FLEXCUBE UBS Oracle GL Adapter MDB Deployment Installation

Oracle FLEXCUBE Universal Banking

Release 12.87.06.0.0

[May] [2020]

ORACLE
FINANCIAL SERVICES

Table of Contents

INSTALLATION STEPS **3**

1.1 PREREQUISITE 3
1.2 STEPS 3

APPENDIX **22**

1.1 CONFIGURING ADOGL MDB WITH IBM WEBSPHERE MQ 22

Installation Steps

1.1 Prerequisite

✓ Ensure that the basic KERNEL Environment Setup is done.

[Please refer ADOGL_Installation.doc.]

1.2 Steps

Follow the steps given below only if the Oracle10g Application Server is to be configured with ***Oracle10gAS JMS***.

Refer OC4J_ADOGL_OracleASJMS_Queue_Installation.doc to create the OC4J JMS Destinations and Connection Factories.

A. Modify ejb-jar.xml

Open the file **<KERNEL_INSTALL_DIR>\ADOGL_MDB\config\ejb-jar.xml** in any editor for editing.

Please **add** the following tag in the <message-driven> tag:

```
<message-driven-destination>
        <destination-type>javax.jms.Queue</destination-type>
</message-driven-destination>
```

Save the file in the same folder after modification.

Please ensure the file has a similar section as the one shown below in the <message-driven> tag:

- ADOGL_DS is the name of the database instance
- ADOGL_MDBQCF is the OGL Queue connection Factory.
- NOTIFY_DEST_QUEUE_DLQ is the OGL Dead Letter Queue.

```
<resource-ref>
        <res-ref-name>ADOGL_DS</res-ref-name>
        <res-type>javax.sql.XADataSource</res-type>
        <res-auth>Container</res-auth>
</resource-ref>
<resource-ref>
        <description>Queue connection factory for MDB Gateway</description>
        <res-ref-name>ADOGL_MDBQCF</res-ref-name>
        <res-type>javax.jms.XAQueueConnectionFactory</res-type>
        <res-auth>Container</res-auth>
</resource-ref>
<resource-env-ref>
       <description>MDB Dead Letter Queue</description>
       <resource-env-ref-name>NOTIFY_DEST_QUEUE_DLQ</resource-env-ref-name>
        <resource-env-ref-type>javax.jms.Queue</resource-env-ref-type>
</resource-env-ref>
```

[NOTE: Please ensure that the name of the database instance is case sensitive and should always be capital letters.]

B. Modify orion-ejb-jar.xml

Open the file

<KERNEL_INSTALL_DIR>\ADOGL_MDB\config\OC4J\orion-ejb-jar.xml in any editor for editing.

Please ensure the following tag in the <enterprise-beans> tag:

```
<message-driven-deployment
   name="ADOGL_MDB_Bean"
```

```
   connection-factory-location="ADOGL_MDBQCF"

   destination-location="NOTIFY_DEST_QUEUE"

   listener-threads="50"

   subscription-name="ADOGLMDBSUB"

   transaction-timeout="172800"

/>
```

Save the file in the same folder after modification.

C. Configure Service parameters

Open <KERNEL_INSTALL_DIR>\ADOGL_MDB\config\ADOGL_MDB_Prop.properties file in an editor and give appropriate values for the properties shown below.

1. ADOGL_MDB_JMS_QCF: This property specifies the location of the OGL Notify MDB Queue connection factory.

   E.g. ADOGL_MDBQCF

2. ADOGL_MDB_JMS_QUEUE_NAME: This property specifies the location of the OGL Destination Queue.

   E.g.: NOTIFY_DEST_QUEUE

3. ADOGL_MDB_JMS_DLQ_CF: This property specifies the location of the OGL Notify Dead Letter MDB Queue connection factory.

   E.g.: ADOGL_MDBQCF

4. ADOGL_MDB_JMS_DLQ: This property specifies the location of the OGL Destination Dead Letter Queue connection factory.

   E.g.: NOTIFY_DEST_QUEUE_DLQ

5. MAX_CLOB_LEN: This property specifies the length till which oracle considers the incoming text as string. For Oracle 10g R2 Database, it should be 32512.

   e.g. MAX_CLOB_LEN=32512

6. DB_TIMEOUT: This property is the timeout in SECONDS for which the FCUBS EJB Gateway will wait for PL/SQL to finish its processing.

   If database does not return within this timeout, the call to PL/SQL will be assumed to be failed.

   E.g.: 200

7. MSG_SCHEMA_CON_POOLNAME: This property specifies the JNDI name of the data source to which the first connection happens.

   [NOTE: The value of this property has to be one of the datasources maintained as <resource-ref><resource-ref> in ejb-jar.xml.]

   [NOTE: This name must be same as the database instance name and must be in upper case.]

