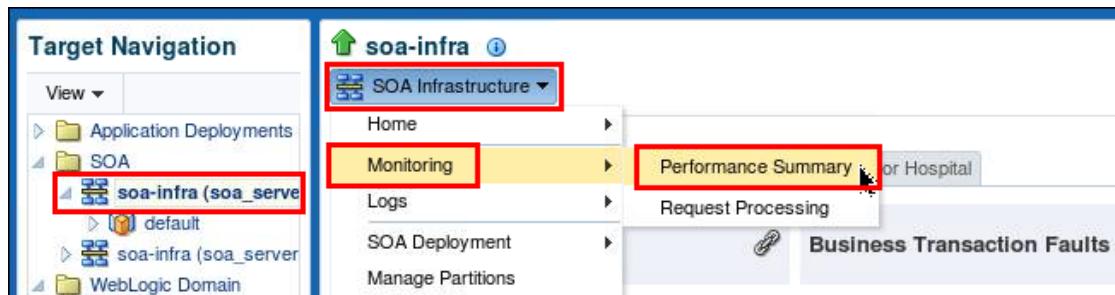
2. In the Oracle Fusion Middleware Control Console Target Navigation pane, expand the WebLogic Domain tree (if needed) and click the `edg_domain` entry.



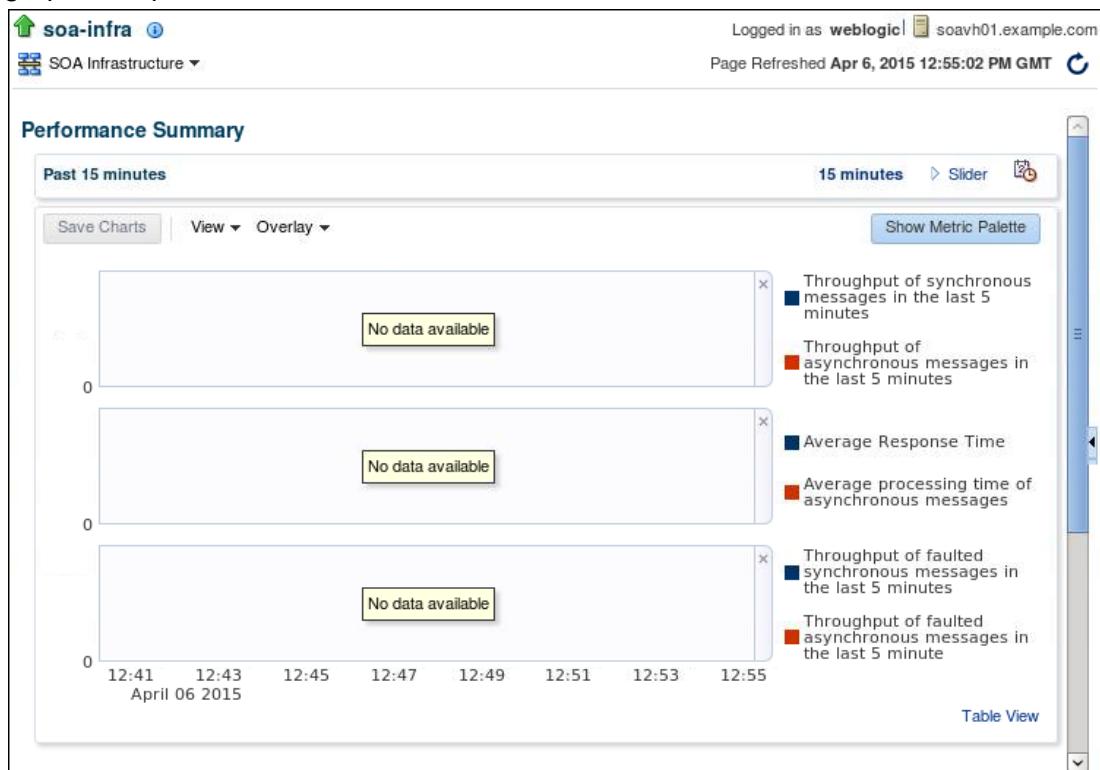
Note: When you click the `edg_domain` entry, you can see information on the Summary page. There is not much information that can be obtained about the domain, which is a named structural component for configuration purposes.

Monitoring the SOA Infrastructure

3. To monitor the SOA Infrastructure performance information, perform the following steps:
 - a. In the Target Navigation pane, expand the SOA folder and click soa-infra (soa_server1). On the soa-infra home page, click SOA Infrastructure > Monitoring > Performance Summary.

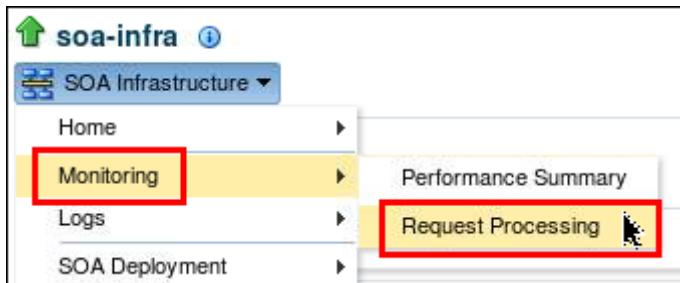


- b. On the soa-infra > Monitoring > Performance Summary page, wait a minute for the graphs to update with real-time information.



Note: You can also access the Performance Summary page by right-clicking the soa-infra (soa_server1) node in the Target Navigation tree, and selecting Monitoring > Performance Summary.

- c. On the soa-infra page, click SOA Infrastructure > Monitoring > Request Processing.



- d. On the Request Processing page, you can view information about request statistics and processing times for various SOA Service Engines, Service Infrastructure, and Binding Components.

The screenshot shows the Request Processing page with three main sections:

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

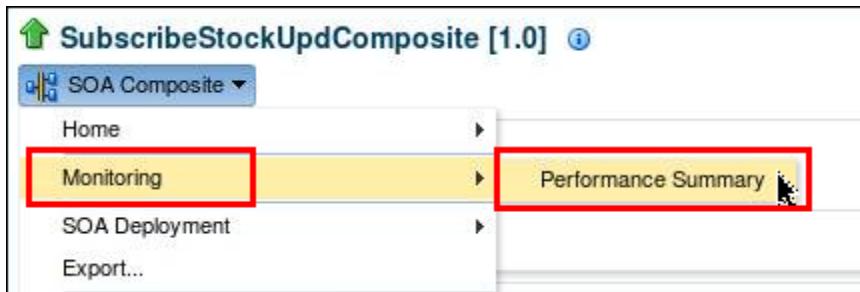
Name	Average Request Processing Time - Synchronous (ms)	Average Request Processing Time - Asynchronous (ms)	Active Requests	Requests Processed
BPEL Engine	0.000	0.000	0	0
Mediator Engine	0.000	0.000	0	0
Human Workflow Engine	0.000	0.000	0	0
Business Rules Engine	0.000	0.000	0	0
Spring Engine	0.000	0.000	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 Infrastructure				
- Binding Components**: Binding components make SOA composite applications accessible to the outside world.

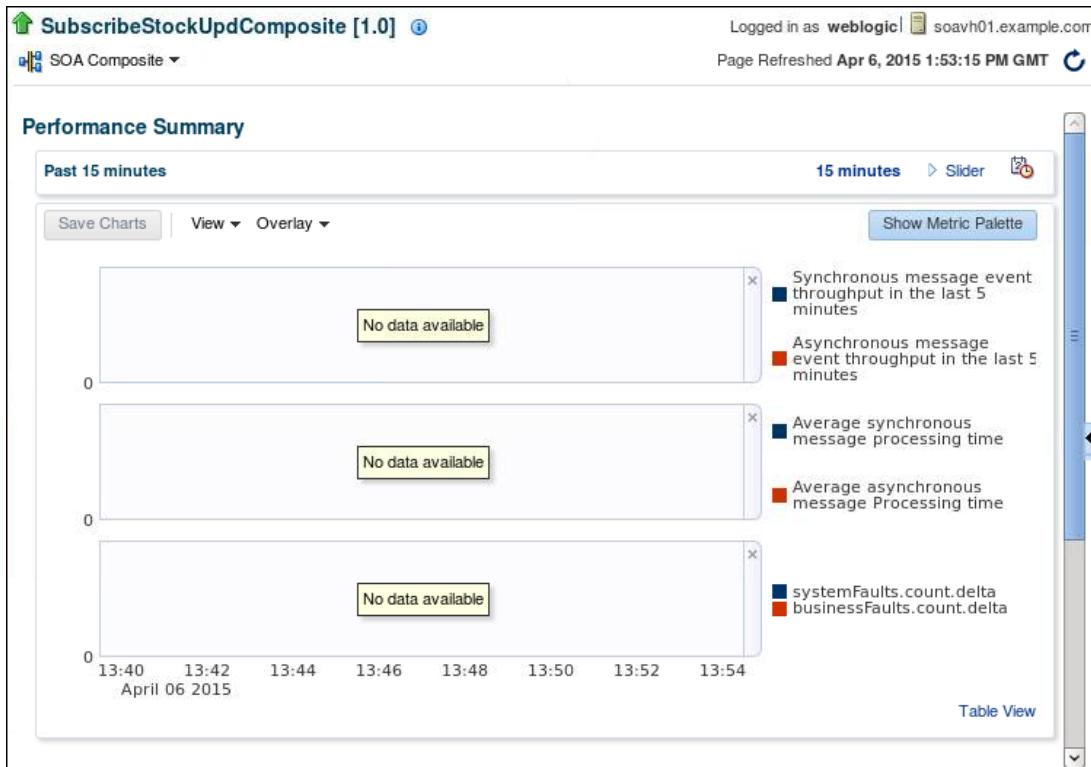
Name	Average Request Processing Time (ms)	Requests Processed
Web Service (WS) Inbound	0.000	0.0
Web Service (WS) Outbound	0.000	0.0

Monitoring Composite Application Performance Information

4. To monitor the performance of a composite application, for example, the SubscribeStockUpdComposite [1.0] application, perform the following steps:
- In the Target Navigation pane, expand the SOA > soa-infra (soa_server1) > default tree, and click the SubscribeStockUpdComposite [1.0] entry.
Note: You can select any other composite application to monitor its performance summary.
 - On the SubscribeStockUpdComposite [1.0] home page, click SOA Composite > Monitoring > Performance Summary.



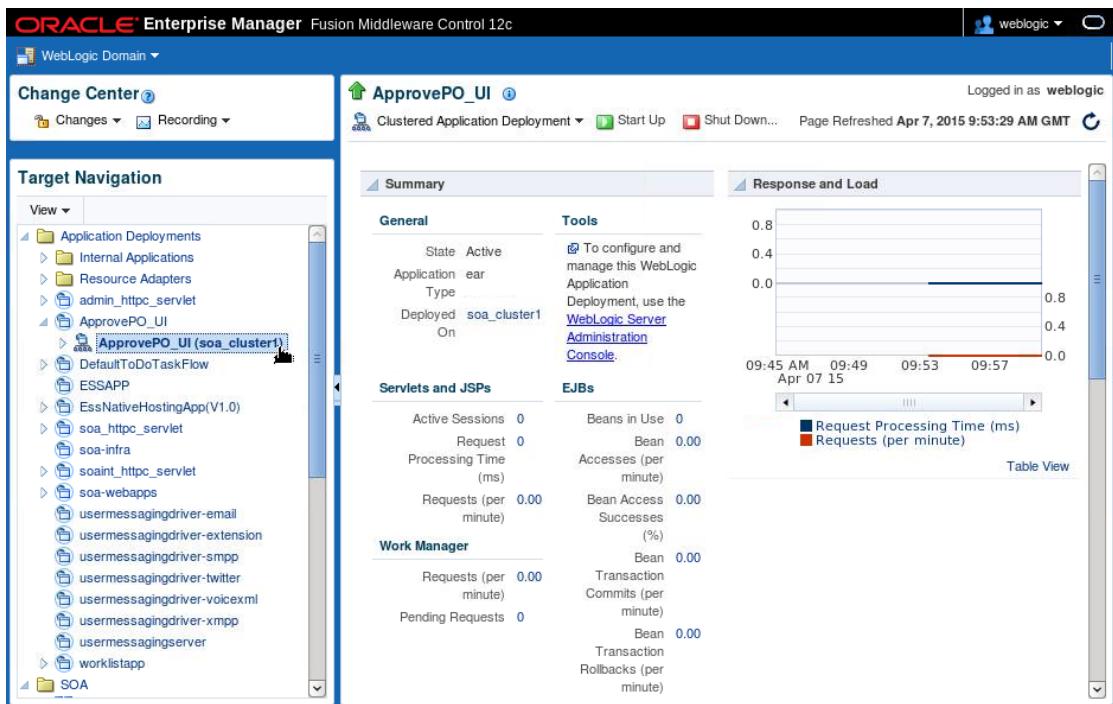
- c. On the Performance Summary page, observe the graphic display information. Because the application is not actively processing requests, there is not much to see.



Note: If you wish, you can click Overlay to add additional layers of metric information from a large list of items that can be monitored. The choice you make depends on the nature of the application and what you are trying to monitor.

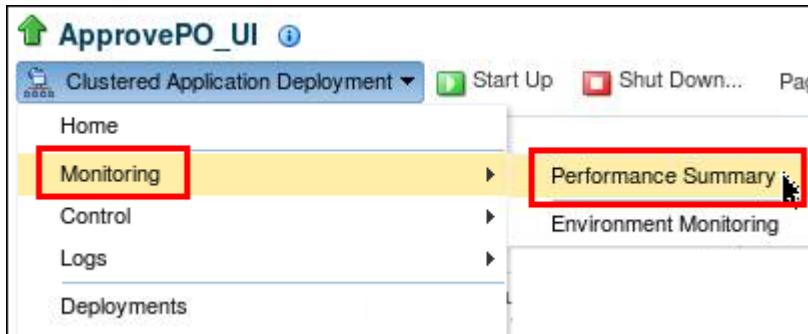
Monitoring Java EE Application Performance

5. To monitor the performance of a Java EE application, such as the ApprovePO_UI web application (or the Human Task Form application), perform the following steps:
 - a. In the Target Navigation pane, expand the Application Deployments section and locate and click the application of interest, for example, ApprovePO_UI. Expand and select the application deployed in the cluster to display its home page with a Summary page of information.



Note: You can select any other Java EE application to monitor its performance summary.

- To view the application performance metrics, on the application home page, click Clustered Application Deployment > Monitoring > Performance Summary.



- On the ApprovePO_UI > Performance Summary page, you can wait for the graphs to be updated with information and scroll the page to view other details.



Note: You do not see much activity for the ApprovePO_UI application because of process inactivity at this time. Consider looking at performance information for the Enterprise Manager application [the em (AdminServer) entry located in the Application Deployments > Internal Applications tree > em].

Monitoring User Messaging Service Component Performance

6. To monitor the performance of the email driver in the SOA Server instance, perform the following steps:
 - a. In the Target Navigation pane, expand the User Messaging Service folder and click the usermessagingdriver-email(soa_server1) entry to display the usermessagingdriver-email home page.

