

Oracle® SOA Suite

Installation Guide for IBM WebSphere Application Server
10g Release 3 (10.1.3.4) for UNIX and Microsoft Windows
E13971-01

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Oracle SOA Suite Installation Guide for IBM WebSphere Application Server, 10g Release 3 (10.1.3.4) for UNIX and Microsoft Windows

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Primary Author: Vimmika Dinesh

Contributing Author: Rajesh Polavarapu, Ravisha Chikkegowda, Shreenidhi Raghuram, Shiva Prasad, Vikas Anand, Swaminathan Ramaswamy

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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

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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:

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

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

Element	Requirement
IBM WebSphere Application Server	Version 6.1.0.15 or newer
Design Time	Oracle JDeveloper version 10.1.3.3
Oracle SOA Suite for OC4J	Apply SOA Suite patchset 10.1.3.4 on Oracle SOA Suite 10.1.3.1 Note: Refer to Step 2: Install Oracle SOA Suite Basic 10.1.3.1.0 for OC4J for installing Oracle SOA Suite for OC4J.
Web browsers	Internet Explorer 6.0 or Mozilla Firefox 2.0
Operation systems	Microsoft Windows XP, Microsoft Windows 2003, Red Hat Enterprise Linux release 3, and Red Hat Enterprise Linux release 4 Note: See the IBM Web site for additional details about using these operating systems with the IBM WebSphere Application Server.
Dehydration store database	Oracle Database 10g (10.2.0.2) or higher Note: 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.

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.

Note: These instructions assume that you have obtained Oracle Database 10g version 10.1.0.2 and Oracle Database 10g Patch version 10.1.0.5.

For all other Database versions, refer to
<http://www.oracle.com/technology/documentation/index.html>.

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

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

You must install Oracle SOA Suite into its 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.

WARNING: Do not start Oracle SOA Server from the Windows Start Menu or by running the `Oracle_Home\bpel\bin\startorabpel` script. These actions are not supported.

Step 3: Create the Oracle SOA Suite Schema in the Oracle Database

Note: The scripts to configure Oracle SOA Suite on the IBM WebSphere Application Server require that the `JAVA_HOME` environment parameter be set prior to running the script.

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:

For...	Run...
Windows XP	SOA_HOME\opmn\bin> opmnctl stopall
Linux	SOA_HOME\opmn\bin> ./opmnctl stopall

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 WEBSHERE 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:

For...	Run...
Windows XP	XP SOA_HOME\opmn\bin> opmnctl stopall
Linux	SOA_HOME/opmn/bin> ./opmnctl stopall

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.

Note:

- The directory to which you download the Oracle SOA Suite should be the same host on which the IBM WebSphere Application Server is installed.
- Unzip the WAS_SOA10134_Installables folder as a non-root user (same user as used to install Oracle SOA Suite 10.1.3.1 for OC4J). For example, Oracle.
- If installing on Linux, then change the permissions to the WAS_SOA10134_Installables folder using the `chmod -R 755 WAS_SOA10134_Installables` command.

3. Ensure that Nodeagent on which the SOA Server will be configured is running, else start Nodeagent as follows:

For...	Run...
Windows XP	WAS_HOME\profiles\<ProfileName>\bin\startNode.bat
Linux	WAS_HOME/profiles/<ProfileName>/bin/startNode.sh

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.DRIVERTYPE	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.

Property	Description
BPEL.JAASAUTHUSERID	The user name for accessing the BPEL schema.
BPEL.JASAUTHPASSWD	The password of the user name for accessing the BPEL schema.
ESB.JAASAUTHUSERID	The user name for accessing the ESB schema.
ESB.JASAUTHPASSWD	The password of the user name for accessing the ESB schema.
AQ.JAASAUTHUSERID	The user name for accessing the AQ schema that is similar to the ESB schema.
AQ.JASAUTHPASSWD	The password of the user name for accessing the AQ schema that is similar to the ESB schema.
VHPORTS1	The virtual host or HTTP port number.
VHPORTS2	The virtual host or HTTP port number.
VHPORTS1 - DEFAULT PORT	The default port on which the Oracle SOA Suite will run.
DMGR_HOST	The host name of the machine where the deployment manager is running.
DMGR_SOAP_CONNECTOR_PORT	The port on which the deployment manager is running.

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.

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

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

For...	Run...
Windows XP	<code>configureStandAloneServer.bat -secure</code>
Linux	<code>configureStandAloneServer.sh -secure</code>

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`, `ConnectionFactory`s, 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.)