   E.g.: ADOGL_DS

8. LOGGER_PATH: This property is the absolute path to the adogl_mdb_logger.cfg file along with file name.

   [NOTE: File separator must be "/".]

   [NOTE: The OGL interfaces provided at the site should be accessible from the OGL Adapter MDB.To ensure this; please specify the following property values carefully.]

9. ADOGL_EJB_JNDI_NAME: The JNDI location of the OGL Bean. The JNDI name of the Bean can be obtained from the in the <session> tag of ejb-jar.xml located in the OGL Enterprise Archive (EAR) file

   E.g.: OGL_EJB_FACADE_Bean

   (In ejb-jar.xml)

```
<ejb-name >OGL_EJB_FACADE_Bean</ejb-name >
```

10. ADOGL_EJB_CALL_TYPE: The type of call could be either REMOTE or LOCAL depending on whether the OGL EJB Façade bean has to be called remotely or locally.

    E.g.: REMOTE

11. ADOGL_EJB_CTX_FACTORY: This property specifies the Initial Context factory to lookup remote OGL EJB provided.

    For Oracle10g AS, the value is:

    com.evermind.server.rmi.RMIInitialContextFactory

12. ADOGL_EJB_SERVER_URL: This property specifies the provider URL for the Initial Context. For Oracle10g AS, the value is:

    ormi://10.80.4.116:23791/OGL_EJB_FACADE_Bean

Note:

- ✓ OGL_EJB_FACADE_Bean is the Application name with which the bean is deployed.
- ✓ 23791 is the default port.
- ✓ 10.80.4.116 is the host machine IP Address.

13. ADOGL_EJB_SECURITY_PRINCIPAL: This property is the username for the Oracle10g AS remote EJB access. Specify the administrator user name of Oracle 10g AS provided during Oracle 10g AS installation.

    E.g.: oc4jadmin

14. ADOGL_EJB_SECURITY_CREDENTIALS: This property is the password for the Oracle10g AS remote EJB access. It has to be decrypted and stored here for security reasons. The password decryption can be done by using a batch file “ChangePassword.bat”.

    The ADOGL_MDB_Prop.properties will look as given below.

```
ADOGL_EJB_JNDI_NAME=AQBridgeFacade

ADOGL_EJB_CALL_TYPE=REMOTE

ADOGL_EJB_CTX_FACTORY=com.evermind.server.rmi.RMIInitialContextFactory

ADOGL_EJB_SERVER_URL=ormi://10.80.4.116:23791/AQBridgeFacade

ADOGL_EJB_SECURITY_PRINCIPAL=

ADOGL_EJB_SECURITY_CREDENTIALS=

ADOGL_MDB_JMS_QCF=ADOGL_MDBQCF

ADOGL_MDB_JMS_QUEUE_NAME=NOTIFY_DEST_QUEUE

ADOGL_MDB_JMS_DLQ_CF=ADOGL_MDBQCF

ADOGL_MDB_JMS_DLQ=NOTIFY_DEST_QUEUE_DLQ

 MAX_CLOB_LEN=32512

 DB_TIMEOUT=200

 MSG_SCHEMA_CON_POOLNAME=FLEXTEST.WORLD
```

```
LOGGER_PATH=D:/Kernel7.2/ADOGL_MDB/config/adogl_mdb_logger.cfg
```

D. Configure logger parameters

Open <KERNEL_INSTALL_DIR>\ADOGL_MDB\config\adogl_mdb_logger.cfg file in an editor and change the value of the property “AD.LOGGER.FPATH” to

<KERNEL_INSTALL_DIR>/ADOGL_MDB/log/.

E.g.:- If the value of your <KERNEL_INSTALL_DIR> is D:\Kernel7.2, then the entry for this property should be

AD.LOGGER.FPATH= D:/Kernel7.2/ADOGL_MDB/log/

[NOTE: Give AD.LOGGER.FPATH with forward slash (/) as file separator and remember to give a slash at the end.]

E. Run the build file

✓ For WINDOWS

- Go to the folder <KERNEL_INSTALL_DIR>\setup in the command prompt, type **“set_env”** and press enter.
- Change directory to <KERNEL_INSTALL_DIR>\ADOGL_MDB\setup\OC4J in the command prompt, type **“ant”** and press enter.

✓ For UNIX

- Go to the folder <KERNEL_INSTALL_DIR>/setup in the shell prompt, type **“set_env.sh”** and press enter.
- Change directory to <KERNEL_INSTALL_DIR>/ADOGL_MDB/setup/OC4J in the shell prompt, type **“ant”** and press enter.

[NOTE: Please make sure that you get a message BUILD SUCCESSFUL after compilation.]

F. Change the Password (for OGL Bean access from the Adapter only)

(i) cd <KERNEL_INSTALL_DIR>\ADOGL_MDB\setup

(ii) Type "**ChangePassword**" at the command prompt.