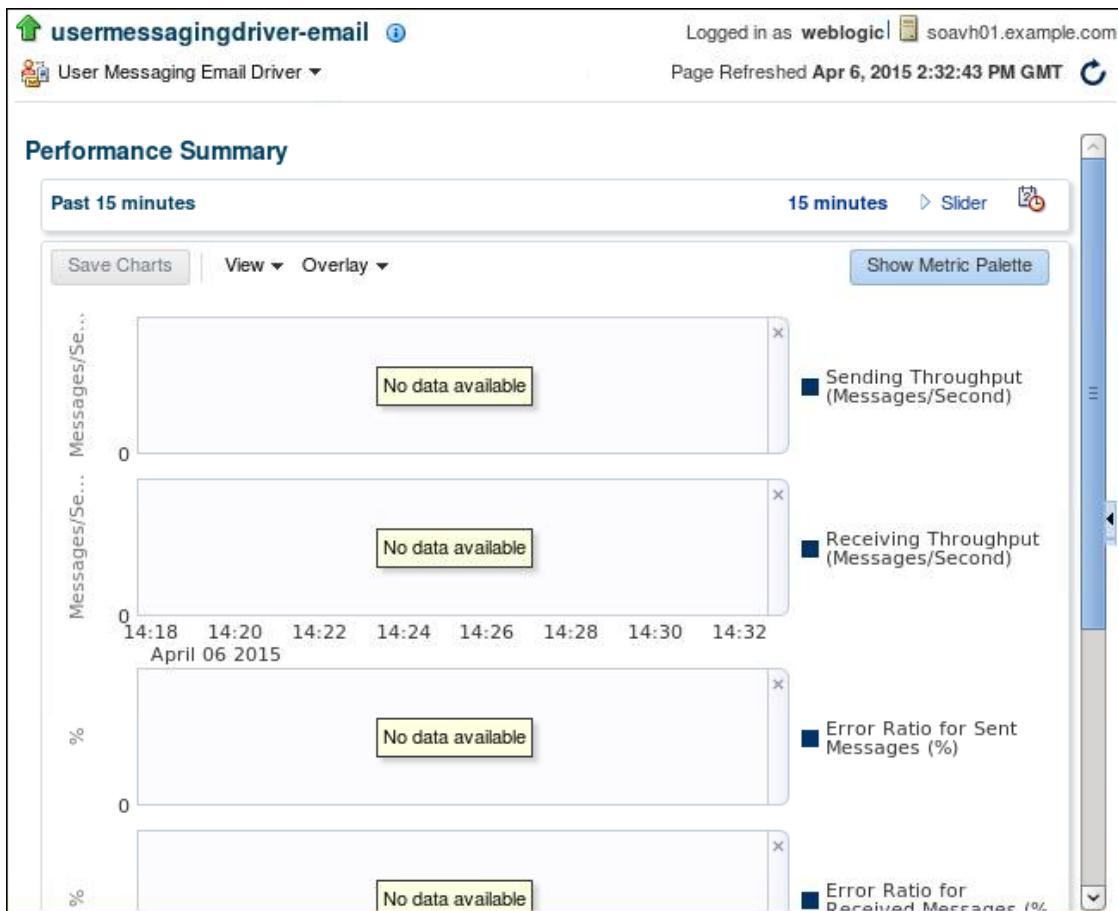
The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The left sidebar is titled 'Target Navigation' and lists various Oracle components: Application Deployments, SOA, WebLogic Domain, edg_domain, Metadata Repositories, Scheduling Services, and User Messaging Service. Under User Messaging Service, there are four entries: usermessagingdriver-email (soa_server1), usermessagingdriver-email (soa_server2), usermessagingserver (soa_server1), and usermessagingserver (soa_server2). The main content area is titled 'usermessagingdriver-email' and shows the 'User Messaging Email Driver' home page. It includes sections for 'Statistics' (Messages Sent Successfully, Failed, Received Successfully, Failed), 'Message Latency' (a graph showing sending and receiving latency over time), 'Resource Center' (links to various Oracle documentation), 'Before You Begin' (links to introduction and getting started), 'Typical Administration Tasks' (links to configuration, monitoring, and management guides), and 'Other Resources' (links to Oracle Fusion Middleware Administrator's Guide, Security Guide, and SOA Suite Guide). The top right corner shows the user is logged in as 'weblogic' on 'soavh01.example.com'.

Note: If you have installed other user messaging drivers, you can monitor them in a similar way.

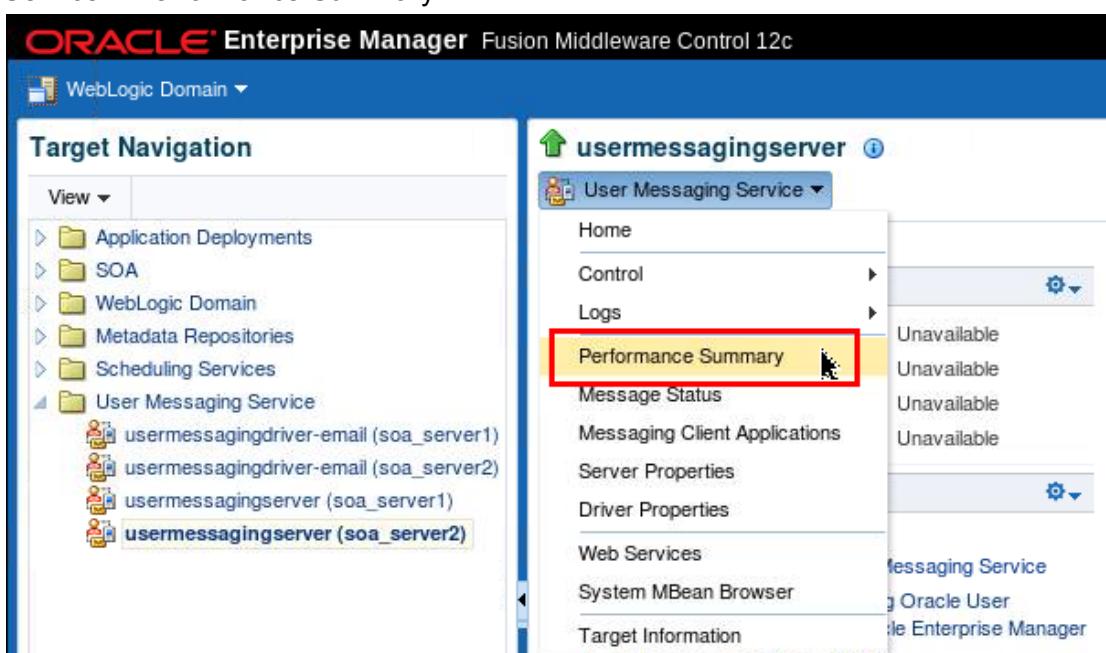
- On the usermessagingdriver-email home page, click User Messaging Email Driver > Performance Summary.

The screenshot shows the 'usermessagingdriver-email' home page with a navigation menu on the left. The menu items are: Home, Control, Logs, Performance Summary, Email Driver Properties, System MBean Browser, and Target Information. The 'Performance Summary' item is highlighted with a red box.

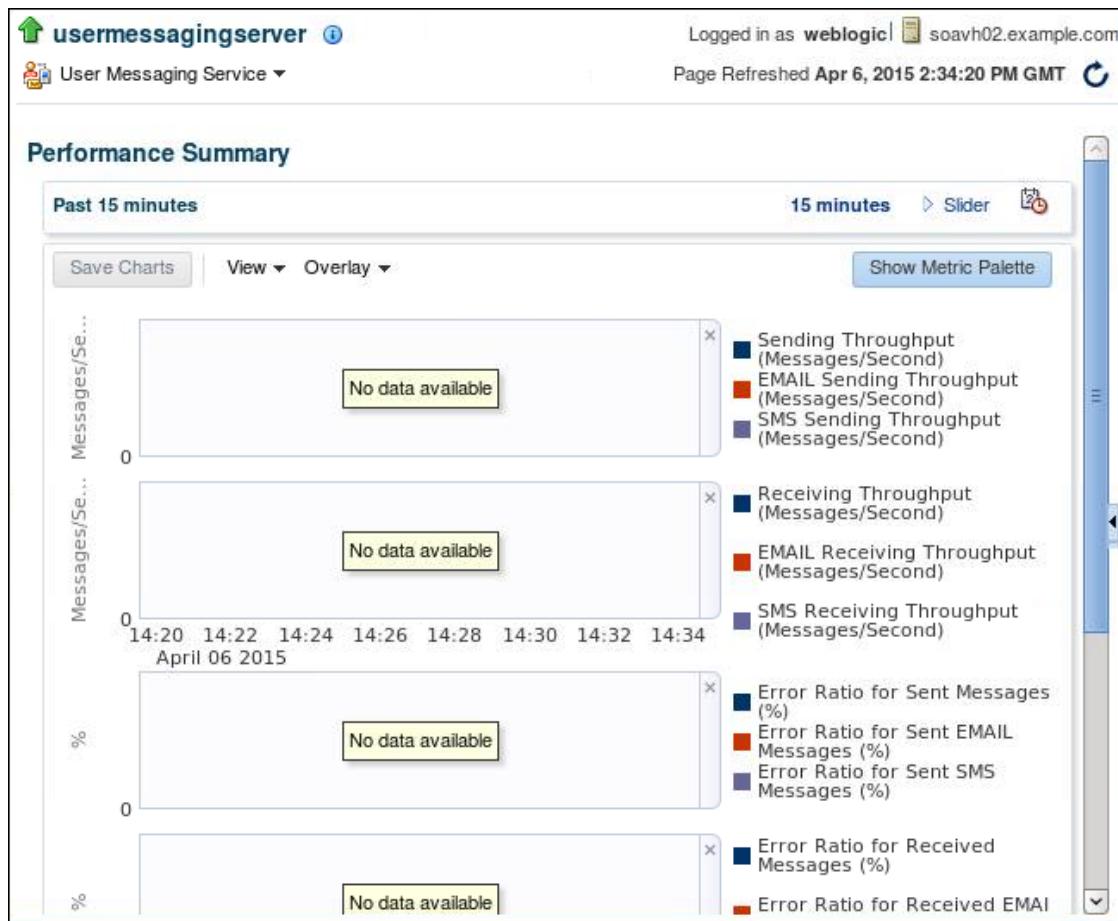
- On the Performance Summary page, in the graphs, you can view and add the overlay metric information that you wish to monitor.



- d. To view performance information for usermessagingserver, click the usermessagingserver entry in the User Messaging Service folder in the Target Navigation pane, and on the usermessagingserver home page, click User Messaging Service > Performance Summary.

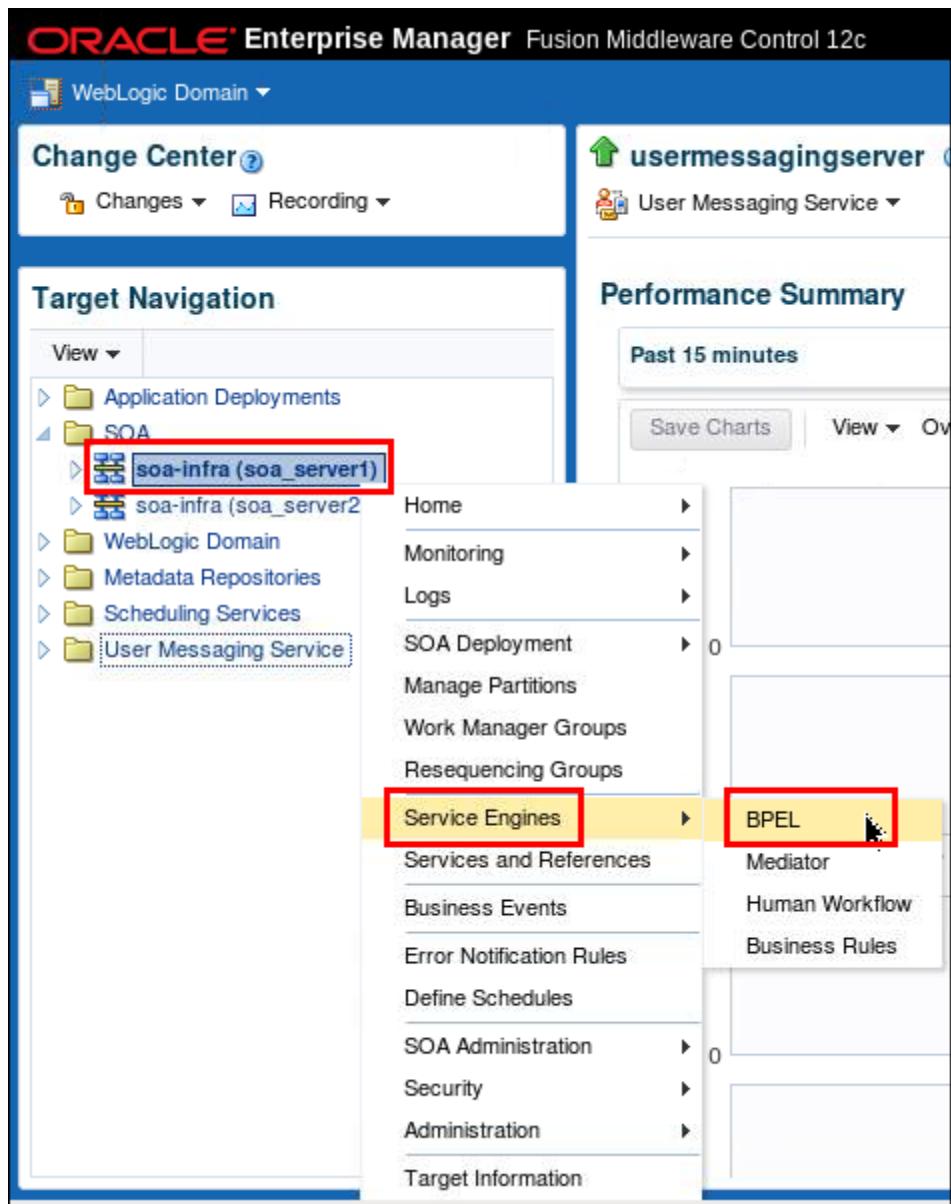


- e. On the Performance Summary page, you can view email throughput and other messaging service throughput if those drivers have been installed and are active. For example, the following page displays information about email performance:



Monitoring Service Engine Performance

7. To monitor the performance of a SOA Service Engine, for example, the BPEL Service Engine, in the Target Navigation pane, expand the SOA folder (if needed), right-click the `soa-infra (soa_server1)` entry, and select Service Engines > BPEL.



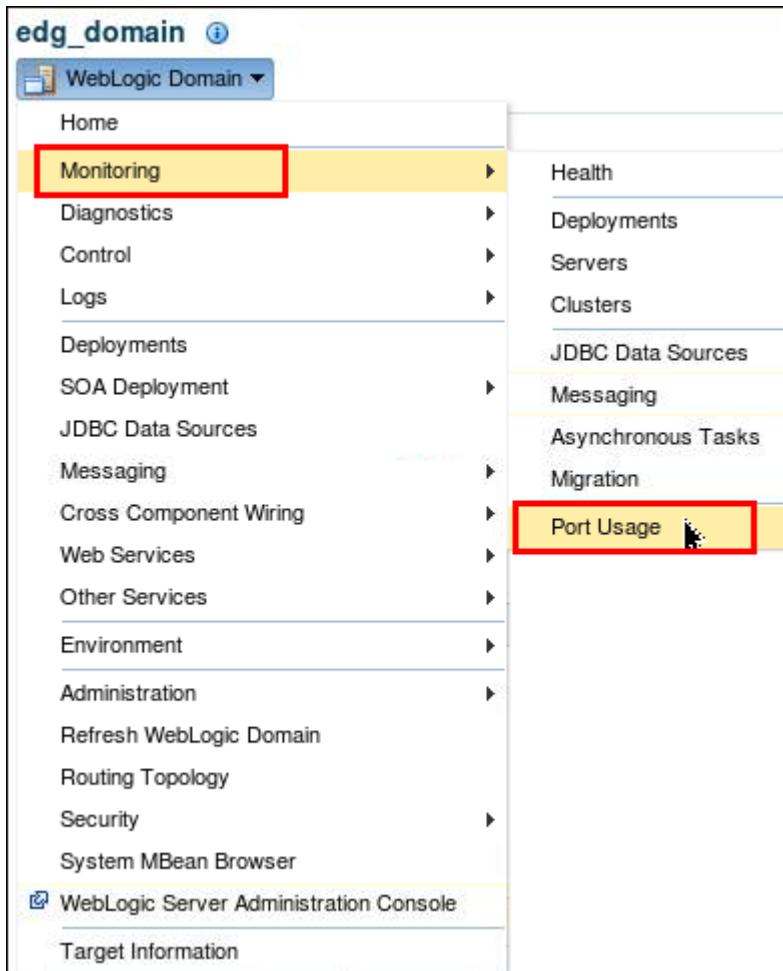
Note: The same steps can be performed for any of the Service Engines options that are available in the Service Engine menu. The performance information for each Service Engine, such as the preceding BPEL Engine (Service Engine) page example, is visible on the Statistics tab page for the Service Engine.

Monitoring Port Usage

In this section, you view port usage.

8. To monitor port usage in the SOA Server instance, perform the following steps:
 - a. On the Oracle Fusion Middleware Control Console home page, to access Port Usage, expand WebLogic Domain and click `edg_domain`.

- b. On the edg_domain page, click WebLogic Domain > Monitoring > Port Usage.



