Oracle® Tuxedo JCA Adapter Inflow Transaction

Users Guide

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Oracle Tuxedo JCA Adapter Inflow Transaction Guide

Packaging and Contents 1

Supported Application Servers and Oracle Tuxedo Versions 1

RAR File Name 2

RAR File Contents 2

Overview 3

Configuration 4

Oracle Tuxedo JCA Adapter Configuration 4

Application Server Resource Adapter Configuration 8

Oracle Tuxedo GWTDOMAIN Gateway Configuration 20

Oracle Tuxedo JCA Adapter Deployment 22

Configure dmconfig File 22

Resource Adapter Deployment Descriptor 23

Deploy Oracle Tuxedo JCA Adapter 37

Configure Activation Spec 39

Configuring MDB Using WebSphere Integrated Console 39

Deploy MDB To WebSphere 39

Oracle Tuxedo Application Domain 42

Oracle Tuxedo Configuration 42

Programming MDB For Oracle Tuxedo JCA Adapter 46

Interface TuxedoMDBService 46

Creating an Inbound Connector-Based MDB Using IBM ASTK 49

Use J2EE Perspective 49

Create EJB Project 49

Setup Build Environment 49

Create Message-Driven Bean 50

Modify EchoBean 52

Build 53
Create EJB JAR File 54
Oracle Tuxedo Transactional Client Source Code 57

Oracle Tuxedo JCA Adapter Inflow Transaction Guide

This document describes the configuration, deployment, and programming of the inflow transaction through *connector-based MDB* (also called *none JMS-based MDB)* feature. This feature allows inflow (inbound) transactions from Oracle Tuxedo to a Java application server. It contains the following topics:

- Packaging and Contents
- Overview
- Configuration
- Oracle Tuxedo JCA Adapter Deployment
- Programming MDB For Oracle Tuxedo JCA Adapter

Packaging and Contents

The Inflow Transaction feature is delivered as an RAR file; you must un-jar the file and modify the Oracle Tuxedo JCA Adapter configuration before it can be installed on an application server.

Supported Application Servers and Oracle Tuxedo Versions

Table 1 lists supported Oracle Tuxedo and application server versions.

Table 1 Supported Versions

Name	Version
WebSphere Application Server	7.0
Oracle Tuxedo	11gR1PS1

RAR File Name

The RAR file name is `com.oracle.tuxedo.TuxedoAdapter.rar`. After you modify the Oracle Tuxedo JCA Adapter configuration, it can be archived (using any name) be used to configure Oracle Tuxedo JCA Adapter to the application server.

RAR File Contents

Table 2 lists the RAR file contents.

Table 2 RAR File Content

File Name	Description
`adapter.properties`	Message catalogue of *Oracle Tuxedo JCA Adapter*.
`adapter_ja.properties`	Japanese version of message catalogue of *Oracle Tuxedo JCA Adapter*.
`com.bea.core.i18n_1.4.0.0.jar`	I18N library
`com.bea.core.jatmi_1.3.2.0.jar`	JATMI library
`com.oracle.tuxedo.adapter_1.2.1.0.jar`	Oracle Tuxedo JCA Adapter
`dmconfig.xml`	Sample *dmconfig* file for *Oracle Tuxedo JCA Adapter* configuration.
`javax.ejb_3.0.1.jar`	EJB 3.0 library
`javax.transaction_1.0.0.0_1-1.jar`	JTA 1.1 library
`tja.xsd`	Schema file for *Oracle Tuxedo JCA Adapter*.

Table 2 RAR File Content

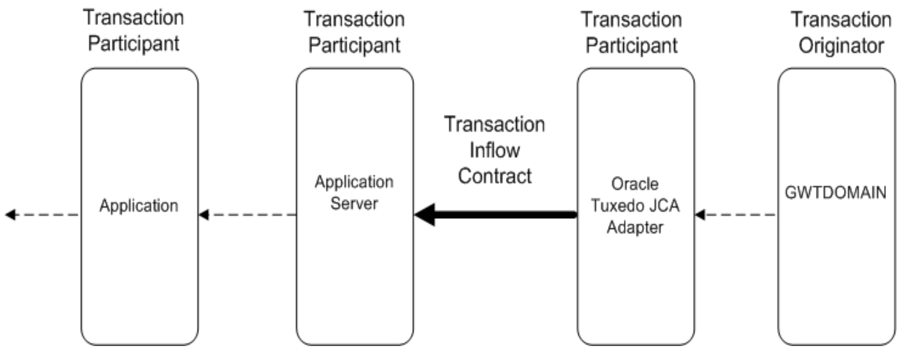
`META-INF/MANIFEST.MF`	Manifest file
`META-INF/client-side.ra.xml`	Sample client-side only resource adapter deployment descriptor
`META-INF/ra.xml`	Sample resource adapter deployment descriptor for connection factory based configuration
`META-INF/sample.weblogic-ra.xml`	Sample weblogic-ra.xml file for **WebLogic Server** for connection factory based configuration
`META-INF/server.ra.xml`	Sample resource adapter deployment descriptor for *dmconfig* based configuration
`META-INF/weblogic-ra.xml`	Sample weblogic-ra.xml file for **WebLogic Server**

Overview

The Oracle Tuxedo JCA Adapter supports Oracle Tuxedo TDOMAIN protocol including its transaction context format as shown in Figure 1. When the Oracle Tuxedo JCA Adapter receives an inbound request from Oracle Tuxedo, it checks whether there is an associated Oracle Tuxedo transaction context or not. If it does have it, then the Oracle Tuxedo JCA Adapter creates a `javax.transaction.xa.Xid` based on the Oracle Tuxedo transaction context.

The Oracle Tuxedo JCA Adapter supplies this XID to an *ExecutionContex*t and submits the *Work* instance along with the *ExecutionContext* to the application server *WorkManager* for execution. By propagating an imported transaction to a Java application server this way, the application server and subsequent participants can work as part of the imported transaction.

Figure 1 Oracle Tuxedo TDOMAIN Protocol



Configuration

Configuration can be separated into two parts. The first part is Oracle Tuxedo JCA Adapter configuration, and the second part is configuring the adapter in an application server.

Oracle Tuxedo JCA Adapter Configuration

An "Exported" service is a Java resource that can be accessed by an Oracle Tuxedo client; in this particular case it is the *connector-based MDB*. You must configure the "Export" element in the *dmconfig* file for an Oracle Tuxedo client to access resources located in the Java application server.

A single "Export" element in the `dmconfig` file refers to an exported resource to the Oracle Tuxedo client. Listing 1 shows two exported services (`Tolower` and `Echo`), to an Oracle Tuxedo client. The `RemoteName` is the service name the Oracle Tuxedo GWTDOMAIN gateway uses to invoke the service; the `name` attribute is the service name of the resource. The `Type` must be MDB for inflow transaction, and the `Source` is the JNDI binding of the MDB.

Listing 1 Exported Services Example

```
…

<Export name=”Tolower”>

  <RemoteName>TolowerMDB</RemoteName>

  <SessionName>session_1</SessionName>
  <Type>MDB</Type>
  <Source>eis/Tolower</Source>
</Export>
<Export name=”Echo”>
  <RemoteName>EchoMDB</RemoteName>
  <SessionName>session_1</SessionName>
  <Type>MDB</Type>
  <Source>eis/Echo</Source>
</Export>
…
```

Multiple exported services using single MDB is also supported. The purpose is to give greater freedom to the adapter application developer. You can configure them using the same JNDI name specified in the *dmconfig* file `Source` element; however, since there is only one interface implemented by the application for that MDB, the application must do the dispatching itself. Listing 2 shows an example of multiple exported services using single MDB.

Listing 2 Multiple Exported Services Example

```
…
<Export name=”INFO_SERVICE”>
  <RemoteName>INFO</RemoteName>
  <SessionName>session_1</SessionName>
  <Type>MDB</Type>
  <Source>eis/services</Source>
</Export>
<Export name=”ACCOUNT_SERVICE”>
  <RemoteName>ACCOUNT</RemoteName>
  <SessionName>session_1</SessionName>
  <Type>MDB</Type>
  <Source>eis/services</Source>
</Export>
…
```

This example exports two services `INFO` and `ACCOUNT` to an Oracle Tuxedo client using the same MDB that binds to JNDI name `eis/services.` In this case you must create and deploy one MDB that dispatches using the service name passed to the MDB. Listing 3 shows an example MDB Code Fragment doing its own dispatching.

Listing 3 MDB Code Fragment

```
…
public Reply service(TPServiceInformation mydata)
    throws TuxedoReplyException
{
  String serviceName = mydata.getServiceName();
  if (serviceName.equals("ACCOUNT_SERVICE")) {
    doAccount1(mydata);
  }
   else if (serviceName.equals("INFO_SERVICE")) {
    doInfo(mydata);
  }
  else {
    /* throws an exception */
  }
}
```

Listing 4 shows a complete Oracle Tuxedo JCA Adapter configuration file example.