(iii) Enter the Properties file name as ADOGL_MDB_Prop.properties

(iv) Enter the User ID Property Name : ADOGL_EJB_SECURITY_PRINCIPAL

(v) Enter the User ID : The administrator user Id provided during the Oracle 10g AS installation

(vi) Enter the password property name: ADOGL_EJB_SECURITY_CREDENTIALS

(vii) Enter the password: The administrator password provided during Oracle 10g AS installation.

G. Deploy the MDB in application server

1. Stop the application server.

If the application server is already running, then stop the application server as follows:

✓ For WINDOWS

- Set JAVA_HOME and ORACLE_HOME with the paths in your machine

  e.g.

  set ORACLE_HOME=D:\Oracle10gAS

  set JAVA_HOME=%ORACLE_HOME%\jdk

- Go to the <APP_SERVER_HOME>/bin directory in the command prompt

  E.g. cd %APP_SERVER_HOME%\bin

- Type **oc4j –shutdown –port 23791 –password <admin_password>**

  e.g. oc4j –shutdown –port 23791 –password oc4jadmin

  This will stop the server.

✓ For UNIX

- Set JAVA_HOME and ORACLE_HOME with the paths in your machine

  e.g.

  export ORACLE_HOME=/home/Oracle10gAS

  export JAVA_HOME=${ORACLE_HOME}/jdk

- Go to the <APP_SERVER_HOME>/bin directory in the command prompt

  e.g. cd ${APP_SERVER_HOME]/bin

- Type **oc4j –shutdown –port 23791 –password <admin_password>**

  e.g. oc4j –shutdown –port 23791 –password oc4jadmin

  This will stop the server.

2. Start the application server.

✓ For WINDOWS

– Set JAVA_HOME and ORACLE_HOME with the paths in your machine

  e.g.

  set ORACLE_HOME=D:\Oracle10gAS

  set JAVA_HOME=%ORACLE_HOME%\jdk

– Go to the <APP_SERVER_HOME>/bin directory in the command prompt

  e.g. cd %APP_SERVER_HOME%\bin

– Type oc4j –start

  This will start the server. Ensure that you get no error during start up. If the server start up is proper we shall get the following screen.

✓ For UNIX

– Set JAVA_HOME and ORACLE_HOME with the paths in your machine.

  e.g.

  export ORACLE_HOME=/home/Oracle10gAS

  export JAVA_HOME=${ORACLE_HOME}/jdk

– Go to the <APP_SERVER_HOME>/bin directory in the command prompt

E.g. cd ${APP_SERVER_HOME}/bin

– Type **oc4j –start**

This will start the server. Ensure that you get no error during start up.

3. Open the Administrative Console of Oracle Enterprise Manager

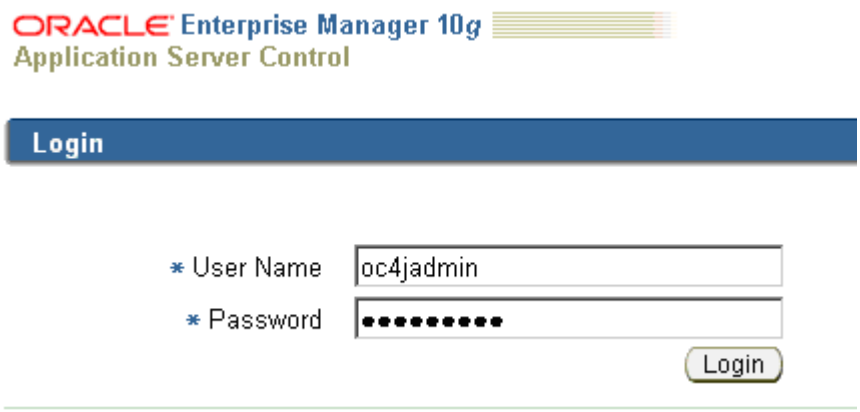
✓ Open an internet browser and type the OC4J Admin Console URL Address of the server.

e.g. http://10.80.4.116:8888/em

Where, 10.80.4.116 is the machine IP Address on which OC4J is running.

✓ Login to Administrative Console

Enter OC4J administrator username/password and press **Login**.



