

## **Oracle® Fusion Middleware**

Application Adapter Best Practices Guide for Oracle WebLogic  
Server

11g Release 1 (11.1.1.3.0)

**E17059-03**

November 2010

Oracle Fusion Middleware Application Adapter Best Practices Guide for Oracle WebLogic Server, 11g  
Release 1 (11.1.1.3.0)

E17059-03

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# Preface

*Oracle Fusion Middleware Application Adapter Best Practices Guide for Oracle WebLogic Server* describes general best practices that are common to all Oracle Application Adapters for Oracle WebLogic Server.

## Audience

The *Oracle Fusion Middleware Application Adapter Best Practices Guide for Oracle WebLogic Server* is intended for system administrators and application developers who are using Oracle Application Adapters for Oracle WebLogic Server.

## Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible to all users, including users that are disabled. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at <http://www.oracle.com/accessibility/>.

### Accessibility of Code Examples in Documentation

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## Related Documents

For more information, see the following documents in the Oracle Enterprise Repository 11g Release 1 (11.1.1.3.0) documentation set:

- *Oracle Fusion Middleware Application Adapters Installation Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter Upgrade Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter for SAP R/3 User's Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter for SAP R/3 (SAP JCo 3.0) User's Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter for Siebel User's Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter for PeopleSoft User's Guide for Oracle WebLogic Server*
- *Oracle Fusion Middleware Application Adapter for J.D. Edwards OneWorld User's Guide for Oracle WebLogic Server*
- Oracle's Unified Method (OUM)

A wealth of additional Governance information can be found within Oracle's Unified Method (OUM). OUM can be used by Oracle employees, Oracle Partner Network Certified Partners or Certified Advantage Partners, and Clients who either participate in the OUM Customer Program or are engaged on projects where Oracle provides consulting services. OUM is a web-deployed toolkit for planning, executing and controlling software development and implementation projects.

For more information about OUM, see the OUM FAQ at

[http://my.oracle.com/portal/page/myo/ROOTCORNER/KNOWLEDGEAREAS1/BUSINESS\\_PRACTICE/Methods/Learn\\_about\\_OUM.html](http://my.oracle.com/portal/page/myo/ROOTCORNER/KNOWLEDGEAREAS1/BUSINESS_PRACTICE/Methods/Learn_about_OUM.html)

## Conventions

The following text conventions are used in this document:

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

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# General Best Practices

This chapter lists and describes general best practices that are common to all Oracle Application Adapters for Oracle WebLogic Server. It contains the following topics:

- [Section 1.1, "Understanding Managed Connections"](#)
- [Section 1.2, "Configuring Oracle Application Adapters in a High Availability Cluster Environment for SOA and BPM"](#)
- [Section 1.3, "Configuring Oracle Application Adapters in a High Availability Cluster Environment for Oracle Service Bus"](#)
- [Section 1.4, "Preferred Repository Type"](#)
- [Section 1.5, "Generating Input XML Documents"](#)

## 1.1 Understanding Managed Connections

Oracle WebLogic Server (WLS) creates and maintains a pool of connections to the iWay J2CA resource adapter. These are called "managed connections". Each managed connection maintains a distinct set of connections to a back-end Enterprise Information System (EIS) systems (exposed as an adapter target). The set is initially empty and becomes populated only as specific adapter target connections are requested by an executing SOA process that is using the managed connection.

A managed connection will maintain only a single connection to any given adapter target and will reuse it each time a connection to that target is requested. When WLS destroys a managed connection, the managed connection will close all its internal EIS connections.

By way of illustration, the following steps detail a scenario in which a SOA process containing references to multiple iWay adapter targets is used.

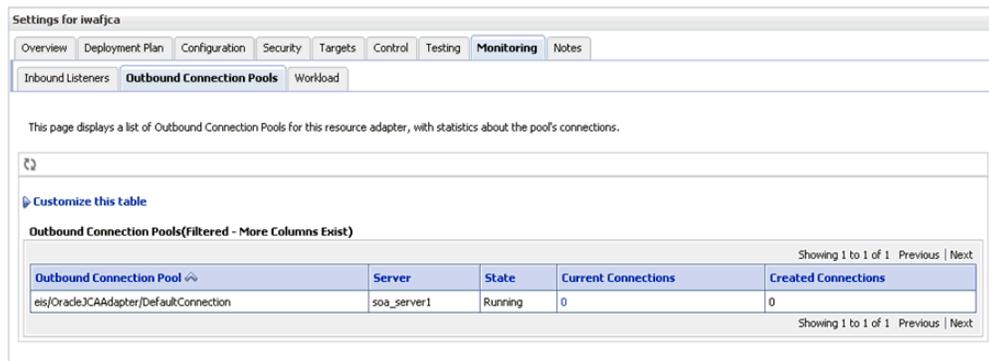
1. SOA process requests a managed connection to the iWay resource adapter ("eis/OracleJCAAdapter/DefaultConnection") and receives a new, empty, managed connection called "Managed1".
2. SOA process invokes a service with adapter target MySAP/SAP1 using Managed1.
3. Managed1 creates a new MySAP adapter instance, activates it for target SAP1, and adds it to its internal EIS connection set.
4. Service is invoked, response returned, and SOA process continues.
5. SOA process invokes a service with adapter target MySAP/SAP2 using Managed1.

6. Managed1 creates a new MySAP adapter instance, activates it for target SAP2, and adds it to its internal EIS connection set.
7. Service is invoked, response returned, and SOA process continues.
8. SOA process invokes a service with adapter target JDEdwards/JDE1 using Managed1.
9. Managed1 creates a new JDEdwards adapter instance, activates it for target JDE1, and adds it to its internal EIS connection set.
10. SOA process terminates. WLS returns Managed1 to the connection pool.

After termination of the SOA process, Managed1 is available to be used by some other SOA process. Its internal EIS connections (SAP1, SAP2, JDE1) remain open. They will be reused the next time a process requests connections to those targets from Managed1. They will be closed only when WLS destroys Managed1.

You can monitor the managed connection pool in the WLS admin console, as shown in [Figure 1-1](#).

**Figure 1-1 Outbound Connection Pools Tab**



The "current connections" column is the number of managed connections that are currently in use, presumably by executing SOA processes. This number should go up when a SOA process begins execution and should go down after a period of inactivity.

When a SOA process needs a managed connection, it will try to retrieve one from the connection pool. If a managed connection is not available, and the number of current connections does not yet exceed the maximum size of the pool, then it will create a new one. If the maximum size of the pool has been reached and no free connection is available, then a resource availability error will be thrown. When a process is finished, the connection is returned to the pool.

It is important to remember that these numbers represent connections to the iWay resource adapter and not to any specific EIS. A single iWay managed connection may contain any number of EIS connections depending upon its usage history. Consequently, there is no way to introspect the number of EIS connections in use by the iWay resource adapter.

The maximum size of the managed connection pool, the minimum size, and other pool parameters can be set in the RAR deployment descriptor ("weblogic-ra.xml") and viewed in the admin console, as shown in [Figure 1-2](#).

Figure 1–2 Connection Pool Tab

Settings for javax.resource.cci.ConnectionFactory

General Properties Transaction Authentication **Connection Pool** Logging

Save

This page allows you to view and modify the pool parameters of this outbound connection.

Initial Capacity: 0

Max Capacity: 10

Capacity Increment: 1

Shrinking Enabled: true

Shrink Frequency Seconds: 900

There are many pool parameters, but because they control the pool of connections to the iWay resource adapter and not any specific EIS many of these are immaterial. Setting an initial pool size, for example, accomplishes nothing except creating a set of empty resource adapter connections: iWay managed connections with no internal EIS connections. There is no reason to do this. For similar reasons, the "capacity increment" parameter is also not particularly useful.

You have to set the initial capacity to zero always to work with the iWay adapters.

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**Note:** You cannot set anything other than the value of zero.

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Some settings will have implicit effects for all adapter targets. For example, setting a maximum size for the managed connection pool will implicitly establish the maximum number of connections that can be made to any single target since each managed connection can hold at most one connection to a unique adapter target. Similarly, defining the lifetime of a managed connection will implicitly define the lifetime for all EIS connections created by the connection. However, there is no way to control connection pooling for specific EIS targets using the iWay "universal" resource adapter.

## 1.2 Configuring Oracle Application Adapters in a High Availability Cluster Environment for SOA and BPM

Application adapters integrate Oracle WebLogic Server with various packaged applications, such as SAP R/3 and Siebel. These adapters include Oracle Application Adapter for PeopleSoft, Oracle Application Adapter for SAP R/3, Oracle Application Adapter for Siebel, and Oracle Application Adapter for J.D. Edwards OneWorld.

This section describes the steps required to successfully deploy the 11g Release 1 (11.1.1.3.0) Oracle Application Adapters in a cluster environment (in all available SOA nodes, which in this case is two machines) and working with inbound and outbound processes.

## 1.2.1 Prerequisites

Before continuing, ensure that the following prerequisites are available:

1. Two machines with the High Availability (HA) cluster configuration completed successfully. For more information about configuring the HA cluster, see: [http://download.oracle.com/docs/cd/E12839\\_01/core.1111/e10106/ha\\_soa.htm#CHDDAHEC](http://download.oracle.com/docs/cd/E12839_01/core.1111/e10106/ha_soa.htm#CHDDAHEC)
2. Upgrade from 11g Release 1 (11.1.1) to 11g Release 1 (11.1.1.3.0).
3. Extend the domain of the first machine (machine1) to add BPM.
4. Pack/unpack the domain configuration from machine1 to the second machine (machine2).
5. Install Oracle Application Adapters 11g Release 1 (11.1.1.3.0) on both machines.
6. Configure a J2CA configuration as a database repository on both machines.
7. Perform the required changes to the **ra.xml** and **weblogic-ra.xml** files before deployment.

## 1.2.2 Deploying the J2CA Connector Application to a Clustered Environment

To deploy the J2CA Connector Application:

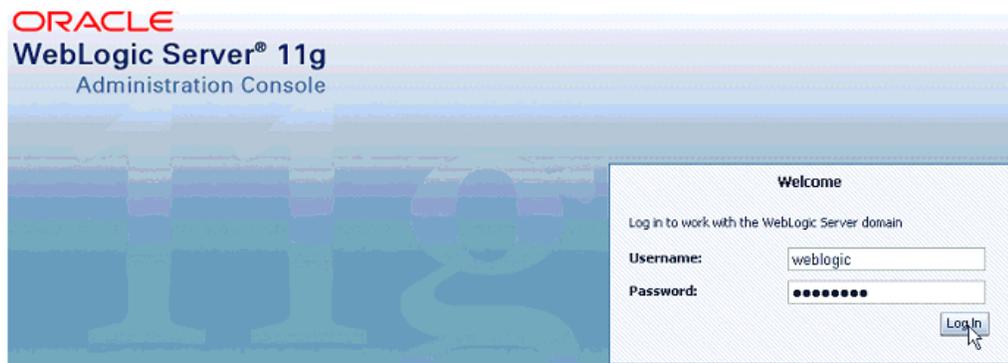
1. Start the Oracle WebLogic Server for the Oracle WebLogic Server domain that has been configured.
2. Start the SOA\_Server1 and SOA\_Server2 for both machines.
3. Open the Oracle WebLogic Server Administration Console in a Web browser by entering the following URL:

`http://hostname:port/console`

Where *hostname* is the name of the machine where Oracle WebLogic Server is running and *port* is the port number for the domain you are using.

The Oracle WebLogic Server Administration Console logon page is displayed, as shown in [Figure 1-3](#).

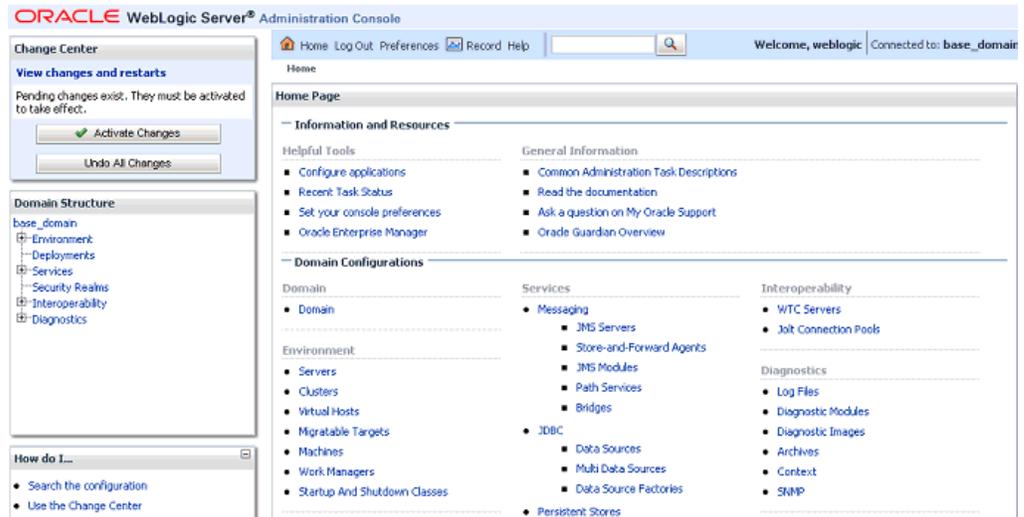
**Figure 1-3 Oracle WebLogic Server Administration Console Logon Page**



4. Log in to the Oracle WebLogic Server Administrative Console using an account that has administrator privileges.

The Oracle WebLogic Server Administration Console home page is displayed, as shown in [Figure 1-4](#).

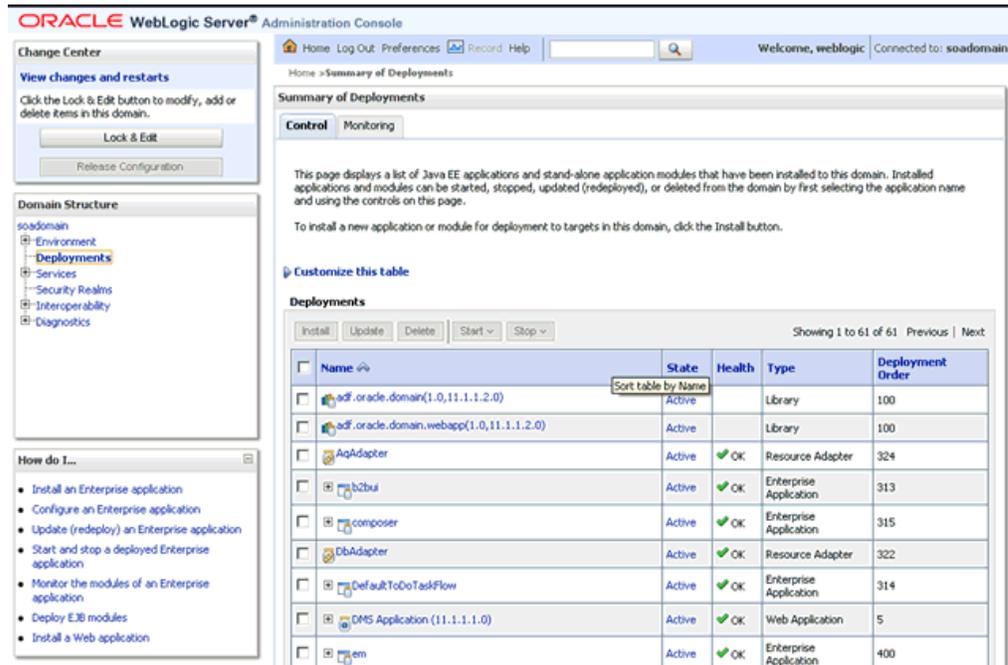
**Figure 1-4 Oracle WebLogic Server Administration Console Home Page**



5. In the Domain Structure section in the left pane, click **Deployments**.

The Deployments page is displayed, as shown in [Figure 1-5](#).