Listing 4 Oracle Tuxedo JCA Adapter Configuration File Example

```
<?xml version="1.0" encoding="UTF-8"?><TuxedoConnector>
  <LocalAccessPoint name="JDOM">
    <AccessPointId>JDOM_ID</AccessPointId>
    <NetworkAddress>//localhost:10801</NetworkAddress>
  </LocalAccessPoint>
  <RemoteAccessPoint name="TDOM1">
    <AccessPointId>TDOM1_ID</AccessPointId>
    <NetworkAddress>//localhost:12478</NetworkAddress>
  </RemoteAccessPoint>
  <SessionProfile name="profile_1">
    <BlockTime>60000</BlockTime>
    <ConnectionPolicy>ON_STARTUP</ConnectionPolicy>
  </SessionProfile>
  <Session name="session_1">
    <LocalAccessPointName>JDOM</LocalAccessPointName>
    <RemoteAccessPointName>TDOM1</RemoteAccessPointName>
    <ProfileName>profile_1</ProfileName>
  </Session>
  <Export name="Tolower">
    <RemoteName>TolowerMDB</RemoteName>
    <SessionName>session_1</SessionName>
    <Type>MDB</Type>
    <Source>eis/tolower</Source>
  </Export>
  <Export name="Echo">
    <RemoteName>EchoMDB</RemoteName>
    <SessionName>session_1</SessionName>
    <Type>MDB</Type>
    <Source>eis/echo</Source>
  </Export>
  <Export name="INFO_SERVICE">
    <RemoteName>INFO</RemoteName>
    <SessionName>session_1</SessionName>
    <Type>MDB</Type>
    <Source>eis/services</Source>
  </Export>
  <Export name="ACCOUNT_SERVICE">
    <RemoteName>ACCOUNT</RemoteName>
    <SessionName>session_1</SessionName>
    <Type>MDB</Type>
    <Source>eis/services</Source>
  </Export>
</TuxedoConnector>
```

Application Server Resource Adapter Configuration

You must configure the Resource Adapter Deployment Descriptor (`ra.xml`). The name, `ra.xml`, cannot be changed. Every RAR file must contain one `ra.xml` file. For inflow transactions using MDB to work, you must configure the `inbound-resourceadapter` element. This element is used to describe the interface and activation specification specific to the Oracle Tuxedo JCA Adapter.

The `inbound-resourceadapter` element is fixed. The `source` property is the only property that you can configure. If configured, the JCA container requires the `source` property to be specified in the EJB descriptor (`ejb-jar.xml`), file.

Listing 5 shows an `ra.xml` file example. You can use the ra.xml file distributed with the Oracle Tuxedo JCA Adapter as a base and customize it as needed.

Listing 5 ra.xml File Example

```
<?xml version="1.0" encoding="UTF-8"?>
<connector xmlns="http://java.sun.com/xml/ns/j2ee"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/connector_1_5.xsd"
    version="1.5">
  <display-name>Tuxedo JCA Adapter</display-name>
  <vendor-name>Oracle</vendor-name>
  <eis-type>Tuxedo</eis-type>
  <resourceadapter-version>11gR1(11.1.1.2.1)</resourceadapter-version>
  <license>
    <description>Tuxedo SALT license</description>
    <license-required>false</license-required>
  </license>
  <resourceadapter>

<resourceadapter-class>com.oracle.tuxedo.adapter.TuxedoResourceAdapter</re
sourceadapter-class>
    <!--
      The following is the list of properties name can be configured as
adapter-wise configuration.
      traceLevel  - java.lang.String  - a numerical value
      xaAffinity  - java.lang.String  - transaction affinity to a remote
domain, "true" or "false", default to true

      keyFileName - java.lang.String  - encryption key file name

      throwFailureReplyException - java.lang.Boolean - default to ture

      appManagedLocalTxTimeout   - java.lang.Integer - Application managed
transaction or AUTOTRAN timeout

                                                   defaults to 300 seconds

     fieldTable16Class - java.lang.String - a comma-separated list of fully
qualified FML classes

     fieldTable32class - java.lang.String - a comma-separated list of fully
qualified FML32 classes

     viewFile16Class   - java.lang.String - a comma-separated list of fully
qualified VIEW classes

     viewFile32Class   - java.lang.String - a comma-separated list of fully
qualified VIEW32 classes

      tpusrFile         - java.lang.String - path name to the TPUSR file

     remoteMBEncoding  - java.lang.String - remote Tuxedo encoding name for
multi-byte language

     mBEncodingMapFile - java.lang.String - path name to Multi-byte encoding
name mapping

      autoTran          - java.lang.Boolean- enable adapter-wise AUTOTRAN,
default to false

    -->

    <outbound-resourceadapter>

      <connection-definition>


<managedconnectionfactory-class>com.oracle.tuxedo.adapter.spi.TuxedoManage
dConnectionFactory</managedconnectionfactory-class>

        <!--

          The following is the list of properties that you can use
          to configure thee connection pool or connection factory.
          You must either configure localAccessPointSpec or
          connectionFactoryName if transaction is used.
        These property described here is serving as template, user should not
          configure them here, instead user should configure them either
through WebSphere console
          or weblogic-ra.xml side file.
        -->
        <config-property>
          <description>factory-wise AUTOTRAN setting, default to false,
overrides adapter-wise setting</description>
          <config-property-name>autoTran</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise Failure Reply Exception setting, default
to true, overrides adapter-wise setting</description>

<config-property-name>throwFailureReplyException</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise application managed transaction or
AUTOTRAN time out, overrides adapter-wise setting</description>

<config-property-name>appManagedLocalTxTimeout</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>
        <config-property>
```

```
              <description>connection factory or pool name, this is required if
    XA or local application managed
                            transaction is required</description>
            <config-property-name>connectionFactoryName</config-property-name>
              <config-property-type>java.lang.String</config-property-type>
            </config-property>
            <config-property>
              <description>application password in either clear text or cipher
    text using com.oracle.tuxedo.tools.EncryptPassword tool</description>
              <config-property-name>applicationPassword</config-property-name>
              <config-property-type>java.lang.String</config-property-type>
            </config-property>
            <config-property>
              <description>local access point specification of the format
    //hostname:port/domainId=DOMAINID</description>
             <config-property-name>localAccessPointSpec</config-property-name>
              <config-property-type>java.lang.String</config-property-type>
            </config-property>
            <config-property>
              <description>factory-wise SSL to configure whether mutual
    authentication is required, default to false</description>

    <config-property-name>mutualAuthenticationRequired</config-property-name>
              <config-property-type>java.lang.Boolean</config-property-type>
            </config-property>
            <config-property>
              <description>factory-wise SSL for configuring identity key store
    file name, must be configured if SSL is desired</description>
```

```
<config-property-name>identityKeyStoreFileName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise SSL setting for private key alias used
in the key store, must be configured if SSL is desired</description>
          <config-property-name>privateKeyAlias</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise trusted key store file name, must be
configured if SSL is desired</description>

<config-property-name>trustedKeyStoreFileName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for identityKeyStore in clear
text</description>

<config-property-name>identityKeyStorePassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for privateKeyAlias in clear
text</description>

<config-property-name>privateKeyAliasPassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for trustedKeyStore in clear
text</description>

<config-property-name>trustedKeyStorePassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
         <description>factory-wise RemoteAccessPoint specification of the
format //hostname:port/domainId=DOMAINID</description>
        <config-property-name>remoteAccessPointSpec</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise allow anonymous access to Tuxedo, default
to false</description>
          <config-property-name>rapAllowAnonymous</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise application key value for anonymous user,
default to -1</description>

<config-property-name>rapDefaultApplicationKey</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>
        <config-property>
```

```
          <description>factory-wise application key fully qualified class
name for AppKey generator</description>

<config-property-name>rapApplicationKeyClass</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise custom application key
parameter</description>

<config-property-name>rapApplicationKeyClassParam</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise session profile block timeout value,
default to 60000 milliseconds</description>
          <config-property-name>spBlockTime</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise whether allows interoperate with 6.5
Tuxedo Domain, default to false</description>
          <config-property-name>spInteroperate</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise security setting, legal values: NONE,
DM_PW, APP_PW</description>
          <config-property-name>spSecurity</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise credential propagation policy, either
LOCAL or GLOBAL</description>
          <config-property-name>spCredentialPolicy</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise number of seconds that session waits
between automatic connection establishment,
                    default to 60 seconds. A value of 0 disabled connection
retry</description>
          <config-property-name>spRetryInterval</config-property-name>
          <config-property-type>java.lang.Long</config-property-type>
        </config-property>
        <config-property>
         <description>factory-wise maximum number of times adapter will try
to establish a session connection to
                        remote Tuxedo access point. Default value is
Long.MAX_VALUE.</description>
          <config-property-name>spMaxRetries</config-property-name>
          <config-property-type>java.lang.Long</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise compression threshold, default to
Integer.MAX_VALUE</description>
          <config-property-name>spCompressionLimit</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>

        <config-property>

        <description>factory-wise minimum encryption strength requirement,
legal values are 0, 40, 56, 128, 256.

                        Default value is 0.</description>

          <config-property-name>spMinEncryptBits</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

        <description>factory-wise maximum encryption strength requirement,
legal values are 0, 40, 56, 128, 256.

                        Default value is 128.</description>

          <config-property-name>spMaxEncryptBits</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise the maximum idle time before sending
application level keep alive.

                     It is measured in millisecond, and roundup to seconds.
Default value is 0.</description>

          <config-property-name>spKeeyAlive</config-property-name>

          <config-property-type>java.lang.Long</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise how long adapter will wait for
acknowledgement before adapter decides the

                     connection already lost.  Measurement in millisecond,
and its default value is 10 seconds.
```

```
                     A value of 0 will disable the wait, and thus will not
close the connection</description>
          <config-property-name>spKeepAliveWait</config-property-name>
          <config-property-type>java.lang.Long</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise valid Tuxedo service names in a
comma-separated list.  If not specified then
                    default import will be used and will grant all service
request to remote Tuxedo domain</description>
          <config-property-name>impResourceName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>Exported resource, types of resource supported are
EJB, POJO, MDB.</description>
          <config-property-name>exportSpec</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>

<connectionfactory-interface>javax.resource.cci.ConnectionFactory</connect
ionfactory-interface>

<connectionfactory-impl-class>com.oracle.tuxedo.adapter.cci.TuxedoConnecti
onFactory</connectionfactory-impl-class>

<connection-interface>javax.resource.cci.Connection</connection-interface>

<connection-impl-class>com.oracle.tuxedo.adapter.cci.TuxedoJCAConnection</
connection-impl-class>
```

```
      </connection-definition>
<!--
      <transaction-support>NoTransaction</transaction-support>
      <transaction-support>LocalTransaction</transaction-support>
-->
      <transaction-support>XATransaction</transaction-support>
      <authentication-mechanism>

<authentication-mechanism-type>BasicPassword</authentication-mechanism-typ
e>

<credential-interface>javax.resource.spi.security.PasswordCredential</cred
ential-interface>
      </authentication-mechanism>
      <reauthentication-support>false</reauthentication-support>
    </outbound-resourceadapter>
    <inbound-resourceadapter>
      <messageadapter>
        <messagelistener>

<messagelistener-type>com.oracle.tuxedo.adapter.intf.TuxedoMDBService</mes
sagelistener-type>
          <activationspec>

<activationspec-class>com.oracle.tuxedo.adapter.spi.TuxedoActivationSpec</
activationspec-class>
            <required-config-property>
              <config-property-name>source</config-property-name>
            </required-config-property>
          </activationspec>
        </messagelistener>
      </messageadapter>
    </inbound-resourceadapter>
  </resourceadapter>
</connector>
```