4. For each "res-ref-name" in ejb-jar.xml create an XA DataSource in Oracle 10g Application Server

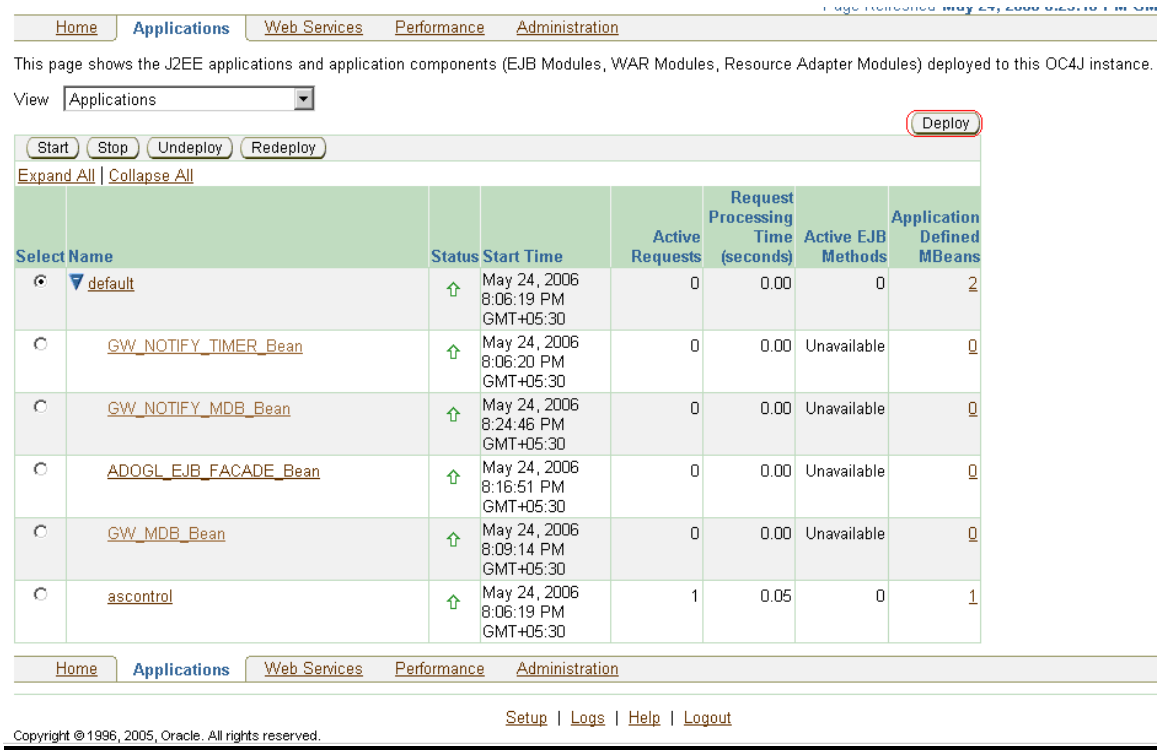
[**Refer:** OC4J_ADOGL_DataSource_Creation.doc]

5. Create OracleASJMS Queues and Queue Connection Factories in Oracle 10g Application Server

[**Refer:** OC4J_ADOGL_OracleASJMS_Queue_Installation.doc]

6. Deploy *ADOGL_MDB_Bean.ear*

✓ ***Click on** Applications -> Deploy.*

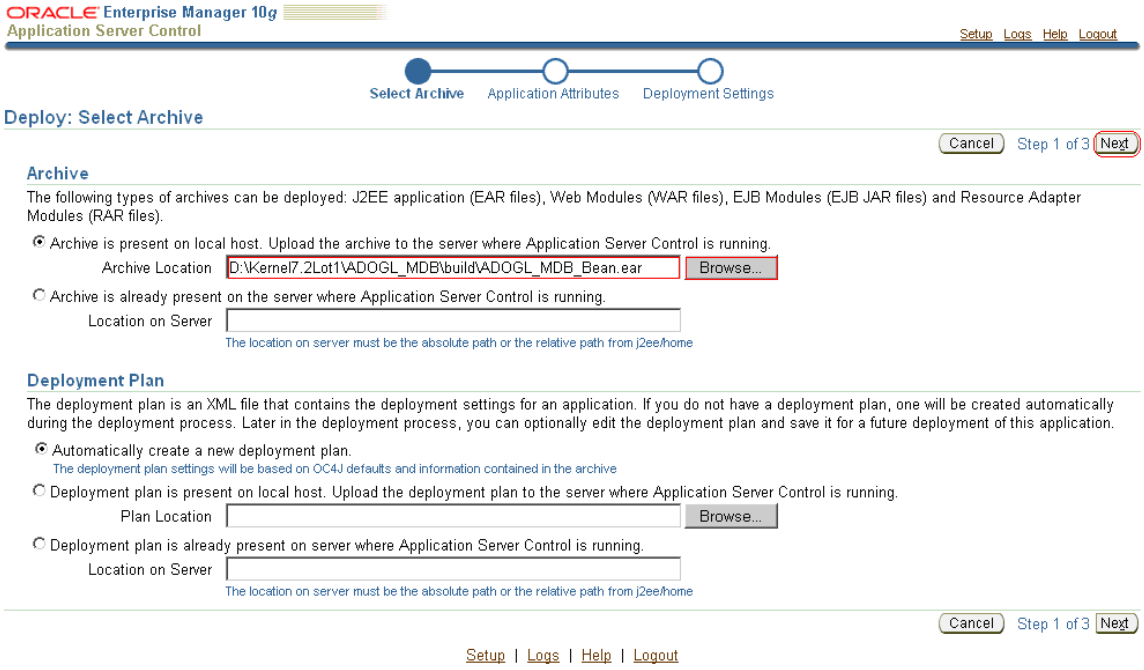


7. ***The following screen is displayed.***

- ✓ Click **Browse**
- ✓ Specify the local path of the enterprise archive file:

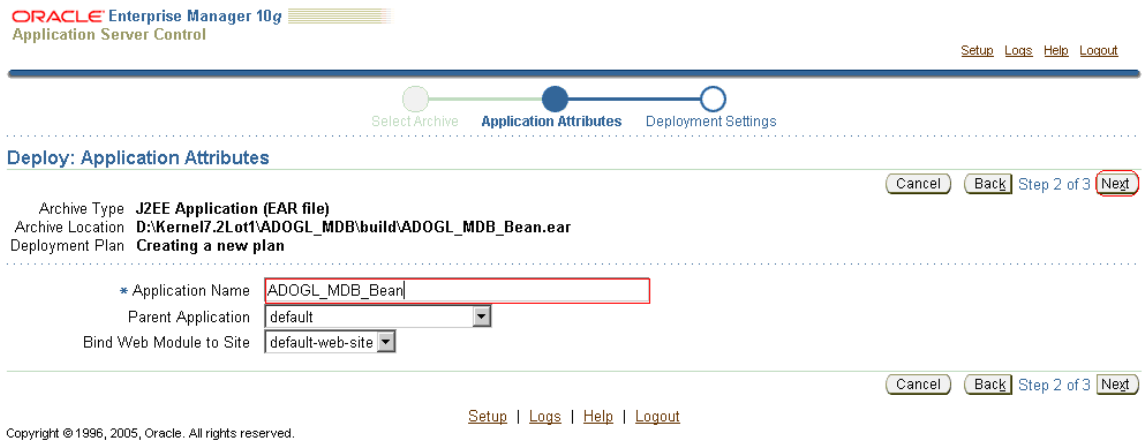
  <KERNEL_INSTALL_DIR>/ADOGL_MDB/build/ADOGL_MDB_Bean.ear

- ✓ ***Click** Next.*



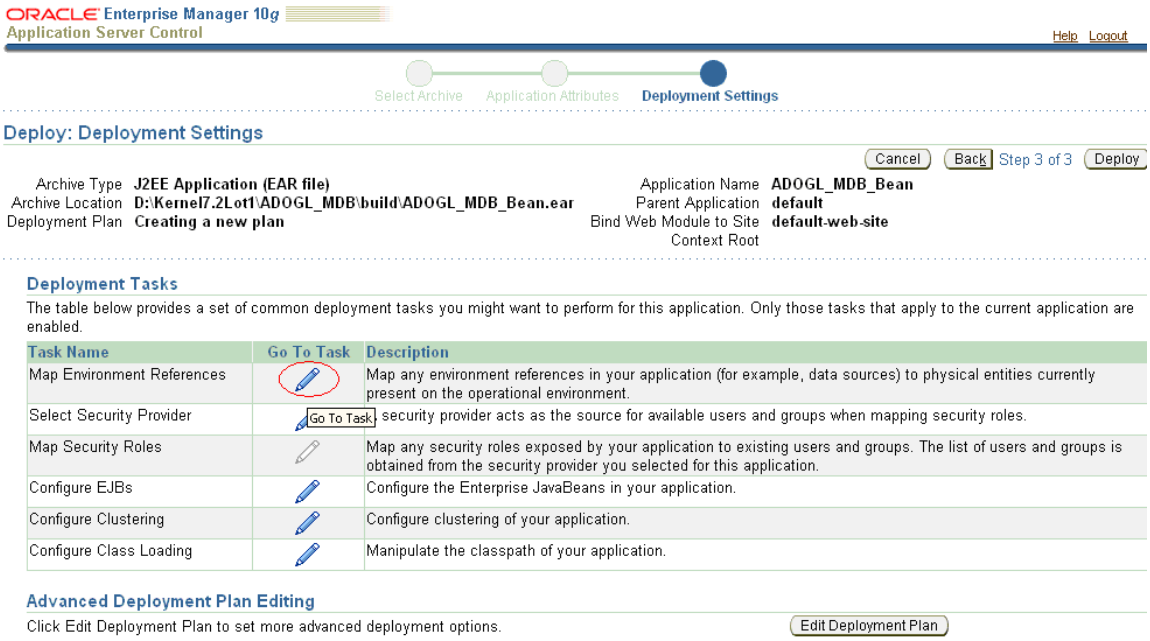
8. ***The following screen is displayed.***