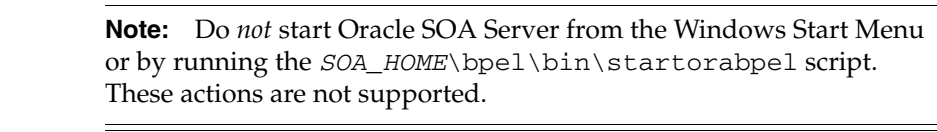
After you execute the script, this script prompts you to enter the WebSphere username and password. If the authentication is successful, then the Deployment Manager artifacts will be installed/configured into WebSphere application server.

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:
 - a. Log in to `http://localhost:9060/console`. The IBM WebSphere Application Server Administrative Console window is displayed.
 - b. Select **Servers -> Application Servers -> oracleSOAServer**. Select the server and click **Start**.



- From the BPELPM Developer Prompt Using Ant
- From JDeveloper

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

- 1-10 Oracle SOA Suite Installation Guide for IBM WebSphere Application Server

- [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
For Windows -
<http://www.oracle.com/technology/software/products/jdev/htdocs/soft10134.html>.
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 in SOA_HOME\bpel\utilities\ant-orabpel.properties file: Ensure that bpelPlatform 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

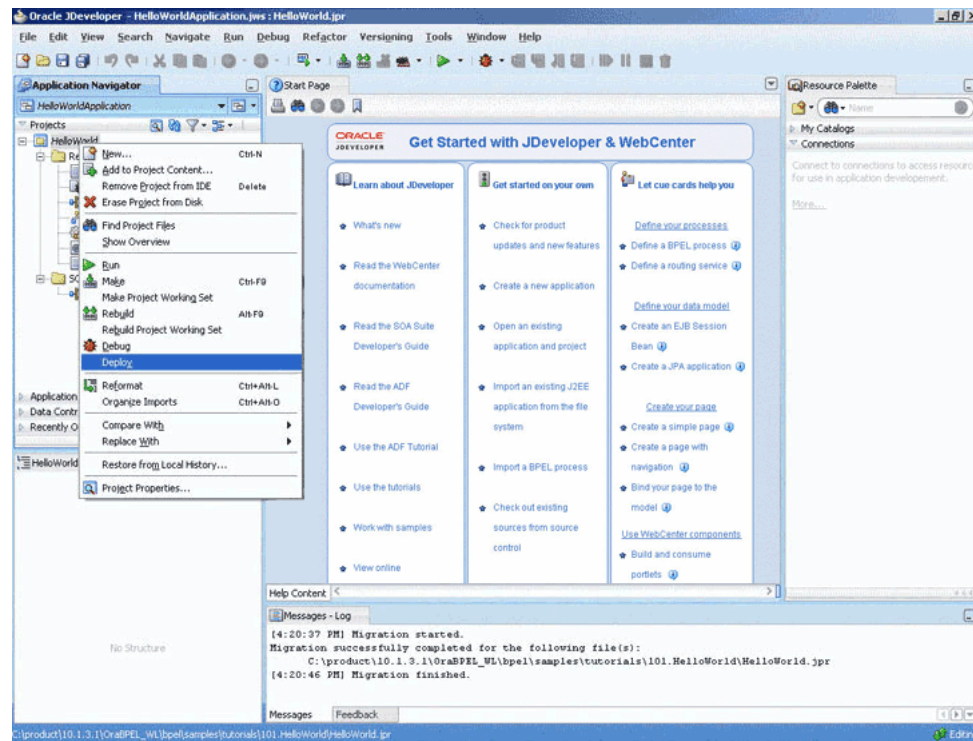
Follow the steps below to create an application server connection and an integration server connection:

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 are 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 `..\decisionsservices\..` 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