The inbound-resourceadapter element contains the interface class that must be implement in the connector-based MDB and the activation specification class.

. The fully qualified interface name is `com.oracle.t uxedo.adapter.intf.TuxedoMDBService`. The fully qualified activation specification is `com.oracle.tuxedo.adapter.spi.TuxedoActivationSpec`. *You must not* change any one of these two values in the Oracle Tuxedo JCA Adapter `ra.xml` file.

Oracle Tuxedo GWTDOMAIN Gateway Configuration

You must also configure the Oracle Tuxedo GWTDOMAIN gateway to communicate with the Oracle Tuxedo JCA Adapter. Listing 6 shows a Tuxedo /Domain configuration file example.

Listing 6 Tuxedo /Domain Configuration File Example

```
#
*DM_RESOURCES
#
VERSION=U22
#

#
#
*DM_LOCAL_DOMAINS
#
```

```
# NOTE: Remove DYNAMIC_RAP line if you are not running with Tuxedo 11.1.1.2.0
#
"TDOM1"    GWGRP=GROUP3
       TYPE=TDOMAIN
       DOMAINID="TDOM1_ID"
       BLOCKTIME=60
       SECURITY=NONE
            DMTLOGDEV="C:\test\JCA\inflow_tx/tdom/DMTLOG"
            DYNAMIC_RAP="YES"

#
*DM_REMOTE_DOMAINS
#
#
JDOM   TYPE=TDOMAIN
       DOMAINID="JDOM_ID"

#
#
*DM_TDOMAIN
#
TDOM1  NWADDR="//localhost:12478"
JDOM   NWADDR="//localhost:10801"
#
#
*DM_LOCAL_SERVICES
#
```

```
#Exported

#

#

*DM_REMOTE_SERVICES

#

#Imported

#

TolowerMDB

EchoMDB

INFO

ACCOUNT
```

In this example, Oracle Tuxedo *imports* the services `TolowerMDB`, `EchoMDB`, `INFO`, and `ACCOUNT`; while the Oracle Tuxedo JCA Adapter *exports* them.

Oracle Tuxedo JCA Adapter Deployment

On the WebSphere Integrated Solution Console, enter https://localhost:9047/ibm/console/logon.jsp (where 9047 is the port number your application server is listening on).

Configure *dmconfig* File

Before deploying the Oracle Tuxedo JCA Adapter for WebSphere application server, a `dmconfig` configuration file must be created. Listing 7 shows a `dmconfig` file example.

Listing 7 dmconfig File Example

```
<?xml version="1.0" encoding="UTF-8"?><TuxedoConnector>

  <LocalAccessPoint name="JDOM">

    <AccessPointId>JDOM_ID</AccessPointId>
    <NetworkAddress>//localhost:10801</NetworkAddress>
  </LocalAccessPoint>
  <RemoteAccessPoint name="TDOM1">
    <AccessPointId>TDOM1_ID</AccessPointId>
    <NetworkAddress>//localhost:12478</NetworkAddress>
  </RemoteAccessPoint>
  <SessionProfile name="profile_1">
    <BlockTime>60000</BlockTime>
    <ConnectionPolicy>ON_STARTUP</ConnectionPolicy>
  </SessionProfile>
  <Session name="session_1">
    <LocalAccessPointName>JDOM</LocalAccessPointName>
    <RemoteAccessPointName>TDOM1</RemoteAccessPointName>
    <ProfileName>profile_1</ProfileName>
  </Session>
  <Export name="ECHOMDB">
    <RemoteName>ECHO</RemoteName>
    <SessionName>session_1</SessionName>
    <Type>MDB</Type>
   <Source>eis/echo</Source>
  </Export>
</TuxedoConnector>
```

Resource Adapter Deployment Descriptor

You can either create the Resource Adapter Deployment Descriptor from scratch or modify an existing one. Listing 8 shows a *Deploy Descriptor ex*ample.

