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Preface

This guide is the primary source of installation information for Oracle SOA Suite.

This preface contains these topics:

- Audience
- Documentation Accessibility
- Related Documentation
- Conventions

Audience

Oracle SOA Suite Installation Guide for IBM WebSphere Application Server is intended for customers who want to install Oracle SOA Suite.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. 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

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.
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Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, 7 days a week. For TTY support, call 800.446.2398. Outside the United States, call +1.407.458.2479.

Related Documentation

For more information, see these Oracle resources:

- Oracle Application Server Installation Guide for your platform
- Oracle Database Administrator’s Guide

In North America, printed documentation is available for sale in the Oracle Store at

http://oraclestore.oracle.com/

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

http://www.oracle.com/technology/membership

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at

http://www.oracle.com/technology/documentation

Conventions

The following text conventions are used in this document:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td><strong>monospace</strong></td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
Installing Oracle SOA Suite with IBM WebSphere Application Server

This chapter provides the requirements and procedures for installing Oracle SOA Suite with IBM WebSphere Application Server.

This chapter contains these topics:

- Overview
- System and Database Requirements
- Installation and Configuration
- Design-time Deployment Support Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15
- Deploying Human Task and Decision Services EAR Files
- Postinstallation Verification Tasks
- Auto Loan Demo
- Limitations and Known Issues

See Also: The following documentation after completing installation:
- Oracle BPEL Process Manager Quick Start Guide
- Oracle BPEL Process Manager Order Booking Tutorial
- Oracle BPEL Process Manager Developer’s Guide
- Oracle Application Server Adapter for Files, FTP, Databases, and Enterprise Messaging User’s Guide
- Oracle Application Server Adapter Concepts

Overview

You can install and use Oracle SOA Suite with the IBM WebSphere Application Server. The IBM WebSphere Application Server enables you to set up, operate, and integrate e-business applications across multiple computing platforms using Web technologies. The IBM WebSphere Application Server includes both the run-time components and the tools to develop and design applications.

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

Oracle Business Rules (Business Rules) and Oracle Adapters plug into the Service Infrastructure, a normalized transport infrastructure, make up the Enterprise Service Bus (ESB). With the addition of the Oracle BPEL Process Manager (BPEL) and Human Task service components, the suite forms a complete Business Process Management (BPM) platform.

The following components comprise Oracle SOA Suite:
- Oracle Enterprise Service Bus (ESB)
- Oracle BPEL Process Manager (BPEL)
- Human Task
- Oracle Web Services Manager (OWSM)
- Oracle Business Rules

The installation of Oracle SOA Suite for IBM WebSphere Application Server consists broadly of the following steps:
- Create the Oracle SOA Suite Schema in the Oracle Database
  This step involves installation of Oracle Database and creation of the required DB schemas for the Oracle SOA Suite on Oracle Database.
- Installation of the Oracle SOA Suite 10.1.3.1 for OC4J
  This comes with an embedded OC4J J2EE container. Further steps will configure this Oracle SOA Suite to work on top of the IBM WebSphere Application Server.
- Apply Oracle SOA Suite Patchset 10.1.3.4 on Oracle SOA Suite 10.1.3.1
  This patchset upgrades the existing 10.1.3.1.0 installation to 10.1.3.4.0.
- Apply Patchset and Upgrade
  This patchset upgrades to Oracle SOA Suite 10.1.3.4 on WebSphere.
- Configure Oracle SOA Suite on IBM WebSphere Application Server Version 6.1.0.15
  This step involves running a command-based script, which will configure the Oracle SOA Suite installed earlier to run on IBM WebSphere Application Server. The script performs the following:
  - Creates application server - oracleSOAServer
  - Configures the oracleSOAServer shared libraries with Oracle SOA Suite Binaries
  - Creates and configures the required dataSources/JMS resources.
  - Deploys the required J2EE applications for BPEL Console, BPEL Administration, Human WorkFlow, ESB, OWSM, and Business Rules.

The above steps, which are further detailed in Installation and Configuration, summarize the installation and configuration of Oracle SOA Suite on IBM WebSphere 6.1.0.15 platform.
System and Database Requirements

Table 1–1 describes the system requirements for using Oracle SOA Suite with the IBM WebSphere Application Server.

Table 1–1 Oracle SOA Suite System Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM WebSphere Application Server</td>
<td>Version 6.1.0.15 or newer</td>
</tr>
<tr>
<td>Design Time</td>
<td>Oracle JDeveloper version 10.1.3.3</td>
</tr>
<tr>
<td>Oracle SOA Suite for OC4J</td>
<td>Apply SOA Suite patchset 10.1.3.4 on Oracle SOA Suite 10.1.3.1</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: Refer to Step 2: Install Oracle SOA Suite Basic 10.1.3.1.0 for OC4J for installing Oracle SOA Suite for OC4J.</td>
</tr>
<tr>
<td>Web browsers</td>
<td>Internet Explorer 6.0 or Mozilla Firefox 2.0</td>
</tr>
<tr>
<td>Operation systems</td>
<td>Microsoft Windows XP, Microsoft Windows 2003, Red Hat Enterprise Linux release 3, and Red Hat Enterprise Linux release 4</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: See the IBM Web site for additional details about using these operating systems with the IBM WebSphere Application Server.</td>
</tr>
<tr>
<td>Dehydration store database</td>
<td>Oracle Database 10g (10.2.0.2) or higher</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: This certification matrix reflects the Oracle SOA Suite certification on Oracle Application Server, and may vary with the application server being used. Confirm the certification matrix of the application server with Oracle Database version.</td>
</tr>
</tbody>
</table>

Installation and Configuration

This section describes the steps involved in installing and configuring the Oracle Database, creating a schema in the Database, and installing and configuring IBM WebSphere Application Server.

This section contains the following topics:

- Step 1: Configure the Oracle Database
- Step 2: Install Oracle SOA Suite Basic 10.1.3.1.0 for OC4J
- Step 3: Create the Oracle SOA Suite Schema in the Oracle Database
- Step 4: Upgrade SOA Schemas to 10.1.3.4
- Step 5: Apply SOA Suite Patchset 10.1.3.4
- Step 6: Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15
- Step 7: Install and Configure IBM WebSphere Application Server Version 6.1.0.15

Step 1: Configure the Oracle Database

Follow these instructions to install Oracle Database 10g.
1. Install Oracle Database 10g 10.1.0.2.
2. Open SQL*Plus and log in as a user with the SYSDBA privilege.
3. Shut down the database:
   SQL> SHUTDOWN IMMEDIATE
4. Install the Oracle Database 10g 10.1.0.5 patch in the same Oracle home in which you installed Oracle Database 10g.
5. If using Linux only, then log in as the root user and run the following command from the operating system command prompt:
   /etc/init.d/init.cssd stop
6. Start the database in upgrade mode in SQL*Plus:
   SQL> STARTUP UPGRADE
7. Run the following script:
   SQL> @ORACLE_HOME/rdbms/admin/catpatch.sql;
8. Shut down the database:
   SQL> SHUTDOWN IMMEDIATE
9. Restart the database:
   SQL> STARTUP
10. Run the following script:
    SQL> @ORACLE_HOME/rdbms/admin/utlrp.sql;

Step 2: Install Oracle SOA Suite Basic 10.1.3.1.0 for OC4J
The install instructions to install basic Oracle SOA Suite 10.1.3.1 for OC4J is available at
You must install Oracle SOA Suite into it’s own directory outside of WebSphere. The WebSphere installation will refer to binaries and property files from this installation. This external installation must be there permanently, it’s not a temporary staging area. Even though it also contains OC4J, you will not be starting and stopping it. This is an important prerequisite prior to the WebSphere install.

