

# **Oracle® BPEL Process Manager**

Installation Guide

10g Release 2 (10.1.2) for Solaris Operating Environment  
(SPARC), Linux x86, and Microsoft Windows

**Part No. B25760-05**

December 2006

Oracle BPEL Process Manager Installation Guide, 10g Release 2 (10.1.2) for Solaris Operating Environment (SPARC), Linux x86, and Microsoft Windows

Part No. B25760-05

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Primary Author: Mark Kennedy, Vinaye Misra

Contributors: Vikas Anand, Guru Balse, Aruna Kasturi, Umesh Kulkarni, Valarie Moore, Jim Peng, Swaminathan Ramaswamy, David Shaffer, Ingrid Stuart, Raj Venkatesan, Sunil Wadhwa, John Wang, Craig West

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# Preface

This guide is the primary source of installation information for Oracle BPEL Process Manager.

This preface contains these topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documentation](#)
- [Conventions](#)

## Audience

*Oracle BPEL Process Manager Installation Guide* is intended for customers who want to install Oracle BPEL Process Manager.

## 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:

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

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



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# Overview of Oracle BPEL Process Manager

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This chapter provides an overview of Oracle BPEL Process Manager components and installation scenarios.

This chapter contains the following topics:

- [Oracle BPEL Process Manager Components Overview](#)
- [Installation Scenarios for Oracle BPEL Process Manager](#)
- [System Requirements for Oracle BPEL Process Manager](#)
- [Oracle Application Server Portal and Oracle BPEL Portlets](#)
- [Oracle BPEL Process Manager and Oracle Application Server Integration B2B](#)

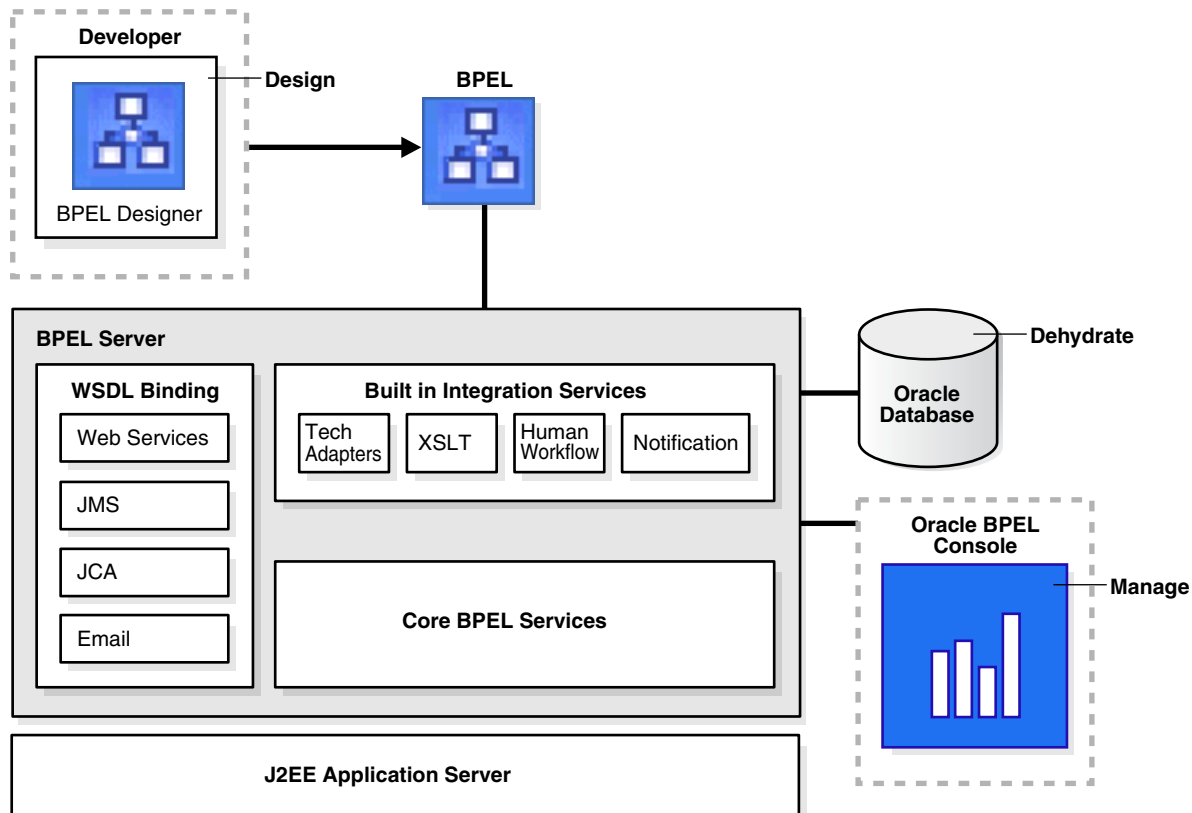
## Oracle BPEL Process Manager Components Overview

Oracle BPEL Process Manager provides a user-friendly and reliable solution for designing, deploying, and managing BPEL processes. When you install Oracle BPEL Process Manager, you are provided with two installation types, as shown in [Table 1–1](#).

**Table 1–1** Oracle BPEL Process Manager Installation Types

Installation Type	Description
Oracle BPEL Process Manager for Developers	Provides a single environment for designing and running BPEL processes. The included components are JDeveloper BPEL Designer and BPEL Process Manager. This installation type is configured with an embedded Oracle Application Server Containers for J2EE (OC4J) and, on Windows only, an Oracle Database Lite as its database.
Oracle BPEL Process Manager for OracleAS Middle Tier	Provides a standards-based environment for running processes designed using BPEL. This runtime environment includes Oracle BPEL Server, Oracle BPEL Console, runtime services, and adapters. This installation type requires that an Oracle Application Server 10g J2EE middle tier already be installed in the chosen Oracle home.

Oracle BPEL Process Manager consists of the key components shown in [Figure 1–1](#). Oracle BPEL Process Manager runs standard BPEL processes that you deploy to Oracle BPEL Server.

**Figure 1–1 Oracle BPEL Process Manager Components**

The following components are included with Oracle BPEL Process Manager.

- BPEL Designer—a graphical and user-friendly way to model, edit, design, and deploy BPEL processes. BPEL Designer also enables you to view and modify the BPEL source code. This component is available with Oracle JDeveloper or as a plug-in on the Eclipse Platform version 3.0GA and gets installed with Oracle BPEL Process Manager for Developers.
- Oracle BPEL Server—the server to which you deploy the BPEL process that you design and that contains human workflow, technology adapters, and notification services components.
- Oracle BPEL Console—the console from which you run, manage, and test your deployed BPEL process. Oracle BPEL Console provides a Web-based interface for management, administration, and debugging of processes deployed to Oracle BPEL Server.
- Oracle Database Lite, on Windows—the database that holds your BPEL schema. This option gets installed with Oracle BPEL Process Manager for Developers on Windows only. For UNIX platforms, or if you want to use a multibyte character set, you must configure an Oracle Database to test your deployed BPEL processes. See ["Preinstallation Tasks for Oracle BPEL Process Manager"](#) on page 2-4 for details about configuring an Oracle Database.

**See Also:**

- *Oracle BPEL Process Manager Developer's Guide*
- *Oracle BPEL Process Manager Quick Start Guide*
- *Oracle BPEL Process Manager Order Booking Tutorial*
- *Oracle Adapters for Files, FTP, Databases, and Enterprise Messaging User's Guide*
- <http://www.oracle.com/technology/bpel>

## **Installation Scenarios for Oracle BPEL Process Manager**

Installation scenarios are described in the following sections:

- [Scenario 1: Oracle BPEL Process Manager for Developers](#)
- [Scenario 2: Oracle BPEL Process Manager for OracleAS Middle Tier](#)

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**Note:** For information about other installation configurations, see:

- ["Oracle Application Server Portal and Oracle BPEL Portlets"](#) on page 1-7 to use Oracle Application Server Portal with Oracle BPEL Process Manager
  - ["Oracle BPEL Process Manager and Oracle Application Server Integration B2B"](#) on page 1-8 to use Oracle Application Server Integration B2B with Oracle BPEL Process Manager
  - ["Step 6: If Installing on a Cold Failover Cluster \(CFC\) Middle Tier"](#) on page 2-9
  - [Chapter 3, "Installing Oracle BPEL Process Manager with the JBoss or BEA WebLogic Application Server"](#) for details on installing Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server
  - [Chapter 4, "Installing Oracle BPEL Process Manager with the IBM WebSphere Application Server"](#) for details on installing Oracle BPEL Process Manager with the IBM WebSphere Application Server
  - [Chapter 5, "Oracle BPEL Process Manager Migration"](#) for details on migrating an existing 10.1.2.0.0 release of Oracle BPEL Process Manager to release 10.1.2.0.2
  - [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#)
  - Oracle BPEL Process Manager high availability details in the *Oracle Application Server High Availability Guide*, which is accessible by clicking **View Library > System Management** under the **Oracle Application Server 10g Release 2 (10.1.2.0.2)** header at <http://www.oracle.com/technology/documentation/appserver101202.html>
  - *Oracle BPEL Process Manager Administrator's Guide* for instructions on creating an Oracle BPEL Process Manager clustering environment at [http://www.oracle.com/technology/products/ias/bpel/htdocs/101202\\_support.html](http://www.oracle.com/technology/products/ias/bpel/htdocs/101202_support.html)
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## Scenario 1: Oracle BPEL Process Manager for Developers

Oracle BPEL Process Manager for Developers provides a design and standalone test environment. With this scenario, you design your process and then perform preproduction deployment and testing. Once you are ready to deploy a production version, you use the OracleAS Middle Tier scenario to deploy the BPEL process.

When you install Oracle BPEL Process Manager for Developers, you get these components:

- JDeveloper BPEL Designer
- Oracle BPEL Server
- Oracle BPEL Console
- Oracle Database Lite, on Windows only

## Scenario 2: Oracle BPEL Process Manager for OracleAS Middle Tier

Oracle BPEL Process Manager for OracleAS Middle Tier provides robust production components for running BPEL processes.

When you select Oracle BPEL Process Manager for OracleAS Middle Tier, you get these components:

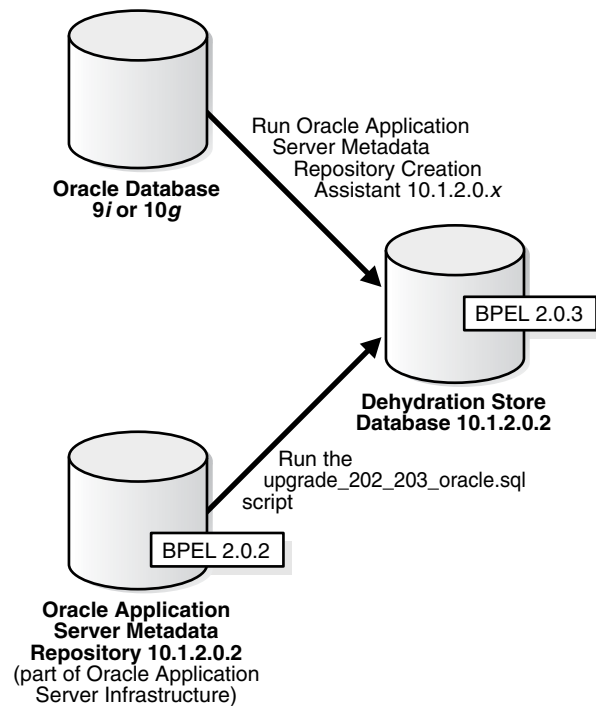
- Oracle BPEL Server
- Oracle BPEL Console

### Dehydration Store Database Options

Oracle BPEL Process Manager uses a dehydration store database to enable the states of long-running processes to be automatically persisted. When installing Oracle BPEL Process Manager for OracleAS Middle Tier, there are these options for setting up a dehydration store database:

1. Before installation, configure your Oracle Database for use with Oracle BPEL Process Manager by running the Oracle Application Server Metadata Repository Creation Assistant
2. Use an existing Oracle Application Server Metadata Repository 10.1.2.0.2 installed with Oracle Application Server Infrastructure. This requires the use of an upgrade script to upgrade the BPEL schema version, as explained later.

[Figure 1–2](#) shows these options:

**Figure 1–2 Dehydration Store Options**

In addition, you can now also use Microsoft SQL Server as your dehydration store database.

**See Also:** [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#) for instructions on using Microsoft SQL Server as a dehydration store

### OracleAS Middle Tier with Oracle Identity Management

Oracle BPEL Process Manager for OracleAS Middle Tier with Oracle Identity Management provides both a robust production platform for running BPEL processes, and an integrated security infrastructure including Oracle Internet Directory.

### Installing Oracle BPEL Process Manager for OracleAS Middle Tier on a Processor Farm

See the *Oracle BPEL Process Manager Administrator's Guide* for instructions on installing Oracle BPEL Process Manager for OracleAS Middle Tier on a processor farm.

## System Requirements for Oracle BPEL Process Manager

This section describes operating system and database requirements for Oracle BPEL Process Manager.

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**Note:** The information provided here reflects the platforms that were supported at the time this document was released. For the most recent list of supported platforms, see the **Certify** tab in Oracle Metalink, available at <http://metalink.oracle.com/> for Oracle customers.

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## Platform Requirements for Oracle BPEL Process Manager

[Table 1–2](#) describes the hardware and memory requirements for Oracle BPEL Process Manager.

**Table 1–2 Oracle BPEL Process Manager System Requirements**

Element	Requirement
Operating system	<ul style="list-style-type: none"> <li>■ Sun SPARC Solaris version 8, 9, and 10 <b>See Also:</b> <i>Oracle Application Server Installation Guide 10g Release 2 (10.1.2) for Solaris Operating System (SPARC)</i> for information on any required operating system patches, packages, swap space requirements, and kernel parameter settings</li> <li>■ Red Hat Enterprise Linux AS/ES 2.1, 3.0, and 4.0</li> <li>■ SUSE Linux Enterprise Server 8 and 9 <b>See Also:</b> <i>Oracle Application Server Installation Guide 10g Release 2 (10.1.2) for hp HP-UX PA-RISC (64-bit) and Linux x86</i> for information on any required operating system patches, packages, swap space requirements, and kernel parameter settings</li> <li>■ Windows 2000 with Service Pack 3</li> <li>■ Windows Server 2003 with Service Pack 1</li> <li>■ Windows XP <b>See Also:</b> <i>Oracle Application Server Installation Guide 10g Release 2 (10.1.2) for Microsoft Windows</i> for information on processor, TEMP directory, virtual memory, and swap space requirements</li> </ul> <p><b>Note:</b> For support on operating systems not listed in this table, check the Certify section of Oracle MetaLink (<a href="http://metalink.oracle.com">http://metalink.oracle.com</a>). For UNIX-based operating systems not listed in this table, but listed as supported in Certify, use the instructions in this guide labeled for UNIX and the corresponding <i>Oracle Application Server Installation Guide 10g Release 2 (10.1.2)</i> for that operating system (for information on any required operating system patches, packages, swap space requirements, and kernel parameter settings). Oracle BPEL Process Manager for OracleAS Middle Tier is supported on all operating systems listed in Certify. However, Oracle BPEL Process Manager for Developers is supported only on Sun SPARC Solaris, Linux x86, and Microsoft Windows.</p>
Memory	512 MB RAM minimum (1 GB preferred)
Disk space	<p>Oracle BPEL Process Manager for Developers:</p> <ul style="list-style-type: none"> <li>■ 600 MB</li> </ul> <p>Oracle BPEL Process Manager for OracleAS Middle Tier:</p> <ul style="list-style-type: none"> <li>■ 200 MB</li> </ul>
Swap space	1535 MB minimum
Monitor	Configured to display at least 256 colors

## Supported Databases for Oracle BPEL Process Manager

[Table 1–3](#) lists information about supported databases for your Oracle BPEL Process Manager installation.

You can use your existing Oracle Database, if it meets the requirements shown in [Table 1–3](#).

**Table 1–3 Supported Databases**

Database	Oracle BPEL Process Manager for Developers	Oracle BPEL Process Manager for OracleAS Middle Tier
Oracle Database Lite	Included on Windows installations only. No database installation steps are necessary.  Refer to the note in this section about multibyte character set support	Not applicable
Oracle Database 10g release 10.1.0.4, 10.1.0.5, or 10.2	Recommended for UNIX installations	Recommended
Oracle9i Database release 9.2.0.6 or 9.2.0.7	Supported	Supported
Microsoft SQL Server	Supported	Supported

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**Note:** Oracle Database Lite currently does not support multibyte character sets. This restriction only applies to Oracle BPEL Process Manager for Developers on the Windows platform.

Therefore, if your locale requires multibyte support, use an Oracle Database instead of Oracle Database Lite.

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**See Also:**

- **Patches & Updates** tab of *OracleMetaLink* (<http://metalink.oracle.com>) for information about any required patches for your version of the Oracle Database
- *Oracle Application Server Installation Guide* for your operating system for information about the supported Oracle Application Server Metadata Repository databases
- [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#)

## Supported Web Browsers for Oracle BPEL Console

Oracle BPEL Console supports these browsers:

- Internet Explorer 6.0 Service Pack (SP) 2
- Mozilla Firefox 1.0.7

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**Note:** Ensure that cookies are enabled in your Web browser. The Oracle BPEL Console caching mechanism uses cookies to identify user sessions.

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## Oracle Application Server Portal and Oracle BPEL Portlets

Oracle BPEL Portlets consist of Oracle BPEL Console report portlets and Oracle BPEL Worklist Application portlets. To use Oracle BPEL Portlets, you must install the following installation types:



- Install the Identity Management and Metadata Repository installation type of Oracle Application Server Infrastructure 10g Release 2 (10.1.2.0.2)
- Install the Portal and Wireless Middle Tier (same release)
- Install Oracle BPEL Process Manager for OracleAS Middle Tier (same release)

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**See Also:** "Oracle BPEL Portlets" in the *Oracle BPEL Process Manager Developer's Guide* for additional information about deploying portlets.

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## Oracle BPEL Process Manager and Oracle Application Server Integration B2B

The B2B WSIL Browser enables interoperability between Oracle BPEL Process Manager and Oracle Application Server Integration B2B. This browser is available in the `B2B-BPEL.zip` file in the following Oracle Application Server Integration B2B installation directory:

`Oracle_Home\ip\install`

**See Also:**

- `README.txt` file, located in the `B2B-BPEL.zip` file, for instructions on installing the B2B WSIL Browser
- *Oracle Application Server Integration B2B User's Guide*



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# Oracle BPEL Process Manager Installation

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This chapter provides the requirements and procedures for installing Oracle BPEL Process Manager.

This chapter contains the following topics:

- [Installation Overview for Oracle BPEL Process Manager](#)
- [Preinstallation Tasks for Oracle BPEL Process Manager](#)
- [Installation Tasks for Oracle BPEL Process Manager](#)
- [Postinstallation Tasks for Oracle BPEL Process Manager](#)
- [Postinstallation Verification Tasks for Oracle BPEL Process Manager](#)
- [Globalization for Oracle BPEL Process Manager](#)
- [Determining the Version of Oracle BPEL Process Manager](#)
- [Directory Structure of Oracle BPEL Process Manager](#)
- [Deinstallation Tasks for Oracle BPEL Process Manager](#)
- [Troubleshooting Oracle BPEL Process Manager Installation and Configuration](#)

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**Note:** The installation procedures in this chapter are only for performing a completely new installation of Oracle BPEL Process Manager.

If you are migrating from an Oracle BPEL Process Manager release 10.1.2.0.0 installation to release 10.1.2.0.2, do not follow the instructions in this chapter. Instead, see [Chapter 5, "Oracle BPEL Process Manager Migration"](#) for procedures.

---

## Installation Overview for Oracle BPEL Process Manager

This section provides an overview of installation tasks to perform based on the type of installation used for Oracle BPEL Process Manager, and provides references to procedures for performing these tasks.

### Exploring the Product CD-ROM

The Oracle BPEL Process Manager product CD-ROM contains the following files and directories at the top level:

- `README_BPEL_OC4J.txt`—The readme file for this release, which contains important information

- `bpel_oc4j`—The directory that contains software to install
- `doc`—The directory that contains this installation guide
- `sql`—The directory that contains the Oracle Application Server Metadata Repository 10.1.2.0.2 upgrade script:
  - `upgrade_202_203_oracle.sql`  
This script automatically executes `sensor_oracle.sql` (also located in the `sql` directory).

---

**Note:** The repository upgrade script is only required if you use an Oracle Application Server Metadata Repository 10.1.2.0.2 installed with Oracle Application Server Infrastructure as your BPEL dehydration store. This script upgrades the Oracle BPEL Process Manager schema version, as explained later.

---

**Installation Tasks Summary and Where to Find Procedures**

Table 2–1 provides a summary of installation tasks to perform for Oracle BPEL Process Manager for Developers if you plan to use an Oracle Database instead of Oracle Database Lite.