Listing 8 Deploy Descriptor Example

```
<?xml version="1.0" encoding="UTF-8"?>
<connector xmlns="http://java.sun.com/xml/ns/j2ee"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/connector_1_5.xsd"
    version="1.5">
  <display-name>Tuxedo JCA Adapter</display-name>
  <vendor-name>Oracle</vendor-name>
  <eis-type>Tuxedo</eis-type>
  <resourceadapter-version>11gR1(11.1.1.2.1)</resourceadapter-version>
  <license>
    <description>Tuxedo SALT license</description>
    <license-required>false</license-required>
  </license>
  <resourceadapter>

<resourceadapter-class>com.oracle.tuxedo.adapter.TuxedoResourceAdapter</re
sourceadapter-class>
    <!--
      The following is the list of properties name can be configured as
adapter-wise configuration.
      traceLevel  - java.lang.String  - a numerical value
      xaAffinity  - java.lang.String  - transaction affinity to a remote
domain, "true" or "false", default to true
      keyFileName - java.lang.String  - encryption key file name
      throwFailureReplyException - java.lang.Boolean - default to ture
      appManagedLocalTxTimeout   - java.lang.Integer - Application managed
transaction or AUTOTRAN timeout
```

```
                                                   defaults to 300 seconds
     fieldTable16Class - java.lang.String - a comma-separated list of fully
qualified FML classes
     fieldTable32class - java.lang.String - a comma-separated list of fully
qualified FML32 classes
     viewFile16Class   - java.lang.String - a comma-separated list of fully
qualified VIEW classes
     viewFile32Class   - java.lang.String - a comma-separated list of fully
qualified VIEW32 classes
      tpusrFile         - java.lang.String - path name to the TPUSR file
     remoteMBEncoding  - java.lang.String - remote Tuxedo encoding name for
multi-byte language
     mBEncodingMapFile - java.lang.String - path name to Multi-byte encoding
name mapping
      autoTran          - java.lang.Boolean- enable adapter-wise AUTOTRAN,
default to false
    -->
    <config-property>
      <config-property-name>traceLevel</config-property-name>
      <config-property-type>java.lang.String</config-property-type>
      <config-property-value>2000000</config-property-value>
    </config-property>
<!--
    <config-property>
      <config-property-name>xaAffinity</config-property-name>
      <config-property-type>java.lang.String</config-property-type>
      <config-property-value>true</config-property-value>
    </config-property>
-->
```

```
        <config-property>
          <config-property-name>dmconfig</config-property-name>
          <config-property-type>java.lang.String</config-property-type>

    <config-property-value>C:\test\JCA\inflow_tx/adapter/dmconfig.xml</config-
    property-value>
        </config-property>
        <config-property>
          <config-property-name>keyFileName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>

    <config-property-value>C:\test\JCA\inflow_tx/adapter/foo.key</config-prope
    rty-value>
        </config-property>
        <config-property>
          <config-property-name>debugAdapter</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugJatmi</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugConfig</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugSession</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugXa</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugPdu</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
        <config-property>
          <config-property-name>debugSec</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
          <config-property-value>true</config-property-value>
        </config-property>
    <!--
    -->
        <outbound-resourceadapter>
          <connection-definition>

    <managedconnectionfactory-class>com.oracle.tuxedo.adapter.spi.TuxedoManage
    dConnectionFactory</managedconnectionfactory-class>
```

```
        <!--
          The following is the list of properties that you can use to
          to configure connection pool or connection factory.
          User must either configure localAccessPointSpec or
          connectionFactoryName if transaction is used.
        These property described here is serving as template, user should not
          configure them here, instead user should configure them either
through WebSphere console
          or weblogic-ra.xml side file.
        -->
        <config-property>
          <description>factory-wise AUTOTRAN setting, default to false,
overrides adapter-wise setting</description>
          <config-property-name>autoTran</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise Failure Reply Exception setting, default
to true, overrides adapter-wise setting</description>

<config-property-name>throwFailureReplyException</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise application managed transaction or
AUTOTRAN time out, overrides adapter-wise setting</description>

<config-property-name>appManagedLocalTxTimeout</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>

        <config-property>

         <description>connection factory or pool name, this is required if
XA or local application managed

                       transaction is required</description>

        <config-property-name>connectionFactoryName</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>application password in either clear text or cipher
text using com.oracle.tuxedo.tools.EncryptPassword tool</description>

          <config-property-name>applicationPassword</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>local access point specification of the format
//hostname:port/domainId=DOMAINID</description>

         <config-property-name>localAccessPointSpec</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise SSL to configure whether mutual
authentication is required, default to false</description>


<config-property-name>mutualAuthenticationRequired</config-property-name>

          <config-property-type>java.lang.Boolean</config-property-type>

        </config-property>

        <config-property>
```

```
          <description>factory-wise SSL for configuring identity key store
file name, must be configured if SSL is desired</description>

<config-property-name>identityKeyStoreFileName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise SSL setting for private key alias used
in the key store, must be configured if SSL is desired</description>
          <config-property-name>privateKeyAlias</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise trusted key store file name, must be
configured if SSL is desired</description>

<config-property-name>trustedKeyStoreFileName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for identityKeyStore in clear
text</description>

<config-property-name>identityKeyStorePassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for privateKeyAlias in clear
text</description>
```

```
<config-property-name>privateKeyAliasPassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise password for trustedKeyStore in clear
text</description>

<config-property-name>trustedKeyStorePassPhrase</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
         <description>factory-wise RemoteAccessPoint specification of the
format //hostname:port/domainId=DOMAINID</description>
        <config-property-name>remoteAccessPointSpec</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise allow anonymous access to Tuxedo, default
to false</description>
          <config-property-name>rapAllowAnonymous</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
        <description>factory-wise application key value for anonymous user,
default to -1</description>

<config-property-name>rapDefaultApplicationKey</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise application key fully qualified class
name for AppKey generator</description>

<config-property-name>rapApplicationKeyClass</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise custom application key
parameter</description>

<config-property-name>rapApplicationKeyClassParam</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise session profile block timeout value,
default to 60000 milliseconds</description>
          <config-property-name>spBlockTime</config-property-name>
          <config-property-type>java.lang.Integer</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise whether allows interoperate with 6.5
Tuxedo Domain, default to false</description>
          <config-property-name>spInteroperate</config-property-name>
          <config-property-type>java.lang.Boolean</config-property-type>
        </config-property>
        <config-property>
```

```
          <description>factory-wise security setting, legal values: NONE,
DM_PW, APP_PW</description>

          <config-property-name>spSecurity</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise credential propagation policy, either
LOCAL or GLOBAL</description>

          <config-property-name>spCredentialPolicy</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise number of seconds that session waits
between automatic connection establishment,

                    default to 60 seconds. A value of 0 disabled connection
retry</description>

          <config-property-name>spRetryInterval</config-property-name>

          <config-property-type>java.lang.Long</config-property-type>

        </config-property>

        <config-property>

         <description>factory-wise maximum number of times adapter will try
to establish a session connection to

                       remote Tuxedo access point. Default value is
Long.MAX_VALUE.</description>

          <config-property-name>spMaxRetries</config-property-name>

          <config-property-type>java.lang.Long</config-property-type>

        </config-property>

        <config-property>
```

```
          <description>factory-wise compression threshold, default to
Integer.MAX_VALUE</description>

          <config-property-name>spCompressionLimit</config-property-name>

          <config-property-type>java.lang.Integer</config-property-type>

        </config-property>

        <config-property>

        <description>factory-wise minimum encryption strength requirement,
legal values are 0, 40, 56, 128, 256.

                       Default value is 0.</description>

          <config-property-name>spMinEncryptBits</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

        <description>factory-wise maximum encryption strength requirement,
legal values are 0, 40, 56, 128, 256.

                       Default value is 128.</description>

          <config-property-name>spMaxEncryptBits</config-property-name>

          <config-property-type>java.lang.String</config-property-type>

        </config-property>

        <config-property>

          <description>factory-wise the maximum idle time before sending
application level keep alive.

                    It is measured in millisecond, and roundup to seconds.
Default value is 0.</description>

          <config-property-name>spKeepAlive</config-property-name>

          <config-property-type>java.lang.Long</config-property-type>

        </config-property>

        <config-property>
```

```
          <description>factory-wise how long adapter will wait for
acknowledgement before adapter decides the
                     connection already lost.  Measurement in millisecond,
and its default value is 10 seconds.
                     A value of 0 will disable the wait, and thus will not
close the connection</description>
          <config-property-name>spKeepAliveWait</config-property-name>
          <config-property-type>java.lang.Long</config-property-type>
        </config-property>
        <config-property>
          <description>factory-wise valid Tuxedo service names in a
comma-separated list.  If not specified then
                    default import will be used and will grant all service
request to remote Tuxedo domain</description>
          <config-property-name>impResourceName</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>
        <config-property>
          <description>Exported resources.  Types of resource supported
are</description>
          <config-property-name>exportSpec</config-property-name>
          <config-property-type>java.lang.String</config-property-type>
        </config-property>

<connectionfactory-interface>javax.resource.cci.ConnectionFactory</connect
ionfactory-interface>

<connectionfactory-impl-class>com.oracle.tuxedo.adapter.cci.TuxedoConnecti
onFactory</connectionfactory-impl-class>
```

```
<connection-interface>javax.resource.cci.Connection</connection-interface>

<connection-impl-class>com.oracle.tuxedo.adapter.cci.TuxedoJCAConnection</
connection-impl-class>
      </connection-definition>
<!--
      <transaction-support>NoTransaction</transaction-support>
      <transaction-support>LocalTransaction</transaction-support>
-->
      <transaction-support>XATransaction</transaction-support>
      <authentication-mechanism>

<authentication-mechanism-type>BasicPassword</authentication-mechanism-typ
e>

<credential-interface>javax.resource.spi.security.PasswordCredential</cred
ential-interface>
      </authentication-mechanism>
      <reauthentication-support>false</reauthentication-support>
    </outbound-resourceadapter>
    <inbound-resourceadapter>
      <messageadapter>
        <messagelistener>

<messagelistener-type>com.oracle.tuxedo.adapter.intf.TuxedoMDBService</mes
sagelistener-type>
          <activationspec>
```

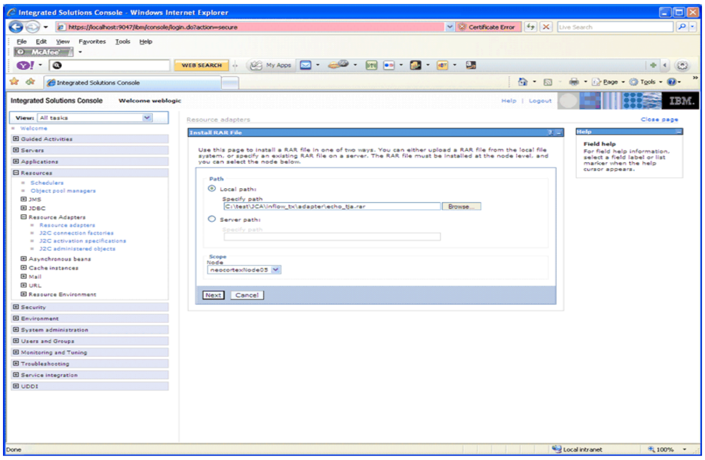
```
<activationspec-class>com.oracle.tuxedo.adapter.spi.TuxedoActivationSpec</
activationspec-class>
            <required-config-property>
              <config-property-name>source</config-property-name>
            </required-config-property>
          </activationspec>
        </messagelistener>
      </messageadapter>
    </inbound-resourceadapter>
  </resourceadapter>
</connector>
```

Deploy Oracle Tuxedo JCA Adapter

After jarring the resource adapter with deployment descriptor to create a Resource Archive, you can deploy it to a WebSphere application server.

After logging in to the WebSphere Integrated Solution Console select **Resource** from the left window pane; select **Resource Adapters** as shown in Figure 2. The **Resource adapter** window appears. Click **Browse** to find your RAR file.

Figure 2 WebSphere Integrated Solution Console



Install RAR File

Use this page to install a RAR file in one of two ways. You can either upload a RAR file from the local file system, or specify an existing RAR file on a server. The RAR file must be installed at the node level, and you can select the node below.

Path

[✓ Local path:]

Specify path: C:\test\JCA\inflow_tx\adapter\echo_tja.rar

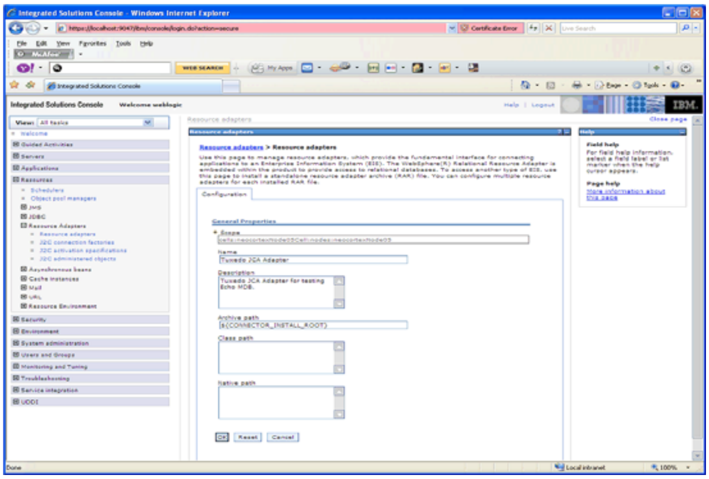
Server path:

Scope

Node: neocortexNode05

Click **Next**; the **General Properties** page appears as shown in Figure 3. Enter the appropriate description in the **Description** text entry box.

Figure 3 General Properties Page



Resource adapters > Resource adapters

Use this page to manage resource adapters, which provide the fundamental interface for connecting applications to an Enterprise Information System (EIS). The WebSphere(R) Relational Resource Adapter is embedded within the product to provide access to relational databases. To access another type of EIS, use this page to install a standalone resource adapter archive (RAR) file. You can configure multiple resource adapters for each installed RAR file.