Note: In this step, you are required to install only the basic installation of Oracle SOA Suite 10.1.3.1, and not the advanced.
Step 3: Create the Oracle SOA Suite Schema in the Oracle Database

1. Navigate to the Disk1\install\soa_schemas\irca folder in the Oracle SOA Suite Installation Setup files directory.
2. Set ORACLE_HOME to point to the Oracle Database Installation location. For example, set ORACLE_HOME=c:\Oracle10g
3. Enter irca.bat on Windows and ./irca.sh in Linux. This runs the irca script to create the schemas required for BPEL, ESB, and OWSM.
4. Enter sys password when prompted.
   The orabpel, oraesb, and orawsm schemas are loaded on the Oracle Database.

Step 4: Upgrade SOA Schemas to 10.1.3.4

In this step, you will apply the SOA Suite Patchset 10.1.3.4 and also upgrade ORABPEL and ORAESB schemas to 10.1.3.4.

Step 4-1: Upgrade ORABPEL and ORAESB Schemas to 10.1.3.4

To upgrade ORABPEL and ORAESB schemas to 10.1.3.4, perform the following steps:
1. Run the 10.1.3.4 SOA Schema upgrade scripts for orabpel/oraesb schemas that are available in the SOA Suite 10.1.3.4 Patchset Installation pack.
2. Execute the following script to upgrade the ORABPEL schema:
   \Disk1\install\soa_schema_upgrade\bpel\scripts\upgrade_10133_10134_oracle.sql
3. Execute the following script to upgrade the ORAESB schema:
   \Disk1\install\soa_schema_upgrade\esb\sql\oracle\upgrade_10131_10134_oracle.sql

Step 5: Apply SOA Suite Patchset 10.1.3.4

To apply SOA Suite Patchset 10.1.3.4, perform the following steps:
1. You can download the SOA Suite Patchset 10.1.3.4 from OTN at http://www.oracle.com/technology/software/products/ias/htdocs/101310.html
2. Follow the instructions in the patchset to install the patchset on the Oracle SOA Suite 10.1.3.1.
Caution: You should not start/restart the Oracle SOA Suite instance of OC4J server after applying the patch.

3. Shutdown the SOA Suite Post patch upgrade as follows:

<table>
<thead>
<tr>
<th>For...</th>
<th>Run...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>SOA_HOME\opmn\bin&gt; opmnctl stopall</td>
</tr>
<tr>
<td>Linux</td>
<td>SOA_HOME/opmn/bin&gt; ./opmnctl stopall</td>
</tr>
</tbody>
</table>

Step 6: Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15

You must download the Opatch for Bug 7446145 (HOTPLUG: SOASUITE 10.1.3.4 ON WEBSHHERE 6.1.0.15 - CHANGES FOR HOTPLUGGABILITY) from ARU and then apply the patch on Oracle SOA Suite 10.1.3.4.

1. Download the OPatch p7446145_101340_GENERIC.zip for Bug 7446145.

2. Follow the instructions given in the Readme.txt file of the patch and apply the patch on Oracle SOA Suite 10.1.3.4.

3. Shutdown the Oracle SOA Suite post patch upgrade as follows:

<table>
<thead>
<tr>
<th>For...</th>
<th>Run...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>XP SOA_HOME\opmn\bin&gt; opmnctl stopall</td>
</tr>
<tr>
<td>Linux</td>
<td>SOA_HOME/opmn/bin&gt; ./opmnctl stopall</td>
</tr>
</tbody>
</table>

Step 7: Install and Configure IBM WebSphere Application Server Version 6.1.0.15

Perform the following steps to install and configure IBM WebSphere application server version 6.1.0.15:

1. Install IBM WebSphere Application Server version 6.1.0.15.

   | Note: | If installing on Linux, then WebSphere should be installed as the root user. |

2. Download the Oracle SOA Suite 10.1.3.4 IBM WebSphere Application Server 6.1.0.15 from OracleMetaLink metalink.oracle.com and unzip to your local machine and then apply the patch 7566941. The contents of this zip file are extracted to WAS_SOA10134_Installables folder.
3. Ensure that Nodeagent on which the SOA Server will be configured is running, else start Nodeagent as follows:

<table>
<thead>
<tr>
<th>For...</th>
<th>Run...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>WAS_HOME\profiles&lt;ProfileName&gt;\bin\startNode.bat</td>
</tr>
<tr>
<td>Linux</td>
<td>WAS_HOME/profiles/&lt;ProfileName&gt;/bin/startNode.sh</td>
</tr>
</tbody>
</table>

4. Modify the following mandatory installation properties in the WAS_SOA10134_Installables\cfg\config.properties file:

Note: Mandatory properties cannot have a comment tag or contain blank values. Failure to follow this requirement results in errors during installation. Also, ensure that you enter the appropriate information for each of the fields. Any typo will cause errors during installation.

However, the proxy settings properties, such as PROXY_HOST is non-mandatory.

### Property Description

- **WAS_HOME**: The directory path in which WebSphere is installed.
- **CELL_NAME**: Name of the WebSphere Cell (<host>Node01Cell).
- **NODE_NAME**: Name of the WebSphere Node (<host>Node01).
- **PROFILE_NAME**: Name of the Profile (AppSrv01 by default).
- **SOA_HOME**: The directory path in which Oracle SOA Suite is installed.
- **SERVER_NAME**: The name of the WebSphere instance that runs Oracle SOA Suite. The default value is oracleSOAServer, but this can be any valid name.
- **SOA.DS.DRIVER_TYPE**: The JDBC driver type (thick or thin).
- **SOA.DS.HOSTNAME**: The name or IP address of the host on which Oracle Database 10g is installed.
- **SOA.DS.PORTNUMBER**: The port number of the host on which Oracle Database 10g is installed.
- **SOA.DS.SID**: The service name of Oracle Database 10g.
5. If you want to use the following optional properties, remove the `<comment>` tag from the properties, and then specify values.

**Note:** Optional properties have the `<comment>` tag, by default. If you remove the `<comment>` tag for these properties, then they cannot contain blank values. Change the default values for the four properties. Failure to follow this requirement results in errors during installation.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROXYSET</td>
<td>Indicates whether a proxy server is being used (true or false).</td>
</tr>
<tr>
<td>PROXYHOST</td>
<td>The name or IP address of the host on which the proxy server is installed.</td>
</tr>
<tr>
<td>PROXYPORT</td>
<td>The port your host uses to access the proxy server.</td>
</tr>
<tr>
<td>NONPROXYHOSTS</td>
<td>The addresses for which the proxy server must be bypassed.</td>
</tr>
<tr>
<td>CLUSTER_NAME</td>
<td>Name of the WebSphere cluster for hosting SOA Server.</td>
</tr>
<tr>
<td>LOAD_BALANCER_HOST</td>
<td>The host name of the machine where the load balancer server is running.</td>
</tr>
<tr>
<td>LOAD_BALANCER_PORT</td>
<td>The port on which the load balancer server is running.</td>
</tr>
</tbody>
</table>

6. Run the following script from WAS_SOA10134_Installables folder at the operating system command prompt:
The configuration scripts mentioned in the table execute in two parts:

The first part creates all the artifacts required for the SOAServer such as DataSources, ConnectionFactories, and Shared-Libraries on the WebSphere Application Server. (On Linux environments, this part needs to be executed as a 'root' user.) The second part of the script modifies configuration values under SOA_HOME. (On Linux environments, this part needs to be executed as a 'non-root' user.)

After you execute the script, this script prompts you to enter the WebSphere username and password. If the authentication is successful, then the Deployment Manager artifacts will be installed/configured into WebSphere application server.

Installation progress is logged to the WAS_SOA10134_Installables\bin\logs\output.log and WAS_SOA10134_Installables\bin\logs\output-copy.log files.