---

**Note:** If you plan to install Oracle BPEL Process Manager for Developers on Windows with Oracle Database Lite, then you can go directly to "Installing Oracle BPEL Process Manager for Developers" on page 2-10. The preinstallation tasks in Table 2–1 are not required.

---

---

**Note:** The Oracle Application Server Metadata Repository Creation Assistant referenced in Table 2-1 is a utility that creates the Oracle BPEL Process Manager user and schema in the Oracle Database.

---

**Table 2–1 Oracle BPEL Process Manager for Developers**

For Database	Follow These Steps...	See Also...
Oracle Database 10g or Oracle9i Database or Microsoft SQL Server	<p>1. Install Oracle Database 10g, Oracle9i Database, or Microsoft SQL Server, if not already installed.</p> <p><b>Note:</b> Oracle BPEL Process Manager works with your existing Oracle Database 10g or Oracle9i Database.</p> <p><b>See Also:</b> Table 1–3 on page 1-7 for details about supported Oracle Database releases</p>	<p><i>Oracle Database Installation Guide 10g</i></p> <p>or</p> <p><i>Oracle Database Installation Guide 9i</i> for your platform</p> <p>or</p> <p><a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a></p>

**Table 2–1 (Cont.) Oracle BPEL Process Manager for Developers**

For Database	Follow These Steps...	See Also...
	<p>2. Create the Oracle BPEL Process Manager schema and user in the Oracle Database using the Oracle Application Server Metadata Repository Creation Assistant.</p> <p>or</p> <p>Create the Oracle BPEL Process Manager schema and user in Microsoft SQL Server with the scripts described in <a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a></p>	
	3. Install Oracle BPEL Process Manager for Developers.	<a href="#">"Installing Oracle BPEL Process Manager for Developers"</a> on page 2-10 of this guide
	<p>4. Configure your Oracle BPEL Process Manager to use the Oracle Database.</p> <p>or</p> <p>Configure your Oracle BPEL Process Manager to use Microsoft SQL Server.</p>	<p><a href="#">"Step 2: May be Needed - Configure Oracle BPEL Process Manager to Use Your Oracle Database"</a> on page 2-17 of this guide</p> <p>or</p> <p><a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a></p>

[Table 2–2](#) provides an overview of installation tasks to perform for Oracle BPEL Process Manager for OracleAS Middle Tier.

**Table 2–2 Oracle BPEL Process Manager for OracleAS Middle Tier**

For	Follow These Steps...	See Also...
Oracle Database 10g or Oracle9i Database	1. Install Oracle Database 10g, Oracle9i Database, or Microsoft SQL Server, if not already installed	<i>Oracle Database Installation Guide 10g</i>
or	or	or
Oracle Application Server Metadata Repository	Install the Oracle Application Server Metadata Repository 10.1.2.0.2, if not already installed	<i>Oracle Database Installation Guide 9i</i> for your operating system
or	<b>See Also:</b> <a href="#">Table 1–3</a> on page 1-7 for details about supported Oracle Database releases	or
Microsoft SQL Server		<i>Oracle Application Server Installation Guide</i> for your operating system
		or
		<a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a>

**Table 2–2 (Cont.) Oracle BPEL Process Manager for OracleAS Middle Tier**

For	Follow These Steps...	See Also...
	<ol style="list-style-type: none"> <li>2. Run Oracle Application Server Metadata Repository Creation Assistant (for Oracle Database 10g or Oracle9i Database only) or Upgrade the BPEL schema version using the upgrade script (for Oracle Application Server Metadata Repository only) or Create the Oracle BPEL Process Manager schema and user in Microsoft SQL Server with the scripts described in <a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a></li> <li>3. Install Oracle Application Server 10g Release 2 (10.1.2.0.2) and select either the J2EE and Web Cache installation type or the Portal and Wireless installation type.</li> <li>4. Install the current release of Oracle BPEL Process Manager for OracleAS Middle Tier. <b>Important:</b> You must install on the Oracle Application Server middle tier in the same Oracle home as J2EE and Web Cache or Portal and Wireless.</li> </ol>	<p><a href="#">"Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database"</a> on page 2-7</p> <p>or</p> <p><a href="#">"Step 4: Upgrade the BPEL Schema Version"</a> on page 2-8</p> <p>or</p> <p><a href="#">Appendix A, "Using Microsoft SQL Server as the Dehydration Store"</a></p> <p><i>Oracle Application Server Installation Guide</i> for your operating system</p> <p><a href="#">"Installing Oracle BPEL Process Manager for OracleAS Middle Tier"</a> on page 2-11 of this guide</p>

## Preinstallation Tasks for Oracle BPEL Process Manager

Depending on the platform and database that you plan to use, complete the following procedures that apply to your installation.

### Steps for Oracle BPEL Process Manager for Developers

---

**Note:** On the Windows platform, Oracle Database Lite is included with the installation. If you plan to use Oracle Database Lite as your dehydration store, skip the preinstallation procedures in this section and go directly to ["Installing Oracle BPEL Process Manager for Developers"](#) on page 2-10.

---

On UNIX platforms, an Oracle Database is required for Oracle BPEL Process Manager for Developers. (If you already have an Oracle Database for this purpose, then you do not need to reinstall the database.)

Complete the following steps on UNIX:

- [Step 1: Install the Database - If Not Already Installed](#)
- [Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database](#)
- [Step 7: Disable IPv6 if it Is Enabled](#)

## Steps for Oracle BPEL Process Manager for OracleAS Middle Tier

For Oracle BPEL Process Manager for OracleAS Middle Tier, the preinstallation steps are as follows:

- [Step 1: Install the Database - If Not Already Installed](#)

These steps are required for an Oracle Database:

- [Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database](#)
- [Step 3: Unlock the orabpel Account and Change the Password](#)
- [Step 5: Install Oracle Application Server](#)

These steps are required for Oracle Application Server Metadata Repository:

- [Step 3: Unlock the orabpel Account and Change the Password](#)
- [Step 4: Upgrade the BPEL Schema Version](#)
- [Step 5: Install Oracle Application Server](#)
- [Step 6: If Installing on a Cold Failover Cluster \(CFC\) Middle Tier](#)
- [Step 7: Disable IPv6 if it Is Enabled](#)

**See Also:** [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#)

## Details of Preinstallation Steps

This section lists the preinstallation steps to follow for Oracle BPEL Process Manager installation. Perform the steps that are appropriate and necessary for your install type, as described earlier in ["Steps for Oracle BPEL Process Manager for Developers"](#) and ["Steps for Oracle BPEL Process Manager for OracleAS Middle Tier"](#).

### Step 1: Install the Database - If Not Already Installed

One of the following databases is required as a dehydration store for Oracle BPEL Process Manager for OracleAS Middle Tier:

- An Oracle Database  
An Oracle Database can be used as a dehydration store for Oracle BPEL Process Manager for Developers on UNIX platforms.
- Oracle Application Server Metadata Repository
- Microsoft SQL Server

At this time, the only non-Oracle database supported as a dehydration store database is Microsoft SQL Server.

---

---

**See Also:**

- ["Dehydration Store Maintenance"](#) on page 2-28
  - [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#)
- 
-

**Oracle Database**

If you already have an Oracle Database that meets the requirements listed in ["Supported Databases"](#) on page 1-7, then you do not need to reinstall the database. Otherwise, install or upgrade before you proceed.

**See Also:**

- *Oracle Database Installation Guide for Microsoft Windows (32-Bit)*
- *Oracle Database Installation Guide for Linux x86*
- *Oracle Database Installation Guide for Solaris Operating System (SPARC 64-Bit)*

**Oracle Application Server Metadata Repository**

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**Note:** As a general best practice, Oracle recommends that you use an Oracle Database on which you run Oracle Application Server Metadata Repository Creation Assistant as the dehydration store database instead of using the Oracle Application Server Metadata Repository installed with Oracle Application Server Infrastructure.

---

An Oracle Application Server installation can serve as the BPEL Process Manager dehydration store in these topologies:

- Oracle Application Server Metadata Repository only
- Oracle Application Server Metadata Repository with Oracle Identity Management

The steps are as follows:

1. Install an Oracle Application Server Metadata Repository based on Oracle Application Server 10.1.2.0.2.
2. Run the upgrade script to upgrade the BPEL schema from version 2.0.2 to version 2.0.3 in ["Step 4: Upgrade the BPEL Schema Version"](#) on page 2-8.

**See Also:**

- *Oracle Application Server Installation Guide for Microsoft Windows*
- *Oracle Application Server Installation Guide for Linux x86*
- *Oracle Application Server Installation Guide for Solaris Operating System (SPARC)*

**Microsoft SQL Server**

At this time, the only non-Oracle database supported as a dehydration store database is Microsoft SQL Server.

**See Also:** [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#)



## Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database

---

**Note:** This step is *not* meant for use when the Oracle Application Server Metadata Repository installed with Oracle Application Server Infrastructure is the dehydration store.

---

Run the Oracle Application Server Metadata Repository Creation Assistant to create the database user and schema. Oracle Application Server Metadata Repository Creation Assistant creates the default user `orabpel`, the default password `orabpel`, and the tablespace `orabpel` in the Oracle Database.

Note that:

- If you previously installed Oracle BPEL Process Manager for Developers and you already ran Oracle Application Server Metadata Repository Creation Assistant on this Oracle Database, then you do not need to run it again.
- If you already have an Oracle BPEL Process Manager user (`orabpel`) in the target database, then stop all sessions, activities, and transactions for the user before running Oracle Application Server Metadata Repository Creation Assistant. This involves shutting down Oracle BPEL Server, Oracle BPEL Console, and JDeveloper BPEL Designer.
- Oracle recommends that you create the `orabpel` tablespace with auto segment space management turned on. This enables you to conveniently reclaim free space in the dehydration store.

---

### See Also:

- ["Dehydration Store Maintenance"](#) on page 2-28
  - *Oracle Application Server Metadata Repository Creation Assistant User's Guide* for information about how to run the Oracle Application Server Metadata Repository Creation Assistant
- 

## Step 3: Unlock the orabpel Account and Change the Password

---

**Note:** Unlocking the `orabpel` account is necessary if you are installing Oracle BPEL Process Manager for an Oracle Application Server Metadata Repository without Oracle Identity Management (the repository is *not* registered with Oracle Internet Directory). If the repository *is* registered with Oracle Internet Directory, the account is **not** locked; instead, you must find out the password to proceed with ["Step 4: Upgrade the BPEL Schema Version"](#) on page 2-8. Instructions for both situations, whether or not the Oracle Application Server Metadata Repository is registered with Oracle Internet Directory, are provided here.

---

- If the Oracle Application Server Metadata Repository is not registered with Oracle Internet Directory, you must unlock the Oracle BPEL Process Manager user account `orabpel` and unlock the schema password as follows:
  1. Start SQL\*Plus:

```
sqlplus /nolog
```

**2. Connect to the OracleAS Metadata Repository:**

```
CONNECT / AS SYSDBA
```

**3. Unlock the Oracle BPEL Process Manager account:**

```
ALTER USER orabpel IDENTIFIED BY orabpel ACCOUNT UNLOCK;
```

**4. For security reasons, Oracle recommends that you then change the account password:**

```
ALTER USER orabpel IDENTIFIED BY new_orabpel_passwd;
```

- If installing on an Oracle Application Server Metadata Repository with Oracle Identity Management (that is, the repository is registered with Oracle Internet Directory), the Oracle BPEL Process Manager orabpel user account is not locked and the password does not require changing. Instead, you must first obtain the orabpel account password with a tool like `ldapsearch`; obtaining the password enables you to log in as `orabpel/random_password`.

`ldapsearch` can be used as follows:

**ldapsearch Syntax:**

```
$Oracle_Home/bin/ldapsearch -h oid_host -p oid_port -D "cn=orcladmin"
-w orcladmin_passwd
-b "orclresourcename=ORABPEL, orclreferencename=oid_global_db_name,
cn=ias infrastructure databases, cn=ias, cn=products, cn=oraclecontext"
-s base "objectclass=top" orclpasswordattribute
```

**ldapsearch Example:**

```
$Oracle_Home/bin/ldapsearch -h sti6rb03.idc.oracle.com -p 389 -D "cn=orcladmin"
-w welcome1 -b "orclresourcename=ORABPEL,
orclreferencename=orcloud.idc.oracle.com, cn=ias
infrastructure databases, cn=ias, cn=products, cn=oraclecontext" -s base
"objectclass=top" orclpasswordattribute
```

**See Also:** The following documentation for details on using `ldapsearch`:

- *Oracle Application Server Administrator's Guide*
- The "`ldapsearch`" command-line tool reference in *Oracle Identity Management User Reference*

## Step 4: Upgrade the BPEL Schema Version

---

**Note:** This step is *only* required if you are using the 10.1.2.0.2 Oracle Application Server Metadata Repository installed with Oracle Application Server Infrastructure. *Ignore* this step if you manually ran Oracle Application Server Metadata Repository Creation Assistant on an Oracle Database in "[Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database](#)" on page 2-7.

---

Locate the SQL\*Plus script to upgrade the BPEL Process Manager schema. The script is located in the `sql` directory of the Oracle BPEL Process Manager CD-ROM and is named `upgrade_202_203_oracle.sql`.

Run the script against your Oracle Application Server Metadata Repository as follows (see the *Note* at the beginning of this step before proceeding):

1. Log in to SQL\*Plus and connect as the `orabpel` user.

- If installing on an Oracle Application Server Metadata Repository without Oracle Identity Management (that is, the repository is *not* registered with Oracle Internet Directory), connect this way:

```
CONNECT orabpel/orabpel_password
```

- If installing on an Oracle Application Server Metadata Repository with Oracle Identity Management (that is, the repository *is* registered with Oracle Internet Directory), connect this way:

```
CONNECT orabpel/random_password
```

2. Execute the upgrade script:

```
@upgrade_202_203_oracle.sql
```

This script automatically executes the `sensor_oracle.sql` script (also located in the `sql` directory). If you copy `upgrade_202_203_oracle.sql` to a different directory in order to execute it, ensure that `sensor_oracle.sql` is also copied to the same directory.

### Step 5: Install Oracle Application Server

Install Oracle Application Server 10g Release 2 (10.1.2.0.2) and select the J2EE and Web Cache installation type or the Portal and Wireless installation type.

---

**Note:** If you are using Oracle Application Server Metadata Repository 10.1.2.0.2 as your dehydration store, ensure that you associate an Oracle Application Server installation type with it before installing Oracle BPEL Process Manager for OracleAS Middle Tier.

---

**See Also:** *Oracle Application Server Installation Guide* for your operating system

### Step 6: If Installing on a Cold Failover Cluster (CFC) Middle Tier

If you are installing on a Cold Failover Cluster (CFC) middle tier, the following steps are required after installation of the middle tier and before you install Oracle BPEL Process Manager.

1. Configure the middle tier for a CFC environment.

See *Oracle Application Server Installation Guide* for your operating system for this step.

2. Check the `Midtier_Home/config/ias.properties` file and make sure that the value of the property `VirtualHostName` is correct for the `VirtualHostName` of the CFC middle tier.

After you complete the preinstallation steps, you are ready to continue with the installation.

**Step 7: Disable IPv6 if it Is Enabled**

The Oracle BPEL Process Manager installation does not support IPv6 addressing. If IPv6 is enabled on the target machine, disable it prior to installing BPEL Process Manager. You can enable IPv6 after installation.

## Installation Tasks for Oracle BPEL Process Manager

Follow the instructions in one of these sections to install BPEL Process Manager:

- [Installing Oracle BPEL Process Manager for Developers](#)
- [Installing Oracle BPEL Process Manager for OracleAS Middle Tier](#)

### Installing Oracle BPEL Process Manager for Developers

This installation type installs both JDeveloper BPEL Designer and Oracle BPEL Process Manager.

1. Ensure that all preinstallation tasks and requirements described in "[Preinstallation Tasks for Oracle BPEL Process Manager](#)" on page 2-4 have been completed.
2. Log on to the host on which you want to install Oracle BPEL Process Manager.
3. Insert the Oracle BPEL Process Manager CD-ROM.
4. Start Oracle Universal Installer from the `bpel_oc4j` directory of the CD-ROM as follows:

On...	Do This...
UNIX	Enter the following command at the operating system prompt: <code>./runInstaller</code>
Windows	Double-click <code>setup.exe</code> .

The Welcome screen appears.

5. Click **Next**.

If your host is detected to be part of a cluster, the Specify Hardware Cluster Installation Mode screen appears. Select **Noncluster Installation**. This installs Oracle BPEL Process Manager on this node only, and not as part of a cluster node. Do not select **Cluster Installation**.

The Specify File Locations screen appears.

6. In the **Destination** fields, accept the default Name and Path, or specify a new Oracle home name and directory path in which to install Oracle BPEL Process Manager components.

---

**Note:** Do not use an existing home name and directory path.

---

- Enter the Name and Path as shown in these examples:

UNIX example:

Name: `BPELPM1012`

Path: `/home/oracle/BPELPM1012`

Windows example:

Name: BPELPM1012  
Path: C:\Oracle\BPELPM1012

- Do not change the directory path in the **Source** field. This is the location of installation files.

7. Click **Next**.

The Select Installation Type screen appears.

[Table 1–1](#) on page 1-1 describes the available installation types.

8. Select **BPEL Process Manager for Developers** and click **Next**.

The Specify Outgoing HTTP Proxy Information screen appears.

---

**Note:** This information is automatically filled in on Windows platforms if your browser has been configured for Proxy Server information under **LAN Settings** on the **Connections** tab.

If your browser is using Automatic Configuration of proxies, then you must fill in this information.

---

9. If you have a direct connection to the Internet and do not use a proxy server, or if you accept the default information, then click **Next**. Otherwise, enter the information as shown in [Table 2–3](#).

**Table 2–3 Outgoing HTTP Proxy Information**

Field	Description	Example
HTTP Proxy Host	Enter the name of the proxy server host.	www-proxy.us.acme.com
HTTP Proxy Port	Enter the port number of the proxy server host.	80
Bypass proxy for addresses	Enter an address that bypasses the proxy. You may enter more than one address, separating each with a semi-colon (;).	*.us.acme.com;*.us.acme.com;<local> <b>Note:</b> The <local> tag ensures that your hostname is automatically included in the bypass proxy list.

The Summary screen appears.

10. Click **Install**.

The Install screen appears showing the installation progress.

11. When installation completes, the End of Installation screen appears with information for your review.

12. Click **Exit** and confirm when prompted.

The Getting Started page appears.

This completes the installation procedures. Verify the installation, as described in ["Postinstallation Tasks for Oracle BPEL Process Manager"](#) on page 2-15.

## Installing Oracle BPEL Process Manager for OracleAS Middle Tier

Before installing Oracle BPEL Process Manager on an OracleAS Middle Tier, recall from ["Preinstallation Tasks for Oracle BPEL Process Manager"](#) on page 2-4 that you

must already have one of the following databases installed for use as a dehydration store for Oracle BPEL Process Manager for OracleAS Middle Tier:

- An Oracle Database on which the Oracle Application Server Metadata Repository Creation Assistant has been executed to create the necessary database user and schema (see ["Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database"](#) on page 2-7)
- An Oracle Application Server Metadata Repository installed with Oracle Application Server Infrastructure on which the version upgrade script has been executed (see ["Step 4: Upgrade the BPEL Schema Version"](#) on page 2-8)
- Microsoft SQL Server (see [Appendix A, "Using Microsoft SQL Server as the Dehydration Store"](#))

To install Oracle BPEL Process Manager for OracleAS Middle Tier:

1. Ensure that all preinstallation tasks and requirements described in ["Preinstallation Tasks for Oracle BPEL Process Manager"](#) on page 2-4 have been completed.
2. If installing the Oracle BPEL Process Manager for OracleAS Middle Tier installation type into an Oracle home directory that includes the Portal and Wireless middle tier type, ensure that Oracle Internet Directory is already running. Otherwise, Oracle BPEL Process Manager for OracleAS Middle Tier does not install successfully.
3. Log on to the host on which you want to install Oracle BPEL Process Manager components.
4. Insert the Oracle BPEL Process Manager CD-ROM.
5. Start Oracle Universal Installer from the `bpel_oc4j` directory of the CD-ROM as follows:

On...	Do This...
UNIX	Enter the following command at the operating system prompt: <code>./runInstaller</code>
Windows	Double-click <code>setup.exe</code> .

The Welcome screen appears.

6. Click **Next**.

If your host is detected to be part of a cluster, the Specify Hardware Cluster Installation Mode screen appears. Select **Noncluster Installation**. This installs Oracle BPEL Process Manager on this node only, and not as part of a cluster node. Do not select **Cluster Installation**.

The Specify File Locations screen appears.