**Figure 1-5 Deployments Page**

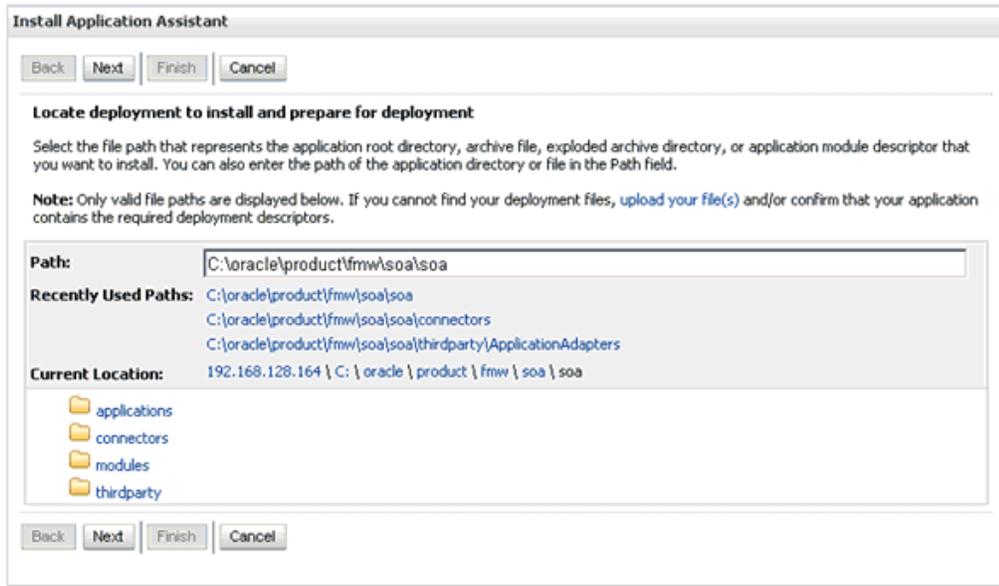


6. Click **Lock & Edit** in the Change Center.

7. Click **Install**.

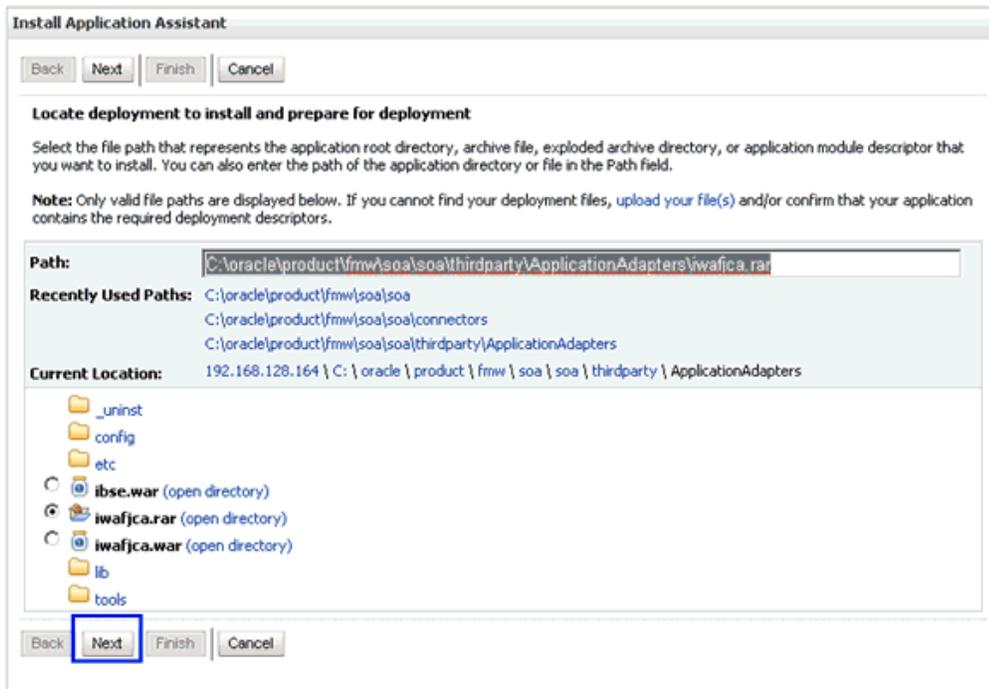
The Install Application Assistant page is displayed, as shown in [Figure 1-6](#).

**Figure 1–6 Install Application Assistant**



8. Browse to the following directory:  
 C:\oracle\product\fmw\soa\soa\thirdparty\ApplicationAdapters\iwafjca.rar
9. Select the radio button next to **iwafjca.rar** and click **Next**, as shown in [Figure 1–7](#).

**Figure 1–7 Next Button In the Install Application Assistant Page**



The Choose Targeting Style page is displayed, as shown in [Figure 1–8](#).

**Figure 1–8 Choose Targeting Style Page**

The screenshot shows the 'Install Application Assistant' dialog box with the title bar. Below the title bar are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'. The main content area is titled 'Choose targeting style' and contains the following text: 'Targets are the servers, clusters, and virtual hosts on which this deployment will run. There are several ways you can target an application.' Below this text are two radio button options:
 

- Install this deployment as an application**
- Install this deployment as a library**

 The first option is selected. Below the options is a paragraph: 'The application and its components will be targeted to the same locations. This is the most common usage.' Below this is another paragraph: 'Application libraries are deployments that are available for other deployments to share. Libraries should be available on all of the targets running their referencing applications.' At the bottom of the dialog box are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'. The 'Next' button is highlighted with a blue rectangular box.

10. Accept the default selection (**Install this deployment as an application**) and click **Next**.

The Select Deployment Target page is displayed, as shown in [Figure 1–9](#).

**Figure 1–9 Select Deployment Target Page**

The screenshot shows the 'Install Application Assistant' dialog box with the title bar. Below the title bar are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'. The main content area is titled 'Select deployment targets' and contains the following text: 'Select the servers and/or clusters to which you want to deploy this application. (You can reconfigure deployment targets later).' Below this text is the section 'Available targets for iwafjca :'. There are two sections: 'Servers' and 'Clusters'.
 

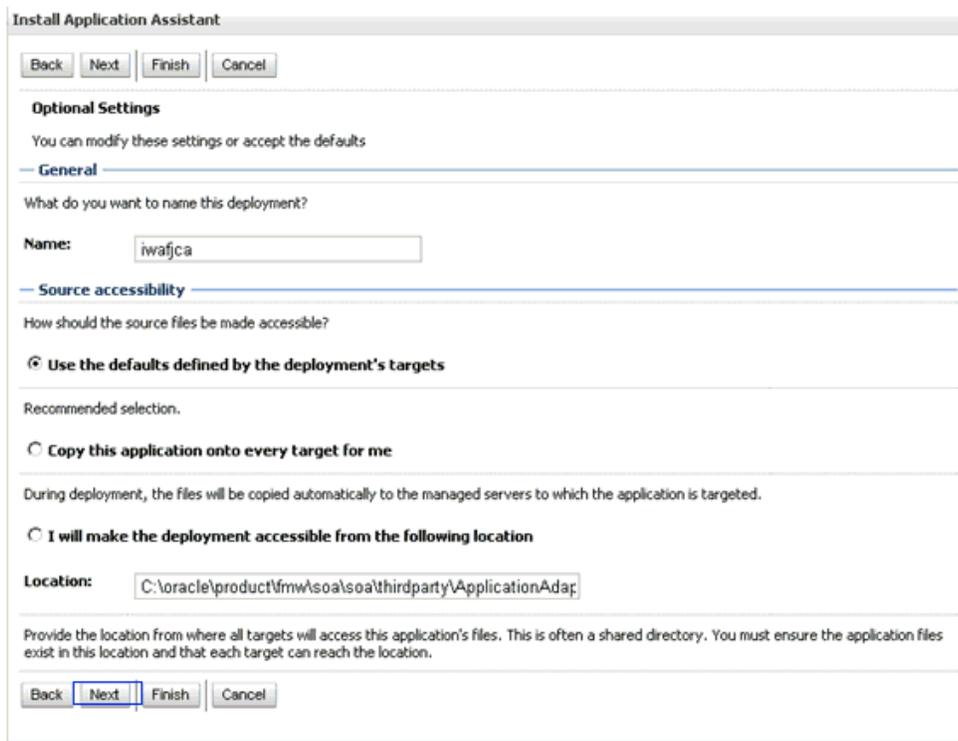
- Servers:** A list box containing one item: 'AdminServer' with an unchecked checkbox.
- Clusters:** A list box containing three items:
  - SOA\_cluster** (selected)
  - All servers in the cluster** (selected)
  - Part of the cluster**
    - WLS\_SOA1
    - WLS\_SOA2

 At the bottom of the dialog box are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

11. In the Clusters section, select **SOA\_Cluster** followed by **All servers in the cluster**.
12. Click **Next**.

The Optional Settings page is displayed, as shown in [Figure 1–10](#).

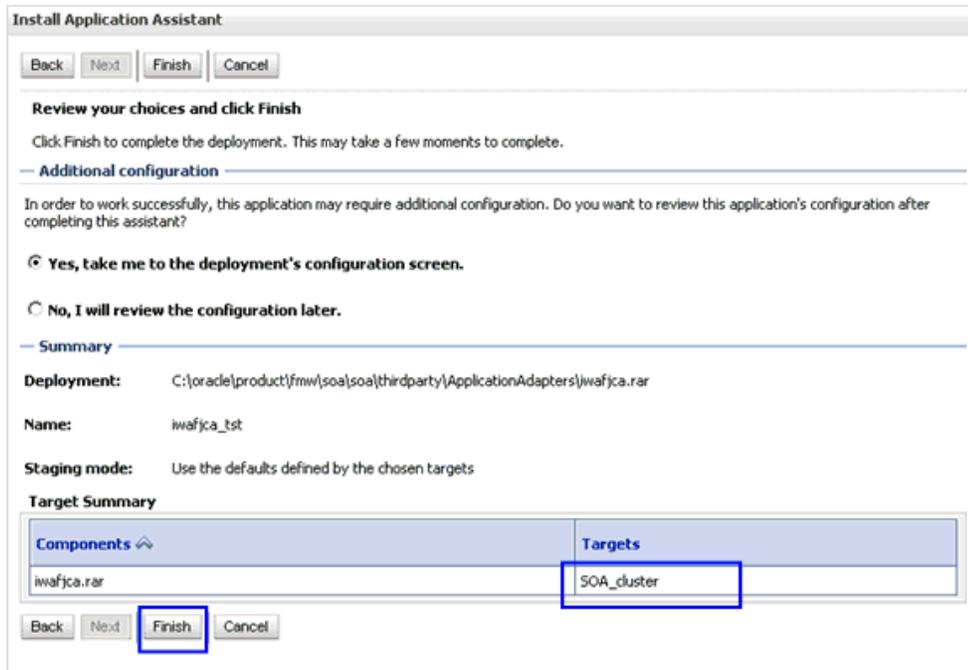
**Figure 1–10 Optional Settings Page**



13. Accept the default values and click **Next**.

The Summary page is displayed, as shown in [Figure 1–11](#).

**Figure 1–11 Summary Page**



14. Click **Finish**.

15. In the displayed Settings page for the J2CA (iwafjca) Connector Application, click **Save**.
16. In the Domain Structure section in the left pane, click **Deployments** and navigate through the table that lists all the deployed applications and find the J2CA (iwafjca) connector application.
17. Select the check box next to **iwafjca**, as shown in [Figure 1–12](#).

**Figure 1–12 Deployments Page**

The screenshot shows the 'Deployments' page with a table of applications. The 'iwafjca' application is highlighted with a red box. The 'Start' dropdown menu is open, showing 'Servicing all requests' as the selected option.

Name	State	Health	Type	Deployment Order
AqAdapter	New		Resource Adapter	324
b2bui	New		Enterprise Application	313
composer	New		Enterprise Application	315
DbAdapter	New		Resource Adapter	322
DefaultToDoTaskFlow	New		Enterprise Application	314
DMS Application (11.1.1.1.0)	Active	OK	Web Application	5
em	Active	OK	Enterprise Application	400
FileAdapter	New		Resource Adapter	321
FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	5
FtpAdapter	New		Resource Adapter	325
<b>iwafjca</b>	Installed		Resource Adapter	100
JmsAdapter	New		Resource Adapter	323

18. Click the **Start** submenu (down arrow) and select **Servicing all requests**.  
The Start Application Assistant page is displayed, as shown in [Figure 1–13](#).

**Figure 1–13 Start Application Assistant Page**



19. Click **Yes**.
20. Verify that the application has successfully started in the Deployments page, as shown in [Figure 1–14](#).

**Figure 1–14 Deployments Page**

Name	State	Health	Type	Deployment Order
adf.oracle.domain(1.0,11.1.1.2.0)	Active		Library	100
adf.oracle.domain.webapp(1.0,11.1.1.2.0)	Active		Library	100
AqAdapter	Active	OK	Resource Adapter	324
b2bui	Active	OK	Enterprise Application	313
composer	Active	OK	Enterprise Application	315
DbAdapter	Active	OK	Resource Adapter	322
DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
DMS Application (11.1.1.1.0)	Active	OK	Web Application	5
em	Active	OK	Enterprise Application	400
emai	Active		Library	100
emas	Active		Library	100
emcore	Active		Library	100
FileAdapter	Active	OK	Resource Adapter	321
FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	5
FtpAdapter	Active	OK	Resource Adapter	325
ibse	Active	OK	Web Application	100
iwafjca	Active	OK	Resource Adapter	100

21. Similarly, repeat steps 5 through 20 for the `iwafjca.war` deployment.

### 1.2.3 Configuring the HA File Adapter for an Outbound Process

The following configuration steps must be performed in the Oracle WebLogic Server Administration Console to work with the outbound process:

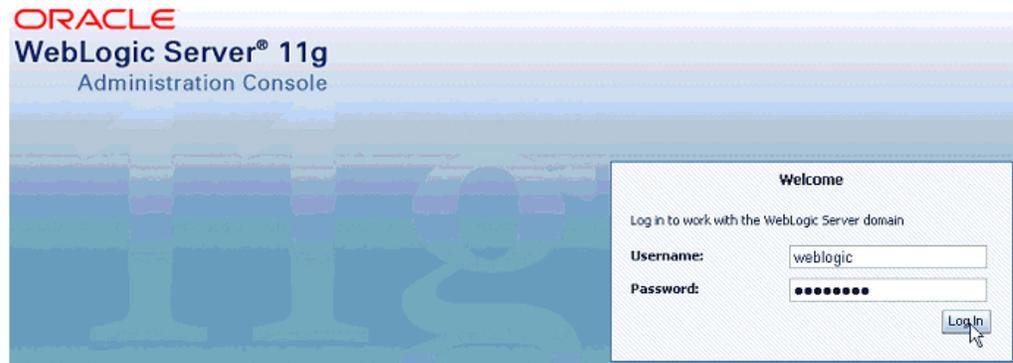
1. Open the Oracle WebLogic Server Administration Console in a Web browser by entering the following URL:

`http://hostname:port/console`

Where *hostname* is the name of the machine where Oracle WebLogic Server is running and *port* is the port number for the domain you are using.