---

**Note:**

- While running the `configureStandAloneServer.bat` or `configureStandAloneServer.sh` file, set the environment variable WAS_HOME to WAS folder. For example, C:\WebSphere in Microsoft Windows or /opt/IBM/WebSphere in Linux.
- Set the JAVA_HOME path to WAS_HOME/java.
- If JAVA_HOME path does not exist, then setup file throws a message asking to set the JAVA_HOME before running the setup file.
- If WAS_HOME path does not exist, then setup file throws a message asking to set the WAS_HOME before running the setup file.
- Refer to Upgrade Path for SOA Suite 10.1.3.3 on WebSphere 6.1.0.15 Installation for existing SOA Suite 10.1.3.4 on WebSphere 6.1.0.15 customers.
- The above scripts can be run without the "-secure" option, if security is disabled in the WebSphere environment.
- On Linux environments, the above script needs to be executed as a 'root' user. Also, the script will prompt for the SOA username while executing the second phase of the configuration.

---

7. Stop and start the NodeAgent after the script run is completed.

8. Start the **oracleSOAServer** server by following the startup instructions as follows:


   b. Select **Servers -> Application Servers -> oracleSOAServer**. Select the server and click **Start**.
9. Once the server starts, log in to the BPEL console at the following URL:
   http://localhost:9700/BPELConsole

Design-time Deployment Support Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15

This section describes the various design-time support functions available on IBM WebSphere Application Server, for the deployment of J2EE applications in JDeveloper. You can deploy BPELPM components on IBM WebSphere Application Server by using the following two methods:

- From the BPELPM Developer Prompt Using Ant
- From JDeveloper

From the BPELPM Developer Prompt Using Ant

You can use ant in the BPELPM developer prompt to deploy J2EE applications. This section contains the following topics:

- Prerequisite Checks

Note: Do not start Oracle SOA Server from the Windows Start Menu or by running the SOA_HOME/bpel/bin/startorabpel script. These actions are not supported.
Steps to Deploy Using the BPELPM Prompt

Prerequisite Checks

1. Ensure that bpelPlatform is set to websphere_5 in the BPEL_HOME\bpel\system\config\collaxa-config.xml file.
2. Ensure that the following properties are set in BPEL_HOME\bpel\utilities\ant-orabpel.properties file:
   - platform to websphere_5
   - admin.user to valid user in WebSphere security realm
   - admin.encrypted.password to admin.password of the above user
   - jndi.url to iiop://<dmgr_host>:<dmgr_port>
   - jndi.InitialContextFactory to com.ibm.websphere.naming.WsnInitialContextFactory

Note: If the admin.user property is not set correctly, then the deployment may throw authentication errors.

Steps to Deploy Using the BPELPM Prompt

Follow these instructions to deploy BPELPM from the developer prompt using ant:

1. Open a BPELPM Developer prompt.
2. Run ant.sh/bat from the BPEL_HOME\bpel\system\appserver\oc4j\ant\bin directory of the BPEL application.

Note: For more information, refer to C:\product\10.1.3.1\OraBPEL_OC4J\bpel\GETTING_STARTED.html.

The only exceptions to be noted are as follows:

- If the BPEL Process contains any Decision Service applications, UI applications, or Work Flow applications, then these applications will not be automatically deployed in WebSphere Application Server by the ant script.
- The corresponding EAR/WAR files is custom built for WebSphere platform but must be manually deployed on the target server oracleSOAServer.
- Use WebSphere Admin console (http://<hostname>:9060/console) to deploy the EAR/WAR files to oracleSOAServer.

Note: Refer to Auto Loan Demo for more details.

From JDeveloper

You can also deploy J2EE applications from JDeveloper. This section contains the following topics:

- Prerequisite Checks
- Steps to Deploy Using JDeveloper
Prerequisite Checks

1. Download JDeveloper Studio 10.1.3.4 (jdevstudio10134.zip) from

2. Copy the bpm-services.jar file from the SOA_HOME\bpel\system\services\lib directory to JDEV_HOME\integration\lib directory.

3. Copy the orabpel-ant.jar and orabpel.jar files from the SOA_HOME\bpel\lib directory to the JDEV_HOME\integration\lib directory.

4. Ensure that the following properties are set in the SOA_HOME\bpel\utilities\ant-orabpel.properties file: Ensure that bpe1Platform is set to websphere_5 in the SOA_HOME\bpel\system\config\collaxa-config.xml file.
   - platform to websphere_5
   - admin.user to valid user in WebSphere realm
   - admin.encrypted.password to admin.password of the above user
   - jndi.url to iiop://<dmgr_host>:<dmgr_port>
   - jndi.InitialContextFactory to com.ibm.websphere.naming.WsnInitialContextFactory

Creating Connections to Oracle SOA Server

Follow the steps below to create an application server connection and an integration server connection:

1. Create an application server connection of the Standalone OC4J 10.1.3 type.
   - Choose OC4J standalone as server type as there is no plugin available for WebSphere
   - Ignore errors when testing this connection. This is due to OPMN absent on WebSphere

2. Create an Integration Server connection to hostname:<default_port>. The default port is as mentioned in the config.properties file.
   - Choose the above-created AppServer connection
   - BPEL and ESB should pass when this connection is tested

Steps to Deploy Using JDeveloper

Follow these instructions to deploy BPELPM from the developer prompt using JDeveloper:

1. From JDeveloper, right-click and deploy the BPEL application into the required domain.
The only exceptions to be noted are as follows:

- If the BPEL Process contains any Decision Service applications, UI applications, or Work Flow applications, then these applications will not be automatically deployed in WebSphere Server by JDeveloper.

- The corresponding EAR/WAR files is custom built for WebSphere platform but must be manually deployed on the target server oracleSOAServer in WebSphere.

- Use WebSphere Admin console (http://<hostname>:9060/console) to deploy the EAR/WAR files to oracleSOAServer.

**Note:** Refer to Auto Loan Demo for more details.

---

**Deploying Human Task and Decision Services EAR Files**

This section describes steps to deploying the human task form ear and decision services ear:

- Deploying Human Task Form WAR
- Deploying Decision Services EAR

**Deploying Human Task Form WAR**

To deploy human task form war:

1. Change to the ...\public_html\...\form in the directory of the sample.
2. Make a note of the <context-root> from the application.xml file.
3. Log in to WebSphere Admin Console and navigate to the Application page.
4. Choose bpel-[nodename].ear and click Update. The Update page is displayed.
5. Choose the Replace or add a single module option and enter workflowform.war in the text field.

6. Click Browse and navigate to the folder where the workflowform.war is available.

7. Provide the <context-root> as in application.xml.

8. Click Next, until the Map Modules to Servers page is displayed.

9. Associate the application to oracleSOAServer and complete the installation procedure.

---

**Note:** Due to an existing bug in WebSphere, Update Applications removes the shared-library references.

After the update procedure, reassociate the soa_bpel_sl to the bpel-[nodename] application.

---

**Deploying Decision Services EAR**

To deploy decision services ear:

1. Change to the ..\decisionservices\.. directory of the sample.

2. Note the ear file created in the directory.

**See Also:** For deploying the ear please look up the section under "Deploying J2EE Applications on WebSphere".

---

**Postinstallation Verification Tasks**

This section describes the postinstallation verification tasks to be performed, and it contains the following topics:

- Verifying Installation from the IBM WebSphere Application Server Console
- Verifying BPEL, ESB, OWSM Consoles
- Verifying the SelectAllByTitle Sample for the Database Adapter
- Verifying the OrderBooking Tutorial Sample
- Running Adapter Samples
- Deploying Samples Using Ant

---

**Verifying Installation from the IBM WebSphere Application Server Console**

Perform the following steps to check if the IBM Admin console has started:

Log in using the valid username and password credentials.