7. Select the Oracle home name and directory path where Oracle Application Server 10.1.2.0.2 J2EE and Web Cache or Portal and Wireless is located.
  - Do not accept the default name and path. The installer looks for the Oracle Application Server 10.1.2.0.2 J2EE and Web Cache or Portal and Wireless instance. If you specify an incorrect path, the Dependencies alert appears. Enter the name and path as shown in these examples.

UNIX example:

Name: `Home1`

Path: /home/oracle/OraHome\_1

#### Windows example:

Name: Home1

Path: C:\OraHome\_1

- Do not change the directory path in the **Source** field. This is the location of installation files.

#### 8. Click **Next**.

The Select Installation Type screen appears.

#### 9. Select **BPEL Process Manager for OracleAS Middle Tier** and click **Next**.

The Specify Outgoing HTTP Proxy Information screen appears.

#### 10. If you have a direct connection to the Internet and do not use a proxy server, or if you accept the default information, then click **Next**. Otherwise, enter the information as shown in [Table 2-3](#) on page 2-11.

The Choose the Dehydration Database type screen appears.

#### 11. Depending on the database you previously configured as the dehydration store, choose one of the following, then click **Next**.

- Oracle Database
- Metadata Repository
- Non-Oracle Database

At this time, the only non-Oracle database supported as a Oracle BPEL Process Manager dehydration store is Microsoft SQL Server. If you select this option, the Summary screen appears. Go to Step 16.

The Specify Dehydration Database Information screen appears.

#### 12. Provide the details as described in the following table:

Information	Description	Example
Password for BPEL Process Manager Schema (ORABPEL):	The password assigned to the user orabpel. You may have changed this password during preinstallation tasks.  For information about the orabpel user account, refer to the section " <a href="#">Step 2: Run the Oracle Application Server Metadata Repository Creation Assistant on the Oracle Database</a> " on page 2-7.	
Hostname:Port:	The full name or IP address of your database host and the listener port. The default listener port is 1521.	my-pc.acme.com:1521 or 137.1.18.228:1521

Information	Description	Example
Service Name:	<p>The service name that you specified when you installed the database. The default service name is <code>orcl</code>, which may be prepended to the fully qualified domain name (FQDN) for your database.</p> <p>Note that this is not the SID.</p> <p>If you are not sure, then run the SQL*Plus command <code>show parameter service_names</code>.</p>	<p><code>orcl</code></p> <p>or</p> <p><code>orcl.us.acme.com</code></p>
ias_admin Password:	The password for the Oracle Application Server middle tier in which you are installing. You specified this password when you installed Oracle Application Server with J2EE and Web Cache or Portal and Wireless.	

**13. Click *Next*.** (Note that it takes a few minutes for the database connection to be established.)

- If you selected a dehydration store that is not configured with the Identity Management Access option, the installation continues after Step 15.
- If you selected the Identity Management Access option for the dehydration store, the Specify Login for Oracle Internet Directory screen appears.

**14.** Enter either the Oracle Internet Directory super user name or the name of a single sign-on user with the install privilege.

**15. Click *Next*.**

The Install Demo Users screen appears. This option enables Oracle Internet Directory to be used as the identity service LDAP-based JAZN provider.

---

**Note:** See the *Oracle BPEL Process Manager Developer's Guide* for details about identity services and the demo user community.

---

- Select **Yes** if you want to automatically install the identity service users, application roles, and groups into Oracle Internet Directory during installation.
- Select **No** if you want to install only the system users and application roles. The demo user community and enterprise groups are not installed; you can later install them manually.

The Summary screen appears.

**16. Click *Install*.**

The Installation Progress screen appears for a few seconds, and then the Configuration Assistants screen appears with Oracle BPEL Process Manager Configuration Assistant.

When installation completes, the End of Installation screen appears with information for your review.

**17. Click *Exit*** and confirm when prompted.



The Getting Started page appears.

This completes the installation procedures. Verify the installation, as described in ["Postinstallation Verification Tasks for Oracle BPEL Process Manager"](#) on page 2-22.

## Postinstallation Tasks for Oracle BPEL Process Manager

After installing Oracle BPEL Process Manager, first complete the required postinstallation steps and then complete the additional steps depending on the type of installation you are performing. The steps are described in these sections:

- [Postinstallation Steps for Oracle BPEL Process Manager \(All Installations\)](#)
- [Postinstallation Steps for Oracle BPEL Process Manager for Developers](#)
- [Postinstallation Steps for Oracle BPEL Process Manager for OracleAS Middle Tier](#)

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**Note:**

- Important information about Oracle BPEL Process Manager configuration is provided in *Oracle\_Home/integration/orabpel/bpelsetupinfo.txt* (for Oracle BPEL Process Manager for Developers) and *Oracle\_Home/install/bpelsetupinfo.txt* (for Oracle BPEL Process Manager for OracleAS Middle Tier).
  - For the full log of installation details, see the *installActionsdate\_time.log* file, where the date and time are specified as *yyyy-mm-dd\_hr-mm-ss*. This file is located under *c:\Program Files\Oracle\Inventory\logs\* on Windows and *\$ORACLE\_HOME/oraInventory/logs/* on UNIX.
- 
- 

### Postinstallation Steps for Oracle BPEL Process Manager (All Installations)

Complete these procedures for all installations of Oracle BPEL Process Manager, including the Developer and OracleAS Middle Tier versions:

- [Step 1: Recommended - Change Default Passwords](#)
- [Step 2: Recommended - Configure Notification and Workflow for Oracle BPEL Process Manager](#)
- [Step 3: Recommended - Update the Path on UNIX](#)
- [Step 4: May Be Needed - Re-enable IPv6](#)

#### Step 1: Recommended - Change Default Passwords

It is important to change default passwords before you start using the product.

- A domain named `default` is automatically installed with Oracle BPEL Process Manager. The initial password for this domain is `bpel`. Change this password immediately after installation is complete.
- You create BPEL domains and configure Oracle BPEL server properties from the Oracle BPEL Admin Console. The password for Oracle BPEL Admin Console is automatically set to `oracle`. Change this password immediately after installation.
- If using a Metadata Repository, and the Metadata Repository and Oracle Internet Directory reside in the same database, then change the password in both places.

**See Also:** *Oracle BPEL Process Manager Developer's Guide* for procedures on changing the domain and Oracle BPEL Admin Console passwords

## Step 2: Recommended - Configure Notification and Workflow for Oracle BPEL Process Manager

To use the notification service and workflow applications, you must complete the following steps.

1. Configure the e-mail server settings as described in *Oracle BPEL Process Manager Developer's Guide* in the Oracle BPEL Process Manager Notification Service chapter. The e-mail server settings send and receive e-mails by the Notification and Workflow services.
2. Acting on workflow tasks through e-mail requires that you configure the actionable e-mail account as described in *Oracle BPEL Process Manager Developer's Guide* in the Oracle BPEL Process Manager Workflow Services chapter.
3. If the notification service is to be used to send notifications using voice, pager, fax, and short message service (SMS) channels, then the wireless service settings must be configured as described in the section on configuring the wireless service provider for voice in the Oracle BPEL Process Manager Notification Service chapter of *Oracle BPEL Process Manager Developer's Guide*.

## Step 3: Recommended - Update the Path on UNIX

After installing on a UNIX platform such as Solaris or Linux, add `orabpel/bin` to the path. This enables you to run useful commands such as `obant.sh` and `obversion.sh`, and also facilitates the deployment and running of samples.

See [Table 2-4](#) on page 2-22 for information on how to enable access to the developer prompt.

## Step 4: May Be Needed - Re-enable IPv6

If you disabled IPv6 on the target host prior to installation, you can now enable it.

## Postinstallation Steps for Oracle BPEL Process Manager for Developers

Follow these steps only if you are using Oracle BPEL Process Manager for Developers:

- [Step 1: Mandatory - Set JDeveloper Proxy Information](#)
- [Step 2: May be Needed - Configure Oracle BPEL Process Manager to Use Your Oracle Database](#)
- [Step 3: May be Needed - On Windows Only, Configure Startup/Shutdown Files to Use Oracle Database](#)
- [Step 4: Optional - Configure JDeveloper BPEL Designer to Use Online Help from a Local Disk](#)

### Step 1: Mandatory - Set JDeveloper Proxy Information

You must add the hostname of your computer to the Oracle JDeveloper preference settings. If you do not, you can receive parsing errors when selecting a WSDL file on the WSDL Chooser window while creating a partner link. Additionally, this step ensures that you can access the online help from the Oracle JDeveloper Web site on the Oracle Technology Network. Follow these steps:

1. Select **Preferences** from the **Tools** main menu.
2. Click **Web Browser and Proxy**.
3. Enter the hostname of your host in the **Exceptions** field. For example, if your hostname is myhost-pc:  

```
us.acme.com|*.us.acme.com|localhost|127.0.0.1|myhost-pc
```
4. Ensure that localhost appears in the **Exceptions** field.
5. Click **OK**.

## Step 2: May be Needed - Configure Oracle BPEL Process Manager to Use Your Oracle Database

This procedure is required:

- If you installed Oracle BPEL Process Manager for Developers on UNIX, or
- If you are using an Oracle Database as your dehydration database on Windows, or
- If you require multibyte character set support

To configure an Oracle Database to use Oracle BPEL Process Manager:

1. Find the Oracle BPEL Process Manager data-sources.xml file located in the config directory under the destination path that you specified during installation. For example, on Windows:

```
C:\BPELPM1012\integration\orabpel\system\appserver\oc4j\j2ee\home\config
```

2. Make a backup copy of the data-sources.xml file.
3. Edit the data-sources.xml file in a text editor as follows:
  - a. Search for the heading Use this datasource to connect to Oracle 9i.
  - b. Uncomment the data-source elements under this heading.
  - c. Edit the connection parameters indicated in bold in this example.

```
<!-- Use this datasource to connect to Oracle 9i -->
<data-source class="com.evermind.sql.DriverManagerDataSource"
  name="BPELServerDataSource"
  location="loc/BPELServerDataSource"
  xa-location="BPELServerDataSource"
  ejb-location="jdbc/BPELServerDataSource"
  connection-driver="oracle.jdbc.OracleDriver"
  max-connections="50"
  min-connections="10"
  connection-retry-interval="30"
  max-connect-attempts="10"
  url="jdbc:oracle:thin:username/password@host:port:sid"/>
```

where the default username is orabpel and the default password is orabpel. The host is the fully qualified name or IP address of the host on which you installed Oracle Database 10g or Oracle9i Database. The default port number is 1521.

An example of the connection parameters is:

```
url="jdbc:oracle:thin:orabpel/orabpel@DB_Host:1521:DB_SID"/>
```

- d. Search for the heading `Use these datasources to connect to Oracle Lite`.
- e. Comment out the entire section under this heading. For example:

```
<!-- Use these datasources to connect to Oracle Lite -->
<!--
<data-source class="com.evermind.sql.DriverManagerDataSource"
             name="BPELServerDataSource"
             location="loc/BPELServerDataSource"
             xa-location="BPELServerDataSource"
             ejb-location="jdbc/BPELServerDataSource"
             connection-driver="oracle.lite.poljdbc.POLJDBCDriver"
             username="system"
             password="any"
             max-connections="30"
             min-connections="10"
...
-->
```

4. Save the `data-sources.xml` file.

### Step 3: May be Needed - On Windows Only, Configure Startup/Shutdown Files to Use Oracle Database

---

---

**Note:** This step is needed if you performed Step 2.

---

---

For Windows only, if you are using an Oracle Database, then you must configure `startorabpel.bat` and `shutdownorabpel.bat` to use an Oracle Database instead of Oracle Database Lite.

---

---

**Note:** This procedure only applies for Windows installations.

---

---

Follow these steps for `startorabpel.bat`:

1. Find the `startorabpel.bat` file located in the `bin` folder under the destination path that you specified during installation. For example:  
`C:\BPELPM1012\integration\orabpel\bin`
2. Make a backup copy of the `startorabpel.bat` file.
3. Edit the `startorabpel.bat` file as follows:
  - Remove or comment out the line that starts Oracle Database Lite as shown:  

```
@rem start /d "C:\BPELPM1012\integration\orabpel\bin" /min /realtime start_olite.bat
```
4. Save the `startorabpel.bat` file.

Repeat similar steps for `shutdownorabpel.bat`:

1. Find the `shutdownorabpel.bat` file located in the `bin` folder under the destination path that you specified during installation. For example:  
`C:\BPELPM1012\integration\orabpel\bin`
2. Make a backup copy of the `shutdownorabpel.bat` file.

3. Edit the `shutdownorabpel.bat` file as follows:

- Remove or comment out the line that stops Oracle Database Lite as shown:

```
@rem start /min /d "C:\BPELPM1012\integration\orabpel\bin\kill_olite.bat"
```

4. Save the `shutdownorabpel.bat` file.

#### Step 4: Optional - Configure JDeveloper BPEL Designer to Use Online Help from a Local Disk

The steps in this section are optional and are only helpful if you want to use online help from a local disk. (Online help for Oracle JDeveloper is available from the Oracle JDeveloper Web site. Therefore, to use the most current online help from the Web, ensure that you have an external connection to access the files.)

To install the online help to use locally:

1. Download `jdev1012_doc.zip` from the Oracle JDeveloper documentation page on Oracle Technology Network at:

<http://www.oracle.com/technology/products/jdev>

2. Install the documentation into Oracle JDeveloper by extracting the files into the directory where Oracle JDeveloper is installed.

The `jdev_install\jdev\doc\ohj` directory is created, as well as the `jdev_install\jdev\tutorials` directory.

3. From the JDeveloper BPEL Designer **Tools** menu, select **Preferences** and then **Documentation**.
4. Select **Use Local Documentation**.

If you install the documentation into any other local directory, then you must configure the location in JDeveloper as follows:

1. Start JDeveloper BPEL Designer.
2. Select **Tools > Preferences > Documentation** from the JDeveloper main menu.
3. Select **Use Local Documentation**.
4. Set the full path to where the local documentation is installed.
5. Click **OK**.

---

**Note:** Oracle BPEL Process Manager must be restarted for changes to take effect.

---

## Postinstallation Steps for Oracle BPEL Process Manager for OracleAS Middle Tier

Follow these steps only if you are using Oracle BPEL Process Manager for OracleAS Middle Tier.

- [Step 1: Mandatory - Restart Oracle Enterprise Manager 10g Application Server Control Console](#)
- [Step 2: Mandatory - If Using Oracle Identity Management - Restart Oracle BPEL Process Manager](#)
- [Step 3: Optional - Configuring SSL Support for Oracle Internet Directory](#)
- [Step 4: Change the orabpel User Password in the data-sources.xml File](#)

### Step 1: Mandatory - Restart Oracle Enterprise Manager 10g Application Server Control Console

Stop and restart Oracle Enterprise Manager 10g Application Server Control Console as follows:

```
emctl stop em
```

```
emctl start em
```

### Step 2: Mandatory - If Using Oracle Identity Management - Restart Oracle BPEL Process Manager

If you are using Oracle BPEL Process Manager with Oracle Identity Management, you must restart Oracle BPEL Process Manager after installation. The restart ensures that Oracle Internet Directory is correctly configured.

Use `opmnctl` to stop and restart Oracle BPEL Process Manager:

```
Oracle_Home\opmn\bin\opmnctl stopproc ias-component=OraBPEL
```

```
Oracle_Home\opmn\bin\opmnctl startproc ias-component=OraBPEL
```

### Step 3: Optional - Configuring SSL Support for Oracle Internet Directory

If during the Oracle Application Server Metadata Repository and middle tier installations, you specified that Oracle Application Server components connect to Oracle Internet Directory through secure socket layer (SSL) connections, you must enable your Oracle BPEL Process Manager SSL port as a postinstallation task.

Perform the following steps:

1. Update the `Oracle_Home\j2ee\OC4J_BPEL\config\jazn.xml` file as follows (changes shown in bold):

- Enter the SSL port number you are using (for this example, 636)
- Add the property name line that enables SSL support

For example:

```
<jazn provider="LDAP" location="ldap://example.com:636" default-realm="us">
  <property name="ldap.user" value="cn=orcladmin"/>
  <property name="ldap.password" value="!welcome1"/>
  <property name="ldap.protocol" value="ssl"/>
</jazn>
```

2. Update the `Oracle_Home\integration\orabpel\system\services\config\is_config.xml` file as follows (changes shown in bold):

- Enter the SSL port number you are using (must be the same number as entered in Step 1)
- Add the property name line that enables SSL support

For example:

```
<BPMIdentityServiceConfig
xmlns="http://www.oracle.com/pcbpel/identityservice/isconfig">
  <provider providerType="JAZN" name="oid" >
    <connection url="ldap://example.com:636" binddn="cn=orcladmin"
      password="welcome1" encrypted="false">
      <property name="securityProtocol" value="ssl" />
    </connection>
```

```
</provider>
</BPMIdentityServiceConfig>
```

#### Step 4: Change the orabpel User Password in the data-sources.xml File

You must perform this step if you changed the password in "Step 3: Unlock the orabpel Account and Change the Password" on page 2-7 for an Oracle Application Server Metadata Repository that is *not* registered with Oracle Internet Directory. The `data-sources.xml` file must also be updated to include this same password. This file defines how to connect to the dehydration store database with the `orabpel` user account and its password.

1. See the following step based on how you want to display the password in the `data-sources.xml` file:

If You Want The Password...	Go to Step...
To display in clear text in the <code>data-sources.xml</code> file.	2
To <i>not</i> display in clear text in the <code>data-sources.xml</code> file; the password is instead indirectly referenced.	3

2. Follow these steps to display a clear text password in the `data-sources.xml` file.
  - a. Use a text edit to open the `data-sources.xml` file located in the following directory:
 

```
Oracle_Home\j2ee\OC4J_BPEL\config
```
  - b. Go to the **BPELServerDataSource** section.
  - c. Change the value for the `password` attribute from:
 

```
password="->pwForOrabpel "
```

to the same password as entered in Step 4 on page 2-8. For example:

```
password="->mynewpassword"
```
  - d. Save your changes.
3. Follow these steps to *not* display a clear text password in the `data-sources.xml` file; the password is instead indirectly referenced.
  - a. Log into the Oracle Enterprise Manager 10g Application Server Control Console.
  - b. Go to **OC4J\_BPEL > Administration > Security**.
  - c. Find the user named **jazn.com/pwForOrabpel** in the **User** section.
  - d. Click on the link to change the password to the one entered in Step 4 on page 2-8. The password is case sensitive and must exactly match the one set in Step 4. Otherwise, Oracle BPEL Console does not display the domains.
  - e. Click **Apply**.

This associates the password with the `pwForOrabpel` value of the `password` attribute in the `data-sources.xml` file.

## Postinstallation Verification Tasks for Oracle BPEL Process Manager

This section helps you verify your installation of Oracle BPEL Process Manager. Completing these steps help confirm a fully functional installation of the various installed components.

Table 2–4 provides instructions for accessing the various components.