General Properties

Name: Tuxedo JCA Adapter

Description: Tuxedo JCA Adapter for testing Echo MDB.

Archive path: ${CONNECTOR_INSTALL_ROOT}

Class path:

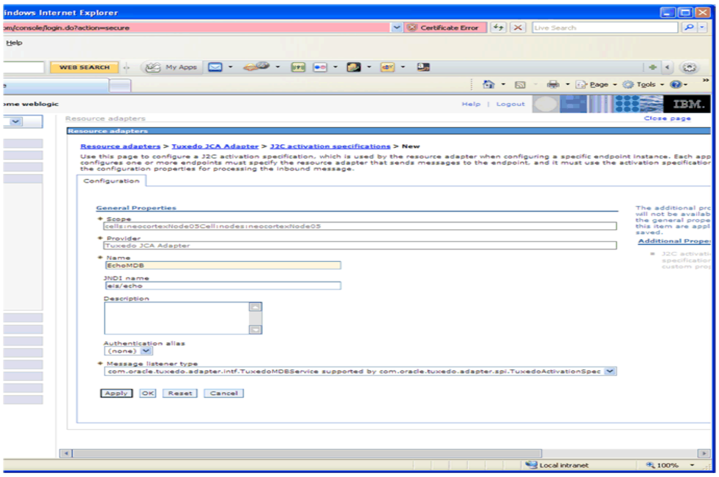
Native path:

Click **OK**, then click **Save**.

Configure Activation Spec

From **Resource adapter > Tuxedo JCA Adapter**, select **J2C activation specification** under **Additional Properties**; the **J2C activation specification** page appears as shown in Figure 4. Select **New**; enter a name for the activation specification and its JNDI name (this example uses `EchoMDB` as name and `eis/echo` as its JNDI name. This JNDI name is the JNDI name `EchoMDB` uses.

Figure 4 J2C Activation Specification Page


Resource adapters > Tuxedo JCA Adapter > J2C activation specifications > New

Use this page to configure a J2C activation specification, which is used by the resource adapter when configuring a specific endpoint instance. Each app configures one or more endpoints must specify the resource adapter that sends messages to the endpoint, and it must use the activation specificatio the configuration properties for processing the inbound message.

Configuration

General Properties

* Scope: cells:neocortexNode05Cell:nodes:neocortexNode05

* Provider: Tuxedo JCA Adapter

* Name: EchoMDB

JNDI name: eis/echo

Description:

Authentication alias: (none)

* Message listener type: com.oracle.tuxedo.adapter.intf.TuxedoMDBService supported by com.oracle.tuxedo.adapter.spi.TuxedoActivationSpec

The additional pro will not be availab the general prope this item are appl saved.

Additional Prope

- J2C activati specificatio custom pro

Click **OK** to complete specification.

Configuring MDB Using WebSphere Integrated Console

Start your WebSphere application server and log in to WebSphere using the Integrated Solution Console. The console port number usually is 904X where "X" can be any digit.

Note: You can find a `logs/server1/SystemOut.log`. Look for "`TCP Channel TCP_3 is listening.`"

Deploy MDB To WebSphere

Configure a Shared Library

On the left pane of console select **Environment**; this expands the menu item with a sub-menu. Select **Shared Library**; the **Shared Library** screen appears.

Click **New;** the configuration screen appears. Fill in **Name** with any name you like. For this example, enter **EchoMDBEnv** in the **Name** text entry box. In the Classpath window enter the full path name of the following two JAR files.

- `com.bea.core.jatmi_1.3.2.0.jar`
- `com.oracle.tuxedo.adapter_1.2.1.0.jar`

Use the Enter key as a separator then click **Save**.

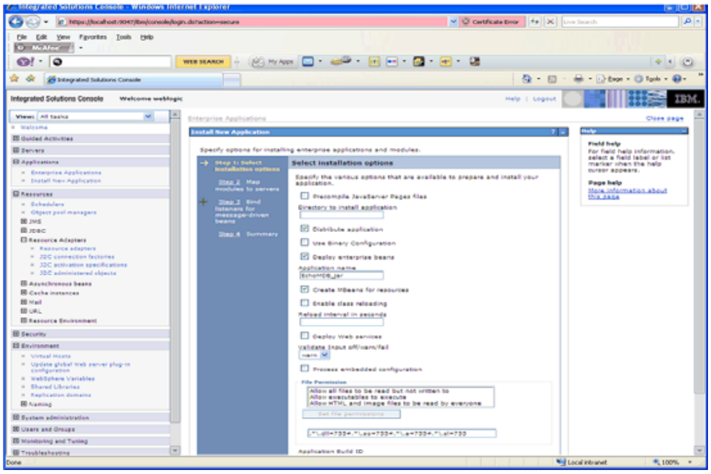
Install MDB

On left pane of the console, select **Applications**, then select **Install New Application**. The **Enterprise Application** menu appears.

In **Path to the new application** select **Local file system**. Use **Browse** to select the `EchoMDB.jar` file.

In **How do you want to install the application**, select **Show me all installation options and parameters**. Click **Next**; the **Select installation options** page appears as shown in Figure 5. Select **Deploy enterprise beans**, then click **Next**.

Figure 5 Select installation Options Page



Install New Application

Specify options for installing enterprise applications and modules.

Step 1: Select installation options
Step 2 Map modules to servers
Step 3 Bind listeners for message-driven beans
Step 4 Summary

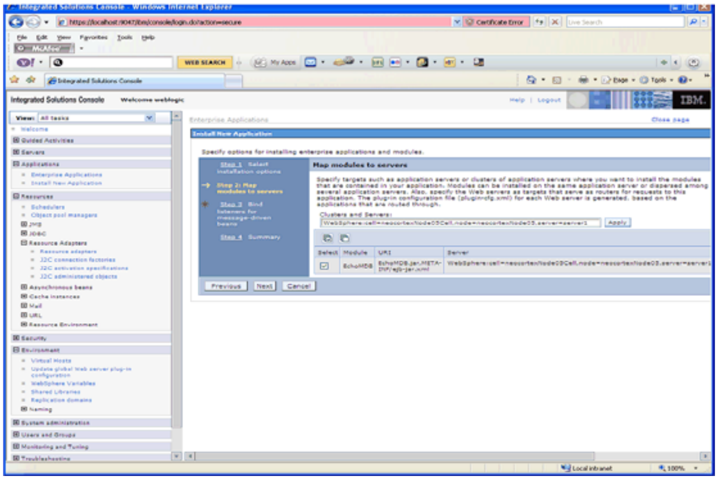
Select installation options

Specify the various options that are available to prepare and install your application.

- [ ] Precompile JavaServer Pages files
- Directory to install application:
- [✓] Distribute application
- [ ] Use Binary Configuration
- [✓] Deploy enterprise beans
- Application name: EchoMDB_jar
- [✓] Create MBeans for resources
- [ ] Enable class reloading
- Reload interval in seconds:
- [ ] Deploy Web services
- Validate Input off/warn/fail: warn
- [ ] Process embedded configuration
- File Permission:
  - Allow all files to be read but not written to
  - Allow executables to execute
  - Allow HTML and image files to be read by everyone
  - .*\.dll=755#.*\.so=755#.*\.a=755#.*\.sl=755
- Application Build ID

In the “Step 2: Map modules to servers” select the server where you want your Echo MDB be available. Place a check mark to “EchoMDB” then click **Apply**. Click **Next**.

Figure 6   Select EchoMDB Module



Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options
→ Step 2: Map modules to servers
Step 3 Bind listeners for message-driven beans
Step 4 Summary

Map modules to servers

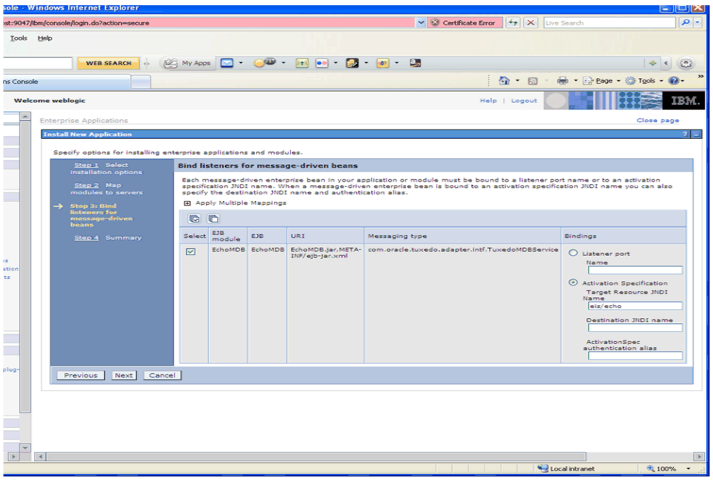
Specify targets such as application servers or clusters of application servers where you want to install the modules that are contained in your application. Modules can be installed on the same application server or dispersed among several application servers. Also, specify the Web servers as targets that serve as routers for requests to this application. The plugin configuration file (plugin-cfg.xml) for each Web server is generated, based on the applications that are routed through.

Clusters and Servers:
WebSphere:cell=neocortexNode03Cell,node=neocortexNode03,server=server1

Select	Module	URI	Server
✓	EchoMDB	EchoMDB.jar,META-INF/ejb-jar.xml	WebSphere:cell=neocortexNode03Cell,node=neocortexNode03,server=server1

In the “Step 3: Bind listeners for message-driven beans” select **Activation Specification** as shown in Figure 7 then enter the JNDI name for this MDB (in this case, enter `eis/echo`).