2. Verify that you can view the SOAServer Home page by selecting Servers -> Application Servers -> SOAServer.
3. Verify that the summaries of the JMS resources that have been created for the JMS module are displayed under Resources -> JMS -> Queue connection factories.
4. Verify that the BPELServerDataSource and BPELServerDataSourceWorkflow are the two JDBC data sources that are created under Resources -> JDBC -> Data sources.
Verifying BPEL, ESB, OWSM Consoles

Perform the following steps to check if the BPEL, ESB, OWSM consoles have started:

1. Navigate to http://localhost:<default_port>/BPELConsole/ (Or to the location where the software is installed, for example, http://<machine-name>:/<default_port>/BPELConsole/). The BPEL Console window is displayed as shown in Figure 1–1.

2. Navigate to the http://localhost:<default_port>/esb/. The ESB Console window is displayed, as shown in Figure 1–2.

3. Navigate to the http://localhost:<default_port>/ccore/Login.jsp. The OWSM Console window is displayed, as shown in Figure 1–3.
Figure 1–1  BPEL Console Window

Figure 1–2  ESB Console Window
Figure 1–3  OWSM Console Window

2. Log in to the BPEL Console using the username and password, the Oracle Enterprise Manager BPEL Control page is displayed, as shown in Figure 1–4.
Log in to the ESB Console using the username and password, the Oracle Enterprise Manager ESB Control page is displayed, as shown in Figure 1–5.

**Figure 1–5 Oracle Enterprise Manager ESB Control**
Log in to the OWSM Console using the username and password, the Oracle Enterprise Manager Web Services Manager Control page is displayed, as shown in Figure 1–6.

Figure 1–6 Oracle Enterprise Manager OWSM Control

3. Verify that the esbprotocol.jar file is copied to `<WAS_HOME>\jdk\jre\lib\ext` directory.

Verifying the SelectAllByTitle Sample for the Database Adapter

1. Log in to the database and start SQL*Plus.
2. Run the `setup.sql` script:

   ```sql
   SQL> @Oracle_Home/samples/tutorials/122.DBAdapter/sql/setup.sql;
   ```

   This script creates and populates the `movies` table in the database.
3. Point the database adapter to your database in the WebSphere Console under `Resources`, `Resource Adapters`, `DB Adapter`, J2C Connection Factories, BPEL Samples, Custom Properties, Connection String. Also, set the username and password.
4. Restart `oracleSOAServer`.
5. Select Start, All Programs, Oracle - Oracle_Home, Oracle SOA Suite, Developer Prompt.
6. Change to the following directory:

   `tutorials\122.DBAdapter\SelectAllByTitle`
7. Run the following command:

   ```bash
   ant
   ```

   This compiles and deploys all projects dependent on this tutorial. Projects are deployed into `Oracle_Home\bpel\domains\domain_name\deploy`.
8. Select Start, All Programs, Oracle - Oracle_Home, Oracle SOA Suite, BPEL Console.
9. Click `SelectAllByTitle` in the Deployed BPEL Processes list.
10. Refer to the MOVIES table, and enter the movie title on the Initiate page. For example, ‘The Aviator’.

11. Click Post XML Message.

12. View the results and inspect the instance.

---

**Note:** Refer to for http://www.oracle.com/technology/products/integration/esb/index.html ESB Samples. You can try and deploy the samples following the instructions in the samples.

---

### Verifying the OrderBooking Tutorial Sample

The web application DTD link in the web.xml files included with Oracle SOA Suite must be modified before deployment to WebSphere.

1. Search for the web.xml files in the Oracle_Home\bpel\samples directory.

2. Make the following change in each web.xml file related to the sample to run:

   **Change:**
   
   ```
   http://java.sun.com/j2ee/dtds/web-app_2_3.dtd
   ```

   **To:**
   
   ```
   http://java.sun.com/dtd/web-app_2_3.dtd
   ```

3. Select Start, All Programs, Oracle - Oracle_Home, Oracle SOA Suite, Developer Prompt.

4. Change directories to the following:

   tutorials\127.OrderBookingTutorial

5. Start SQL*Plus and run the following script:

   ```
   SQL> @PracticeFiles\insertTable.sql;
   ```

   This creates the required sample tables in the database.

6. Change all the BPEL partner links in the bpel.xml files to update to the default port, as defined in the constants.properties file.

7. Run the following command:

   ```
   ant
   ```

   This compiles and deploys all projects dependent upon this tutorial. However, WAR files for CreateOrderBookingUI and SelectManufacturingUI must be manually deployed into WebSphere.

8. Change to the <ORACLE_HOME>\j2ee\home\applications directory.

9. Note the CreateOrderBookingUI.war file that was created when you ran ant in Step 7.

10. Change to the OrderApproval\public_html\OrderApproval\form directory.

11. Note the default_OrderApproval_1_0_OrderApproval.war file that was created when you ran ant in Step 7.
12. Select **Install Application** in the WebSphere Administrative console to deploy the war files to WebSphere.

   Access the WebSphere Administrative console at the following URL:

   http://hostname:9060/ibm/console

   **Note:** For deploying the WAR files alone, you will have to supply the context root as follows:
   - CreateOrderBookingUI

13. Select **oracleSOAServer** as the deployment target.

14. Repeat Steps 9 through 13 for the war or ear file.

15. Restart **oracleSOAServer** from the IBM console.

16. Run the following OrderBooking Tutorial steps:
   a. Initiate the process using `http://localhost:<default_port>/CreateOrderBookingUI` where `default_port` is as defined in the constants.properties file.
   b. Open the console in audit or flow mode. Follow the steps that appear on the console and click task links to complete the task.
   c. After the process moves beyond supplier selection, the human workflow is added, for manual user approval (or rejection). This process has a timeout of 5 minutes and defaults to order status is rejected. Follow this step by opening the worklist URL at
      `http://localhost:<default_port>/integration/worklistapp/Login` where `default_port` is as defined in the constants.properties file.
   d. Log in as jcooper/welcome, and you will be presented with a list of tasks. Acquire the task first, then view it, and approve or reject the task. Then, logout of the jcooper page.
      
      Log in as jstein/welcome and you will be presented with a list of Approved tasks only. View it, and approve or reject it. Then, logout of the jstein page. This completes the human workflow part of the process. You can return to main process to audit the process.
   e. To run the process in batch mode with file read, copy the provided practice files\OrderBookingPO_*.xml in the \temp directory, and observe the batch process read the file and process it.

**Running Adapter Samples**

Ensure that J2C connection factory’s custom properties are modified.

**Configuring J2C Connection Factories for Adapters in WebSphere**

You should create the required outbound connection pools that are used by BPEL Process Partnerlinks before deploying BPEL Processes using adapters. Perform the following steps to create the required J2C connection factories:


2. Select **Resource Adapters** -> **Resource Adapters** and the change the scope to Cell level. The available resource providers are displayed.
3. Select the appropriate resource provider and navigate to **J2C Connection Factories**. The J2C Connection Factories Creation page is displayed.

4. Click **New**. The Create a New J2C Connection Factories page is displayed.

5. Enter the required name and JNDI name as referenced by the partnerlink WSDL of the BPEL process under `jca:address` location.

6. Click **Apply**.

7. Click **Custom** properties and update the the respective property value column.

8. Click **Save** to save the changes.

---

**Deploying Samples Using Ant**

Ensure that `admin.user` and `admin.password` in `SOA_HOME\bpel\utilities\ant-orabpel.properties` are updated with the credentials of a valid user from the authentication store setup for authentication.

Samples can be deployed from the developer prompt using the `ant` script following the above step.

The samples containing only BPEL processes can be fully deployed using the `ant` script.

Samples containing additional components such as Decision Service applications, workflow forms, and UI applications must be deployed in the following manner.

1. Use the `ant` script to deploy the BPEL process of the sample.

2. For each Decision Service application, refer to Deploying Decision Services EAR under Deploying Human Task and Decision Services EAR Files. Start the application.