- c. On the Port Usage page, you can observe the different ports in use by the different components.

edg_domain 

WebLogic Domain  Page Refreshed Apr 7, 2015 11:16:02 AM GMT 

Port Usage

Show **All** 

Port in Use	IP Address	Component	Channel	Protocol
7001	adminvh.example.com	AdminServer	Default[http]	http
8080	soa.example.com	lbr_server	Default[snmp]	snmp
7001	adminvh.example.com	AdminServer	Default[ldap]	ldap
8080	admin.example.com	lbr_server	Admin_Chan	http
8001	soavh02.example.com	soa_server2	Default[CLUSTER-B...	CLUSTER-BROADCAST
8001	soavh01.example.com	soa_server1	Default[t3]	t3
7001	adminvh.example.com	AdminServer	Default[snmp]	snmp
8001	soavh02.example.com	soa_server2	Default[http]	http
8001	soavh01.example.com	soa_server1	Default[iop]	iop
4443	soa.example.com	lbr_server	DefaultSecure[ldaps]	ldaps
4443	soa.example.com	lbr_server	DefaultSecure[t3s]	t3s
7001	adminvh.example.com	AdminServer	Default[t3]	t3
8001	soavh02.example.com	soa_server2	Default[ldap]	ldap
7001	adminvh.example.com	AdminServer	Default[iop]	iop
4443	soa.example.com	lbr_server	DefaultSecure[ilops]	iops
8001	soavh01.example.com	soa_server1	Default[CLUSTER-B...	CLUSTER-BROADCAST
8001	soavh01.example.com	soa_server1	Default[http]	http
8080	soa.example.com	lbr_server	Default[iop]	iop
8080	soainternal.example.c...	lbr_server	SoaInt_Chan	http
8080	soa.example.com	lbr_server	Default[t3]	t3

Part 2: Troubleshooting

General Notes

Although the practice instructions for the troubleshooting tasks and their corrective actions are documented in a sequential manner, consider trying to diagnose and take corrective action by yourself before reading the possible solutions and corrective actions that are documented.

Practice 13-5: Deploying a Troublesome Composite Application

Overview

In this practice, you deploy the TroubleSomeComposite application by using its supplied SOA archive file. You log in to the Oracle Fusion Middleware Control Console and examine the components that are part of the deployed application.

The application accepts a new product name and quantity in the input (request) data and inserts the new product into the `EXTERNAL_STORE` database table. The input data can be sent through the SOAP binding or the JCA binding that is provided by a File Adapter. The application uses the DbAdapter to insert the new product into the database table.

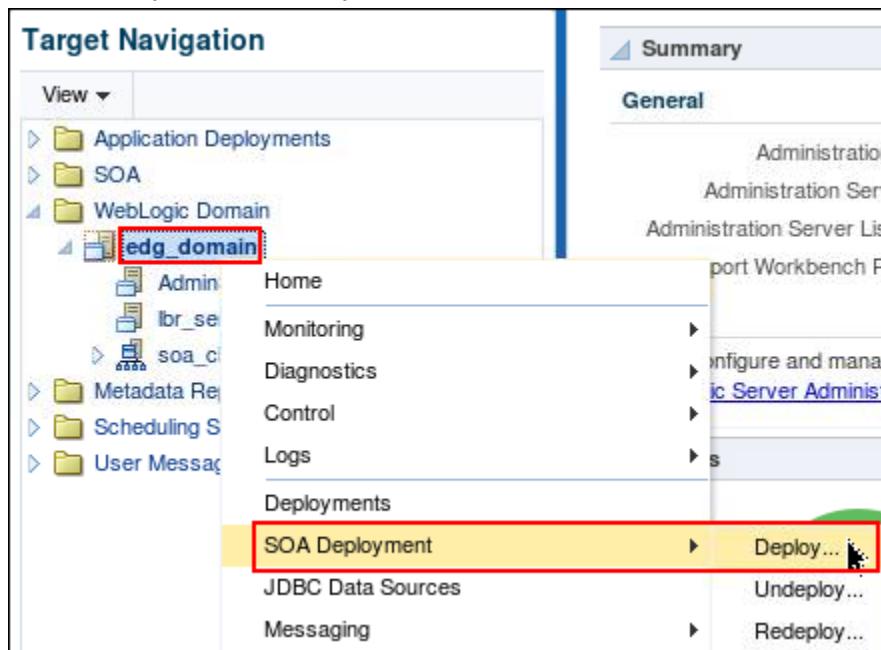
Assumptions

- The runtime server configuration for the DbAdapter connection factory, `eis/DB/soademo`, is configured to use the JDBC `jdbc/soademo` data source, which is also configured. If not, perform the steps for configuring the database adapter as described in the practice for the lesson titled “Configuring High Availability.”

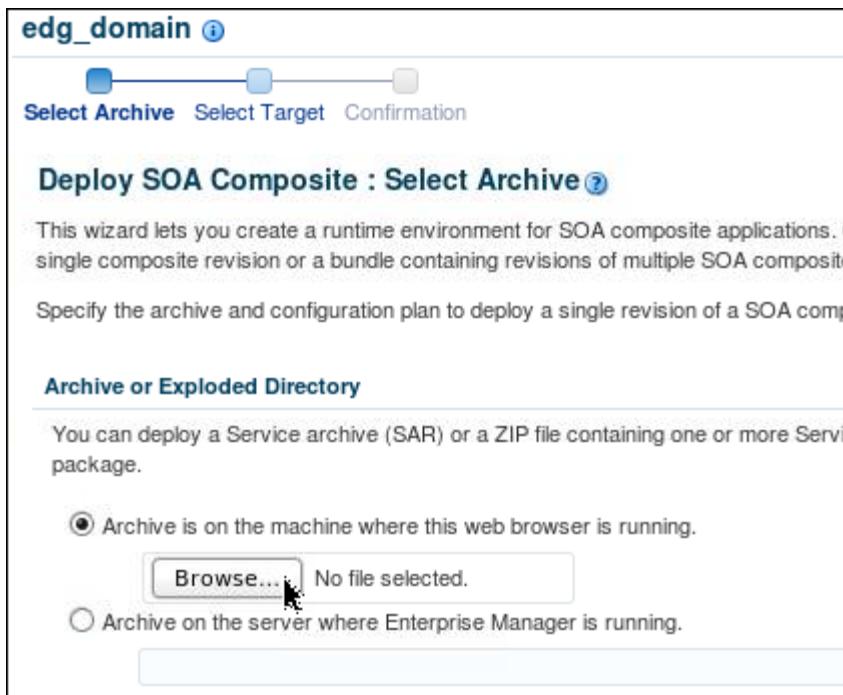
Tasks

Deploying the TroubleSomeComposite Application

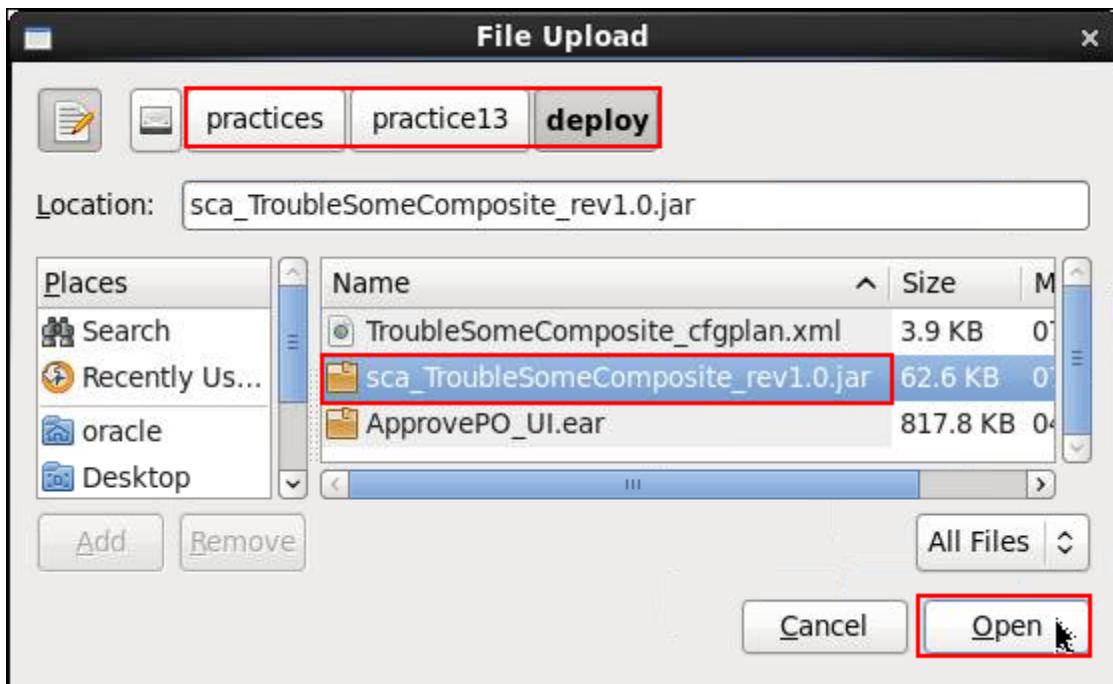
1. To deploy the TroubleSomeComposite application, perform the following steps:
 - a. If required, in a web browser window, access Oracle Enterprise Manager Fusion Middleware Control with the URL `http://admin.example.com:8080/em`, and sign in with the `weblogic` administrator credentials.
 - b. In the Target Navigation pane, expand the `edg_domain` node, right-click it, and select `SOA Deployment > Deploy`.



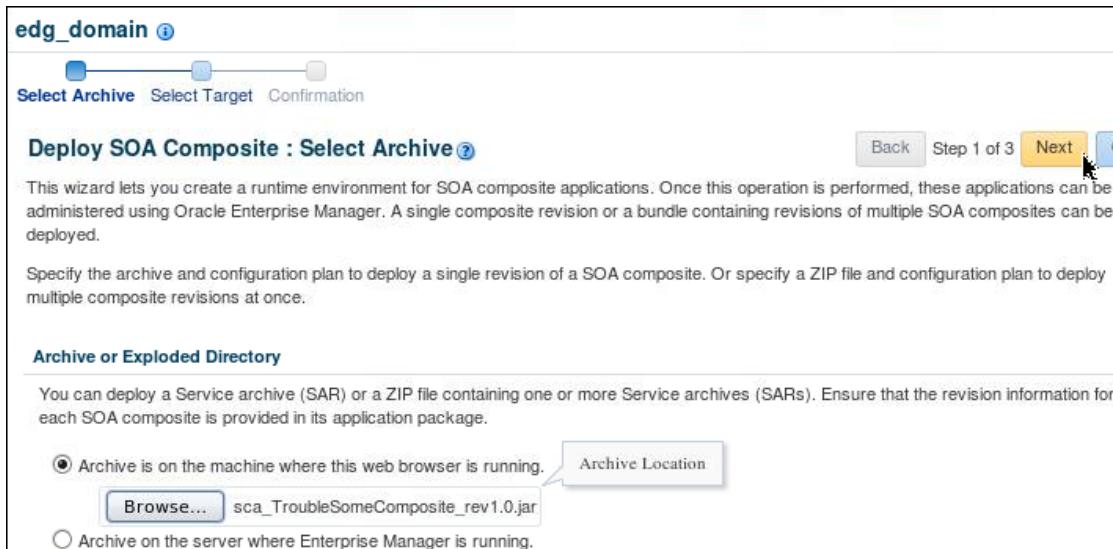
- c. On the “Deploy SOA Composite: Select Archive” page, accept the default selected option called “Archive is on the machine where this web browser is running.”, and click `Browse`.



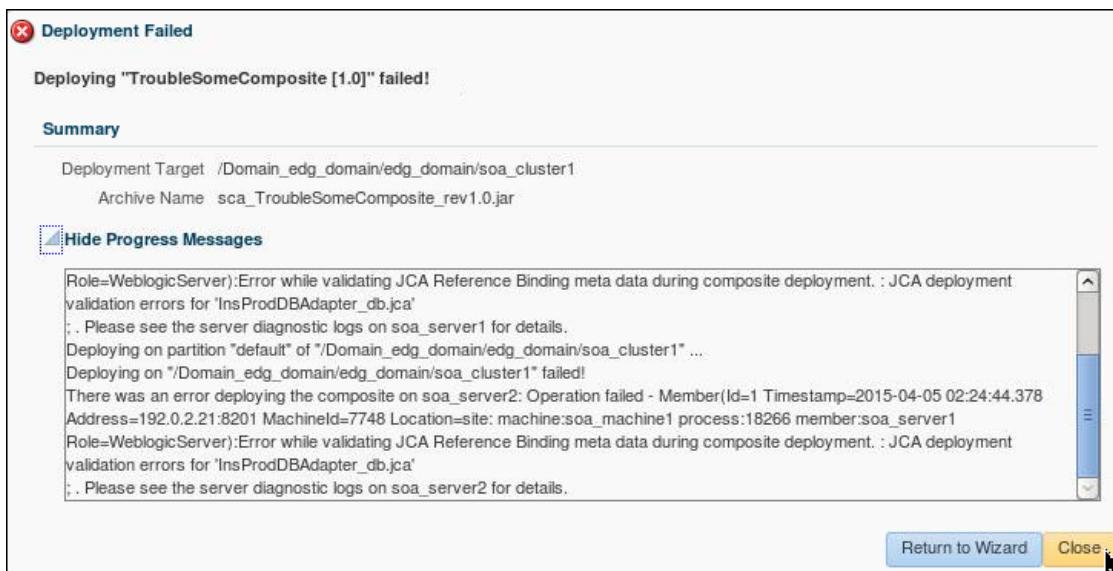
- d. In the File Upload dialog box, navigate to the `/practices/practice13/deploy` folder, select the `sca_TroubleSomeComposite_rev1.0.jar` file, and click Open.



- e. On the “Deploy SOA Composite : Select Archive” page, verify that the `sca_TroubleSomeComposite_rev1.0.jar` file name appears in the “Archive or Exploded Directory” section, accept the default settings for the remaining items, and click Next.



- f. On the “Deploy SOA Composite : Select Target” page, accept the default settings and click Next.
 - g. On the “Deploy SOA Composite : Confirmation” page, click Deploy.
- Note:** The “Deployment in progress” dialog box is displayed, where you can track deployment processing.
- h. When processing completes, you should see a Deployment Failed message appear with details of the error shown in the Progress Messages area. Take note of the error message and the component name (InsProdDBAdapter) listed in the error message, and click Close.

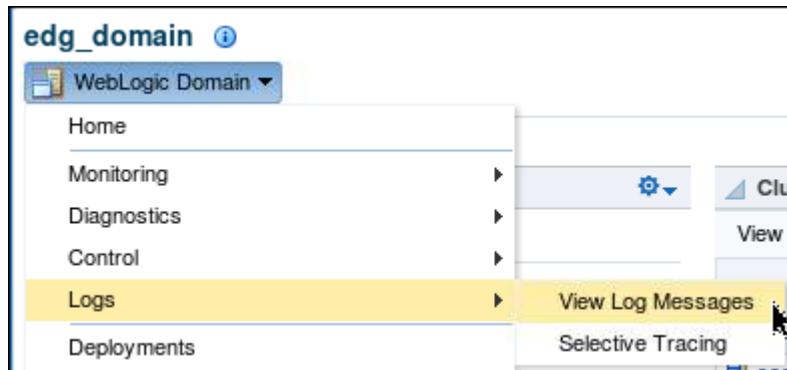


- i. Briefly explore, with your instructor or other students, what the possible cause of this error may be.

Hint: The error is related to the type of component and the configuration details associated with the error.
- 2. Because the error message references the diagnostic log file for a specific SOA server (in this case, soa_server2), you could navigate through the file system on host02 to find the \$MSERVER/servers/soa_server2/logs folder and view the contents of the

`soa_server2-diagnostic.log` file. However, you can view the same log information by performing the following steps:

- On the Oracle Enterprise Manager Fusion Middleware Control Console page, with the `edg_domain` node selected in the Target Navigation pane, on the `edg_domain` home page, click `WebLogic Domain > Logs > View Log Messages`.



- On the Log Messages page, the default search settings capture the latest messages of interest, and therefore, the topmost message should represent the error related to the application deployment failure.