Figure 7   Activation Specification



Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options
Step 2 Map modules to servers
→ Step 3: Bind listeners for message-driven beans
Step 4 Summary

Bind listeners for message-driven beans

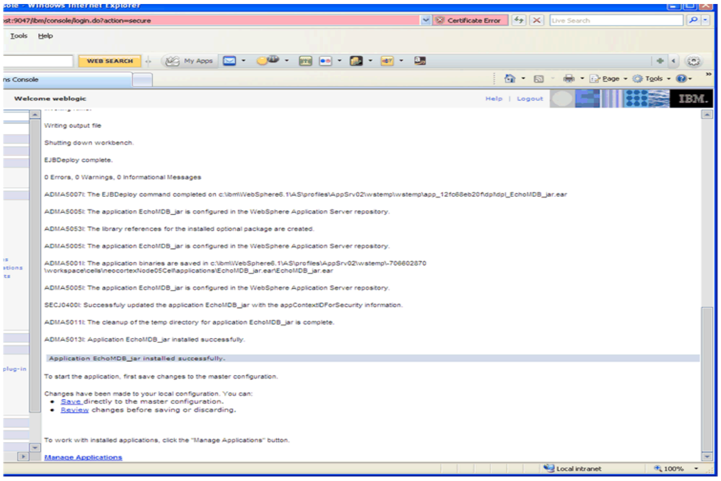
Each message-driven enterprise bean in your application or module must be bound to a listener port name or to an activation specification JNDI name. When a message-driven enterprise bean is bound to an activation specification JNDI name you can also specify the destination JNDI name and authentication alias.

Apply Multiple Mappings

Select	EJB module	EJB	URI	Messaging type	Bindings
✓	EchoMDB	EchoMDB	EchoMDB.jar,META-INF/ejb-jar.xml	com.oracle.tuxedo.adapter.intf.TuxedoMDBService	Listener port Name: [✓ Activation Specification] Target Resource JNDI Name: eis/echo; Destination JNDI name; ActivationSpec authentication alias

Click **Next**: the Summary page appears as shown in Figure 8. Click **Finish**. The application server compiles and deploy deploys the MDB.

Figure 8 Summary Page



```
Writing output file

Shutting down workbench.

EJBDeploy complete.

0 Errors, 0 Warnings, 0 Informational Messages

ADMA5007I: The EJBDeploy command completed on c:\ibm\WebSphere6.1\AS\profiles\AppSrv02\wstemp\wstemp\app_12fc68eb20f\dpl\dpl_EchoMDB_jar.ear

ADMA5005I: The application EchoMDB_jar is configured in the WebSphere Application Server repository.

ADMA5053I: The library references for the installed optional package are created.

ADMA5005I: The application EchoMDB_jar is configured in the WebSphere Application Server repository.

ADMA5001I: The application binaries are saved in c:\ibm\WebSphere6.1\AS\profiles\AppSrv02\wstemp\-706602870
\workspace\cells\neocortexNode05Cell\applications\EchoMDB_jar.ear\EchoMDB_jar.ear

ADMA5005I: The application EchoMDB_jar is configured in the WebSphere Application Server repository.

SECJ0400I: Successfuly updated the application EchoMDB_jar with the appContextIDForSecurity information.

ADMA5011I: The cleanup of the temp directory for application EchoMDB_jar is complete.

ADMA5013I: Application EchoMDB_jar installed successfully.

Application EchoMDB_jar installed successfully.

To start the application, first save changes to the master configuration.

Changes have been made to your local configuration. You can:
  • Save directly to the master configuration.
  • Review changes before saving or discarding.


To work with installed applications, click the "Manage Applications" button.

Manage Applications
```

Click **Save**.

Activate MDB

From the left pane of the console select **Applications** and then select **Enterprise Applications.** Select **EchoMDB.jar** and click **Star**t. **Echo" EJB** is activated.

Oracle Tuxedo Application Domain

Oracle Tuxedo Configuration

Listing 1 shows the Oracle Tuxedo UBBCONFIG file used in this example.

Listing 1 Oracle Tuxedo UBBCONFIG File Example

```
#

#Ubbconfig domain1

#


*RESOURCES

IPCKEY                    51301
```

```
MASTER               site1
MAXACCESSERS100
MAXSERVERS    25
MAXSERVICES   50
MODEL                       SHM
LDBAL                       N
BLOCKTIME 1
SCANUNIT      5
SECURITY        NONE

*MACHINES
DEFAULT:
              APPDIR="C:\test\JCA\inflow_tx/tdom1"
              TUXCONFIG="C:\test\JCA\inflow_tx/tdom1/TUXCONFIG"
              TUXDIR="c:\tuxedo\tux11g"

"NEOCORTEX"LMID=site1
              MAXWSCLIENTS=2

*GROUPS
GROUP3 LMID=site1 GRPNO=3OPENINFO=NONE
GROUP2 LMID=site1 GRPNO=2OPENINFO=NONE
GROUP1 LMID=site1 GRPNO=1  TMSNAME=TMS TMSCOUNT=3
#GROUP1 LMID=site1 GRPNO=1

*SERVERS
```

```
DEFAULT:
              CLOPT="-A" RESTART=Y MAXGEN=5

DMADM         SRVGRP=GROUP2SRVID=1
GWADM         SRVGRP=GROUP3SRVID=2
GWTDOMAINSRVGRP=GROUP3SRVID=3
              ENVFILE="C:\test\JCA\inflow_tx/tdom1/gwt.env"
simpserv      SRVGRP=GROUP1SRVID=20

*SERVICES
TOUPPER_STR
```

```
Tuxedo /Domain Configuration
The following is the /Domain configuration for this sample.
#
*DM_RESOURCES
#
VERSION=U22
#
#
*DM_LOCAL_DOMAINS
#
# NOTE: Remove DYNAMIC_RAP line if you are not running with Tuxedo 11.1.1.2.0
#
"TDOM1"    GWGRP=GROUP3
```

```
       TYPE=TDOMAIN
       DOMAINID="TDOM1_ID"
       BLOCKTIME=60
       SECURITY=NONE
   DMTLOGDEV="C:\test\JCA\inflow_tx/tdom1/DMTLOG"
   DYNAMIC_RAP="YES"

#
*DM_REMOTE_DOMAINS
#
#
JDOM   TYPE=TDOMAIN
       DOMAINID="JDOM_ID"

#
#
*DM_TDOMAIN
#
TDOM1  NWADDR="//localhost:12478"
JDOM   NWADDR="//localhost:10801"
#
#
*DM_LOCAL_SERVICES
#
#Exported
#
TOUPPER_STR
```

```
#

*DM_REMOTE_SERVICES

#

#Imported

#

ECHO
```

Programming MDB For Oracle Tuxedo JCA Adapter

Interface TuxedoMDBService

The Tuxedo JCA Adapter provides an **EJB MDB** interface that you must implement in your **EJB** application code.

Note: The **MDB** interface is similar to the existing **EJB** supported by *Oracle Tuxedo JCA Adapter*; however, they are not the same.

Listing 2 shows the interface listing.

Listing 2 Interface Listing

```
package com.oracle.tuxedo.adapter.intf;

import weblogic.wtc.jatmi.Reply;

import com.oracle.tuxedo.adapter.tdom.TPServiceInformation;

import com.oracle.tuxedo.adapter.TuxedoReplyException;

public interface TuxedoMDBService {

public Reply service(TPServiceInformation service) throws
TuxedoReplyException;

}
```

This is different from a *JMS*-based **MDB**, it uses the `service()` interface instead of the `onMessage()` interface. Listing 3 shows an **MDB** code example that implements the "*Tolower*" service for an Oracle Tuxedo client.

Listing 3 MDB Code Example

```
package ejbs;
import com.oracle.tuxedo.adapter.TuxedoReplyException;
import com.oracle.tuxedo.adapter.intf.TuxedoMDBService;
import com.oracle.tuxedo.adapter.tdom.TPServiceInformation;
import javax.ejb.MessageDrivenBean;
import javax.ejb.MessageDrivenContext;
import javax.jms.Message;
import weblogic.wtc.jatmi.Reply;
import weblogic.wtc.jatmi.TypedString;

public class TolowerMDBBeanBean
    implements MessageDrivenBean, TuxedoMDBService
{

    public TolowerMDBBeanBean()
    {
    }

    public MessageDrivenContext getMessageDrivenContext()
    {
        return fMessageDrivenCtx;
    }
    public void setMessageDrivenContext(MessageDrivenContext ctx)
    {
        fMessageDrivenCtx = ctx;
    }

    public void ejbCreate()
    {
    }

    public void onMessage(Message message)
    {
    }

    public void ejbRemove()
    {
    }

    public Reply service(TPServiceInformation mydata)
        throws TuxedoReplyException
    {
        TypedString data = (TypedString)mydata.getServiceData();
        String lowered = data.toString().toLowerCase();
        TypedString return_data = new TypedString(lowered);
        mydata.setReplyBuffer(return_data);
        return mydata;
    }
  private static final long serialVersionUID = 1L;
  private MessageDrivenContext fMessageDrivenCtx;
}
```

Creating an Inbound Connector-Based MDB Using IBM ASTK

This procedure creates a Connector-Based EJB 2.1 MDB using WebSphere ASTK 6.1. The simple EJB MDB echoes the input string back to the Oracle Tuxedo Client. The name of the project is called EchoMDB.

Use J2EE Perspective

If you are not already in "J2EE" perspective, do the following to change to "J2EE" perspective.

From menu *Window* select ***Open Perspective***, and then select ***J2EE***.