3. For each workflow form application, generate the `war` or `ear` file, and deploy into `oracleSOAServer`. Start the application.
This appendix describes how to run Auto Loan Demo on Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15 application server. It contains these sections:

- Prerequisites on JDeveloper Studio 10.1.3.3
- Auto Loan Demo Sample
- Modelling Auto Loan Flow Process Using JDeveloper Studio
- Known Issues on non-Oracle Platforms
- Deploying J2EE Applications on WebSphere
- Running the Sample

Prerequisites on JDeveloper Studio 10.1.3.3

The following one-time changes should be performed on JDeveloper:

1. Replace the `bpm-services.jar` within JDeveloper at `jdev\integration\lib` with the updated jar from `SOA_HOME\bpel\system\services\lib`

2. Replace the `orabpel-ant.jar` and `orabpel.jar` files within JDeveloper at `jdev\integration\lib` with the updated jar from `SOA_HOME\bpel\lib`.

3. Modify the following properties in `jdev\integration\bpel\utilities\ant-orabpel.properties` file:

---

**Note:** When deploying BPEL processes into `oracleSOAServer` on WebSphere 6.1.0.15, you only must specify the following two properties in build property files:

- `http.hostname = <SOA_hostname>`
- `http.port = 9700`

These properties can be either defined in the `build.properties` file in your project or in the `ant-orabpel.properties` file. You can also create a customized build property file, which will overwrite the other two build property files when properties get loaded by ant.

Once properties are loaded by ant, the order in which the properties are loaded are as follows:

1. Customized build property file
   To use this file when deploying a BPEL project, use the following command:
   ```
   ant -propertyfile <name>, where <name> is the build property filename created by users.
   ```

2. Build.properties file in your BPEL project

3. If BPEL_HOME environment variable is specified, then BPEL_HOME/utilities/ant-orabpel.properties will be used, otherwise, JDEV_HOME/bpel/utilities/ant-orabpel.properties is loaded by ant, where JDEV_HOME is the JDeveloper installation directory.

It is recommended using build.properties file or customized build property files when deploying BPEL processes using ant.
- Platform to websphere_5
- admin.user to a valid user in websphere realm
- admin.password to the password of the above user
- jndi.url to iiop://<dmgr_host>:<dmgr_port>
- jndi.InitialContextFactory to com.ibm.websphere.naming.WsnInitialContextFactory

4. On JDeveloper, create an Application Server connection of type “Standalone OC4J 10.1.3”.

5. On JDeveloper, create an Integration Server connection to "<hostname>:9700"

Note: Ignore errors during test connection regarding Mediator at this stage.

Auto Loan Demo Sample

The Auto Loan Flow sample has the following components:
- BPEL Process: AutoLoanFlow BPEL Process <bpel jar>
- Decision Service Applications (Business Rules Applications)
  - CreditRatingAgent <ear>
  - LoanAdvisorAgent <ear>
- UI Application: AutoLoanFlowUI <ear>
- HWF Tform application: AutoLoanflow LoanApproval <war>

Since the AutoLoanFlow sample that is bundled with Oracle SOA Suite standalone is written for OC4J Application Server, it cannot be run as is on WebSphere 6.1.0.15 Application Server. Specifically, the Decision Service applications must be regenerated for WebSphere platform, using JDeveloper.

The java-wsdl-mapping file needs WebSphere specific modifications.

The next section describes the steps to regenerate the Decision Services Applications in Auto Loan Flow for WebSphere.

Modelling Auto Loan Flow Process Using JDeveloper Studio

Perform the following steps to modify the AutoLoanFlow sample for WebSphere:

1. Delete the following file from the filesystem:
   
   SOA_HOME\bpel\samples\demos\AutoLoanDemo\AutoLoanFlow\bpel\decisionservices.decs

2. Open the AutoLoanFlow sample from JDeveloper Studio as a JDeveloper project using the following file:
   
   SOA_HOME\bpel\samples\demos\AutoLoanDemo\AutoLoanFlow\AutoLoanFlow.jpr

3. Open the AutoLoanFlow.bpel file from the Applications Navigator (found within the AutoLoanFlow project).
4. From the Services swim lane of **AutoLoanFlow.bpel**, delete the following decision service partnerlinks:
   - CreditRatingAgent
   - LoanAdvisorAgent

5. Follow the steps II, III, IV and V of "Modelling Auto Loan Broker Process" from [SOA_HOME]/bpel/samples/demos/AutoLoanDemo/AutoLoanBroker.pdf to re-create the two Decision Service applications.

**Known Issues on non-Oracle Platforms**

The AutoLoanFlow BPEL process has two Decision Service applications as partnerlinks (CreditRatingAgent and LoanAdvisorAgent). By default, the context-root generated for both these J2EE applications are same with the value -

```
/rules/${domain_id}/${process_id}/${process_revision}
```

The ${} attributes are replaced by actual values during the build and deploy of the Auto Loan Flow. However, as the context-root is not unique for these two applications, these cannot be deployed on WebSphere. When the second application is deployed/started on WebSphere it would complain that the context-root is already in use.

This is an issue on non-Oracle application servers when a BPEL Process references more than one Decision Service partnerlinks generated from JDeveloper Studio. As a workaround, after generating the Decision Service applications on JDeveloper and before doing a build and deploy, perform the following:

- Modify the
  AutoLoanFlow\decisionservices\CreditRatingAgent\ear\META-INF\application.xml file.

  Change
  `<context-root>/rules/${domain_id}/${process_id}/${process_revision}</context-root>`
  to
  `<context-root>/rules/${domain_id}/${process_id}/${process_revision}/CreditRatingAgent</context-root>`

- Modify the
  AutoLoanFlow\decisionservices\CreditRatingAgent\war\WEB-INF\web.xml file.

  Change
  `<url-pattern>CreditRatingAgent</url-pattern>`
  to
  `<url-pattern></url-pattern>`

- Finally, build and deploy the Auto Loan Flow using the Integration Server Connection. In the application navigator, right-click the BPEL project and select Deploy.

  This would automatically deploy the BPEL process into BPEL engine running at the Integration Server connection.

The following J2EE applications should be manually deployed into WebSphere using the WebSphere Admin console:

- CreditRatingAgent.ear
- LoanAdvisorAgent.ear
- AutoLoanFlowUI.ear
- workflowform.war
Limitations and Known Issues

**See Also:** For deploying the ear, look up the section under "Deploying J2EE Applications on WebSphere".

For deploying the decision service/human task form war, look up the section under "Deploying Human Task Form WAR".

### Deploying J2EE Applications on WebSphere

Perform the following steps to deploy the applications to WebSphere:

2. Navigate to the Install New Application page under Applications.
3. Choose Browse and navigate to the directory where the target ear file is located on the file system.
4. Select the ear file. Ensure that the **Prompt me only when additional information is required** option is selected.
5. Click **Next**, until the Map Modules to Servers page is displayed.
6. Associate the application to `oracleSOAServer` and complete the installation procedure.
7. Click Finish on the Summary page.
8. Once the installation procedure is complete, click **Save**.
9. Start the deployed application from list of enterprise applications.

### Running the Sample

When the process is deployed, perform the following steps to test the sample:

2. Click the **Initiate New BPEL Loan Flow** link.
3. Accept the default payload and click **Submit Loan Application**.
4. Log in to the worklist at `http://<hostname>:9700/integration/worklistapp` using `jstein/welcome1` as the username and password.
5. Click the Task title (Loan Approval for Irving Stone).
6. Examine the task payload, the credit rating for that loan should be 500 with "Medium" risk and a Credit Max Amount of 50000.0.
   The provider for the Loan Offer should be "Premium Bank" with an APR of 4.0
7. Approve the task.
8. Verify the AutoLoanFlow instance.

### Limitations and Known Issues

This section describes the limitations, known issues, and troubleshooting tips for Oracle SOA Suite 10.1.3.1 on IBM WebSphere Application Server version 6.1.0.15.