Note: If you hover the mouse over the Message column for the Error message for the selected Message ID, the message that is written to the log file can be seen in the Deployment Failed dialog box.

The screenshot shows the 'Log Messages' page for the `edg_domain`. The page header shows 'Logged in as weblogic' and 'Page Refreshed Apr 8, 2015 4:23:12 AM GMT'. The main area displays a table of log messages. The table has columns: Time, Message Type, Message ID, and Message. The 'Message' column contains error messages related to composite deployment on `soa_server1`. A specific message is highlighted with a blue background, showing the full error stack trace.

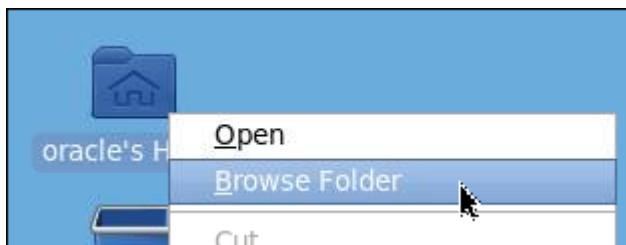
Time	Message Type	Message ID	Message
Apr 8, 2015 4:18:56 AM GMT	Error	SOA-21537	Sending back error message: There was an error deploying the composite on soa_server1: Operation failed - Member(id=1, Timestamp=2015-04-05 02:24:44.378, Address=192.0.2.21:8201, MachineId=7748, Location=site:, machine:soa_machine1, process:18266, member:soa_server1, Role=WeblogicServer):Error while validating JCA Reference Binding meta data during composite deployment. : JCA deployment validation errors for 'InsProdDBAdapter_db.jca'
Apr 8, 2015 4:18:57 AM GMT	Error		Load failed for 270a1602-d285-4000-9a7b-1d60a12008f
Apr 8, 2015 4:18:57 AM GMT	Error		Sending back error message: There was an error deploying the composite on soa_server1: Operation failed - Member(id=1, Timestamp=2015-04-05 02:24:44.378, Address=192.0.2.21:8201, MachineId=7748, Location=site:, machine:soa_machine1, process:18266, member:soa_server1, Role=WeblogicServer):Error while validating JCA Reference Binding meta data during composite deployment. : JCA deployment validation errors for 'InsProdDBAdapter_db.jca'
Apr 8, 2015 4:20:02 AM GMT	Error		Location=site:, machine:soa_machine1, process:18266, member:soa_server1, Role=WeblogicServer):Error while validating JCA Reference Binding meta data during composite deployment. : JCA deployment validation errors for 'InsProdDBAdapter_db.jca'
Apr 8, 2015 4:20:02 AM GMT	Error		Location=site:, machine:soa_machine1, process:18266, member:soa_server1, Role=WeblogicServer):Error while validating JCA Reference Binding meta data during composite deployment. : JCA deployment validation errors for 'InsProdDBAdapter_db.jca'
Apr 8, 2015 4:20:02 AM GMT	Error		Location=site:, machine:soa_machine1, process:18266, member:soa_server1, Role=WeblogicServer):Error while validating JCA Reference Binding meta data during composite deployment. : JCA deployment validation errors for 'InsProdDBAdapter_db.jca'

Tip: If you can view all the columns for the message log page, you can find a column that identifies the file in which the message you are viewing is saved. In this case, the message with ID SOA-21357 is written to the `soa_server2-diagnostic.log` file.

Note: In this case, if you understand Database Adapter properties and configuration, you can ascertain that there is probably an issue with the connection factory associated with the DbAdapter.

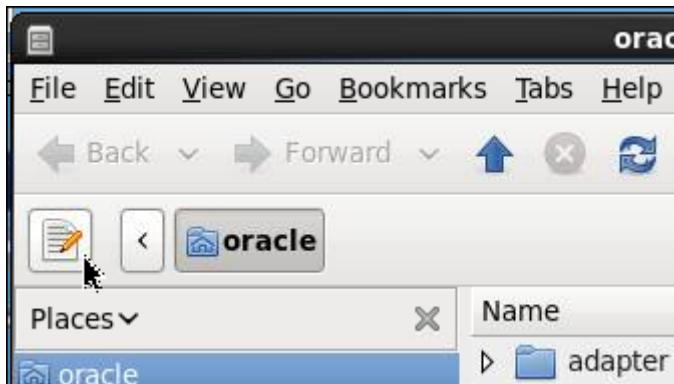
- Because the diagnostic error message references the `InsProdDBAdapter_db.jca` file, which holds the application configuration data related to the Database Adapter, you can examine the `InsProdDBAdapter_db.jca` file by opening it from the deployment archive, by using the following steps:

- a. On the Linux desktop, on host01 or host02, right-click the “oracle’s Home” desktop icon and select Browse Folder.



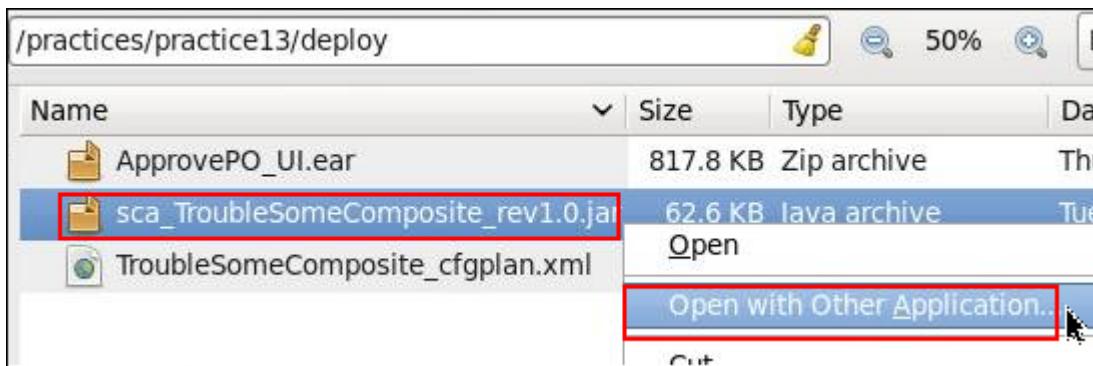
Note: This action opens the File Browser application.

- b. In the File Browser window, click the first Edit icon below the menu and toolbar.

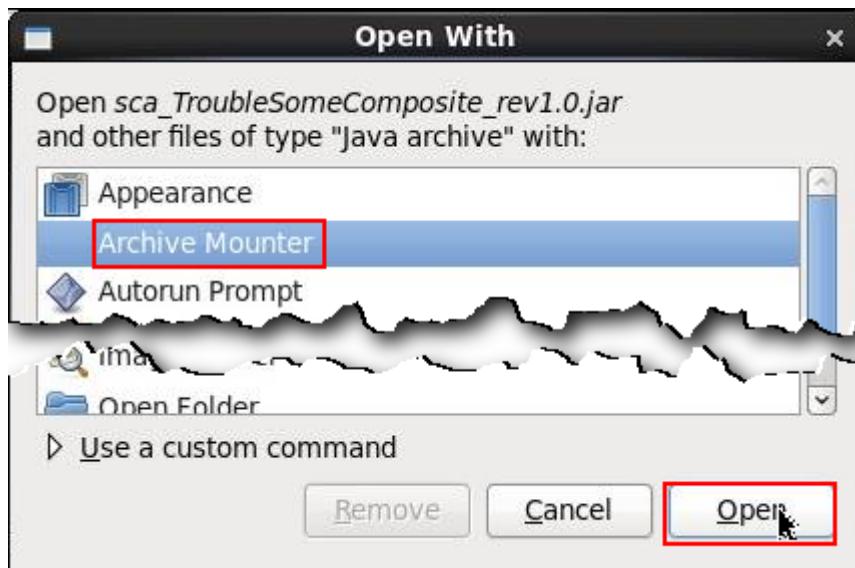


Note: Clicking the Edit icon creates a Location field using which you can navigate to any folder by entering the destination path name and pressing Enter.

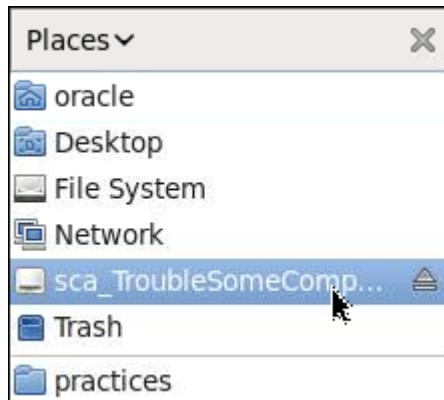
- c. In the File Browser window, in the Location field, enter the /practices/practice13/deploy path and press Enter. Right-click the sca_TroubleSomeComposite_rev1.0.jar file and select “Open with Other Application.”



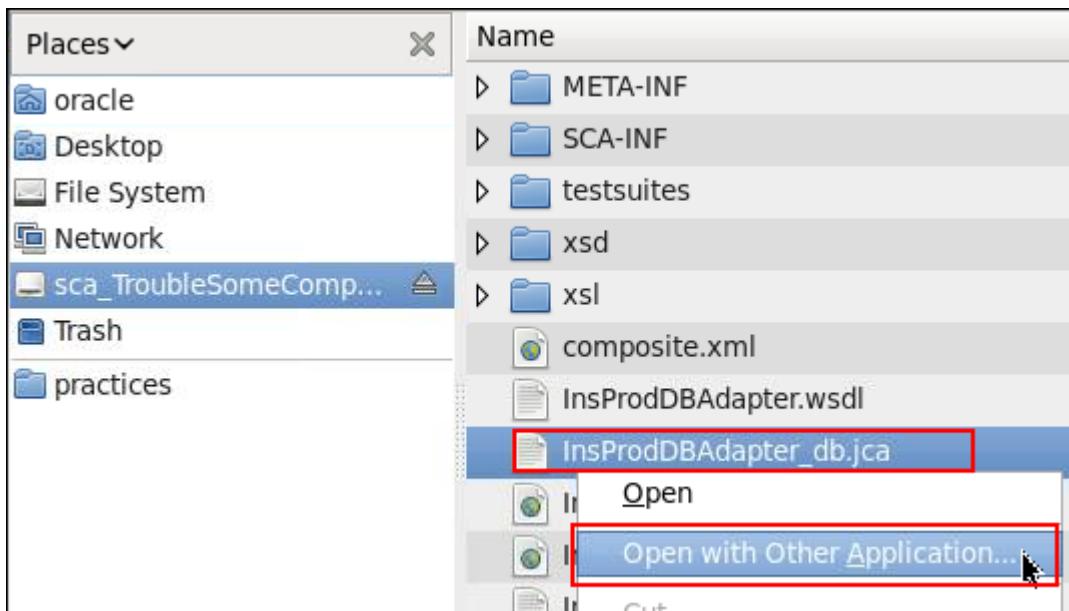
- d. In the “Open with” dialog box, select Archive Mounter, and click Open.



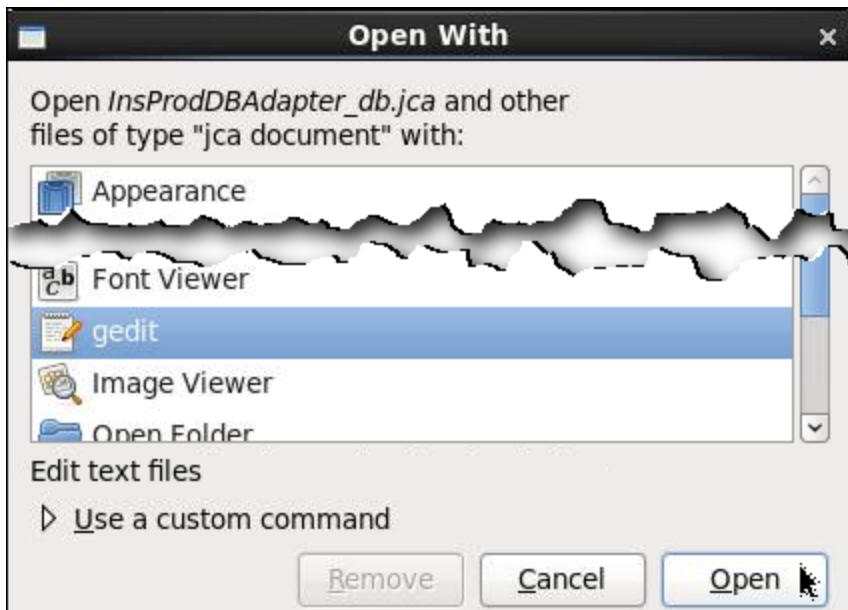
Note: After clicking Open, the `sca_TroubleSomeComposite_rev1.0.jar` file is added as an entry in the Places pane as a mounted archive. This mechanism allows easy navigation through the archive and viewing of file contents as if it were a normal file system.



- e. In the Places pane, select the `sca_TroubleSomeComposite_rev1.0.jar` mounted archive entry, and in the right-hand pane, scroll down to locate and right-click the `InsProdDBAdapter_db.jca` file, and select "Open with Other Application."



- f. In the Open With dialog box, select the gedit entry and click Open.



- g. In the gedit window, the `InsProdDBAdapter_db.jca` file content is displayed on a tab page with the same name. Locate and view the location attribute value in the `<connection-factory>` element.



```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <adapter-config name="InsProdDBAdapter" adapter="db" wsdlLocation="InsProdDBAdapter.wsdl"
  platform.integration.oracle.blocks/adapter/fw/metadata">
3
4   <connection-factory location="eis/DB/demo" UIConnectionName="soademo" adapterRef="" />
5   <endpoint-interaction portType="InsProdDBAdapter_ptt" operation="insert">
6     <interaction-spec className="oracle.tip.adapter.db.DBWriteInteractionSpec">
7       <property name="DescriptorName" value="InsProdDBAdapter.ExternalStore"/>
8       <property name="DmlType" value="insert"/>
9       <property name="MappingsMetaDataURL" value="InsProdDBAdapter-or-mappings.xml"/>
10      <property name="DetectOmissions" value="true"/>
11      <property name="GetActiveUnitOfWork" value="false"/>
12    </interaction-spec>
13  </endpoint-interaction>
14
15 </adapter-config>

```

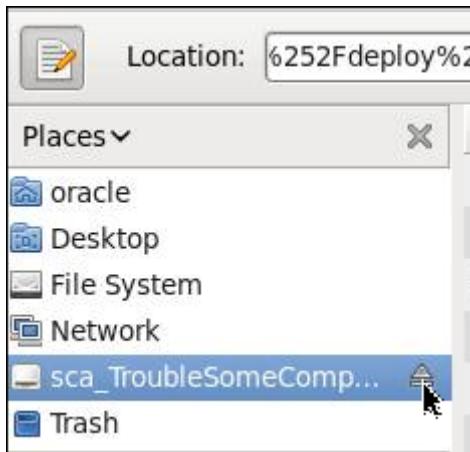
- h. What is the value of the location attribute value in the `<connection-factory>` element?

Answer: `eis/DB/demo`

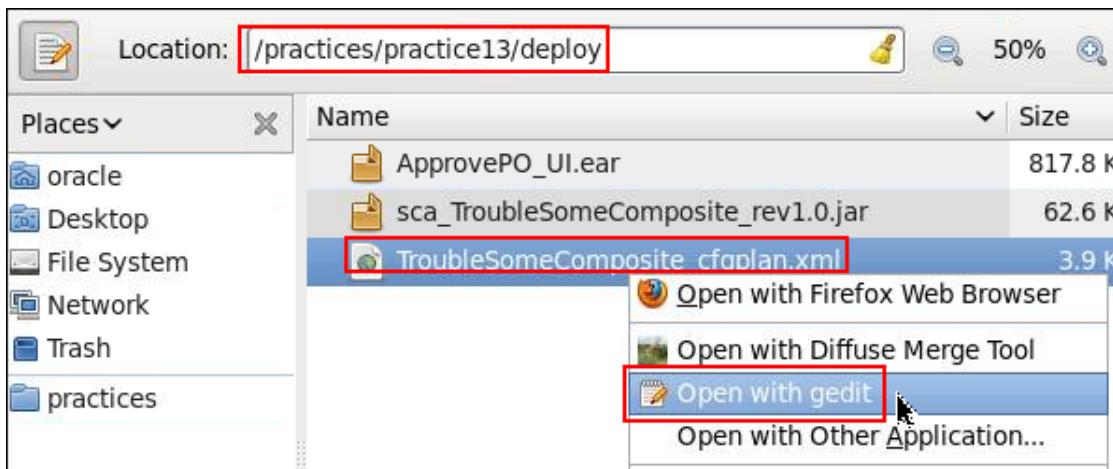
Comment: This is the source of error because you have not yet created a connection factory with the JNDI name `eis/DB/demo`. However, you have previously created a connection factory with the JNDI name `eis/DB/soademo`. In this case, you can presume (although this should be checked with the application developer) that the JNDI name `eis/DB/soademo` should have been used.

