IBM WebSphere Adapter for JDBC 7.5.0.0

Quick Start Tutorials

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Note: Before using this information and the product it supports, read the information in the "Notices" section, at the end of this document.

This edition applies to version 7, release 0, modification 0 of IBM WebSphere Adapter for JDBC and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Introduction

WebSphere Adapter for JDBC 7.5.0.0 enables the bidirectional connectivity for integration to any database application. The exchange of data for such applications happens at the database level. Updates to the database may need to be applied to another Enterprise Information System (EIS) and changes in an EIS may need to be applied to a database. The JDBC resource adapter can integrate with any database, as long as there is a JDBC driver that supports the JDBC 2.0 or higher specification, available for the database. Examples of such databases include Oracle, Microsoft SQLServer, DB2, Sybase, and Informix.

Learning objectives

After completing the tutorial, you should be able to perform the following tasks:

- Create an adapter project in IBM Integration Designer.
- Discover services and associated business objects from the enterprise information system (EIS) and make them part of the adapter project.
- Create a deployable module that you install on IBM Process Server or WebSphere Enterprise Service Bus.
- Test the module and validate the results.

Audience

These tutorials are for integration developers who design, assemble, test, and deploy business integration solutions.

Software prerequisites

To use these tutorials, you must have the following applications installed:

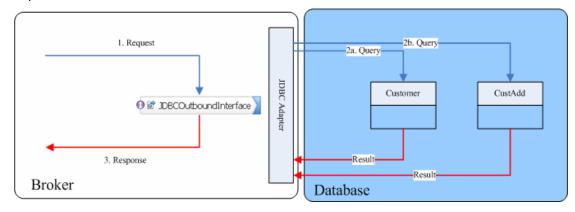
- IBM Integration Designer version 7.5.0.0
- IBM Process Server version 7.5.0.0
- WebSphere Adapter for JDBC version 7.5.0.0
- JDBC Driver for Oracle
- JDBC Driver for DB2
- JDBC Driver for SQLServer

Chapter 2. Tutorial 1: Creating a record using parent child business objects with a CreateSP operation associated with the child business objects (Oracle)

This tutorial demonstrates how to create records in a table in a parent child relationship for WebSphere Adapter for JDBC 7.5.0.0. The scenario also demonstrates the use of a stored procedure attached to a business object. A stored procedure is associated with the child business object using the CreateSP verb ASI. The adapter calls the stored procedure to create the record in the child table instead of generating the insert SQL statement.

About this task

In this scenario, an application SCA component raises a create Customer business object request to the JDBC Outbound Interface. The JDBC adapter generates SQL statements to insert corresponding Customer and CustAdd records into the database. Finally, the JDBC adapter generates response according to the input business object and the execution results of the SQL statements. The following figure represents this scenario.



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and stored procedure
- Create an authentication alias
- Create a data source

Create tables and stored procedure

You must create the following tables and stored procedures in the Oracle database before starting the scenario.

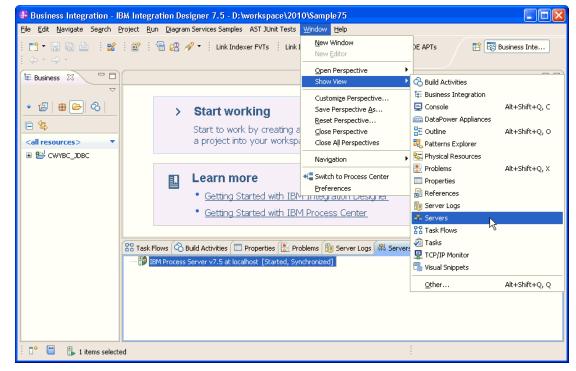
```
CREATE TABLE CUSTOMER
                       (
       PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,
       FNAME VARCHAR2(20)
                           ,
       LNAME VARCHAR2(20)
        CCODE VARCHAR2(10) )
                             ;
CREATE TABLE CUSTADD
                      (
       ADDRID VARCHAR2(10) NOT NULL PRIMARY KEY,
       CUSTID VARCHAR2(10) ,
       CITY VARCHAR2(20)
        ZIPCODE VARCHAR2(10) ) ;
CREATE OF REPLACE PROCEDURE CREATEADDRESS
(addr_id IN varchar2, cust_id IN varchar2, city IN
  varchar2, zipcode IN varchar2)
  AS
  BEGIN
  INSERT into CUSTADD (ADDRID, CUSTID, CITY, ZIPCODE)
  values
            (addr_id, cust_id, city, zipcode);
  END;
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

 In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.



2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace \ 2010 \ Sampl 📰 🗖 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
i 📬 🕂 📓 🖻 🕴 👬 👬	😤 🔗 🔹 🔛 📴 Business Inte
Link Indexer FVTs Link Indexer APTs BTree tests	WDE APTs
$()^{-}$	
🚥 🔀 Task Flow 🙆 Build Activ 🔲 Properties 🔝 Problems	
	≫ O 🖉 = 🕑 ⊂ 🥤
IBM Process Server v7.5 at localhost [Stopped, Synch	ronized]
	Ne <u>w</u>
	Open
	Show In
	📔 Сору
	💼 Paste
	💢 Delete
	Rename
	☆ <u>D</u> ebug
	🔅 Start
	profile 🐴
	Stop
	📳 Publish
🗄 🗣 📒 🔓 1 items selected	<u>C</u> lean

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

BM Process Server v7.5 at localhost [Started, Syn	chronized]
	New
	Open
	Show In
	Сору
	💼 Paste
	💢 Delete
	Rename
	🏇 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	📕 Stop
	📳 Publish
	<u>⊂</u> lean
	🖶 Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	🔚 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

@ [Business Integration - WebSphere Administrative Consol	le for WPS7 at localhost 📘 🗖 🔀
Eile	e <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>W</u> indow <u>H</u> elp	
1 🗖	1 • 🖫 🗅 i 📽 i 🕅 🌒 🌒 🦉 🦉 🎯 🖓 🖉 🖬 🕫 i 🕼 🖉 • i 🗢 •	E 🖏 🖾
	Admin Console X	- <i>e</i>
te:	Integrated Solutions Console	ien and tem
8	Log in to the console.	
	User ID:	
	Note: After some period of inactivity, the system will log you out automatically and ask you to log in again.	
: ∎⁴	Done	i e 🔀 🗞 🗔 度 🧌 👫

5. Click Security → Global security.

View: All tasks
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
1 Resources
🖂 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
🕀 Integration Applications
🗄 Users and Groups
🗄 Monitoring and Tuning
Troubleshooting
🗄 Service integration
I UDDI

6. On the right, click J2C Authentication Data under Java Authentication and Authorization Service.

unctions and is used as a default security policy for user applications. Secur applications.	ty policy. This security configuration applies ity domains can be defined to override and
Security Configuration Wizard Security Config	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expin <u>LTPA</u> Kerberos and LTPA
Application security Image: Constraint of the security	Kerberos and ErrA Kerberos configuration O SWAM (deprecated): No authenti Authentication cache settings
Java 2 security Use Java 2 security to restrict application access to local resources Image: Warn if applications are granted custom permissions Restrict access to resource authentication data	 Web and SIP security RMI/IIOP security Java Authentication and Authoriza Application logins
User account repository Current realm definition Federated repositories Available realm definitions	System logins <u>J2Q authentication data</u> Specifies a list of user identities and pass for Java(TM) 2 connector security to use.

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

New	Delete		
0	ī ₩ \$		
Select	Alias 🛟	User ID 🗘	Description (
You c	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authenticatio alias for the Common Event Infrastructur JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used b SCA to login a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authenticatio alias for the Event Server

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

Global security ? -
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias
Alias_Oracle
* User ID
sample
* Password

Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

	🖯 Messages
	 Changes have been made to your local configuration. You can: Save, directly to the master configuration. Rec. w changes before saving or discarding.
	⚠ The server may need to be restarted for these changes to take effect.
oal secu	rity > JAAS - J2C authentication data
	list of user identities and passwords for Java(TM) 2 connector security to use.
cifies a	list of user identities and passwords for Java(TM) 2 connector security to use. new alias names with the node name of the cell (for compatibility with earlier releases)

You have created an authentication alias that will be used to configure the data source.

🕀 Pre	ferences		
New	Delete		
D	6 # 4		
Select	Alias 🛟	User ID 🗘	Description 🗘
You d	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
	nlNode01/AliashGracle	luweiqin	
Total	5		

Create the data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source will be used later when generating the artifacts for the module.

Note: This tutorial will use Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment** → **WebSphere Variables**.

View: All tasks		
= Welcome		
🗄 Guided Activities		
🗄 Servers		
Applications		
🗄 Services		
🕀 Resources		
🗄 Security		
Environment		
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared lib Replication WebSphere variables Replication 		
\boxplus System administration		
🗄 Users and Groups		
🗄 Monitoring and Tuning		
🕀 Troubleshooting		
🛨 Service integration		
IDDI 🗄		

2. On the right, click **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

WebSphere Variables	? -
WebSphere Variables > ORACLE_JDBC_DRIVER_PATH	
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directorie Variables have a scope level, which is either server, node, cluster, or cell. Valu one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at gr scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.	es at eater
Configuration	
General Properties * Name ORACLE_JDBC_DRIVER_PATH Value D:\Lib	
Description	
The directory that contains the Oracle thin or oci8 JDBC Driver.	
Apply OK Reset Cancel	

3. Click **Save** to save the changes.

WebSphere Variables	?.
 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. RU lew changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

The variable has been added and appears in the list.

🕀 Pref	erences		
New	Delete		
	i 🗰 🗐		
Select	Name 🛟	Value 🗘	Scope 🗘
You c	an administer the following resources:		
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01
_	CVRACE IDDC DDD/ED DATU		N

4. Select **Resources** → JDBC -> JDBC Providers.

View: All tasks	
= Welcome	
🗄 Guided Activities	
🗄 Servers	
Applications	
🗄 Services	
🗆 Resources	
Schedulers	
 Object pool managers 	
⊞ JMS	
People directory provider	
Extended messaging provider	
 WebSphere Business Integration Adapters 	
🖾 ЈДВС	
 JDBC proniders 	
Data soul is	
 Data sour JDBC providers Application Server V4) 	
Business Integration Data Source	
🗄 Resource Adapters	
🗄 Asynchronous beans	
🛨 Cache instances	
🗄 Mail	
⊞ Remote artifacts ■	
🗄 Resource Environment	
🗄 Security	
Environment	
Es Environment	

5. Click **New** in the JDBC providers window.

BC provider	s		
JDBC provi	ders		
encapsulate specific ven <u>quided activ</u>	es the specific JDBC d Idor database of your	of a JDBC provider. The J river implementation clas environment. Learn more provides a list of task ste	s for access to the e about this task in a
🖯 Scope: 🤇	Cell=localhostNode01	Cell, Node=nlNode01	
d s	efinition is visible. For	el at which the resource r detailed information on rks, <u>see the scope setting</u>	
🕀 Preferen	ices		
New Del	lete		
	**		
Select Nan	ne 🗘	Scope 🗘	Description 🗘
None			
Total O			

6. In the Create new JDBC provider page, select an Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new	Create new JDBC provider
JDBC provider Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nINodeO1 * Database type Oracle Oracle * Provider type Oracle JDBC Driver * Implementation type Connection pool data source * Name Oracle JDBC Driver Description Oracle JDBC Driver

7. In the Enter database classpath information page, enter the following value in the **Class path** field:

\$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where

\$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.

8. Click Next.

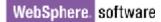
Cell=localhostNode01Cell, Profile=AppSrv01

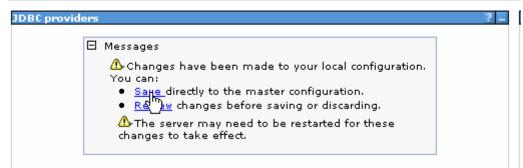
	e a new JDBC Provider ate a new JDBC Provide	
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the value.
		Class path:
		\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib
	Previous Next	Cancel

9. Click Finish.

re	ate a new JDBC Provide	r	
	Step 1: Create new	Summary	
	JDBC provider Step 2: Enter	Summary of actions:	
	database class path	Options	Values
	information	Scope	cells:localhostNode01Cell:nodes:nlNode01
•	Step 3: Summa ry	JDBC provider name	Oracle JDBC Driver
		Description	Oracle JDBC Driver
		Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
		Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource

10. Click **Save** to save the changes.





The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC providers		
encapsulates the specific specific vendor database	perties of a JDBC provider. Th JDBC driver implementation of of your environment. Learn n activity provides a list of task pic.	class for access to the nore about this task in a
🖃 Scope: Cell =localhost	Node01Cell, Node=nlNode01	
<u>help.</u> Node=nlNod	ow it works, <u>see the scope set</u> le01	ungs
<u>help.</u> Node=nlNod		ungs
<u>help.</u> Node=nlNod		ungs
<u>help.</u> Node=nlNod		
<u>help.</u> Node=nlNod		Description 🗘
help. Node=nlNod Preferences New Delete	le01 💌	

11. Click the Oracle JDBC provider you just created. Under Additional Properties, click Data sources. Click New.

JUDC provider	<u>;</u> > <u>0</u>	racle JDBC Drive	<u>r</u> > Data so	urces		
JDBC provider. accessing the (The d datab	it the settings of datasource objec ase. Learn more sk steps and mo	t supplies y about this f	our applicatio task in a <u>quid</u>	n with connectio led activity, A gu	ns for
New Delete		Test connection	Manage	e state		
	P					
Select Name	\$	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🤇

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

13. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



	Step 1: Enter basic data source information	Enter database specific prope	rties for the data source
	database specific properties for the	Set these database-specific proper database vendor JDBC driver to su managed through the datasource.	
	data source Step 3: Setup	Name	Value
		* URL	jdbc:oralce:thin:@9.181.84.1
	Step 4: Summary	★ Data store helper class name Oracle10g data store helper	
		Use this data source in contai	iner managed persistence (CMP)

14. Select the authentication alias you just created from the **Component-managed authentication alias** list. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Create a data source	
Step 1: Enter basic data source information Step 2: Enter database specific properties for the data source • Step 3: Setup security aliases Step 4: Summary	Setup security aliases Select the authentication values for this resource. Component-managed authentication alias INNode01/Alias_Oracle Mapping-configuration alias (none) Container-managed authentication alias (none) V
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost. Global J2C authentication alias Security domains

The Summary of the values entered for the data source will be shown.

15. Click Finish.

Close

Create a data source

Step 1: Enter basic data source	Summary	
information	Summary of action	151
Step 2: Enter	Options	Values
properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
data source	Data source name	Oracle JDBC Driver DataSource
Step 3: Setup	JNDI name	OracleDS
	Select an existing JDBC provider	Oracle JDBC Driver
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
	URL	jdbc:oracle:thin:@9.181.84.136:1521:ord
	Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelper
	Use this data source in container managed persistence (CMP)	true
	Component- managed authentication alias	nlNode01/Alias_Oracle
	Mapping- configuration alias	(none)
	Container- managed authentication alias	(none)
	data source information Step 2: Enter database specific properties for the data source	data source informationSummary of actionStep 2: Enter database specific properties for the data sourceOptionsStep 3: Setup security aliasesJNDI nameStep 4: SummarySelect an existing JDBC providerURL Data store helper class nameURLData store helper class nameUse this data source in container managed authentication aliasMapping- configuration aliasContainer- managed authentication

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

viders	
 Messages Changes have been made to your local configuration. You can: Sauge directly to the master configuration. Res w changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

17. Select the check box corresponding to the data source you created in the previous step and click **Test connection**.

JUBUP	<u>roviders</u> > <u>Orac</u>	<u>le JDBC Driver</u> :	> Data sources			
provide databa	er. The datasour se. Learn more	ce object supplie	datasource that is as your application in a <u>quided activit</u> pout the topic.	n with connecti	ons for accessin	ig the
🕀 Pref	erences					
New	Delete Tes	st connection	Manage state			
D	ð 👯 🧐	Ů				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Categor
You c	an administer th	e following reso	urces:			
	<u>Oracle JDBC</u> <u>Driver</u> DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as shown in the following figure. If you experience problems while testing the connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

DBC providers
🖯 Messages
The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node nlNode01 was successful. Information
<u>JDBC providers</u> > <u>Oracle JDBC Driver</u> > Data sources
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic.
Preferences
New Delete Test connection Manage state
Select Name 🗘 JNDI name 🗘 Scope 🗘 Provider 🗘 Description 🗘 Category 🔇
You can administer the following resources:
Oracle JDBC Driver OracleDS Node=nlNode01 Oracle JDBC Driver New JDBC Datasource
Total 1

Note: The data source is created which will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- In the Available Types area, select Adapters > JDBC and then click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Eilter: type filter text	B_
<u>A</u> vailable types:	
DBC Domino Domino Oracle E-Business Suite A PeopleSoft Suite	
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	
(?) < Back Next > Einish Cancel	

4. Select the **IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0)** and click **Next**.

New External Service	
Select an Adapter	S
Select the version of the adapter that you want to use.	
۵,	^
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	✓
(?) (<u>Back</u> <u>N</u> ext > Einish	Cancel

5. In the **Connector project** field enter **CWYBC_JDBC**, and in the **Target runtime environment** field, select the appropriate runtime. Click **Next**.

🚯 New External Service		
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	
Archive file: Connector project: * Target runtime enviroment:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	_JDBC.rar
?	< Back Next > Einish	Cancel

6. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service	
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.	
When deploying the application to a stand-alone server, these files must be configured on the server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the database server. JDB	30
driver JAR files are shipped with the database installation. If you do not have a local databas installation, you can download these files from the Web site of the database vendor. JDBC driver JAR files:	se
D:\workspace_lib\JDBCdrivers\Oracle\ojdbc6\ojdbc6.jar Remov	2
Specify the location of the database-specific native system libraries required to access the database server. This is required if you are using a Type 2 driver implementation. The native libraries are shipped with the database server and client installations.	
System libraries:	
Back Mext > Einish Car	icel

7. Select **Outbound** and click **Next**.

🚯 New External Service	
Select the Processing Direction Select the direction of adapter processing at run time.	
O Inbound Inbound processing passes data from the adapter to your service export.	
Outbound	
Outbound processing passes data from your service import to the adapter.	
	l≩
Sack Next > Finish	Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node from **Database system connection information** then select **10**.
- 2. Enter System ID, Host name, Port number, User name and Password fields, and then click Next.

New External Service		
Specify the Discovery Propert	ies	5
Connection properties Database system connection infor	nation	^
	Properties:	
→1" 	JDBC driver type: Oracle Thin	Driver 🗸
♦ V8.2	System ID: * orcl	
♦ V9.1	Host name: * 9.123.108.	86
	Port number: * 1521	
i⊒… ♦ Orade	JDBC driver class name: * oracle.jdbc	.driver.OracleDriver
<pre></pre>	Database URL: jdbc:oracle	:thin:@9.123.108.86
User name: *	qad	
Password: *	*******	
Prefix for business object names:		
Advanced >>		
	-	×
?	< Back Next >	inish Cancel

Select the business objects to be used with the adapter

Follow these steps to select the **Customer** and **CustAdd** business objects:

1. In the Find Objects in Enterprise System window, click **Edit Query**.

B New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported d Run Query	Edit Query Show query pro
Discovered objects: Selected objects:	
李 亿 印	0
Kun a query to populate this view w	
(?) < Back	Cancel

2. In the Specify the Query Properties window, select the **Prompt for** additional configuration settings when adding business objects check box and click **OK**.

Preventer Preven	×
Specify the Query Properties	
Specify the pattern for the schema name filter (for example, ADMIN* or SCOT?) Schema name or pattern: Supported database object types:	~
Tables Views Stored Procedures Synonyms - Nick Names	
Map JDBC Date/Time/Timestamp types to date/time/dateTime.	
Prompt for additional configuration settings when adding business object	
Create a query business object to build user-defined Select statements	
Number of select queries to create: 1	
The Select statements are listed under the Query Statements node of the discovered objects tr	-
	J
OK Cancel	

3. Click Run Query.

4. Expand the **QAD** (for this tutorial only) node, select **Tables** and expand it.

B New External Service	
Find Objects in the Enterprise System No discovered object is selected.	HO,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported d	Edit Query
Discovered objects: Selected objects:	
PM PM <td>0</td>	0
Einish	Cancel

 Select the CUSTOMER table and click . In the Specify the Configuration Properties for 'CUSTOMER' window, click **OK**.

WebSphere. s	oftware
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New External Service	×
Specify the Configuration Propertie	s for 'CUSTOMER'
Select status column name and status value for Name of the column used to perform logical deletes: Value used to indicate a deleted object: An operation can be performed by a stored pro procedure to perform the operation or to do cu processing. To use a stored procedure, add it to the list an	ocedure. You can run a stored ustom processing before or after
?	OK Cancel

- 6. Select the CUSTADD table and click
- In the Specify the Configuration Properties for 'CUSTADD' window, select CUSTOMER (SAMPLE) from the Choose parent table list, and then select PKEY for CUSTID in the Build a foreign key area. Select the Parent object owns child object(cascade delete) check box. Click Add.

WebSphere.	software
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B New External Service				×
Specify the Configuration Properties for 'CUSTADD'				
			0	
Select status column name and status value f Name of the column used	for logical delete	¥		^
to perform logical deletes: Value used to indicate a deleted object:				
Choose parent table from the list for the sele Choose parent table:	CUSTOMER (QAD)	v		
Single cardinality				
Build a foreign key relationship by selecting a ADDRID:	parent table column for each child colu NDNE	imn 🗸		
CUSTID:	PKEY	v		
CITY:	NONE	~		
ZIPCODE:	NONE	v		
 Parent object owns child object (cascade delete) Preserves CUSTADD when the parent is updated. CUSTADD required for operations on parent 				
An operation can be performed by a stored procedure. You can run a stored procedure to perform the operation or to do custom processing before or after processing. To use a stored procedure, add it to the list and then configure it.:				
			Add Remove	>
?	ОК		Cancel	

8. Select **CreateSP** and click **OK**.

🔂 Add Value	
Select values from the list	t below:
AfterCreateSP	~
AfterDeleteSP	
AfterRetrieveAllSP	
AfterRetrieveSP	
AfterUpdateSP BeforeCreateSP	
BeforeDeleteSP	
BeforeRetrieveAllSP	
BeforeRetrieveSP	
BeforeUpdateSP	
Create P	
Deletest	
RetrieveAllSP	
RetrieveSP	
?	OK Cancel
U C	

9. Select \mathbf{QAD} for schema name.

Select Value	
Select a value from the list bel	ow:
OLAPSYS ORACLE_OCM ORDPLUGINS ORDSYS OUTLN	
OWBSYS PERFSTAT PLSQL PM	=
QAD RECCALHR SAMPLE SAMPLE1 SCOTT	
?	OK Cancel

10. Select **CREATEADDRESS** form the stored procedure name list.

New External Service	
Specify the Configuration Propertie	es for 'CUSTADD'
CreateSP	
Select the schema name to display the ma	atching schema
Schema name:	QAD
Stored procedure name or pattern:	
Stored procedure name:	CREATEADDRESS
For each stored procedure parameter, se	lect a table column
ADDR_ID:	addrid
CUST_ID:	addrid 💌
CITY:	addrid 💌
ZIPCODE:	addrid 💌
Advanced >>	
?	OK Cancel

11. Select stored procedure parameter for each column.

ADDR_ID: addrid CUST_ID: custid CITY: city ZIPCODE: zipcode

12. Click **OK**.

New External Service	X
Specify the Configuration Propertie	es for 'CUSTADD'
CreateSP Select the schema name to display the ma	atching schema
Schema name:	QAD
Stored procedure name or pattern:	
Stored procedure name:	CREATEADDRESS
For each stored procedure parameter, se	ect a table column
ADDR_ID:	addrid
CUST_ID:	custid 💌
CITY:	city 🗸
ZIPCODE:	zipcode 🗸 🗸
Advanced >>	_
?	OK Cancel

13. In the Find Objects in Enterprise System window, click Next.

Bew External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. create the query, then click Run Query to run it.	Click Edit Query to
Query: SchemaFilterLabel=null,Schema name or patte Run Query	rn=null,Supported d Edit Query
Discovered objects:	Selected objects:
CLOBTABLE CUSTADD CUSTINFO CUSTINFO CUSTOMER CUSTOMER CUSTOMER GRANDPA GRANDPA S	CUSTADD CUSTOMER
(?) < <u>B</u> ack <u>N</u> ext >	Einish Cancel

Generating business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for all fields and click **Next**.

New External Service		
Specify Composite Properti Specify properties that apply to all		
specify properties that apply to all	selected objects.	
Operations for selected business of	-	
Operations for these functions Create	will be added to the service interface.:*	Add
Update UpdateAll Delete DeleteAll		Remov
Custom Business Faults Pattern for the Custom Busines	ss Faults:	
Pattern String	Custom Fault Name	Add
		Edit
		Remov
Create and configure user-defined		
	wronner oniecte	
	N	
? < <u>B</u> a	ick Next > Einish	Cancel

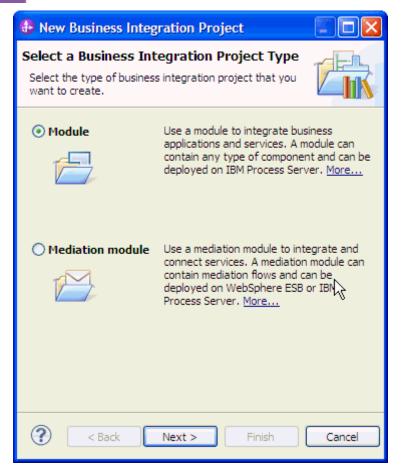
- 2. In the Specify the Service Generation and Deployment window, perform the following steps:
 - a) Select **Other** for security options under **Deployment Properties**.
 - b) Clear the **Join the global transaction** check box.
 - c) Select **Specify predefined connection pool DataSource** from the **Database connection information** list.
 - d) Enter **OracleDS** in the **Connection pool DataSource JNDI Name** field, and click **Next**.

Rew External Service				\times
Specify the Service Generation Specify properties for generating the ser		•	6	
Passworu;				-
 Other 				-
Use if no security is required or v server and security will be specif		by the EIS system, or the RAR will be deperties in the JNDI lookup name.	ployed on t	
	oin a global tra	action provides a higher degree of data in ansaction, specify a predefined XA data s		
Deploy connector project:	With module	for use by single application	~	
Specify the settings that are used to	connect to JD	BC at run time:	_	
Connection settings:	Specify conne	ection properties	<i>y</i>	
Connection Properties				
	global transac	ed XA datasource or XA database conne tion, either the XA connection information		:
Database connection information	n:	Specify predefined connection pool Dat	taSounce 💽	
Database system connection inf	ormation			
Database vendor:		ORACLE		
Connection pool DataSource	: JNDI name;*	OradeDS		
Advanced >>	m		<u> </u>	3
•	< <u>B</u> ad	Enish (Cancel	

3. Click **New** in the Specify the Location Properties window.

🚯 New Externa	Il Service	
	cation Properties	
Properties for Ser	vice	
Module:	· · · · · · · · · · · · · · · · · · ·	New
Namespace:	http:///JDBCOutboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;	· 🕑	New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.



5. In the Create a Module window, type **TestCreateSPOracle** in the **Module Name** field and click **Finish**.

🚯 New Module	
Create a Module Use a module to integrate business applications and services. A module can contain any type of component	
Module name: TestCreateSPOracle	
Use default location	
Location: D:\workspace\QSS\TestCreateSPOracle	Browse
☑ Open the module assembly diagram	
	\mathbf{k}
Reck Next > Finish	Cancel

6. Click **Finish** to complete service creation.

Bew Externa	l Service	
	cation Properties roperties for where you want to save the service.	
Properties for Ser	vice	
Module:	TestCreateSPOracle 🗸	New
Namespace:	http://TestCreateSPOrade/JDBCOutboundInterfa	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;	·	New
Description:		
		\searrow
		Ŭ
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

7. Expand the created Business Integration Project and verify whether the artifacts are generated correctly.

e- Di	usiness Integration 🖾
<all< th=""><th>resources></th></all<>	resources>
6	Assembly Diagram
	DBCOutboundInterface
	🕰 Dependencies
	🖉 Integration Logic
6	Data
	DeleteAllResult
	ExistsResult
	🔲 IntegrityConstraintFault
	MatchesExceededLimitFault
	🗐 MissingDataFault
	ObjectNotFoundFault
	PrimaryKeyPairType
	🛱 QadCustadd
	QadCustaddBatchResult
	ିଲ୍ଲି QadCustaddBG
	🛱 QadCustaddContainer
	🛱 QadCustaddList
	QadCustaddListBG
	🛱 QadCustaddUpdateAlInput
	୍ୱାତ୍ତି QadCustaddUpdateAlInputBG
	- 🖨 QadCustomer
	🗐 QadCustomerBatchResult
	🔞 QadCustomerBG
	QadCustomerContainer
	🗐 QadCustomerList
	ि QadCustomerListEG
	🗇 QadCustomerUpdateAlInput
	ReadCustomerUpdateAlInputEG
	RecordNotFoundFault
	UniqueConstraintFault
	DpdateAlResult
Ŀ	
	IDBCOutboundInterface

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove...**.

New	•
Open	F3
Show In	Alt+Shift+W →
Сору	Ctrl+C
Paste	Ctrl+V
X Delete	Delete
Rename	F2
🟇 Restart in Debug	Ctrl+Alt+D
Restart	Ctrl+Alt+R
Restart in Profile	
Stop	Ctrl+Alt+S
Publish	Ctrl+Alt+P
Clean	
http://www.commons.com/action/	
Monitoring	•
📋 Create Tables and Data Sources	
Reconnect Debug Process	
🚰 View and Publish Changes to Server	
Manage Server Profiles	
Export Dynamic Endpoint Selection Configuration	
Import Dynamic Endpoint Selection Configuration	
Dpdate Vocabularies and Related Artifacts	
Server Configuration	•
Universal Test Client	•
Administration	•
Launch	•
Add and Remove Integration Solution Projects	+
Properties	Alt+Enter

The Add and Remove... window lists the available projects in the IBM Integration Designer workspace.

🚯 Add and Remove				
Add and Remove Modify the resources that are configured on the server				
Move resources to the right to configure them on the server	,			
Available:	Configured:			
Image: TestCreateSPOradeApp Add > Add > < Remove				
✓ If server is started, publish changes immediately				
Reack Next >	Finish Cancel			

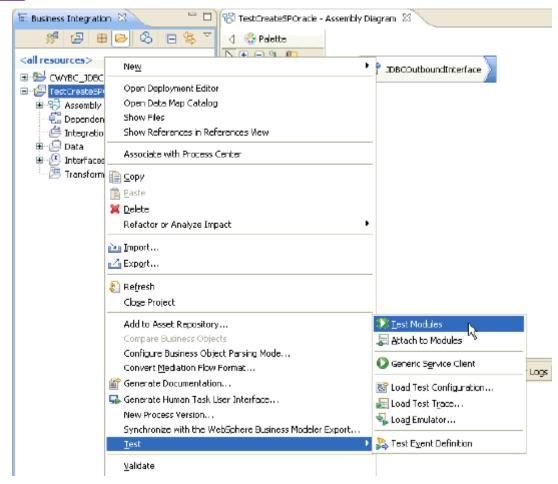
4. Select your project (**TestCreateSPOracleApp**) and click **Add** to configure the project on the server. Click **Finish**.

nd Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server	
Available:	Configured:
Add >	
< Remove	
Add All >> <td></td>	
✓ If server is started, publish changes immediately	
Back Next >	Finish Cancel

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

 Select the TestCreateSPOracle module, right-click, and select Test > Test Module. The Test Client window is displayed.



2. Select createQadCustomerBG from the Operation list.

General Properties

•	Detailed	Properties
---	----------	------------

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. <u>More...</u>

Configuration:	Default Module Test	¥
Module:	TestCreateSPOracle	¥
Component:	JDBCOutboundInterface	¥
Interface:	JDBCOutboundInterface	¥
Operation:	createQadCustomerBG	*

Initial request parameters:

💿 Value editor 🛛 💭 🛛 ML editor

Name	Туре	Value	
🗆 🏪 createQadCu	QadCustomerBG	аь	
🖳 🛄 verb		🔤 Create	
🖮 💾 QadCustome	QadCustomer	ав	
🖳 💭 pkey	string	ав	
🖳 💭 fname	string	ав	
🦳 💭 Iname	string	ав	
🖳 💭 ccode	string	ав	
🔤 custadd	QadCustadd[]	60	

3. Enter **Create** for the verb and specify values for **pkey**, **Iname**, **fname** and **ccode** as shown in the figure.

General Properties

•	Detailed	Properties
---	----------	------------

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. More...

Configuration:	Default Module Test	*
Module:	TestCreateSPOracle	*
Component:	JDBCOutboundInterface	*
Interface:	JDBCOutboundInterface	*
Operation:	createQadCustomerBG	*

- Initial request parameters:
 - 💿 Value editor 🛛 🔿 XML editor

₽ <u>₿</u> ₽			E
Name	Туре	Value	
😑 🖳 createQadCustc	QadCustomerBG	ав	
🖳 💭 verb	verb <string></string>	📧 Create	
📄 💾 QadCustome	QadCustomer	ав	
🖳 🛄 pkey	string	IO0	
🖳 💭 fname	string	📧 testFname	
🖳 🛄 Iname	string	📧 testLname	
🖳 🛄 ccode	string	📧 testcCode	
💷 💷 💷	QadCustadd[]	66	
			_

4. Right-click **custaddobj** and select **Add Elements**.

- General Properties
- Detailed Properties

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. <u>More...</u>

	Configuration:	Default	Module Test		*
	Module:	TestCr	eateSPOracle		¥
	Component:	JDBCO	utboundInterface		*
	Interface:	JDBCC	©opy Value		*
	Operation:	create	Paste Value Select <u>A</u> ll		~
4	Initial request pa		A d <u>Elements</u> Set <u>T</u> o Set Reguired to Default		
	Reference		Add Value to Pool Use Value from Pool Import from File	Value]
		verb OadCus	Expo <u>r</u> t to File	eate	
	(📁 pke	Use Derived Type	0	
		💷 fnai 💷 Inar	Select Element	stFname stLname	
		🗀 cco	Show Change Summary	stcCode	
					_

5. Enter 1 and click OK.

🚯 Add Element	
Enter the number of new elements to add:	*
1	
R	
ľ	
	OK Cancel

6. Enter values for **custaddobj[0]** as shown in the figure below.

General Properties

- D	etailed)	Properties
------------	----------	------------

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. <u>More...</u>

Configuration:	Default Module Test	*
Module:	TestCreateSPOracle	*
Component:	JDBCOutboundInterface	*
Interface:	JDBCOutboundInterface	*
Operation:	createQadCustomerBG	*

Initial request parameters: Þ 1...

💿 Value editor 🛛 🔿 XML editor			
₿ 🔮 🖪			
Name	Туре	Value	
ccode	string	📧 testcCode	~
🖃 🗉 💷 💷	QadCustadd[]	60°	
🖃 🖳 custaddob	QadCustadd	35	
	string	■ 101	_
custid	string	▣ 100	
	string	📧 BeiJing	
zipcod	string	ab 100000	
			~
	<u> </u>	>	
 To edit values, start typing or 	press F2.		

- 7. To execute the service, click \triangleright .
- 8. In the Select a Deployment Location window, select the server, and click Finish.

Deployment Location	
Select a Deployment Location	
Specify a runtime location where this test will deploy.	
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at localhost WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run]
 Use this location as the default and do not ask again To change the default location elsewhere, open the Properties window for the proje Business Integration > Integration Test Client. 	ct and select
? <u>Einish</u>	Cancel

9. Check the data in the EIS to ensure that it is populated correctly.

Clear the sample content

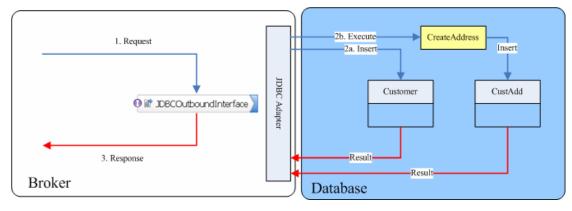
After you have tested the application, clear the sample content to return the data to its original state.

Chapter 3. Tutorial 2: Creating a record using parent-child business objects with a CreateSP associated with the child business object (SQL Server)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 populates the Customer and Address information into the database where the CUSTOMER and ADDRESS tables have a parent-child relationship. A stored procedure is used to populate the Address (child) information.

About this task

In this scenario, an application SCA component raises a create Customer business object request to the JDBC Outbound Interface. The JDBC adapter generates SQL statements to insert corresponding CUSTOMER and ADDRESS records into database. Finally, the JDBC adapter generates response according to the input business object and the execution results of the SQL statements. The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

• Create tables and stored procedure

- Create an authentication alias
- Create a data source

Create tables and stored procedure

You must create the following tables and stored procedure in the MS SQLServer database before starting the scenario.

a. Script for creating CUSTOMER and ADDRESS tables