#### Limitations

Note the following limitations:
Limitations and Known Issues

- IBM WebSphere Application Server 6.1.0.15 and Oracle SOA Suite 10.1.3.1 should be installed as the same user on Linux and the user should not be a root user.
- Human Workflow API is not supported.
  
  Human Workflow API's cannot be invoked from standalone Java clients. There are issues between WebSphere classloaders and SOAServer classloaders.
- ESB Binding not supported between colocated BPEL-ESB.
  
  When BPEL processes invokes a co-located ESB service, then the SOAP port should be specified as the preferred port for the partner link.
- Security is disabled for the RuleAuthor application.

Known Issues

Note the following known issues:

- JMS Adapter
- ESB Shutdown Error
- Human Workflow Warnings

JMS Adapter

- JMS Adapter throws the following NullPointerException during initialization on non-Oracle platforms:

```java
java.lang.NullPointerException
at oracle.tip.adapter.jms.JmsConnectionFactory.<init>(JmsConnectionFactory.java:91)
at oracle.tip.adapter.jms.JmsManagedConnectionFactory.createConnectionFactory
(JmsManagedConnectionFactory.java:80)
```

This is a benign error and does not stop the JMS connection factory from initializing.

- The following data type binding warnings and errors are displayed during deployment and start of Decision Service (Business Rules) Applications. These errors and warnings can be ignored.

```xml
<WS data binding error>could not find schema type
'{http://www.w3.org/2001/XMLSchema}NCName
<WS data binding error>could not find schema type
'{http://websphere.ibm.com/webservices/}SOAPElement
java.lang.IllegalStateException
at weblogic.wsie.bind.runtime.internal.AnonymousTypeFinder$GlobalElementNode.
getSchemaProperty(AnonymousTypeFinder.java:253)
at
weblogic.wsie.bind.runtime.internal.AnonymousTypeFinder.getHiddenArrayElement
ComponentTypeNamed(AnonymousTypeFinder.java:104)
<WS data binding error>could not find schema type
'{http://www.w3.org/2001/XMLSchema}long
<WS data binding error>could not find schema type
'{http://xml.apache.org/xml-soap}Element
<WS data binding error>could not find schema type
'{http://www.w3.org/2001/XMLSchema}anyType
<WS data binding error>could not find schema type
'{http://www.w3.org/2001/XMLSchema}string
```
could not identify anonymous schema type named
'http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent:tProperty[0,unbounded]',
ignoring
<WS data binding error>While processing <exception-mapping> for
wsdlMessageName='('http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent)decisionServiceError',
wsdlMessagePartElement='('http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent)errorInfo'. Unable to find a BindingType in the binding file for
javaTypeName = 'oracle.bpel.services.rules.DecisionServiceError',
xmlTypeName = 'e=errorInfo@http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent'. The cause of this error is likely because an <exception-mapping> specified for
(http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent)decisionServiceErrorequries that a <java-xml-type-mapping> exist for java
type = 'oracle.bpel.services.rules.DecisionServiceError',
xmlTypeName = 'e=errorInfo@http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent', with a <root-type-qname> of
(http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgent)errorInfo
<WS data binding error>oracle.bpel.services.rules.DecisionServiceError is not understood because there is no type mapping for exception class

ESB Shutdown Error
The following errors may be displayed during ESB shutdown due to the fact that JMS modules are shutdown prior to ESB attempting to cleanup of JMSDequeuer:

a 'java:' name cannot be completed because the server runtime is not able to
associate the operation's thread with any J2EE application component. This
condition can occur when the JNDI client using the "java:" name is not executed on
the thread of a server application request. Make sure that a J2EE application does
not execute JNDI operations on "java:" names within static code blocks or in
threads created by that J2EE application. Such code does not necessarily run on
the thread of a server application request and therefore is not supported by JNDI
operations on "java:" names. Exception stack trace:
javax.naming.ConfigurationException [Root exception is
javax.naming.NameNotFoundException: Name "comp/UserTransaction" not found in
context "java:".]
at
com.ibm.ws.naming.java.javaURLContextImpl.throwConfigurationExceptionWithDefaultJa
vaNS(javaURLContextImpl.java:411)
at
com.ibm.ws.naming.java.javaURLContextImpl.lookup(javaURLContextImpl.java:388)
at
com.ibm.ws.naming.java.javaURLContextRoot.lookup(javaURLContextRoot.java:204)
at
com.ibm.ws.naming.java.javaURLContextRoot.lookup(javaURLContextRoot.java:144)
at
javax.naming.InitialContext.lookup(InitialContext.java:363)
at
oracle.tip.esb.server.common.JTAHelper.getUserTransaction(JTAHelper.java:70)
at
oracle.tip.esb.server.dispatch.agent.ESBWork.run(ESBWork.java:113)
at
com.ibm.ejs.j2c.work.WorkProxy.run(WorkProxy.java:497)
at
com.ibm.ws.util.ThreadPool$Worker.run(ThreadPool.java:1469)
Caused by: javax.naming.NameNotFoundException: Name "comp/UserTransaction" not found in
context "java:".
at
com.ibm.ws.naming.ipbase.NameSpace.lookupInternal(NameSpace.java:1095)
at
com.ibm.ws.naming.ipbase.NameSpace.lookup(NameSpace.java:991)
at
com.ibm.ws.naming.urlbase.UrlContextImpl.lookup(UrlContextImpl.java:1263)
at
com.ibm.ws.naming.java.URLContextImpl.lookup(javaURLContextImpl.java:384)
... 7 more
Human Workflow Warnings

The following warnings will appear in the SystemErr.log file:

WSWS3441W: Warning: The WSDL2Java emitter cannot find the corresponding java-xml-type-mapping construct for the exception-mapping with wsdl-message
((http://xmlns.oracle.com/bpel/workflow/taskService)workflowErrorMessage) and
exception-type (oracle.bpel.services.workflow.task.soap.WorkflowErrorMessage) in
file WEB-INF/TaskService-java-wsdl-mapping.xml..
oracle.tip.esb.server.common.exceptions.BusinessEventRetriableException: Failed to
get transaction status
at oracle.tip.esb.server.common.JTAHelper.getTransactionStatus(JTAHelper.java:154)
at oracle.tip.esb.server.common.JTAHelper.commitTransaction(JTAHelper.java:178)
at oracle.tip.esb.server.dispatch.agent.ESBWork.run(ESBWork.java:155)
at com.ibm.ejs.j2c.work.WorkProxy.run(WorkProxy.java:497)
at com.ibm.ws.util.ThreadPool$Worker.run(ThreadPool.java:1469)
Caused by: java.lang.NullPointerException
at oracle.tip.esb.server.common.JTAHelper.getTransactionStatus(JTAHelper.java:149)
... 4 more
Upgrade Path for SOA Suite 10.1.3.3 on WebSphere 6.1.0.15 Installation

The steps to be followed to upgrade a SOA Suite 10.1.3.3 on WebSphere 6.1.0.15 installation to 10.1.3.4 are as follows:

1. Stop the SOAServer server.

2. Apply SOA Suite Patchset 10.1.3.4 on the existing SOA Suite 10.1.3.3 installation (SOA_HOME).
   
   Refer to Step 5: Apply SOA Suite Patchset 10.1.3.4 of the Installation and Configuration section.

3. Upgrade SOA Schemas to 10.1.3.4.
   
   Run the 10.1.3.4 SOA Schema upgrade scripts for orabpel/oraesb schemas that are available in the SOA Suite 10.1.3.3 Patchset Installation pack.

   Execute the following SQL script against ORBPEL schema to upgrade the ORBPEL schema:
   
   Disk1\install\soa_schema_upgrade\bpel\scripts\upgrade_10133_10134_oracle.sql

   Execute the following SQL script against ORAESB schema to upgrade the ORAESB schema:
   
   Disk1\install\soa_schema_upgrade\esb\sql\oracle\upgrade_10133_10134_oracle.sql

4. Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15.
   