Note: This error can be fixed by using a deployment configuration plan to replace the offending value. Alternatively, the developer can fix the application source and provide you with an updated archive for deployment.

- i. Close the gedit application without making changes to the `InsProdDBAdapter_db.jca` file.
- j. In the File Browser window, eject the mounted archive by clicking the Eject icon to the right of the mounted archive name.



- k. Do not close the File Browser application window.
4. Because a deployment configuration plan is created for you, you can view the deployment configuration plan file by performing the following steps:
- In the File Browser application window, enter the `/practices/practice13/deploy` path in the Location field, or navigate to this location. Locate and right-click the `TroubleSomeComposite_cfgplan.xml` file, and select "Open with gedit."



- In the gedit editor window, click Search > Find (or press Ctrl+F) and search for the word demo.

Note: After finding the first occurrence of the word demo, you should see the <searchReplace> element that provides the instruction to the deployment processing to replace the incorrect eis/DB/demo value with the correct eis/DB/soademo value.

```

92  <wsdlAndSchema name="InsProdDBAdapter.wsdl|InsProdDBAdapter_db.jca|NewProd
  NewProdFileService file.jca|xsd/InsProdDBAdapter_table.xsd|xsd/product.xsd">
93    <searchReplace>
94      <search>eis/DB/demo</search>
95      <replace>eis/DB/soademo</replace>
96    </searchReplace>
97  </wsdlAndSchema>
98 </SOAConfigPlan>

```

Tip: Either the developer can create this configuration plan file for you with the appropriate configuration data, or you can create it yourself. It is easier to create the deployment plans by using Oracle JDeveloper with the source of the composite application available.

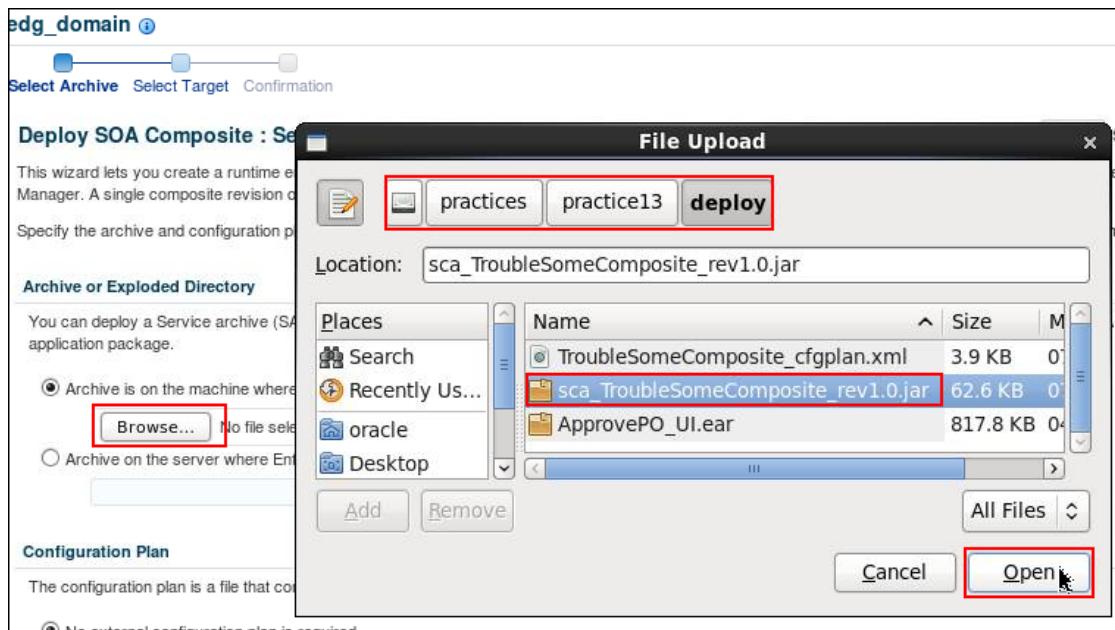
- Close the gedit editor window.
- Close the File Browser application window.

Redeploying the TroubleSomeComposite Application with a Deployment Configuration Plan

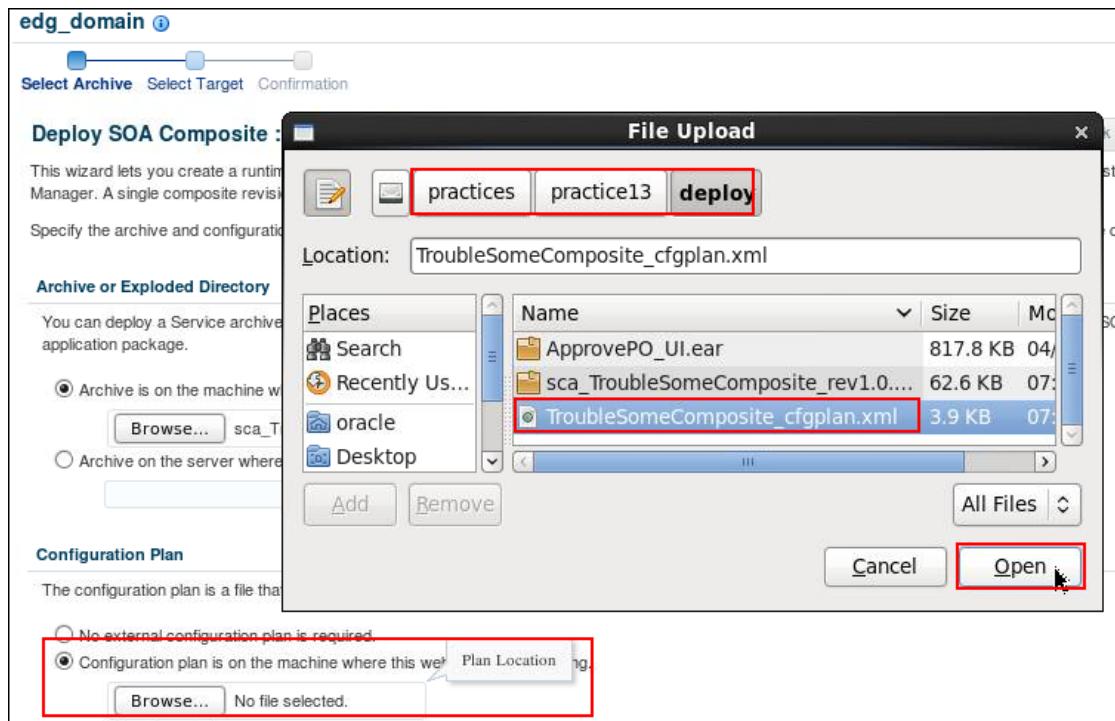
- Return to the Oracle Fusion Middleware Control Console.

Note: If required, access the page by using the URL <http://admin.example.com:8080/em>, and sign in as the `weblogic` administration user.

- To deploy the TroubleSomeComposite application with the configuration plan, performing the following steps:
 - In the Target Navigation pane, with the `edg_domain` node expanded and selected, right-click the `edg_domain` node and select SOA Deployment > Deploy.
 - On the “Deploy SOA Composite: Select Archive” page, accept the default selected option called “Archive is on the machine where this web browser is running.” and click Browse. In the File Upload dialog box, navigate to the `/practices/practice13/deploy` folder, select the `sca_TroubleSomeComposite_rev1.0.jar` file, and click Open.



- c. On the “Deploy SOA Composite: Select Archive” page, in the Configuration Plan section, select “Configuration Plan is on the machine where this web browser is running.” and click Browse. In the File Upload dialog box, navigate to the /practices/practice13/deploy folder, select the TroubleSomeComposite_cfgplan.xml file, and click Open.



- d. On the “Deploy SOA Composite : Select Archive” page, with the composite archive and its configuration plan files selected, click Next.
- e. On the “Deploy SOA Composite : Select Target” page, accept the default settings and click Next.
- f. On the “Deploy SOA Composite : Confirmation” page, click Deploy.

- g. Wait for the deployment to complete. This time you should see a Deployment Succeeded dialog box displayed. Click Close.



Note: Having successfully diagnosed the deployment error and deployed the application, you might want to test the various interfaces provided by the application. Although this type of testing should be done during the development and testing phases, some runtime error can still occur that may not have been caught during those phases.

Practice 13-6: Testing the TroubleSomeComposite Interfaces

Overview

In this practice, you initiate tests of the TroubleSomeComposite application by using different interfaces to see if any errors occur at run time. You start with testing the SOAP binding interface. If you encounter problems, you are required to take corrective action to diagnose and fix the problem.

You then initiate a test by using the File Adapter interface. Again, if problems arise, you are required to take corrective action.

Assumptions

- You have deployed the TroubleSomeComposite application.

Tasks

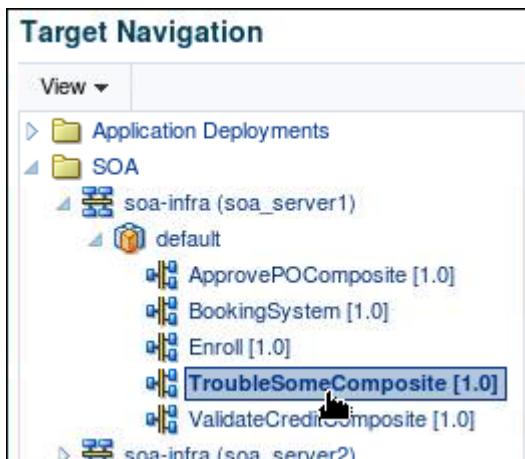
In the tasks, you first test the SOAP interface, take corrective action for problems, then test the File Adapter interface again, and take corrective action if there are any problems remaining. The goal is to have a working application for all its input sources.

Testing the SOAP Application Interface

In this section, you test the SOAP interface of the TroubleSomeComposite application to verify that the changes made to the database adapter connection factory property, by deploying with the configuration plan, makes the application operate as expected. If successful, a data row is added to the EXTERNAL_STORE table in the SOADEMO database schema.

1. Ensure that you have the Dashboard tab page of the TroubleSomeComposite application displayed in the Oracle Enterprise Manager Fusion Middleware Control interface.

Note: If the TroubleSomeComposite Dashboard page is not visible, in the Target Navigation panel, expand SOA > soa-infra (soa_server1) > default, and click the TroubleSomeComposite [1.0] node.



2. To invoke a test of the TroubleSomeComposite application SOAP interface, perform the following steps:
 - a. On the TroubleSomeComposite [1.0] page, above the subtabs such as the Flow Instances tab, click Test.



- b. On the TroubleSomeComposite [1.0] > Test Web Services page, scroll down to the Input Arguments section on the Request subtab, expand the body element in the Input Arguments area, and after entering the following field values, click Test Web Service (at the top or bottom right side of the page).

Id	TBLT03
qty	5

Logged in as weblogic | soavh01.exam
Page Refreshed May 12, 2015 3:59:30 AM GM

Test Web Service

Use this page to test any WSDL or WADL, including WSDLs or WADLs that are not in the farm. To test a Web service, click the Test Web Service button.

Endpoint: https://soa.example.com:4443/soa-infra/services/default/TroubleSomeComposite/InsProdMediator_... Endp

Request **Response**

► Security
► Quality of Service
► HTTP Header
► Additional Test Options

► **Input Arguments**

Tree View Enable Validation Load Payload No file selected.

SOAP Body

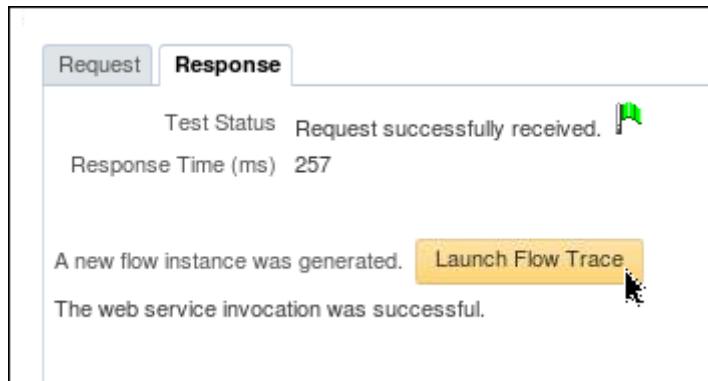
View

Name	Type	Value
* body	body	
* id	string	TBLT03
* qty	int	5

Note: If you look for the Operation field, it shows that the Read operation is being invoked. The Read operation is the only function that is exposed by the service. In addition, you have to scroll down the page to locate the fields in the expanded Input Arguments section. After you click Test Web Service, the Response tab becomes active on the page with the response information.

- c. On the TroubleSomeComposite [1.0] > Test Web Services Response tab page, you can see an indicator that the request was received successfully. However, receiving a message successfully does not necessarily indicate that the service completed

successfully. To view if the service's Read operation completed successfully, click Launch Flow Trace.



The screenshot shows the 'Response' tab of the Flow Trace interface. It displays the following information:

- Test Status: Request successfully received. (Green icon)
- Response Time (ms): 257
- A new flow instance was generated. (Yellow 'Launch Flow Trace' button)
- The web service invocation was successful.

- d. On the Flow Trace page, the Faults tab page is active by default. You can now see that the invocation and execution of the service operation was successful because there are no error messages on the Faults tab page. In addition, in the Trace section, you can see that all the components that were executed by the flow completed without error. With the focus on the database adapter, you can see that the InsProdDBAdapter service reference completed successfully, indicating that a row was inserted into the database table.



The screenshot shows the Flow Trace page with the 'Faults' tab selected. It displays:

- Error Message: No faults found. (highlighted with a red box)

The 'Trace' tab is also visible, showing the following table of completed service instances:

Instance	Type	Usage	State
InsProdMediator_ep	Service	Service	Completed
InsProdMediator	Mediator	Service	Completed
InsProdDBAdapter	Reference	Reference	Completed

Note: Although you may not know the target database table, in this course, you can verify that the data has been added to the EXTERNAL_STORE table in the SOADEMO database schema.

- e. Close the Flow Trace browser window or tab page.
3. To verify that the row has been inserted into the EXTERNAL_STORE table in the SOADEMO database schema, enter the following `sqlplus` command in a Terminal window on host02, and then enter the subsequent SQL statements:

```
$ sqlplus
```

Note: When SQL*Plus prompts for the username, enter `soademo`, and enter the password for the database schema (check with your password list or ask the

instructor). At the SQL*Plus SQL> prompt, enter the SELECT SQL statement shown, and then the exit SQL*Plus command:

```
SQL> SELECT * FROM external_store WHERE prod_id like 'TBLT%';
```

Note: Whereas the SQL query is not case-sensitive, the text data (TBLT%) within the quotation marks is case-sensitive. The following query result should be returned:

```
SQL> SELECT * FROM external_store WHERE prod_id like 'TBLT%';  
PROD_ID          QUANTITY  
-----  
TBLT03           5
```

```
SQL> exit
```

```
bash-4.1$ sqlplus  
SQL*Plus: Release 11.2.0.3.0 Production on Thu Apr 9 00:06:24 2015  
Copyright (c) 1982, 2011, Oracle. All rights reserved.  
Enter user-name: soademo  
Enter password:  
Connected to:  
Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit  
With the Partitioning, OLAP, Data Mining and Real Application Test  
SQL> SELECT * FROM external_store WHERE prod_id LIKE 'TBLT%';  
PROD_ID          QUANTITY  
-----  
TBLT03           5  
SQL> exit
```

Summary: You have verified that the deployed application functions correctly for invocations through its SOA interface for the Read operation, and that the Database Adapter configuration is now valid.

Testing the File Adapter Interface

In this section, you test the File Adapter interface by copying a supplied XML file to a specified folder, from which the File Adapter consumes the supplied file.

Note: There are two problems that you get to experience and solve with this File Adapter scenario.