Create EJB Project

From menu "***File***" select ***New***, then select ***Project…***. Expand **EJB** by clicking it, and then highlight ***EJB Projec****t*. Click ***Next***.

In ***EJB Project*** menu fill in ***Project Name*" with "*EchoMDB**. Click ***Next.*** The "*Select Project Facets*" menu will be shown.

In "*Select Project Facets*" menu, make sure "*EJB Module*" version is "*2.1*", "*Java*" version is "*5.0*", and "WebSphere EJB (Extended" version is "*6.1*", and make sure these three are selected. Click on "*Next*".

In "*EJB Module*" menu you uncheck "*create an EJB Client JAR module to hold the client interface and classes*" since inbound EJB is invoked by Oracle Tuxedo JCA Adapter so it is not needed.   Click on "*Finish*".

Setup Build Environment

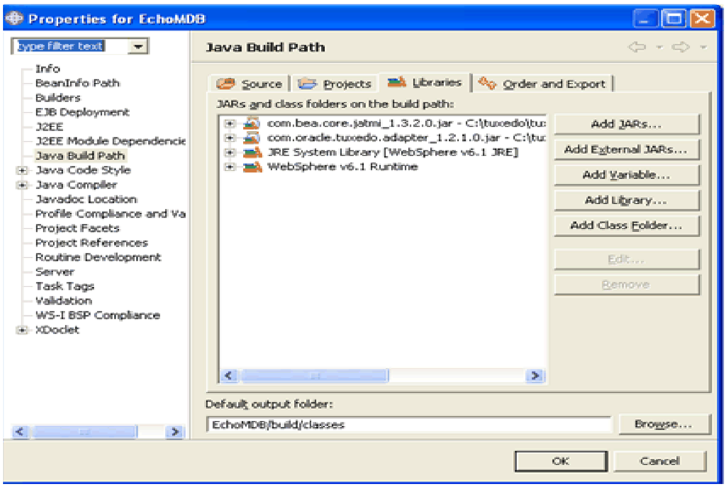
Right click on project **EchoMDB** in the **Project Explorer**. Select **Properties** from the context menu, **the Properties for EchoMDB** window appears as shown in Figure 9.

Select **Add External JARs…** from the "Java Build Path". Add the following two Jar files from Oracle Tuxedo JCA Adapter RAR file. (If you have not unzipped the RAR file, do so now.)

```
com.bea.core.jatmi_1.3.2.0.jar

com.oracle.tuxedo.adapter_1.2.1.0.jar
```

Click **OK**.

Figure 9 EchoMDB Properties Window



JARs and class folders on the build path:

- com.bea.core.jatmi_1.3.2.0.jar - C:\tuxedo\tu:
- com.oracle.tuxedo.adapter_1.2.1.0.jar - C:\tu:
- JRE System Library [WebSphere v6.1 JRE]
- WebSphere v6.1 Runtime

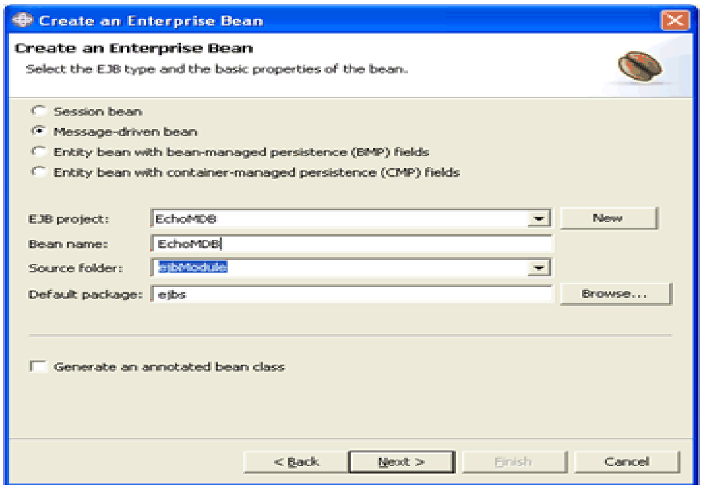
Default output folder: EchoMDB/build/classes

Create Message-Driven Bean

On the left Window pane under the **Project Explorer,** expand the newly create MDB project EchoMDB. Right click **EchoMDB,** select **New**, and then select **Other**. Select **Enterprise Bean** and click **Next**. The **Create an Enterprise Bean** popup window appears as shown in Figure 10.

In the popup window select **Message-driven bean.** Enter the Bean name with value **EchoMDB**.

Figure 10 Create an Enterprise Bean Window


Create an Enterprise Bean

Create an Enterprise Bean

Select the EJB type and the basic properties of the bean.

- Session bean
- [✓ Message-driven bean]
- Entity bean with bean-managed persistence (BMP) fields
- Entity bean with container-managed persistence (CMP) fields

EJB project: EchoMDB

Bean name: EchoMDB

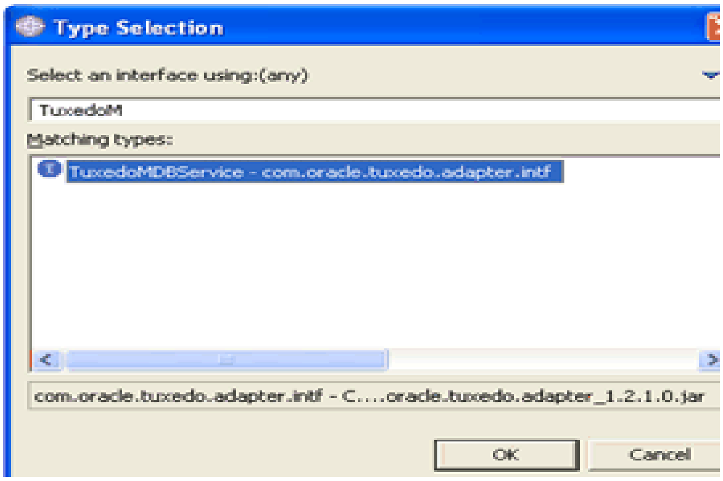
Source folder: ejbModule

Default package: ejbs

Generate an annotated bean class

Click **Next**. The “Message Driven Bean type” popup window appears as shown in Figure 11. Select **Other Type** and then click **Browse**. Enter **TuxedoMDBService** and select from the list shown in Figure 11, then click **OK**.

Figure 11 Message Driven Bean Type Window


Type Selection

Select an interface using:(any)

TuxedoM

Matching types:

TuxedoMDBService - com.oracle.tuxedo.adapter.intf

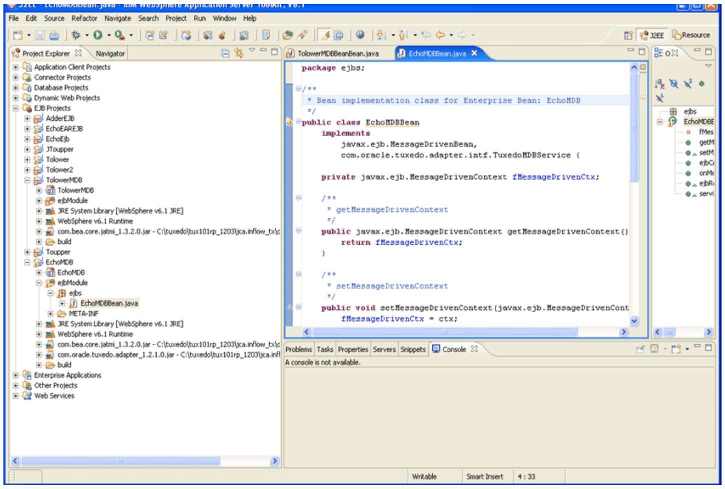
com.oracle.tuxedo.adapter.intf - C:...oracle.tuxedo.adapter_1.2.1.0.jar

The **Message Driven Bean type** popup window appears. Click **Finish**.

Modify EchoBean

Expand **ejbModule** in the left window pane until you see **EchoMDBBean.java**. EchoMDBBean.java must be modified to perform the ECHO service. Double click **EchoMDBBean.java** and the edit window pane with default editor appears as shown in Figure 12.

Figure 12 Edit Window



```
package ejbs;

/**
 * Bean implementation class for Enterprise Bean: EchoMDB
 */
public class EchoMDBBean
    implements
        javax.ejb.MessageDrivenBean,
        com.oracle.tuxedo.adapter.intf.TuxedoMDBService {

    private javax.ejb.MessageDrivenContext fMessageDrivenCtx;

    /**
     * getMessageDrivenContext
     */
    public javax.ejb.MessageDrivenContext getMessageDrivenContext()
        return fMessageDrivenCtx;
    }

    /**
     * setMessageDrivenContext
     */
    public void setMessageDrivenContext(javax.ejb.MessageDrivenCont
        fMessageDrivenCtx = ctx;
```

```
A console is not available.
```

Add the following lines shown in Listing 1at the top of the class file.

Listing 1 Add New Lines

```
import weblogic.wtc.jatmi.Reply;
import weblogic.wtc.jatmi.TPException;
import weblogic.wtc.jatmi.TPReplyException;
import weblogic.wtc.jatmi.TypedString;

import com.oracle.tuxedo.adapter.TuxedoReplyException;
import com.oracle.tuxedo.adapter.intf.TuxedoMDBService;
import com.oracle.tuxedo.adapter.tdom.TPServiceInformation;
```

Edit the method `service()` at the end of the class file as shown in Listing 2.