```
CREATE TABLE CUSTOMER (
    PKEY VARCHAR(10) NOT NULL PRIMARY KEY,
    FNAME VARCHAR(20) ,
    LNAME VARCHAR(20) ,
    CCODE VARCHAR(10) ) ;

CREATE TABLE ADDRESS (
    ADDRID VARCHAR(10) NOT NULL PRIMARY KEY,
    CUSTID VARCHAR(10) ,
    CITY VARCHAR(20) ,
    ZIPCODE VARCHAR(10) ) ;
```

b. Script for create CREATEADDRESS procedure

ena,

Create an authentication alias

The authentication alias needs to be set because the data source that is used to generate artifacts will use the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

<u>, </u>	gration Designer 7.5 - D:\workspace\201		
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> i	Run Diagram Services Samples AST JUnit Tests	<u>Window</u> <u>H</u> elp	_
	🔚 🥵 🖋 🔹 Link Indexer FVTs 🕴 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 📑 🔯 Business Inte
Tar Business 🛛 🗖		Open Perspective	C Build Activities
✓ </th <th> Start working Start to work by creating a a project into your workspace Learn more Getting Started with IBN Getting Started with IBN </th> <th>Close All Perspectives Navigation * Switch to Process Center Preferences</th> <th>Image: Business Integration Image: Business Integration Image: Business Integration Image: DataPower Appliances Image: Dutline Alt+Shift+Q, O Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline <td< th=""></td<></th>	 Start working Start to work by creating a a project into your workspace Learn more Getting Started with IBN Getting Started with IBN 	Close All Perspectives Navigation * Switch to Process Center Preferences	Image: Business Integration Image: Business Integration Image: Business Integration Image: DataPower Appliances Image: Dutline Alt+Shift+Q, O Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline <td< th=""></td<>
	k Flows 🔀 Build Activities 🔲 Properties 🔝 Pro IBM Process Server v7.5 at localhost [Started, Syn		감 Task Flows 생 Tasks 로 TCP/IP Monitor 행 Visual Snippets Qther Alt+Shift+Q, Q
i 🗘 🕄 🖡 1 items selected			

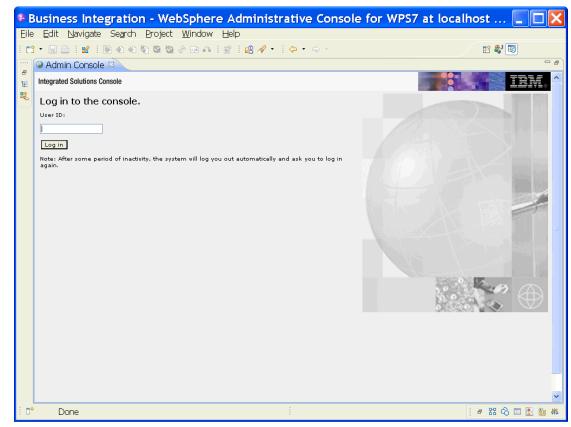
2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace \2010 \Sampl 🔳 🗖 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
: 📬 • 🔚 🕼 🗁 🤃 👘 : 👘	😤 🛷 🔹 🔛 🐯 Business Inte
	WDE APTs
🐨 🔀 Task Flow 🙆 Build Activ 🔲 Properties 🔝 Problems	👸 Server Lo 🗰 Servers 🛛 🗖 🖶 🚥
8	* • ₽ = ₽ -
🐨 📰 IBM Process Server v7.5 at localhost [Stopped, Synch	
	Ne <u>w</u>
	Open
	Show In
	📄 Сору
	💼 Paste
	💢 Delete
	Rename
	☆ <u>D</u> ebug
	😥 Start 📐
	profile
	Stop
	Publish
🗄 🗋 🗧 🔚 1 items selected	<u>C</u> lean
	· · · ·

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

📪 IBM Process Server v7.5 at localhost [Started, Synchi	ronized
	New
	Open
	Show In
	Сору
	The Paste
	X Delete
	Re <u>n</u> ame
	🐝 Restart in Debug
	Restart
	🌮 Restart in Profile
	Stop
	Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	🔚 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.



- View: All tasks Welcome 🗄 Guided Activities 🗄 Servers 🗄 Applications 🗄 Services 🗄 Resources 🖯 Security Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security 🗄 Environment \boxplus Integration Applications \pm System administration 🛨 Users and Groups 🗄 Troubleshooting \pm Service integration 🗄 UDDI
- 5. Click Security → Global security.

6. Under Java Authentication and Authorization Service, click J2C authentication data.



l=localhostNode01Cell, Profile=AppSrv01	Close page
bal security	
Global security Use this panel to configure administration and the default application securi functions and is used as a default security policy for user applications. Secu	
applications. Security Configuration Wizard Security Config	juration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication	Authentication Authentication mechanisms and expirati
Application security Image: security Image: security	Kerberos configuration SWAM (deprecated): No authenticat Authentication cache settings
Java 2 security □ Use Java 2 security to restrict application access to local resources ✓ Warn if applications are granted custom permissions □ Restrict access to resource authentication data	
User account repository Current realm definition Federated repositories	System logins J2Gauthentication data
Available realm definitions Federated repositories V Configure Set as current	Specifies a list of user identities and passwo for Java(TM) 2 connector security to use.
	 External authorization providers Custom properties

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply

Preferences

New Delete				
D				
Select	Alias 🛟	User ID 🗘	Description 🗘	
You c	an administer the following resources:			
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias	
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues	
	<u>SCA Auth Alias</u>	wbiuser	This is the alias used by SCA to login to a secured SIBus	
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server	
Total 4				

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

obal security
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias_SQLServer
* User ID
sa

Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

oal security	
E	 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. Remeasure the server may need to be restarted for these changes to take effect.

You have created an authentication alias that will be used to configure the data source.

New Delete			
Select Alias 🛟	User ID 🗘	Description 🗘	
You can administer the following resources:			
BSpace JDBC Alias	wbiuser	Business Space Authorization Alias	
CommonEventInfrastructureJMSAuthAlias	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues	
SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus	
localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server	
nlNode01/Alias Oracle	sample		
nlNode01/Alias SpLServer	sample		
Total 6			

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source is used later when generating the artifacts for the module.

Note: This tutorial uses SQL Server as the database and the SQL Server JDBC driver sqljdbc.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** Variables.

View: All tasks 💌
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🖯 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared libh es Replication WebSphere variables Maming
Integration Applications
\boxplus System administration
🗄 Users and Groups
⊞ Monitoring and Tuning
Troubleshooting ■ Troubleshooting ■
🛨 Service integration
I UDU

2. On the right, select **MICROSOFT_JDBC_DRIVER_PATH** and specify the path of the sqljdbc.jar file in the **Value** field. Click **OK**.

Cell=localhostNode01Cell, Profile=AppSrv01

WebSphere Variables > MICROSOFT_JDBC_DRIVER_PATH Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables. Configuration
for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables. Configuration <u>General Properties</u> * Name <u>MICROSOFT_JDBC_DRIVER_F</u> Value <u>D:\Lib</u> Description The directory that contains the Microsoft SQL Server
General Properties * Name MICROSOFT_JDBC_DRIVER_F Value D:\Lib Description The directory that contains the Microsoft SQL Server
* Name MICROSOFT_JDBC_DRIVER_F Value D:\Lib Description The directory that contains the Microsoft SQL Server
The directory that contains the Microsoft SQL Server
Apply OK Reset Cancel

3. Click **Save** to save the changes.

WebSphere Va	ariables	?
	 Messages Changes have been made to your local configuration. You can: Same directly to the master configuration. R lew changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

The variable is added and appears in the list.

	Preferences			
⊕ Pret	ferences			
New	New Delete			
D				
Select	Name 🛟	Value 🗘	Scope 🗘	
You c	an administer the following resources:			
	MICROSOFT JDBC DRIVER NATIVEPATH		Node=nlNode01	
	MICROSOFT JDBC DRIVER PATH	D:\Lib	Node=nlNode01	
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01	
	ORACLE JDBC DRIVER PATH	D:\Lib	Node=nlNode01	
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01	
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01	
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01	
	SCA BUS ID	localhostNode01Cell	Cell=localhostNode01Cell	
	SERVER LOG ROOT	\${LOG_ROOT}/server1	Node=nlNode01,Server=serve	
	SYBASE JDBC DRIVER PATH		Node=nlNode01	
	UNIVERSAL JDBC DRIVER PATH	\${WAS_INSTALL_ROOT}/universalDriver/lib	Node=nlNode01	

4. Select **Resources** → **JDBC** -> **JDBC** Providers.

Viev	v: All tasks	
= We	lcome	
🗄 Gu	iided Activities	
🗄 Se	rvers	
⊞Ар	plications	
🗄 Se	rvices	
🖯 Re	sources	
	Schedulers	
	Object pool managers	
Ŧ	JMS	
	People directory provider	
	Extended messaging provider	
	WebSphere Business Integration Adapters	
Ξ	JDBC	
	 JDBC propiders 	
	Data sources	
	 Data sour JDBC providers Application Server V4) 	
	 Business Integration Data Source 	
Ŧ	Resource Adapters	
🗄 Asynchronous beans		
🛨 Cache instances		
🕀 Mail		
🗄 Remote artifacts		
Ŧ	URL	
Ŧ	Resource Environment	
🛨 Se	curity	
_	vironment	
E EN	vironment	

5. Click **New** in the JDBC providers window.

Cell=localhostNode01Cell, Profile=AppSrv01

DBC providers ?				
JDBC providers				
Use this page to edit properties of a JDBC provider. The JDBC provider object encapsulates the specific JDBC driver implementation class for access to the specific vendor database of your environment. Learn more about this task in a <u>guided</u> <u>activity</u> . A guided activity provides a list of task steps and more general information about the topic.				
🕞 Scope: Cell=localhostNode01	l Cell , Node= nlNode01			
Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings</u> <u>help.</u> Node=nlNode01				
New Delete				
Select Name 🛟	Scope 🗘	Description 🗘		
You can administer the following resources:				
Oracle JDBC Driver	Node=nlNode01	Oracle JDBC Driver		
Total 1				

6. In the Create new JDBC provider page, select an SQL Server database with a connection pool data source for the SQL Server JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope [cells:localhostNode01Cell:nodes:nlNode01] * Database type SQL Server Provider type Microsoft SQL Server JDBC Driver * Implementation type Connection pool data source * Name Microsoft SQL Server JDBC Driver Description Microsoft SQL Server JDBC Driver Lossoft SQL Server JDBC Driver Microsoft SQL Server JDBC Driver

7. In the Enter database classpath information page, enter the following value in the **Class path** field:

\$(MICROSOFT_JDBC_DRIVER_PATH)/sqljdbc.jar, where \$(MICROSOFT_JDBC_DRIVER_PATH) is library path for the run time.

8. Click Next.

Cell=localhostNode01Cell, Profile=AppSrv01

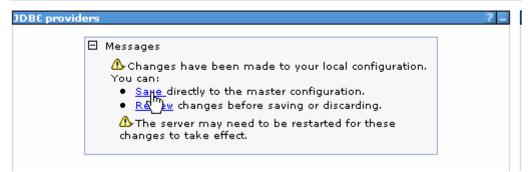
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the value.
		Class path:
		\${MICROSOFT_JDBC_DRIVER_PATH}/sqljdbc.jar
		Directory location for "sqljdbc.jar" which is saved as WebSphere variable \${MICROSOFT_JDBC_DRIVER_PATH} D:\Lib
		Native library path Directory location which is saved as WebSphere variable

9. In the Summary page, click Finish.

Create a new JDBC Provide	r	
Step 1: Create new JDBC provider	Summary	
Step 2: Enter	Summary of actions:	
database class path information	Options	Values
	Scope	cells:localhostNode01Cell:nodes:nlNode01
Step 3: Summary	JDBC provider name	Microsoft SQL Server JDBC Driver
	Description	Microsoft SQL Server JDBC Driver. This provider is configurable in version 6.1.0.15 and later nodes.
	Class path	\${MICROSOFT_JDBC_DRIVER_PATH}/sqljdbc.jar
	\${MICROSOFT_JDBC_DRIVER_PATH}	D:\Lib
	Native path	\${MICROSOFT_JDBC_DRIVER_NATIVEPATH}
	\${MICROSOFT_JDBC_DRIVER_NATIVEPATH}	
	Implementation class name	com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSourc

10. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

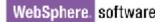


The JDBC provider is added and appears in the list.

Cell=localhostNode01Cell, Profile=AppSrv01

BC prov	viders		
JDBC p	providers		
JDBC d more a	friver implementation class for a	DBC provider. The JDBC provider (ccess to the specific vendor datab ty. A guided activity provides a lis	pase of your environment. Learr
🖂 Scoj	pe: Cell =localhostNode01Cell , N	lode= nlNode01	
		which the resource definition is vis scope is and how it works, <u>see the</u>	
🕀 Pref	ferences		
New	Delete		
	C ## \$		
Select	Name 🔷	Scope 🗘	Description 🗘
You c	an administer the following reso	urces:	
	Microsoft SQL Server JDBC Driver	Node=nlNode01	Microsoft SQL Server JDBC Driver. This provider is configurable in version 6.1.0.15 and later nodes.
	Oracle JDBC Driver	Node=nlNode01	Oracle JDBC Driver
Total	2		

11. Select the SQL Server JDBC provider you created. Under Additional Properties, click Data sources. Click New.



Cell=localhostNode01Cell, Profile=AppSrv01

irce that is associated with your selected JDBC provider. n with connections for accessing the database. Learn mo ictivity provides a list of task steps and more general						
New Delete Test connection Manage state						
pe 🗘 🔋 Provider 🗘 🛛 Description 🗘 Category :						

12. Type any value in the JNDI name field, and select the authentication alias. Click Next.

Create a data source Create a data source Step 1: Enter basic data source information Enter basic data source information Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Step 2: Enter database specific properties for the data source Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 Step 3: Setup security aliases specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Microsoft SQL Server JDBC Driver * Data source name Microsoft SQL Server JDBC Driver - DataSource * JNDI name SQLServerDS Next Cancel

13. Enter appropriate values in the Database name, Port number, and Server name fields. Click Next.

Cell=localhostNode01Cell, Profile=AppSrv01

Cell=localhostNode01Cell, Profile=AppSrv01

	Step 1: Enter basic data source	Enter database specific pr	roperties for the data source
	information		
→	Step 2: Enter database specific properties for the data source	Set these database-specific properties, which are required by the database vendor JDBC driver to support the connections that are managed through the datasource.	
	data source	Name	Value
	Step 3: Setup security aliases	Database name	sample
	Step 4: Summary	Port number	1433
		Server name	9.181.84.136
		Use this data source in c	

14. Select the authentication alias you just created from the **Component-managed authentication alias** list and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Setup security aliases
information Step 2: Enter database specific properties for the data source • Step 3: Setup	Select the authentication values for this resource. Component-managed authentication alias nINode01/Alias_SQLServer Mapping-configuration alias (none)
s ecurity aliases Step 4: Summary	Container-managed authentication alias (none)
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost. <u>Global J2C authentication alias</u> Security domains

15. In the Summary page, review the values entered for the data source and click **Finish**.



Cell=localhostNode01Cell, Profile=AppSrv01

	ep 1: Enter basic ta source	Summary			
	ormation	Summary of acti	ions:		
	ep 2: Enter	Options	Values		
	tabase specific operties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01		
	ta source ep 3: Setup	Data source name	Microsoft SQL Server JDBC Driver - DataSource		
	curity aliases	JNDI name	SQLServerDS		
→ St	ep 4: Summa ry	Select an existing JDBC provider	Microsoft SQL Server JDBC Driver		
		Implementation class name	com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSource		
		Database name	sample		
		Port number	1433		
		Server name	9.181.84.136		
	Use this data source in container managed persistence (CMP)	true			
	Component- managed authentication alias	nlNode01/Alias_SQLServer			
		Mapping- configuration alias	(none)		
	Container- managed authentication alias	(none)			

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Messages
 Changes have been made to your local configuration. You can: <u>Save</u> directly to the master configuration. <u>Rex</u> w changes before saving or discarding. The server may need to be restarted for these changes to take effect.

17. Select the check box corresponding to the data source you created in the previous step and click **Test connection**.

Cell=localhostNode01Cell, Profile=AppSrv01

10.00		
	providers	

JDBC providers > Microsoft SQL Server JDBC Driver > Data sources

Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u>. A guided activity provides a list of task steps and more general information about the topic.

I∓I Preferences	(Ŧ	Pref	erei	nces
-----------------	----	------	------	------

New Delete Test		Manage state			
	ů				
Select Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
You can administer the	e following resourc	es:			
Microsoft SQL Server JDBC Driver - DataSource	SQLServerDS	Node=nlNode01	Microsoft SQL Server JDBC Driver	Data source for the Microsoft SQL Server JDBC Driver. This data source type is configurable in version 6.1.0.15 and later nodes.	

The connection should succeed shown in the following figure. If you experience problems while testing the connection, refer to the "Troubleshooting" section.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

DBC provid	ore					
760 provid	ers					
Messages The test connection operation for data source Microsoft SQL Server MBC Driver - DataSource on server server1 at node nlNode01 was successful with 6 warning(s). <u>Wiew JVM logs</u> for further details.						
<u>JDBC providers</u> > <u>Microsoft SQL Server JDBC Driver</u> > Data sources Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic.						
Preferences New Delete Test connection Manage state						
Select Na		JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
You can	administer the	following resourc	es:			
	licrosoft SQL erver JDBC river - ataSource	SQLServerDS	Node=nlNode01	Microsoft SQL Server JDBC Driver	Data source for the Microsoft SQL Server JDBC Driver. This data source type is configurable in version 6.1.0.15 and later nodes.	
Total 1						

Note: The data source is created which will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- 3. In the **Available Types** area, select **Adapters > JDBC** and then click **Next**.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Eilter: type filter text Available types:	8_
DBC DDBC Dotus Domino Oracle E-Business Suite A PeopleSoft COD	~
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	< >
(?) < Back Next > Einish Cancel	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

🚯 New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	k
(?) < <u>Back</u> <u>Next</u> > <u>Einis</u>	h Cancel

5. In the **Connector project** field enter **CWYBC_JDBC**, and in the **Target runtime environment** field, select the appropriate runtime. Click **Next**.

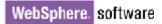
🚯 New External Service		
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	S
Archive file: Connector project: * Target runtime enviroment:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	_JDBC.rar
?	< <u>B</u> ack Next > Einish	Cancel

6. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		×
Locate the Required Files and Libraries		
Connector projects require system-specific libraries and JAR files.	×	
When deploying the application to a stand-alone server, these files must be configu the server. <u>More</u>	red on	^
Specify the location of the JDBC driver JAR files required to access the database set driver JAR files are shipped with the database installation. If you do not have a loca installation, you can download these files from the Web site of the database vendor	l database	
JDBC driver JAR files:		
D:\workspace_lib\JDBCdrivers\SQLServer2005\sqljdbc4.jar	Add	
	Remove	
Specify the location of the database-specific native system libraries required to acce database server. This is required if you are using a Type 2 driver implementation. Th libraries are shipped with the database server and client installations. System libraries:		
	Add	
		~
(?) (Seck Next > Einish	Cancel	

7. Select **Outbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
Inbound processing passes data from the adapter to your service export. Outbound Outbound processing passes data from your service import to the adapter.