- ✓ ***Click** Next.*



9. ***The following screen is displayed.***

✓ Click**" Map Environment References"**



10. *The following screen is displayed.*

✓ **Map to JNDI Location**

[Note: The JNDI names by default are in the table given below. These names can be modified if required in the following screen of the OEM console. In such a situation, remember to modify the corresponding entries in ejb-jar.xml and the ADOGL_MDB_Prop.properties file]

Resource Reference	JNDI Location
ADOGL_MDBQCF	**ADOGL_MDBQCF**
ADOGL_DS	**ADOGL_DS**
NOTIFY_DEST_QUEUE_DLQ	**NOTIFY_DEST_QUEUE_DLQ**

✓ Click **OK**

Deployment Settings: Map Environment References

Cancel OK

Archive Type	**J2EE Application (EAR file)**	Application Name	**ADOGL_MDB_Bean**
Archive Location	**D:\Kernel7.2Lot1\ADOGL_MDB\build\ADOGL_MDB_Bean.ear**	Parent Application	**default**
Deployment Plan	**Creating a new plan**	Bind Web Module to Site	**default-web-site**

Map Resource References

The table below lists all resource manager connection factory references found in your application. Resource references need to be associated with the JNDI names of physical entities on the system where the selected instance/cluster is running.

Resource Reference	Description	Type	Referenced By		Map to JNDI Location
			Module	Enterprise Bean	
ADOGL_MDBQCF	Queue connection factory for MDB Gateway	javax.jms. XAQueueConnectionFactory	ADOGL_MDB_Bean.jar	ADOGL_MDB_Bean	ADOGL_MDBQCF
ADOGL_DS		javax.sql.XADataSource	ADOGL_MDB_Bean.jar	ADOGL_MDB_Bean	ADOGL_DS

Map Resource Environment References

The table below lists all resource environment references found in your application. A resource environment reference needs to be bound to an administered object in the target operational environment.

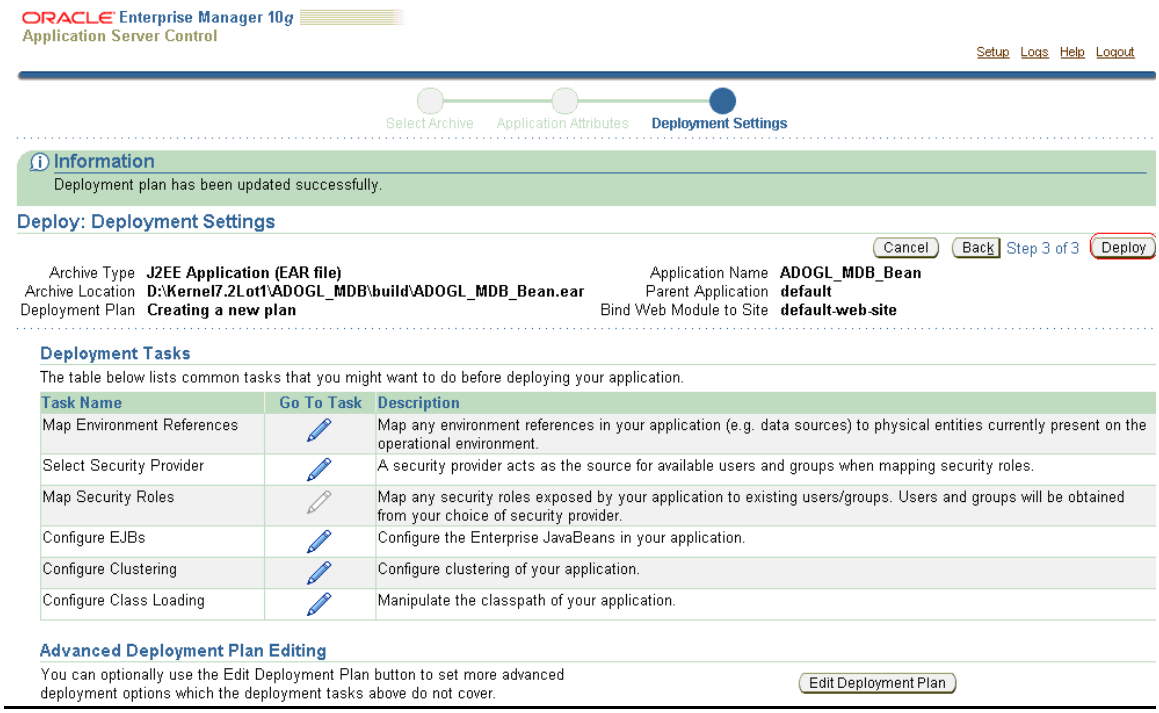
Resource Environment Reference	Description	Type	Referenced By		Map to JNDI Location
			Module	Enterprise Bean	
NOTIFY_DEST_QUEUE_DLQ	MDB Dead Letter Queue	javax.jms. Queue	ADOGL_MDB_Bean.jar	ADOGL_MDB_Bean	NOTIFY_DEST_QUEUE_DLQ

Map Message Destinations

The table below lists all message destinations found in your application. Logical destinations need to be mapped to physical destinations in the target operational environment.