The Oracle WebLogic Server Administration Console logon page is displayed, as shown in [Figure 1–15](#).

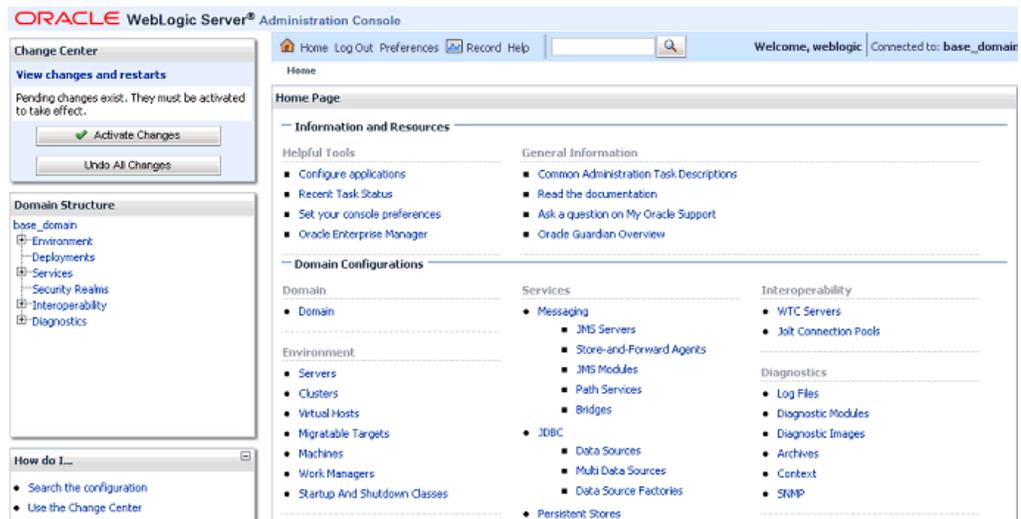
**Figure 1–15 Oracle WebLogic Server Administration Console Logon Page**



2. Log in to the Oracle WebLogic Server Administrative Console using an account that has administrator privileges.

The Oracle WebLogic Server Administration Console home page is displayed, as shown in [Figure 1–16](#).

**Figure 1–16 Oracle WebLogic Server Administration Console Home Page**



3. In the Domain Structure section in the left pane, click **Deployments**.

The Deployments page is displayed, as shown in [Figure 1–17](#).

**Figure 1–17 Deployments Page**

Name	State	Health	Type	Deployment Order
adf.oracle.domain(1.0,11.1.1.2.0)	Active		Library	100
adf.oracle.domain.webapp(1.0,11.1.1.2.0)	Active		Library	100
AqAdapter	Active	OK	Resource Adapter	324
b2bui	Active	OK	Enterprise Application	313
composer	Active	OK	Enterprise Application	315
DbAdapter	Active	OK	Resource Adapter	322
DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
DMS Application (11.1.1.1.0)	Active	OK	Web Application	5
em	Active	OK	Enterprise Application	400
emai	Active		Library	100
emas	Active		Library	100
emcore	Active		Library	100
<b>FileAdapter</b>	Active	OK	Resource Adapter	321
FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	5
FtpAdapter	Active	OK	Resource Adapter	325

- Click FileAdapter.

The Settings for FileAdapter page is displayed, as shown in Figure 1–18.

**Figure 1–18 Settings for File Adapter Page**

Settings for FileAdapter

Overview | Deployment Plan | **Configuration** | Security | Targets | Control | Testing | Monitoring | Notes

General | Properties | **Outbound Connection Pools** | Admin Objects | Workload | Instrumentation

This page displays a table of Outbound Connection Pool groups and instances for this resource adapter. The top level entries in the table represent Outbound Connection Pool groups. Groups are listed by connection factory interface and the instances are listed by their JNDI names. Expand a group to obtain configuration information for a Connection Pool instance within an Outbound Connection Pool group. Click the name of a group or instance to configure it. Automatically generated Connection Pools are not displayed in the table below.

**Outbound Connection Pool Configuration Table**

Click the **Lock & Edit** button in the Change Center to activate all the buttons on this page.

New | Delete | Showing 1 to 1 of 1 | Previous | Next

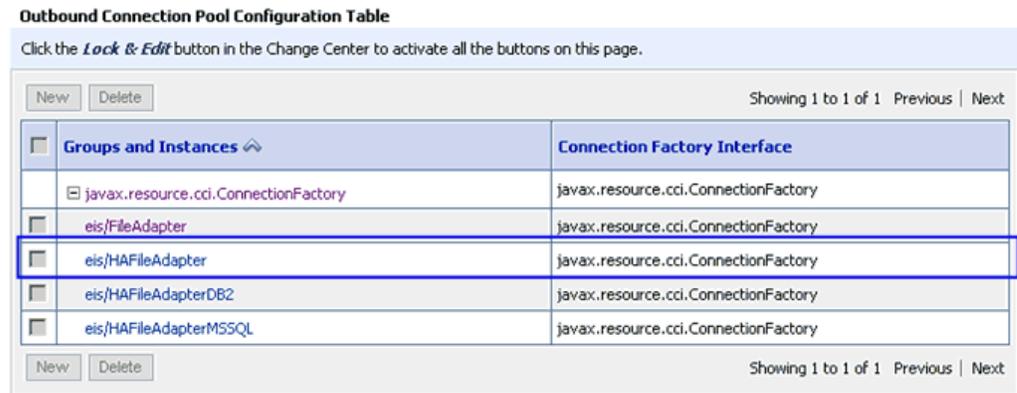
Groups and Instances	Connection Factory Interface
<ul style="list-style-type: none"> <li>javax.resource.cci.ConnectionFactory</li> </ul>	javax.resource.cci.ConnectionFactory

New | Delete | Showing 1 to 1 of 1 | Previous | Next

- Click the **Configuration** tab followed by the **Outbound Connection Pools** tab.

The Outbound Connection Pool Configuration Table page is displayed, as shown in Figure 1–19.

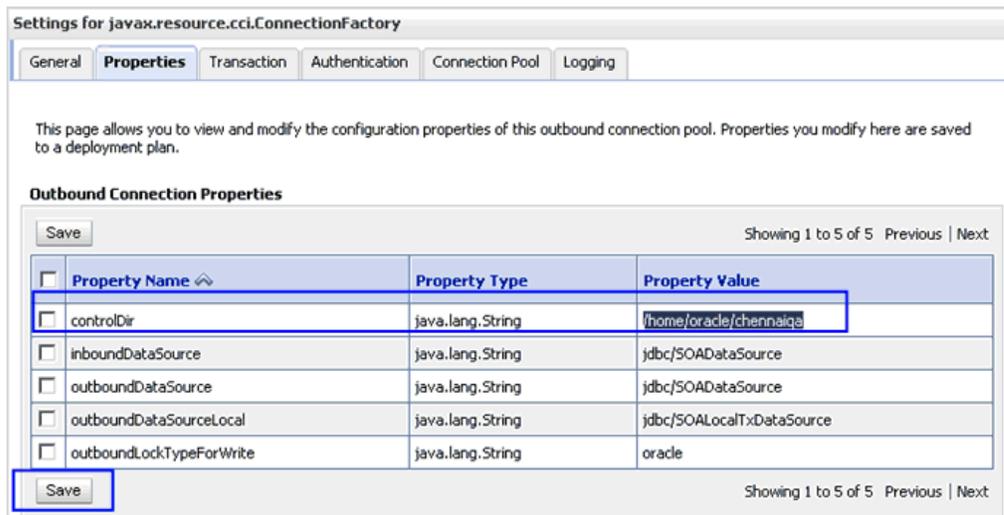
**Figure 1–19 Outbound Connection Pool Configuration Table Page**



- Expand `javax.resource.cci.ConnectionFactory` and click `eis/HAFileAdapter`.

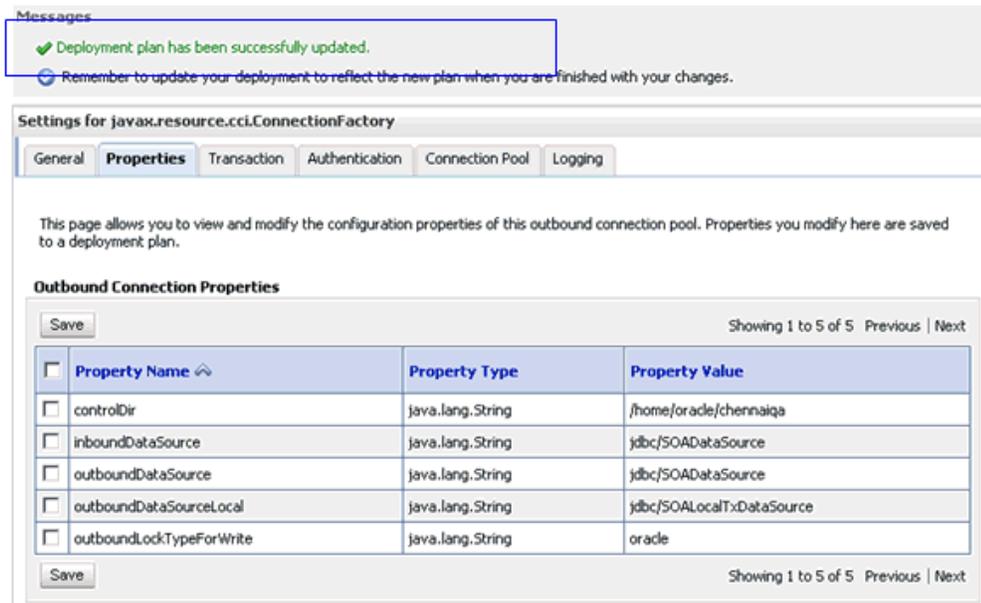
The settings for `javax.resource.cci.ConnectionFactory` page is displayed, as shown in [Figure 1–20](#).

**Figure 1–20 Javax.resource.cci.ConnectionFactory Page**



- Click the **Properties** tab.
- Provide a valid location for the `controlDir` property and click **Save**.
- Check if the success message is displayed, as shown below in [Figure 1–21](#).

**Figure 1–21 Deployment Plan Success Message**



10. In the Domain Structure section in the left pane, click **Deployments**, as shown in Figure 1–22.

**Figure 1–22 Deployments Page**



11. Select **FileAdapter** from the deployments list and click **Update**.

The Update Application Assistant page is displayed, as shown in Figure 1–23.

**Figure 1–23 Update Application Assistant Page**

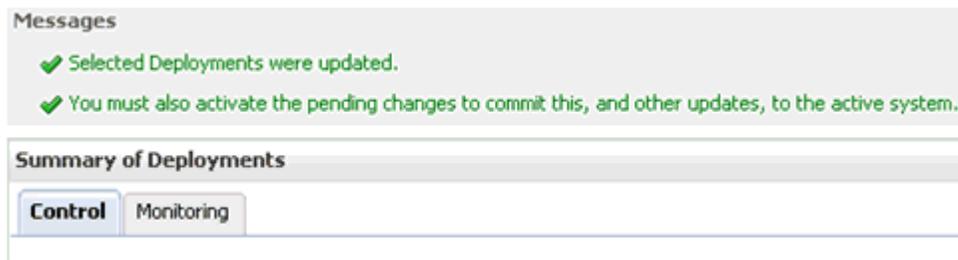
12. Select **Update this application in place with new deployment plan changes** and click **Next**.

The Summary page is displayed, as shown in [Figure 1–24](#).

**Figure 1–24 Summary Page**

13. Click **Finish**.
14. Check if the success message is displayed, as shown in [Figure 1–25](#).

**Figure 1–25 Deployment Success Message**



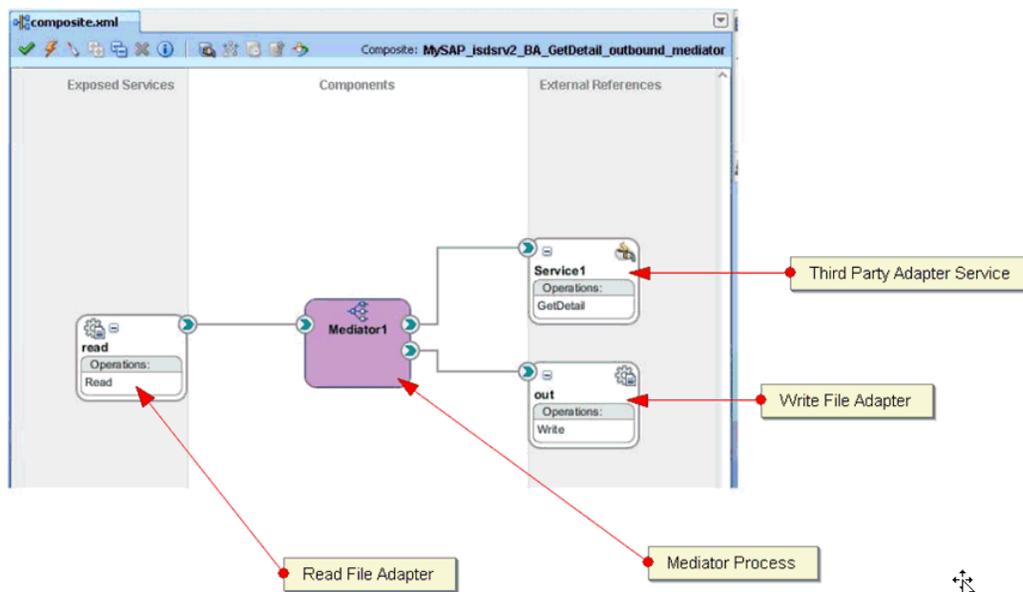
15. Copy the generated **plan.xml** file from the first machine (first node in the cluster configuration) to the same location (Oracle\_Home\Middleware\Oracle\_SOA1\soa) in the second machine (second node in the cluster configuration).
16. Restart the servers (Admin\_Server, SOA\_Server1, SOA\_Server2).
17. Create a shared input location that is accessible by both machines.  
For example, if the inputs are pasted in this location, they can be consumed by machine1 and machine2.