4. To test the File Adapter interface, as input for new product data, perform the following steps:

- In a Terminal window, copy the file prod_tblt01.xml from the /practices/xml/troubleshoot folder to the /practices/practice13 folder, by entering the following commands:
\$ cd /practices/practice13
\$ cp /practices/xml/troubleshoot/prod_tblt01.xml .

Note: There is a space followed by a dot character at the end of the last command.

- Wait a maximum of one minute for the file to be processed.

Note: The File Adapter reference in the application is configured to delete a file that it reads as input data. If the file is not processed, it will not be removed.

- c. Does the `prod_tblt01.xml` file get removed from the `/practices/practice13` folder?

Hint: Enter the following command in the Terminal window to check if the XML file is still present in the `/practices/practice13` folder:

```
$ ls prod*.xml
```

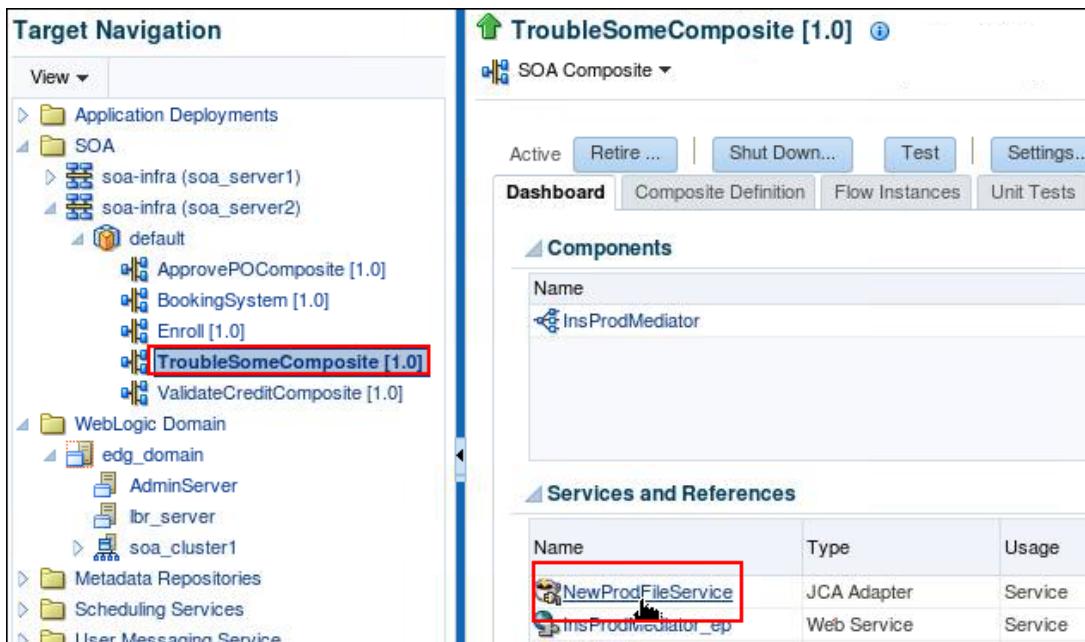
Answer: No the `prod_tblt01.xml` file does not get removed from the `/practices/practice13` folder.

- d. Your task is to diagnose the cause of the problem. Where do you start looking first? Is an instance created for the application? Is any fault reported?

Answer: In this case, no application instance is created and therefore no fault information is available either in the Oracle Fusion Middleware Control Console or in the log files. Therefore, the problem could be related to the application component configuration.

Tip: Although a developer can take care of these configuration settings, changes may be required when an application is moved from the test to production contexts, and the component configuration data may need to be modified. Some of the component configuration for the services and references in composite applications can be accessed and modified through the Oracle Enterprise Manager Fusion Middleware Control interface.

5. To troubleshoot the lack of file processing observed with the File Adapter interface, perform the following steps:
 - a. On the Oracle Fusion Middleware Control Console web page, in the Target Navigation pane, click the `TroubleSomeComposite [1.0]` application node.
- Note:** You may need to expand the `SOA > soa-infra (soa_server1) > default` tree first.
- b. On the `TroubleSomeComposite [1.0]` application Dashboard tab page, scroll down to the “Services and References” section and click the `NewProdFileService` JCA Adapter Service link.



The screenshot shows the Oracle Fusion Middleware Control Console interface. On the left, the **Target Navigation** pane displays a tree structure of application deployments, SOA domains, WebLogic domains, and metadata repositories. The `TroubleSomeComposite [1.0]` application node is selected and highlighted with a red box. On the right, the **TroubleSomeComposite [1.0]** application dashboard is shown. The **Components** section lists the `InsProdMediator` component. The **Services and References** section lists the `NewProdFileService` and `InsProdMediator_ep` services. The `NewProdFileService` entry is also highlighted with a red box.

Name	Type	Usage
<code>NewProdFileService</code>	JCA Adapter	Service
<code>InsProdMediator_ep</code>	Web Service	Service

- c. On the TroubleSomeComposite [1.0] > NewProdFileService (File Adapter) page, click the Properties tab.

The screenshot shows the SOA Composite interface for the TroubleSomeComposite [1.0]. The NewProdFileService (File Adapter) is selected. The Properties tab is highlighted with a red box. Below the tabs, there is a section titled 'Instances and Faults'.

- d. On the TroubleSomeComposite [1.0] > NewProdFileService (File Adapter) > Properties tab page, the `prd_dir` property specifies the folder for the input files. This value has not been configured yet.

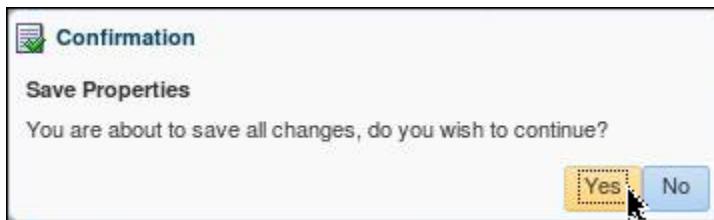
The screenshot shows the NewProdFileService (File Adapter) Properties tab. The `prd_dir` property is listed in the table, and its value cell is empty, indicated by a red box.

Name (Operation or Port Type)	Value
DeleteFile (Read)	true
PollingFrequency (Read)	30
useRejectedMessageRecovery (Read)	true
UseHeaders (Read)	false
IncludeFiles (Read)	prod_.*.xml
MinimumAge (Read)	0
Recursive (Read)	false
<code>prd_dir</code>	

- e. On the TroubleSomeComposite [1.0] > NewProdFileService (File Adapter) > Properties tab page, enter the path `/practices/practice13` in the Value cell of the `prd_dir` property row to specify where the File Adapter looks for input files, and click Apply.

Name (Operation or Port Type)	Value
DeleteFile (Read)	true
PollingFrequency (Read)	30
useRejectedMessageRecovery (Read)	true
UseHeaders (Read)	false
IncludeFiles (Read)	prod_.*.xml
MinimumAge (Read)	0
Recursive (Read)	false
prd_dir	/practices/practice13

- f. In the Confirmation dialog box, with the “Save Properties” prompt, click Yes.



- g. In the Information dialog box, with the message “Properties have been saved successfully,” click OK.



6. To verify that your corrective action is successful, perform the following steps:

- a. In the Terminal window, verify that the `prod_tblt01.xml` file no longer exists, that is, it has been consumed (removed from the folder) by the application for processing, by entering the command:

```
$ ls prod*.xml
```

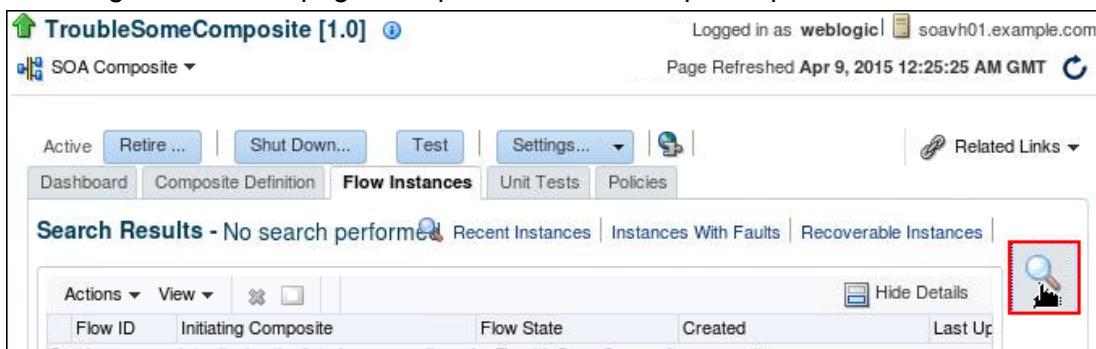
Note: No files should be listed as a result of entering the `ls` command. The following message is displayed:

```
ls: cannot access prod*.xml: No such file or directory
```

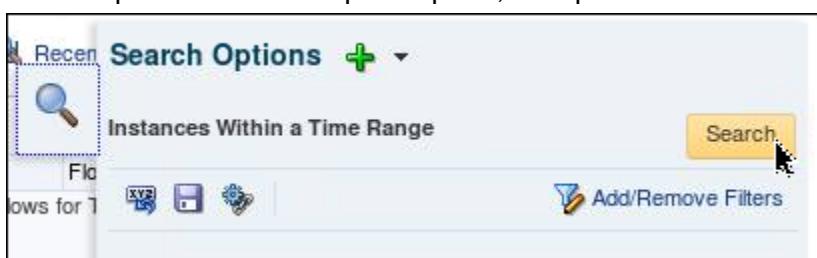
- b. Return to the web browser window with the `TroubleSomeComposite [1.0] > NewProdFileService (File Adapter) > Properties tab` page, and click SOA Composite > Home > Flow Instances.



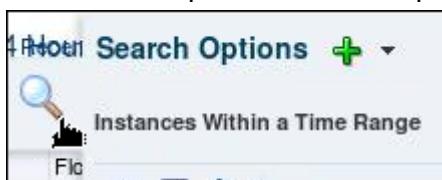
- c. On the TroubleSomeComposite [1.0] > Flow Instances tab page, click the Search icon on the right side of the page to expand the Search Options pane.



- d. In the expanded Search Options pane, accept the default settings and click Search.



Note: To collapse the Search Options pane, click the Search icon in the pane.



- e. On the TroubleSomeComposite [1.0] > Flow Instances tab page, verify that a new (topmost) instance ID has been created and has the value Completed in the Flow State column. Click the Flow ID for the top row in the Search Results table, to open the Flow Trace for that instance.

Flow ID	Initiating Composite	Flow State	Created	Last Up
40004	TroubleSomeComposite [1.0]	✓ Completed	Apr 9, 2015 12:44:33 AM	Apr 9, 2015 12:44:33 AM
40005	TroubleSomeComposite [1.0]	✓ Completed	Apr 9, 2015 12:04:46 AM	Apr 9, 2015 12:04:46 AM

- f. On the Flow Trace page, you can verify that the service executed successfully to completion, and you can expect to find another row inserted into the EXTERNAL_STORE table of the SOADEMO database schema.

Instance	Type	Usage	State
NewProdFileService	Service	Service	✓ Completed
InsProdMediator	Mediator		✓ Completed
InsProdDBAdapter	Reference	Reference	✓ Completed

- g. Optionally, in the Terminal window, start SQL*Plus again, and press the up arrow key to recall the `SELECT * FROM external_store WHERE prod_id LIKE 'TBLT%'` SQL statement. Press Enter.
- Note:** A row with the TBLT01 value in the PROD_ID column, and the value 10 in the QUANTITY column should be displayed in the query results.
- h. Exit SQL*Plus.

Working with the Audit Level and Payload Validation Settings

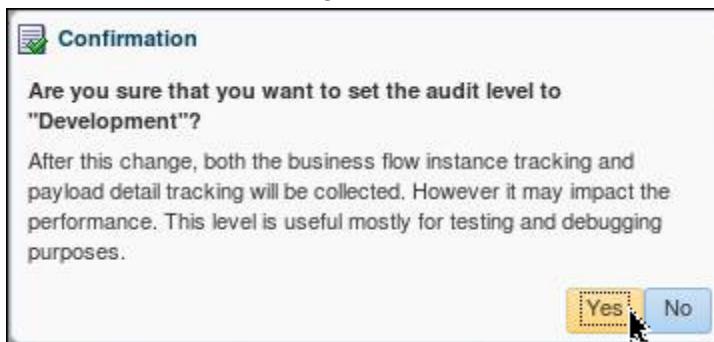
In this section, you initiate the TroubleSomeComposite application with another input XML file. However, this time the data can generate a fault. Before you perform the test, you are required to make some changes to the Audit Level for the composite to facilitate the troubleshooting process. You also enable the payload validation feature.

7. To change the Audit Level for the TroubleSomeComposite [1.0] application, perform the following steps:

- In the web browser window with the Oracle Fusion Middleware Control Console, click TroubleSomeComposite [1.0] in the Target Navigation pane to display the Dashboard tab page of the composite application.
- On the TroubleSomeComposite [1.0] home page, select Settings > Composite Audit Level: Inherit > Development.

Note: The default Audit Level setting is Inherit, which is derived from the soa-infra container settings.

- In the Confirmation dialog box, click Yes.



Note: After clicking Yes in the Confirmation dialog box, the following confirmation message response is displayed at the top of the page.

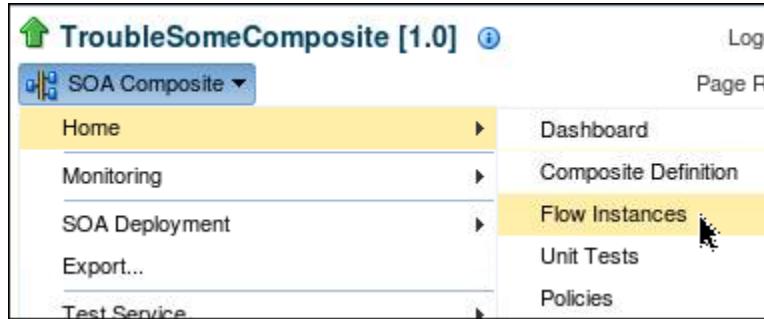
- Using a Terminal window, to initiate the composite application again, perform the following steps:
 - Copy the `prod_tblt02.xml` file from the `/practices/xml/troubleshoot` folder to the `/practices/practice13` folder, by entering the following commands:


```
$ cd /practices/practice13
$ cp /practices/xml/troubleshoot/prod_tblt02.xml .
```

Note: There is a space followed by a dot character at the end of the last command. Wait for approximately one or two minutes for the XML file to be processed and removed from the `/practices/practice13` folder.
 - Does the `prod_tblt02.xml` file get removed from the `/practices/practice13` folder?

Answer: Yes! The `prod_tblt02.xml` file is removed from the `/practices/practice13` folder.

- c. Return to the web browser window with the `TroubleSomeComposite [1.0]` page, and click `SOA Composite > Home > Flow Instances`.



- d. Perform a Search request to refresh the information displayed in the flow trace Search Results table.
e. On the `TroubleSomeComposite [1.0] > Flow Instances` page, what is the Flow State of the latest (topmost entry) instance?

Answer: The latest instance has a Recovery State.

Flow ID	Initiating Composite	Flow State	Created	Last Up
40005	TroubleSomeComposite [1.0]	Recovery	Apr 9, 2015 1:10:07 AM	Apr 9, 2015 1:10:07 AM
40004	TroubleSomeComposite [1.0]	Completed	Apr 9, 2015 12:44:33 AM	Apr 9, 2015 12:44:33 AM
40003	TroubleSomeComposite [1.0]	Completed	Apr 9, 2015 12:04:46 AM	Apr 9, 2015 12:04:46 AM

- f. What do you think is the cause of the fault condition this time? The File Adapter or something else?

Answer: This time the File Adapter is not the cause of the fault. The problem lies somewhere else. You need to examine the application Flow Trace to examine and determine the source of the problem.

9. To explore the application fault condition, perform the following steps:
- On the `TroubleSomeComposite [1.0] > Flow Instances` page, click the name of the composite in the top row of the Search Results table to select the row, and view the Error Message on the Faults subtab below the Search Results table.