**Table 2–4 Accessing Oracle BPEL Process Manager Components**

To Access The...	On Windows...	On UNIX...
Oracle BPEL Server	<p>To start Oracle BPEL Server:</p> <p>Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; Start BPEL PM Server</b></p> <p>To stop Oracle BPEL Server:</p> <p>Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; Stop BPEL PM Server</b></p>	<p>To start Oracle BPEL Server:</p> <p>From \$ORACLE_HOME/integration/orabpel/bin:</p> <p><code>startorabpel.sh</code></p> <p>To stop Oracle BPEL Server:</p> <p>From \$ORACLE_HOME/integration/orabpel/bin:</p> <p><code>shutdownorabpel.sh</code></p>
JDeveloper BPEL Designer	<p>To start JDeveloper BPEL Designer, select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; JDeveloper BPEL Designer</b> or use the shortcut icon that is placed on your desktop.</p>	<p><code>\$ORACLE_HOME/integration/jdev/jdev/bin/jdev</code></p>
Oracle BPEL Console	<p>First start Oracle BPEL Server.</p> <p>To start Oracle BPEL Console:</p> <ol style="list-style-type: none"> <li>1. Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; BPEL Console</b></li> </ol> <p>You can also start Oracle BPEL Console from your Web browser using the URL for your installation, which can be found in <code>bpelsetupinfo.txt</code>.</p>	<p>First start Oracle BPEL Server.</p> <p>To start Oracle BPEL Console:</p> <ul style="list-style-type: none"> <li>■ From your Web browser, log on to the URL for your installation, which can be found in <code>bpelsetupinfo.txt</code>.</li> </ul>



**Table 2–4 (Cont.) Accessing Oracle BPEL Process Manager Components**

To Access The...	On Windows...	On UNIX...
Developer Prompt for easy access to samples	Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; Developer Prompt</b> to open up a command prompt at the <code>c:\Oracle_Home\integration\orabpel\samples</code> directory.	Set the Developer Prompt in the Bourne shell: <pre>\$ ORACLE_ HOME=/home/oracle/installs/midtier \$ export ORACLE_HOME \$ PATH=\$ORACLE_ HOME/integration/orabpel/bin:\$PATH \$ export PATH</pre>
Oracle BPEL Process Manager Samples and Tutorials	For details about BPEL samples and additional tutorials available for use:  Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; Getting Started with Samples</b>	Log into the following URL using your Web browser:  <pre>\$ORACLE_ HOME/integration/orabpel/samples/s ampleshome.html</pre>
Oracle BPEL Worklist Application	To access the login window for Oracle BPEL Worklist Application:  Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle BPEL Process Manager 10.1.2 &gt; Sample Worklist Application</b>  You may also start Oracle BPEL Worklist Application from your Web browser using the URL for your installation, which is found in <code>bpelsetupinfo.txt</code> .	First start Oracle BPEL Server.  To start Oracle BPEL Worklist Application: <ul style="list-style-type: none"> <li>From your Web browser, log on to the URL for your installation, which is found in <code>bpelsetupinfo.txt</code>.</li> </ul>

**See Also:**

- *Oracle BPEL Process Manager Quick Start Guide*
- *Oracle BPEL Process Manager Order Booking Tutorial*
- *Oracle BPEL Process Manager Developer's Guide*
- *Oracle Adapters for Files, FTP, Databases, and Enterprise Messaging User's Guide*

## Globalization for Oracle BPEL Process Manager

This section provides information about globalization and optional considerations. It includes these sections:

- [Oracle BPEL Console and BPEL Server Locales](#)
- [XSLT Mapper Parsing](#)

### Oracle BPEL Console and BPEL Server Locales

Oracle BPEL Console is available in the following languages: French, German, Italian, Spanish, Portuguese, Japanese, Korean, Simplified Chinese, and Traditional Chinese. JDeveloper BPEL Designer is only available in English and Japanese. Oracle BPEL Console and JDeveloper BPEL Designer retrieve and display text messages from Oracle BPEL Server in the server locale on certain pages. To avoid mixed languages being displayed, ensure Oracle BPEL Console and Oracle BPEL Server are using the same locale.

## XSLT Mapper Parsing

The XSLT mapper uses UTF-8 encoding for your operating system to read XSL content from files. Therefore, parsing errors can occur if encoding of XSL content is different from UTF-8.

## Determining the Version of Oracle BPEL Process Manager

You can determine the version number of Oracle BPEL Process Manager for support purposes.

To check the JDeveloper BPEL Designer version:

- Start JDeveloper BPEL Designer and select **About** from the **Help** menu. Look for the line **BPEL Designer**.

To check the Oracle BPEL Server version on Windows:

1. Select **Start > All Programs > Oracle - Oracle\_Home > Oracle BPEL Process Manager 10.1.2** and select **Developer Prompt**.
2. Enter `obversion` at the command prompt.

To check the Oracle BPEL Server version on UNIX:

- Go to `$ORACLE_HOME/integration/orabpel/bin` and run `obversion.sh`.

## Directory Structure of Oracle BPEL Process Manager

Table 2–5 shows the directory structure that is created after completing installation.

**Table 2–5 Directory Structure for Oracle BPEL Process Manager Installed Components**

This Directory	Contains...
<code>cfgtoollogs</code>	Oracle Universal Installer configuration tools logs.
<code>diagnostics</code>	Oracle Universal Installer diagnostic information.
<code>integration</code>	These subdirectories:
<ul style="list-style-type: none"> <li>■ <code>jdev</code></li> </ul> <p>Note: This directory is installed with the BPEL Process Manager for Developers option only</p>	<ul style="list-style-type: none"> <li>■ JDeveloper BPEL Designer and Oracle JDeveloper files and directories, including the workspace and project directories (under <code>jdev/jdev/mywork</code>) in which your BPEL processes are created and designed</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>orabpel</code></li> </ul>	<ul style="list-style-type: none"> <li>■ Oracle BPEL Process Manager files and directories, which include the samples</li> </ul>
<code>integration/orabpel</code>	These subdirectories:
<ul style="list-style-type: none"> <li>■ <code>bin</code></li> </ul>	<ul style="list-style-type: none"> <li>■ BPEL server binary and script files</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>docs</code></li> </ul>	<ul style="list-style-type: none"> <li>■ Javadocs and API documentation</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>domains</code></li> </ul>	<ul style="list-style-type: none"> <li>■ The default domain, plus new domains you create</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>install</code></li> </ul>	<ul style="list-style-type: none"> <li>■ BPEL installer-related files</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>lib</code></li> </ul>	<ul style="list-style-type: none"> <li>■ Oracle BPEL Process Manager JAR files</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>samples</code></li> </ul>	<ul style="list-style-type: none"> <li>■ All samples and associated files</li> </ul>
<ul style="list-style-type: none"> <li>■ <code>system</code></li> </ul>	<ul style="list-style-type: none"> <li>■ Oracle Application Server files, classes, and logs.</li> </ul>
<code>inventory</code>	Oracle installed products.

**Table 2–5 (Cont.) Directory Structure for Oracle BPEL Process Manager Installed**

<b>This Directory</b>	<b>Contains...</b>
jdk	The required Java Developer's Kit version.
jre	Java runtime environment files and libraries.
lib	Servlet jar file.
OPatch	The opatch utility and files to help patch components within this product.
oui	Oracle Universal Installer.
perl	The required version of Perl for the opatch utility.

## Deinstallation Tasks for Oracle BPEL Process Manager

Follow these instructions to deinstall Oracle BPEL Process Manager:

1. Start Oracle Universal Installer.

<b>On...</b>	<b>Do This...</b>
UNIX	Enter the following command at the operating system prompt: <code>./runInstaller</code>
Windows	Select <b>Start &gt; All Programs &gt; Oracle - Oracle_Home &gt; Oracle Installation Products &gt; Universal Installer</b>

2. Select **Deinstall Products**.
3. Expand the Oracle home that contains the products to deinstall.
4. Select **Oracle BPEL Process Manager**.
5. Click **Yes** when prompted.

The deinstallation does not remove files created after installation (for example, project files, server files, log files, and so on). You must manually remove these files and directories. Oracle recommends that you delete the `integration` directory under your Oracle home after backing up any required files.

---

---

**Note:**

- If you want to deinstall and reinstall Oracle BPEL Process Manager in the *same* Oracle home, ensure that you first remove files and subdirectories under *Oracle\_Home/integration/orabpel* and *Oracle\_Home/integration/jdev* before performing the Oracle BPEL Process Manager reinstallation. (The only directory in this path that does not need to be removed is the *log* directory. Other than this directory, the *Oracle\_Home/integration/orabpel* and *Oracle\_Home/integration/jdev* directories must be empty for reinstallations into the same Oracle home.
  - You cannot deinstall and then reinstall within the same Oracle home during the same OUI install session. You must exit the OUI after deinstallation, clean out the directory structure, and then restart a fresh installation.
- 
- 

## Troubleshooting Oracle BPEL Process Manager Installation and Configuration

This section contains troubleshooting tips and information for issues that you can encounter. It includes these topics:

- [Optimizing Transaction Timeout for Oracle BPEL Server](#)
- [Preventing Timeouts with Oracle Application Server Containers for J2EE](#)
- [Finding Metrics in Application Server Control Console](#)
- [Executing Upgrade Scripts](#)
- [Oracle BPEL Server Processes Not Starting](#)
- [Dehydration Store Maintenance](#)

### Optimizing Transaction Timeout for Oracle BPEL Server

The server timeout value is specified by the `transaction-config timeout` parameter in the `server.xml` file, located in:

- *Oracle\_Home\j2ee\OC4J\_BPEL\config* (Oracle BPEL Process Manager for OracleAS Middle Tier)
- *Oracle\_Home\integration\orabpel\system\appserver\oc4j\j2ee\home\config* (Oracle BPEL Process Manager for Developers)

The default value of the `transaction-config timeout` parameter is "60000" milliseconds, or one minute, which may not be optimal for your server load.

A related parameter, `syncMaxWaitTime`, resides in the domain configuration file `domain.xml`, which is located in *Oracle\_Home\integration\orabpel\domains\default\config* (for both Oracle BPEL Process Manager for OracleAS Middle Tier and Oracle BPEL Process Manager for Developers).

In general, `syncMaxWaitTime` should always be less than `transaction-config timeout` in the `server.xml` file.

To change the `transaction-config timeout` parameter value:

1. Open the file `server.xml` in a text editor.
2. Find the line for the `transaction-config timeout` parameter. For example:

```
<transaction-config timeout="60000" />
```

3. Change the value to a greater duration. An example that sets the duration to five minutes is as follows:

```
<transaction-config timeout="300000" />
```

You can change the `syncMaxWaitTime` parameter value by using the Oracle BPEL Admin Console. Alternatively, you can change the `syncMaxWaitTime` setting manually, as follows:

1. Open the file `domain.xml` in a text editor.
2. Find the line for the `syncMaxWaitTime` parameter. For example:

```
<property id="syncMaxWaitTime">
```

3. Change the value to a greater duration, making sure that this is less than the duration you set for `transaction-config timeout`. For example:

```
<property id="syncMaxWaitTime">
  <name>Delivery result receiver maximum wait time</name>
  <value>120</value>
```

The default is 45 seconds, and in this example the duration is changed to 120 seconds, or three minutes.

Alternatively, you can reduce the database activity to the BPEL dehydration store database. For example, you can change the `AuditLevel` value to `production` to reduce the database activity. However, doing so takes away some of the useful information from the Console Audit instances details in the Oracle Enterprise Manager 10g Application Server Control Console.

## Preventing Timeouts with Oracle Application Server Containers for J2EE

With slow processors, heavily loaded systems, or very large numbers of business processes, Oracle Application Server Containers for J2EE (OC4J) may time out while Oracle BPEL Process Manager is shutting down. If this occurs, then Oracle Enterprise Manager 10g Application Server Control Console displays an error message.

To prevent Oracle Application Server Containers for J2EE from timing out with Oracle BPEL Process Manager, you can increase the `Stop Timeout` parameter value in the `opmn.xml` file to 3 or 4 minutes.

## Finding Metrics in Application Server Control Console

The metrics for Start Time, CPU Usage, and Memory Usage for Oracle BPEL Process Manager are displayed as "Not Yet Available" in Oracle Enterprise Manager 10g Application Server Control Console. To see these metrics for Oracle BPEL Process Manager, go to the page for Oracle Application Server Containers for J2EE.

## Executing Upgrade Scripts

If you copy `upgrade_202_203_oracle.sql` to a different directory in order to execute it, ensure that `sensor_oracle.sql` is also copied to the same directory. The

`upgrade_202_203_oracle.sql` script automatically executes the `sensor_oracle.sql` script. If both scripts are not in the same directory, execution fails.

Also ensure that you do not run these SQL scripts from a directory path that includes spaces (for example, `C:\Documents and Settings\mydesktop`). Spaces in the directory path can cause execution to fail.

## Oracle BPEL Server Processes Not Starting

Oracle BPEL Console uses the Oracle Application Server Web Cache port in this release. Therefore, both Oracle HTTP Server and Oracle Application Server Web Cache must be running for BPEL server processes to be available. You can start these processes from Oracle Enterprise Manager 10g Application Server Control Console by selecting the process and then clicking **Start**.

Alternatively, you can start the processes from the developer prompt as follows:

To start Oracle HTTP Server, enter:

```
opmnctl startproc process-type=HTTP_server
```

To start Oracle Application Server Web Cache, enter:

```
opmnctl startproc process-type=WebCache
```

## Dehydration Store Maintenance

This section explains how you can periodically reclaim free space in the dehydration store and manage the future growth of the store.

Oracle recommends that you create the `orabpel` tablespace with auto segment space management turned on. This enables you to conveniently reclaim free space in the dehydration store.

With auto segment space management turned on, use the following commands to regain free space (in this example, for the `cube_scope` table):

```
alter table cube_scope enable row movement;
alter table cube_scope shrink space compact;
alter table cube_scope shrink space;
alter table cube_scope disable row movement;
```

---

## Installing Oracle BPEL Process Manager with the JBoss or BEA WebLogic Application Server

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This chapter provides the requirements and procedures for installing Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server:

This chapter contains the following topics:

- [Oracle BPEL Process Manager Components Overview](#)
- [System and Database Requirements for Oracle BPEL Process Manager](#)
- [Preinstallation Tasks for Using an Oracle Database](#)
- [Installation Tasks for Oracle BPEL Process Manager](#)
- [Postinstallation Tasks for Oracle BPEL Process Manager](#)
- [Postinstallation Verification Tasks for Oracle BPEL Process Manager](#)
- [Globalization for Oracle BPEL Process Manager](#)
- [Directory Structure for Oracle BPEL Process Manager](#)
- [Deinstallation Tasks for Oracle BPEL Process Manager](#)

---

**Note:** The installation procedures in this chapter are for performing a completely new installation of Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server. You cannot migrate from the 10.1.2.0.0 release of Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server to this 10.1.2.0.2 release.

---

**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 Adapters for Files, FTP, Databases, and Enterprise Messaging User's Guide*

## Oracle BPEL Process Manager Components Overview

The JBoss Application Server is an open source, Java-based application server for use on operating systems that support Java. The BEA WebLogic Application Server enables you to develop, integrate, secure, and manage distributed service-oriented applications.

You can install and use Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server.

The following components are included with Oracle BPEL Process Manager:

- Oracle BPEL Server—the server to which you deploy the BPEL process that you design and that contains human workflow, technology adapters, and notification services components.
- Oracle BPEL Console—the console from which you run, manage, and test your deployed BPEL process. Oracle BPEL Console provides a Web-based interface for management, administration, and debugging of processes deployed to Oracle BPEL Server.

---

**Note:** JDeveloper BPEL Designer, which provides a graphical and user-friendly way to model, edit, design, and deploy BPEL Processes, is not included with Oracle BPEL Process Manager on the JBoss Application Server or BEA WebLogic Application Server. See [Chapter 2, "Oracle BPEL Process Manager Installation"](#) for instructions on installing JDeveloper BPEL Designer.

---

## System and Database Requirements for Oracle BPEL Process Manager

This section describes the system requirements for installing Oracle BPEL Process Manager:

- [JBoss Application Server Requirements](#)
- [BEA WebLogic Application Server Requirements](#)

### JBoss Application Server Requirements

[Table 3–1](#) describes the system requirements for Oracle BPEL Process Manager with the JBoss Application Server.

**Table 3–1 Oracle BPEL Process Manager System Requirements**

Element	Requirement
JBoss Application Server	Version 3.2.6  <b>Note:</b> This version is automatically included with Oracle BPEL Process Manager.
JDK	JDK 1.4.x (JDK 1.4.0 is not supported)
System requirements	See <a href="#">Table 1–2</a> on page 1-7 for operating system, memory, disk space, swap space, and monitor requirements.  <b>Note:</b> Oracle BPEL Process Manager with the JBoss Application Server is not currently supported on Linux.
Database requirements	See <a href="#">Table 1–3</a> on page 1-8 for supported databases to use as the dehydration store.



## BEA WebLogic Application Server Requirements

[Table 3–2](#) describes the system requirements for Oracle BPEL Process Manager with the BEA WebLogic Application Server.

**Table 3–2 Oracle BPEL Process Manager System Requirements**

Element	Requirement
BEA WebLogic Application Server	Version 8.1.5 must already be installed.
JDK	JDK 1.4.x (JDK 1.4.0 is not supported)
System requirements	See <a href="#">Table 1–2</a> on page 1-7 for operating system, memory, disk space, swap space, and monitor requirements.  <b>Note:</b> Oracle BPEL Process Manager with the BEA WebLogic Application Server is not currently supported on Linux.
Database requirements	See <a href="#">Table 1–3</a> on page 1-8 for supported databases to use as the dehydration store.

## Supported Web Browsers for Oracle BPEL Console

Oracle BPEL Console requires Internet Explorer 6.0 Service Pack (SP) 2 or Mozilla Firefox 1.0.7.

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**Note:** Ensure that cookies are enabled in your Web browser. The Oracle BPEL Console caching mechanism uses cookies to identify user sessions.

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## Preinstallation Tasks for Using an Oracle Database

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**Note:** If you are using Oracle Database Lite, you can skip this section and proceed to "[Installation Tasks for Oracle BPEL Process Manager](#)" on page 3-6.

---

An Oracle Database is required to be your dehydration store for all Oracle BPEL Process Manager instances. Oracle Database Lite is automatically installed with Oracle BPEL Process Manager on Windows operating systems only.

For UNIX platforms or if you want to use a multibyte character set, you need to configure an Oracle Database for your deployed BPEL processes.

Follow these instructions:

- [Step 1: Install the Oracle Database - If Not Already Installed](#)
- [Step 2: Download the Oracle BPEL Process Manager Software](#)
- [Step 3: Run the Oracle BPEL Process Manager Schema Scripts](#)

### Step 1: Install the Oracle Database - If Not Already Installed

If you already have an Oracle Database that meets the requirements, then you do not need to reinstall the database. Otherwise, install or upgrade before you proceed.

**See Also:** [Table 1–3](#) on page 1-8 for information about supported databases

## Step 2: Download the Oracle BPEL Process Manager Software

Perform the following software download instructions for Oracle BPEL Process Manager:

- [Oracle BPEL Process Manager for the JBoss Application Server](#)
- [Oracle BPEL Process Manager for the BEA WebLogic Application Server](#)

The downloadable files contain the following components:

- The `readme` file for this release, which contains important information to read before you begin
- The scripts to create the Oracle BPEL Process Manager schema in the Oracle Database in "[Step 3: Run the Oracle BPEL Process Manager Schema Scripts](#)" on page 3-5
- The Oracle BPEL Process Manager software to install

### Oracle BPEL Process Manager for the JBoss Application Server

1. Go to the following URL:

<http://www.oracle.com/technology/bpel>

2. Click **Download BPEL Process Manager 10.1.2.0.2** and follow the instructions to access the download page.
3. Download Oracle BPEL Process Manager for the JBoss Application Server for the operating system you are using:

Operating System	Name of File to Download
Windows	<code>orabpel_10.1.2.0.2_JBOSS_win32.exe</code>
Solaris	<code>orabpel_10.1.2.0.2_JBOSS_solaris.bin.gz</code>
Linux	<code>orabpel_10.1.2.0.2_JBOSS_linux.bin.gz</code>

4. Download `IRCA_101202.zip`, which contains the scripts for creating the Oracle BPEL Process Manager schema.
5. Extract the contents of the downloadable file on the host on which to install Oracle BPEL Process Manager:

For...	Perform These Steps...
Windows	<ol style="list-style-type: none"><li>1. Double-click <code>orabpel_10.1.2.0.2_JBOSS_win32.exe</code> and extract the contents into a temporary directory.</li></ol>
Solaris or Linux	<ol style="list-style-type: none"><li>1. Unzip the <code>.gz</code> file: <code>gunzip orabpel_10.1.2.0.2_JBOSS_platform.bin.gz</code> where <i>platform</i> is either <code>solaris</code> or <code>linux</code>.</li><li>2. Set the permissions to make the unzipped file executable: <code>chmod +x orabpel_10.1.2.0.2_JBOSS_platform.bin</code></li></ol>

6. Unzip the `IRCA_101202.zip` file.

### Oracle BPEL Process Manager for the BEA WebLogic Application Server

1. Go to the following URL:

<http://www.oracle.com/technology/bpel>

2. Click **Download BPEL Process Manager 10.1.2.0.2** and follow the instructions to access the download page.
3. Download Oracle BPEL Process Manager for the BEA WebLogic Application Server for the operating system you are using:

Operating System	Name of File to Download
Windows	<code>orabpel_10.1.2.0.2_WL_win32.exe</code>
Solaris	<code>orabpel_10.1.2.0.2_WL_solaris.bin.gz</code>
Linux	<code>orabpel_10.1.2.0.2_WL_linux.bin.gz</code>

4. Download `IRCA_101202.zip`, which contains the scripts for creating the Oracle BPEL Process Manager schema.
5. Extract the contents of the downloadable file on the host on which to install Oracle BPEL Process Manager:

For...	Perform These Steps...
Windows	<ol style="list-style-type: none"> <li>1. Double-click <code>orabpel_10.1.2.0.2_WL_win32.exe</code> and extract the contents into a temporary directory.</li> </ol>
Solaris or Linux	<ol style="list-style-type: none"> <li>1. Unzip the <code>.gz</code> file:  <code>gunzip orabpel_10.1.2.0.2_WL_platform.bin.gz</code>            where <i>platform</i> is either <code>solaris</code> or <code>linux</code>.</li> <li>2. Set the permissions to make the unzipped file executable:  <code>chmod +x orabpel_10.1.2.0.2_WL_platform.bin</code></li> </ol>

6. Unzip the `IRCA_101202.zip` file.

## Step 3: Run the Oracle BPEL Process Manager Schema Scripts

Run the following scripts to create the Oracle BPEL Process Manager schema:

- `bpmirca.sql`

This script automatically runs these subscripts:

- `bpmtablespace.sql`
- `bpmuser.sql`

- `domain_oracle.ddl`

This script automatically runs subscript `sensor_oracle.sql`.