11. <u>The following screen is displayed.</u>

- ✓ ***<u>Click</u>*** *<u>Deploy</u>*



12. *The following screen is displayed.*

Please ensure the ADOGL_MDB_Bean is successfully deployed.

✓ ***Click*** *Return*

ORACLE Enterprise Manager 10g
Application Server Control

Setup Logs Help Logout

Confirmation

Return

The Application "ADOGL_MDB_Bean" has been successfully deployed.

Progress Messages

```
[May 24, 2006 8:31:27 PM] Application Deployer for ADOGL_MDB_Bean STARTS.
[May 24, 2006 8:31:27 PM] Copy the archive to D:\Oracle10gAS\j2ee\home\applications\ADOGL_MDB_Bean.ear
[May 24, 2006 8:31:27 PM] Initialize D:\Oracle10gAS\j2ee\home\applications\ADOGL_MDB_Bean.ear begins...
[May 24, 2006 8:31:27 PM] Unpacking ADOGL_MDB_Bean.ear
[May 24, 2006 8:31:27 PM] Done unpacking ADOGL_MDB_Bean.ear
[May 24, 2006 8:31:27 PM] Initialize D:\Oracle10gAS\j2ee\home\applications\ADOGL_MDB_Bean.ear ends...
[May 24, 2006 8:31:27 PM] Starting application : ADOGL_MDB_Bean
[May 24, 2006 8:31:27 PM] Initializing ClassLoader(s)
[May 24, 2006 8:31:27 PM] Initializing EJB container
[May 24, 2006 8:31:27 PM] Loading connector(s)
[May 24, 2006 8:31:28 PM] Starting up resource adapters
[May 24, 2006 8:31:28 PM] Processing EJB module: ADOGL_MDB_Bean.jar
[May 24, 2006 8:31:28 PM] Compiling EJB generated code
[May 24, 2006 8:31:28 PM] Initializing EJB sessions
[May 24, 2006 8:31:28 PM] Committing ClassLoader(s)
[May 24, 2006 8:31:28 PM] Started application : ADOGL_MDB_Bean
[May 24, 2006 8:31:28 PM] Binding web application(s) to site default-web-site begins...
[May 24, 2006 8:31:28 PM] Binding web application(s) to site default-web-site ends...
[May 24, 2006 8:31:28 PM] Application Deployer for ADOGL_MDB_Bean COMPLETES. Operation time: 468 msecs
```

Return

Setup | Logs | Help | Logout

Copyright © 1996, 2005, Oracle. All rights reserved.

Appendix

1.1 Configuring ADOGL MDB with IBM WebSphere MQ

Follow the steps given below only if the Oracle10g Application Server is to be configured with ***IBM WebSphere MQ***.

Before going ahead with the steps given below, ensure the IBM WebSphere MQ Destinations, Connection Factories and their Bindings are created.

[Note: The path of the .bindings files needs to be specified in orion-application.xml]

Please refer to WAS_ADOGL_WebSphereMQ_Installation.doc Section 1.4 to create them.

The Resource Adapter (used to connect to IBM WebSphere MQ) related files are as given below and are located at

<KERNEL_INSTALL_DIR>\ADOGL_MDB\config\OC4J

- ✓ oc4j-connectors.xml
- ✓ oc4j-ra.xml
- ✓ orion-application.xml
- ✓ orion-ejb-jar.xml
- ✓ ra.xml

In addition, changes have been made to

- ✓ ejb-jar.xml (located at <KERNEL_INSTALL_DIR>\ADOGL_MDB\config)

1. **Modify oc4j-connectors.xml**

Specify all the Queues involved as given below:

```
<adminobject-config location="NOTIFY_DEST_QUEUE">
        <adminobject-class>oracle.j2ee.ra.jms.generic.AdminObjectQueueImpl</adminobject-class>
        <config-property name="jndiName" value="NOTIFY_DEST_QUEUE"/>
        <config-property name="resourceProviderName" value="WebSphereMQRP"/>
</adminobject-config>

<adminobject-config location="NOTIFY_DEST_QUEUE_DLQ">
        <adminobject-class>oracle.j2ee.ra.jms.generic.AdminObjectQueueImpl</adminobject-class>
        <config-property name="jndiName" value="NOTIFY_DEST_QUEUE_DLQ"/>
        <config-property name="resourceProviderName" value="WebSphereMQRP"/>
</adminobject-config>
```

2. **Modify oc4j-ra.xml**

Specify the Queue Connection Factories involved as given below:

```
<connector-factory location="ADOGL_MDBQCF" connector-name="WebSphereMQC">
   <connectionfactory-interface>javax.jms.XAQueueConnectionFactory</connectionfactory-interface>
   <config-property name="jndiLocation" value="ADOGL_MDBQCF"/>
</connector-factory>
```

3. **Modify orion-application.xml**

Define the Resource Provider to be used by the Notify MDB.

