



BPEL Process Manager Oracle 9i Configuration Guide

This document describes how to configure the Oracle BPEL Process Manager 2.0 to use Oracle 9i as its dehydration store.

Versions: Oracle Process Manager 2.0 and Oracle 9.2.0.1

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Before You Start

These configuration instructions should be used with the OC4J (9.0.4), Jboss (3.2.2 Release) or Weblogic (8.1sp2) version of the Oracle BPEL Process Manager 2.0.

To configure Oracle BPEL Process Manager to use Oracle9i as your database, follow these high level steps:

- Install Oracle9i Database Server or client
- Create Oracle BPEL Process Manager tablespace and user in Oracle9i
- Install Oracle BPEL Process Manager
- Create Oracle BPEL Process Manager database schema
- Download Oracle9i JDBC OCI driver
- Configure OC4J version of Oracle BPEL Process Manager
- Configure Jboss version of Oracle BPEL Process Manager
- Configure Weblogic version of Oracle BPEL Process Manager
- Test Your Configuration

These are described in more detail below.

1. Install Oracle9i

You may skip this step if you already have the Oracle 9i database or client libraries (if you already have the oracle 9i database on a remote system) installed on the system that you intend to run Oracle BPEL Process Manager on. However, if you do not, the following instructions may be helpful:

If you do not have Oracle9i or the Oracle9i client libraries installed, you can download evaluation versions of them from

<http://otn.oracle.com/software/products/oracle9i/content.html>

To make sure that you can connect to Oracle independent of Oracle BPEL Process Manager 2.0, you could try connecting to your database with SQL*Plus. For example, on Windows, if you have a user named "system" with password "password" on an Oracle instance that you can connect to via the name "connect_string":

```
prompt> sqlplus system/password@connect_string
```

If you experience trouble connecting to your Oracle9i database, contact your system or database administrator to ensure that you have the Oracle9i database or client properly installed and know the appropriate connection information for your database.

2. Create Oracle BPEL Process Manager tablespace and user in Oracle9i

In this step you will create a new user and tablespace within your Oracle9i environment for the database activity that the Oracle BPEL Process Manager Engine generates. This will require administrative access to your database and can be performed by a DBA or by a BPEL developer with the appropriate privileges.

- **Create a Oracle BPEL Process Manager tablespace in Oracle9i**

You can create a new tablespace by using the graphical Oracle Enterprise Manager (Object/Create.../Tablespace) or from a SQL*Plus command line. For a development environment, a suitable tablespace size is 100MB. SQL*Plus commands for creating a tablespace are shown below:

```
prompt> sqlplus system/password@connect_string
```

```
SQL*Plus: Release 9.2.0.1.0 - Production on Mon Apr 14 13:43:36 2003
```

```
...
```

```
SQL> create tablespace "ORABPEL" logging datafile  
'C:\oracle\oradata\orabpel.ora' size 100M;
```

Tablespace created.

- **Create a Oracle BPEL Process Manager system user in Oracle9i**

You will now create a new Oracle user for your Oracle BPEL Process Manager installation. The Oracle BPEL Process Manager engine will use this Oracle user to access the tablespace you created above. The user should have connect and resource privileges on its default tablespace. Again, you can create a new user with the Oracle Enterprise Manager tool (Object/Create.../User) or from a SQL*Plus command line (as shown below, assuming the same connection information as above):

```
SQL> create user "ORABPEL" profile "DEFAULT" identified by "orabpel"  
default tablespace "ORABPEL" temporary tablespace "TEMP" account unlock;
```

User created.

```
SQL> grant "CONNECT" to "ORABPEL";
```

Grant succeeded.

```
SQL> grant "RESOURCE" to "ORABPEL";
```

Grant succeeded.

3. Install Oracle BPEL Process Manager 2.0

Run the Oracle BPEL Process Manager 2.0 install program (available at <http://otn.oracle.com/bpel>). If you accept the default installation location, it will be installed into:

- C:\orabpel (on win32)
- /user_home/orabpel (on Linux or Solaris)

If you have installed Oracle BPEL Process Manager into a different location, you should change this directory path wherever it appears in this document.