### 1.2.4 Configuring the Outbound Process

To configure the outbound process:

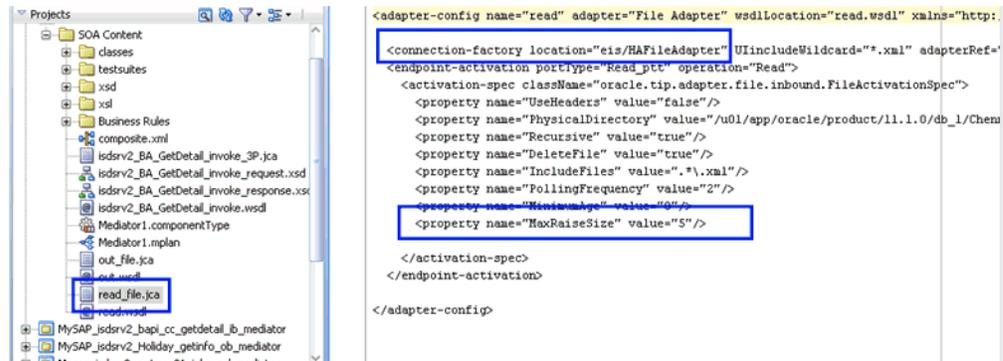
1. Create a target using Application Explorer on the first machine.
2. Connect to the target (on the first machine) and create an outbound WSDL for the Oracle Application Adapter for SAP R/3 (MySAP node).
3. On the second machine, create a target using Application Explorer with the same name as specified on the first machine.
4. Restart the Admin Server and the soa\_servers on both machines.
5. As shown below in [Figure 1–26](#), create an outbound Mediator process using Oracle JDeveloper with the following configuration:

**Figure 1–26 Outbound Mediator Process in Oracle JDeveloper**



6. Select the `Read_file_adapter.jca` file and make the following changes:
  - a. Change `<connection-factory location="eis/FileAdapter" UIincludeWildcard="*.xml" adapterRef="" />` to `<connection-factory location="eis/HFileAdapter" UIincludeWildcard="*.xml" adapterRef="" />`
  - b. Add the value `<property name="MaxRaiseSize" value="5" />` to the end, as shown in [Figure 1-27](#).

**Figure 1-27 JCA Properties Source**



7. Save the process and deploy the process to both SOA servers.
8. Provide the input files in the input location configured in the Read file adapter and check if the outputs are shared and placed in the output location (in two machines) configured in the Write file adapter.

## 1.2.5 Configuring Connection Settings for the Inbound Process

The following configuration steps must be completed (for PeopleSoft, Siebel, and J.D. Edwards OneWorld Application Adapters) before executing an inbound process:

1. Navigate to the following location:

```
Oracle_Home\product\11.1.0\ohs_1\Oracle_WT1\instances\instance1\config\OHS\ohs1
```

2. Open the `mod_wl_ohs.conf` file.
3. Add the IP address and port number (port number configured while creating the channel for the adapter) for both machines in the `mod_wl_ohs.conf` file.

For example (for the PeopleSoft adapter):

```

<Location /name>
SetHandler weblogic-handler
WebLogicCluster machine1_ip:port, machine2_ip:portWLLogFile c:\tmp\psft.log
</Location>

```

Where:

- `name` - Is any appropriate name.
- `machine1_ip` and `machine2_ip` - Are the machine IP addresses where `SOA_Server1` and `SOA_Server2` are configured.
- `port` - The port number that is configured in the channel configuration for `machine1` and `machine2`.

4. Open a command prompt and navigate to:  
`Oracle_Home\product\11.1.0\ohs_1\Oracle_WT1\instances\instance1\bin`
5. Restart the Oracle HTTP server using the following command:  
`opmnctl restartproc ias-component=ohs1`
6. When providing the URL in the backend for the adapters (PeopleSoft, Siebel, JDEdwards) the URL must be in the following format:

`http://ohsserver_ip:7777/name`

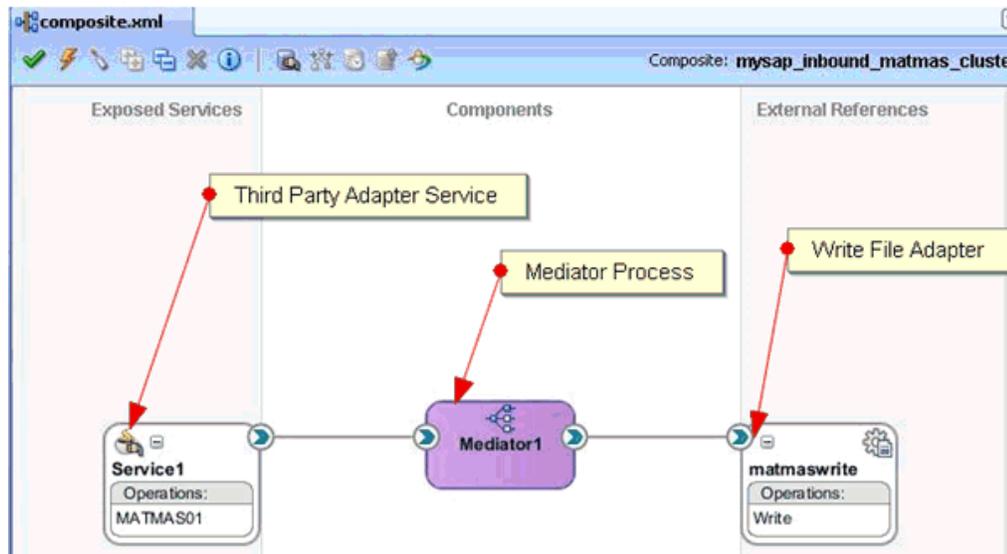
Where *ohsserver\_ip* is the IP address of the machine where the Oracle HTTP server is installed and *name* is the name of the Location configured in the `mod_wl_ohs.conf` file.

## 1.2.6 Configuring the Inbound Process

To configure the inbound process:

1. Create a target and channel using Application Explorer on the first machine.
2. Connect to the target (on the first machine) and create an inbound WSDL for the Oracle Application Adapter for SAP R/3 (MySAP node).
3. On the second machine, create a target and channel using Application Explorer with the same name as specified on the first machine.
4. Restart the Admin Server and the `soa_servers` on both machines.
5. As shown in [Figure 1-28](#), create an inbound Mediator process using Oracle JDeveloper with the following configuration:

**Figure 1-28 Inbound Mediator Process in Oracle JDeveloper**



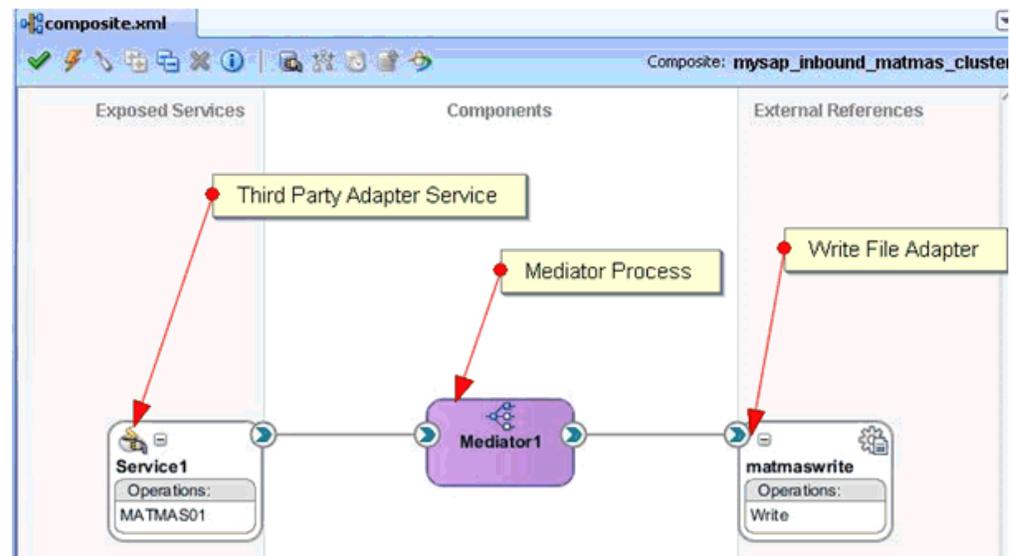
6. Save the process and deploy the process (to both SOA servers).
7. Trigger from the backend or use HTTP publisher and check if the output is shared and placed in the output locations (in both machines) that are configured in the Write File adapter.

## 1.2.7 Singleton Testing

To perform Singleton testing:

1. On the first machine, create a target and channel using Application Explorer.
2. Connect to the target (on the first machine) and create an inbound WSDL for the Oracle Application Adapter for SAP R/3 (MySAP node).
3. On the second machine, create a target and channel using Application Explorer with the same name as specified on the first machine.
4. Restart the Admin Server and the soa\_servers on both machines.
5. As shown in [Figure 1–29](#), create an inbound Mediator process using Oracle JDeveloper with the following configuration:

**Figure 1–29 Inbound Mediator Process in Oracle JDeveloper**



6. For singleton testing, open the `composite.xml` file (source view) and add the following property in the Service section:

```
<property name="singleton">true</property>
```

For example:

```
<service name="Service1" ui:wSDLLocation="MATMAS01_receive_cluster.wsdl">
<interface.wSDL
interface="http://xmlns.oracle.com/pcbpel/iWay/wSDL/MySAP/isdsrv2_
cluster/MATMAS01#wSDL.interface(MATMAS01PortType)"/>
<binding.jca config="MATMAS01_receive_cluster_3P.jca"/><property
name="singleton">true</property>
</service>
```

7. Save the inbound Mediator process and deploy the process to both SOA servers.
8. Trigger from the backend or use HTTP publisher and check if the messages are received by any one of the machines in the output location.
9. Stop the soa\_server of the machine that is receiving the messages.
10. Check whether the messages are being received by the second machine.

When you are using the Singleton testing feature with Oracle Application Adapter for SAP R/3, there are some loss of messages (messages are dumped in the SAP GUI). This is caused because the end-point activation of the second system is in progress after the first system is down.

To retrieve the lost messages, perform the following steps:

1. Login to the SAP GUI.
2. Enter the `/sm58` transaction and navigate to the dumped messages.
3. Right-click a dumped message, and then select **Execute LUW**.
4. Repeat step 3 for all the dumped messages.

All the lost messages are received in the Oracle Enterprise Manager console.

## 1.3 Configuring Oracle Application Adapters in a High Availability Cluster Environment for Oracle Service Bus

This section describes the steps required to successfully deploy the 11g Release 1 (11.1.1.3.0) Oracle Application Adapters in a cluster environment for Oracle Service Bus (OSB) and configuring for inbound processes.

### 1.3.1 Configuring and Deploying J2CA

This section describes how to configure and deploy J2CA.

#### 1.3.1.1 Configuring the J2CA Connector Application

To configure settings for the J2CA Connector Application:

1. Locate the `ra.xml` file, which is located in the following directory:

```
<OSB_HOME>\Oracle_OSB1\3rdparty\ApplicationAdapters\iwafjca.rar\META-INF\ra.xml
```

2. Open the `ra.xml` file in an editor.
3. Enter a value for the `IWayHome` property. This is the folder where the Oracle Application Adapters are installed. For example:

```
<config-property>
  <config-property-name>IWayHome</config-property-name>
  <config-property-type>java.lang.String</config-property-type>
  <config-property-value> OSB_Home\Oracle_OSB1\3rdparty\ApplicationAdapters
</config-property-value>
</config-property>
```

4. Enter a value for the `IWayConfig` property. This is the value that you specified when you created a new J2CA configuration using Application Explorer. For example:

```
config-property>
  <config-property-name>IWayConfig</config-property-name>
  <config-property-type>java.lang.String</config-property-type>
  <config-property-value>J2CA_SampleConfig</config-property-value>
</config-property>
```

5. Enter a value for the `LogLevel` property. This property can be set to `DEBUG`, `INFO`, or `ERROR`. For example:

```
<config-property>
```

```

<config-property-name>LogLevel</config-property-name>
<config-property-type>java.lang.String</config-property-type>
<config-property-value>DEBUG</config-property-value>
</config-property>

```

6. Save the `ra.xml` file and exit from the editor.

### 1.3.1.2 Deploying the J2CA Connector Application using the OSB Administration Console

To deploy the J2CA Connector Application:

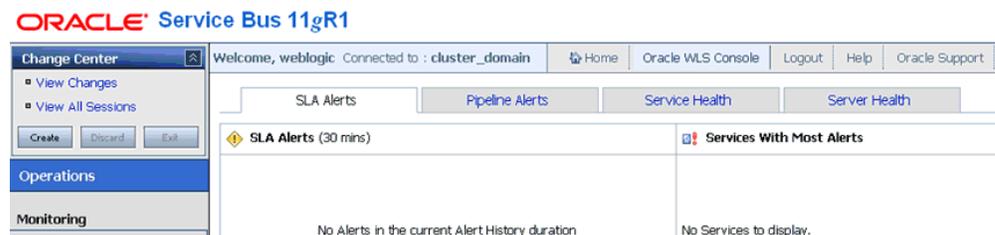
1. Open the Oracle Service Bus Administration Console in a Web browser by entering the following URL:

```
http://hostname:port/sbconsole
```

Where `hostname` is the name of the system where Oracle WebLogic Server is running and `port` is the port for the domain you are using. The port for the default domain is 7001.

The Oracle Service Bus Administration Console is displayed, as shown in Figure 1–30.

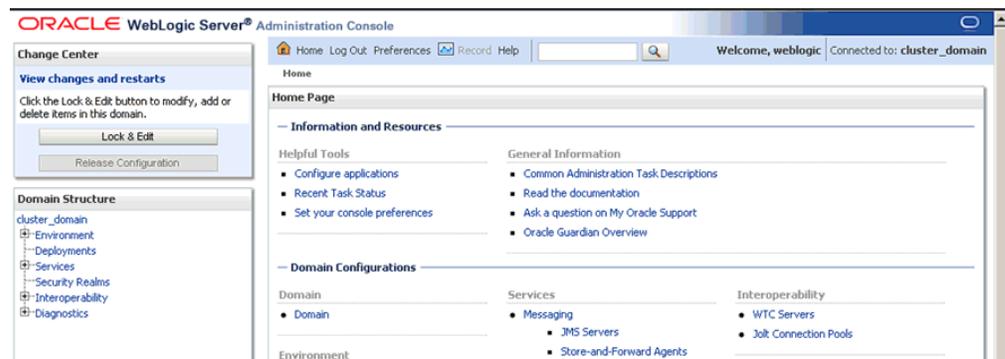
**Figure 1–30 Oracle Service Bus Administration Console**



2. Click **Oracle WLS Console** located on the menu bar.

The Oracle WebLogic Server Administration Console is displayed, as shown in Figure 1–31.

**Figure 1–31 Oracle WebLogic Server Administration Console**



3. In the Domain Structure section in the left pane, click **Deployments**.

The Deployments page is displayed.

4. Click **Install**.

The Install Application Assistant page is displayed.

5. Browse to the following directory:

<OSB\_HOME>\Oracle\_OSB1\3rdparty\ApplicationAdapters\

6. Select the radio button next to **iwafjca.rar** and click **Next**.

The Choose Targeting Style page is displayed.

7. Leave the default option selected (Install this deployment as an application) and click **Next**.

The Optional Settings page is displayed.

8. Leave the default options selected and click **Next**.

The Select deployment targets page is displayed, as shown in [Figure 1–32](#).

**Figure 1–32 Select Deployment Targets Page**



9. Select **AdminServer** from the Servers section and **OSB\_Cluster\_1** from the Clusters section.

10. Click **Next**.

The Summary page is displayed.

11. Click **Finish**.

The Settings page for the J2CA (iwafjca) Connector Application is displayed.

12. Click **Save**.

Verify that a success message is displayed.

### 1.3.2 Deploying the J2CA Installation Verification Program (IVP)

This section describes how to deploy the J2CA Installation Verification Program (IVP).