[Note: Ensure the .bindings file is located in the correct path given below as value of the property name, java.naming.provider.url]

```
<resource-provider
    class="com.evermind.server.deployment.ContextScanningResourceProvider"
    name="WebSphereMQRP">
     <description>WebSphere MQ Resource Provider</description>
     <property name="java.naming.factory.initial"
                value="com.sun.jndi.fscontext.RefFSContextFactory"/>

     <property name="java.naming.provider.url" value="file:/D:/Kernel7.2/Bindings"/>
</resource-provider>
```

4. Modify orion-ejb-jar.xml

Mention the Resource Adapter name and the Resource references as shown below.

```
<message-driven-deployment name="ADOGL_MDB_Bean"
            resource-adapter="WebSphereMQC"
            listener-threads="100"
            subscription-name="ADOGL_MDB_Bean_Sub"
            transaction-timeout="172800">


     <!-- Resource Ref mappings -->
     <resource-ref-mapping name="ADOGL_DS" location="ADOGL_DS" />
```

```
    <resource-ref-mapping name="ADOGL_MDBQCF" location="ADOGL_MDBQCF" />


    <!-- Resource Ref Environment mappings -->
    <resource-env-ref-mapping name="NOTIFY_DEST_QUEUE"
                                        location="NOTIFY_DEST_QUEUE" />


     <resource-env-ref-mapping name="NOTIFY_DEST_QUEUE_DLQ"
                                         location="NOTIFY_DEST_QUEUE_DLQ" />


 </message-driven-deployment>
```

5. **Modify ra.xml**

Specify the Queues and the Queue Connection Factory involved as given below:

```
<!-- Queue admin object -->
<adminobject>
        <adminobject-interface>javax.jms.Queue</adminobject-interface>
        <adminobject-class>oracle.j2ee.ra.jms.generic.AdminObjectQueueImpl</adminobject-class>
        <config-property>
            <config-property-name>jndiName</config-property-name>
            <config-property-type>java.lang.String</config-property-type>
            <config-property-value>NOTIFY_DEST_QUEUE</config-property-value>
        </config-property>
        <config-property>
            <config-property-name>resourceProviderName</config-property-name>
```

```
            <config-property-type>java.lang.String</config-property-type>
            <config-property-value>WebSphereMQRP</config-property-value>
          </config-property>
</adminobject>

<outbound-resourceadapter>
     <connection-definition>
            <managedconnectionfactory-class>
                    oracle.j2ee.ra.jms.generic.ManagedXAQueueConnectionFactoryImpl
            </managedconnectionfactory-class>
            <connectionfactory-interface>
                    javax.jms.XAQueueConnectionFactory
             </connectionfactory-interface>
            <connectionfactory-impl-class>
                    oracle.j2ee.ra.jms.generic.XAQueueConnectionFactoryWrapper
             </connectionfactory-impl-class>
            <connection-interface>javax.jms.XAConnection</connection-interface>
            <connection-impl-class>
                    oracle.j2ee.ra.jms.generic.ConnectionWrapper
            </connection-impl-class>
            <config-property>
               <config-property-name>jndiLocation</config-property-name>
               <config-property-type>java.lang.String</config-property-type>
               <config-property-value>ADOGL_MDBQCF</config-property-value>
            </config-property>
    </connection-definition>
```

6. Modify ejb-jar.xml

Specify the Queue the ADOGL MDB is listening to in the <activation-config> tag as shown below:

```
<activation-config>
    <activation-config-property>
        <activation-config-property-name>DestinationType</activation-config-property-name>
        <activation-config-property-value>javax.jms.Queue</activation-config-property-value>
    </activation-config-property>
    <activation-config-property>
        <activation-config-property-name>DestinationName</activation-config-property-name>
        <activation-config-property-value>
            NOTIFY_DEST_QUEUE
        </activation-config-property-value>
    </activation-config-property>
    <activation-config-property>
        <activation-config-property-name>
            ConnectionFactoryJndiName
        </activation-config-property-name>
        <activation-config-property-value>ADOGL_MDBQCF</activation-config-property-value>
    </activation-config-property>
</activation-config>
```

FLEXCUBE UBS Oracle GL AdapterMDB Deployment Installation
[May] [2020]
Version 12.87.06.0.0

Oracle Financial Services Software Limited
Oracle Park
Off Western Express Highway
Goregaon (East)
Mumbai, Maharashtra 400 063
India

Worldwide Inquiries:
Phone: +91 22 6718 3000
Fax: +91 22 6718 3001
www.oracle.com/financialservices/

Copyright © [2007], [2020], Oracle and/or its affiliates. All rights reserved.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate failsafe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

This software or hardware and documentation may provide access to or information on content, products and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.