(?) < <u>B</u> ack <u>N</u> ext > Einish Cancel



Set connection properties for the external service wizard

To connect to the SQL Server:

- 1. Expand the **SQL Server** node in the **Database system connection information** area and select **2005**.
- 2. Enter **Database**, **Host name**, **Port number**, **User name** and **Password** fields, and click **Next**.

🔒 New External Service 📃 🗖 🔀			
Specify the Discovery Proper	ties		
Connection properties Database system connection inform. Database system connection inform. DB2 UDB OB2 UDB V7.2 V8.1 V8.2 V9.1 DB2 UDB iSeries OB2 UDB iSeries OB2 UDB iSeries OB2 UDB iSeries OCAL SQL Server V2.2 V8.1 V8.2 V9.1 Connection inform. V8.2 V9.1 Connection inform. V8.2 V8.2 V9.1 Connection inform. V8.2 V8.2 V9.1 Connection inform. V8.2 V8.2 V9.1 Connection inform. V8.2 V9.1 Connection inform. Connection inform. C	ation Properties: JDBC driver type: Microsoft SQLServer 2005 for JDI Database: * sample Host name: * 9.123.108.86 Port number: * 1433 JDBC driver class name: Com.microsoft.sqlserver.jdbc.SQLServe Database URL: Idbc:sqlserver://9.123.108.86:1433;da Additional JDBC driver connection properties [name:value;name:value]: These additional JDBC drive establishing the database c		
	sa *********		
?	< <u>Back N</u> ext > Einish Cancel		

Select the business objects and services to be used with the adapter

1. Find Objects in Enterprise System window, click Edit Query.

🖶 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	HO,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database object	Edit Query
Discovered objects: Selected objects:	
Kun a query to populate this view with discc	
	Cancel

2. In the Specify the Query Properties window, select the **Prompt for** additional configuration settings when adding business objects check box and click **OK**.

🛞 New External Service	
Specify the Query Properties	S
Specify the pattern for the schema name filter (for example, ADMIN* or SCOT?)	
Schema name or pattern:	
Supported database object types:	
Tables Views Stored Procedures Synonyms - Nick Names Map JDBC Date/Time/Timestamp types to date/time/dateTime.	Add Remove
Create a query business object to build user-defined Select statements	
Number of select queries to create: 1	
The Select statements are listed under the Query Statements node of the discovered objects Create a batch SQL business object to build user-defined insert, update, and delete state	
Number of batch SQL business objects to create; 1	
The batch SQL statements are listed under the Batch SQL Statements node of the discovered tree,	l objects
? ОК	Cancel

3. Click **Run Query**.

Dew External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	HO.
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported datat	Edit Query
DiscoverRun the query. Selected objects:	
学 22 中	0
····· i < Run a query to populate this view with	
< Back	Cancel

4. Expand the **dbo** (for this tutorial only) node, select **Tables** and expand it.

🚯 New External Service	
Find Objects in the Enterprise System 8 No discovered object is selected.	and a
Query: SchemaFilterLabel=null,Schema name or pattern=null,Suppor	rted da Edit Query
Discovered objects: Selected obje	its:
RECOV_HR SAMPLE SAMPLE O CUSTOMER O WBIA_JDBC_EVENTSTORE O WBIA_JDBC_EVENTSTORE O Views	scovered objects to select
< Back	h Cancel

5. Select the **CUSTOMER** table and click . In the Specify the Configuration Properties for 'CUSTOMER' window click **OK**.

New External Service	
Specify the Configuration Properties	s for 'CUSTOMER'
Select status column name and status value for k Name of the column used to perform logical deletes: Value used to indicate a deleted object: An operation can be performed by a stored proce to perform the operation or to do custom process To use a stored procedure, add it to the list and k	edure. You can run a stored procedure
Advanced >>	
0	OK Cancel

- 6. Select the ADDRESS table and click
- 7. In the Specify the Configuration Properties for 'ADDRESS' window, select **CUSTOMER (dbo)** from the **Choose parent table** list, and then select **PKEY** for **CUSTID** in the **Build a foreign key** area. Select the **Parent object owns child object(cascade delete)** check box. Click **Add**.

WebSphere.	software
------------	----------

🚯 New External Service				×
Specify the Configuration Propertie	es for 'address'		0	1
Select status column name and status value for Name of the column used to perform logical deletes: Value used to indicate a deleted object; Choose parent table from the list for the selecte		×		~
Choose parent table:	customer (dbo)	*		
Single cardinality Build a foreign key relationship by selecting a pa	rent table column for ea	ch child column —		
addrid:	NONE	*		
custid:	pkey	*		
city:	NONE	*		≣
zipcode:	NONE	~		
Parent object owns child object (cascade delete) Preserves address when the parent is updated. address required for operations on parent An operation can be performed by a stored procedure. You can run a stored procedure to perform the operation or to do custom processing before or after processing. To use a stored procedure, add it to the list and then configure it.: Add Remove				
< ?	- IIII	OK	Cancel	

8. Select CreateSP and click OK.

🗣 Add Value 📃 🗖 🔀
Select values from the list below:
BeforeCreateSP BeforeDeleteSP BeforeRetrieveAllSP BeforeUpdateSP CreateSP DeleteSP DeleteSP
⑦ OK Cancel

9. Select **dbo** for the schema name.

🚯 New External Service			×	
Specify the Configuration Propertie	es for 'ADDRESS'		4	
Single cardinality			•	
Build a foreign key relationship by selecting a pa	rent table column for each child column —			
ADDRID:	NONE			
CUSTID:	PKEY]		
CITY:	NONE]		
ZIPCODE:	NONE]		
Parent object owns child object (cascade	e delete)			
Preserves ADDRESS when the parent is	updated.			
ADDRESS required for operations on par	ent			
the operation or to do custom processing before To use a stored procedure, add it to the list and CreateSP		Add Remove		
CreateSP				
Select the schema name to display the matc	_	1		
Schema name:	dbo			
Stored procedure name or pattern:	Select	a schema fro	om wh	
Stored procedure name:	×]		
For each stored procedure parameter, select a table column				
None:				
Advanced >>			~	
0	ОК	Cancel		

10. Select **CREATEADDRESS;1** from stored procedure name list.

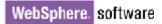
Bew External Service			X
Specify the Configuration Propertie	s for 'ADDRESS'	Ó	1
CIT:	NUNE	*	
ZIPCODE:	NONE	~	
Parent object owns child object (cascade	delete)		
Preserves ADDRESS when the parent is u	updated.		
ADDRESS required for operations on pare	ent		
An operation can be performed by a stored proc the operation or to do custom processing before To use a stored procedure, add it to the list and	or after processing.	procedure to perform	
To use a stored procedure, add it to the list and CreateSP	then configure it.:	Add	1
		Remove	
CreateSP			-
Select the schema name to display the matcl	ning schema		
Schema name:	dbo	~	
Stored procedure name or pattern:			
Stored procedure name:	CREATEADDRESS;1		=
For each stored procedure parameter, selec		a to accoriate with the s	-tored r
ReturnValue:	for the business object. Fo	r example, if you have s	selected
	select CreateCustomerProc stored procedure to perfor		
@addr_id:	aaana	×	
@cust_id:	addrid	~	
@city:	addrid	~	
@zipcode:	addrid	~	
Advanced >>			
Havancoa 22			
			~

11. Select stored procedure parameter for each column.

@addr_id: addrid @cust_id: custid @city: city @zipcode: zipcode 12. Click OK.

🖶 New External Service		×
Specify the Configuration Propertie	es for 'ADDRESS'	
CITY:		~
ZIPCODE:	NONE	
Parent object owns child object (cascade	delete)	
Preserves ADDRESS when the parent is u	updated.	
ADDRESS required for operations on para	ent	
the operation or to do custom processing before		
To use a stored procedure, add it to the list and CreateSP		
Createsp	Add	
	Remove	
CreateSP		
Select the schema name to display the match	hing schema	
Schema name:	dbo 🔽	
Stored procedure name or pattern:		
Stored procedure name:	CREATEADDRESS;1	≣
For each stored procedure parameter, selec	t a table column	
ReturnValue:	addrid 💌	
@addr_id:	addrid	
@cust_id:	custid	
@city:	city 🗸	
@zipcode:	zipcode 💌	
Advanced >>		~
0	OK Cancel	

13. In the Find Objects in Enterprise System window, click Next.



🖶 New External Service 📃 🔲	\times
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database Edit Query	
Run Query	
Discovered objects: Selected objects:	
₿ <u>∠</u> □	
Tables Ta	
Cancel	

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for all fields and click **Next**.

🚯 New External Service	
Specify Composite Properties Specify properties that apply to all selected objects.	
Operations for selected business objects Operations for these functions will be added to the service interface.:*	
Create Update UpdateAll Delete DeleteAll	Add Remove
Custom Business Faults Pattern for the Custom Business Faults:	
Pattern String Custom Fault Name	Add Edit Remove
Create and configure user-defined wrapper objects	
	Add ⊻
C Eack Next > Einist	h Cancel

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Other** for security options under **Deployment Properties**.
 - b) Clear the Join the global transaction check box.
 - c) Select Specify predefined connection pool DataSource from the Database connection information list.
 - d) Enter SQLServerDS in the Connection pool DataSource JNDI Name field, and click Next.

🚯 New External Service				
Specify the Service Generation	n and Dep	loyment Pro	perties	R
Specify properties for generating the ser	vice and runnir	ng it on the server		
Service Operations To modify the names, or add a descr	intion to the or	erations to be get	perated in the	
interface file, click Edit Operations.	ipcion co che of	ieracionis co be ger	ierateu in the	Edit Opera
Deployment Properties				
How do you want to specify the secu		5?		
 Using an existing JAAS alias (reco 		/		
A Java Authentication and Autho	prization Servic	es (JAAS) alias is t	he preferred me	ethod,
J2C authentication data entry:				S
🔘 Using security properties from the	e managed con	nection factory		
The properties will be stored as p	olain text; no e	ncryption is used.		
User name:	sa			
Password:	****			
Other				
Use if no security is required or v server and security will be specif				be deployed
The quality of service that is used to especially when a failure occurs. To j database connection information. Mo	oin a global tra			
Join the global transaction				
Deploy connector project:	With module I	for use by single a	pplication	*
Specify the settings that are used to	connect to JDI	BC at run time:		
Connection settings:	Specify conne	ection properties		~
Connection Properties				
To join a global transaction, specify a predefined XA datasource or XA database connection information. When not joining a global transaction, either the XA connection information or th connection information can be specified.				
Database connection information	n:	Specify predefine	ed connection p	ool DataSour
Database system connection inf	ormation			
Database vendor:		MSSQLSERVER		
Connection pool DataSource	e JNDI name:*	SQLServerDS		~
<				>
?	< <u>B</u> ack	<u>N</u> ext >	<u>Einish</u>	Cancel

3. Click **New** in the Specify the Location Properties window.

🚯 New External	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:	TestConnectionPool	New
Namespace;	http://TestConnectionPool/JDBCOutboundInterface	Create
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface]
	Save business objects to a library	
Library:	· · · · · · · · · · · · · · · · · · ·	New
Description:]
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Inte	gration Project	
	Integration Project Type ss integration project that you want to create.	
	Use a module to integrate business applications and services. A modu any type of component and can be deployed on WebSphere Process : <u>More</u>	
Mediation module	Use a mediation module to integrate and connect services. A mediation contain mediation flows and can be deployed on WebSphere ESB or W Process Server. <u>More</u>	
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel

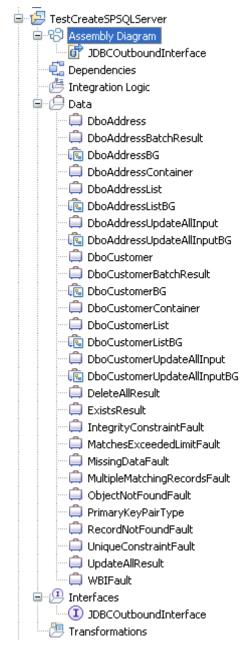
5. In the Create a Module window, type **TestCreateSPSQLServer** in the **Module Name** field and click **Finish**.

🚯 New Module
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.
Module name: TestCreateSPSQLServer
✓ Use default location
Location: D:\Workspaces\WID7_0806\TestCreateSPSQLServer Browse
✓ Open module assembly diagram
⑦ < <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel

6. Click **Finish** to complete service creation.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	Ħ
Properties for Serv	vice	
Module:	TestCreateSPSQLServer 🗸	New
Namespace;	http://TestCreateSPSQLServer/JDBCOutboundInterface	
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

7. Expand the created Business Integration Project and verify whether the artifacts are generated correctly.



Deploy the module to the test environment

The result of running the external service wizard is a Service Component Architecture (SCA) module that contains an Enterprise Information System import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows** > **Show View** > **Servers**.

- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

Ne <u>w</u> Open Show In	F3 Alt+Shift+W	• •
 Copy Paste Delete Rename 	Ctrl+C Ctrl+V Delete F2	
 Restart in Debug Restart Restart in Profile Stop Publish Clean 	Ctrl+Alt+D Ctrl+Alt+R Ctrl+Alt+S Ctrl+Alt+P	
Add and Remove Projects Monitoring ^k		•
 Create tables and data sources Reconnect debug process View and publish the changes to the server Manage server profiles Server configuration Universal test client Administration Launch Add and Remove Integration Solution Projects 		* * * *
Properties	Alt+Enter	

The Add and Remove Projects window lists the available projects in the IBM Integration Designer workspace.

🕀 Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server Available:Configured: BOCustAddrDB2App DBCInboundTestApp CTestCreateSPSQLServer TestExecuteSPSQLServer TestExistsApp TestExistsApp TestWrapperInboundApr Add All >> < <remove <="" all="" td=""></remove>	
✓ If server is started, publish changes immediately	
(?) < Back Next > Finish	Cancel

4. Select your project (**TestCreateSPSQLServerApp**) and click **Add** to configure the project on the server. Click **Finish**.

🚯 Add and Remove	
Add and Remove Modify the resources that are configured on	the server
Move resources to the right to configure the	n on the server
<u>A</u> vailable:	<u>C</u> onfigured:
	Add >
	Id All >>
✓ If server is started, publish changes imme	
	anacory
(?) < <u>B</u> ack	Next > Einish Cancel

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

 Select the TestCreateSPSQLServer module, right-click and select Test > Test Module. The Test Client window is displayed.

WebSphere. software ItestCreateSPSOLServer Image: Comparison of the server 📗 🔯 Mediation Flow . Open Deployment Editor <u>ن</u> Open Data Map Catalog <u>÷</u>... Show Files Show References in References View Associate with Process Center Refresh and Publish be... Refresh from Process Center []] ⊆ору ts 💼 <u>P</u>aste 💢 <u>D</u>elete ters Refactor or Analyze Impact ۲ rs 🔖 Import... 🚮 Exp<u>o</u>rt... 🗞 Re<u>f</u>resh Clo<u>s</u>e Project Add to Asset Repository... Compare <u>B</u>usiness Objects Configure Business Object Parsing Mode... Convert Mediation Flow Format... 😭 Generate Documentation... 🖫 Generate Human Task User Interface... New Process Version... Synchronize with the WebSphere Business Modeler Export... 🜔 <u>T</u>est Modules Test 🛓 Attach to Modules <u>V</u>alidate

2. Select createDboCustomerBG from the Operation list.

General Properties

Detailed Properties

Specify the component, interface, operation, and input parameter values for the Invoke event, then click the Continue icon in the Events area to run the test. <u>More...</u>

Configuration:	Default Module Test	*
<u>Module:</u>	TestCreateSPSQLServer	*
<u>Component:</u>	JDBCOutboundInterface	*
Interface:	JDBCOutboundInterface	*
Operation:	createDboCustomerBG	*

Initial request parameters:

⊙ Val<u>u</u>e editor ○ XML editor

Name	Туре	Value
🗉 💾 createDb	DboCustomerBG	✓
🗁 🗁 verb	verb <string></string>	🖌 Create
🖻 🖳 DboCusta	DboCustomer	*
🖳 🗔 pkey	string	*
📖 💭 fname	string	*
📖 💭 İname	string	*
📖 💭 ccode	string	*
[] addres	DboAddress[]	60°

3. Enter **Create** for the verb and specify values for **pkey**, **Iname**, **fname** and **ccode** as shown in the figure.

Initial request parameters: • Value editor • XML editor

₽ 6 □				
Name	Type	Value		
🗉 🖳 createDboCu	DboCustomerBG	✓		
💭 🖳 💭	verb <string></string>	🖌 Create		
🗖 🕒 🖻 🕒 🖻	DboCustomer	*		
🗖 🗖 💭 💭 💭	string	✓ 100		
👘 💷 fname	string	✓ testFname		
👘 💷 İname	string	✓ testLname		
🔲 🗆 🗠	string	✓ testCcode		
[I] addres	DboAddress[]	ങ		

4. Right-click addressobj and select Add Elements.

Initial request parameters:

⊙ Val <u>u</u> e editor	○ <u>X</u> ML editor
-------------------------	----------------------

3 8 🗖		Ē
Name	Type	Value
🗉 🗄 createDboCustomeri	E DboCustomerBG	×
💷 🗁 verb	verb <string></string>	🗸 Create
🖻 🖳 DboCustomer	DboCustomer	×
💷 pkey	string	✓ 100
💷 🗇 🕮	string	🖌 testFname
💷 Iname	string	🖌 testLname
🕮 ccode	string	🖌 testCcode
<	 opy Value aste Value elect <u>A</u> ll	
A	🕼 Elements	

5. Enter 1 and click OK.

Add Element	
Enter the number of new elements to	add:*
1	
	OK Cancel

6. Enter the values for **addressobj[0]** as shown in the figure below.

Initial request parameters:

⊙ Value editor OXML editor

Name	Туре	Value
🗉 🖳 createDboCustor	DboCustom	*
💷 💷 verb	verb <string></string>	🖌 Create
🖃 🖳 DboCustomer	DboCustomer	*
🚽 💷 pkey	string	✓ 100
🚽 💷 fname	string	✓ testFname
🔤 🗁 💷	string	✓ testLname
ccode	string	✓ testCcode
🖃 💷 💷 addressobj	DboAddress[]	667
🖻 🖳 address	DboAddress	*
🖳 💷 addr	string	✓ 100
🕮 custi	string	✓ 100
— 💷 city	string	🖌 Beijing
🛄 🖵 zipco	string	✓ 100000
^D Type: http://www.w3.org/2001/XMLSchema#string		

7. To execute the service click \triangleright .



8. In the Deployment Location window, select the server, and click **Finish**.

🚯 Deployment Location							
Select a Deployment Location	E						
Specify a runtime location where this test will deploy.							
Deployment location:							
IBM Process Servers IBM Process Server v7.5 at localhost WebSphere Enterprise Service Bus Server	New <u>S</u> erver						
Mode: Run							
Use this location as the default and do not ask again							
① To change the default location elsewhere, open the Properties window for the project and select Business Integration > Integration Test Client.							
? Einish	Cancel						

The result of the test execution will be displayed once completed.

Clear the sample content

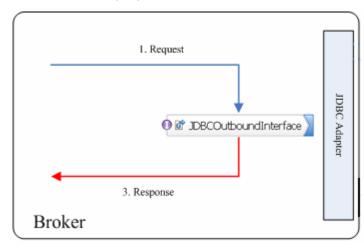
After a record created with the IBM Integration Designer environment, it can be remove using a Delete operation.

Chapter 4. Tutorial 3: Creating and executing stored procedure business objects with complex data types (Oracle)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 creates business object for stored procedure and executes the stored procedure using the Execute operation. This tutorial also demonstrates the support for Array and Struct data types.

About this task

In this scenario, an application SCA component raises an execute request to the JDBC Outbound Interface. Then JDBC adapter constructs the complex SQL types according to the input business object and generates execute SQL statement to call the corresponding stored procedure. The stored procedure executes its internal business logic and generates output. Finally, the JDBC adapter generates a response according to the execution status and output of the stored procedure. The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create types, tables and stored procedure
- Create an authentication alias
- Create a data source

Create types, tables and stored procedure

You must create the following tables, objects and stored procedures in the Oracle database before starting the scenario.

a. Script for creating the reference type