4. Create Oracle BPEL Process Manager database schema

Now you will create the database tables that will be used by Oracle BPEL Process Manager. Scripts for supported databases are included with your Oracle BPEL Process Manager installation, so you will just need to login to your database server as the Oracle BPEL Process Manager system user that you created in the previous step and run the Oracle database setup script.

- **On Win32**

The Oracle script can be found in C:\orabpel\system\database\scripts\domain_oracle.ddl and server_oracle.ddl. So you can execute the following at a DOS command prompt (modifying the orabpel path if necessary):

```
prompt> cd C:\orabpel\system\database\scripts
```

```
prompt> sqlplus orabpel/orabpel@connect_string @domain_oracle.ddl
```

```
prompt> sqlplus orabpel/orabpel@connect_string @server_oracle.ddl
```

Note: if this command fails for any reason, you may want to test connecting to your Oracle database using your new Oracle BPEL Process Manager user as in:

```
prompt> sqlplus orabpel/orabpel@connect_string
```

- **On Linux or Solaris**

The Oracle script can be found in /user_home/orabpel/system/database/scripts/domain_oracle.ddl and server_oracle.ddl. So

you can execute the following at a shell prompt (modifying the orabpel path if necessary):

```
bash-2.05b$ cd /user_home/orabpel/system/database/scripts
```

```
bash-2.05b$ sqlplus orabpel/orabpel@connect_string @domain_oracle.ddl
```

```
bash-2.05b$ sqlplus orabpel/orabpel@connect_string @server_oracle.ddl
```

Note: if this command fails for any reason, you may want to test connecting to your Oracle database using your new Oracle BPEL Process Manager user as in:

```
bash-2.05b$ sqlplus orabpel/orabpel@connect_string
```

5. Download Oracle9i JDBC OCI driver

You may skip this step if you like to use JDBC thin Driver.

Download Oracle9i JDBC OCI driver. Since Oracle BPEL Process Manager 2.0 only supports JDK versions 1.4.1 and higher, you should download ojdbc14.jar and shared library/DLL files.

http://otn.oracle.com/software/htdocs/distlic.html?http://otn.oracle.com/software/tech/java/sqlj_jdbc/htdocs/jdbc9201.html

For example, on win32,
Download the driver and shared library/DLL files into:

```
C:\oracle9i_JDBC\DLL  
C:\oracle9i_JDBC\ojdbc14.jar
```

For example, on Linux or Solaris,
Download the driver and shared library/DLL files into:

```
/user_home/oracle9i_JDBC/Library  
/user_home/oracle9i_JDBC/ojdbc14.jar
```

6. Configure OC4J version of Oracle BPEL Process Manager

(1). Configure OC4J data-sources.xml to use Oracle9i

You will now configure your OC4J data-sources.xml file for your Oracle BPEL Process Manager installation to use Oracle instead of Oracle Lite (a bundled database supported for development and developer evaluations of Oracle BPEL Process Manager -- OC4J version).

This file will be in Oracle BPEL Process Manager installation directory (C:\orabpel or /user_home/orabpel in this document), if you accepted the default Oracle BPEL Process Manager installation. So for our default installation here, it would be:

- **On Win32**

C:\orabpel\system\appserver\oc4j\j2ee\home\config\data-sources.xml

- **On Linux or Solaris**

/user_home/orabpel/system/appserver/oc4j/j2ee/home/config/data-sources.xml

Note: we recommend you backup this file before editing it. Open this file in any text editor and look for "Use this datasource to connect to Oracle 9i", for example:

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

- **For use JDBC THIN Driver**

Change this element to be the following, editing your Oracle connection parameters shown in bold below as appropriate:

```
<!-- Use this datasource to connect to Oracle 9i -->
<data-source class="com.evermind.sql.DriverManagerDataSource"
    name="BPELServerDataSource"
    location="jdbc/BPELServerDataSource"
    xa-location="BPELServerDataSource"
    ejb-location="jdbc/BPELServerDataSource"
    connection-driver="oracle.jdbc.OracleDriver"
    max-connections="50"
    min-connections="10"
    url="jdbc:oracle:thin:[USERNAME/ PASSWORD]@[HOST
NAME]:[PORT]:[SID]/>

<data-source class="com.evermind.sql.DriverManagerDataSource"
    name="BPELSamplesDataSource"
    location="jdbc/BPELSamplesDataSource"
    xa-location="BPELSamplesDataSource"
```

```
ejb-location="jdbc/BPELSamplesDataSource"
connection-driver="oracle.jdbc.OracleDriver"
max-connections="50"
min-connections="10"
url="jdbc:oracle:thin:[USERNAME/ PASSWORD]@[HOST
NAME]:[PORT]:[SID]"/>
```