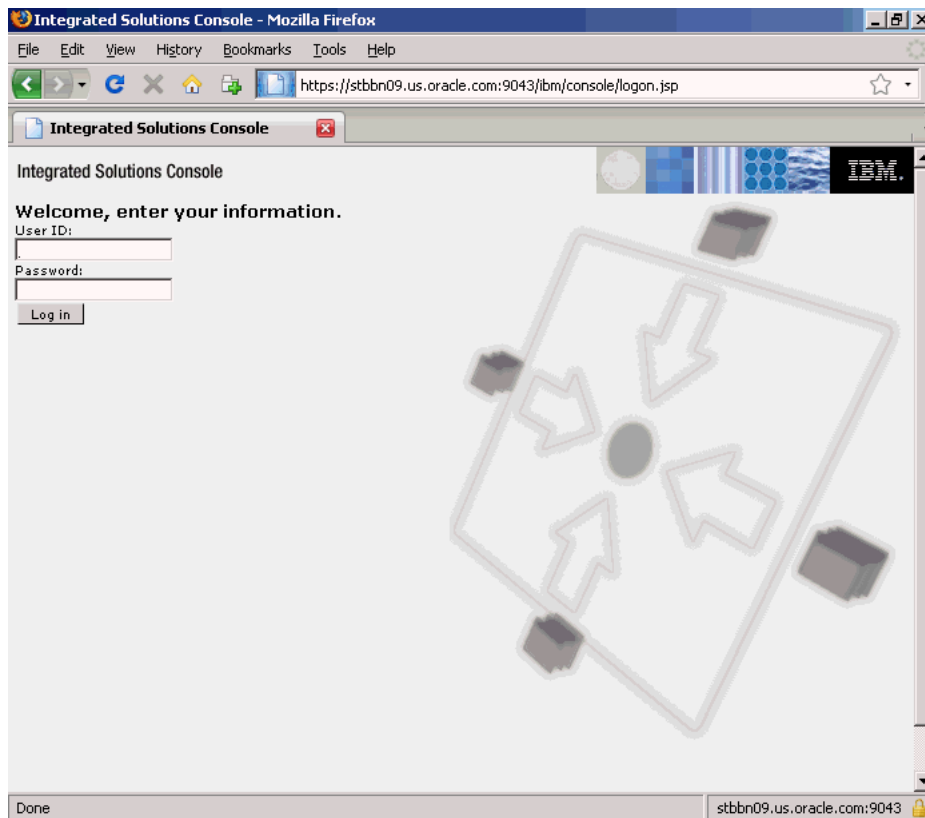
This section describes the postinstallation verification tasks to be performed, and it contains the following topics:

- [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

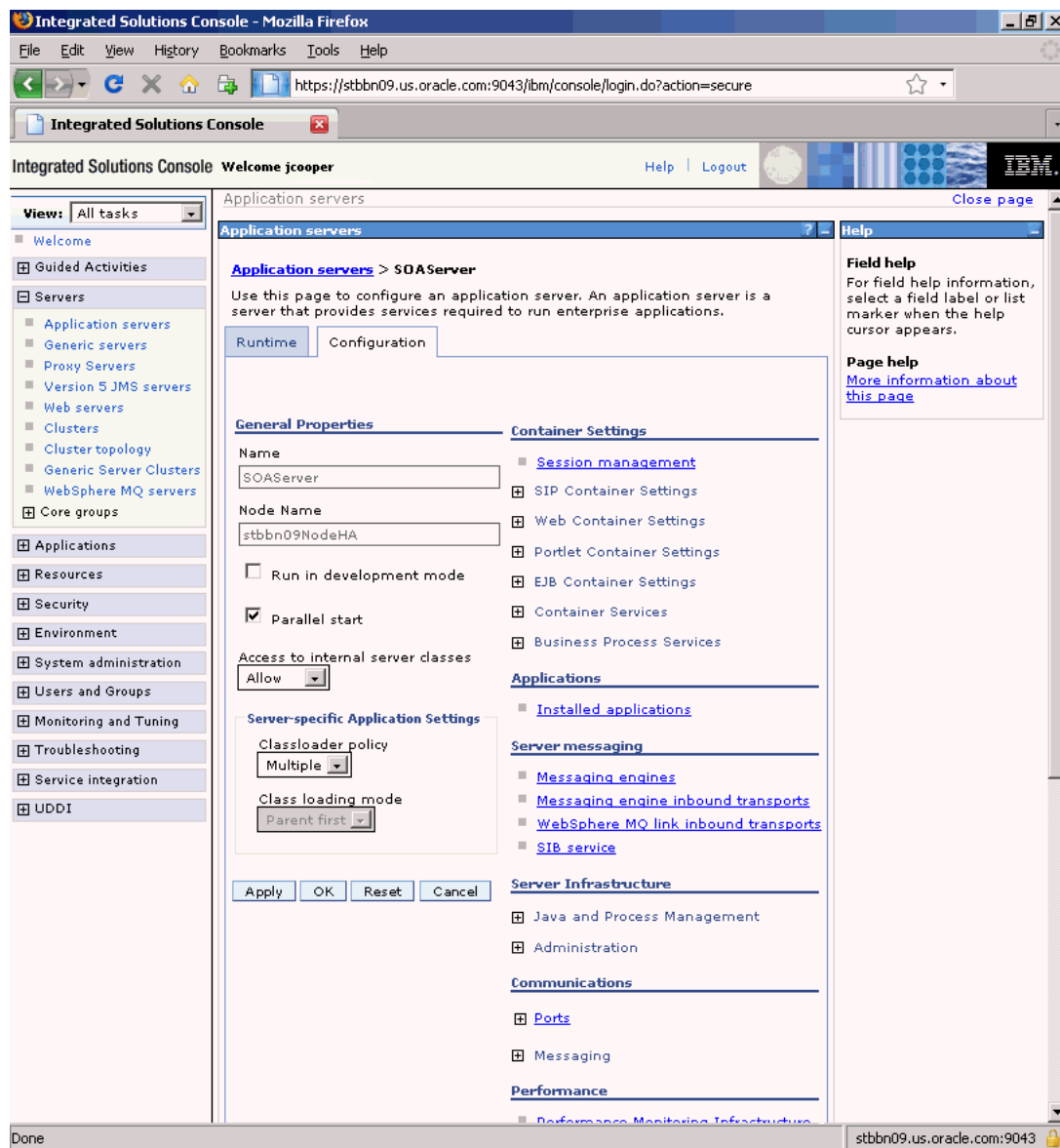
Perform the following steps to check if the IBM Admin console has started:

1. Navigate to `http://localhost:9060/Console`. The Oracle IBM WebSphere Application Server Admin Console window is displayed.

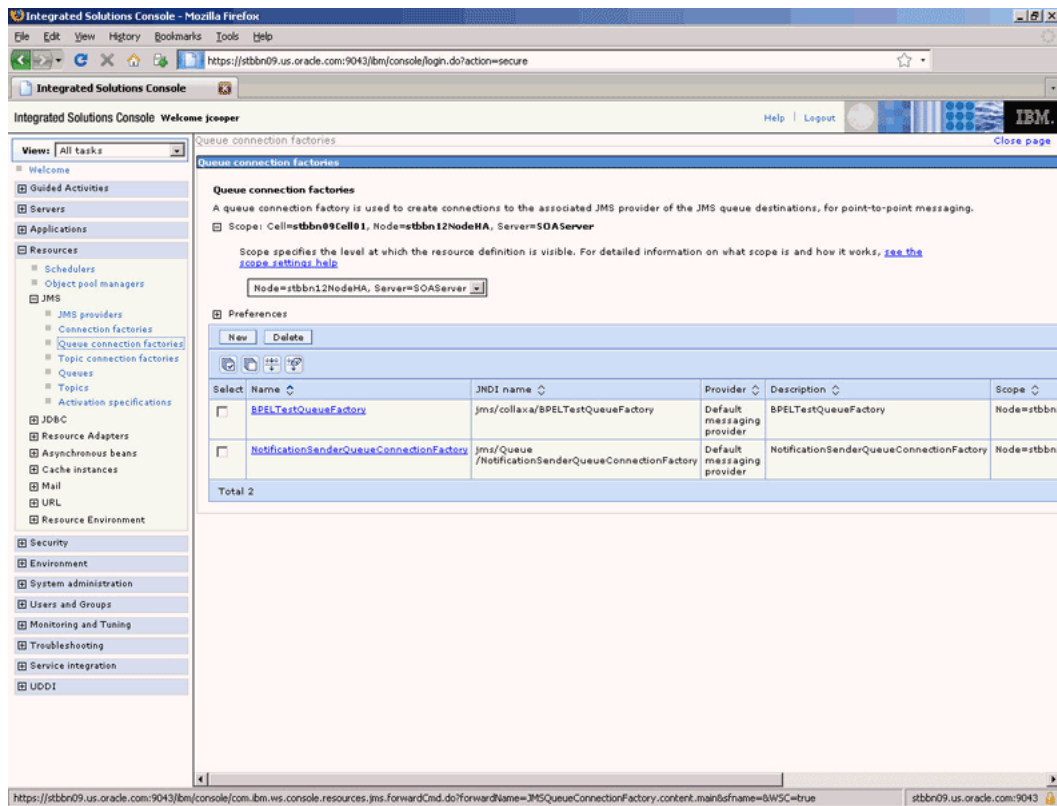


Log in using the valid username and password credentials.