TroubleSomeComposite [1.0] 

Logged in as **weblogic** |  **soavh01.ex**

Page Refreshed Apr 9, 2015 12:25:25 AM

SOA Composite 

Active Retire ... Shut Down... Test Settings...  Related

Dashboard Composite Definition **Flow Instances** Unit Tests Policies

Search Results - Instances Created  Instances Instances With Faults Recoverable Instances

Actions	View	X	Flow ID	Initiating Composite	Flow State	Created	Last Up
		X	40005	TroubleSomeComposite [1.0]	 Recovery	Apr 9, 2015 1:10:07 AM	Apr 9, 2015 1:10:07 AM
		X	40004	TroubleSomeComposite [1.0]	 Completed	Apr 9, 2015 12:44:33 AM	Apr 9, 2015 12:44:33 AM
		X	40003	TroubleSomeComposite [1.0]	 Completed	Apr 9, 2015 12:04:46 AM	Apr 9, 2015 12:04:46 AM

Rows Selected 1 | Columns Hidden 2

Faults Composite Sensor Values Composites

Recover View Flow Instance 40005

Error Message	Fault Owner	Fault
 ORAMED-03302:[Exception in oneway execution]Unexpe	NewProdFileServ	Apr 9, 2015 1:10:07 AM

Note: If you hover the mouse over the Error message beginning with the text ORAMED-03302, you can see the message detail appear in a pop-up display area.

Trouble 

SOA Com 

Active        

ORAMED-03302:[Exception in oneway execution]Unexpected exception in one-way operation "insert" on reference "InsProdDBAdapter".Possible Fix:Check whether the reference service is properly configured and running or look at exception for analyzing the reason or contact Oracle Support Services. Cause: BINDING.JCA-12563

Exception occurred when binding was invoked.

Exception occurred during invocation of JCA binding: "JCA Binding execute of Reference operation 'insert' failed due to: DBWriteInteractionSpec Execute Failed Exception.

insert failed. Descriptor name: [InsProdDBAdapter.ExternalStore].

Caused by java.sql.SQLIntegrityConstraintViolationException: ORA-01400: cannot insert NULL into ("SOADEMO"."EXTERNAL_STORE"."PROD_ID")

Please see the logs for the full DBAdapter logging output prior to this exception. This exception is considered not retriable, likely due to a modelling mistake. To classify it as retriable instead add property nonRetriableErrorCodes with value "-1400" to your deployment descriptor (i.e. weblogic-ra.xml). To auto retry a retriable fault set these composite.xml properties for this invoke: jca.retry.interval, jca.retry.count, and jca.retry.backoff. All properties are integers.

The invoked JCA adapter raised a resource exception.

Please examine the above error message carefully to determine a resolution.

Error Message	Fault Owner	Fault
 ORAMED-03302:[Exception in oneway execution]Unexpe	NewProdFileServ	Apr 9, 2015 1:10:07 AM

Hint: The preceding image highlights the failure condition, which indicates that an attempt was made to insert a NULL value in to the PROD_ID column of the

EXTERNAL_STORE database table. This error points to the source of the problem being in the data received from the XML file that is provided as input.

- Move the mouse away from the Error Message to return to the TroubleSomeComposite [1.0] > Flow Instance tab page, and click the instance ID link in Flow ID column in the top row of the Search Results table.

Flow ID	Initiating Composite	Flow State	Created
40005	TroubleSomeComposite [1.0]	Recovery	Apr 1
40004	TroubleSomeComposite [1.0]	Completed	Apr 1
40003	TroubleSomeComposite [1.0]	Completed	Apr 1

Note: When you click the instance ID link for the faulted instance, the Flow Trace page is opened.

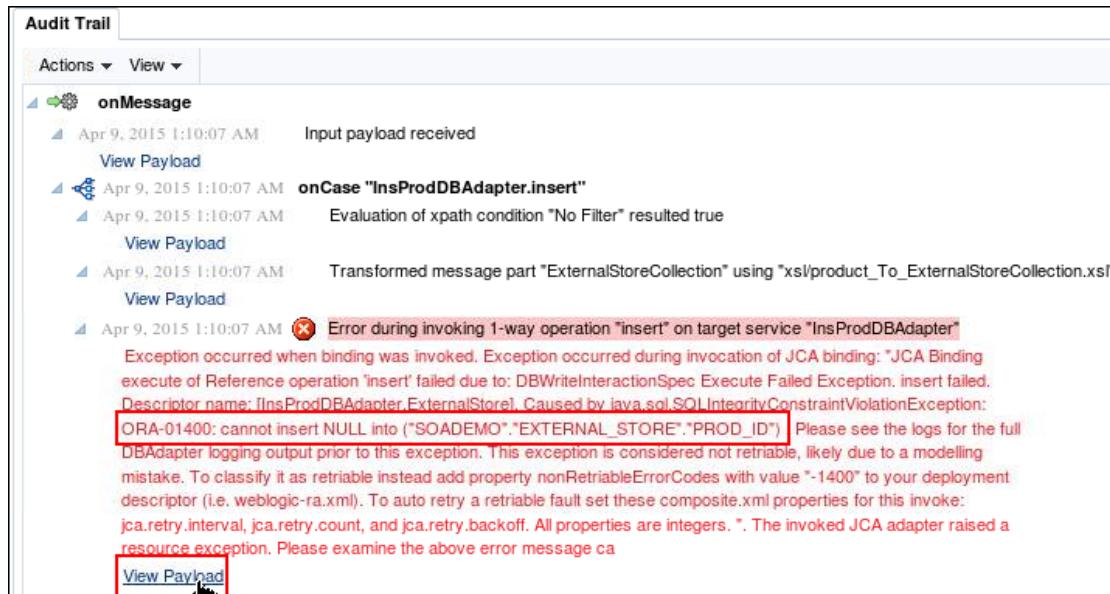
- On the Flow Trace page, click the InsProdMediator link in the Trace table. Notice that the Error Message appears on the Faults tab page, with a link for recovery provided. However, you first examine the Audit Trail for the mediator component to drill deeper into the situation.

Instance	Type	Usage	State
NewProdFileService	Service	Service	Recovery Reqd
InsProdMediator	Mediator		Failed
InsProdDBAdapter	Reference	Reference	Failed

Note: In this flow sequence, the fault occurred when the InsProdDBAdapter reference was invoked to perform the INSERT operation on the database. The fault was propagated to the InsProdMediator component, which received the message from NewProdFileService and forwarded it to the Database Adapter. Because the mediator component invokes the database adapter service, it received the failed state as well.

- On the Audit Trail page, you can see the error in detail again, located at the specific point where it was detected within the application execution sequence, in this case, when the ProdDBAdapter was invoked with the insert operation. Without the Audit Trail setting set to Development, you will not be able to click the View Payload link to see

the data that is actually processed at this point in the application. Because the Audit Level is set to Development mode, click the View Payload link.



Audit Trail

Actions ▾ View ▾

onMessage

Apr 9, 2015 1:10:07 AM Input payload received

View Payload

Apr 9, 2015 1:10:07 AM onCase "InsProdDBAdapter.insert"

Apr 9, 2015 1:10:07 AM Evaluation of xpath condition "No Filter" resulted true

View Payload

Apr 9, 2015 1:10:07 AM Transformed message part "ExternalStoreCollection" using "xsl/product_To_ExternalStoreCollection.xsl"

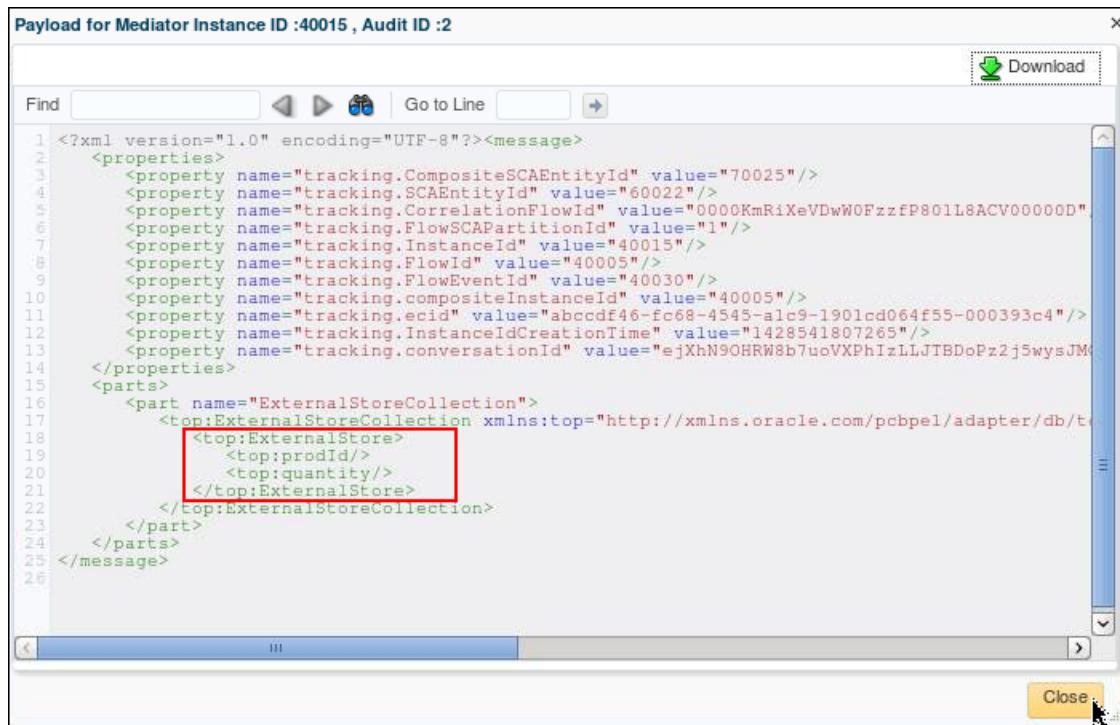
View Payload

Apr 9, 2015 1:10:07 AM Error during invoking 1-way operation "insert" on target service "InsProdDBAdapter"

Exception occurred when binding was invoked. Exception occurred during invocation of JCA binding: "JCA Binding execute of Reference operation 'insert' failed due to: DBWriteInteractionSpec Execute Failed Exception. insert failed. Descriptor name: InsProdDBAdapter_ExternalStore_Caused by java.sql.SQLIntegrityConstraintViolationException: ORA-01400: cannot insert NULL into ("SOADEMO"."EXTERNAL_STORE"."PROD_ID") Please see the logs for the full DBAdapter logging output prior to this exception. This exception is considered not retriable, likely due to a modelling mistake. To classify it as retriable instead add property nonRetriableErrorCodes with value "-1400" to your deployment descriptor (i.e. weblogic-ra.xml). To auto retry a retriable fault set these composite.xml properties for this invoke: jca.retry.interval, jca.retry.count, and jca.retry.backoff. All properties are integers. ". The invoked JCA adapter raised a resource exception. Please examine the above error message ca

View Payload

- e. On the Payload for Mediator page, the data to be processed (sent to the Database Adapter) for inserting into the database reveals that there are no data values in the <prodid> and the <quantity> elements. Click Close.



Payload for Mediator Instance ID :40015 , Audit ID :2

Find

```

1 <?xml version="1.0" encoding="UTF-8"?><message>
2   <properties>
3     <property name="tracking.CompositeSCAEEntityId" value="70025"/>
4     <property name="tracking.SCAEntityId" value="60022"/>
5     <property name="tracking.CorrelationFlowId" value="0000KmRiXeVDwW0FzzfP801L8ACV00000D"/>
6     <property name="tracking.FlowSCAPartitionId" value="1"/>
7     <property name="tracking.InstanceId" value="40015"/>
8     <property name="tracking.FlowId" value="40005"/>
9     <property name="tracking.FlowEventId" value="40030"/>
10    <property name="tracking.compositeInstanceId" value="40005"/>
11    <property name="tracking.ecid" value="abccdf46-fc68-4545-alc9-1901cd064f55-000393c4"/>
12    <property name="tracking.InstanceIdCreationTime" value="1428541807265"/>
13    <property name="tracking.conversationId" value="ejXhN9OHRW8b7uoVXPhIzLLJTBDpZ2j5wysJM"/>
14  </properties>
15  <parts>
16    <part name="ExternalStoreCollection">
17      <top:ExternalStoreCollection xmlns:top="http://xmlns.oracle.com/pcbpel/adapter/db/tc">
18        <top:ExternalStore>
19          <top:prodId/>
20          <top:quantity/>
21        </top:ExternalStore>
22      </top:ExternalStoreCollection>
23    </part>
24  </parts>
25 </message>

```

Download

Close

Note: The <payload> contents reveal that the DbAdapter did indeed get empty data values. Empty XML elements are interpreted as a database NULL value by the DbAdapter. Taking a closer look at the processing task that owns the payload, you can see that the information appears just after the Transformation step. Therefore, something happened during the transformation to cause the input data to be converted to empty XML elements.

- f. On the Flow Trace > Instance of InsProdMediator page, click the Flow Trace breadcrumb link on the top-left corner of the page to return to the main Flow Trace page.

- g. On the Flow Trace page, click Recovery Required.

- h. On the System Fault page, you can view the error message again and the information that indicates that the problem is considered “not retrieable.” Therefore, you terminate the instance by clicking Abort.

Note: Clicking Abort displays the following Confirmation dialog box that asks if you want to Abort the Selected Fault, which aborts the entire flow. In the Confirmation dialog box, click Yes.

- i. On the Flow Trace page, there is a message to indicate that the abort request could take a little time to be reflected in the system. Close the Flow Trace page.

The screenshot shows the 'Flow Trace' page with a message: 'Request to abort selected fault has been submitted. You may need to allow some time for the request to complete, and later click the refresh page icon to see updated fault state.' The page includes tabs for 'Faults', 'Composite Sensor Values', and 'Composites'. The top right shows 'Flow ID 40005' and 'Started Apr 9, 2015 1:10:07 AM'. A 'Recover' and 'View' button are at the bottom left, and 'Flow Instance 40005' is at the bottom right.

- j. On the TroubleSomeComposite [1.0] > Flow Instance tab page, click the Refresh icon on the top-right corner of the page.

The screenshot shows the 'TroubleSomeComposite [1.0]' page with the 'Flow Instances' tab selected. The top right shows 'Page Refreshed Apr 9, 2015 12:25:25 AM GMT' and a refresh icon. A red box highlights the refresh icon. The page includes tabs for 'Active', 'Retire ...', 'Shut Down...', 'Test', 'Settings...', 'Dashboard', 'Composite Definition', 'Flow Instances' (selected), 'Unit Tests', and 'Policies'.

Note: Clicking the Refresh icon updates the data in the Search Results table, where you can confirm that the latest instance shows the Flow State of Aborted.

The screenshot shows the 'Search Results - Instances Created (24 Hours)' table. The 'Flow Instances' tab is selected. The table has columns for 'Actions', 'Flow ID', 'Initiating Composite', and 'Flow State'. The 'Flow State' column for the latest instance (Flow ID 40005) is highlighted with a red box and shows 'Aborted' with a crossed-out icon. The other two instances (40004 and 40003) show 'Completed' with a green checkmark icon.

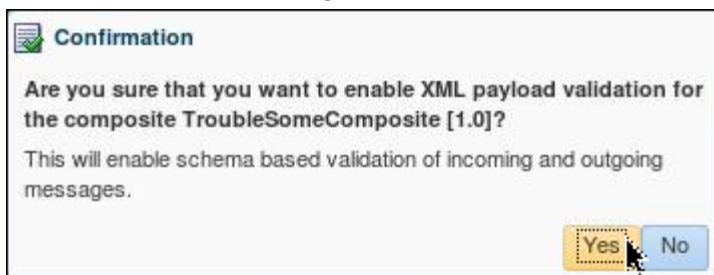
Actions	Flow ID	Initiating Composite	Flow State
	40005	TroubleSomeComposite [1.0]	✗ Aborted
	40004	TroubleSomeComposite [1.0]	✓ Completed
	40003	TroubleSomeComposite [1.0]	✓ Completed

10. Because you now suspect that the data coming into the composite application could be problematic, an option of enabling Payload Validation for the composite application is available. However, there is a data storage overhead cost for enabling Payload Validation, similar to using Audit Level set to Development. Therefore, use of these features should be minimized on a production system. To enable payload validation for the application, perform the following actions:

- a. On the TroubleSomeComposite [1.0] page, above the Flow Instances tab, click Settings > Payload Validation: Inherit > Enable.