- **For use JDBC OCI Driver**

Change this element to be the following, editing your Oracle connection parameters shown in bold below as appropriate:

```
<!-- Use this datasource to connect to Oracle 9i -->
<data-source class="com.evermind.sql.DriverManagerDataSource"
  name="BPELServerDataSource"
  location="jdbc/BPELServerDataSource"
  xa-location="BPELServerDataSource"
  ejb-location="jdbc/BPELServerDataSource"
  connection-driver="oracle.jdbc.OracleDriver"
  max-connections="50"
  min-connections="10"
  url="jdbc:oracle:oci:[USERNAME/ PASSWORD]@[SID]"/>
```

```
<data-source class="com.evermind.sql.DriverManagerDataSource"
  name="BPELSamplesDataSource"
  location="jdbc/BPELSamplesDataSource"
  xa-location="BPELSamplesDataSource"
  ejb-location="jdbc/BPELSamplesDataSource"
  connection-driver="oracle.jdbc.OracleDriver"
  max-connections="50"
  min-connections="10"
  url="jdbc:oracle:oci:[USERNAME/ PASSWORD]@[SID]"/>
```

(2). Additional configuration for JDBC OCI Driver

You may skip this step if you use JDBC thin Driver

Step 1: Copy the ojdbc14.jar from the <ORACLE_HOME>\jdbc\lib directory into

On Win32: C:\orabpel\system\appserver\oc4j\j2ee\home\jdbc\lib

On Linux/Solaris: /user_home/orabpel/system/appserver/oc4j/j2ee/home/jdbc/lib

Step 2: Take a backup of the present Oracle9i JDBC Driver (classes12dms.jar) by renaming it as classes12dms_backup.jar

Step 3: Rename the copied ojdbc14.jar as classes12dms.jar to complete the configuration.

Where <ORACLE_HOME> is the root directory of Oracle9i Installation.

Note: If you installed oracle9i client on your local machine, you should copy ojdbc14.jar from your remote oracle9i DB server machine to your local machine and change <ORACLE_HOME>\jdbc\lib directory path wherever it appears in this document

(3). Configure startOraBPEL.bat/sh to use Oracle9i

And then, remove or comment out "Use these datasources to connect to Oracle Lite" (default datasource connection)

- **On Win32**

C:\orabpel\bin\startOraBPEL.bat

- **On Linux or Solaris**

No change for Linux/Solaris OC4J version of the startOraBPEL.sh

Note: we recommend you backup this file before editing it.

Open this file in any text editor and remove or comment out:
start /d "C:\orabpel\bin" /min /realtime start_olite.bat

For example,

```
@rem start /d "C:\orabpel\bin" /min /realtime start_olite.bat
```

7. Configure JBOSS version of Oracle BPEL Process Manager

(1). Configure oracle-ds.xml and oracle-sample-bpel-ds.xml

You will now configure your Jboss oracle-ds.xml and oracle-sample-bpel-ds.xml files for your Oracle BPEL Process Manager installation to use Oracle instead of Oracle Lite (a bundled database supported for development and developer evaluations of Oracle BPEL Process Manager -- JBOSS version).

This file will be in Oracle BPEL Process Manager installation directory (C:\orabpel or /user_home/orabpel in this document), if you accepted the default Oracle BPEL Process Manager installation. So for our default installation here, it would be:

- **On Win32**

C:\orabpel\system\appserver\jboss\server\default\deploy\oracle-ds.xml
C:\orabpel\system\appserver\jboss\server\default\deploy\oracle-sample-bpel-ds.xml

- **On Linux or Solaris**

/user_home/orabpel/system/appserver/jboss/server/default/deploy/oracle-ds.xml
/user_home/orabpel/system/appserver/jboss/server/default/deploy/oracle-sample-bpel-ds.xml