   Refer to Step 6: Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15 for more information on applying the opatch.

5. Modify the installation properties in the WAS_SOAS10134_Installables\upgrade.properties file.
   
   Refer to Step 4 of Step 7: Install and Configure IBM WebSphere Application Server Version 6.1.0.15 section.

   Modify the following values as per the environment. Sample values are mentioned below:

   - CELL_NAME=[hostName]Cell01
   - NODE_NAME=[hostName]Node01
   - PROFILE_NAME=AppSrv01
   - SERVER_NAME=SOAServer
- WAS_HOME=C:/Program Files/WebSphere/AppServer
- DMGR_HOST=[DMGR_HOSTNAME]
- DMGR_SOAP_CONNECTOR_PORT=[DMGR_PORT]
- SOA_HOME=C:/product/10.1.3.1/OracleAS_5

**See Also:** Refer to Step 4 in *Installation and Configuration* section for more details.

Enter appropriate values for other properties in the upgrade.properties file.

6. Run the following script from WAS_SOAl0134_Installables folder at the operating system command prompt:

<table>
<thead>
<tr>
<th>For...</th>
<th>Run...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>upgradeSOA.bat -secure</td>
</tr>
<tr>
<td>Linux</td>
<td>upgradeSOA.sh -secure</td>
</tr>
</tbody>
</table>

This script upgrades the existing Oracle SOA Server. The SOA applications are redeployed and adapter binaries are upgraded to 10.1.3.4. Also, the old SOA applications and adapters will be backed up under `<SOA_HOME>/WebSphere/10.1.3.3/backup/${DATE_DIR}/.`

**Note:** The J2C Connection Factories that existed before the upgrade will no longer be available after the upgrade. The corresponding resouces.xml are backed up in the directory mentioned above. These will have to be recreated by the user after the upgrade. Refer to *Configuring J2C Connection Factories for Adapters in WebSphere*.

The configuration scripts mentioned in the table execute in two parts:

The first part creates all the artifacts required for the SOAServer such as DataSources, ConnectionFactories, and Shared-Libraries on the WebSphere Application Server. (On Linux environments, this part needs to be executed as a 'root' user.) The second part of the script modifies configuration values under SOA_HOME. (On Linux environments, this part needs to be executed as a 'non-root' user.)

After you execute the script, this script prompts you to enter the WebSphere username and password. If the authentication is successful, then the Deployment Manager artifacts will be installed/configured into WebSphere application server.
Note:

- This script will prompt for the password of the default 'WebSphere' user at the command prompt.
- While running the upgradeSOA.bat or upgradeSOA.sh file, set the environment variable WAS_HOME to the WAS folder. For example, C:\WAS in Microsoft Windows or /opt/IBM/WebSphere in Linux.
- Based on the WAS_HOME variable value, the setup script assumes the jdk folder name to be jdk150_06 and appends this value to WAS_HOME, sets it to the JAVA_HOME variable, and checks for the path existence in the file structure. For example, JAVA_HOME=WAS_HOME/java.

If JAVA_HOME path does not exist, then setup file throws a message asking to set JAVA_HOME before running the setup file.

- If WAS_HOME path does not exist, then setup file throws a message asking to set WAS_HOME before running the setup file.
- The above scripts can be run without the "-secure" option, if security is disabled in the WebSphere environment.
- On Linux environments, the above script needs to be executed as a 'root' user. Also, the script will prompt for the SOA username while executing the second phase of the configuration.
This appendix describes the configuration steps for installing and configuring clustered Oracle SOA Suite 10.1.3.4 on IBM WebSphere Application Server 6.1.0.15. This appendix contains the following sections:

- Sample HA Topology
- Steps for Installation and Configuration of the Sample HA Topology
- Post Installation Steps

**Sample HA Topology**

This is a sample topology with the following chosen as its members.

- **SERVERS** - SOASERVER1, SOASERVER2, and ESB-DT SERVER
- **CLUSTER** - SOACluster will contain two managed servers (SOAServer1 and SOAServer2)

You can extend the same procedure to configure a cluster with more members as per your requirement. Figure B–1 describes the sample topology diagram.
Steps for Installation and Configuration of the Sample HA Topology

This section consists the detailed steps for installation and configuration of the sample HA topology mentioned in Sample HA Topology.

Prerequisites

The following prerequisites should be met for the installation and configuration of the sample HA topology:

1. Install IBM WebSphere Application Server 6.1.0.15 on three machines (MachineA, MachineB, and MachineC).
2. A Deployment Manager is running and available.
3. Download the WAS_HA_SOA10134_Installables.zip file and extract on all the three machines.
4. A common dehydration store database with SOA schemas upgraded to 10.1.3.4 level should be available.

See Also: Step 4: Upgrade SOA Schemas to 10.1.3.4.

SOA Suite 10.1.3.4 (for OC4J) Installation on All Three Machines

Perform the following steps to install Oracle SOA Suite 10.1.3.4:

1. Install Oracle SOA Suite 10.1.3.1 for OC4J on all the three machines (MachineA, MachineB, and MachineC).
2. Choose Basic Installation of SOA Suite 10.1.3.4. For Linux, choose the above-created database during installation.
3. Apply PatchSet 4 (Oracle SOASuite 10.1.3.4 for OC4J) on all the installations.
4. Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15.

Refer to Step 6: Apply Opatch for Oracle SOA Suite 10.1.3.4 on WebSphere 6.1.0.15 for more information on applying the opatch.
5. Install Oracle SOA Suite 10.1.3.4 for OC4J on all the physical machines (MachineA, MachineB, and MachineC).

Steps to Configure HA Setup for SOA 10.1.3.3 on WebSphere 6.1.0.15

Perform the following steps to configure HA setup for SOA 10.1.3.3 on WebSphere 6.1.0.15:

- Setting up SOAServer on the First (Primary) Node
- Adding Subsequent Members to the Cluster (Secondary Nodes)
- Setting up ESB-DT Outside the Cluster

Setting up SOAServer on the First (Primary) Node

**Step 1: Create a Custom Node "Node A" in MachineA**

1. While creating the node, federate the node into the Deployment Manager.
2. Verify that Node A has been federated from the IBM Admin Console’s Node page.

**Step 2: Under the WAS_SOA10134_Installables/cfg folder, edit the config.properties file, as per the environment**

Refer to Step 4 in Step 7: Install and Configure IBM WebSphere Application Server Version 6.1.0.15 for the list of properties in the config.properties file.

1. Ensure that the `DEPLOY_ESBDT` property is set to "N" in config.properties.
   - DEPLOY_BPELPM=Y
   - DEPLOY_ESBDT=N
   - DEPLOY_ESBRT=Y
   - DEPLOY_RULES=Y
   - DEPLOY_OWSM=Y

   **Note:** If proxy setting is enabled, then the NONPROXYHOSTS property should contain the machine names of all cluster member and deployment manager.

   For example,
   NONPROXYHOSTS=*.oracle.com|*.oraclecorp.com|localhost|127.0.0.1|a-host|b-host|c-host

2. Run the following script from WAS_SOA10134_Installables folder at the operating system command prompt:

<table>
<thead>
<tr>
<th>For...</th>
<th>Run...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>configureStandAloneServer.bat -secure</td>
</tr>
<tr>
<td>Linux</td>
<td>configureStandAloneServer.sh -secure</td>
</tr>
</tbody>
</table>

The configuration scripts mentioned in the table execute in two parts:
Steps for Installation and Configuration of the Sample HA Topology

The first part creates all the artifacts required for the SOAServer such as DataSources, ConnectionFactories, and Shared-Libraries on the WebSphere Application Server. (On Linux environments, this part needs to be executed as a 'root' user.) The second part of the script modifies configuration values under SOA_HOME. (On Linux environments, this part needs to be executed as a 'non-root' user.)