```
CREATE OR REPLACE TYPE ARRAYTYPE AS
VARRAY(10) OF VARCHAR2(50);
```

This script creates a reference type of Array that holds up to 10 records of type VARCHAR2. It is used as an input type in our stored procedure.

```
CREATE OR REPLACE TYPE STRUCTTYPE AS OBJECT (
EMPID VARCHAR2(10),
NAME VARCHAR2(20),
TITLE VARCHAR2(10)
);
```

This script creates a reference type of Struct that has three columns. It is used as an output type in our stored procedure.

Note: To create reference types, enter a forward slash (/) at the end and then press the Return key.

b. Script for creating tables

Create two tables that will be used in the stored procedure.

```
CREATE TABLE TABLE_ARRAY (
	ID VARCHAR2(10),
	INFO ARRAYTYPE );
CREATE TABLE TABLE_STRUCT (
	ID VARCHAR2(10),
	INFO STRUCTTYPE );
```

Insert a record into TABLE_STRUCT by executing the following SQL statement:

```
INSERT INTO TABLE_STRUCT VALUES ('100',
STRUCTTYPE('10', 'xyz', 'SE'));
```

c. Script for creating the stored procedure

The stored procedure takes an Array type as an input parameter and returns a Struct type as an output parameter.

```
CREATE OR REPLACE PROCEDURE SAMPLE_ARRAY_STRUCT (
pkey IN VARCHAR, arr IN ARRAYTYPE, strt OUT STRUCTTYPE
)
IS BEGIN
INSERT INTO TABLE_ARRAY VALUES (pkey, arr);
SELECT INFO INTO strt FROM TABLE_STRUCT WHERE ID =
pkey;
END SAMPLE_ARRAY_STRUCT;
/
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

 In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.

Business Integration - IBM Integration	gration Designer 7.5 - D:\workspace\201	0\Sample75	
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> u	Run Diagram Services Samples AST JUnit Tests	<u>W</u> indow <u>H</u> elp	
	🗄 🛗 🚜 🖋 🔹 Link Indexer FVTs 🕴 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 😰 🐯 Business Inte
		Open Perspective	
E Business 🛛 🗖		Show View 🔸	🖓 Build Activities
✓ </th <th> Start working Start to work by creating a a project into your workspation of the start of the st</th> <th>Close All Perspectives Navigation * Switch to Process Center Preferences</th> <th>Image: Server Logs Alt+Shift+Q, C Image: DataPower Appliances Image: DataPower Appliances Image: Outline Alt+Shift+Q, O Image: Physical Resources Image: Outline Image: Problems Alt+Shift+Q, X Image: Properties Image: Outline Image: Properties Image: Outline Image: Properties Image: Outline Image: Outline Image: Outline</th>	 Start working Start to work by creating a a project into your workspation of the start of the st	Close All Perspectives Navigation * Switch to Process Center Preferences	Image: Server Logs Alt+Shift+Q, C Image: DataPower Appliances Image: DataPower Appliances Image: Outline Alt+Shift+Q, O Image: Physical Resources Image: Outline Image: Problems Alt+Shift+Q, X Image: Properties Image: Outline Image: Properties Image: Outline Image: Properties Image: Outline Image: Outline Image: Outline
	k Flows 🖗 Build Activities 🔲 Properties 🏦 Pro		Servers Sarvers Sarve
1 items selected			

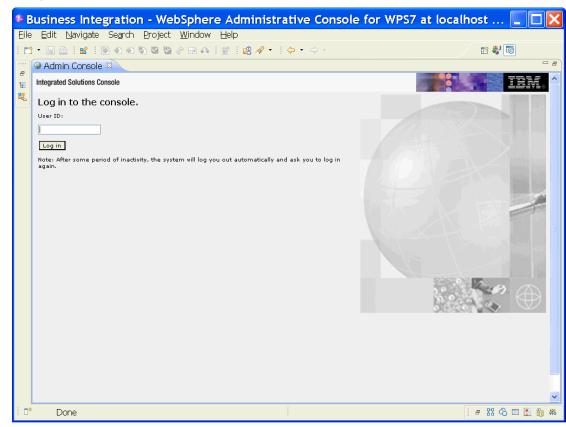
10. In the **Servers** view, right-click the server that you want to start and select **Start**.

🚯 B	usiness Integ	ration -	IBM Inte	egrati	ion De	esigne	r 7.5	- D:\v	worksp	ace\;	2010	\Sam	ipl		
Eile	<u>E</u> dit <u>N</u> avigate	Se <u>a</u> rch	Project	<u>R</u> un	<u>D</u> iagra	am Servi	ces Sar	nples	AST JU	Jnit Tes	its <u>\</u>	<u>M</u> indov	∾ <u>H</u> e	lp	
Image: State of the state															
••••	뀸 Task Flow	🗟 Build	Activ 🔲	Prope	erties	🛃 Prot	olems	🛅 Se	rver Lo	위 라 9	ierve	s 🛙		- 8) (
8										Ŕ	\$ C	Þ		<u>p</u> ~	8
1	IBM Process Server v7.5 at localhost [Stopped, Synchr <u>onized]</u>														
								N	le <u>w</u>						
)pen						
								S	ihow In						
									Сору						
								Ê P	aste						
								💢 D	elete						
								R	le <u>n</u> ame						
								ॐ ⊑	ebug						
								2 🜔	itart						
								¢۳ P	rofile	15					
								E S	itop						
								P 🗐	ublish						
1 ∎	° 📒 🔒 1	items sele	cted						lean						

11. After the server is started, right-click the server, and select **Administration > Run administrative console**.

🚏 IBM Process Server v7.5 at localhost [Started, Synchr	ronized]
	Ne <u>w</u>
	Open
	Show In
	Сору
	💼 Paste
	💢 Delete
	Rename
	🐝 Restart in Debug
	Restart
	🔊 Restart in Profile
	E Stop
	📳 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	😤 View and Publish Changes to Server
	Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

12. Log on to the administrative console.



13. Click Security → Global security.

View: All tasks
Welcome
🗄 Guided Activities
Applications
🗄 Services
🗄 Resources
🖂 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🕀 Environment
Integration Applications
🗄 Users and Groups
🗄 Monitoring and Tuning
田 Troubleshooting
🗄 Service integration

14. On the right, click J2C Authentication Data under Java Authentication and Authorization Service.

unctions and is used as a default security policy for user applications. Secu	
applications.	rity domains can be defined to override and
Security Configuration Wizard Security Config	juration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expir
Application security	 Kerberos and LIPA Kerberos configuration SWAM (deprecated): No authentition
Java 2 security	Authentication cache settings
 Warn if applications are granted custom permissions Restrict access to resource authentication data 	RMI/IIOP security Java Authentication and Authorizat Application logins
User account repository Current realm definition	J2G authentication data
Federated repositories Available realm definitions	Specifies a list of user identities and pass for Java(TM) 2 connector security to use.