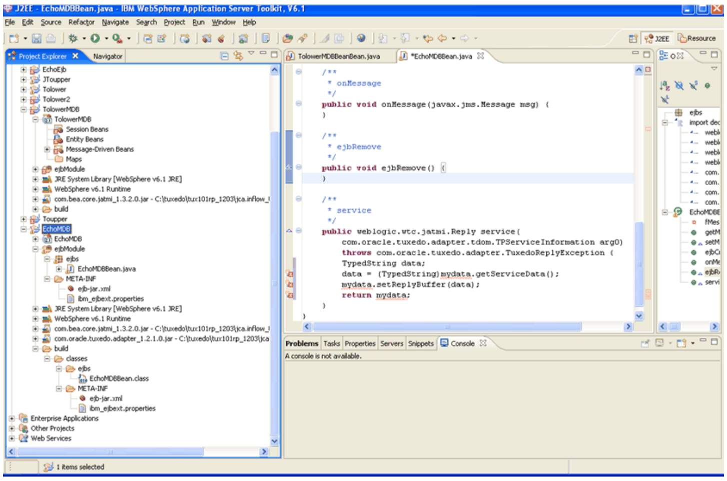
Listing 2 service()

```
public weblogic.wtc.jatmi.Reply service(
       com.oracle.tuxedo.adapter.tdom.TPServiceInformation mydata)
        throws com.oracle.tuxedo.adapter.TuxedoReplyException {
  TypedString data;
  data = (TypedString)mydata.getServiceData();
  mydata.setReplyBuffer(data);
  return mydata;
}
```

Build

Right click project **EchoMDB** in the Project Explorer, and then select **Deploy** as shown in Figure 13. This compiles it into class in the build directory.

Figure 13 Compile



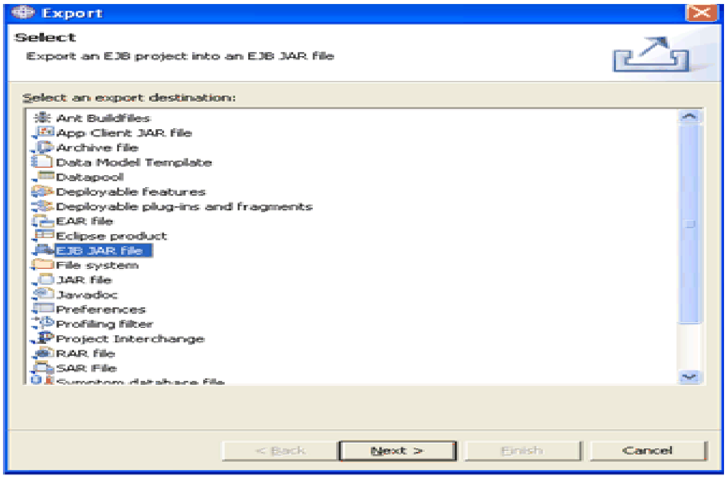
```
    /**
     * onMessage
     */
    public void onMessage(javax.jms.Message msg) {
    }

    /**
     * ejbRemove
     */
    public void ejbRemove() {
    }

    /**
     * service
     */
    public weblogic.wtc.jatmi.Reply service(
        com.oracle.tuxedo.adapter.tdom.TPServiceInformation arg0)
        throws com.oracle.tuxedo.adapter.TuxedoReplyException {
        TypedString data;
        data = (TypedString)mydata.getServiceData();
        mydata.setReplyBuffer(data);
        return mydata;
    }
}
```

A console is not available.

Create EJB JAR File

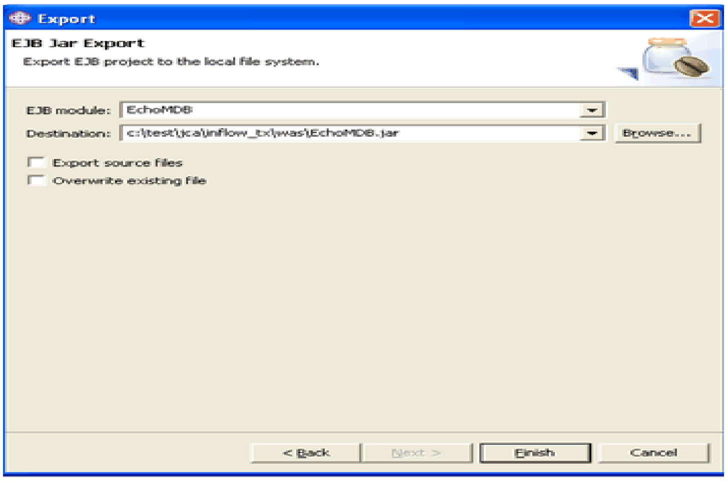
Right click the project **EchoMDB** in the Project Explorer and select **Export.** The **Export** menu popup appears as shown in Figure 14.

Figure 14 Export Popup Window



In the Export popup window select **EJB JAR file**. Click **Nex**t. The **EJB Jar Export** popup window appears as shown in Figure 15. Select **EchoMDB** from the drop down menu, and enter the complete path of the jar file name in the **Destination:** text field. Click **Finish**.

Figure 15 EJB Jar Export Popup Window


Export

EJB Jar Export

Export EJB project to the local file system.

EJB module: EchoMDB

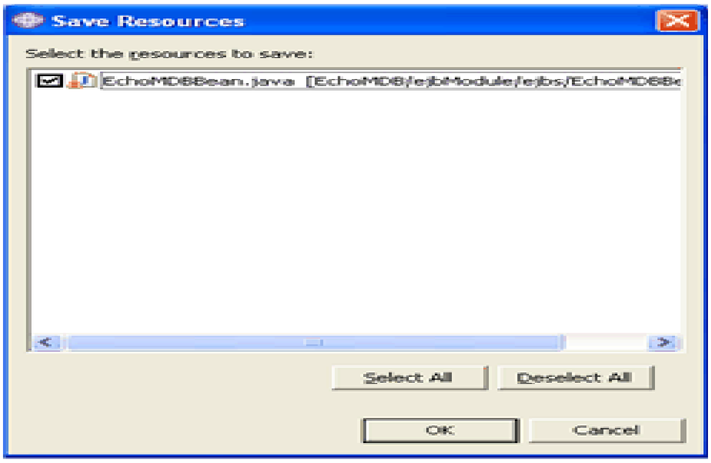
Destination: c:\test\jca\inflow_tx\was\EchoMDB.jar

Export source files

Overwrite existing file

The **Save Resources** popup window appears as shown inFigure 16 click “OK”.

Figure 16 Save Resources Popup Window


Save Resources

Select the resources to save:

EchoMDBBean.java [EchoMDB/ejbModule/ejbs/EchoMDBBe

For *Oracle Tuxedo JCA Adapter* dispatching-based MDB, you must add `activation-config-property` to its `ejb-jar.xml` file using one of two ways.

1. The first method is to unzip the jar file. After the jar file is unzipped, modify the `META-INF/ejb-jar.xml`, and then re-jar the bean jar file. Listing 1 shows an example `ejb-jar.xml` file suitable to this type of MDB.

Listing 1 ejb-jar.xml File Example

```
<?xml version="1.0" encoding="UTF-8"?>

<ejb-jar id="ejb-jar_ID" version="2.1"
xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/ejb-jar_2_1.xsd">

   <display-name>EchoMDB</display-name>

   <enterprise-beans>

      <!-- message driven descriptor -->

      <message-driven id="EchoMDB">

         <ejb-name>EchoMDB</ejb-name>

         <ejb-class>ejbs.EchoMDBBean</ejb-class>

         <!-- message listener interface -->


<messaging-type>com.oracle.tuxedo.adapter.intf.TuxedoMDBService</messag

ing-type>

         <transaction-type>Container</transaction-type>

         <!-- the values for the Activation Spec JavaBean -->

         <activation-config>

            <activation-config-property>


<activation-config-property-name>source</activation-config-property-name>
```

```
<activation-config-property-value>eis/echo</activation-config-property-val
ue>
            </activation-config-property>
         </activation-config>
      </message-driven>
   </enterprise-beans>
</ejb-jar>
```

Where `eis/echo` is the JNDI name of `EchoMDB`.

2. Similarly, the second method is to modify `ejb-jar.xml` file directly to add `activation-config-property` using ASTK before the MDB is being deployed and exported.

Oracle Tuxedo Transactional Client Source Code

Listing 2 shows the simple Oracle Tuxedo native client that accesses the `ECHO` service imported from WebSphere application server.

Listing 2 ECHO Service Imported from WebSphere Application Server

```
#include <stdio.h>
#include “atmi.h”
main(int argc, char *argv[])
{
  char *sendbuf, *rcvbuf;
  long sendlen, rcvlen;
  int  ret;

  if (tpinit((TPINIT *)NULL) == -1) {
    (void)fprintf(stderr, “Tpinit failed\n”);
    exit(1);
  }
  sendlen = strlen(argv[1]);
  if ((sendbuf = (char *)tpalloc(“STRING”, NULL, sendlen + 1)) == NULL) {
      (void)fprintf(stderr, “Error allocating send buffer\n”);
      tpterm();
     exit(2);
  }
  if ((rcvbuf = (char *)tpalloc(“STRING”, NULL, sendlen + 1)) == NULL) {
      (void)fprintf(stderr, “Error allocating receive buffer\n”);
    tpfree(sendbuf);
      tpterm();
     exit(2);
  }
  (void)strcpy(sendbuf, argv[2]);
  tpbegin(45, 0);
  ret = tpcall(“ECHO”, (char *)sendbuf, 0, (char **)&rcvbuf, &rcvlen,
(long)0);
  if (ret == -1) {
    tpabort(0);
    tpfree(sendbuf);
    tpfree(recvbuf);
    tpterm();
    exit(1);
  }
  userlog(“Return string: %s”, rcvbuf);
  tpcommit(0);
  tpfree(sendbuf);
  tpfree(rcvbuf);
  tpterm();
  return(0);
}
```