### 1.3.2.1 Deploying the J2CA Installation Verification Program (IVP) Using the OSB Administration Console

To deploy the J2CA Installation Verification Program (IVP):

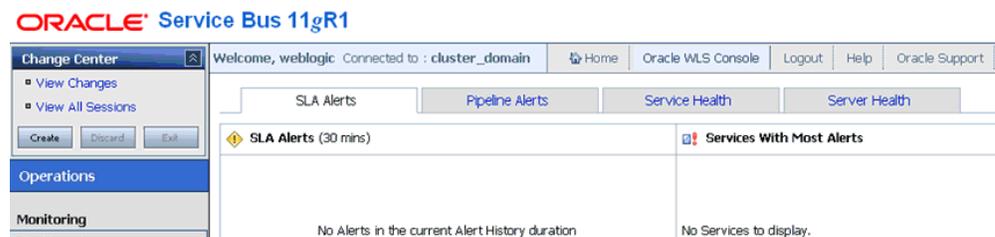
1. Open the Oracle Service Bus Administration Console in a Web browser by entering the following URL:

```
http://hostname:port/sbconsole
```

Where *hostname* is the name of the system where Oracle WebLogic Server is running and *port* is the port for the domain you are using. The port for the default domain is 7001.

The Oracle Service Bus Administration Console is displayed, as shown in [Figure 1–33](#).

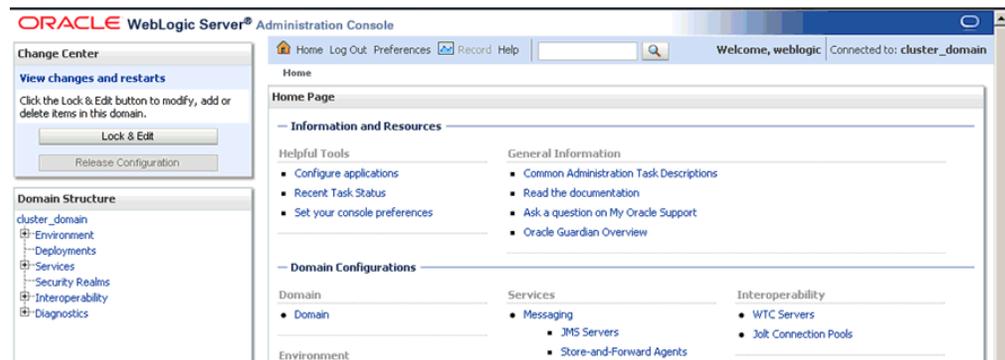
**Figure 1–33 Oracle Service Bus Administration Console**



2. Click **Oracle WLS Console** located on the menu bar.

The Oracle WebLogic Server Administration Console is displayed, as shown in [Figure 1–34](#).

**Figure 1–34 Oracle WebLogic Server Administration Console**



3. In the Domain Structure section in the left pane, click **Deployments**.

The Deployments page is displayed.

4. Click **Install**.

The Install Application Assistant page is displayed.

5. Browse to the following directory:

```
<OSB_HOME>\Oracle_OSB1\3rdparty\ApplicationAdapters\
```

6. Select the radio button next to **iwafjca.war** and click **Next**.

The Choose Targeting Style page is displayed.

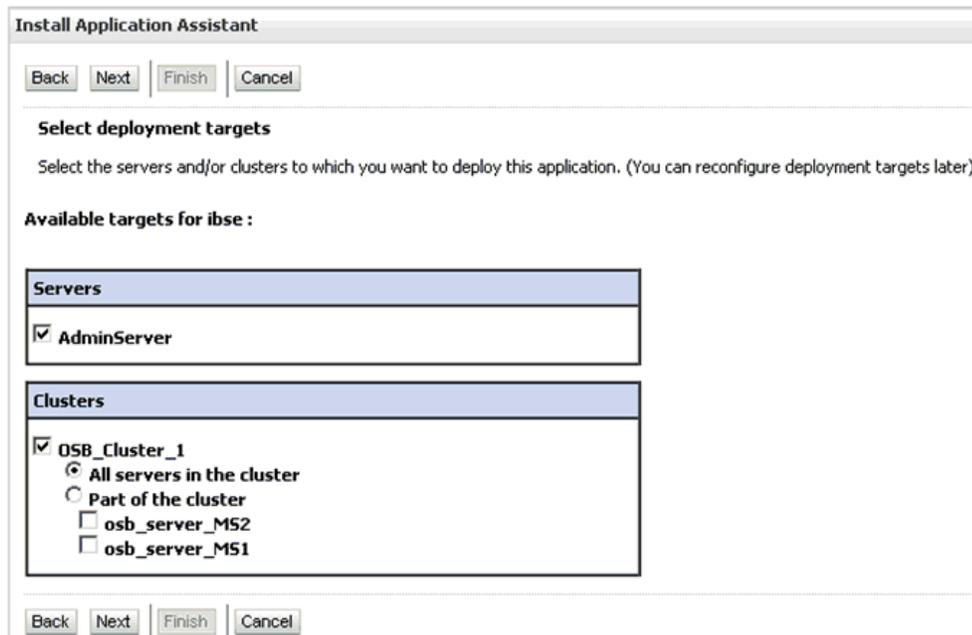
7. Leave the default option selected (Install this deployment as an application) and click **Next**.

The Optional Settings page is displayed.

8. In the Name field, enter **iwafjcatest**.
9. Leave the remaining default options selected and click **Next**.

The Select deployment targets page is displayed, as shown in [Figure 1–35](#).

**Figure 1–35 Select Deployment Targets Page**



10. Select **AdminServer** from the Servers section and **OSB\_Cluster\_1** from the Clusters section.

11. Click **Next**.

The Summary page is displayed.

12. Click **Finish**.

The Settings page for the J2CA IVP is displayed.

13. Click **Save**.

Verify that a success message is displayed.

### 1.3.3 Configuring the Oracle HTTP Server for Inbound Processing

Before executing an inbound process, the following configuration steps must be completed for the PeopleSoft, Siebel, and J.D. Edwards Oracle Application Adapters:

1. Navigate to the following location:

`<Oracle_Home>\Oracle_WT1\instances\instance1\config\OHS\ohs1`

2. Open the `mod_wl_ohs.conf` file in an editor.

3. Add the IP address and port number for both systems.

---

**Note:** The port number refers to the value that was specified while creating the channel for the Oracle Application Adapter using Application Explorer.

---

For example (PeopleSoft Adapter):

```
<Location /name>
SetHandler weblogic-handler
WebLogicCluster machine1_ip:port, machine2_ip:port
WLLogFile c:\tmp\psft.log
</Location>
```

Where *name* is any appropriate name, *machine1\_ip* and *machine2\_ip* are the system IP addresses where the SOA\_Server1 and SOA\_Server2 are configured, and *port* are the numbers that are configured in the channel configuration for both systems.

4. Save the *mod\_wl\_ohs.conf* file.
5. Perform the following steps to restart the Oracle HTTP server:
  - a. Open a command prompt and navigate to the following location:
 

```
C:\oracle\product\11.1.0\ohs_1\Oracle_WT1\instances\instance1\bin
```
  - b. Execute the following command:
 

```
opmnctl restartproc ias-component=ohs1
```
6. Use the following format when providing the URL for the PeopleSoft, Siebel, and J.D. Edwards Oracle Application Adapters:

```
http://ohsserver_ip:7777/name
```

Where *ohsserver\_ip* is the IP address of the system where the Oracle HTTP server is installed and *name* is the name that was specified in the `<Location>` element in the *mod\_wl\_ohs.conf* file.

## 1.4 Preferred Repository Type

As a best practice, it is recommended to use only a database repository (for example, Oracle) for adapters in development, test, and production environments. Do not use the File repository, which is provided by default only for initial startup purposes. The File repository is not supported for troubleshooting any issues.

## 1.5 Generating Input XML Documents

This section describes how to generate input XML documents that can be used as payloads for outbound BPEL and Mediator processes.

### 1.5.1 Prerequisites

Before continuing, ensure that the following components and applications are available:

- Outbound WSDL document created using Application Explorer.

- XML editor (for example, Oracle JDeveloper or Altova XML Spy, which is used as an example in this section).
- Oracle WebLogic Server 11g Release 1 (11.1.1.3.0) with Oracle JDeveloper Studio.

## 1.5.2 Creating a WSDL Document Using Application Explorer

To create a WSDL document using Application Explorer:

1. Ensure that Oracle WebLogic Server is started, which is where Application Explorer is deployed.
2. Start Application Explorer by clicking the Windows **Start** menu, selecting **All Programs, Oracle Application Adapters**, and clicking **Application Explorer**, as shown in [Figure 1–36](#).

**Figure 1–36 Oracle Application Adapters Program Menu**



You can also start Application Explorer by executing the **ae.bat** file, which is located in the following directory:

```
C:\oracle\Middleware\home_0309\Oracle_
SOA1\soa\thirdparty\ApplicationAdapters\tools\iwae\bin\ae.bat
```

---

**Note:** It is a good practice to create a shortcut for the **ae.bat** file on your desktop.

---

If you are using a UNIX or Linux platform, then you can start Application Explorer by accessing the **iwae.sh** file.

3. Select an available JCA configuration.
4. Select an appropriate adapter (for example, MySAP).
5. Create a new target or connect to an existing target.
6. Expand the created target adapter and select the appropriate object.
7. Right-click the object and select **Create Outbound JCA Service(Request/Response)**.

The Export WSDL dialog is displayed.

8. Accept the default location in the Name field and click **OK** to export the WSDL document to the default location.

You can also click **Browse** to provide a different location and then click **OK**, which will export the WSDL document to your defined location.

9. Navigate to the location where the WSDL document was exported and verify that the WSDL, JCA, Request, and Response schema files are exported and available.

### 1.5.3 Generating an Input XML File From a Request Schema

To generate an input XML file from a request schema:

1. Open an XML editor, as shown in [Figure 1–37](#) (for example, Altova XML Spy, which is used as an example in this section).

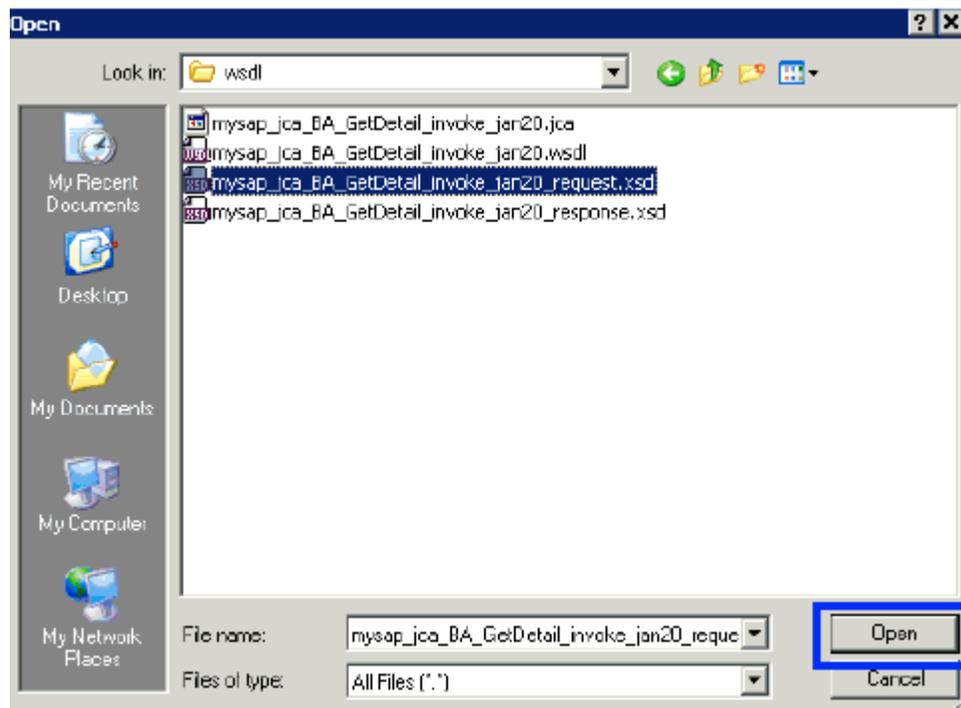
**Figure 1–37 The Open Option**



2. Click **File**, and then select **Open**.

The Open dialog is displayed, as shown in [Figure 1–38](#).

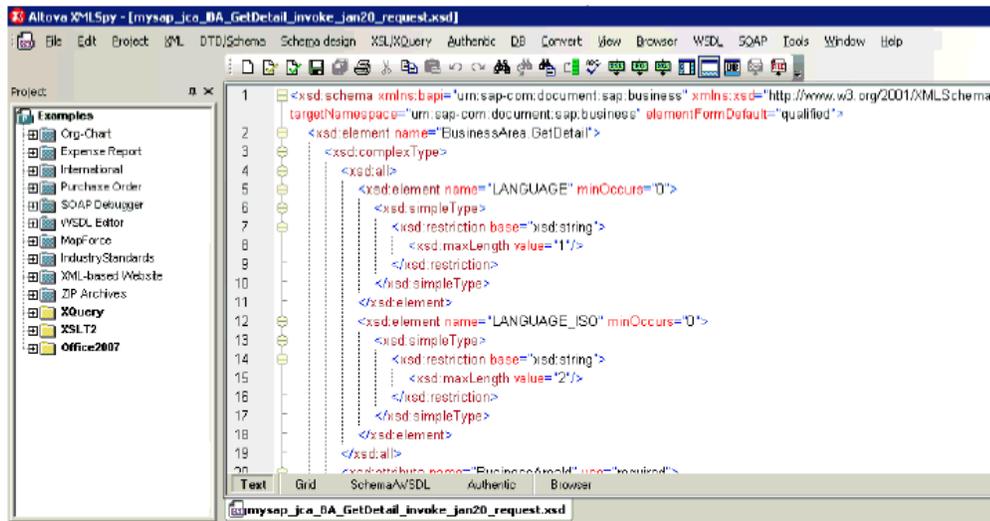
**Figure 1–38 The Open Dialog**



3. Navigate to the location on your file system where the XML request schema is exported, select the schema file and click **Open**.

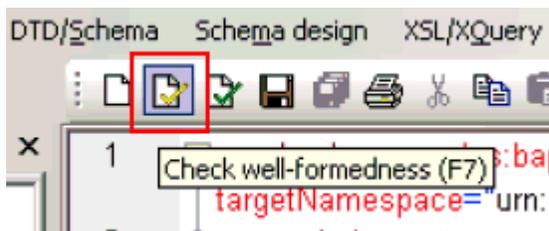
The XML request schema file is opened and displayed in Altova XML Spy, as shown in [Figure 1–39](#).

**Figure 1–39 XML Request Schema File Displayed in Altova XML Spy**



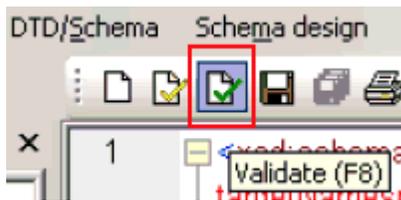
4. Check if the schema is well formed by clicking **Check well-formedness** or pressing **F7**, as shown in [Figure 1–40](#).