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

New	Delete		
	∎ ₩ ₽		
Select	Alias 🛟	User ID 🗘	Description (
You c	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authenticatio alias for the Common Event Infrastructur JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used b SCA to login a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authenticatio alias for the Event Server

15. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global securi	ty ?
	Messages Changes have been made to your local configuration. You can:
	 <u>Same</u> directly to the master configuration. <u>Review</u> changes before saving or discarding.
	Δ The server may need to be restarted for these changes to take effect.
<u>Global sec</u>	curity > JAAS - J2C authentication data
	a list of user identities and passwords for Java(TM) 2 connector security to use.
🚩 Prefi>	< new alias names with the node name of the cell (for compatibility with earlier releases)
Apply	

You have created an authentication alias that will be used to configure the data source.

🕀 Pre	ferences		
New	Delete		
D			
Select	Alias 🛟	User ID 🗘	Description 🗘
You d	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
	nINode01/AliashGracle	luweiqin	
Total	5		

Create the data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source will be used later when generating the artifacts for the module.

Note: This tutorial will use Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

18. In the administrative console, select **Environment** → **WebSphere** Variables.

View: All tasks 💌
= Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🗆 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared libh es Replication WebSphere variables Maming
$oldsymbol{ heta}$ System administration
🗄 Users and Groups
🗄 Monitoring and Tuning
🗄 Troubleshooting
II UDU

19. On the right, click **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

WebSphere Variables ? -
WebSphere Variables > ORACLE_JDBC_DRIVER_PATH
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.
Configuration
General Properties
* Name ORACLE_JDBC_DRIVER_PATH
Value D:\Lib
Description
The directory that contains the Oracle thin or oci8 JDBC Driver.
Apply OK Reset Cancel

20. Click **Save** to save the changes.

WebSphere Variables	?
 Messages Changes have been made to your local configuration. You can: Same directly to the master configuration. RX lew changes before saving or discarding. A The server may need to be restarted for these changes to take effect. 	

The variable has been added and appears in the list.

H Preferences				
New	New Delete			
Select	Name 🛟	Value 🗘	Scope 🗘	
You c	You can administer the following resources:			
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01	
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01	
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01	
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01	
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01	
_	CVDACE IDDC DDD/ED DATU		N.JIN.J.O4	

21. Select Resources	s → JDBC ->	JDBC Providers.
----------------------	-------------	-----------------

View: All tasks
= Welcome
🗄 Guided Activities
🗄 Servers
🕀 Services
🗆 Resources
Schedulers
 Object pool managers
⊞ JMS
People directory provider
Extended messaging provider
 WebSphere Business Integration Adapters
🖂 ЈОВС
 JDBC propiders
Data soul
 Data sour JDBC providers Application Server V4)
 Business Integration Data Source
⊞ Resource Adapters
🛨 Asynchronous beans
🗄 Cache instances
🗄 Mail
田 Remote artifacts ■
1 URL
🛨 Resource Environment
🗄 Security
🗄 Environment

22. Click $\ensuremath{\textbf{New}}$ in the JDBC providers window.

BC providers			?
JDBC provide	rs		
encapsulates specific vendo <u>quided activit</u>	the specific JDBC d or database of your	of a JDBC provider. The J river implementation clas environment. Learn more provides a list of task ste	s for access to the e about this task in a
🖯 Scope: Cel	ll=localhostNode01	Cell, Node=nlNode01	
defi scop <u>help</u>	nition is visible. Fo pe is and how it wor o. 4ode=nlNode01	el at which the resource r detailed information on ks, <u>see the scope setting</u>	
H Preference	:S		
New Delet	e		
00#	*		
Select Name	\$	Scope 🗘	Description 🗘
None			
Total O			

23. In the Create new JDBC provider page, select an Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 * Database type Oracle Provider type Oracle V * Implementation type Connection pool data source V
	* Name Oracle JDBC Driver
	Description
	Oracle JDBC Driver

- 24. In the Enter database classpath information page, enter the following value in the **Class path** field:
 - \$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where

\$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.

25. Click Next.

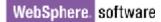
Cell=localhostNode01Cell, Profile=AppSrv01

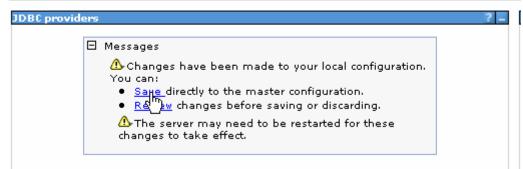
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the value.
		Class path:
		\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib

26. Click Finish.

Cre	ate a new JDBC Provide	r	
	Step 1: Create new JDBC provider	Summary	
	Step 2: Enter database class path information	Summary of actions:	
		Options	Values
		Scope	cells:localhostNode01Cell:nodes:nlNode01
→	Step 3: Summary	JDBC provider name	Oracle JDBC Driver
		Description	Oracle JDBC Driver
		Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
		Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource

27. Click **Save** to save the changes.





The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC providers Use this page to edit pro	perties of a JDBC provider. T	The JDBC provider object
encapsulates the specific specific vendor database	DBC driver implementation of your environment. Learn activity provides a list of tas	i class for access to the more about this task in a
🖃 Scope: Cell =localhost	Node01Cell, Node=nlNode01	L
	ow it works, <u>see the scope se</u>	received by
<u>help.</u> Node=nlNod ∓ Preferences	e01 💌	
<u>help.</u> Node=nlNod	e01 💌	
<u>help.</u> Node=nlNod	e01 💌	
<u>help.</u> Node=nlNod Preferences New Delete	e01 💌	Description 🗘
help. Node=nlNod Preferences New Delete	Scope 🗘	Description 🗘

28. Click the Oracle JDBC provider you just created. Under Additional Properties, click Data sources. Click New.

JUBL providers > C	<u>)racle JDBC Drive</u>	er > Data so	urces		
Use this page to ec JDBC provider. The accessing the datab provides a list of ta	datasource objec base. Learn more	t supplies y about this f	our applicatio task in a <u>quid</u>	n with connectio <u>led activity</u> . A gu	ns for
Preferences					
New Delete	Test connection	Manage	e state		
© Č # 7					
Select Name 🔿	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (
Select name V					

29. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

30. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



	Step 1: Enter basic data source	Enter database specific prope	rties for the data source
	information		
→ Step 2: Enter database specific properties for the data source	Set these database-specific proper database vendor JDBC driver to su managed through the datasource.		
	Name	Value	
	Step 3: Setup security aliases	* URL	jdbc:oralce:thin:@9.181.84.1
Step 4: Summary	Step 4: Summary	★ Data store helper class name Oracle10g data store helper	
		Use this data source in contai	iner managed persistence (CMP)

31. Select the authentication alias you just created from the **Component-managed authentication alias** list. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

reate a data source	
Create a data source	
Step 1: Enter basic data source information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Setup security aliases Select the authentication values for this resource. Component-managed authentication alias INNode01/Alias_Oracle Mapping-configuration alias (none) Container-managed authentication alias
Previous Next C	(none) Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost. <u>Global J2C authentication alias</u> <u>Security domains</u> ancel

The Summary of the values entered for the data source will be shown.

32. Click Finish.

Close

Create a data source

Step 1: Enter basic	Summary	
information	Summary of action	151
Step 2: Enter	Options	Values
properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
data source	Data source name	Oracle JDBC Driver DataSource
Step 3: Setup	JNDI name	OracleDS
	Select an existing JDBC provider	Oracle JDBC Driver
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
	URL	jdbc:orade:thin:@9.181.84.136:1521:ord
	Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe
	Use this data source in container managed persistence (CMP)	true
	Component- managed authentication alias	nlNode01/Alias_Oracle
	Mapping- configuration alias	(none)
	Container- managed authentication alias	(none)
	data source information Step 2: Enter database specific properties for the data source	data source information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary URL Data store helper class name URL Data store helper class name Use this data source in container managed persistence (CMP) Component- managed authentication alias Container- managed authentication

33. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

roviders	
🕀 Messages	
 Changes have been made to your local configuration. Yo Save directly to the master configuration. ReX // changes before saving or discarding. The server may need to be restarted for these changes effect. 	

34. Select the check box corresponding to the data source you created in the previous step and click **Test connection**.

ловер	providers > Orac	<u>le JDBC Driver</u> :	> Data sources			
provide databa	er. The datasour ise. Learn more	rce object supplie	datasource that is as your application in a <u>quided activit</u> pout the topic.	n with connecti	ons for accessin	ig the
🕀 Pref	ferences					
New	Delete Tes	st connection	Manage state			
	d 👯 🦃	Ů				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Categor
You c	an administer th	e following reso	urces:			
✓	<u>Oracle JDBC</u> <u>Driver</u> DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as shown in the following figure. If you experience problems while testing the connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

						_
🕀 Messages						
The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node nlNode01 was successful. Information						
JDBC p	providers > Orac	le JDBC Driver	> Data sources			
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic.						
🕀 Pref	ferences					
New Delete Test connection Manage state						
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category :
You can administer the following resources:						
You c	an administer ti	e ronowing resor	urces.			
You c	<u>Oracle JDBC</u> <u>Driver</u> <u>DataSource</u>	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

Note: The data source is created which will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- 2. Start the external service wizard by selecting File-> New -> External Service.
- 3. In the **Available Types** area, select **Adapters > JDBC** and then click **Next**.

🚯 New External Service	×
Select the Service Type or Registry	
Select the type of service to create or registry to browse.	
Filter: type filter text	B_
Available types:	
JDBC	^
PeopleSoft	
SAP SAP	
- Siebel	
E Case Management	~
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application that runs in IBM Process	>
(?) < <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
<)	>
(?) < <u>Back</u> Next > Einish	Cancel

5. In the **Connector project** field enter **CWYBC_JDBC**, and in the **Target runtime environment** field, select appropriate runtime. Click **Next**.

🚯 New External Service	9	
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	
Archive file:	E:\WID75.image\ResourceAdapters\JDBC_7.5.0 DBC.rar).0\CWYBC_J
Connector project: *	CWYBC_JDBC1	
Target runtime enviroment:	IBM Process Server v7.5	~
? (< <u>B</u> ack <u>N</u> ext > Einish	Cancel

6. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service	
Locate the Required Files and Libraries "	
Connector projects require system-specific libraries and JAR files.	
When deploying the application to a stand-alone server, these files must be configured on the server. <u>More</u>	^
Specify the location of the JDBC driver JAR files required to access the datal server. JDBC driver JAR files are shipped with the database installation. If y have a local database installation, you can download these files from the We the database vendor.	ou do not
JDBC driver JAR files:	
E:\Yuanjs\oracle\ojdbc6.jar	Add
Specify the location of the database-specific native system libraries required the database server. This is required if you are using a Type 2 driver implem The native libraries are shipped with the database server and client installati System libraries:	entation.
	Add
? < Back	Cancel

7. Select **Outbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
O Inbound Inbound processing passes data from the adapter to your service export.
• Outbound processing passes data from your service import to the adapter.
(?) (<u>Back</u> <u>Next</u>) Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node from **Database system connection information** then select **10**.
- 2. Enter System ID, Host name, Port number, User name and Password fields, and then click Next.

New External Service	k	
Specify the Discovery Properti	es	0
Connection properties Database system connection informal Database System connection informal Database System connection informal DB2 UDB iSeries DB2 UDB iSeries DB2 UDB zSeries DB2 UDB zSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSeries DD2 ZSF ZSER DD2 ZSF Z	tion Properties: JDBC driver type: System ID: * Host name: * Port number: * JDBC driver class name: * Database URL: Additional JDBC driver	9.123.98.52
	ample *****	
Prefix for business object names:	wizard	
?	< <u>B</u> ack	lext > Einish Cancel

Select the business objects to be used with the adapter

Follow these steps to select the **SAMPLE_ARRAY_STRUCT** business object:

1. In the Object Discovery and Selection screen, click Edit Query.

New External Service	
Find Objects in the Enterprise Syste Use a query to find objects on the enterprise syst the query, then click Run Query to run it.	
Query: SchemaFilterLabel=null,Schema name or p Run Query	attern=null,Supported databa Edit Query
Discovered objects:	Selected objects:
<u></u> 学 Z 印	0
\cdots \mathbf{i} < Run a query to populate this view with	
? < Back	Next > Einish Cancel

2. In the Specify the Query Properties window, select the **Prompt for** additional configuration settings when adding business objects check box and click **OK**.

New External Service	
Specify the Query Properties	S
Specify the pattern for the schema name filter (for example, ADMIN* or SCOT?)	
Schema name or pattern:]
Supported database object types:	
Tables Views Stored Procedures Synonyms - Nick Names	Add Remove
 Map JDBC Date/Time/Timestamp types to date/time/dateTime. Prompt for additional configuration settings when adding business object]
Create a query business object to build user-defined Select statements	
Number of select queries to create; 1]
The Select statements are listed under the Query Statements node of the discovered obje Create a batch SQL business object to build user-defined insert, update, and delete st	
Number of batch SQL business objects to create: 1	
The batch SQL statements are listed under the Batch SQL Statements node of the discove tree.	ered objects
? ОК	Cancel

- 3. Click Run Query.
- 4. Expand the **SAMPLE** (for this tutorial only) node and select **Stored Procedures** and expand it.
- 5. Select **SAMPLE_ARRAY_STRUCT** from stored procedures and click

Dew External Service	
Find Objects in the Enterprise System No discovered object is selected.	R.
Query: SchemaFilterLabel=null,Schema name or pattern Run Query	=null,Supported database object types=Ta Edit Query
Discovered objects:	Selected objects:
 Views Stored Procedures Stored Procedures Synonyms - Nick Names Scott Scott StilnFORMTN_SCHEMA SPATIAL_CSW_ADMIN_USR SPATIAL_WFS_ADMIN_USR 	Add selected discovered objects to selected objects
?	: <u>B</u> ack <u>N</u> ext > <u>F</u> inish Cancel

6. In the Specify the Configuration Properties for 'SAMPLE_ARRAY_STRUCT' window, accept the default value for the **Maximum number of result sets returned** field and check whether the data types of parameters are correct.

New External Service		
Specify the Configuration Properties for 'SAM	IPLE_ARRAY_STRUCT'	
Generate a business object for the stored procedure		
Business object		
Stored procedure name:	SAMPLE.SAMPLE_ARRAY_STRUCT	
The maximum number of ResultSets returned from the stored procedure.:	0	
Attributes		
PKEY		
Data type:	string	•
Sample Value:	9	
ARR		
Data type:	ARRAY	
	* SAMPLE.ARRAYTYPE	
Type name: Attributes	* DAMPLE.ARKATITPE	
Attributes		
Data type:	string	
Sample Value:		
	STRUCT	
Data type:		
Type name:	* SAMPLE.STRUCTTYPE	
Attributes		
	atuin a	
Data type:	string	
NAME		
Data type:	string	
TITLE		
Data type:	string	
Returned ResultSets		
None:		
Validate the stored procedure		
Validate the syntax of the stored procedure using the sam	pie values;	
Validate		
Result:		
0	ОК	Cancel

 Enter sample values for the stored procedure input types, click Validate to verify if the stored procedure executes successfully. Check the Result to verify the result of validation and click OK.

New External Service			
Specify the Configuration Properties for 'SAMPLE	_AF	RAY_STRUCT'	(A)
Generate a business object for the stored procedure			
Business object			
Stored procedure name:		SAMPLE.SAMPLE_ARRAY_STRUCT	
The maximum number of ResultSets returned from the stored procedure.:		0	
Attributes			
PKEY		[
Data type:		string	*
Sample Value:		100	
ARR			
Data type:		ARRAY	*
Type name:	*	SAMPLE.ARRAYTYPE	
Attributes			
Attribute1		[
Data type:		string	*
Sample Value:		s1	
STRT			
Data type:		STRUCT	*
Type name:	*	SAMPLE.STRUCTTYPE	
Attributes			
EMPID			
Data type:		string	~
NAME			
Data type:		string	*
TITLE			
Data type:		string	*
Returned ResultSets			
None:			
Validate the stored procedure			
Validate the syntax of the stored procedure using the sample val	lues:		
Validate			
Result:		Validation was successful.	
0		ОК	Cancel

8. Click Next.

🚯 New External Service					
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.					
Query: SchemaFilterLabel=null,Schema name or pattern Run Query					
Discovered objects:	Selected objects:				
Image: Constraint of the second s	SAMPLE_ARRAY_STRUCT				
SI_INFORMTN_SCHEMA SPATIAL_CSW_ADMIN_USR SPATIAL_WFS_ADMIN_USR					
(?)	< <u>Back</u> <u>N</u> ext > <u>Finish</u> Cancel				

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for the all fields and click **Next**.



🚯 Ne	w External Service	Ν	
	cify Composite Prope ify properties that apply to all		
	om Business Faults Pattern for the Custom Busine	ss Faults:	
	Pattern String	Custom Fault Name	Add Edit Remove
 Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc Specify the relative folder for generated business objects Folder: Generate a business graph for each business object Advanced >> 			
?		< <u>B</u> ack Next > Einish	Cancel

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Other** for security options under **Deployment Properties**.
 - b) Clear the Join the global transaction check box.
 - c) Select Specify predefined connection pool DataSource from the Database connection information list.
 - d) Enter OracleDS in the Connection pool DataSource JNDI Name field, and click Next.

Bow External Service		
Specify the Service Generation Specify properties for generating the set	on and Deployment Properties	3
generated in the internate rile, tiltki Deployment Properties	· · · · · · · · · · · · · · · · · · ·	<u> </u>
How do you want to specify the sec	•	-
Using an existing JAAS alias (reco	ommended) orization Services (JAAS) alias is the preferred method.	
		ct
J2C authentication data entry:		
OUsing security properties from th		
	plain text; no encryption is used,	
User name;	sample	
Password:	*****	
💽 Other	Ν	=
	 join the transaction provides a higher degree of data ccurs. To join a global transaction, specify a predefined nection information. <u>More</u> 	j
Deploy connector project:	With module for use by single application 🛛 👻	
Specify the settings that are used to	o connect to JDBC at run time:	
Connection settings;	Specify connection properties	
Connection Properties		
connection information. When r	ecify a predefined XA datasource or XA database not joining a global transaction, either the XA connectio ion information can be specified.	n
Database connection informatic	n: Specify predefined XA DataSource	~
Database system connection	on information	
Database vendor:	ORACLE	
XA DataSource JNDI na	ame:* ^V OracleDS	~
?	< <u>B</u> ack <u>N</u> ext > Einish C	ancel

3. Click **New** in the Specify the Location Properties window.

🚯 New Externa	l Service	
	roperties for where you want to save the service.	
Properties for Ser	vice	
Module:		New
Namespace;	http:///JDBCOutboundInterface]
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface]
	Save business objects to a library	
Library;	v	New
Description:]
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Integ	ration Project 📐	
	ntegration Project Type s integration project that you want to create.	
	Use a module to integrate business applications and services. A module any type of component and can be deployed on IBM Process Server. №	
OMediation module	Use a mediation module to integrate and connect services. A mediation contain mediation flows and can be deployed on WebSphere ESB or IBN Server. <u>More</u>	
?	< <u>B</u> ack Next > Einish	Cancel

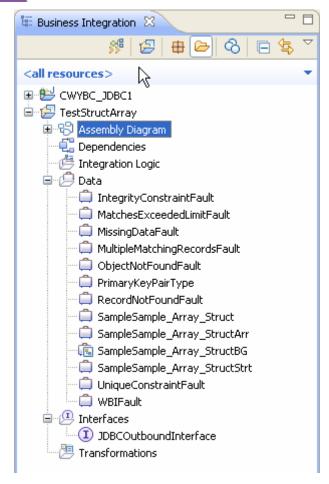
5. In the Create a Module window, type **TestStructArray** in the **Module Name** field and click **Finish**.

🚯 New Module	
Create a Module	
Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on	
Module name: TestStructArray	
✓ Use default location	
Location: E:\WID7.5_sample\TestStructArray	Browse
☑ Open the module assembly diagram	
? < <u>Back</u> <u>Next</u> > <u>Finish</u>	Cancel

6. Click **Finish** to complete service creation.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:	TestStructArray	New
Namespace;	http://TestStructArray/JDBCOutboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

7. Expand the created Business Integration Project and verify whether the artifacts are generated correctly.



Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows** > **Show View** > **Servers**.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

Process		🏪 Add and Renove	
Rule Group		Monitoring	•
State Machine		Modern Batch Job Management Console	
Import		Create Tables and Data Sources	
Export		Reconnect Debug Process	
References		😤 View and Publish Changes to Server	
Interface Map (De		🛅 Manage Server Profiles	
Selector		2 Export Dynamic Endpoint Selection Configuration	
Outbound Imports		2 Import Dynamic Endpoint Selection Configuration	
•		2 Update Vocabularies and Related Artifacts	
Inbound Exports		Server Configuration	+
Outbound Adapters		Universal Test Client	+
Inbound Adapters		Administration	+
(0)		Launch	+
Task Flows 🙆 Build	Activities 🔲 Properties 🗟	Add and Remove Integration Solution Projects	+
🔒 AJAX Test Server	• [Stopped] er v7.5 at 9.119.154.112 [Pro	Properties	Alt+Enter

The Add and Remove Projects window lists the available projects in the IBM Integration Designer workspace.