Note: we recommend you backup these two files before editing them. Open each file in any text editor and modify:

```
...  
<connection-url>jdbc:polite4@127.0.0.1:100:orabpel</connection-url>  
<driver-class>oracle.lite.poljdbc.POLJDBCdriver</driver-class>  
<user-name>system</user-name>  
<password>manager</password>  
...
```

- **For use JDBC THIN Driver**

```
...  
<connection-url>jdbc:oracle:thin:[USER_NAME/PASSWORD]@ [HOST  
NAME]:[PORT]:[SID]</connection-url>  
<driver-class>oracle.jdbc.OracleDriver</driver-class>  
...
```

- **For use JDBC OCI Driver**

```
...  
<connection-url>jdbc:oracle:oci:[USER_NAME/PASSWORD]@[SID]</connection-  
url>  
<driver-class>oracle.jdbc.OracleDriver</driver-class>  
...
```

(2). Configure Jboss run.bat/sh to use Oracle9i

- **For use JDBC THIN Driver**

- On win32,
C:\orabpel\system\appserver\jboss\bin\run.bat

Note: we recommend you backup this file before editing it. Open this file in any text editor and add <ORACLE_HOME>\jdbc\lib\ojdbc14.jar into
JBOSS_CLASSPATH:

```
...  
set
```

```
JBOSS_CLASSPATH=<ORACLE_HOME>\jdbc\lib\
ojdbc14.jar;%JBOSS_CLASSPATH%;%JAVAC_JAR%;%RUNJAR%;%POST_
CLASSPATH%;
```

...

Where <ORACLE_HOME> is the root directory of Oracle9i Installation.

- On Linux or Solaris:
/user_home/orabpel/system/appserver/jboss/bin/run.sh

Note: we recommend you backup this file before editing it. Open this file in any text editor and add <ORACLE_HOME>\jdbc\lib\ojdbc14.jar into JBOSS_CLASSPATH:

```
...
JBOSS_CLASSPATH=$ORACLE_HOME/jdbc/lib/
ojdbc14.jar:$JBOSS_CLASSPATH

# Display our environment
echo "=====
```

...

Where <ORACLE_HOME> is the root directory of Oracle9i Installation.

Note: If you installed oracle9i client on your machine, you should copy ojdbc14.jar from your remote oracle9i DB server machine to your local machine and change <ORACLE_HOME>\jdbc\lib directory path wherever it appears in this document

- **For use JDBC OCI Driver**
 - On win32,
C:\orabpel\system\appserver\jboss\bin\run.bat

Note: we recommend you backup this file before editing it. Open this file in any text editor and add C:\oracle9i_JDBC\ojdbc14.jar into JBOSS_CLASSPATH and C:\oracle9i_JDBC\DLL into system PATH:

```
...
set
JBOSS_CLASSPATH=C:\oracle9i_JDBC\ojdbc14.jar;%JBOSS_CLASSPATH%
;%JAVAC_JAR%;%
RUNJAR%;%POST_CLASSPATH%;

set PATH=C:\oracle9i_JDBC\DLL;%PATH%
...
```

- On Linux or Solaris:
/user_home/orabpel/system/appserver/jboss/bin/run.sh

Note: we recommend you backup this file before editing it. Open this file in any text editor and add /user_home/oracle9i_JDBC/ojdbc14.jar into JBOSS_CLASSPATH and /user_home/oracle9i_JDBC/Library into system PATH:

```
...
JBOSS_CLASSPATH=/user_home/oracle9i_JDBC/ojdbc14.jar:$JBOSS_CLASS
PATH
PATH=/user_home/oracle9i_JDBC/library:$PATH:$JAVA_HOME/bin
...
```

(3). Configure startOraBPEL.bat/sh to use Oracle9i

And then, remove or comment out "Use these datasources to connect to Oracle Lite" (default datasource connection)

- On Win32
C:\orabpel\bin\startOraBPEL.bat

- On Linux or Solaris
No change for Linux/Solaris Jboss version of the startOraBPEL.sh

Note: we recommend you backup this file before editing it.

Open this file in any text editor and remove or comment out:
start /d "C:\orabpel\bin" /min /realtime start_olite.bat

For example,

```
@rem start /d "C:\orabpel\bin" /min /realtime start_olite.bat
```

8. Configure WebLogic version of Oracle BPEL Process Manager

(1). Configure WebLogic config.xml to use Oracle9i

You will now configure your WebLogic config.xml file for your Oracle BPEL Process Manager installation to use Oracle instead of Oracle Lite (a bundled database supported for development and developer evaluations of Oracle BPEL Process Manager -- WebLogic version).