**Figure 1–40 Check well-formedness Icon**

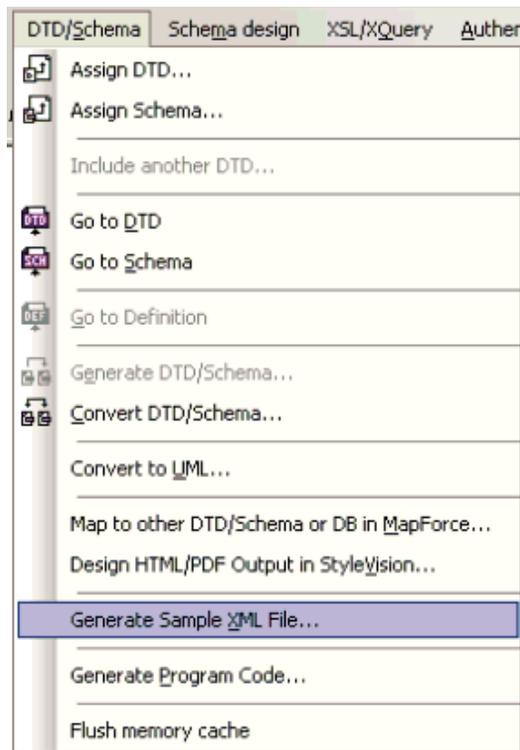


5. Validate the schema by clicking **Validate** or pressing **F8**, as shown in [Figure 1–41](#).

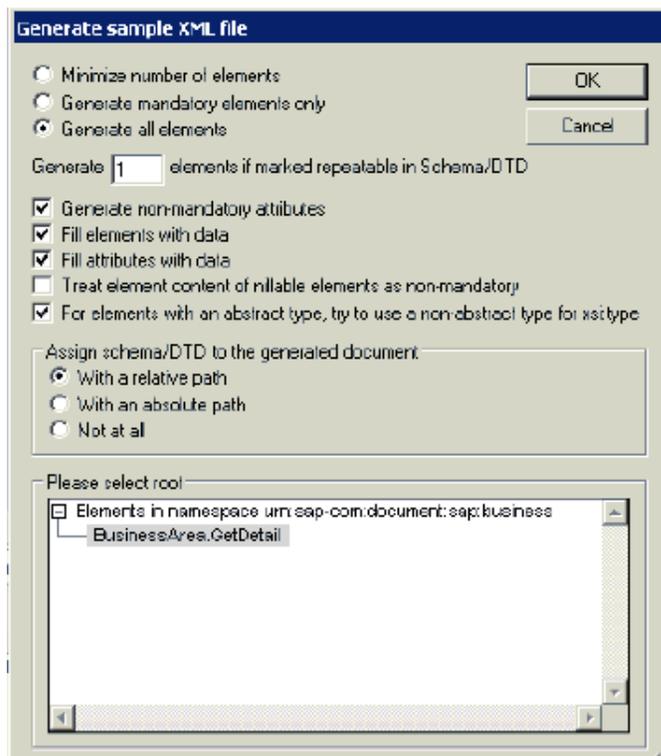
**Figure 1–41 The Validate Icon**



6. Once you have confirmed that the schema is well-formed and valid, click **DTD/Schema**, and then select **Generate Sample XML File**, as shown in [Figure 1–42](#).

**Figure 1–42 Generate Sample XML File Option**

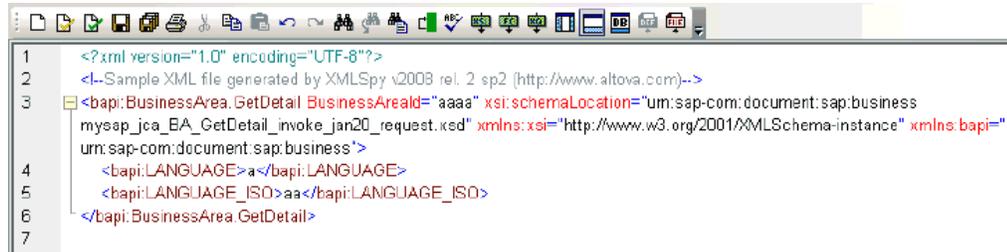
As shown in [Figure 1–43](#), the Generate Sample XML File dialog is displayed.

**Figure 1–43 Generate Sample XML File Dialog**

7. Select the appropriate parameters for your sample XML file and click **OK** when you are ready.

As shown in [Figure 1–44](#), the sample XML file is generated in Altova XML Spy.

**Figure 1–44 Sample XML File Generated in Altova XML Spy**



```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <!--Sample XML file generated by XMLSpy v2008 rel. 2 sp2 (http://www.altova.com)-->
3 <bapi:BusinessArea.GetDetail BusinessAreald="aaaa" xsi:schemaLocation="urn:sap-com:document:sap:business
   mysap_jca_BA_GetDetail_invoke_jan20_request.ked" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:bapi="
   urn:sap-com:document:sap:business">
4   <bapi:LANGUAGE>a</bapi:LANGUAGE>
5   <bapi:LANGUAGE_ISO>aa</bapi:LANGUAGE_ISO>
6 </bapi:BusinessArea.GetDetail>
7

```

8. Verify that the generated input XML file is well-formed and valid.

The generated input XML file can be used to invoke a BPM, BPEL, or Mediator process after providing the necessary values in the file.

### 1.5.4 Using the Generated Input XML File in the Oracle Enterprise Manager Console

Before you can use the generated input XML file in the Oracle Enterprise Manager console, verify that the following prerequisites are available:

- BPM Outbound process created in JDeveloper and deployed in SOA\_Server1
- Mediator Outbound process created in JDeveloper and deployed in SOA\_Server1
- BPEL Outbound process created in JDeveloper and deployed in SOA\_Server1

#### Mediator Outbound Process

Perform the following steps to use the input XML file in an outbound Mediator process:

1. Log in to the Oracle Enterprise Manager console by using the following URL:

`http://localhost:7001/em`

2. Expand your domain in the left pane followed by the SOA folder, as shown in [Figure 1–45](#).

Figure 1–45 Oracle Enterprise Manager Console



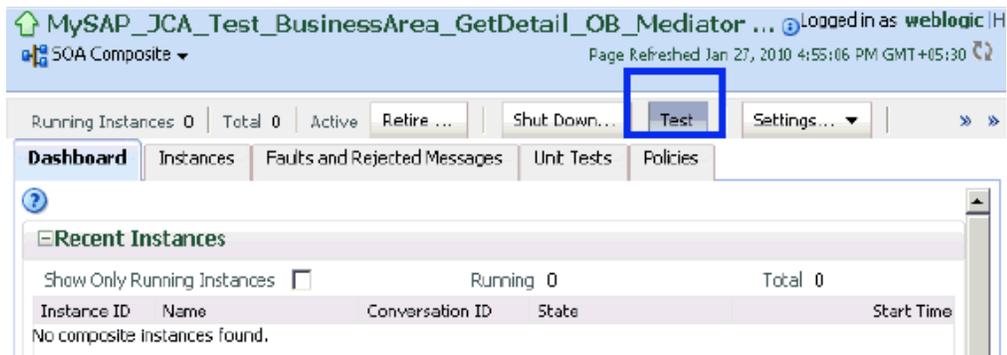
3. As shown in Figure 1–46, select an outbound Mediator project (for example, MySAP\_JCA\_Test\_BusinessArea\_GetDetail\_OB\_Mediator).

Figure 1–46 Outbound Mediator Project Example



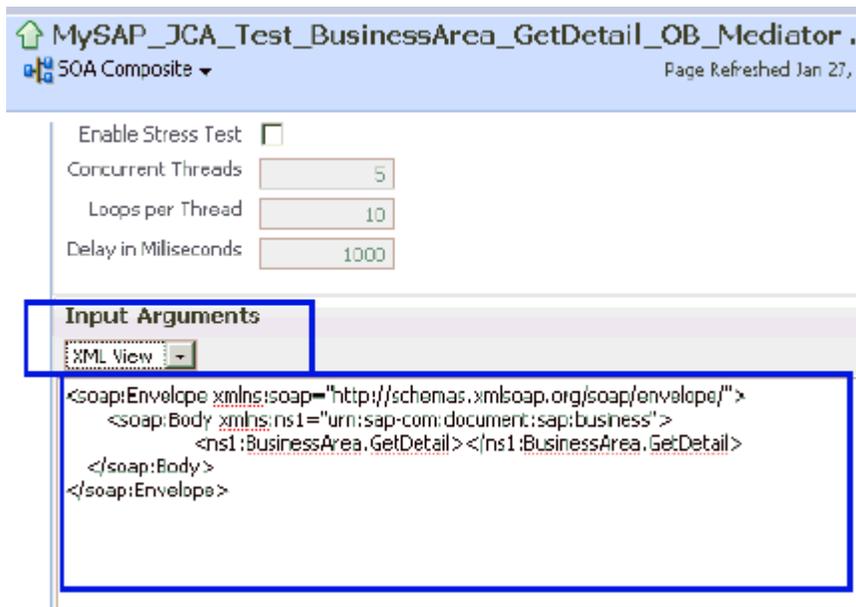
4. Click the **Test** button on the top right-hand corner of the console, as shown in Figure 1–47.

**Figure 1–47 Test Button**



- In the Input Arguments section, select **XML View** from the list and verify that the input XML is displayed, as shown in [Figure 1–48](#).

**Figure 1–48 XML View Option in Input Arguments Section**




---

**Note:** For Mediator processes, it is mandatory for the input XML to be used with a namespace.

---

- The displayed XML in the Oracle Enterprise Manager console can be altered and used as follows:

**XML Displayed in the Oracle Enterprise Manager Console**

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
    <ns1:BusinessArea.GetDetail> </ns1:BusinessArea.GetDetail>
  </soap:Body>
</soap:Envelope>
```

**Altered XML**

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
```

```
<ns1:BusinessArea.GetDetail BusinessAreaId="1000">
</ns1:BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

7. The sample input XML that was generated using Altova XML Spy can be used after making the following required modifications:
  - a. Remove XML headers.
  - b. Add necessary inputs.
  - c. Add the soap headers as displayed in the Oracle Enterprise Manager console.
  - d. Modify the namespaces to match the namespaces in the input XML.

### XML Generated Using Altova XML Spy

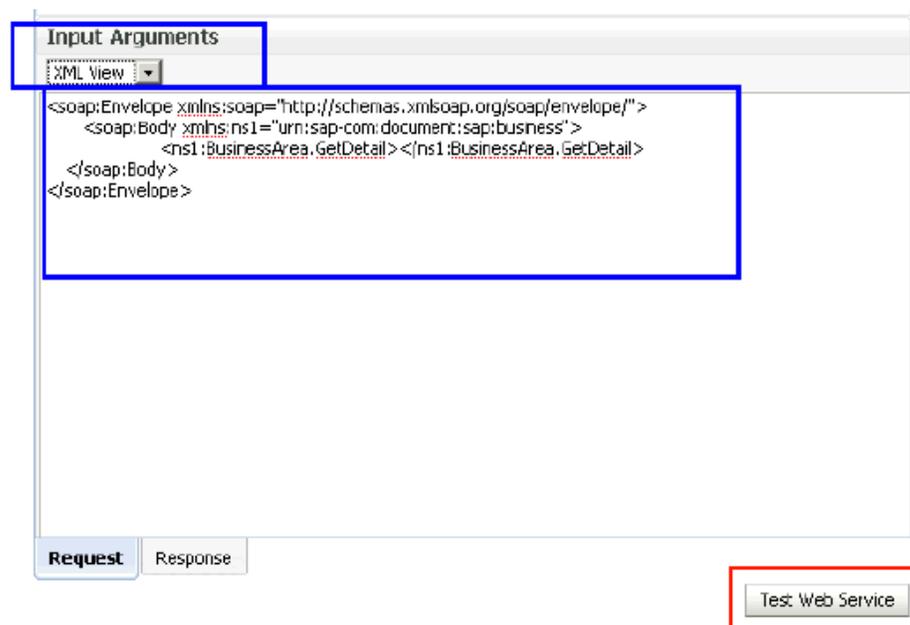
```
<?xml version="1.0" encoding="UTF-8"?> <!--Sample XML file generated by XMLSpy
v2008 rel. 2 sp2 (http://www.altova.com)--> <bapi:BusinessArea.GetDetail
BusinessAreaId="aaaa" xsi:schemaLocation="urn:sap-com:document:sap:business
mysap_jca_BA_GetDetail_invoke_jan20_request.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:bapi="urn:sap-com:document:sap:business">
<bapi:LANGUAGE>a</bapi:LANGUAGE> <bapi:LANGUAGE_ISO>aa</bapi:LANGUAGE_ISO>
</bapi:BusinessArea.GetDetail>
```

### Altered XML

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
<ns1:BusinessArea.GetDetail BusinessAreaId="1000"> <ns1:LANGUAGE>D</
ns1:LANGUAGE> < ns1:LANGUAGE_ISO>EN</ ns1:LANGUAGE_ISO>
</ns1:BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

8. Click **Test Web Service** after providing the input XML, as shown in [Figure 1–49](#).

**Figure 1–49 Test Web Service Button**



The output is displayed in the Response tab.

### BPEL Outbound Process

Perform the following steps to use the input XML file in an outbound BPEL process:

1. Log in to the Oracle Enterprise Manager console by using the following URL:  
<http://localhost:7001/em>
2. As shown in [Figure 1–50](#), expand your domain in the left pane followed by the SOA folder.

**Figure 1–50 Oracle Enterprise Manager Console**

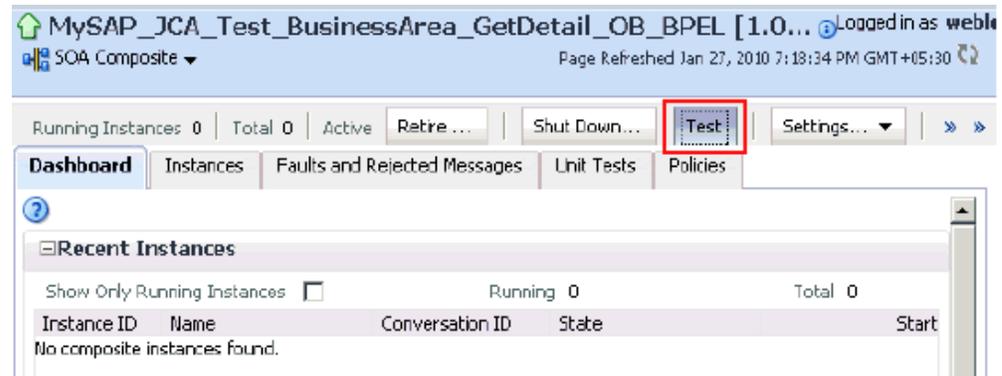


3. As shown in [Figure 1–51](#), select an outbound BPEL project (for example, MySAP\_JCA\_Test\_BusinessArea\_GetDetail\_OB\_BPEL).

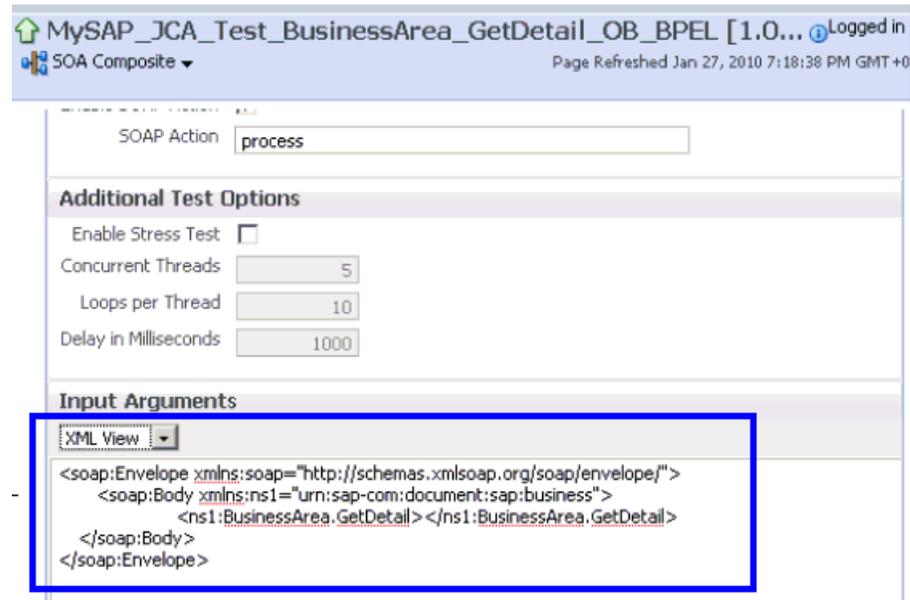
**Figure 1–51 Outbound BPEL Project in Oracle Enterprise Manager Console**



4. Click the **Test** button on the top right-hand corner of the console, as shown in [Figure 1–52](#).

**Figure 1–52 Test Button**

5. In the Input Arguments section, select **XML View** from the list and verify that the input XML is displayed, as shown in [Figure 1–53](#).

**Figure 1–53 Input XML Document Inside Input Arguments Section**


---

**Note:** For BPEL processes, it is not mandatory for the input XML to be used with a namespace.

---

6. The displayed XML in the Oracle Enterprise Manager console can be altered and used as follows:

#### XML Displayed in the Oracle Enterprise Manager Console

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
<ns1:BusinessArea.GetDetail> </ns1:BusinessArea.GetDetail> </soap:Body>
</soap:Envelope>
```