- `server_oracle.ddl`

This script automatically runs subscript `workflow_oracle.sql`.

Review the following requirements before running these scripts:

- You must run these scripts from the host on which your Oracle Database is installed, and your database must be up and running before you run these scripts.
- If you already have an Oracle BPEL Process Manager user (`orabpel`) in the target database, then stop all sessions, activity, and transactions for the user before running these scripts.
- When you run these scripts, any existing tablespace in your database named `orabpel` is left alone. If you already have a user named `orabpel` in the `orabpel` tablespace, that user is dropped and recreated.
- Do not *run* Oracle Application Server Metadata Repository or the `upgrade_202_203_oracle.sql` script described in [Chapter 2, "Oracle BPEL Process Manager Installation"](#) against your database.

To run the schema scripts:

1. Copy *all* these scripts from the directory in which you downloaded the Oracle BPEL Process Manager software in ["Step 2: Download the Oracle BPEL Process Manager Software"](#) on page 3-4 to a directory on the host on which the Oracle Database is installed. All scripts must be in the same directory.

2. Log in to the Oracle Database using SQL\*Plus:

```
sqlplus /NOLOG
CONNECT sys/sys_password@service_name AS SYSDBA
```

3. Run the following script to create the Oracle BPEL Process Manager tablespace and user:

```
@bpmirca orabpel orabpel_password sys_pwd service_name
```

where:

- `orabpel` is the user name.
- `orabpel_password` is the password to use for the `orabpel` user.
- `sys_pwd` is the sys user password you specified when you installed the Oracle Database.
- `service_name` is the service name you specified when you installed the Oracle Database.

4. Log in again to the Oracle Database using SQL\*Plus:

```
sqlplus orabpel/orabpel_password@service_name
```

5. Run the following scripts to create the Oracle BPEL Process Manager schema:

```
@domain_oracle.ddl
@server_oracle.ddl
```

## Installation Tasks for Oracle BPEL Process Manager

Follow these instructions to install Oracle BPEL Process Manager:

- [Oracle BPEL Process Manager for the JBoss Application Server](#)
- [Oracle BPEL Process Manager for the BEA WebLogic Application Server](#)

---

**Note:** The Solaris and Linux instructions in these sections describe the screens that appear and mouse clicks to use when performing an X Windows-based installation. If you are performing a console-based installation (that is, with no graphical user interface), the questions that appear are the same, but the keyboard commands you use to navigate through the installation are different. Be aware of the commands. For example, you press **Enter** to move to the next set of questions, instead of clicking **Next**.

---

## Oracle BPEL Process Manager for the JBoss Application Server

1. Log on to the host on which to install Oracle BPEL Process Manager.
2. Go to the temporary directory in which you downloaded the Oracle BPEL Process Manager software in "[Step 2: Download the Oracle BPEL Process Manager Software](#)" on page 3-4.
3. Begin the installation:

For...	Perform These Steps...
Windows	<ol style="list-style-type: none"> <li>1. Double-click the <code>orabpel_10.1.2.0.2_JBOSS_win32.exe</code> executable file.</li> </ol>
Solaris or Linux	<ol style="list-style-type: none"> <li>1. Run the file in either of two ways:  <b>For X Windows-based installations:</b>  <code>./orabpel_10.1.2.0.2_JBOSS_platform.bin</code>            where <i>platform</i> is either <i>solaris</i> or <i>linux</i>.  <b>For console-based installations (no graphical user interface):</b>  <code>./orabpel_10.1.2.0.2_JBOSS_platform.bin -i console</code> </li> </ol>

The Introduction screen appears.

4. Review the instructions and click **Next**.

The Choose Install Folder window appears.

5. Specify a directory in which to install Oracle BPEL Process Manager and click **Next**.

---

**Note:** The examples throughout this chapter use `C:\OraBPELPM` (for Windows installations) and `/home/user_home/OraBPELPM` (for Solaris installations) as the home directory name that you specify. If you specify a different home directory, substitute it as necessary in this chapter.

---

The Choose JDK Folder window appears.

6. Specify a directory in which JDK 1.4.x is installed and click **Next**. You cannot use JDK 1.4.0. You can download the correct version from the following URL:

<http://java.sun.com/j2se>

The Specify incoming HTTP port information window appears.

7. Enter the following details and click **Next**:

Field	Description	Example
<b>HTTP Port</b>	The incoming HTTP port number	9700
<b>HTTPS Port</b>	The incoming secure HTTP port number	9701

The Specify outgoing HTTP port information window appears. This window enables you to route outgoing HTTP connections through a proxy server.

- If a proxy server is required for connecting to the Internet, ensure that the **Proxy required for internet** check box remains selected.
- Enter the following proxy server details:

Field	Description	Example
<b>HTTP Proxy Host</b>	The name of the proxy server host	www-proxy.us.acme.com
<b>HTTP Proxy Port</b>	The port number of the proxy server host	80
<b>Bypass proxy for addresses</b>	The addresses that bypass the proxy (separated by semicolons)	*.acmecorp.com; *.acmepor tal.com;<local>

- Click **Install**.

The Pre-Installation Summary screen appears.

- Review your selections from the previous screens and click **Install**.

After installation completes, the Install Complete screen appears.

- Click **Done**.

The Getting Started with Oracle BPEL Process Manager page appears with instructions on how to get started.

## Oracle BPEL Process Manager for the BEA WebLogic Application Server

- Log on to the host on which to install Oracle BPEL Process Manager.
- Go to the temporary directory in which you downloaded the Oracle BPEL Process Manager software in ["Step 2: Download the Oracle BPEL Process Manager Software"](#) on page 3-4.
- Begin the installation:

For...	Perform These Steps...
Windows	<ol style="list-style-type: none"> <li>Double-click the <code>orabpel_10.1.2.0.2_WL_win32.exe</code> executable file.</li> </ol>
Solaris	<ol style="list-style-type: none"> <li>Run the file in either of two ways:  <b>For X Windows-based installations:</b>  <code>./orabpel_10.1.2.0.2_WL_platform.bin</code>            where <i>platform</i> is either <code>solaris</code> or <code>linux</code>.  <b>For console-based installations (no graphical user interface):</b>  <code>./orabpel_10.1.2.0.2_WL_platform.bin -i console</code> </li> </ol>

The Introduction screen appears.

4. Review the instructions and click **Next**.

The Choose Install Folder window appears.

5. Specify a directory in which to install Oracle BPEL Process Manager and click **Next**.

The Choose BEA Installation window appears.

6. Select the directory in which the BEA WebLogic Application Server version 8.1.5 is installed and click **Next**.

The Specify WebLogic Domain window appears.

7. Accept the default domain name of **myorabpel** or specify a different name in the **Domain Name** field and click **Next**.

The Choose WebLogic Domain Location window appears.

8. Accept the base directory of **user\_projects** for your domain or specify a different directory and click **Next**.

The Choose JDK Folder window appears.

9. Specify a directory in which JDK 1.4.x is installed and click **Next**. You cannot use JDK 1.4.0. Your BEA WebLogic Application Server version 8.1.5 installation includes an applicable JDK 1.4.x installation that you can use.

You can also download the correct version from the following URL:

<http://java.sun.com/j2se>

The Specify incoming HTTP port information window appears.

10. Enter the following details and click **Next**:

Field	Description	Example
HTTP Port	The incoming HTTP port number	9700
HTTPS Port	The incoming secure HTTP port number	9701

The Specify outgoing HTTP port information window appears. This window enables you to route outgoing HTTP connections through a proxy server.

11. If a proxy server is required for connecting to the Internet, ensure that the **Proxy required for internet** check box remains selected.

12. Enter the following proxy server details:

Field	Description	Example
HTTP Proxy Host	The name of the proxy server host	www-proxy.us.acme.com
HTTP Proxy Port	The port number of the proxy server host	80
Bypass proxy for addresses	The addresses that bypass the proxy (separated by semicolons)	*.acmecorp.com; *.acmepor tal.com; <local>

**13. Click *Install*.**

The Pre-Installation Summary screen appears.

**14. Review your selections from the previous screens and click *Install*.**

After installation completes, the Install Complete screen appears.

**15. Click *Done*.**

The Getting Started with Oracle BPEL Process Manager page appears with instructions on how to get started.

## Postinstallation Tasks for Oracle BPEL Process Manager

Complete the following postinstallation tasks.

- [Postinstallation Steps for Oracle BPEL Process Manager](#)
- [Postinstallation Tasks for Oracle Databases](#)

## Postinstallation Steps for Oracle BPEL Process Manager

Complete these postinstallation procedures for Oracle BPEL Process Manager.

- [Step 1: Mandatory - Configure the Samples on Solaris](#)
- [Step 2: Mandatory - Change Passwords and Configure Services and Applications](#)

### Step 1: Mandatory - Configure the Samples on Solaris

You must configure the samples shipped with Oracle BPEL Process Manager on Solaris before you can use them.

1. Set your PATH variable to include `/home/user_home/OraBPELPM/bin`:

```
export PATH=/home/user_home/OraBPELPM/bin:$PATH
```

2. Change to the following directory:

```
cd /home/user_home/OraBPELPM/samples
```

3. Run `obant` to configure the samples:

```
obant.sh configure
```

A message similar to the following displays at the end.

```
BUILD SUCCESSFUL
Total time: 23 seconds
```

### Step 2: Mandatory - Change Passwords and Configure Services and Applications

[Table 3–3](#) describes additional postinstallation tasks to perform.

**Table 3–3** *Postinstallation Tasks for Oracle BPEL Process Manager*

Task	See Section...
Change default passwords	<a href="#">"Step 1: Recommended - Change Default Passwords"</a> on page 2-15
Configure the notification service and workflow application	<a href="#">"Step 2: Recommended - Configure Notification and Workflow for Oracle BPEL Process Manager"</a> on page 2-16



## Postinstallation Tasks for Oracle Databases

If you are using an Oracle Database other than Oracle Database Lite as the dehydration store, you must complete the following steps for the JBoss Application Server or BEA WebLogic Application Server:

- [Step 1: \(Windows only\) Configure the Startup File to Use the Oracle Database](#)
- [Step 2: Configure the Application Server to Use the Oracle Database as a Dehydration Store](#)

---

**Note:** Substitute the home directory name in the following sections with the one you specified on the Choose Install Folder window in Step 5 on page 3-7 for the JBoss Application Server or Step 5 on page 3-9 for the BEA WebLogic Application Server.

---

### Step 1: (Windows only) Configure the Startup File to Use the Oracle Database

If you are using the Oracle Database on Windows only, then you must configure `startorabpel.bat` and `shutdowntorabpel.bat` to use the Oracle Database instead of Oracle Database Lite. This procedure only applies for Windows installations on the JBoss Application Server or BEA WebLogic Application Server.

1. If you installed Oracle BPEL Process Manager on Windows, remove or comment out the following Oracle Database Lite lines in these files:

- In `Oracle_Home\bin\startorabpel.bat`:  

```
@rem start /d "Oracle_Home\bin" /min /realtime start_olite.bat
```
- In `Oracle_Home\bin\shutdowntorabpel.bat`:  

```
@rem start /min /d "Oracle_Home\bin\kill_olite.bat"
```

2. Save your changes in both files.

### Step 2: Configure the Application Server to Use the Oracle Database as a Dehydration Store

Follow these instructions to configure the application server:

- [Configure the JBoss Application Server](#)
- [Configure the BEA WebLogic Application Server](#)

#### Configure the JBoss Application Server

1. Back up the following files for the operating system you are using. Ensure that the backup file is placed in a directory *other* than the `deploy` directory listed below.

On...	Back Up...
Windows	<ul style="list-style-type: none"> <li>■ <code>C:\OraBPELPM\system\appserver\jboss\server\default\deploy\oracle-ds.xml</code></li> <li>■ <code>C:\OraBPELPM\system\appserver\jboss\server\default\deploy\oracle-sample-bpel-ds.xml</code></li> </ul>

On...	Back Up...
Solaris and Linux	<ul style="list-style-type: none"> <li>■ <code>/home/user_ home/OraBPELPM/system/appserver/jboss/server/default/deploy/oracle-ds.xml</code></li> <li>■ <code>/home/user_ home/OraBPELPM/system/appserver/jboss/server/default/deploy/oracle-sample-bpel-ds.xml</code></li> </ul>

2. Open `oracle-ds.xml` for the operating system you are using with a text editor. This file includes the following sections to which you *must* make the same changes:

- `<local-tx-datasource>`
- `<no-tx-datasource>`

3. Change the following two lines in the `<local-tx-datasource>` section to include the following information:

- The JDBC thin driver with the Oracle Database
- The `orabpel` user name, password, and database service name specified when running the Oracle BPEL Process Manager schema scripts in ["Step 3: Run the Oracle BPEL Process Manager Schema Scripts"](#) on page 3-5
- The name of the host and port number on which the Oracle Database is installed.

Change:

```
<connection-url>jdbc:polite4@127.0.0.1:100:orabpel</connection-url>
<driver-class>oracle.jdbc.pool.jdbc.POLJDBCdriver</driver-class>
```

to:

```
<connection-url>jdbc:oracle:thin:orabpel/orabpel_  
password@hostname:port:database_service_name </connection-url>
<driver-class>oracle.jdbc.OracleDriver</driver-class>
```

4. Optionally add the following lines immediately below this if you want to use exception handling capabilities:

```
<exception-sorter-class-name>
org.jboss.resource.adapter.jdbc.vendor.OracleExceptionSorter
</exception-sorter-class-name>
```

5. Remove or comment out the following two lines. These lines apply only to Oracle Database Lite.

```
<!--
<user-name>system</user-name>
<password>manager</password>
-->
```

6. Repeat Step 3 through Step 5 to make the same changes in the `<no-tx-datasource>` section of `oracle-ds.xml`.
7. Save your changes.
8. Open `oracle-sample-bpel-ds.xml` and repeat Step 3 through Step 5 to make the same changes *only* in the `<local-tx-datasource>` section; this file does not include a `<no-tx-datasource>` section.

9. Save your changes.

10. Back up the following file for the operating system you are using:

On...	Back Up...
Windows	■ C:\OraBPELPM\system\appserver\jboss\bin\run.bat
Solaris and Linux	■ /home/user_home/OraBPELPM/system/appserver/jboss/bin/run.sh

11. Open the file for the operating system you are using with a text editor.

12. Make the following changes for the JDBC thin driver.

On...	Make The Following Changes:
Windows	<p>1. Update JBOSS_CLASSPATH as follows:</p> <pre>set JBOSS_CLASSPATH=Oracle_Home\jdbc\lib\ojdbc14.jar;%JBOSS_CLASSPATH% ;%JAVAC_JAR%;% RUNJAR%;%POST_CLASSPATH%;</pre> <p>where <i>Oracle_Home</i> is the Oracle top-level directory (for example, C:\oracle\product\10.1.0\Db_1).</p>
Solaris and Linux	<p>1. Update JBOSS_CLASSPATH as follows:</p> <pre>JBOSS_CLASSPATH=\$ORACLE_HOME/jdbc/lib/ojdbc14.jar:\$JBOSS_CLASSPATH</pre> <p>where <i>\$ORACLE_HOME</i> is the Oracle top-level directory (for example, home/user_home/oracle/product/10.1.0/Db_1).</p>

---

**Note:** If the Oracle Database is installed remotely, you must copy the JAR file locally (for example, C:\temp\ojdbc14.jar) and add it to your path.

---

13. Save your changes.

### Configure the BEA WebLogic Application Server

1. Back up the following files for the operating system you are using:

On...	Back Up...
Windows	C:\OraBPELPM\domain_location\domain_name\config.xml
Solaris and Linux	/home/user_home/OraBPELPM/domain_location/domain_name/config.xml where: <ul style="list-style-type: none"> <li>■ <i>domain_location</i> is the name you specified in Step 8 on page 3-9</li> <li>■ <i>domain_name</i> is the name you specified in Step 7 on page 3-9</li> </ul>

2. Open the file for the operating system you are using with a text editor.

3. Enter the following details:

- The JDBC thin driver with the Oracle Database

- The `orabpel` user name, password, and database service name specified when running the Oracle BPEL Process Manager schema scripts in ["Step 3: Run the Oracle BPEL Process Manager Schema Scripts"](#) on page 3-5
- The name of the host and port number on which the Oracle Database is installed.

```
<JDBCConnectionPool CapacityIncrement="2"
DriverName="oracle.jdbc.OracleDriver"
MaxCapacity="15" LoginDelaySeconds="1"
Name="BPELServerPool"
ShrinkPeriodMinutes="15"
ShrinkingEnabled="true" SupportsLocalTransaction="true"
Targets="orabpelServer"
URL="jdbc:oracle:thin:orabpel/orabpel_password@hostname:port:database_service_
name" />
```

4. Remove the following line from the `JDBCConnectionPool` section. This line applies only to Oracle Database Lite.

```
Properties="user=system;password=manager"
```

5. Save your changes.

## Postinstallation Verification Tasks for Oracle BPEL Process Manager

[Table 2-4](#) on page 2-22 provides instructions for accessing the various components. [Table 2-4](#) enables you to verify your installation of Oracle BPEL Process Manager. Completing these steps confirms a fully functional installation of the various installed components.

---

**Note:** Note the following conventions when using [Table 2-4](#) on page 2-22:

- Substitute `C:\OraBPELPM` (for Windows installations) and `/home/user_home/OraBPELPM` (for Solaris installations) in the examples with the home directory name that you specified in the Choose Install Folder screen in Step 5 on page 3-7 for the JBoss Application Server or Step 5 on page 3-9 for the BEA WebLogic Application Server.
  - Substitute **Oracle - application\_server** in the Windows Start Menu with the JBoss Application Server or BEA WebLogic Application Server (for example, **Oracle - JBoss** or **Oracle - WebLogic**).
- 

## Globalization for Oracle BPEL Process Manager

[Table 3-4](#) describes the following globalization details:

**Table 3-4 Globalization Details**

Element	Description
Oracle BPEL Console and Oracle BPEL Server locales	See <a href="#">"Oracle BPEL Console and BPEL Server Locales"</a> on page 2-23 for details about supported languages.
Installation	Oracle BPEL Process Manager installation with the JBoss Application Server or BEA WebLogic Application Server is only in English.

## Directory Structure for Oracle BPEL Process Manager

Table 3–5 shows the directory structure that is created after completing the installation of Oracle BPEL Process Manager with the JBoss Application Server or BEA WebLogic Application Server.

**Table 3–5** *Directory Structure for Oracle BPEL Process Manager Installed Components*

This Directory	Contains...
bin	Oracle BPEL Server binary and script files.
docs	Javadocs and API documentation.
domains	The default domain, plus new domains you create.
install	BPEL installer-related files.
lib	Oracle BPEL Process Manager JAR files.
samples	All samples and associated files.
system	Application server files, classes, and logs.
user_projects (BEA WebLogic Application Server only)	Default base directory name for your BEA WebLogic domain. You accepted this default name or specified a different name in Step 8 on page 3-9 of Oracle BPEL Process Manager installation.

## Deinstallation Tasks for Oracle BPEL Process Manager

Follow these instructions to deinstall Oracle BPEL Process Manager.

- [On Windows Operating Systems](#)
- [On UNIX Operating Systems](#)

---

**Note:** The deinstallation does not remove files created after installation (for example, project files, server files, log files, and so on). You must manually remove these files and directories.

---

### On Windows Operating Systems

1. Select **Start > Programs > Oracle - *application\_server* > Oracle BPEL Process Manager 10.1.2 > Uninstall BPEL Process Manager**.

The Uninstall Oracle BPEL Process Manager 10.1.2.0.0 window appears.

2. Click **Uninstall**.

### On UNIX Operating Systems

1. Change directories to `$ORACLE_HOME/install/UninstallerData`.
2. Enter the following command:

```
./uninstall
```

The Uninstall Oracle BPEL Process Manager 10.1.2.0.0 window appears.

3. Click **Uninstall**.



---

# Installing Oracle BPEL Process Manager with the IBM WebSphere Application Server

This chapter provides the requirements and procedures for installing Oracle BPEL Process Manager with the IBM WebSphere Application Server.