Note: This action enables the payload validation functionality, which was previously set to a disabled value as inherited from the SOA infrastructure default setting.

- In the Confirmation dialog box, click Yes.



- On the TroubSomeComposite [1.0] page, another confirmation message is displayed to indicate that payload validation is now enabled for the composite application.

- To examine the changes in the application execution sequence with payload validation enabled, perform the following steps:

- Repeat the commands to copy the `prod_tblt02.xml` file from the `/practices/xml/troubleshoot` folder to the `/practices/practice13` folder, by entering the following commands:

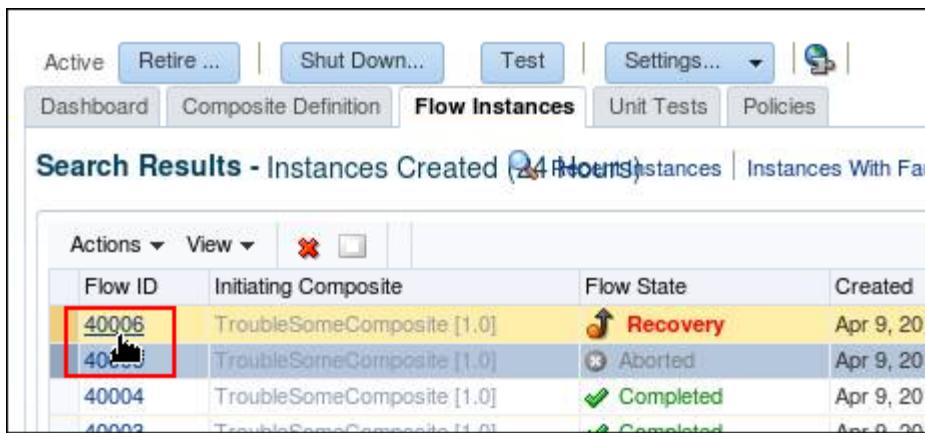
```
$ cd /practices/practice13
$ cp /practices/xml/troubleshoot/prod_tblt02.xml .
```

Note: Remember that there is a space and dot character at the end of the command.

- Wait for approximately one or two minutes for the XML file to be processed and removed from the `/practices/practice13` folder.
- Return to your web browser where the TroubSomeComposite [1.0] page is displayed and click the Refresh icon on the right side of the page.

Note: If required, use the Target Navigation pane to navigate to the TroubSomeComposite [1.0] > Flow Instances tab page.

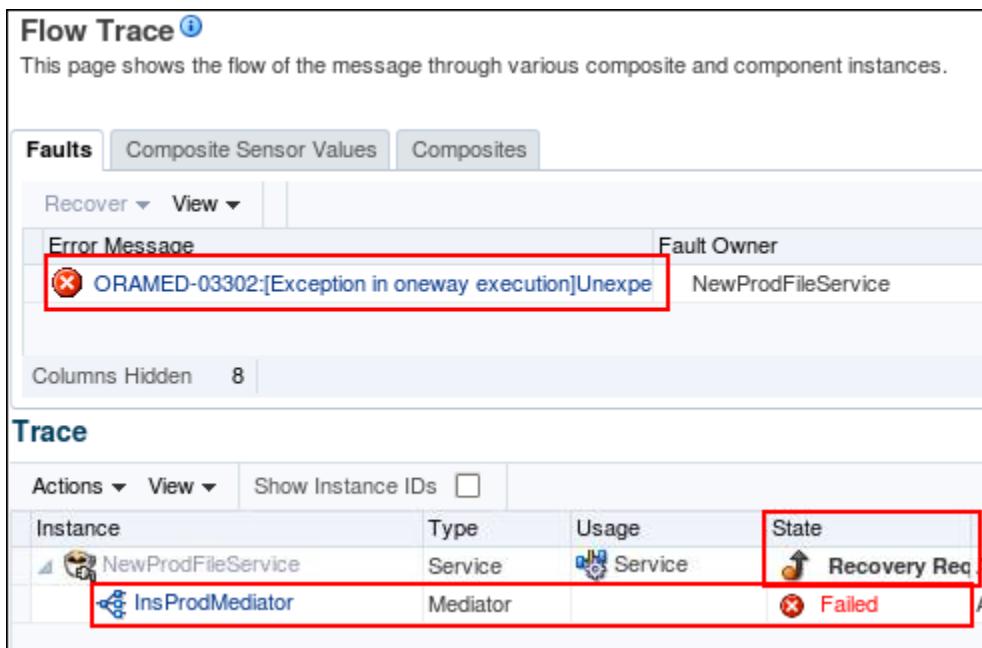
- d. On the TroubleSomeComposite [1.0] > Flow Instances tab page, a new failed instance appears as the top (first) row in the Search Results table, with a Flow State value of Recovery. Click the Flow ID link for the new row to open the Flow Trace.



Flow ID	Initiating Composite	Flow State	Created
40006	TroubleSomeComposite [1.0]	Recovery	Apr 9, 2015
40005	TroubleSomeComposite [1.0]	Aborted	Apr 9, 2015
40004	TroubleSomeComposite [1.0]	Completed	Apr 9, 2015
40003	TroubleSomeComposite [1.0]	Completed	Apr 9, 2015

- e. On the Flow Trace page, observe the new error message information.

Note: In this flow sequence, the InsProdDBAdapter reference was not even invoked by the InsProdMediator component. This time the InsProdMediator component gets the fault condition, and the NewProdFileService component has the Recovery Required state.



Error Message		Fault Owner
ORAMED-03302:[Exception in oneway execution]Unexpe		NewProdFileService

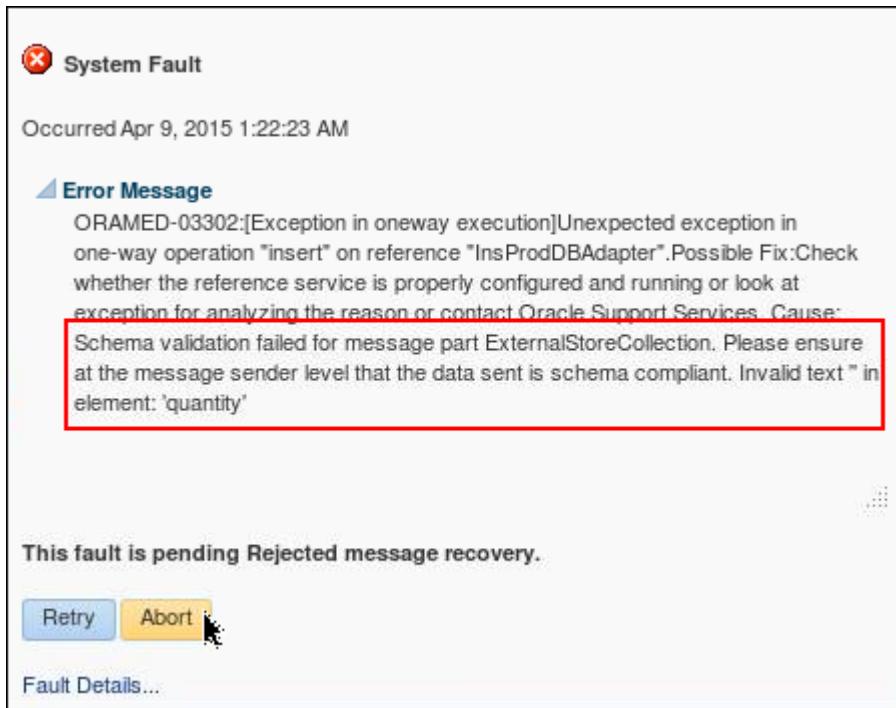
Trace			
Actions	View	Show Instance IDs	
Instance	Type	Usage	State
NewProdFileService	Service	Service	Recovery Req
InsProdMediator	Mediator		Failed

- f. On the Flow Trace > Faults tab page, click the Recovery Required link in the Error Message row.



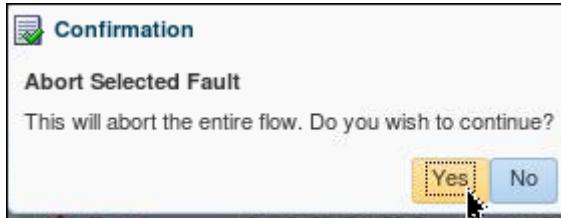
Flow Trace			
This page shows the flow of the message through various composite and component instances.			
Faults	Composite Sensor Values	Composites	Flow ID Started
Recover	View		
Error Message	Fault Owner	Fault Time	Recovery
ORAMED-03302:[Exception in oneway execution]Unexpe	NewProdFileService	Apr 9, 2015 1:22:23 AM	Recovery Required

- g. On the System Fault page, you see that the error message is different and indicates a possible XML schema problem with invalid text in the <quantity> element. Again, you terminate the instance by clicking Abort.

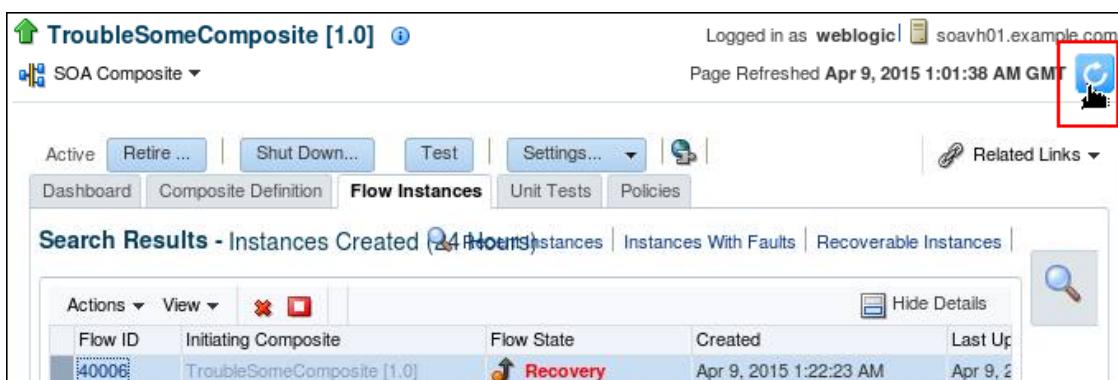


Note: Whereas this might be a recoverable message, there is no way to modify the input data unless you go to the source where it is created to examine what is produced and to fix the data where it is created.

- h. In the Confirmation dialog box, which asks if want to confirm aborting the flow, click Yes.



- i. On the TroubleSomeComposite [1.0] page, click the Refresh icon on the right, to verify that the instance is in the Aborted Flow state.



- j. After clicking the Refresh icon, verify that the Flow State for the latest instance is Aborted.

Flow ID	Initiating Composite	Flow State
40006	TroubleSomeComposite [1.0]	Aborted
40005	TroubleSomeComposite [1.0]	Aborted
40004	TroubleSomeComposite [1.0]	Completed
40003	TroubleSomeComposite [1.0]	Completed

Optional Tasks of Correcting the XML Input Data

This section is optional, because as an administrator, you may not be able to access the input data, which could be transferred via the network via other protocols instead of using a File Adapter to consume the data. However, in this case, the XML file has an incorrect namespace in the source file.

12. To find the correct XML namespace that should be used (or the XML element structure if it were the problem), you must find the XML Schema that is associated with the composite entry point and definition. In this case, InsProdMediator_ep (SOAP entry point) shares the same XML Schema as the File Adapter interface. To determine the XML namespace that is required to be used for input data, perform the following steps:
- On the TroubleSomeComposite [1.0] page, click the “Show WSDL and endpoint URI” icon (next to the Settings button).

- b. In the “Service Endpoint and WSDL” dialog box, click the WSDL URL link.



Note: Clicking the WSDL URL causes a new web browser window or tab page to open with the XML structure of the endpoint WSDL document.

- c. In the web browser window or on the page that displays the WSDL information, you can scroll down to locate the first `<schema>` element and compare the namespace attribute value (`http://www.example.org/ns/product`) in the `<import>` element to the value observed in the “Native payload of rejected message” dialog box.

```
-<plt:partnerLinkType name="Read_plt">
  -<plt:role name="Read_role">
    <plt:portType name="tns:Read_ptt"/>
  </plt:role>
</plt:partnerLinkType>
-<wsdl:types>
  -<schema>
    <import namespace="http://www.example.org/ns/product" schemaLocation="https://soa.example.com:4443/soa-infra/services/default/TroubleSomeComposite/InsProdMediator_ep?XSD=xsd/product.xsd"/>
  </schema>
</wsdl:types>
-<wsdl:message name="Read_msg">
  <wsdl:part name="body" element="impl:product"/>
```

Note: This final piece of the puzzle clearly identifies the XML namespace in the input file (`prod_tblr02.xml`) that contains the source of the error.

- d. Close the extra web browser window or tab page that contains the WSDL information.
e. To close the “Service Endpoint and WSDL” dialog box, click OK.



13. To correct the source of the problem (the XML namespace in the input data), perform the following steps:

- a. In a Terminal window, make a copy of the `prod_tblr02.xml` file in the `/practices/xml/troubleshoot` folder by entering the following commands:

```
$ cd /practices/xml/troubleshoot  
$ cp prod_tblt02.xml prod_tblt02_copy.xml
```

Note: The new file is called `prod_tblt02_copy.xml`.

- b. In the Terminal window, open the new file `prod_tblt02_copy.xml` in an editor, with the `gedit` editor command, as shown in the following example:

```
$ gedit prod_tblt02_copy.xml
```

- c. In the `gedit` editor window, locate the `xmlns` attribute in the `<prd:product>` root element and delete the trailing letter "s" from the end of the string `xmlns:prd="http://www.example.org/ns/products"` in the first line of the file.



```
1 <prd:product xmlns:prd="http://www.example.org/ns/products">  
2   <prd:id>TBLT02</prd:id>  
3   <prd:qty>10</prd:qty>  
4 </prd:product>  
5
```

- d. After you delete the trailing letter s from the XML namespace, click `File > Save`. Then verify that the changed `xmlns:prd` attribute value is `http://www.example.org/ns/product` (without a trailing s character).



```
1 <prd:product xmlns:prd="http://www.example.org/ns/product">  
2   <prd:id>TBLT02</prd:id>  
3   <prd:qty>10</prd:qty>  
4 </prd:product>  
5
```

- e. To close the editor, click `File > Quit`.

14. To test if your corrective action produces the correct result, that is, the new composite application processes the data file and stores the information in the `EXTERNAL_STORE` table, perform the following steps:

- a. In a Terminal window, enter the following commands to copy the updated `prod_tblt02_copy.xml` file from the `/practices/xml/troubleshoot` folder to the `/practices/practice13` folder, by entering the following commands:

```
$ cd /practices/practice13
```

```
$ cp /practices/xml/troubleshoot/prod_tblt02_copy.xml .
```

Note: Remember that there is a space and dot character at the end of the command.

- b. Wait for approximately one or two minutes for the XML file to be processed and removed from the `/practices/practice13` folder.
 - c. Return to your web browser where the `TroubleSomeComposite [1.0] > Flow Instances` tab page is displayed and click the Refresh icon on the right of the page.
- Note:** If required, use the Target Navigation pane to navigate to the `TroubleSomeComposite [1.0] > Flow Instances` tab page.

- d. On the TroubleSomeComposite [1.0] > Flow Instances tab page, verify that a new, most recent (topmost) instance is created and that its State value is Completed.

Flow ID	Initiating Composite	Flow State	Create Date
40008	TroubleSomeComposite [1.0]	✓ Completed	Apr 10, 2015 10:45:10 AM
40006	TroubleSomeComposite [1.0]	✗ Aborted	Apr 10, 2015 10:45:10 AM

Note: The Flow ID values may be different on your system.

- e. As the final check for completeness, in a Terminal window on host02, enter the SQL*Plus command (sqlplus), log in as the SOADEMO user, and enter the following SQL statement to view the TBLT products in the table:

```
SQL> SELECT * FROM external_store WHERE prod_id LIKE 'TBLT%';
```

Note: The query result should include the row with the PROD_ID value TBLT02 and the QUANTITY column with the value 10.

SQL> SELECT * FROM external_store WHERE prod_id LIKE 'TBLT%';	
PROD_ID	QUANTITY
TBLT01	10
TBLT02	10
TBLT03	5

- f. Exit SQL*Plus, by entering the exit command, and optionally close the Terminal window.