#### Altered XML With Namespace

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
```

```
<soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
<ns1:BusinessArea.GetDetail BusinessAreaId="1000">
</ns1:BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

#### Altered XML Without Namespace

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body xmlns="urn:sap-com:document:sap:business"> <BusinessArea.GetDetail
BusinessAreaId="1000"> </BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

7. The sample input XML that was generated using Altova XML Spy can be used after making the following required modifications:
  - a. Remove XML headers.
  - b. Add necessary inputs.
  - c. Add the soap headers as displayed in the Oracle Enterprise Manager console.
  - d. Modify or remove the namespaces.

#### XML Displayed in XML View in the Oracle Enterprise Manager Console

```
<?xml version="1.0" encoding="UTF-8"?> <!--Sample XML file generated by XMLSpy
v2008 rel. 2 sp2 (http://www.altova.com)--> <bapi:BusinessArea.GetDetail
BusinessAreaId="aaaa" xsi:schemaLocation="urn:sap-com:document:sap:business
mysap_jca_BA_GetDetail_invoke_jan20_request.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:bapi="urn:sap-com:document:sap:business">
<bapi:LANGUAGE>a</bapi:LANGUAGE> <bapi:LANGUAGE_ISO>aa</bapi:LANGUAGE_ISO>
</bapi:BusinessArea.GetDetail>
```

#### Altered XML With Namespace

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
<ns1:BusinessArea.GetDetail BusinessAreaId="1000"> <ns1:LANGUAGE>D</
ns1:LANGUAGE> < ns1:LANGUAGE_ISO>EN</ ns1:LANGUAGE_ISO>
</ns1:BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

#### Altered XML Without Namespace

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body xmlns="urn:sap-com:document:sap:business"> <BusinessArea.GetDetail
BusinessAreaId="1000"> <LANGUAGE>D</ LANGUAGE> < LANGUAGE_ISO>EN</ LANGUAGE_
ISO> </BusinessArea.GetDetail> </soap:Body> </soap:Envelope>
```

8. Click Test Web Service after providing the input XML with or without a namespace.

The output is displayed in the Response tab, as shown in [Figure 1-54](#).

#### Input XML With Namespace

**Figure 1–54 Input XML Document With Namespace**

**Input Arguments**

XML View

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="urn:sap-com:document:sap:business">
    <ns1:BusinessArea.GetDetail BusinessAreaId="1000">
      <ns1:LANGUAGE>E</ns1:LANGUAGE>
      <ns1:LANGUAGE_ISO>EN</ns1:LANGUAGE_ISO>
    </ns1:BusinessArea.GetDetail>
  </soap:Body>
</soap:Envelope>
```

Input XML With Namespace

**Response****Figure 1–55 Response Tab**

Request **Response**

Test Status Passed

Response Time (ms) 890

XML View

Launch Message Flow Trace

```
<BusinessArea.GetDetail.Response xmlns="urn:sap-com:document:sap:business.response">
  <BUSINESSAREA_DETAIL xmlns="">
    <BUS_AREA>1000</BUS_AREA>
    <BUS_AR_DES>Mechanical engineering</BUS_AR_DES>
    <CONS_BA>1000</CONS_BA>
  </BUSINESSAREA_DETAIL>
  <RETURN xmlns="">
    <TYPE/>
    <CODE/>
    <MESSAGE/>
    <LOG_NO/>
    <LOG_MSG_NO>000000</LOG_MSG_NO>
    <MESSAGE_V1/>
    <MESSAGE_V2/>
    <MESSAGE_V3/>
  </RETURN>
</BusinessArea.GetDetail.Response>
```

**Input XML Without Namespace****Figure 1–56 Input XML Document Without Namespace**

**Input Arguments**

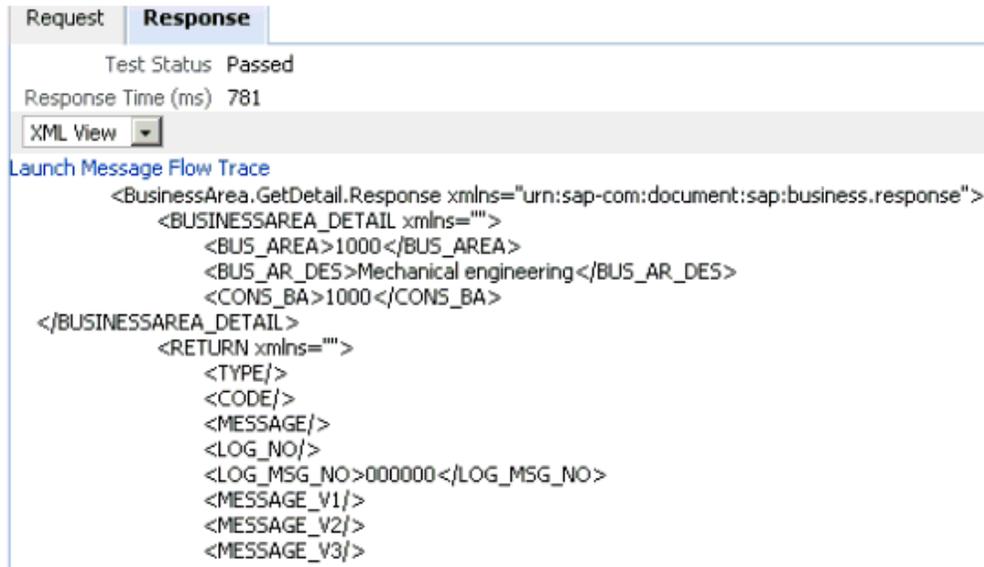
XML View

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns="urn:sap-com:document:sap:business">
    <BusinessArea.GetDetail BusinessAreaId="1000">
      <LANGUAGE>E</LANGUAGE>
      <LANGUAGE_ISO>EN</LANGUAGE_ISO>
    </BusinessArea.GetDetail>
  </soap:Body>
</soap:Envelope>
```

Input XML Without Namespace

## Response

**Figure 1–57 XML Response Document Being Returned**



### Using the Input XML File in an Outbound BPM Process

Perform the following steps to use the input XML file in an outbound BPM process:

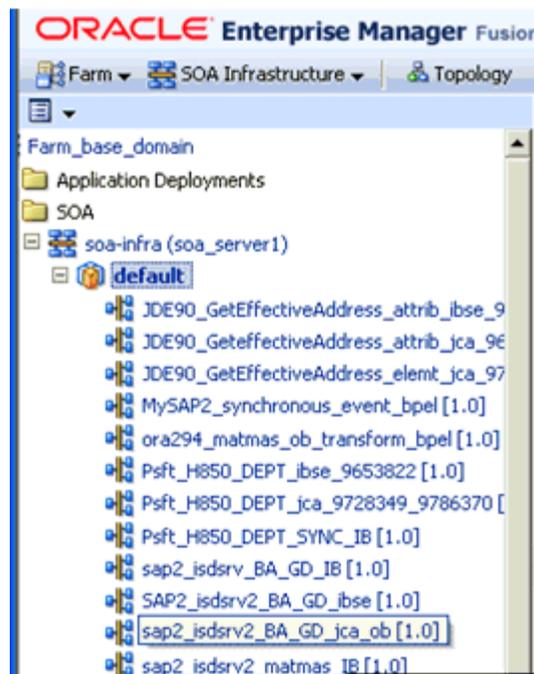
1. Log in to the Oracle Enterprise Manager Console by using the following URL:  
<http://localhost:7001/em>
2. Expand your partition under soa-infra (soa\_server1) in the left pane followed by the SOA folder, as shown in [Figure 1–58](#).

**Figure 1–58 Partition Expanded Under soa-infra**



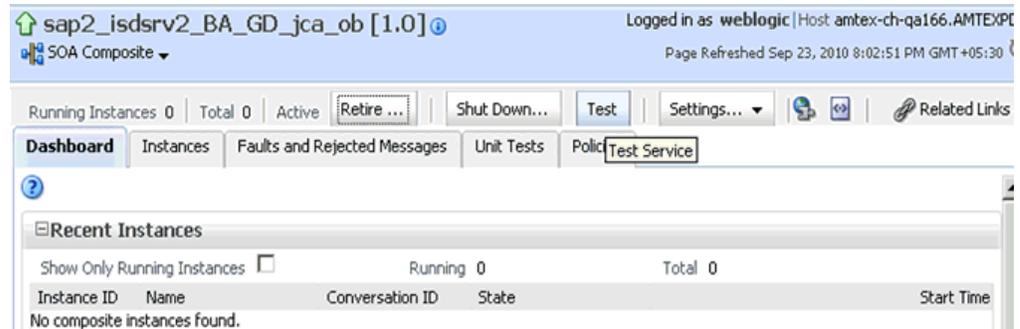
3. As shown in [Figure 1–59](#), select an outbound BPM project (for example, SAP2\_ isdsrv2\_BA\_GD\_jca\_ob).

**Figure 1–59 Outbound BPM Project Selected**



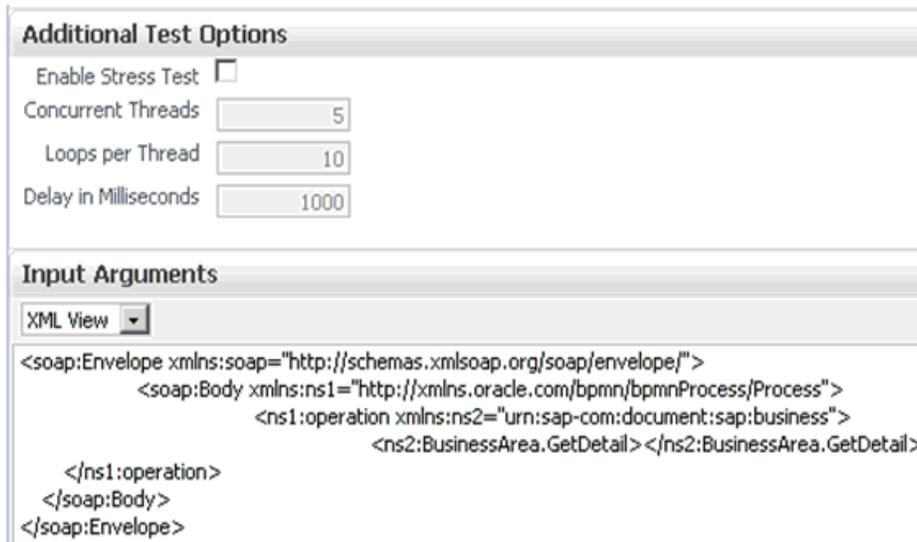
4. Click **Test** on the top right-hand corner of the console, as shown in [Figure 1–60](#).

**Figure 1–60 Test Button**



5. In the Input Arguments section, select **XML View** from the list and verify that the input XML is displayed, as shown in [Figure 1–61](#).

**Figure 1–61 XML View Option Selected in the Input Arguments Section**



**Note:** For BPM processes, it is required for the input XML to be used with a namespace.

6. The displayed XML in the Oracle Enterprise Manager console can be altered and used as follows:

**XML Displayed in the Oracle Enterprise Manager Console**

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="http://xmlns.oracle.com/bpmn/bpmnProcess/Process">
    <ns1:operation xmlns:ns2="urn:sap-com:document:sap:business">
      <ns2:BusinessArea.GetDetail/>
    </ns1:operation>
  </soap:Body>
</soap:Envelope>
```

**Altered XML**

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="http://xmlns.oracle.com/bpmn/bpmnProcess/Process">
    <ns1:operation xmlns:bapi="urn:sap-com:document:sap:business">
      <bapi:BusinessArea.GetDetail BusinessAreaId="0001">
        <bapi:LANGUAGE>D</bapi:LANGUAGE>
        <bapi:LANGUAGE_ISO>DE</bapi:LANGUAGE_ISO>
      </bapi:BusinessArea.GetDetail>
    </ns1:operation>
  </soap:Body>
</soap:Envelope>
```

7. The sample input XML that was generated using Altova XML Spy can be used after making the following required modifications:
  - a. Remove the XML headers.
  - b. Add the necessary inputs.
  - c. Add the SOAP headers as displayed in the Oracle Enterprise Manager Console.

- d. Modify the namespaces to match the namespaces in the input XML.

### XML Generated Using Altova XML Spy

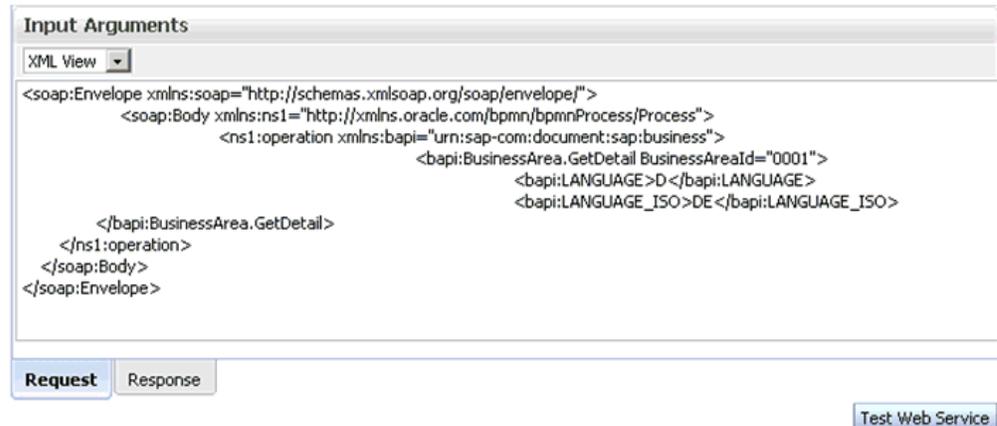
```
<?xml version="1.0" encoding="UTF-8"?> <!--Sample XML file generated by
XMLSpyv2008 rel. 2 sp2 (http://www.altova.com)--> <bapi:BusinessArea.GetDetail
BusinessAreaId="aaaa" xsi:schemaLocation="urn:sap-com:document:sap:business
mysap_jca_BA_GetDetail_invoke_jan20_request.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:bapi="urn:sap-com:document:sap:business">
  <bapi:LANGUAGE>a</bapi:LANGUAGE>
  <bapi:LANGUAGE_ISO>aa</bapi:LANGUAGE_ISO>
</bapi:BusinessArea.GetDetail>
```

### Altered XML

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body xmlns:ns1="http://xmlns.oracle.com/bpmn/bpmnProcess/Process">
    <ns1:operation xmlns:bapi="urn:sap-com:document:sap:business">
      <bapi:BusinessArea.GetDetail BusinessAreaId="0001">
        <bapi:LANGUAGE>D</bapi:LANGUAGE>
        <bapi:LANGUAGE_ISO>DE</bapi:LANGUAGE_ISO>
      </bapi:BusinessArea.GetDetail>
    </ns1:operation>
  </soap:Body>
</soap:Envelope>
```

8. Click **Test Web Service** after providing the input XML, as shown in .

**Figure 1–62** Input XML



The output is received in the destination folder.