This file will be in WebLogic8.1sp2 installation directory (C:\bea or /user_home/bea in this document). if you accepted the default Oracle BPEL Process Manager installation. So for our default installation here, it would be:

- **On Win32**

C:\bea\user_projects\myorabpel\config.xml

- **On Linux or Solaris**

BEA_HOME/user_projects/myorabpel/config.xml

Note: we recommend you backup this file before editing it. Open this file in any text editor and look for " JDBCConnectionPool section", for example:

```
<JDBCConnectionPool CapacityIncrement="2"
  DriverName="oracle.lite.poljdbc.POLJDBCdriver" MaxCapacity="15"
  LoginDelaySeconds="1" Name="BPELServerPool"
  Notes="ORABPEL:Process Container uses weblogic&apos;s connection pool to get
  JDBC connections to the database."
  Properties="user=system;password=manager"
  ShrinkPeriodMinutes="15" ShrinkingEnabled="true"
  SupportsLocalTransaction="true" Targets="orabpelServer"
  URL="jdbc:polite4@127.0.0.1:100:orabpel"/>
```

- **For use JDBC OCI Driver**

```
<JDBCConnectionPool CapacityIncrement="2"
  DriverName="oracle.jdbc.OracleDriver"
  InitialCapacity="10" LoginDelaySeconds="1" MaxCapacity="20"
  Name="BPELServerPool"
  ShrinkPeriodMinutes="15" ShrinkingEnabled="true"
  SupportsLocalTransaction="true" Targets="orabpelServer"
  TestTableName="dual" URL="jdbc:oracle:oci:[USER_NAME/PASSWORD]@
[SID]"/>
```

- **For use JDBC THIN Driver**

```
<JDBCConnectionPool CapacityIncrement="2"
  DriverName="oracle.jdbc.OracleDriver"
  InitialCapacity="10" LoginDelaySeconds="1" MaxCapacity="20"
  Name="BPELServerPool"
  ShrinkPeriodMinutes="15"
  ShrinkingEnabled="true" SupportsLocalTransaction="true"
  Targets="orabpelServer" TestTableName="dual"
  URL="jdbc:oracle:thin:[USER_NAME/PASSWORD]@ [HOST
NAME]:[PORT]:[SID]"/>
```

(2). Configure startOraBPEL.bat/sh to use Oracle9i

And then, remove or comment out "Use these datasources to connect to Oracle Lite" (default datasource connection)

- **On Win32**

C:\orabpel\bin\startOraBPEL.bat

- **On Linux or Solaris**

No change for Linux/Solaris WebLogic8.1sp2 version of startOraBPEL.sh

Note: we recommend you backup this file before editing it.

Open this file in any text editor and remove or comment out:
start /d "C:\orabpel\bin" /min /realtime start_olite.bat

For example,

```
@rem start /d "C:\orabpel\bin" /min /realtime start_olite.bat
```

8. Test Your Configuration

Start your Oracle BPEL Process Manager

You can now start up your Oracle BPEL Process Manager. On Windows, you can do this from the Start menu using:

Programs ==>Oracle BPEL Process Manager 2.0 ==>Start BPEL Process Manager

Build the LoanFlow demo

In a command prompt, go to the directory below and run obant to build the LoanFlow BPEL demo:

```
prompt> cd C:\orabpel\samples\demos\LoanDemo
```

```
prompt> obant
```

Testing the LoanFlow demo

If you now connect to the Oracle Process Manager Console

([http://\[your_hostname\]:9700/BPELConsole](http://[your_hostname]:9700/BPELConsole)) you should see several BPEL processes deployed that you built with the obant command above. Select LoanFlow and you should see an automatically generated test page, which will allow you to create a new instance of this BPEL process.

In the Test form, the "Post XML Message" button. Now if you click on the Visual Flow link, you should see a visual representation of the current state of this flow.

Finally, you can use the Purge Database link to clean out the in-process instances you just created.

If you encounter any problems with this configuration or have questions regarding supported platforms, please contact us for technical support at:

collaxa_support_us@oracle.com