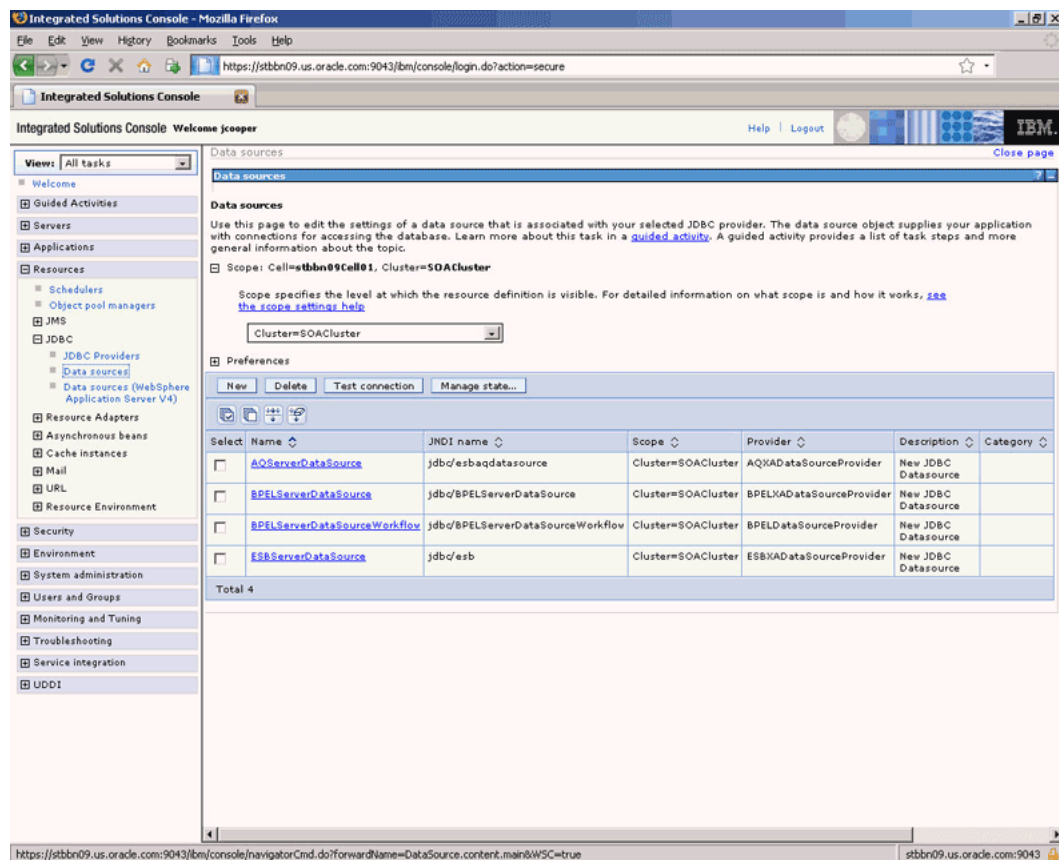
2. Verify that you can view the SOAServer Home page by selecting **Servers -> Application Servers -> SOAServer**.



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](#).

Navigate to the `http://localhost:<default_port>/esb/`. The ESB Console window is displayed, as shown in [Figure 1-2](#).

Navigate to the `http://localhost:<default_port>/core/Login.jsp`. The OWSM Console window is displayed, as shown in [Figure 1-3](#).