After you execute the script, this script prompts you to enter the WebSphere username and password. If the authentication is successful, then the Deployment Manager artifacts will be installed/configured into WebSphere application server.

---

**Note:**

- The above scripts can be run without the ".secure" option, if security is disabled in the WebSphere environment.
- On Linux environments, the above script needs to be executed as a 'root' user. Also, the script will prompt for the SOA username while executing the second phase of the configuration.

---

3. The script requires JAVA_HOME and WAS_HOME to be set.
4. Check the output.log/output-copy.log files in the WAS_SOA10134_Installables/bin/logs directory.

This script will configure SOAServer1 on Machine A and add it to a cluster.

5. Log in to the WebSphere Admin Console and verify that the SOACluster and SOAServer1 are created.

Adding Subsequent Members to the Cluster (Secondary Nodes)

---

**Note:** It's assumed that SOA 10.1.3.4 on OC4J is already installed on all the three machines (MachineA, MachineB, and MachineC).

---

**Step 1: Create a Custom Node "Node B" in MachineB**

1. While creating the node, federate the node into the Deployment Manager.
2. From the IBM Admin Console, navigate to the cluster created in the previous step and click the Cluster members.
3. Click New to create a new Cluster member.
4. In the Create Additional Cluster Member page, enter a name for the new server, for example, SOAServer2. Add the new server into the cluster and save the changes.

---

**Note:** Ensure that Node B is selected in the Select Node list.

---

Now, there will be two servers as cluster member, one each on Node A and Node B.

**Step 2**

1. Repeat Steps 1 to 4 in **Step 2: Under the WAS_SOA10134_Installables/cfg folder, edit the config.properties file, as per the environment.**
2. The configuration scripts re-configure SOAServer-1 on Node2 created in the previous steps.
   - Create new SIB Bus, SIB Bus member
   - Update Queue Connection Factories, Queues and Activation Specifications with the new SIB details.
   - Update the shared-libraries.
   - Update the WebSphere variables and JVM properties.

Oracle SOA Suite on WebSphere Cluster is configured for HA.

**Setting up ESB-DT Outside the Cluster**

**Step 1: Create a Custom Node "Node C" in MachineC**
1. While creating the node, federate the node into the Deployment Manager.
2. Verify that Node C has been federated from the IBM Admin Console's Node page.

**Step 2: Under the WAS_SOA10134_Installables/cfg folder, edit the config.properties as per the environment**
1. Ensure that the `DEPLOY_ESBDT` property is set to "Y" in `config.properties`. The rest of the `DEPLOY` properties should be set to N.
   - `DEPLOY_BPELPM=N`
   - `DEPLOY_ESBDT=Y`
   - `DEPLOY_ESBRT=N`
   - `DEPLOY_RULES=N`
   - `DEPLOY_OWSM=N`
2. Repeat Steps 2 to 4 in Step 2: Under the WAS_SOA10134_Installables/cfg folder, edit the config.properties file, as per the environment.

   The configuration script will configure ESB-DT Server on MachineC.
3. Log in to the WebSphere Admin Console and verify that the ESB-DT server is created. Modify the `DT_OC4J_HOST` and `DT_OC4J_PORT` parameters in the `ESB_PARAMETER (oraesb)` table with `hostName/port` value of the ESB-DT server.

---

**Note:** For ESB-DT HA, an active-passive cluster needs to be setup separately. ESB_DT needs to run as a single instance and the host/port of this instance should be updated in `DT_OC4J_HOST` and `DT_OC4J_PORT` fields of `ESB_PARAMETER table in the ORAESB schema.`

---

**Post Installation Steps**

Perform the following post installation steps:

**Configure Collaxa-config for BPEL**

Update the following properties in `SOA_HOME/bpel/system/config/collaxa-config.xml` on both the machines to configure HA for BPEL runtime:
Post Installation Steps

- `bpelPlatform = websphere_5`
- `soapServerUrl = LoadBalancerHost:port`
- `soapCallbackUrl = LoadBalancerHost:port`
- `enableCluster = true`
- `clusterName = LoadBalancerHost:port`

Configure JGroups for BPEL

Update the `<SOA_HOME>/bpel/system/config/jgroups-protocol.xml` file on both the machines to setup JGroups between the BPEL instances.

This is used for BPEL process and adapter state synchronization between BPEL instances.

Load Balancer

Perform the following steps to configure external load balancer Apache for WebSphere Cluster setup:

1. Refer to `http://e-docs.ibm.com/wls/docs92/plugins/apache.html` to install and configure Apache plugin on WebSphere server.
2. Mention the load balancer hostname and port name in `<SOA_HOME>/bpel/utilities/ant-orabpel.properties` and `<SOA_HOME>/bpel/system/config/collaxa-config.xml` files on all machines.

Addresses

The SOA Apps will be available at the following addresses post installation.

- **Admin Server**: `http://Machine1: 9060/console`
- **BPEL Console**: `http://LoadBalancerhost: port/BPELConsole`
- **OWSM**: `http://LoadBalancer: port/ccore/Login.jsp`
- **WorkList App**: `http://LoadBalancerhost: port/`
- **RuleAuthor**: `http://LoadBalancerhost: port/ruleauthor`
- **ESB-DT**: `http://Machine1: 9700/esb`
Additional Configuration Steps for the IBM WebSphere Server

The configuration steps mentioned in this section are optional and you can perform these only if there is a need:

■ More Configuration Steps

More Configuration Steps

Perform the following additional configuration steps for the IBM WebSphere Server:

■ ESB System Configurations
■ Changing to File-based Slide Repository
■ Identify Service Configuration

ESB System Configurations

Ensure that the system information for the ESB services deployed are as follows:

■ Virtual Host: The hostname of ESB design-time instance
■ Port: The port number of ESB design-time instance
■ Topic Location: ESB_JAVA_DEFERRED

The value of the 'Connection Factory Location' parameter does not matter for ESB on WebSphere 6.1.0.15, since ESB, by default, uses AQ messaging and uses the AQ JMS API to connect to the AQ Messaging topics.

Changing to File-based Slide Repository

By default, ESB on WebSphere 6.1.0.15 is configured to use database-based slide as the metadata repository. Perform the following steps configure ESB on WebSphere 6.1.0.15 to use file-based slide repository:

1. Rename Domain_file.xml to Domain.xml in the <SOA_HOME>/integration/esb/config directory.
2. Rerun IRCA for ORAESB schema from the<SOASuite 10.1.3.1 Installation pack>Disk1\install\soa_schema\irca\irca_oraesb directory.
3. Execute the following script against ORAESB schema to upgrade it to 10.1.3.4: <SOASuite 10.1.3.4 Patchset Installation
pack>
Disk1\install\soa_schema_upgrade\esb\sql\oracle\upgrade_10131_10134_oracle.sql

4. Edit the WAS_SOA10134_Installables/bin/ESB_data.aq.sql file and update the values for the following:
   ■ ESB_PARAMETER properties
   ■ DT_OC4J_HOST
   ■ DT_OC4J_PORT

5. Execute the following script against ORAESB schema to modify it for WebSphere Server:

   WAS_SOA10134_Installables/bin/ESB_data.aq.sql

**Identify Service Configuration**

The identity service in the default installation leverages the same model as the SOA Suite deployment on OC4J to obtain users from the Jazn.com realm.

This can be changed by configuring the SOA_HOME/bpel/system/services/config/is_config.xml file. Refer to http://download.oracle.com/docs/cd/B31017_01/integrate.1013/b28982/service_config.htm for more details. Also, refer to the is_config.xml example files provided at SOA_HOME/bpel/system/services/config/ldap to connect to the external LDAP providers.
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