This chapter contains these topics:

- [Overview](#)
- [System and Database Requirements](#)
- [Installation and Configuration](#)
- [Postinstallation Configuration of the IBM WebSphere Application Server](#)
- [Postinstallation Verification Tasks](#)
- [Workarounds, Limitations, and Unsupported Features](#)

**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 Adapters for Files, FTP, Databases, and Enterprise Messaging User's Guide*
- *Oracle Application Server Adapter Concepts*

## Overview

You can install and use Oracle BPEL Process Manager 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.

The following components are included with Oracle BPEL Process Manager:

- Oracle BPEL Server—the server to which you deploy the BPEL process that you design and that contains human workflow, technology adapters, and notification services components.

- Oracle BPEL Console—the console from which you run, manage, and test your deployed BPEL process. Oracle BPEL Console provides a Web-based interface for management, administration, and debugging of processes deployed to Oracle BPEL Server.
- JDeveloper BPEL Designer — a graphical and user-friendly way to model, edit, design, and deploy BPEL processes.

## System and Database Requirements

[Table 4–1](#) describes the system requirements for using Oracle BPEL Process Manager with the IBM WebSphere Application Server.

**Table 4–1 Oracle BPEL Process Manager System Requirements**

Element	Requirement
IBM WebSphere Application Server	Version 5.1.1 with fix packs IC 45152 and IY 59675
Oracle BPEL Process Manager	Version 10.1.2.0.2
Web browsers	Internet Explorer 6.0 or Mozilla Firefox 5.0
Operation systems	Microsoft Windows XP, Microsoft Windows 2000, and Linux 2.4.1  <b>Note:</b> See the IBM Web site for additional details about using these operating systems with the IBM WebSphere Application Server.
Dehydration store database	Oracle Database 10.1.0.5

## Installation and Configuration

This section contains the following topics:

- [Step 1: Install the Oracle Database](#)
- [Step 2: Create the Oracle BPEL Process Manager Schema in the Oracle Database](#)
- [Step 3: Install and Configure IBM WebSphere Application Server Version 5.1.1](#)

---

---

**Note:** Oracle Database Lite is automatically installed with the Oracle BPEL Process Manager for Developers install type described in this chapter. However, you *cannot* use Oracle Database Lite as the dehydration store.

---

---

### Step 1: Install the Oracle Database

Follow these instructions to install Oracle Database 10g.

---

---

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

---

---

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, 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 again:

```
SQL> STARTUP
```

10. Run the following script:

```
SQL> @ORACLE_HOME/rdbms/admin/utlrb.sql;
```

## Step 2: Create the Oracle BPEL Process Manager Schema in the Oracle Database

---

**Note:** The scripts to configure Oracle BPEL Process Manager on the IBM WebSphere Application Server require that the `JAVA_HOME` environment parameter be set prior to script execution.

---

1. Go to the following URL:

```
http://www.oracle.com/technology/software/products/ias/bpel/index.html
```

2. Go to the **Oracle BPEL Process Manager 10.1.2.0.2 for WebSphere (v5.1.1.x)** section.

Oracle BPEL Process Manager for IBM WebSphere Application Server is available on the Windows and Linux operating systems.

3. Download the Oracle BPEL Process Manager for IBM WebSphere Application Server file.
4. Unzip the file on the host on which the database is installed.
5. Create the schema in either of two ways:
  - [Automatically Create the Schema](#)
  - [Manually Create the Schema](#)

### Automatically Create the Schema

1. Note the following prerequisites for automatically creating the schema:

- The script runs *only* on Oracle Database 10g. See [Table 4–1](#) on page 4-2 for details.
  - The SQL\*Plus Client must be installed on the host from which to run the script.
  - The user that runs the script must have the SYSDBA privilege.
  - The script creates a tablespace named `orabpel` that cannot be modified. If a tablespace named `orabpel` already exists, it is left alone.
  - If a user named `orabpel` already exists in the `orabpel` tablespace, the user is dropped and recreated.
2. Modify the following *mandatory* variables in the `Unzip_Location/cfg/db.properties` file:

Property	Description
<code>db.host</code>	The name or IP address of the host on which the database is installed
<code>db.servicename</code>	The service name of the database
<code>db.sypwd</code>	The password of the user (for example, <code>sys</code> ) with SYSDBA privileges
<code>db.username</code>	The user to be created in the <code>orabpel</code> schema
<code>db.userpwd</code>	The password for the user

3. Go to the `Unzip_Location/bin` directory.
4. Execute the `setupdb` script at the operating system command prompt:

---

**Note:** If using Linux, ensure that the `setupdb` script mentioned in this step and `setup` script mentioned in Step 11 on page 4-7 are executed by the same user who installed Oracle BPEL Process Manager. If a `Permission Denied` message appears while running the scripts, grant the necessary permissions to that user.

---

For...	Execute...
Windows XP	<code>setupdb.bat</code>
Linux	<code>setupdb.sh</code>

Installation progress is logged to the `Unzip_Location/bin/logs/db.log` file.

### Manually Create the Schema

1. Read the `README.txt` file in the `Unzip_Location/dbs` directory for details on manually creating the schema in the database.

## Step 3: Install and Configure IBM WebSphere Application Server Version 5.1.1

---

**Note:** These instructions assume you have obtained IBM WebSphere Application Server version 5.1.0 and version 5.1.1 upgrade software.

---

1. Review the following prerequisites before installing the IBM WebSphere Application Server.
  - If installing on Linux, visit the following URL for instructions on creating groups and users *prior* to installing the IBM WebSphere Application Server.  
<http://www-128.ibm.com/developerworks/linux/library/l-ss3pi-installwas5/>
  - If installing on Windows, ensure that you have administrative privileges.
2. Install IBM WebSphere Application Server version 5.1.0.
3. Upgrade IBM WebSphere Application Server to version 5.1.1 by downloading and applying the following fix packs from IBM support:
  - Refer to the following URL for download and configuration instructions for fix APAR IC 45152 for IBM WebSphere Application Server MQ version 5.3  
<http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg24010287>
  - Refer to the following URL for download and configuration instructions for fix APAR IY 59675 for IBM WebSphere Application Server version 5.1 with FixPack1  
<http://www-1.ibm.com/support/docview.wss?uid=swg1IY59675>
4. Install Oracle BPEL Process Manager for Developers version 10.1.2.0.2 into any directory on the same host on which the IBM WebSphere Application Server is installed.

---

**Note:** Do *not* start Oracle BPEL Server from the Windows Start Menu or by running the `SOA_Oracle_Home/integration/orabpel/bin/startorabpel` script. These actions are not supported.

---

5. Modify the following *mandatory* installation properties in the `Unzip_Location/cfg/constants.properties` file.

---

**Note:** Mandatory properties cannot be commented out or contain blank values. Failure to follow this requirement results in errors during installation.

---

Property	Description
WAS_HOME	The directory path in which IBM WebSphere Application Server is installed
BPEL_HOME	The directory path in which Oracle BPEL Process Manager is installed
BPEL_INSTALL_ROOT	The directory containing the JDK of Oracle BPEL Process Manager. For example, if the Oracle BPEL Process Manager home directory is <code>C:/OraBPELPM_1/integration/orabpel</code> , then <code>BPEL_INSTALL_ROOT</code> is typically <code>C:/OraBPELPM_1</code> .
BS_PORT	The IBM WebSphere Application Server boot strap port
SERVER_NAME	The name of the IBM WebSphere Application Server instance that runs Oracle BPEL Process Manager. The default value is <code>oracleBPELServer</code> , but this can be any valid name.

Property	Description
ORACLE_JDBC_DRIVER_PATH	The JDBC driver path (odjbc14.jar)
DRIVERTYPE	The JDBC driver type (thick or thin)
HOSTNAME	The name or IP address of the host on which Oracle Database 10g is installed
PORTNUMBER	The port number of the host on which Oracle Database 10g is installed
SID	The service name of Oracle Database 10g
JAASAUTHUSERID	The user name for accessing the Oracle BPEL Process Manager schema
JASAUTHPASSWD	The password of the user name for accessing the Oracle BPEL Process Manager schema
VHPORTS1	The virtual host or HTTP port number
VHPORTS2	The virtual host or HTTP port number
ISIMBEDDED	The Boolean value to specify for the messaging type

6. If you want to use the following optional properties, uncomment them and specify values.

---

**Note:** Optional properties are commented by default. If you uncomment these properties, they cannot contain blank values. Change the default values for the four properties appropriately. Failure to follow this requirement results in errors during installation.

---

Property	Description
PROXYSET	Indicates if 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

7. If you are using MQ as the messaging middleware, uncomment and specify values for the following properties.

---

**Note:** MQ properties are commented by default. If you uncomment these properties, they cannot contain blank values. Failure to follow this requirement results in errors during installation.

---

Property	Description
QUEUEMANAGER	The name of the queue manager that provides access to the queues
HOST	The name of the host on which the WebSphere MQ queue manager runs

Property	Description
PORT	The TCP/IP port number used for connections to the WebSphere MQ queue manager
CHANNEL	The name of the channel used for connections to the WebSphere MQ queue manager
TRANSPORTTYPE	The communication channel to connect to the queue manager
CCSID	The coded character set identifier for use with the WebSphere MQ queue manager
INVOKERBASEQUEUENAME	The name of the invoker base queue to which messages are sent
WORKERBASEQUEUENAME	The name of the worker base queue to which messages are sent
ALIAS	The name for the component-managed authentication alias
USERNAME	The user name for accessing the queue
PASSWORD	The password for the user name

8. Start Server1 by following the startup instructions in the IBM WebSphere Application Server administration documentation.

Server1 is the default IBM WebSphere Application Server instance that runs the WebSphere Administrative Console. This server has to be started before the user can access the WebSphere Administrative Console at the following URL:

`http://hostname:9090/admin`

Note that the instructions in this chapter assume the default name of Server1 is used for the instance name.

9. Edit the *Unzip\_Location/bin/wsadmin.properties* file to set the `com.ibm.ws.scripting.traceFile` property and `com.ibm.ws.scripting.validationOutput` property to any preferred writable location with the full path and file name. The preferred file name for `com.ibm.ws.scripting.traceFile` is `wstrace.trace`. The preferred file name for `com.ibm.ws.scripting.validationOutput` is `wstrace.out`. When installation and configuration are complete, these files can be checked.
10. Remain in the *Unzip\_Location/bin* directory.
11. Execute the following script at the operating system command prompt:

For...	Execute...
Windows XP	<code>setup.bat</code>
Linux	<code>setup.sh</code>

This creates Oracle BPEL Server on the IBM WebSphere Application Server and configures the required applications, database connections, and adapters.

Installation progress is logged to the *Unzip\_Location/bin/logs/output.log* file.

12. If using Linux, enter the `sudo` password when prompted at the end of script execution. This is required for additional dependent files to be copied to the IBM WebSphere Application Server.

Script execution completes.

13. Start Oracle BPEL Server (represented by the name `oracleBPELServer`) by following the startup instructions in the IBM WebSphere Application Server administration documentation.

---

**Note:** Do *not* start Oracle BPEL Server from the Windows Start Menu or by running the `SOA_Oracle_Home/integration/orabpel/bin/startorabpel` script. These actions are not supported.

---

14. Restart Server1.

## Postinstallation Configuration of the IBM WebSphere Application Server

While configuring Oracle BPEL Process Manager on the IBM WebSphere Application Server, you can use either the embedded messaging feature of Websphere or the external MQ for JMS feature:

- To use embedded messaging, you set the `ISIMBEDDED` property to `true` in the `constants.properties` configuration file. The queue connection factories and queues required for Oracle BPEL Process Manager are created under **WebSphere Queue Connection Factories** in the WebSphere Administrative Console.
- To use external MQ for JMS, you set the `ISIMBEDDED` property to `false` in the `constants.properties` configuration file. The queue connection factories and queues required for Oracle BPEL Process Manager are created under **WebSphere MQ Queue Connection Factories** in the WebSphere Administrative Console.

If you change the `ISIMBEDDED` setting *after* running the `setup` script, you must manually delete several configuration properties.

1. If the message middleware type changes as described below, make the following changes:

If the Messaging Middleware is Changed From...	Go to the WebSphere Console and Perform the Following Tasks...
External MQ for JMS <i>to</i> Embedded	Delete the following: <ol style="list-style-type: none"><li>1. <b>BPELInvokerQueueFactory</b> and <b>BPELWorkerQueueFactory</b> under <b>WebSphere MQ Queue Connection Factories</b>.</li><li>2. <b>BPELInvokerQueue</b> and <b>BPELWorkerQueue</b> under <b>WebSphere MQ Queue Destinations</b>.</li><li>3. <b>InvokerBeanPort</b> and <b>WorkerBeanPort</b> from the listener ports.</li></ol>
Embedded <i>to</i> External MQ for JMS	Delete the following: <ol style="list-style-type: none"><li>1. <b>BPELInvokerQueueFactory</b> and <b>BPELWorkerQueueFactory</b> under <b>WebSphere Queue Connection Factories</b>.</li><li>2. <b>BPELInvokerQueue</b> and <b>BPELWorkerQueue</b> under <b>WebSphere Queue Destinations</b>.</li><li>3. <b>InvokerBeanPort</b> and <b>WorkerBeanPort</b> from the listener ports.</li></ol>

2. If you manually install any new adapters, add the directory path of the adapter's JAR file to the shared libraries classpath in the WebSphere Administrative Console under **Environment > Shared Libraries > orabpel\_sl**.

You must perform this action only for adapters you intend to use with Oracle BPEL Process Manager.

3. Change the default values configured by the `setup` script for the adapter J2C connection factories to values appropriate to your environment in the WebSphere Administrative Console under **Resources > Resource Adapters > *adapter\_type* > J2C Connection Factories**.

The J2C connection factories are created for the resource adapters. These adapters are created and configured as follows:

- Resource adapters (file, FTP, and so on) are created using the JACL script.
- J2C connection factories are created for each resource adapter.

To connect to the appropriate resource, the server uses the J2C connection factories. For example, you create a J2C connection factory with the following attributes for the database adapter:

- Name of BPELSamples
- JNDI name of `eis/DB/BPELSamples`
- Connection string of `jdbc:oracle:thin:@localhost:1521:orcl`

This connection string is automatically configured to use the default values as mentioned above. You must change the string to point to a proper database (if it is different from the default value) under **Resources > Resource Adapters > *adapter\_type* > J2C Connection Factories** before using the database adapter.

4. Change the default value of none for the adapter J2C connection factories authentication alias to a value appropriate to your environment.

## Postinstallation Verification Tasks

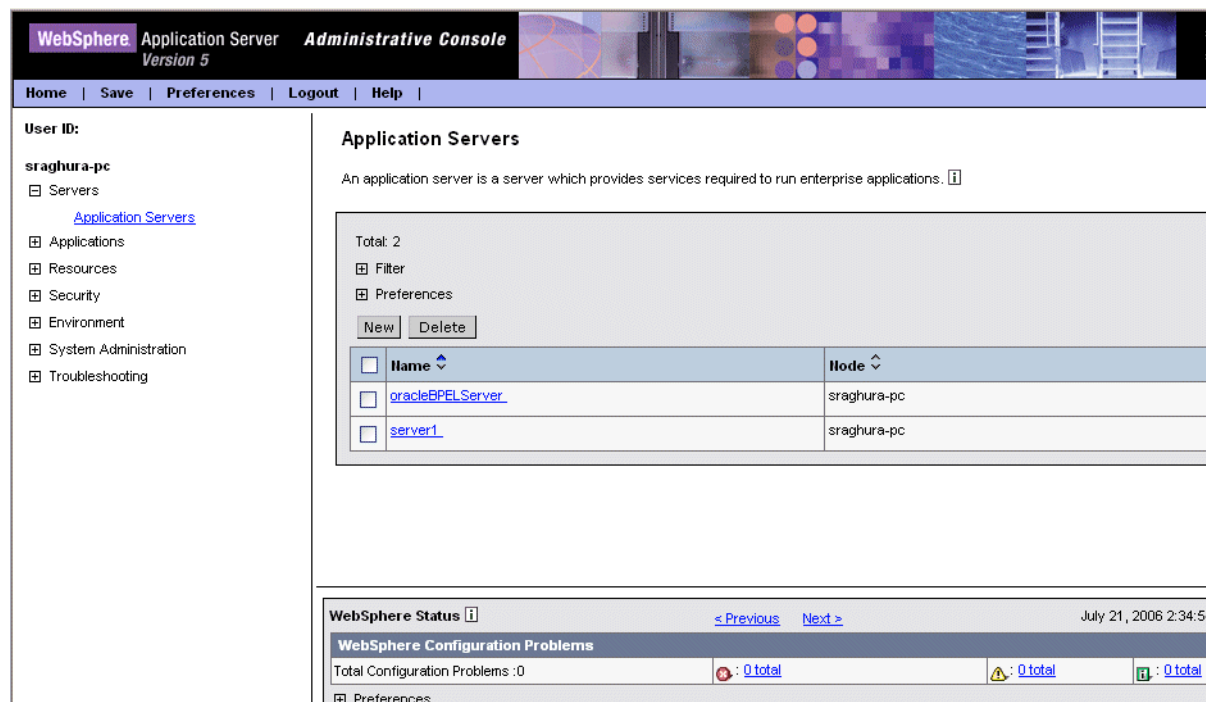
This section describes postinstallation verification tasks to perform.

This section contains the following topics:

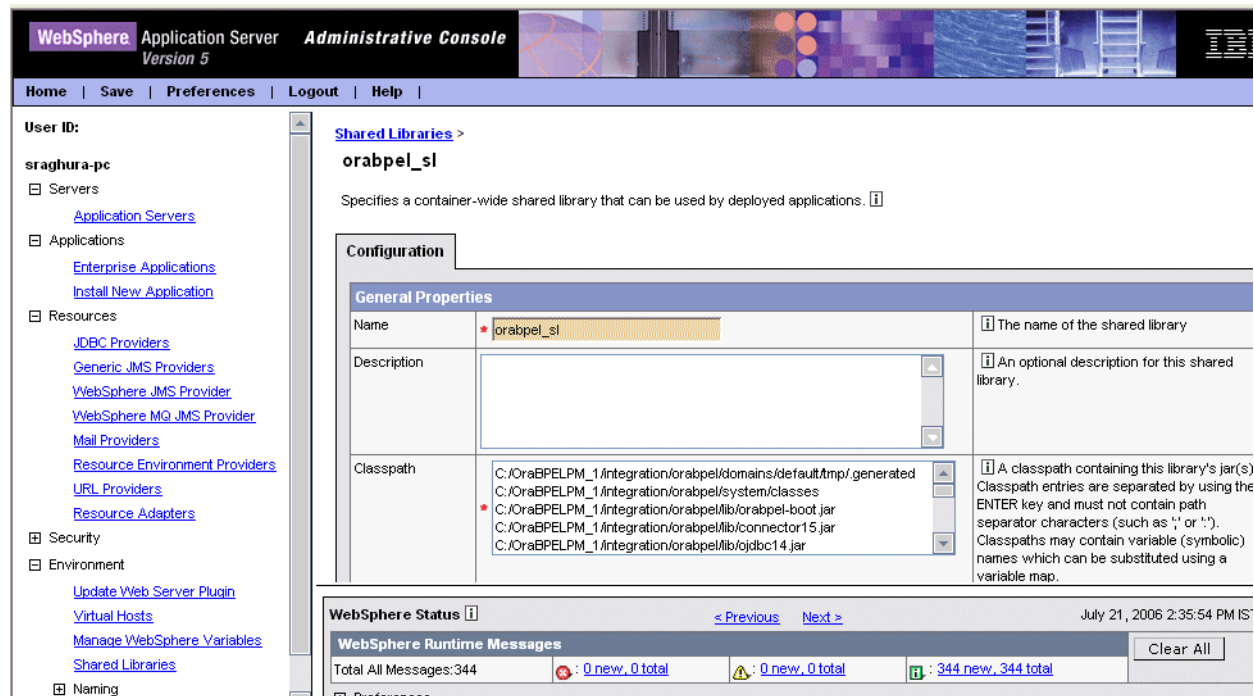
- [Verifying Installation from the WebSphere Console](#)
- [Verifying the SelectAllByTitle Sample for the Database Adapter](#)
- [Verifying the OrderBooking Tutorial Sample](#)
- [Running Adapter Samples](#)

### Verifying Installation from the WebSphere Console

1. Log in to the WebSphere Console and verify that **oracleBPELServer** is installed under **Servers > Application Servers**.



- Verify that the **orabpel\_sl** shared library has been created under **Environment > Shared Libraries**.



- Verify that **BPELDataSourceProvider** and **BPELXADDataSourceProvider** are created for **oracleBPELServer** under **Resources > JDBC Providers**.