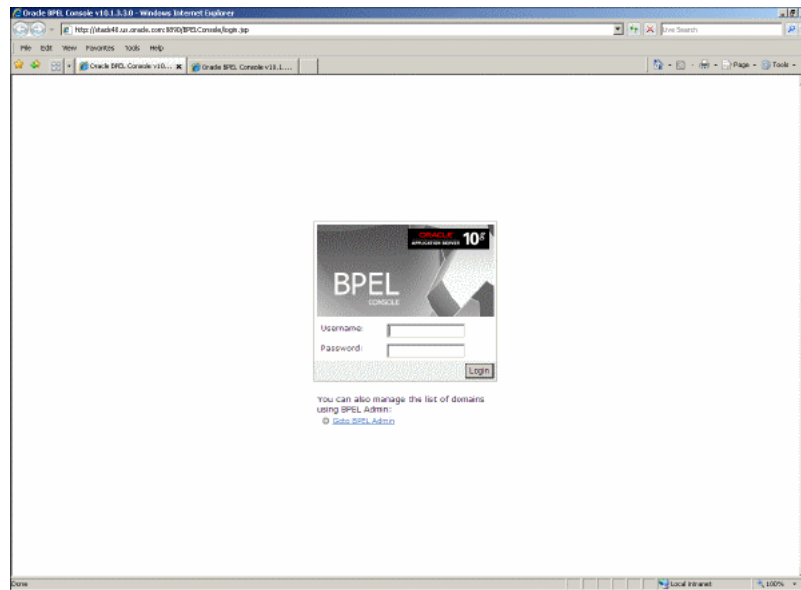
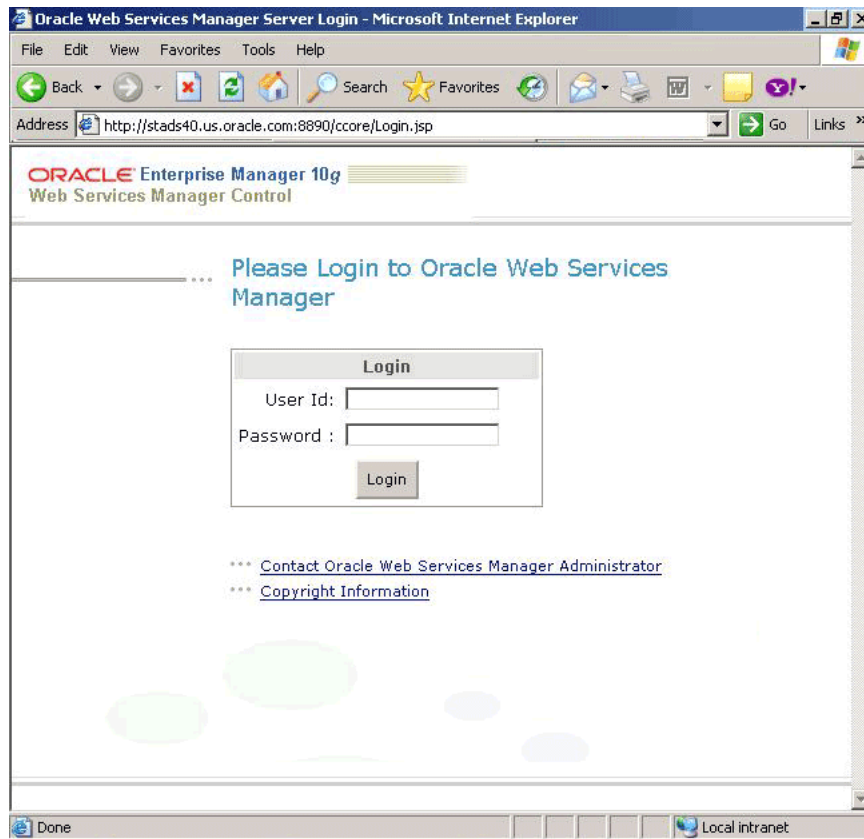
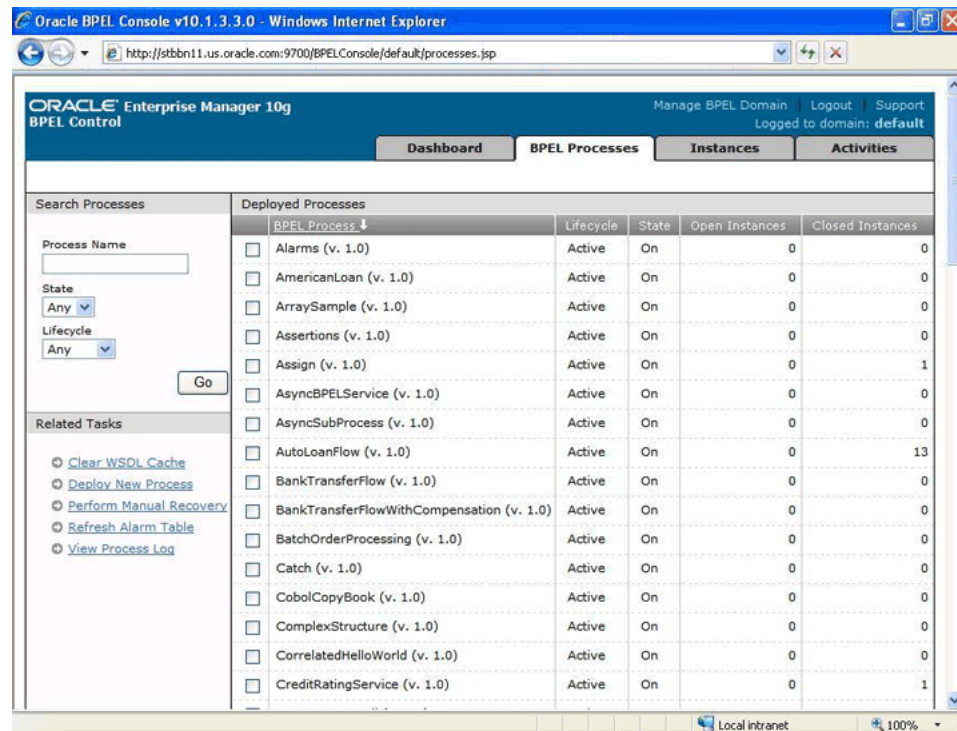
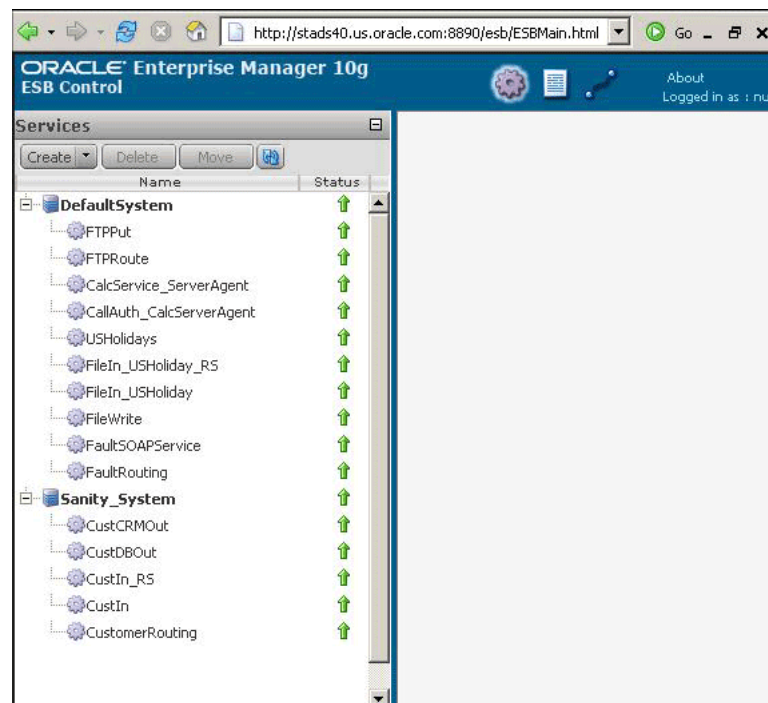
Figure 1–1 BPEL Console Window**Figure 1–2 ESB Console Window**