Add and Remove	
Add and Remove Modify the resources that are configured on the serv	er 📃
Move resources to the right to configure them on the	server
<u>A</u> vailable:	<u>⊂</u> onfigured:
Image: TestStructArrayApp Add > Add > Add All >> << Remove	
☑ If server is started, publish changes immediately	
(?) < <u>B</u> ack !	Next > Finish Cancel

4. Select your project (**TestStructArrayApp**) and click **Add** to configure the project on the server. Click **Finish**.

🚯 Add and Remove	
んし Modify the resources that are configured on the server	
Move resources to the right to configure them on the server <u>A</u> vailable:	<u>C</u> onfigured:
Add >	TestStructArrayApp ☐ TestStructArrayApp
Add Al! >> <	
✓ If server is started, publish changes immediately	
(?) < Back Next >	Einish Cancel

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. Select the **TestStructArray** module, right-click, and select **Test > Test Module.** The Test Client window is displayed.

🗄 Business Integratio	n 🛛 🗧	, 🗆	😵 TestStructArray - Assembly Di
8	\$ 🖃 🖨 🔁 🖶 🖇	∇	👌 😳 Palette
<all resources=""></all>		-	📐 🗨 🗨 🐁 💷
	1		🔁 Favorites
🖻 🔁 TestStructArra	iy		🗁 Components
B B Assemb	Ne <u>w</u>	ר	💁 Untyped Component
Depend Depend		-	👔 Human Task
🖃 🏳 Data	Open		🛃 Java
	Open Wit <u>h</u>		🔁 Mediation Flow
Mat —	Show Files		👤 Process
🗍 Miss 📗	Copy		🔚 Rule Group
— 🖨 Mult 👘	Aste		🗧 🗧 State Machine
🛁 Obj	Colete		
📄 💭 Prim		-	i Import
	<u>Import</u>		🙀 Export
Sam	🚰 Export		References
i San 🧔	Refresh		📩 Interface Map (De
Sam		-	😔 Selector
🗐 🗐 Unic	Add to Asset Repository		Coutbound Imports
🛄 wbi	Export as Image		C Inbound Exports
🖨 🚇 Interfac 🗎	Generate Documentation		
JDB	<u>T</u> est		Test <u>Martule</u>
🔤 🎦 Transfo	<u>V</u> alidate	-	Attach Cers
	T <u>e</u> am 🕨		🚼 Task Flows 📀 Build Activitie:
	Comp <u>a</u> re With		AJAX Test Server [Stopp
	Replace With		IBM Process Server v7.5

There is only one supported operation for business objects created for stored procedures. The **executeSampleSample_Array_StructBG** operation is selected by default.

General Properties

Detailed Properties

Specify the component, interface, operation, and input parameter values for the Invoke event, then click the Continue icon in the Events area to run the test. <u>More...</u>

Configuration:	Default Module Test	*
<u>Module:</u>	TestStructArray	*
<u>Component:</u>	JDBCOutboundInterface1	*
Interface:	JDBCOutboundInterface1	*
Operation:	executeSampleSample_Array_StructBG	*

Initial request parameters:

⊙ Value editor ○ XML editor

		Ē
Name	Туре	Value
🗉 📴 executeSampleSample	SampleSample	×
verb	verb <string></string>	🗸 Create
🖕 🖳 SampleSample_Array	/ SampleSample	×
🕮 pkey	string	×
(•) arr	SampleSample	66
🖕 🖳 strt	SampleSample	×
🖳 🕮 empid	string	×
🕮 name	string	×
📖 🗊 title	string	×
<		>

2. Right-click arr and click Add Elements.

Initial request parameters:

⊙ Val<u>u</u>e editor O<u>X</u>ML editor

Ŗ	ģ 🕞				
	Name		Туре		Value
	🗉 🖳 executeSampleSa	mple_A	SampleSample	×	
	💷 verb		verb <string></string>	🖌 Cre	eate
	🖻 🖳 SampleSample	e_Array	SampleSample	×	
	🔤 🗁 🗁 🗠		string	×	
	arr [•]		<u>CompleComple</u>	ഒ	
	🖃 🖳 🖳 strt		oy Value		
	🚽 🗖 🗖 🗐 🗐		ste Value		
	💷 name	Sel	ect <u>A</u> ll		
	title	Ad	d <u>E</u> lements		
		Set	: <u>T</u> o	•	
			Reguired to Defaul	t	
	<	Use	d Val <u>u</u> e to Pool e Value <u>f</u> rom Pool		>

3. In the Add Element window enter 2, to create two child objects and click **OK**.

Add Element	×
Enter the <u>n</u> umber of new elements to add:*	
2	
OK Cancel	

4. Populate data for the input pkey and the two array child attributes as shown in the figure.

Initial request parameters:

⊙ Val<u>u</u>e editor ⊃XML editor

Ş 🛔 🕒			
Name	Type	Value	
🗉 🖳 executeSampleSamp	SampleSamp	*	
📖 🕮 verb	verb <string></string>	🖌 Create	
🖕 🖶 SampleSample_/	SampleSamp	*	
	string	✓ 100	
■ ^[□] arr	SampleSamp	ഹ	
📖 🕮 attribute	string	🖌 abc	
	SampleSamp	*	
📖 🕮 attribute	string	💙 хүг	
🖕 🖳 strt	SampleSamp	*	
🔤 empid	string	*	
🖾 name	string	*	
📖 🗇 title	string	*	

5. Unset the value for the **strt** attribute, which is an output type by right-clicking on **strt** and select **Set To→Unset**.

Initial request parameters: ⊙ Val<u>u</u>e editor ⊙XML editor 幕 🖞 Name Type Value 🗉 🏪 executeSampleSamr SampleSamp... 🗹 ---- 🗁 verb verb<string> 🗸 Create 🖕 🖳 SampleSample_/ SampleSamp... 🖌 string **~** 100 — 🗇 pkey SampleSamp... 📽 🛓 💷 💷 🖕 🖳 arr[0] SampleSamp... 🗸 🖌 abc 📖 💷 attribute string SampleSamp... 🖌 🛓 🖳 arr[1] 🗸 xyz 🛄 💷 attribute string 🖃 🖴 strt SampleSamp 1 Copy Value 💷 empid i∎Paste Value 🗇 name Select All 📖 💷 title Set <u>T</u>o <u>V</u>alue... Set Reguired to Default Default <u>U</u>nset Add Value to Pool... Null Use Value from Pool... 🧟 oli 1995) 🧠 oli 1997 - 19 . . . _...

- 6. Execute the service by click \triangleright .
- 7. In the Select Deployment location window, select the server, and click **Finish**.

Deployment Location	
NS Specify a runtime location where this test will deploy.	E
Deployment location: BM Process Servers IBM Process Server v7.5 at 9.119.154.112 WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run	
Use this location as the default and do not ask again	
(i) To change the default location elsewhere, open the Properties window for the projection Business Integration > Integration Test Client.	ct and select
?	Cancel

8. Check the output of the service, and check the data in the Enterprise Information System to ensure it matches expected values.

Name	Туре	Value
🖃 🖶 execute[abdullaSa	JabdullaSample_Array_S	*
🖳 💷 verb	verb <string></string>	*
🚊 🖶 JabdullaSample_Arr	JabdullaSample_Array_S	*
🖳 💭 pkey	string	✓ 100
🖃 💷 💷	JabdullaSample_Array_S	66°
😑 🖳 arr[0]	JabdullaSample_Array_S	*
💷 💷 attributel	string	🖌 abc
😑 🖳 arr[1]	JabdullaSample_Array_S	*
💷 💷 attributel	string	🖌 xyz
🖻 🖳 strt	JabdullaSample_Array_S	*
- 🕮 empid	string	✓ 10
mil name	string	🖌 xyz
🛄 title	string	✓ SE

Clear the sample content

After you have tested the application, clear the sample content to return the data to its original state.

Chapter 5. Tutorial 4: Sending Data to Enterprise Information System using BatchSQL (Oracle)

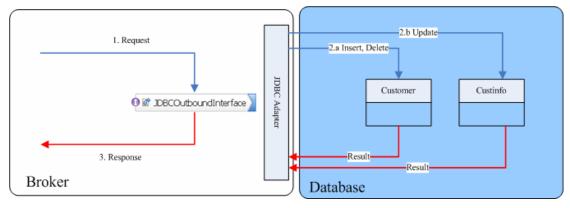
This tutorial demonstrates how to create batch SQL business object to execute multiple SQL statements using WebSphere Adapter for JDBC 7.5.0.0.

About this task

In this scenario, an application SCA component raises a batch SQL execution request to the JDBC Outbound Interface. The JDBC adapter executes a batch SQL to complete the following database operations:

- Insert a record into CUSTOMER table
- Delete a record from CUSTOMER table
- Update a record in CUSTINFO table

Finally, the JDBC adapter returns the execution result to a SDO and sends a response to the SCA component. The following figure represents the scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify that the files you create with the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and records
- Create an authentication alias
- Create a data source

Create tables and records

You must create the following tables in the Oracle database before starting the scenario.

a. Script for creating the tables

```
CREATE TABLE CUSTINFO (

CCODE VARCHAR2(10) NOT NULL PRIMARY KEY,

CDATA VARCHAR2(20));

CREATE TABLE CUSTOMER (

PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,

FNAME VARCHAR2(20) ,

LNAME VARCHAR2(20) ,

CCODE VARCHAR2(10) ) ;
```

b. Script for inserting records into tables

Insert a record in Customer table.

INSERT INTO CUSTOMER (pkey,ccode,fname,lname)
values('Test', 'ANITA','MEHTA','IBM');

Insert a record in CUSTINFO table.

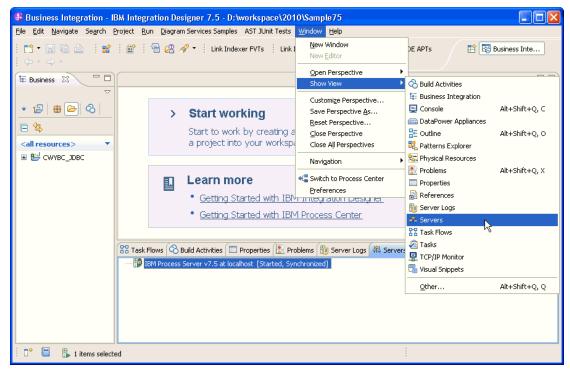
```
INSERT INTO CUSTINFO (ccode, cdata) values('Test1',
'ABC');
```

Create an authentication alias

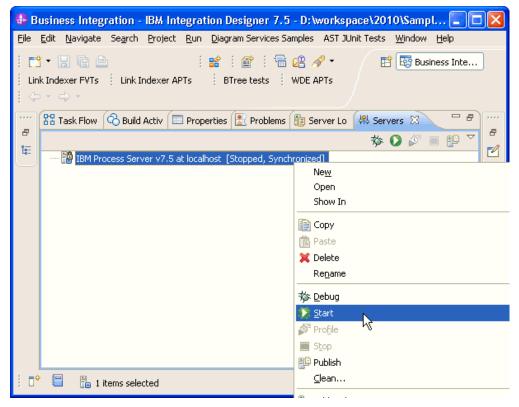
The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

 In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.



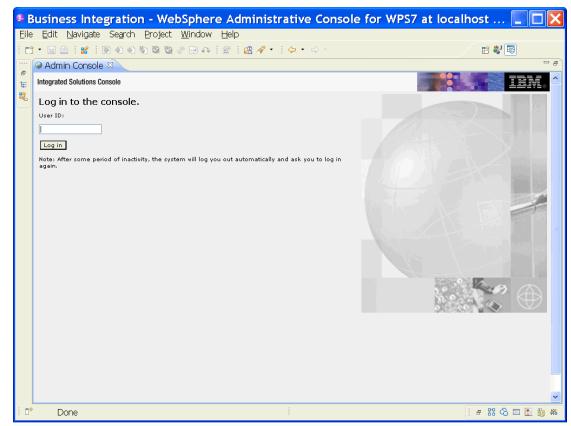
2. In the **Servers** view, right-click the server that you want to start and select **Start**.



3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

😰 IBM Process Server v7.5 at localhost [Started, Synch	hronized]
	Ne <u>w</u>
	Open
	Show In
	Сору
	🛱 Paste
	💢 Delete
	Re <u>n</u> ame
	🏇 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	Stop
	📳 Publish
	 lean
	📇 Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	👷 View and Publish Changes to Server
	🔚 Manage Server Profiles
	Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration
	4.

4. Log on to the administrative console.



5. Click Security → Global security.

View: All tasks
= Welcome
Guided Activities ■
🕀 Servers
🕀 Services
🕀 Resources
🖯 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
Integration Applications
🕀 Users and Groups
🕀 Monitoring and Tuning
Troubleshooting
Service integration

6. Under Java Authentication and Authorization Service, click J2C authentication data.



=localhostNode01Cell, Profile=AppSrv01	Close page
bal security	
Global security Use this panel to configure administration and the default application securit functions and is used as a default security policy for user applications. Securi applications.	
Security Configuration Wizard Security Configu	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expirat <u>LTPA</u> Kerberos and LTPA
Application security	Kerberos configuration O SWAM (deprecated): No authentica
Java 2 security Use Java 2 security to restrict application access to local resources Warn if applications are granted custom permissions Restrict access to resource authentication data	Authentication cache settings
User account repository Current realm definition Federated repositories	Application rooms System logins J2Gauthentication data
Available realm definitions Federated repositories Configure Set as current	Specifies a list of user identities and passw for Java(TM) 2 connector security to use.
	 <u>External authorization providers</u> Custom properties

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

🗹 Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply

New Delete 00 # \$ Select Alias 🔷 User ID 🗘 Description 🗘 You can administer the following resources: **BSpace JDBC Alias** wbiuser Business Space Authorization Alias CommonEventInfrastructureJMSAuthAlias wbiuser Authentication alias for the Common Event Infrastructure JMS Topics and Queues This is the SCA Auth Alias wbiuser alias used by SCA to login to a secured SIBus Derby localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby authentication alias for the **Event Server** Total 4

 Click New to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click OK.

Global security ? –
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias_Oracle
* User ID sample
* Password
Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global securit	ty ?
	🖂 Messages
	 Changes have been made to your local configuration. You can: Saile directly to the master configuration. Relieve changes before saving or discarding.
	Δ The server may need to be restarted for these changes to take effect.
Specifies a	<mark>urity</mark> > JAAS - J2C authentication data a list of user identities and passwords for Java(TM) 2 connector security to use. I new alias names with the node name of the cell (for compatibility with earlier releases)
Apply	

You have created an authentication alias that will be used to configure the data source.

Preferences		
New Delete		
Select Alias 🛟	User ID 🗘	Description 🗘
You can administer the following resources:		
BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
CommonEventInfrastructureJMSAuthAlias	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
IocalhostNode01Cell/nlNode01/server1/EventAuthDataAliast	<u>Derby</u>	Derby authentication alias for the Event Server
nlNode01/AliashQracle	luweiqin	
Total 5		

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source is used later when generating the artifacts for the module.

Note: This tutorial uses Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** Variables.

View: All tasks 💌
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🖯 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared libh es Replication WebSphere variables Maming
Integration Applications
\boxplus System administration
🗄 Users and Groups
🗄 Monitoring and Tuning
🕀 Troubleshooting
I UDDI

2. On the right page, select **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

WebSphere Variables > ORACLE_JDBC_DRIVER_PATH
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.
Configuration
General Properties * Name ORACLE_JDBC_DRIVER_PATH Value D:\Lib
Description The directory that contains the Oracle thin or oci8 JDBC Driver.
Apply OK Reset Cancel

3. Click **Save** to save the changes.

WebSphere Variables	?.
 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. RU lew changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

The variable has been added and appears in the list.

🕀 Pret	Preferences					
New	New Delete					
Select	Name 🛟	Value 🗘	Scope 🗘			
You c	an administer the following resources:					
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01			
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01			
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01			
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01			
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01			
_	CVDACE IDDC DDD/CD DATU		N - J IN - J - 04			

4. Select **Resources** → JDBC -> JDBC Providers.

View: All tasks
= Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🗆 Resources
Schedulers
 Object pool managers
⊞ JMS
People directory provider
Extended messaging provider
 WebSphere Business Integration Adapters
🖂 ЈОВС
 JDBC proniders
Data soul is
 Data sour JDBC providers Application Server V4)
Business Integration Data Source
🗄 Resource Adapters
🗄 Asynchronous beans
🛨 Cache instances
🗄 Mail
⊞ Remote artifacts ■
🗄 Resource Environment
🗄 Security
Environment
Es Environment

5. Click **New** in the JDBC providers window.

BC providers		?
JDBC providers		
encapsulates the specific JD specific vendor database of	BC driver implemen your environment, tivity provides a list	ider. The JDBC provider object ntation class for access to the Learn more about this task in a of task steps and more general
Scope: Cell=localhostNo	de01Cell , Node= nl N	ode01
definition is visibl scope is and how <u>help.</u> Node=nlNode0	e level at which the e. For detailed infor it works, <u>see the sc</u> 1	mation on what
New Delete		
Select Name 🛟	Scope 🗘	Description 🗘
None		
Total 0		

6. Select an Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 * Database type Oracle Øracle DBC Driver * Implementation type Connection pool data source Name Oracle JDBC Driver Description
	Oracle JDBC Driver

- 7. In the Enter database classpath information page, enter the following value for the **Class path** field:
 - \$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.
- 8. Click Next.

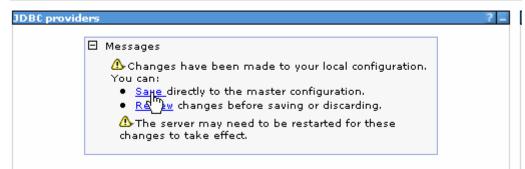
Cell=localhostNode01Cell, Profile=AppSrv01

Cr	eate	e a new JDBC Provider	
	A	ate a new IDBC Provide	
	Cre	ate a new JDBC Provid:	
		Step 1: Create new JDBC provider	Enter database class path information
	→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
			If a value is specified for you, you may click Next to accept the value.
			Class path:
			\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
			Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib
	F	Previous Next (Cancel

9. In the Summary page, click Finish.

Cre	ate a new JDBC Provider		
	Step 1: Create new JDBC provider	Summary	
	Step 2: Enter	Summary of actions:	
	database class path	Options	Values
	information	Scope	cells:localhostNode01Cell:nodes:nlNode01
÷	Step 3: Summary	JDBC provider name	Oracle JDBC Driver
		Description	Oracle JDBC Driver
		Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
		Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource

10. Click Save.



The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC pro	viders		
encapsul specific v quided a	ates the specific JD endor database of	erties of a JDBC provider. T DBC driver implementation f your environment. Learn i ctivity provides a list of tasl 5.	class for access to the more about this task in a
] Scope	: Cell =localhostNo	de01Cell, Node=nlNode01	
	scope is and how	IT WORKS, SEE THE SCORE SE	THEORY
	scope is and how help. Node=nlNodeO	it works, <u>see the scope se</u> 11	<u>ungs</u>
± Prefer	<u>help.</u> Node=nlNode0		<u>ungs</u>
	<u>help.</u> Node=nlNode0		
	<u>help.</u> Node=nlNode0 ences		
New [help. Node=nlNode0 ences Delete		Description 🗘
New (help. Node=nlNode0 ences Delete	D1 ♥ Scope ≎	

11. Select the Oracle JDBC provider you just created. Under Additional Properties, click Data sources. Click New.

		racle JDBC Drive	er > Data so	urces		
JDBC p accessi	rovider. The ing the datab	t the settings of datasource objec ase. Learn more :k steps and mo	t supplies y about this t	our applicatio task in a <u>quic</u>	n with connectio led activity. A gu	ns for
⊕ Pref	erences		-			
New	Delete .	Test connection	Manage	state		
- Colé	h ## #?					
000	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

13. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



	Step 1: Enter basic data source	Enter database specific properties for the data source		
 A source information A Step 2: Enter database specific properties for the 		Set these database-specific proper database vendor JDBC driver to su managed through the datasource.	pport the connections that are	
	data source Step 3: Setup security aliases	Name * URL	Value jdbc:oralce:thin:@9.181.84.1	
	Step 4: Summary	* Data store helper class name Oracle10g data store helper 💙	iner managed persistence (CMP)	

14. Select the authentication alias you just created from the **Component-managed authentication alias** field and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Setup security aliases
information	
Step 2: Enter	Select the authentication values for this resource.
database specific properties for the	Component-managed authentication alias
data source	nlNode01/Alias_Oracle
 Step 3: Setup security aliases 	Mapping-configuration alias (none)
Step 4: Summary	Container-managed authentication alias
step 4: summary	(none)
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost.
	Global J2C authentication alias Security domains

15. In the Summary page, review the values entered for the data source and click **Finish**.

Close

Create a data source

Step 1: Enter basic Summary data source						
	information	Summary of actions:				
	Step 2: Enter database specific properties for the data source	Options	Values			
		Scope	cells:localhostNode01Cell:nodes:nlNode01			
		Data source name	Oracle JDBC Driver DataSource			
	Step 3: Setup	JNDI name	OradeDS			
•	security aliases Step 4: Summary	Select an existing JDBC provider	Oracle JDBC Driver			
	,	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource			
		URL	jdbc:orade:thin:@9.181.84.136:1521:ord			
		Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe			
		Use this data source in container managed persistence (CMP)	true			
		Component- managed authentication alias	nlNode01/Alias_Oracle			
		Mapping- configuration alias	(none)			
		Container- managed authentication alias	(none)			

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

3C providers		
E	 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. Red w changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

17. Select the data source you just created and click **Test connection**.

JDBC p	roviders > Orac	le JDBC Driver	> Data sources			
provide databa	er. The datasour ise. Learn more	ce object supplie	datasource that is as your applicatior in a <u>quided activit</u> oout the topic.	n with connecti	ons for accessin	ig the
🕀 Pref	erences					
New	Delete Tes	t connection	Manage state			
D	ð 👯 🦃	Ū				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Catego
You c	an administer th	e following reso	urces:			
V	Oracle JDBC Driver	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

BC providers					2
🖯 Messa	iges				1
The test connection operation for data source Oracle JDBC Driver DecaSource on server server1 at node nlNode01 was successful. Information					
<u>JDBC providers</u> > <u>Ora</u>	acle JDBC Driver	> Data sources			
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic.					
Preferences					
New Delete Test connection Manage state					
Select Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
You can administer the following resources:					
Oracle JDBC Driver DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	
Total 1					

The data source is created and it will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer 7.5 by selecting Window -> Open Perspective -> Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- 3. In the Available Types area, select Adapters > JDBC and click Next.