**WebSphere Application Server Administrative Console**  
Version 5

Home | Save | Preferences | Logout | Help

User ID: sraghura-pc

**JDBC Providers**

JDBC providers are used by the installed applications to access data from databases. ⓘ

Total: 2

Scope: Cell=sraghura-pc, Node=sraghura-pc, Server=oracleBPELServer

Cell: sraghura-pc  
Node: sraghura-pc  
Server: oracleBPELServer

Apply

Filter  
Preferences  
New Delete

<input type="checkbox"/>	Name	Description
<input type="checkbox"/>	<a href="#">BPELDataSourceProvider</a>	Oracle JDBC Driver
<input type="checkbox"/>	<a href="#">BPELXADataSourceProvider</a>	Oracle JDBC Driver (XA)

4. Test the database connectivity of the created data sources under **Resources > JDBC Providers > BPELDataSourceProvider** and **Resources > JDBC Providers > BPELXADataSourceProvider**.

**WebSphere Application Server Administrative Console**  
Version 5

Home | Save | Preferences | Logout | Help

User ID: sraghura-pc

**Message(s)**

Test Connection for datasource BPELServerDataSourceWorkflow on server server1 at node sraghura-pc was successful.

**JDBC Providers > BPELDataSourceProvider > Data Sources**

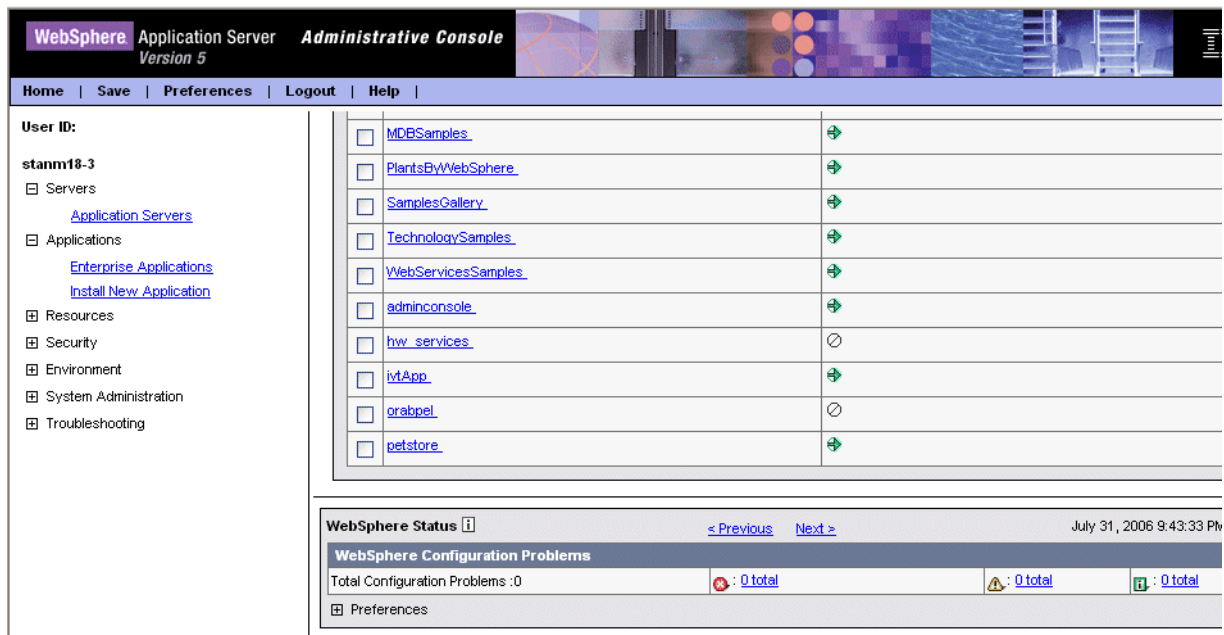
Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. ⓘ

Total: 1

Filter  
Preferences  
New Delete Test Connection

<input type="checkbox"/>	Name	JNDI Name	Description	Category
<input type="checkbox"/>	<a href="#">BPELServerDataSourceWorkflow</a>	jdbc/BPELServerDataSourceWorkflow	New JDBC Datasource	

5. Verify that the **orabpel** and **hw\_services** application enterprise archives (EARs) are installed under **Applications > Enterprise Applications**.



## Verifying the SelectAllByTitle Sample for the Database Adapter

1. Log into 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**.
4. Select **Start > All Programs > Oracle - Oracle\_Home > Oracle BPEL Process Manager > Developer Prompt**.
5. Change directories to the following:

```
tutorials/122.DBAdapter/SelectAllByTitle
```

6. Run the following command:

```
obant
```

This compiles and deploys all projects dependent upon this tutorial. Projects are deployed into `Oracle_Home/bpel/domains/domain_name/deploy`.

7. Select **Start > All Programs > Oracle - Oracle\_Home > Oracle BPEL Process Manager > BPEL Console**.
8. Click **SelectAllByTitle** in the **Deployed BPEL Processes** list.
9. Enter the movie title as input on the Initiate page.
10. Click **Post XML Message**.
11. View the results and inspect the instance.

## Verifying the OrderBooking Tutorial Sample

The Web application DTD link in the `web.xml` files included with Oracle BPEL Process Manager must be modified before deployment to the IBM WebSphere Application Server.

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 BPEL Process Manager > Developer Prompt**.

4. Change directories to the following:

```
tutorials/127.OrderBookingTutorial
```

5. Start SQL\*Plus and execute the following script:

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

This creates the required sample tables in the database.

6. Run the following command:

```
obant
```

This compiles and deploys all projects dependent upon this tutorial. Projects are deployed into `Oracle_Home/bpel/domains/domain_name/deploy`. However, EAR files for `CreateOrderBookingUI` and `SelectManufacturingUI` must be manually deployed into the IBM WebSphere Application Server.

7. Change directories to `PriceQuote/CreateOrderBookingUI`.
8. Note the `CreateOrderBookingUI.ear` file that was created when you ran `obant` in Step 6.
9. Select **Install Application** in the WebSphere Administrative Console to deploy the `CreateOrderBookingUI.ear` file to the IBM WebSphere Application Server.

Access the WebSphere Administrative Console at the following URL:

```
http://hostname:9090/admin
```

10. Select **oracleBPELServer** as the deployment target.
11. Repeat Steps 8 through 10 for the `PriceQuote/SelectManufacturingUI/SelectManufacturingUI.ear` file.
12. Run the OrderBooking Tutorial by following steps e through h in `127.OrderBookingTutorial/Notes/Complete_RunSteps.pdf`.

## Running Adapter Samples

Ensure that the J2C connection factory properties shown in [Table 4-2](#) are modified.

**Table 4–2 J2C Connection Factory Properties**

Adapter Type	Properties
Database	<ul style="list-style-type: none"> <li>driverClassName</li> <li>connectionString</li> </ul>
FTP	<ul style="list-style-type: none"> <li>host</li> <li>port</li> </ul> <p><b>Note:</b> A new authentication alias must be created for connecting to the FTP server.</p>
Applications	<ul style="list-style-type: none"> <li>connectionString</li> <li>userName</li> <li>password</li> </ul>
AQ	<ul style="list-style-type: none"> <li>connectionString</li> <li>userName</li> <li>password</li> </ul>
JMS	<ul style="list-style-type: none"> <li>connectionFactoryLocation</li> <li>isTopic</li> <li>isTransacted</li> </ul> <p><b>Note:</b> The <code>istopic</code> property must be set to <code>false</code> for queues. The <code>isTransacted</code> property must be set to <code>false</code> for the JMS samples to run.</p>

## Workarounds, Limitations, and Unsupported Features

The section describes limitations and unsupported features for Oracle BPEL Process Manager 10.1.2.0.2 on IBM WebSphere Application Server version 5.1.1.

### Workarounds

- Human workflow transaction rollback error

The following exception may appear when accessing the Oracle BPEL Worklist Application. This exception can be ignored.

```
[4/21/06 12:01:04:865 PDT] 369596c7 LocalTranCoor E WLTC0033E: Resource
jdbc/BPELServerDataSourceWorkflow rolled back in cleanup of unresolved
LocalTransactionContainment
[4/21/06 12:01:04:896 PDT] 369596c7 LocalTranCoor E WLTC0032E: One or more
resources rolled back. An unresolved LocalTransactionContainment had an
unresolved action of rollback.
[4/21/06 12:01:04:865 PDT] 369596c7 WebAppTransac E WTRN0043I: LocalTransaction
rolled-back due to setRollbackOnly.
[4/21/06 12:01:04:943 PDT] 369596c7 WebGroup E SRVE0026E: LocalTransaction
rolled-back due to setRollbackOnly].
com.ibm.ws.LocalTransaction.RolledbackException
at
com.ibm.ws.LocalTransaction.LocalTranCoordImpl.cleanup(LocalTranCoordImpl.java:
1073)
at com.ibm.ws.webcontainer.webapp.WebAppTransactionCollaborator.postInvoke
(WebAppTransactionCollaborator.java:249)
at com.ibm.ws.webcontainer.webapp.WebAppRequestDispatcher.dispatch(WebAppRequest
Dispatcher.java:708)
at com.ibm.ws.webcontainer.webapp.WebAppRequestDispatcher.forward(WebAppRequestD
ispatcher.java:200)
```

- Remote method invocation (RMI) calls into Oracle BPEL Process Manager fail on the IBM WebSphere Application Server. The IIOP configuration and RMI invocation of processes are not currently working.

- When shutting down Oracle BPEL Server, `IllegalAccessError` errors display in the server logs. These errors can be ignored.

- Invoking any external Web service results in the following error:

```
java.lang.ClassCastException:org.apache.axis.transport.http.HTTPSender
```

Find the fix for this error at the following URL:

<http://www-1.ibm.com/support/docview.wss?rs=180&uid=swg1PK19407>

1. Stop Server1 and Oracle BPEL Server.
2. Go `WebSphere_Home/lib/wsif.jar`.
3. Remove the `client-config.wsdd` file.
4. Restart the servers.
5. Run the tests.

- The while loop sample does not run.

Find the fix for this error at the following URL:

<http://www-1.ibm.com/support/docview.wss?rs=180&uid=swg1PK19407>

1. Stop Server1 and Oracle BPEL Server.
2. Go `WebSphere_Home/lib/wsif.jar`.
3. Remove the `client-config.wsdd` file.
4. Restart the servers.
5. Run the tests.

## Limitations

Note the following limitations:

- Oracle BPEL Process Manager 10.1.2.0.2 integration on IBM WebSphere Application Server version 5.1.1 has been tested on the following platforms:
  - Windows XP
  - Linux
- Oracle Database 10g version 10.1.0.5 has been tested as the dehydration store.
- Oracle Database Lite is not supported as the dehydration store.
- All samples except for the following have been tested:
  - Human workflow
  - SOAP attachment

## Unsupported Features

The following Oracle BPEL Process Manager features are not supported:

- Sensors

- Oracle Application Server Integration B2B and Oracle Application Server Integration InterConnect interoperability
- Oracle BPEL Portlets

---

# Oracle BPEL Process Manager Migration

---

This chapter describes how to migrate data and processes from an Oracle BPEL Process Manager release 10.1.2.0.0 installation to release 10.1.2.0.2.

This chapter contains the following sections:

- [Migration Information for Oracle BPEL Process Manager for Developers](#)
- [Migrating Oracle BPEL Process Manager for OracleAS Middle Tier](#)

---

**Note:** The migration procedures in this chapter are only for moving from a release 10.1.2.0.0 installation to release 10.1.2.0.2.

If you are performing a completely new installation of Oracle BPEL Process Manager, do not follow the instructions in this chapter. Instead, see [Chapter 2, "Oracle BPEL Process Manager Installation"](#) for preinstallation, installation, postinstallation, and postinstallation verification procedures.

---

## Migration Information for Oracle BPEL Process Manager for Developers

You cannot migrate Oracle BPEL Process Manager for Developers release 10.1.2.0.0 to 10.1.2.0.2. In addition, if Oracle Database Lite is your dehydration store, you cannot migrate it to an Oracle Database or to Oracle Application Server Metadata Repository release 10.1.2.0.2.

Instead, install Oracle BPEL Process Manager for Developers release 10.1.2.0.2. You can then open JDeveloper BPEL Designer 10.1.2.0.2 and point it to the source files of your 10.1.2.0.0 projects. You can then redeploy your projects with JDeveloper BPEL Designer or obant and proceed.

**See Also:** ["Step 9: Opening JDeveloper BPEL Designer 10.1.2.0.0 Projects in 10.1.2.0.2"](#) on page 5-8

## Migrating Oracle BPEL Process Manager for OracleAS Middle Tier

Perform the following procedures to migrate Oracle BPEL Process Manager for OracleAS Middle Tier:

- [Step 1: Understanding What is Meant By Oracle BPEL Process Manager Migration](#)
- [Step 2: Reviewing Migration Requirements](#)
- [Step 3: Preparing to Migrate](#)
- [Step 4: Migrating the Data in the Dehydration Store Database](#)

- [Step 5: Installing a New Oracle Application Server Middle Tier and Oracle BPEL Process Manager](#)
- [Step 6: Configuring the 10.1.2.0.2 Environment](#)
- [Step 7: Testing Process Instances](#)
- [Step 8: Redeploying Processes If They Failed to Be Loaded by Oracle BPEL Server 10.1.2.0.2](#)
- [Step 9: Opening JDeveloper BPEL Designer 10.1.2.0.0 Projects in 10.1.2.0.2](#)

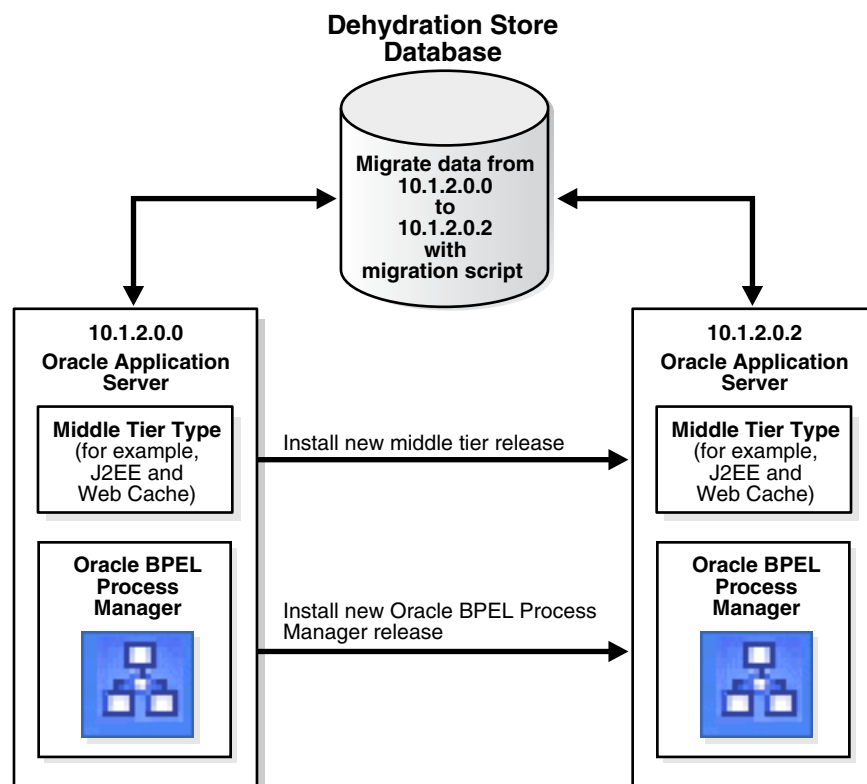
## Step 1: Understanding What is Meant By Oracle BPEL Process Manager Migration

Oracle BPEL Process Manager migration consists of the following main tasks:

- Migrating BPEL data from release 10.1.2.0.0 to 10.1.2.0.2 in the same dehydration store database
- Installing new releases of Oracle Application Server middle tier and Oracle BPEL Process Manager on the same host as was used in 10.1.2.0.0.

[Figure 5–1](#) provides an overview of this process.

**Figure 5–1 Oracle BPEL Process Manager Migration Overview**



See ["Step 2: Reviewing Migration Requirements"](#) for complete details.

## Step 2: Reviewing Migration Requirements

Review the following Oracle BPEL Process Manager migration requirements:

- You must have at *least* release 10.1.2.0.0 Patch 2 (4496111) of Oracle BPEL Process Manager installed in order to migrate data in the dehydration store database.



- If your Oracle BPEL Process Manager installation is currently release 10.1.2.0.0, you must apply Patch 1 (4406640) and Patch 2 (4496111) before migrating.
- If your Oracle BPEL Process Manager installation is currently release 10.1.2.0.0 Patch 1 (4406640), you must apply Patch 2 (4496111) before migrating.

To determine which patch version you are using:

1. Check if your Oracle BPEL Process Manager installation includes an *Oracle\_Home\ .patch\_storage* directory.
2. Look inside the *.patch\_storage* directory to see which subdirectories are included:

If This Subdirectory Exists...	Then...
4406640	Patch 1 is installed
4496111	Patch 2 is installed

3. Verify that these directories include content (files and subdirectories) and are not empty. If they do, these patches have been successfully installed.

**See Also:** One of the following locations if you need to download and install Patch 1 (4406640) and Patch 2 (4496111):

- <http://metalink.oracle.com/>
- <http://www.oracle.com/technology/bpel>
- You *must* install a new Oracle Application Server middle tier release 10.1.2.0.2 (for example, J2EE and Web Cache or Portal and Wireless) to use with Oracle BPEL Process Manager 10.1.2.0.2.
- You *must* install a new Oracle BPEL Process Manager for OracleAS Middle Tier release 10.1.2.0.2 installation type.
- You can only migrate Oracle BPEL Process Manager on the same host; migrating to another host is not supported.
- You cannot have any process instances running on Oracle BPEL Server release 10.1.2.0.0; all processes must have completed before migrating. Do not start any process instances prior to migrating.

---

**Note:** Note that the migration of any in-flight instances or any other instances waiting on task actions to complete is not currently supported.

---

### Step 3: Preparing to Migrate

1. Ensure that all process instances have completed running in Oracle BPEL Server release 10.1.2.0.0. Running process instances cannot be migrated.
2. Back up the Oracle Database used as the dehydration store with Oracle BPEL Process Manager release 10.1.2.0.0.
3. Stop Oracle BPEL Server release 10.1.2.0.0.

## Step 4: Migrating the Data in the Dehydration Store Database

Follow these procedures to migrate the Oracle BPEL Process Manager data in the dehydration store database from release 10.1.2.0.0 to 10.1.2.0.2. If no in-flight instances are detected, migration completes successfully and a message is displayed. Otherwise, the migration script terminates and migration does not occur.

1. Download Patch 5041642 from *OracleMetaLink*:

<http://metalink.oracle.com>

This patch includes a SQL\*Plus migration script named `migrate_OC4J_101200P2_101202_oracle.sql`. This script enables you to migrate the data from release 10.1.2.0.0 to 10.1.2.0.2.

---

---

**Note:** Do *not* use the upgrade script named `upgrade_202_203_oracle.sql` that is located in the `sql` directory on the Oracle BPEL Process Manager CD-ROM. This script is only for upgrading a *completely new* Oracle Application Server Metadata Repository installed with Oracle Application Server Infrastructure.

---

---

2. Log in to SQL\*Plus and connect to the Oracle Database as the `orabpel` user:

```
CONNECT orabpel/orabpel_password
```

3. Execute the migration script:

```
@migrate_OC4J_101200P2_101202_oracle.sql
```

If migration is successful, the following message appears:

```
Completed migration procedure.
Please refer to the installation guide for more information
on verifying the migrated instances and completing the other
required steps in the migration process.
```

If migration is unsuccessful, the following message appears:

```
In Flight instances detected. No instances will be migrated.
Please refer to the installation guide for more information
on migration restrictions.
```

## Step 5: Installing a New Oracle Application Server Middle Tier and Oracle BPEL Process Manager

This step provides an overview of the installation instructions described in the *Oracle Application Server Installation Guide* for your operating system and in the *Oracle BPEL Process Manager Installation Guide*.

1. Stop all OC4J Oracle Application Server components (including Oracle Enterprise Manager 10g Application Server Control Console) in Oracle BPEL Process Manager 10.1.2.0.0.
2. Copy the 10.1.2.0.2 `staticports.ini` file from the following location on the Oracle Application Server CD-ROM or DVD-ROM to a location on your hard drive. This file is described in the *Oracle Application Server Installation Guide* for your operating system.

Operating System	Media	Location of staticports.ini File
Solaris	CD-ROM	Disk 1: <i>mount_point/1012disk1/stage/Response/staticports.ini</i>
	DVD-ROM	<i>mount_point/application_server/stage/Response/staticports.ini</i>
Linux	CD-ROM	Disk 1: <i>mount_point/1012disk1/stage/Response/staticports.ini</i>
	DVD-ROM	<i>mount_point/application_server/stage/Response/staticports.ini</i>
Windows	CD-ROM	Disk 1: <i>CD_ROM_Drive\stage\Response\staticports.ini</i>
	DVD-ROM	<i>DVD_Drive:\application_server\stage\Response\staticports.ini</i>

3. Open the 10.1.2.0.0 *Oracle\_Home\install\portlist.ini* file.
4. Modify the 10.1.2.0.2 *staticports.ini* file to include the same port values as used in the 10.1.2.0.0 *Oracle\_Home\install\portlist.ini* file.