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](#).

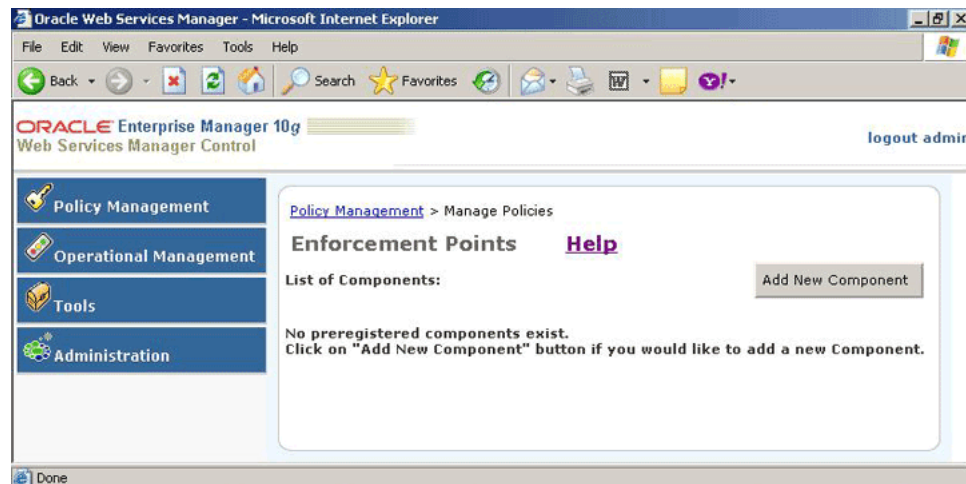
Figure 1–4 Oracle Enterprise Manager BPEL Control