Select the Service Type or Registry 🛛 🚗 🧹
Select the type of service to create or registry to browse.
Eilter: type filter text
<u>A</u> vailable types:
DBC Lotus Domino Oracle E-Business Suite PeopleSoft SAP Siebel Unlisted Adapter Case Management J Java
Messaging
Description: Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application that runs in IBM Process Server or WebSphere Enterprise Service Bus.
(?) < Back Next > Finish Cancel

4. Select IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

Bew External Service	
Select an Adapter Select the version of the adapter that you want to use.	63
Select the version of the adapter that you want to use.	
🗊 IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
IBM WebSphere Adapter for JDBC	
< Back	Cancel

- 5. In the **Connector project** field enter **CWYBC_JDBC**.
- 6. In the **Target runtime environment** field, select the appropriate runtime and click **Next**.

🚯 New External Service	3	
Import a RAR File Import a resource adapter a adapter.	rchive (RAR) from the file system to create a connector project for the	
Archive file: Connector project: * Target runtime enviroment:	E:\WID75.image\ResourceAdapters\JDBC_7.5.0.0\CWYBC_JDBC.rar CWYBC_JDBC IBM Process Server v7.5	
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🔂 New External Service	
Locate the Required Files and Libraries	
Connector projects require system-specific libraries and JAR files.	
When deploying the application to a stand-alone server, these files must be configured on the server.	More
Specify the location of the JDBC driver JAR files required to access the database server. JDBC driver shipped with the database installation. If you do not have a local database installation, you can downl from the Web site of the database vendor. JDBC driver JAR files:	JAR files are oad these files
E:\Yuanjs\oracle\ojdbc6.jar	Add Remove
Specify the location of the database-specific native system libraries required to access the database s required if you are using a Type 2 driver implementation. The native libraries are shipped with the data and client installations. System libraries:	
	Add Remove
(?) < <u>Back</u> Next > Einish	Cancel

8. Select **Outbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
 Inbound Inbound processing passes data from the adapter to your service export. Outbound
Outbound processing passes data from your service import to the adapter.
(?) < <u>Back Next</u> > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node in the **Database system connection information** area and select **10**.
- 2. Enter values in the **System ID**, **Host name**, **Port number**, **User name** and **Password** fields, and then click **Next**.

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Bew External Service		
Specify the Discovery Properti	es	
Connection properties Database system connection informat DB2 UDB DB2 UDB V7.2 V8.1 V8.2 V9.1 DB2 UDB iSeries OB2 UDB iSeries Oracle SQL Server SQL Se	Properties: JDBC driver type: System ID: *	Oracle Thin Driver ora11g 9.123.98.52 1521 oracle.jdbc.driver.OracleDriver jdbc:oracle:thin:@9.123.98.52:1521:or
	mple *****	
?	< <u>B</u> ack	Next > Einish Cancel

Select the business objects and services to be used with the adapter

Follow these steps to select the data for outbound Processing:

1. In the Object Discovery and Selection screen, click Edit Query.

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	HO,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database objection Run Query	Edit Query Show qu
Discovered objects: Selected objects:	
C C C C C C C C C C C C C C C	0
Image: Section of the section of t	Cancel

2. In the Specify the Query Properties window, select the **Create batch SQL business object...** check box and accept the default value for the **Number of batch SQL business objects to be created** field. Click **OK**.

🚯 New External Service	×
Specify the Query Properties	<u>`</u>
Specify the pattern for the schema name filter (for example, ADMIN* or SCOT?)	_
Schema name or pattern:	
Supported database object types:	
Tables Views Stored Procedures Synonyms - Nick Names	Add Remove
Map JDBC Date/Time/Timestamp types to date/time/dateTime.	- -
Prompt for additional configuration settings when adding business object	
Create a query business object to build user-defined Select statements	
Number of select queries to create: 1]
The Select statements are listed under the Query Statements node of the discovered object: Create a batch SQL business object to build user-defined insert, update, and delete state	
Number of batch SQL business objects to create: 1]
The batch SQL statements are listed under the Batch SQL Statements node of the discovered tree.	d objects
? ОК	Cancel

- 3. In the Find Objects in Enterprise System window, click **Run Query**.
- 4. Expand the **Batch SQL Statements** node.

🚯 New External Service		
Find Objects in the Enterpris No discovered object is selected.	se System	20
Query: SchemaFilterLabel=null,Schem	na name or pattern=null,Supported database object types=Tab	Edit Query
Run Query		
Discovered objects:	Selected objects:	
	Image: Second secon	
?	< <u>Back</u> Next > Einish	Cancel

- 5. Select Batch SQL Statement1 and click
- 6. In the Specify the Configuration Properties for Batch SQL window, specify the following details:
 - a) In the **Batch SQL business object name** field, enter **TestBatchSQL**.
 - b) In the SQL Statements field, enter the following query:

Insert into customer values(?,?,?,?);update
custinfo set cdata=? Where ccode=?;delete from
customer where pkey=?

🚯 New External Service		
Specify the Configuration	Properties for 'Batch SQL Statement 1'	
Batch SQL business object name:*	TestBatchSQL	
Type the SQL statements, separate	ed by semicolons (;), then configure their parameters.	
SQL statements: *	Insert into customer values(?,?,?,?); update custinfo set cdata=? Where ccode=?; delete from customer where pkey=?	~ ~
Unique identifier (single insert state	ments only)	
Retrieve the generated unio	que identifier	
Column name;		
Generate parameters		
Validate batch SQL statements		
Validate		
Result:		
?	ОК	Cancel

7. Select the **Generate Parameters** check box. Parameter fields corresponding to each '?' in the SQL Statements will be generated as shown in the figure below:

🚯 New External Service			×
Specify the Configuration	Properties for 'Batch SQL Statement 1'	Ó	4
	TestBatchSQL ed by semicolons (;), then configure their parameters.		^
SQL statements: *	Insert into customer values(?,?,?,?); update custinfo set cdata=? Where ccode=?; delete from customer where pkey=?	~	
Unique identifier (single insert state Retrieve the generated unio Column name:			
Generate parameters			
	meters for the specified batch SQL statements		
Sequence name;	e		
Parameter type:	string	~	~
?	ОК	Cancel	

8. Select the parameter type and enter the sample value for each parameter in all the statements.

🚯 New External Service		×
Specify the Configuration	Properties for 'Batch SQL Statement 1'	
🗹 Generate parameters		^
Batch SQL Parameters		
Statement1, parameter1		
📃 Parameter is a sequenc	e	
Sequence name:		=
Parameter type:	string 💌	=
Sample value:	test1	
Statement1, parameter2		
Parameter is a sequenc	e	
Sequence name:		
Parameter type:	string 🗸 🗸	
Sample value:	test1	
Statement1, parameter3		
Parameter is a sequence	e	
?	OK Cancel	

9. Click $\ensuremath{\textbf{Validate}}$. The validation result is displayed. Click $\ensuremath{\textbf{OK}}$.

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🚯 New External Service		×
Specify the Configuration	Properties for 'Batch SQL Statement 1'	f
Diatomonica, paramotoria		^
Parameter is a sequence	e	
Sequence name;		
Parameter type:	string	
Sample value:	test1	
Statement3, parameter1 —		
🔲 Parameter is a sequenc	e	
Sequence name;		
Parameter type:	string	
Sample value:	test1	
Validate batch SQL statements —		
Validate		
Result:	Validation was successful.	
		~
?	OK Cancel	

10. The Batch SQL Statement1 will be listed in the **Selected Objects**. Click **Next**.

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query Run Query to run it.	v to create the query, then click
Query: SchemaFilterLabel=null,Schema name or pattern=null,Support	ed database object types=Tab Edit Query
Discovered objects:	Selected objects:
SAMPLE SCOTT SCOTT Structure Struct	Batch SQL Statement 1
?	Next > Einish Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for the all fields and click **Next**.

🚯 New External Service		
Specify Composite Pr	-	_
Specify properties that apply I	to all selected objects.	
Custom Business Faults Pattern for the Custom Bu	isiness Faults:	
Pattern String	Custom Fault Name	Add
		Edit
		Remove
		-
		-
		-
]
Specify the relative folder for	http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc]
Folder:		
🗹 Generate a business graph	The relative folder where generated business objects will be stored.]
Advanced >>		
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Other** for security options under **Deployment Properties**.
 - b) Clear the Join the global transaction check box.
 - c) Select Specify predefined connection pool DataSource from the Database connection information list.
 - d) Enter OracleDS in the Connection pool DataSource JNDI Name field, and click Next.

🚯 New External Service					×
Specify the Service Generation	on and Dep	loyment Properties			
Specify properties for generating the se	rvice and runnin	g it on the server.		(\mathbf{O})	
To modify the names, or add a desc interface file, click Edit Operations. Deployment Properties	ription to the op	erations to be generated in the	Edit Op	perations	
How do you want to specify the sec	urity credentials	?			
🔘 Using an existing JAAS alias (reco					
A Java Authentication and Auth	orization Service	es (JAAS) alias is the preferred met	hod,		
J2C authentication data entry:				Select	
OUsing security properties from th	e managed conr	nection factory			
The properties will be stored as	plain text; no er	cryption is used,			
User name;	sample]	
Password;	***				=
• Other				1	
Use if no security is required or server and security will be speci The quality of service that is used to especially when a failure occurs. To database connection information. <u>M</u> Join the global transaction	fied by the prop) join the transa join a global trai	ction provides a higher degree of d	· · ata integri	ty,	
Deploy connector project:	With module f	or use by single application	*		
Specify the settings that are used to	o connect to JDB	C at run time:			
Connection settings:	Specify conne	ction properties	~		
Connection Properties					
To join a global transaction, specify a predefined XA datasource or XA database connection information. When not joining a global transaction, either the XA connection information or the local connection information can be specified.					
Database connection informatic	n:	Specify predefined connection poo	ol DataSou	rce 🔽	
Database system connection in	formation				
Database vendor:		ORACLE			
Connection pool DataSourc	e JNDI name:*	OracleDS			×
?		< <u>B</u> ack <u>N</u> ext > E	jinish	Cancel	

3. In the Specify the Location Properties window, click New.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:		New
Namespace;	http:///JDBCOutboundInterface	
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library:		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Integ	ration Project	
	ntegration Project Type s integration project that you want to create.	
	Use a module to integrate business applications and services. A module ca any type of component and can be deployed on IBM Process Server. <u>More</u>	
O Mediation module	Use a mediation module to integrate and connect services. A mediation me contain mediation flows and can be deployed on WebSphere ESB or IBM P Server. <u>More</u>	
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

5. In the Create a Module window, type **JDBCBatchSQLTest** in the **Module Name** field and click **Finish**.

🚯 New Modu	le secondaria de la constante de la constante de la constante de la constante de la constante de la constante d	
Create a Mo Use a module to component and	odule o integrate business applications and services. A module can contain any type of can be deployed on IBM Process Server.	F
<u>M</u> odule name:	JDBCBatchSQLTest	
🔽 Use defaul	t location	
Location; E:\\	WID7.5_sample\JDBCBatchSQLTest	Browse
♥ Open the m	odule assembly diagram	
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

- 6. Click **Finish** to complete service creation.
- 7. Verify the results.

🐨 Business Integration 🛛 🗧	
🖇 🔁 🖶 🗁 🗞 🖻 🕏	
<all resources=""></all>	•
CWYBC_JDBC CWYBC_JDBC DDBCBatchSQLTest DDBCBatchSQLTest CDBCBatchSQLTest DDBCBatchSQLTest DDBCBatchSQLTest DDBCBatchSQL DDBCBatchSQL DDBCBatchSQL DDBCBatchSQL CDBCBAtChingRecordsFault DDBCCutboundInterface Transformations DDBCCutboundInterface Transformations DDBCCutboundInterface CDBCBAtchSQL DDBCCutboundInterface DDBCCut	

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) import. You must install this SCA module in the IBM Integration Designer integration test client.

To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start.**
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

🚯 Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server <u>A</u> vailable: <u>JDBCBatchSQLTestApp</u> <u>JDBCBatchSQLTest</u> <u>JDBCBatchSQLTestWe</u> <u>Add ></u> <u>Add ></u> <u>Add All >></u> <u>Add All >></u>	<u>C</u> onfigured:
✓ If server is started, publish changes immediately ② < Back	Ejnish Cancel

4. Add the SCA module to the server.

🚯 Add and Remove		
Add and Remove Modify the resources that are confi	igured on the server	
Move resources to the right to conf <u>A</u> vailable:	Add > Add All >>	Configured:
✓ If server is started, publish chan	<< Remove All ages immediately < <u>Back</u>	<u>Finish</u> Cancel

5. Click Finish.

Test the assembled adapter application

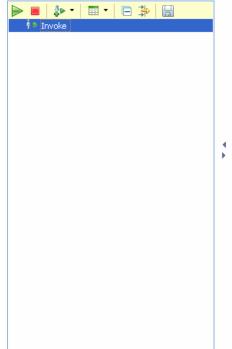
Test the assembled adapter application using the IBM Integration Designer integration test client.

 Select the JDBCBatchSQLTest module, right-click, and select Test > Test Module.

🗄 Business Integration 🛛 📃 🗌	😵 JDBCBatchSQLTest - Assembly Diagram 🛛	
Image: Second control Image: Second control Image: Second control Image: Second control <	Image: Subclatting these is assertion of the particular set of the particular s	
↓ Depend New ↓ Integra Open ↓ Data Open With ↓ Mai Show Files ↓ Mai Dopy ↓ Mai Dopy ↓ Mai Dopy ↓ Mai Delete ↓ Prir Tes ↓ Tes Import ↓ Tes Export ↓ Uni Export ↓ Interfa Add to Asset Repository ↓ JDt Export as Image	 han Task. a fiation Flow cess Group Group Group e Machine ort ort ort ort erences afface Map (De sctor bound Imports ound Exports 	
Iransfc	Test Module Attach	Servi

Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. <u>More...</u>



General Properties

Detailed Properties

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. More...

Configuration:	Default Module Test	*
Module:	JDBCBatchSQLTest	*
Component:	JDBCOutboundInterface	~
Interface:	JDBCOutboundInterface	~
Operation:	executeTestBatchSQLBG	~

Initial request parameters:

 8			
Name	Туре	Value	
🖃 🏪 executeTestBatchSQL	TestBatchSQ	ab	
🖳 🛄 verb	verb <string></string>	📧 Create	
🖮 🏪 TestBatchSQL *	TestBatchSQL	ab	
🖳 🛄 statement1par	string	ID TC	
🖳 🛄 statement1par	string	💷 John	
🖳 🛄 statement1par	string	💷 McNay	
👘 🛄 statement1par	string	IBM	
👘 🛄 statement2par	string	IBM	
👘 💷 statement2par	string	📧 Test1	
👘 💷 statement3par	string	🗈 Test	
🖳 💭 <mark>statement1sta</mark>	int	аb	

2. Populate data for parameters as shown in the figure below.

Initial request parameters

₽ ± □		B
Name	Туре	Value
😑 🖳 executeTestBatchSQLBGInput	TestBatchSQLBG	аь
	verb <string></string>	🗈 Create
😑 🖳 TestBatchSQL *	TestBatchSQL	аь
🖳 💭 statement1parameter1 *	string	ID TC
🖳 🛄 statement1parameter2 *	string	💷 John
- 💭 statement1parameter3 *	string	🗈 McNay
🖳 🛄 statement1parameter4 *	string	IBM
🖳 🛄 statement2parameter1 *	string	IBM
🖳 💭 statement2parameter2 *	string	🗈 Test1
🖳 💭 statement3parameter1 *	string	🗈 Test
🖳 🎞 statement1status	int	2 6
🖳 💭 statement2status	int	2 6
💭 🚛 statement3status	int	2 5

- 3. To execute the service, click **Continue** \mathbf{O} .
- 4. In the Select a Deployment location window, select the server and click **Finish**.

Deployment Location	
Select a Deployment Location	
This server instance is currently running.	
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at 9.119.154.112 WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run]
Use this location as the default and do not ask again	
① To change the default location elsewhere, open the Properties window for the proje Business Integration > Integration Test Client.	ct and select
? Einish	Cancel

5. Check the output of the service, and check the data in the Enterprise Information System to ensure it matches the expected values.

Ŗ <u>∦</u> ⊡ □			
Name	Туре	Value	
🖃 🖳 executeTestBatchS	QLBGInput TestBatchSQLBG	✓	
····· 💭 verb	verb <string></string>	8	
😑 💾 TestBatchSQL	TestBatchSQL	×	
🛄 🛄 statement 1	parameter: string	✓ TestCustomer	
🛄 🛄 statement 1	parameter: string	✓ John	
💭 statement 1	parameter: string	✓ McNay	
💭 statement 1	_	✓ IBM	
💭 statement2	parameter: string	✓ IBM	
🛄 statement2	parameter: string	✓ Test1	
	parameter: string	✓ Test	
💭 statement 1s	status int	✓ 1	
💭 statement2s	status int	✓ 1	
statement3	status int	✓ 1	
1888881			

Clear the sample content

After you have tested the application, clear the sample content to return the data to its original state.

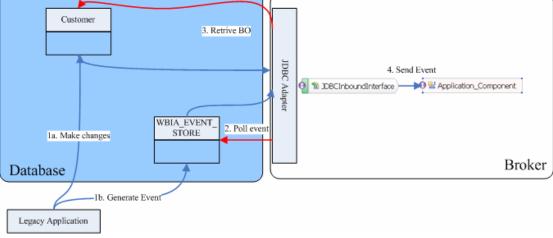
Chapter 6. Tutorial 5: Receiving events from the Enterprise Information System (Oracle)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 polls the inbound events from the database table.

About this task

In this scenario, a legacy application makes a change to the CUSTOMER table in a single operation. Here we will insert an event record into the event table (WBIA_EVENT_TABLE). The JDBC adapter will poll the events from the database periodically. If a new event found, it will fetch the event and corresponding business objects from database. Finally, the JDBC adapter will convert the event to a SDO and send it to the destination SCA component.