---

**Note:** The following line in the 10.1.2.0.2 *staticports.ini* file:

Oracle Management Agent port

corresponds to the following line in the 10.1.2.0.0 *portlist.ini* file:

Enterprise Manager Agent port

---

5. Save your changes to the *staticports.ini* file.
6. Install a *new* 10.1.2.0.2 Oracle Application Server middle tier installation type. In particular, ensure that you:
  - Install the same middle tier installation type (for example, J2EE and Web Cache) as was used for 10.1.2.0.0.
  - Install this middle tier installation type into a *new* Oracle home directory on the same host as the 10.1.2.0.0 Oracle Application Server middle tier.
  - Select **Manual** and enter the full path to the 10.1.2.0.2 *staticports.ini* file you modified in Step 4 on the Specify Port Configuration Options window during Oracle Universal Installer installation. If you do not specify the full path to the file, the installer cannot find the file. The installer then assigns default ports for all the components without displaying any warning.
7. Install a *new* 10.1.2.0.2 Oracle BPEL Process Manager for OracleAS Middle Tier installation type. In particular, ensure that you:
  - Install into the same Oracle home directory on the same host (using the same port number) in which you installed the new 10.1.2.0.2 Oracle Application Server middle tier in Step 6.
  - Point to the Oracle Database you migrated in ["Step 4: Migrating the Data in the Dehydration Store Database"](#).

## Step 6: Configuring the 10.1.2.0.2 Environment

1. Perform the following step based on the type of Oracle BPEL Process Manager domains you used in 10.1.2.0.0:

For this Domain Type...	See Step...
default	2
Any custom, site-specific domains you created in 10.1.2.0.0	3

2. Follow these steps for the `default` domain. You do not need to recreate the `default` domain, because this was automatically created during 10.1.2.0.2 installation.
  - a. Use a text editor to enter any configuration settings that you used in Oracle BPEL Process Manager release 10.1.2.0.0 into the following 10.1.2.0.2 domain files:

**In `Oracle_Home\integration\orabpel\domains\default\config`**

```
domain.xml
log4j-config.xml
message-handlers.xml
quartz-config.properties
resources_jdbc_quartz.properties
xpath-functions.xml
```

- b. Go to Step 4.
3. Follow these steps for any custom, site-specific domains you created in 10.1.2.0.0.
    - a. Start Oracle BPEL Server 10.1.2.0.2.
    - b. Log in to the 10.1.2.0.2 Oracle BPEL Admin Console and click the **BPEL Domains** tab.
    - c. Create domains with the exact same names as those you created in Oracle BPEL Process Manager release 10.1.2.0.0. For example, if your previous release had custom, site-specific domains named `sales`, `marketing`, and `human_resources`, create those three again.
    - d. Return to Step 2a.
    - e. Go to the appropriate custom, site-specific domain name directory, substituting the `default` domain name in the directory path with the site-specific domain name (for example, `sales`, `marketing`, and `human_resources`).
    - f. Enter any configuration settings that you used in Oracle BPEL Process Manager release 10.1.2.0.0 into the 10.1.2.0.2 domain files.
    - g. Go to Step 4.
  4. Perform the following additional configuration tasks:
    - a. Use a text editor to enter any configuration settings that you used in Oracle BPEL Process Manager release 10.1.2.0.0 into the following 10.1.2.0.2 files:

In <i>Oracle_Home</i> \integration\orabpel\system\config	In <i>Oracle_Home</i> \j2ee\OC4J_BPEL\config	In <i>Oracle_Home</i> \j2ee\OC4J_BPEL\application-deployments\default
admin-auth.properties	application.xml	AppsAdapter\oc4j-ra.xml
collaxa-config.xml	data-sources.xml	AqAdapter\oc4j-ra.xml
log4j-config.xml	http-web-site.xml	DbAdapter\oc4j-ra.xml
	jazn-data.xml	FileAdapter\oc4j-ra.xml
	jazn.xml	FtpAdapter\oc4j-ra.xml
	jms.xml	IcAdapter\oc4j-ra.xml
	oc4j.properties	JmsAdapter\oc4j-ra.xml
	rmi.xml	
	server.xml	

- b. Copy any custom class files located in *Oracle\_Home*\integration\orabpel\system\classes to the same directory in 10.1.2.0.2.
- c. Copy any custom WSDL, XSD, and XML files located in *Oracle\_Home*\integration\orabpel\system\xml\lib to the same directory in 10.1.2.0.2.
- d. Ensure that you redeploy any application user interface and Enterprise Java Beans (EJB) EAR files located in *Oracle\_Home*\j2ee\OC4J\_BPEL\applications into 10.1.2.0.2.
- e. Manually enter any configuration settings that you used in the 10.1.2.0.0 *Oracle\_Home*\j2ee\OC4J\_BPEL\config\opmn.xml file into the 10.1.2.0.2 release (for example, any heap size changes you made).

---

**Note:** You must manually reconfigure all Oracle BPEL Console or Oracle BPEL Admin Console settings instead of copying the text files associated with these settings (for example, collaxa-config.xml). This is because these text files often include absolute directory paths for settings. These paths no longer work with the new Oracle home directories into which you installed Oracle Application Server middle tier and Oracle BPEL Process Manager.

---

5. Stop Oracle BPEL Server if it is running. If you created any custom, site-specific domains, the server is likely still running.
6. Delete the *Oracle\_Home*\integration\orabpel\domains\default\tmp directory in release 10.1.2.0.2.
7. Copy all the BPEL suitcase JAR files from the 10.1.2.0.0 release to 10.1.2.0.2 for the default domain. For example:
  - From the old *Oracle\_Home*\integration\orabpel\domains\default\deploy directory of the release 10.1.2.0.0 installation
  - To the new *Oracle\_Home*\integration\orabpel\domains\default\deploy directory of the release 10.1.2.0.2 installation

For example, if your previous release had the following files in *Oracle\_Home\integration\orabpel\domains\default\deploy*:

- *bpel\_TaskManager\_1.0.jar*
- *bpel\_TaskActionHandler\_1.0.jar*
- *bpel\_HelloWorld\_1.0.jar*
- *bpel\_HelloWorld\_2.0.jar*

You copy these files to the *Oracle\_Home\integration\orabpel\domains\default\deploy* directory of the 10.1.2.0.2 installation.

8. If you have any custom, site-specific domains, repeat the procedures in Step 7 for those domains.

## Step 7: Testing Process Instances

1. Start Oracle BPEL Server 10.1.2.0.2.
2. Log in to Oracle BPEL Console 10.1.2.0.2.
3. Ensure (but do not yet redeploy) that the correct process instance versions for the suitcase JAR files you copied in Step 7 on page 5-7 appear in the **Deployed BPEL Processes** list of the **Dashboard** tab of Oracle BPEL Console. For example:
  - HelloWorld ( v.1.0 )
  - HelloWorld ( v.2.0 )

You should be able to review all completed instances that you invoked in 10.1.2.0.0 from Oracle BPEL Console 10.1.2.0.2 and invoke all copied 10.1.2.0.0 BPEL processes in 10.1.2.0.2.

## Step 8: Redeploying Processes If They Failed to Be Loaded by Oracle BPEL Server 10.1.2.0.2

If some 10.1.2.0.0 BPEL processes did not appear in the 10.1.2.0.2 Oracle BPEL Console or were marked as failing, there may be implementation errors in the project. These were not identified as errors by the 10.1.2.0.0 BPEL compiler, but were caught by the 10.1.2.0.2 BPEL compiler during loading time. If this occurs, perform the following procedures:

1. Check the Oracle BPEL Server compiler or loading message that appears in the server output log file or in the operating system window or terminal.
2. Correct the problem.
3. Recompile and redeploy the process.

At this point, you have successfully migrated all processes to the 10.1.2.0.2 release.

## Step 9: Opening JDeveloper BPEL Designer 10.1.2.0.0 Projects in 10.1.2.0.2

JDeveloper BPEL Designer 10.1.2.0.0 projects are fully supported with respect to edit and deploy capabilities in JDeveloper BPEL Designer 10.1.2.0.2.

Follow these procedures to use JDeveloper BPEL Designer 10.1.2.0.0 projects in 10.1.2.0.2:

1. Install Oracle BPEL Process Manager for Developers 10.1.2.0.2 into a *new* Oracle home directory on the same host as Oracle BPEL Process Manager for Developers 10.1.2.0.0.
2. Start Oracle BPEL Server 10.1.2.0.2 if it is not currently running.
3. Start JDeveloper BPEL Designer 10.1.2.0.2 for the first time.  
A message appears asking if you want to migrate from a previous release of JDeveloper BPEL Designer.
4. Click **Yes**.  
The Migrate User Settings window appears.
5. Click **Browse**.
6. Select the *Oracle\_Home\integration\jdev\jdev\system10.1.2.0.0.1811* directory of Oracle BPEL Process Manager for Developers 10.1.2.0.0.
7. Click **Select**.  
Applicable settings on the Migrate User Settings window are automatically selected.
8. Click **OK**.  
A message appears that describes details about migrating user settings.
9. Click **OK**.  
Your 10.1.2.0.0 project files (for example, WSDL, BPEL, *bpe1.xml*, and so on) are loaded into the **Applications Navigator** of JDeveloper BPEL Designer 10.1.2.0.2.

---

**Note:** If you do not select to migrate your projects from a previous JDeveloper BPEL Designer release in Step 4, you can still load them into 10.1.2.0.2 by following these procedures:

1. Create a new workspace in JDeveloper BPEL Designer 10.1.2.0.2.
2. Select **Open** from the **File** main menu.
3. Navigate to the *process\_name.jpr* file of the process you want to open.
4. Double-click the *process\_name.jpr* file.

Your 10.1.2.0.0 project files are loaded into the **Applications Navigator** of JDeveloper BPEL Designer 10.1.2.0.2.

---





---

## Using Microsoft SQL Server as the Dehydration Store

This appendix describes how to use a Microsoft SQL Server database as the dehydration store with Oracle BPEL Process Manager.

This appendix contains the following topics:

- [Overview of Requirements](#)
- [Step 1: Install and Configure the Microsoft SQL Server Database](#)
- [Step 2: Install Oracle BPEL Process Manager](#)
- [Step 3: Create the Oracle BPEL Process Manager Tables in the Microsoft SQL Server Database](#)
- [Step 4: Download and Configure the JDBC Driver](#)
- [Step 5: Configure Microsoft SQL Server as the Dehydration Store](#)

---

**Note:** This appendix describes installing and configuring Oracle BPEL Process Manager on Windows. If installing Oracle BPEL Process Manager on a UNIX operating system, substitute the appropriate directory paths throughout this appendix.

---

### Overview of Requirements

[Table A-1](#) describes the supported Microsoft SQL Server database, JDBC driver, and application server to use with Oracle BPEL Process Manager. For details about Oracle BPEL Process Manager memory, disk space, swap space, and monitor requirements, see [Table 1-2](#) on page 1-6.

**Table A-1** *Microsoft SQL Server Database Requirements*

Component	Requirement
Database	■ MS SQL Server 2000 with Service Pack (SP) 4
JDBC driver	■ Oracle&DataDirect JDBC Driver 10.1.2.0.2
Applications server	■ Oracle Application Server 10.1.2.0.2

### Step 1: Install and Configure the Microsoft SQL Server Database

1. Go to the host on which to install Microsoft SQL Server (for this example, the host is named `myDB_Host`). Substitute your own host name as necessary.

2. Install and configure your Microsoft SQL Server database with the following details:

Element Type	Element Example Name
Database name	orabpeldb (recommended name to use)
Database login user name	orabpel (recommended name to use)
Database login password	orabpel_pword

These element names are used throughout this chapter. If you use different names, substitute those names as necessary.

3. Use the username and password created in Step 2 to test your connection to the Microsoft SQL Server database.
4. If you have difficulty connecting, contact your Microsoft SQL Server database administrator.

## Step 2: Install Oracle BPEL Process Manager

1. Follow the instructions in [Chapter 2, "Oracle BPEL Process Manager Installation"](#) to install the 10.1.2.0.2 installation type appropriate to your environment:
  - Oracle BPEL Process Manager for Developers
  - Oracle BPEL Process Manager for OracleAS Middle Tier
2. If installing Oracle BPEL Process Manager for OracleAS Middle Tier, select **Non-Oracle Database** on the Choose the Dehydration Database type screen during Oracle Universal Installer installation.

This enables you to skip additional installation screens and complete the installation process (such as the Specify Dehydration Store Database Information screen).

## Step 3: Create the Oracle BPEL Process Manager Tables in the Microsoft SQL Server Database

1. Download Oracle*MetaLink* patch number 5099565 from the following location:  
<http://metalink.oracle.com>

This patch includes the following Oracle BPEL Process Manager table scripts:

- server\_sqlserver.ddl
  - domain\_sqlserver.ddl
  - workflow\_sqlserver.sql
  - sensor\_sqlserver.sql
2. Copy these files to a directory on a host on which the `isql` SQL utility is installed (for example `c:\temp`):

The `isql` SQL utility is required for running these scripts.

3. Use `isql` to create the Oracle BPEL Server database tables:

```
c:\temp>isql -U orabpel -P orabpel_pword -S myDB_Host -d orabpeldb -i server_
sqlserver.ddl
```

```
c:\temp>isql -U orabpel -P orabpel_pword -S myDB_Host -d orabpelddb -i domain_
sqlserver.ddl
```

where:

- orabpel is the user name specified in "Step 1: Install and Configure the Microsoft SQL Server Database" on page A-1
- orabpel\_pword is the password specified in "Step 1: Install and Configure the Microsoft SQL Server Database" on page A-1
- myDB\_Host is the name of the host on which the Microsoft SQL Server database is installed
- orabpelddb is the database name specified in "Step 1: Install and Configure the Microsoft SQL Server Database" on page A-1

4. Create the Oracle BPEL Process Manager workflow database tables:

```
c:\temp>isql -U orabpel -P orabpel_pword -S myDB_Host -d orabpelddb -i workflow_
sqlserver.sql
```

5. Create the Oracle BPEL Process Manager sensor database tables:

```
c:\temp>isql -U orabpel -P orabpel_pword -S myDB_Host -d orabpelddb -i sensor_
sqlserver.sql
```

## Step 4: Download and Configure the JDBC Driver

1. Download the DirectData JDBC driver from the following URL:

<http://www.oracle.com/technology/software/products/ias/htdocs/utills oft.html>

2. Review the Oracle Technology Network Developer License Terms and accept all conditions of use.

The Oracle Application Server 10g page appears.

3. Go to the **Version 10.1.2.0.2** header.

4. Click **DirectData JDBC Drivers** to download the driver.

5. Create a directory on the Oracle BPEL Process Manager host in which to place the JDBC driver. For this example, the following directory name is used:

```
C:\dataDirectOc4jJDBCDriver
```

6. Add the JDBC driver JAR files into the `application.xml` file for your installation type:

- For Oracle BPEL Process Manager for Developers

```
Oracle_
```

```
Home\integration\orabpel\system\appserver\oc4j\j2ee\home\c
onfig\application.xml
```

- For Oracle BPEL Process Manager for OracleAS Middle Tier

```
Oracle_Home\j2ee\OC4J_BPEL\config\application.xml
```

```
...
```

```
<!-- ORABPEL -->
```

```
...
```

```
<library path="C:\dataDirectOc4jJDBCdriver\lib\Ymbase.jar"/>
<library path="C:\dataDirectOc4jJDBCdriver\lib\Ymssqlserver.jar"/>
<library path="C:\dataDirectOc4jJDBCdriver\lib\Ymutil.jar"/>
...
```

## Step 5: Configure Microsoft SQL Server as the Dehydration Store

1. Open the `data-sources_sqlserver.xml` file included in the *OracleMetaLink* patch that you downloaded in ["Step 3: Create the Oracle BPEL Process Manager Tables in the Microsoft SQL Server Database"](#) on page A-2.

The information in this file enables you to configure the following settings:

- The JDBC driver
  - The host name and port on which the Microsoft SQL Server database was installed in ["Step 1: Install and Configure the Microsoft SQL Server Database"](#) on page A-1.
  - The user name and password settings created in ["Step 1: Install and Configure the Microsoft SQL Server Database"](#) on page A-1.
2. Open the `data-sources.xml` file located in the following directory for your installation type:
    - For Oracle BPEL Process Manager for Developers  
`Oracle_Home\integration\orabpel\system\appserver\oc4j\j2ee\home\config\data-sources.xml`
    - For Oracle BPEL Process Manager for OracleAS Middle Tier  
`Oracle_Home\j2ee\OC4J_BPEL\config\data-sources.xml`
  3. Copy and paste the following sections of the `data-sources_sqlserver.xml` file into the `data-sources.xml` file.
  4. Change the host name, port, password, and user name (only if you changed it from `orabpel`) to the correct values for your environment in the following sections.

```
<?xml version="1.0" standalone='yes'?>
<!DOCTYPE data-sources PUBLIC "Orion data-sources"
"http://xmlns.oracle.com/ias/dtds/data-sources-9_04.dtd">
```

```
<data-sources>
<!--
```

```
An example/default DataSource that uses
Oracle JDBC-driver to create the connections.
This tag creates all the needed kinds
of data-sources, transactional, pooled and EJB-aware sources.
The source generally used in application code is the "EJB"
one - it provides transactional safety and connection
pooling. Oracle thin driver could be used as well,
like below.
url="jdbc:oracle:thin:@host:port:sid"
-->
```

```
<!-- Use this datasource to connect to Microsoft SQL Server -->
```

```
<data-source class="com.evermind.sql.DriverManagerDataSource"
```

```

        name="BPELServerDataSource"
        location="jdbc/BPELServerDataSourceWorkflow"
        xa-location="BPELServerDataSource"
        ejb-location="jdbc/BPELServerDataSource"
        connection-driver="com.oracle.ias.jdbc.sqlserver.SQLServerDriver"
        max-connections="50"
        min-connections="10"
        connection-retry-interval="30"
        max-connect-attempts="10"
url="jdbc:oracle:sqlserver://
[DB_HOST]:[PORT];SelectMethod=cursor;User=orabpel;Password=orabpel_pword"/>

<data-source class="com.evermind.sql.DriverManagerDataSource"
    name="BPELSamplesDataSource"
    location="jdbc/BPELSamplesDataSource"
    xa-location="BPELSamplesDataSource"
    ejb-location="jdbc/BPELSamplesDataSource"
    connection-driver="com.oracle.ias.jdbc.sqlserver.SQLServerDriver"
    max-connections="50"
    min-connections="10"
    connection-retry-interval="30"
    max-connect-attempts="10"
url="jdbc:oracle:sqlserver:
//[DB_HOST]:[PORT];SelectMethod=cursor;User=orabpel;Password=orabpel_pword"/>

<data-source class="com.evermind.sql.DriverManagerDataSource"
    name="AdminConsoleDataSource"
    location="jdbc/AdminConsoleDataSource"
    xa-location="AdminConsoleDataSource"
    ejb-location="jdbc/AdminConsoleDataSource"
    connection-driver="com.oracle.ias.jdbc.sqlserver.SQLServerDriver"
    max-connections="80"
    min-connections="2"
    connection-retry-interval="30"
    max-connect-attempts="10"
url="jdbc:oracle:sqlserver:
//[DB_HOST]:[PORT];SelectMethod=cursor;User=orabpel;Password=orabpel_pword"/>

```

5. Comment out the Oracle Database Lite section of data-sources.xml:

```

<!-- Use these datasources to connect to Oracle Lite -->
<!--
<data-source class="com.evermind.sql.DriverManagerDataSource". . .
. . .
. . .
<data-source class="com.evermind.sql.DriverManagerDataSource"
. . .
. . .
<data-source class="com.evermind.sql.DriverManagerDataSource"
. . .
. . .
    url="jdbc:polite4@127.0.0.1:100:orabpel"/>
-->

```

6. Save your changes in the data-sources.xml file.

7. If you installed Oracle BPEL Process Manager on Windows, remove or comment out the following Oracle Database Lite lines in these files:

- In *Oracle\_Home*\integration\orabpel\bin\startorabpel.bat:
 

```
@rem start /d "Oracle_Home\integration\orabpel\bin" /min /realtime start_
```

olite.bat

- In *Oracle\_Home\integration\orabpel\bin\shutdowntorabpel.bat*:  
**@rem** start /min /d "*Oracle\_Home\integration\orabpel\bin\kill\_olite.bat*"

8. Microsoft SQL Server database configuration is now complete.

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