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---

# Oracle Application Adapter for SAP R/3 Best Practices

This chapter lists and describes best practices that are specific to the Oracle Application Adapter for SAP R/3 (using SAP JCo 2.1.x and 3.x). It contains the following topics:

- [Section 2.1, "Understanding Connection Pools"](#)
- [Section 2.2, "Security"](#)
- [Section 2.3, "Load Balancing"](#)
- [Section 2.4, "Encoding"](#)

## 2.1 Understanding Connection Pools

A connection pool is a set of client-connections to a certain destination. The pool may automatically create new connections to the specified remote system or return an already existing connection. It also provides methods to return a connection back to the pool when it is no longer needed. The following list describes a number of key points:

- The maximum number of connections specified can never be increased while the application is running. As a best practice, you must choose a number that is large enough for your application.
- A connection pool can have any name. Since a connection pool is global within the Java Virtual Machine (JVM), it is recommended that different applications running in the same JVM follow a naming convention standard to avoid any issues.
- If multiple users share a connection pool, then they share the SAP authorization permissions of the underlying user ID that created the connection pool.
- When a target is created using Application Explorer during design time, the specified connection parameters are used during run time for all objects created using the target. Ensure that the connection properties are capable of supporting your environment.
- The general parameters for calculating a connection pool size are:  $\text{TIME} = (\text{SAP Application Server execution time for called function}) + (\text{size of document}) + (\text{network lag})$ . It is recommended to check with a SAP Gateway administrator about the maximum size of allowed connection pools for a particular landscape.
- Larger documents or long running transactions need a larger value for the Connection Timeout parameter. Extremely long running documents should not be

run in the foreground. It is recommended to check with a system administrator about establishing a batch job that can be called by the Oracle Application Adapter for SAP R/3.

- By default, SAP Java Connector (SAP JCo) opens one initial connection for a connection pool. If that initial connection is busy when another request arrives, then SAP JCo opens an additional connection, leading up to the maximum pool size. When the maximum pool size is reached, the Connection Wait Time parameter is called, which determines how long SAP JCo must wait for a free connection without aborting the task.

To monitor the number of connections that are being made to SAP from the Oracle Application Adapter for SAP R/3, you can use the SMGW transaction from your SAP GUI.

Optimizing a connection pool effectively requires knowledge about the application and its users. The following questions should be discussed:

- How much time does it normally take to execute this function?
- How much data is returned by this function?
- How many users are going to use this function?

It is not unreasonable to configure multiple connection targets with different connection pools for different functions. For example, a sales order inquiry that checks if an item exists may execute quickly, it does not need maximum resources. However, a sales order creation that creates a header and line items that is executed by many people may require a greater execution time, so configuring a larger connection pool is recommended.

## 2.2 Security

The following list describes a number of key points regarding security best practices:

- The SAP Java Connector (SAP JCo) default is plain text. If the SAP JCo communication has an insecure network path, then it is recommended that the RFC communication is encrypted.
- Restrict the ability of users to monitor or access the SAP Gateway and its functions. Ensure that the run time user ID for SAP JCo communications is not an SAP dialog user but a communications type user.
- As a best practice, consider using the SAP router mechanism for communications between systems that are behind firewalls.

## 2.3 Load Balancing

There are two types of load balancing mechanisms that are available (logon load balancing and load balancing for registered programs). Logon load balancing logs users to SAP using an SAP Message Server. The Message Server distributes logons to Application Servers and can even distribute logons by specific application groups. Oracle Application Adapter for SAP R/3 supports connections to SAP using Message Servers. Load balancing for registered programs is a technique employed when sending a large amount of data out from SAP to remote destinations. As a best practice, only an SAP Gateway administrator should attempt to change the named parameters in the SAP Gateway that affect load balancing.

Since iWay registered servers (channels) connect to a SAP Gateway and not to specific application servers, they are enabled for load balancing by default through the SAP

Java Connector (SAP JCo). The mechanism for message delivery depends on how the SAP Gateway is enabled by the administrator, but it is generally one of the following forms:

- 0: No load balancing, the first free registered program is used.
- 1: The program with the lowest counter is used. Every time a registered program is assigned a request, the counter is increased by one.
- 2: The program with the least load is used, which is determined by SAP.

When there is a one-to-one relationship between a SAP Gateway server and an instance of the iWay channel, the singleton is in a non load balanced scenario. The types of messages that are sent to the server are determined by the Interface document style and the RFC destination. The RFC destination is used to hold the program ID inside SAP, and is used to route all messages to the iWay channel. For this reason, it is recommended that the SM59 transaction that controls the RFC destination is locked to hide the IP address of the remote server inside SAP. Inside SAP, RFC function modules are routed to the iWay channel by specifying the DESTINATION parameter in the CALL FUNCTION invocation, passing the RFC destination that holds the iWay server. For example:

```
CALL FUNCTION 'RFC_GET_SYSTEM_INFO DESTINATION ` DESTINATION `MYDEST'
```

Where *MYDEST* is defined as a remote TCP (T) destination in the SM59 transaction and holds a Registered Server Program as one its parameters.

The iWay channel connects to the SAP Gateway and exposes the same Program ID to the SAP Gateway. At this point, one or more servers accept the connection.

SAP IDocs need additional configuration to define the sending and receiving systems. They are contained in a SAP Logical System. All IDocs routed through Message Control use the Logical System linked to a RFC destination to process through the channel. BAPI objects have no outbound form, to use a BAPI outbound object from SAP, use the RFC function form of the BAPI. For example, you can replace `Company.GetDetail` with `BAPI_COMPANY_GETDETAIL`.

All messages sent to a Program ID arrive at a channel configured to listen to a SAP Gateway and Program ID. Any final destinations configured to receive messages from the channel receive all messages from the channel. This may have important implications in configuring business processes. Consider using different Program IDs for different messages, message filters or message splitters as coding techniques to route messages based on type or content.

When multiple channels or servers are configured with the same Program ID, messages can be duplicated or never arrive, depending if load balancing is enabled on the SAP system. Use caution when deploying and using Program IDs and assign them in a logical and coordinated manner (for example, by department or by message type).

## 2.4 Encoding

iWay channels on Unicode systems work only in Unicode mode. In the SM59 transaction, ensure that the RFC Destination Parameter, Unicode, is selected when creating the destination in SAP GUI.

The RFC components of SAP Java Connector (SAP JCo) automatically determine the target code page of the sending (client) and adjust the code page translation between the client and server accordingly. The only way to modify this is to change the target machine code page, in Windows using Regional and Language Options in the Control Panel. For other systems, it is recommended to consult the administrator. In general, a

machine must have a code page and a language pack. Encoding is used to map one code page to another. This is straightforward in Unicode systems, but can be difficult or not possible on non-Unicode systems. As a general rule, in non-Unicode systems, you are limited to the code page and language pack you have on the machine for the display of data. However, because of the Java language Unicode support, transmission can occur correctly if the remote system has the correct configuration.

Receiving document from SAP, especially IDocs, can have segments containing multiple languages. It is usually not possible to get all languages correct. For example, setting the Java encoding variable to ISO-8859-2 correctly sends German umlauts, but distorts Japanese Kanji. The only solution for this situation is multiple sends of the text segments and combining them into one result.

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# Oracle Application Adapter for Siebel Best Practices

This chapter lists and describes best practices that are specific to the Oracle Application Adapter for Siebel. It contains the following topics:

- [Section 3.1, "Best Practices for Siebel"](#)
- [Section 3.2, "Configuring Connection Pooling for Siebel"](#)

## 3.1 Best Practices for Siebel

This section lists and describes best practices for the Oracle Application Adapter for Siebel.

- If you are using the native Siebel Java Data Bean (JDB) API to connect with a Siebel system, then integration should be performed using Siebel Business Objects and Business Services. If the HTTP protocol is required, then you must use HTTP. As a best practice, it is recommended to use the Siebel JDB API for connectivity when possible.
- If large amounts of transaction volumes need processing, then as a best practice, it is recommended to use connection pooling by configuring the `siebel.properties` file. For more information, see "[Configuring Connection Pooling for Siebel](#)" on page 3-2.
- For secure connectivity during outbound (services) processing only, it is recommended to enable RSA encryption using Application Explorer during the adapter target configuration stage.
- As a best practice, it is recommended to use XML schemas (.xsd) files that are generated through Siebel for Integration Objects and Business Services nodes.
- If any changes to the Siebel repository (.srf file) are made, then it is a best practice to recompile the .srf file and restart Siebel services to reflect the changes in the adapter.
- Even though Siebel Versions 6.2 and lower (using COM connectivity) are still supported, as a best practice, it is recommended that your integration project use Siebel 6.3 or higher with the Siebel JDB API.
- When sending an Insert, Update, or Query request, it is a best practice to include only the elements in the payload that has data to be inserted, updated, or retrieved. Any blank elements should be removed.
- As a best practice, do not include any special characters in the name when creating an Integration Object or Business Services node.

## 3.2 Configuring Connection Pooling for Siebel

To configure connection pooling for Siebel, you must create a **siebel.properties** file for use with the Oracle Application Adapter for Siebel. This file can be used to provide default parameters for applications connecting to Siebel using the Java Data Bean (JDB) API. The **siebel.properties** file must be added to your system classpath.

The following table lists and describes the property values that can be added in the **siebel.properties** file.

Property Type	Property	Description
Request Timeout	siebel.conmgr.txtimeout	Indicates the transaction timeout in seconds on the server side. The default is 2700 seconds.
Poolsize	siebel.conmgr.poolsize	Indicates the connection pool size. Connection pool maintains a set of connections to a specific server process. The default is 2 with a maximum of 500.
Session Timeout	siebel.conmgr.sesstimeout	Indicates the transaction timeout in seconds on the client side. The default is 600 seconds.
Encryption	siebel.conmgr.jce	Indicates the usage of Java Cryptography Extension (JCE). Setting a value of 1 enables JCE and setting a value of 0 disables JCE.
Boolean	siebel.user.encrypted	Specifies whether the user name and the password is encrypted with <code>com.siebel.extra.MangleString</code> .

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# Oracle Application Adapter for PeopleSoft Best Practices

This chapter lists and describes best practices that are specific to the Oracle Application Adapter for PeopleSoft.

## 4.1 PeopleSoft Events (Inbound Processing)

For Release 8.4, iWay Software recommends using the TCP/IP and HTTP target connectors that are delivered by PeopleSoft for the PeopleTools 8.4 series. Do not use the target connectors that are supplied by iWay Software for the PeopleTools 8.1 series. They are only packaged by iWay Software for the PeopleTools 8.4 series to assist existing users who are migrating from Release 8.1 to Release 8.4.



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# Oracle Application Adapter for J.D. Edwards OneWorld Best Practices

This chapter lists and describes best practices that are specific to the Oracle Application Adapter for J.D. Edwards OneWorld. It contains the following topics:

- [Section 5.1, "Connection Pooling and Load Balancing"](#)
- [Section 5.2, "Security"](#)
- [Section 5.3, "Multiple Connections and Multiple Users"](#)
- [Section 5.4, "Unicode Support"](#)
- [Section 5.5, "Delivery Confirmation and Error Messages"](#)

## 5.1 Connection Pooling and Load Balancing

Connection pooling is established for a session by setting the session attribute of the standard `jdeRequest` element. When the session attribute is an empty string, a new session is started. On the server, the `SessionManager` singleton class creates a new instance of a session object given the user name, password, and environment name. The session can be reused before it expires to avoid the overhead of session initialization. You can specify the session ID in the session attribute for an already established session in an earlier request.

Session expiration is addressed by the `sessionidle` attribute of the standard `jdeRequest` element. This attribute, when given on a session creation request, specifies the amount of time in seconds that a session is allowed to be idle. If the `SessionManager` determines that a session has not had any requests processed in this amount of time, then it terminates the session and frees all associated resources. For more information, see the *J.D. Edwards OneWorld Interoperability Guide*.

The load balancing configuration is controlled by various interrelated run time settings in the `jde.ini` file on the server. These settings are in the `[JDENET]` and applicable `[JDENET_KERNEL_DEFx]` sections. All relevant settings are listed and described in the preceding section. You can control two types of processes:

- Network jobs (`JDENET_n`)
- Dedicated kernel process jobs (`JDENET_k`)

For more information, see the *J.D. Edwards OneWorld System Administration Guide*.

## 5.2 Security

The Oracle Application Adapter for J.D. Edwards OneWorld supports standard JDE security. Security is managed by user profiles defined in the system. For more information, see the *J.D. Edwards OneWorld Server and Workstation Administration Guide*.

## 5.3 Multiple Connections and Multiple Users

Multiple connections and multiple users depends on the user profiles that are defined in J.D. Edwards OneWorld. For more information, see the *J.D. Edwards OneWorld Server and Workstation Administration Guide*.

## 5.4 Unicode Support

The J.D. Edwards XML solution supports well-formed XML documents. It also supports UTF8 and UTF16 Unicode standards for inbound processing and UTF8 standards for outbound processing.

## 5.5 Delivery Confirmation and Error Messages

Each transaction is assigned session ID by J.D. Edwards OneWorld. As a best practice, use application P92002 to investigate server-side error messages.

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# Glossary

**adapter**

Provides universal connectivity by enabling an electronic interface to be accommodated (without loss of function) to another electronic interface.

**agent**

Supports service protocols in listeners and documents.

**business service**

Also known as a Web service. A Web service is a self-contained, modularized function that can be published and accessed across a network using open standards. It is the implementation of an interface by a component and is an executable entity.

**channel**

Represents configured connections to particular instances of back-end systems. A channel binds one or more event ports to a particular listener managed by an adapter.

**listener**

A component that accepts requests from client applications.

**port**

Associates a particular business object exposed by the adapter with a particular disposition. A disposition is a URL that defines the protocol and location of the event data. The port defines the end point of the event consumption.



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