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> @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:


```
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:

1. Log in to `http://localhost:9060/ibm/console`.
2. Select **Resource Adapters -> Resource Adapters** and then 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.

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/integration/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.

Auto Loan Demo

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:

- 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\decision
services.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

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:

1. Log in to WebSphere Admin console using `http://<hostname>:9060/console`.
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:

1. Open the AutoLoanFlow UI at `http://<hostname>:9700/AutoLoanFlowUI`.
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:

- 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:

```
JmsConnectionFactory: Unable to set connectionparameters for
OracleConnectionManager
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.

```
<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.wsee.bind.runtime.internal.AnonymousTypeFinder$GlobalElementNode.
getSchemaProperty(AnonymousTypeFinder.java:253)
at
weblogic.wsee.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}decis
ionServiceError',
wsdlMessagePartElement='{http://xmlns.oracle.com/AutoLoanFlow/CreditRatingAgen
t}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}decisionServiceErrorreq
uires 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 JMSDequeueer:

```

[9/23/08 18:54:37:439 IST] 00000031 javaURLContex E NMSV0310E: A JNDI operation on
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.javaURLContextImpl.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..
[9/23/08 18:54:37:361 IST] 00000031 agent E Global transaction rollback
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 ORBPPEL schema to upgrade the ORABPEL 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_SOA10134_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]Cell101
- NODE_NAME=[hostName]Node01
- PROFILE_NAME=AppSrv01
- SERVER_NAME=SOAServer

- WAS_HOME=C:/Progra~1/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_SOA10134_Installables` folder at the operating system command prompt:

For...	Run...
Windows XP	<code>upgradeSOA.bat -secure</code>
Linux	<code>upgradeSOA.sh -secure</code>

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 `resources.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 SOA Server 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.
-
-

SOA Suite 10.1.3.4 HA Setup Using WebSphere Cluster

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:

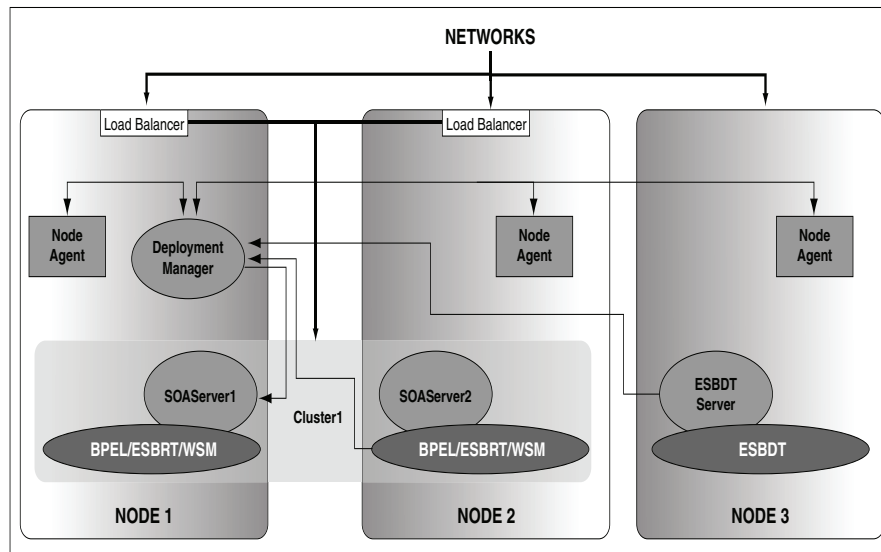
- [Sample HA Topology](#)
- [Steps for Installation and Configuration of the Sample HA Topology](#)
- [Post Installation Steps](#)

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)
- **MACHINES** - Three machines (MachineA, Machine B and Machine C) Machine A and Machine B contains SOAServer1 and SOAServer2. Machine C contains ESB-DT Server.
- **NODES** - Three nodes Node A, Node B, and Node C in Machine A, Machine B and Machine C respectively.

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.

Figure B–1 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

Step1: 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.
3. Start Node Agent for Node A using the `startNode` command.

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_BPCLPM=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:

For...	Run...
Windows XP	<code>configureStandAloneServer.bat -secure</code>
Linux	<code>configureStandAloneServer.sh -secure</code>

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:

- 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: Its 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.
3. Start Node agent for Node C using `startNode` command.

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:

- `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/twls/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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