The following figure represents the whole scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and stored procedures
- Create an authentication alias
- Create a data source

Create tables and stored procedures

You must create the following tables and stored procedures in the Oracle database before starting the scenario.

a. Script for creating the tables

```
CREATE TABLE CUSTOMER
                        (
       PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,
        FNAME VARCHAR2(20) ,
        LNAME VARCHAR2(20) ,
        CCODE VARCHAR2(10) ) ;
CREATE SEQUENCE EVENT_SEQ INCREMENT BY 1 START WITH
1 MINVALUE 1 CACHE 20 ;
CREATE TABLE WBIA_JDBC_EVENTSTORE
(
  EVENT_ID INTEGER NOT NULL PRIMARY KEY,
  XIDVARCHAR2(200),OBJECT_KEYVARCHAR2(80)
                                      NOT NULL,
  OBJECT_KEY VARCHAR2(80) NOT NUL
OBJECT_NAME VARCHAR2(40) NOT NULL,
  OBJECT_FUNCTION VARCHAR2(40) NOT NULL,
  EVENT_PRIORITYINTEG!EVENT_TIMETIMESTAMP,EVENT_STATUSINTEGER
                        INTEGER
                                            NOT NULL,
                                    NOT NULL,
  EVENT_TIMEOUT TIMESTAMP,
  CONNECTOR_ID
                            VARCHAR2(40),
  EVENT_COMMENT
                    VARCHAR2(100)
);
```

b. Script for creating triggers for Inbound

```
CREATE OR REPLACE TRIGGER EVENT_CREATE AFTER INSERT
ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name,object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:N.pkey,
'SampleCustomerBG', 'Create', 1, 0);
END;
CREATE OR REPLACE TRIGGER EVENT_DELETE AFTER DELETE
ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name,object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:0.pkey,
'SampleCustomerBG', 'Delete', 1, 0);
END;
/
CREATE OR REPLACE TRIGGER EVENT_UPDATE AFTER UPDATE
OF PKEY, CCODE, FNAME, LNAME ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name, object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:N.pkey,
'SampleCustomerBG', 'Update', 1, 0);
  END;
1
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

 In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.

<u>, </u>	gration Designer 7.5 - D:\workspace\201		
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> i	Run Diagram Services Samples AST JUnit Tests	<u>Window</u> <u>H</u> elp	_
	🔚 🥵 🖋 🔹 Link Indexer FVTs 🕴 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 📑 🔯 Business Inte
Tar Business 🛛 🗖		Open Perspective	C Build Activities
✓ </th <th> Start working Start to work by creating a a project into your workspace Learn more Getting Started with IBN Getting Started with IBN </th> <th>Close All Perspectives Navigation * Switch to Process Center Preferences</th> <th>Image: Business Integration Image: Business Integration Image: Business Integration Image: DataPower Appliances Image: Dutline Alt+Shift+Q, O Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline <td< th=""></td<></th>	 Start working Start to work by creating a a project into your workspace Learn more Getting Started with IBN Getting Started with IBN 	Close All Perspectives Navigation * Switch to Process Center Preferences	Image: Business Integration Image: Business Integration Image: Business Integration Image: DataPower Appliances Image: Dutline Alt+Shift+Q, O Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline Alt+Shift+Q, X Image: Dutline Image: Dutline Image: Dutline <td< th=""></td<>
	k Flows 🔀 Build Activities 🔲 Properties 🔝 Pro IBM Process Server v7.5 at localhost [Started, Syn		감 Task Flows 생 Tasks 로 TCP/IP Monitor 행 Visual Snippets Qther Alt+Shift+Q, Q
i 🗘 🕄 🖡 1 items selected			

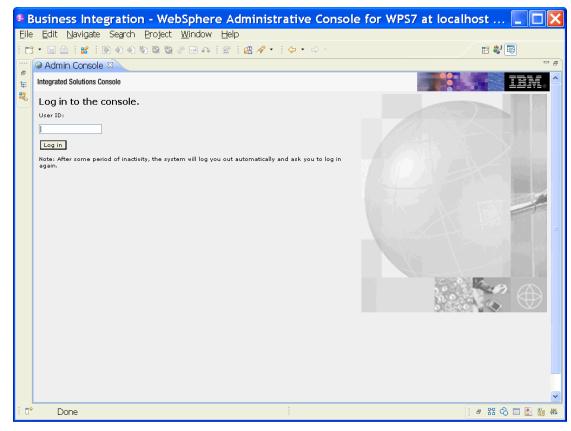
2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace\2010\Sampl 📃 🗖 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
i 📬 • 🔛 🕼 🗁 🛛 🕴 🕯 😭 i 😭 i	😤 🛷 🔹 📑 🐯 Business Inte
Link Indexer FVTs Link Indexer APTs BTree tests	WDE APTs
😳 🚼 Task Flow 🕜 Build Activ 🔲 Properties 🔝 Problems	👸 Server Lo 🛛 👭 Servers 🔀 🛛 🖓 🚥
	\$ ○ ● ● [●]
IBM Process Server v7.5 at localhost [Stopped, Synch	
	Ne <u>w</u>
	Open
	Show In
	📄 Сору
	🛱 Paste
	💢 Delete
	Rename
	🏇 Debug
	😥 <u>S</u> tart
	profile V
	Stop
	Publish
🗄 🗗 🔚 🔒 1 items selected	<u>C</u> lean

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

😰 IBM Process Server v7.5 at localhost [Started, Synch	ronized1
	Ne <u>w</u>
	Open
	Show In
	Сору
	💼 Paste
	💢 Delete
	Rename
	🐝 Restart in Debug
	🚺 <u>R</u> estart
	🔊 Restart in Profile
	Stop
	🗐 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	film Manage Server Profiles
	Configuration Configuration
	Configuration Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.



5. Click Security → Global security.

View:	All tasks	~
= Welco		-
		_
🗄 Guide	d Activities	
🗄 Serve	rs	
🗄 Appli	cations	
🗄 Servi	ces	
🗄 Reso	urces	
🖯 Secur	ity	
= G	isiness Integration Security obal security curity domains	
= Ac	Iministrative Authorization Groups	
= 89	L certificate and key management	
= Se	curity auditing	
= Bu	is security	
🗄 Envir	onment	
🗄 Integ	ration Applications	
🗄 Syste	m administration	
🗄 Users	and Groups	
🗄 Monit	oring and Tuning	
🗄 Troub	leshooting	
🗄 Servi	ce integration	
⊞ UDDI		

6. Under Java Authentication and Authorization Service, click J2C authentication data.



=localhostNode01Cell, Profile=AppSrv01	Close page
bal security	
Global security Use this panel to configure administration and the default application securit functions and is used as a default security policy for user applications. Securi applications.	
Security Configuration Wizard Security Configu	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expirat <u>LTPA</u> Kerberos and LTPA
Application security	Kerberos configuration O SWAM (deprecated): No authentica
Java 2 security Use Java 2 security to restrict application access to local resources Warn if applications are granted custom permissions Restrict access to resource authentication data	Authentication cache settings
User account repository Current realm definition Federated repositories	Application rooms System logins J2Gauthentication data
Available realm definitions Federated repositories Configure Set as current	Specifies a list of user identities and passw for Java(TM) 2 connector security to use.
	 <u>External authorization providers</u> Custom properties

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

🗹 Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply

New Delete 00 # \$ Select Alias 🔷 User ID 🗘 Description 🗘 You can administer the following resources: **BSpace JDBC Alias** wbiuser Business Space Authorization Alias CommonEventInfrastructureJMSAuthAlias wbiuser Authentication alias for the Common Event Infrastructure JMS Topics and Queues This is the SCA Auth Alias wbiuser alias used by SCA to login to a secured SIBus Derby localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby authentication alias for the **Event Server** Total 4

 Click New to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click OK.

Global security ? –
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias_Oracle
* User ID sample
* Password
Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global securi	ty ?
	🖯 Messages
	 Changes have been made to your local configuration. You can: Sate directly to the master configuration. Return changes before saving or discarding.
	Δ The server may need to be restarted for these changes to take effect.
Specifies a	urity > JAAS - J2C authentication data a list of user identities and passwords for Java(TM) 2 connector security to use. a new alias names with the node name of the cell (for compatibility with earlier releases)
Apply	

You have created an authentication alias that will be used to configure the data source.

Preferences		
New Delete		
Select Alias 🛟	User ID 🗘	Description 🗘
You can administer the following resources:		
BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
CommonEventInfrastructureJMSAuthAlias	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
IocalhostNode01Cell/nlNode01/server1/EventAuthDataAliast	<u>Derby</u>	Derby authentication alias for the Event Server
nlNode01/AliashQracle	luweiqin	
Total 5		

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source is used later when generating the artifacts for the module.

Note: This tutorial uses Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** Variables.

View: All tasks 💌
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🖯 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared libh es Replication WebSphere variables Maming
Integration Applications
\boxplus System administration
🗄 Users and Groups
⊞ Monitoring and Tuning
Troubleshooting ■
🛨 Service integration
I UDU

2. On the right page, select **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

WebSphere Variables ? -
<u>WebSphere Variables</u> > ORACLE_JDBC_DRIVER_PATH
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.
Configuration
General Properties * Name ORACLE_JDBC_DRIVER_PATH Value
D:\Lib
Description
The directory that contains the Oracle thin or oci8 JDBC Driver.
Apply OK Reset Cancel

3. Click **Save** to save the changes.

WebSphere Variables	?.
 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. RU lew changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

The variable has been added and appears in the list.

🕀 Pret	ferences		
New	Delete		
	C # 7		
Select	Name 🛟	Value 🗘	Scope 🗘
You c	an administer the following resources:		
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01
_	CVDACE IDDC DDD(ED DATU		N

4. Select **Resources → JDBC -> JDBC Providers**.

View: All tasks
Welcome
🗄 Guided Activities
🛨 Servers
🗄 Services
🗆 Resources
Schedulers
 Object pool managers
⊞ JMS
People directory provider
Extended messaging provider
 WebSphere Business Integration Adapters
🖾 ЈОВС
 JDBC propiders
Data souk /s
 Data sour JDBC providers Application Server V4)
 Business Integration Data Source
🗄 Resource Adapters
🛨 Asynchronous beans
🗄 Cache instances
🛨 Mail
🗄 Remote artifacts
1 URL
🛨 Resource Environment
🛨 Security
Environment

5. Click **New** in the JDBC providers window.

BC providers			?
JDBC provide	215		
encapsulates specific vend <u>quided activit</u>	: the specific JDBC d or database of your	of a JDBC provider. The J river implementation clas environment. Learn mor provides a list of task ste	s for access to the e about this task in a
🖂 Scope: Ce	ll=localhostNode01	Cell, Node=nlNode01	
def sco <u>hel</u>	finition is visible. Foi pe is and how it wor <u>p.</u> Node=nlNode01	el at which the resource r detailed information on rks, <u>see the scope setting</u>	
Preference	25		
New Delet	te		
	\$		
Select Name	• 🗘	Scope 🗘	Description 🗘
None			
Total O			

6. Select an Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNode01Cell:nodes:nlNode01 * Database type
	* Name Oracle JDBC Driver
	Description Oracle JDBC Driver

- 7. In the Enter database classpath information page, enter the following value for the **Class path** field:
 - \$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.
- 8. Click Next.

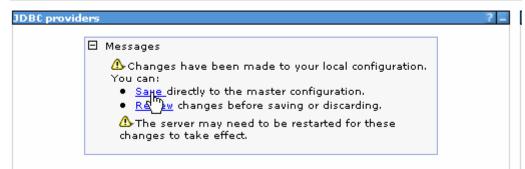
Cell=localhostNode01Cell, Profile=AppSrv01

Cre	ate a new JDBC Provid	er
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This vizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the value.
		Class path:
		\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib

9. In the Summary page, click **Finish**.

Create a new JDBC Provider		
Step 1: Create new JDBC provider	Summary	
Step 2: Enter	Summary of actions:	
database class path information	Options	Values
Information	Scope	cells:localhostNode01Cell:nodes:nlNode01
→ Step 3: Summary	JDBC provider name	Oracle JDBC Driver
	Description	Oracle JDBC Driver
	Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
	\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSourc

10. Click Save.



The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC t	providers		
encaps specifi <u>quided</u>	sulates the specific JC c vendor database of	rties of a JDBC provider. T DBC driver implementation your environment. Learn tivity provides a list of task	class for access to the more about this task in a
∃ Sco	pe: Cell =localhostNo	de01Cell, Node=nlNode01	
		it works, <u>see the scope se</u>	
7 0	scope is and how <u>help.</u> Node=nlNode0		
± Pre	scope is and how <u>help.</u>		
+ Pre	scope is and how help. Node=nlNode0 ferences		
	scope is and how help. Node=nlNode0 ferences		
New	scope is and how help. Node=nlNode0 ferences Delete		
New Rew Select	scope is and how help. Node=nINode0 ferences Delete	1 V Scope 🗘	<u>ttings</u>

11. Select the Oracle JDBC provider you just created. Under Additional Properties, click Data sources. Click New.

	<u>)racle JDBC Drive</u>	<u>er</u> > Data so	urces		
Use this page to ec JDBC provider. The accessing the datab provides a list of ta	datasource objec base. Learn more	t supplies y about this f	our applicatio task in a <u>quid</u>	n with connectio <u>led activity</u> . A gu	ns for
Preferences					
New Delete	Test connection	Manage	e state		
0 6 # 4					
Select Name 💠	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

13. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



Step 1: Enter basic data source	Enter database specific properties for the data source		
information			
Step 2: Enter database specific properties for the	Set these database-specific proper database vendor JDBC driver to su managed through the datasource.	pport the connections that are	
data source	Name	Value	
Step 3: Setup security aliases	* URL	jdbc:oralce:thin:@9.181.84.1	
Step 4: Summary	★ Data store helper class name Oracle10g data store helper]	
security aliases	* Data store helper class name	jdbc:oralce:thin:@9.1	

14. Select the authentication alias you just created from the **Component-managed authentication alias** field and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic	Only a second strange
data source information	Setup security aliases
Step 2: Enter database specific	Select the authentication values for this resource. Component-managed authentication alias
properties for the data source	nlNode01/Alias_Oracle
→ Step 3: Setup security aliases	Mapping-configuration alias (none)
Step 4: Summary	Container-managed authentication alias (none)
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost.
	<u>Global J2C authentication alias</u> <u>Security domains</u>

15. In the Summary page, review the values entered for the data source and click **Finish**.

Close

Create a data source

	Step 1: Enter basic data source	Summary			
	information	Summary of action	151		
	Step 2: Enter database specific	Options	Values		
	properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01		
	data source	Data source name	Oracle JDBC Driver DataSource		
	Step 3: Setup security aliases	JNDI name	OracleDS		
→	security allases Step 4: Summary	Select an existing JDBC provider	Oracle JDBC Driver		
		Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource		
		URL	jdbc:orade:thin:@9.181.84.136:1521:ord		
		Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe		
		Use this data source in container managed persistence (CMP)	true		
		Component- managed authentication alias	nlNode01/Alias_Oracle		
		Mapping- configuration alias	(none)		
		Container- managed authentication alias	(none)		

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

roviders		
🖯 Messages		1
• <u>Sav</u> h • <u>Rev</u>)	is have been made to your local configuration. You can: directly to the master configuration. <u>«</u> changes before saving or discarding. erver may need to be restarted for these changes to take	

17. Select the data source you just created and click **Test connection**.

JDBC p	roviders > Orac	le JDBC Driver	> Data sources			
provide databa	er. The datasour ise. Learn more	ce object supplie	datasource that is as your applicatior in a <u>quided activit</u> oout the topic.	n with connecti	ons for accessin	ig the
🕀 Pref	erences					
New	Delete Tes	t connection	Manage state			
D	ð 👯 🦃	Ū				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Catego
You c	an administer th	e following reso	urces:			
v	Oracle JDBC Driver	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

BC providers					12
🖯 Messa	iges				
Daga	ne test connection Source on server : <mark>ormation</mark>	operation for dat server1 at node n	a source Orac INode01 was s	le JDBC Driver :uccessful.	
<u>JDBC providers</u> > <u>Ora</u>	acle JDBC Driver	> Data sources			
Use this page to edit provider. The dataso database. Learn mor steps and more gene	urce object supplie e about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	g the
Preferences					
New Delete T	est connection	Manage state			
0 6 👯 😤					
Select Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
You can administer	the following reso	urces:			
Oracle JDBC Driver DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	
Total 1					

The data source is created and it will be used by the adapter to connect to the database.

Configure the adapter for inbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- 3. In the Available Types area, select Adapters > JDBC and click Next.

Select the Service Type or Registry Select the type of service to create or registry to browse.
Select the type of service to create or registry to browse.
Filter: type filter text
<u>A</u> vailable types:
JDBC JDBC Lotus Domino Coracle E-Business Suite A PeopleSoft SAP Siebel Unlisted Adapter Case Management Java
Description:
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application that runs in IBM Process
Reck Next > Finish Cancel

4. Select IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

🚯 New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	>
< Back	Cancel

- 5. In the **Connector project** field enter **CWYBC_JDBC.**
- 6. In the **Target runtime environment** field, select the appropriate runtime and click **Next**.

🤀 New External Service		
Import a RAR File Import a resource adapter a project for the adapter.	rchive (RAR) from the file system to create a connector	es l
Archive file:	E:\WID75.image\ResourceAdapters\JDBC_7.5.0.0\CWYBC	_JDBC.rar
Connector project: *	CWYBC_JDBC	
Target runtime enviroment:	IBM Process Server v7.5	~
	R	
?	< <u>B</u> ack Next > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		
Locate the Required Files and Libraries		
Connector projects require system-specific libraries and JAR files.		
When deploying the application to a stand-alone server, these files must be con on the server. <u>More</u>	figured 🔷	
Specify the location of the JDBC driver JAR files required to access the database JDBC driver JAR files are shipped with the database installation. If you do not he database installation, you can download these files from the Web site of the dat vendor.	ave a local	
JDBC driver JAR files:		
E:\Yuanjs\oracle\ojdbc6.jar	Add Remove	1444
Specify the location of the database-specific native system libraries required to a database server. This is required if you are using a Type 2 driver implementation native libraries are shipped with the database server and client installations.		
System libraries:		
	Add	
? < Back	Cancel)

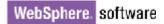
8. Select **Inbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
• Inbound Inbound processing passes data from the adapter to your service export.
Outbound processing passes data from your service import to the adapter.
(?) < Back Next > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node in the **Database system connection information** area and then select **10**.
- 2. Enter values in the System ID, Host name, Port number, User name and Password fields, and click Next.



New External Service	
Specify the Discovery Prope	rties
Connection properties Database system connection inform	Aation Properties: JDBC driver type: System ID: Host name: Port number: T521 JDBC driver class name: Catabase URL: JDBC driver class name: Sample
Password: *	*****
Prefix for business object names:	
Advanced >> Change the logging properties for the	e wizard
?	< <u>Back</u> Next > Einish Cancel

Select the business objects and services to be used with the adapter

Follow these steps to select the data for Inbound processing:

1. In the Find Objects in Enterprise System window, click **Run Query**.

🚯 New External Service			
Find Objects in the Enterprise System			B
Use a query to find objects on the enterprise system. Click click Run Query to run it.	< Edit Qu	uery to create the query, the	
Query: SchemaFilterLabel=null,Schema name or pattern=	null,Supp	ported database object type	Edit Query
Run Query			
Discovered objects:		Selected objects:	
			0
\cdots \mathbf{i}_{-} < Run a query to populate this view with discovery			
	Ľ		
<			
?		Next > Einish	Cancel

2. Expand the **SAMPLE** (for this tutorial only) node, select **Tables** and expand it.

B New External Service				
Find Objects in the Enterprise Syl (2) No discovered object is selected.	ystem			
Query: SchemaFilterLabel=null,Schema nam	e or patt≩rn=i	null,Supp	orted database object types	Edit Query
Discovered objects:			Selected objects:	
	静区四]		6
SAMPLE SAMPLE CUSTOMER WBIA_JDBC_EVENTSTORE Views Synonyms - Nick Names SCOTT SSH SI_INFORMTN_SCHEMA				
?	< <u>B</u> ack		Next > Einish	Cancel
Select the CUSTOMER table	and click	$\left \right>$		

4. Click Next.

New External Service	
Find Objects in the Enterprise System 🗟	D
Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database object types	Edit Query
Run Query	
Discovered objects: Selected objects:	
学 2 甲	0
Image: Solution of the second state	
(?) (Back Next > Einish	Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values and click **Next**.

New External Service		\mathbf{X}
Specify Composite Properties Specify properties that apply to all selected objects.		
Operations for selected business objects		^
Create Update Delete	Add Remove	
Create and configure user-defined wrapper objects	Add	
	Remove	
Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc]	
Specify the relative folder for generated business objects		
< Back	Cancel	

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Using security properties from the activation specification** as the section option.
 - b) Select **Specify predefined DataSource** from the **Database connection information** list.
 - c) Click Advanced.

🚯 New External Service			×
Specify the Service Generation and Deployment Properties			
Using security properties from the The properties will be stored as p			^
User name: *	sample		
Password: *	***		
	vill be handled by the EIS system, or the RAR will be deploye ecified by the properties in the JNDI lookup name.	ed on	
Deploy connector project:	With module for use by single application		≡
Specify the settings that are used to	connect to JDBC at run time:		
Connection settings:	Specify connection properties		
Connection Properties			
Database connection information	n: Specify predefined DataSource	*	
Database system connection inf			
Database vendor: DataSource JNDI name:			
Databource JNDI name:	* OracleDS		~
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel	

d) In the Even Configuration area, enter the values for the Event Order By, Event Table Name fields and click Next.

🎂 New External Service		
Specify the Service Generation and Deploymen Specify properties for generating the service and running it on the		f
Database vendor: ORACLE		^
DataSource JNDI name: * OracleDS		
<< Advanced		
Event polling and processing configuration		
Event delivery configuration		
▶ Processing methods for illegal XML characters		
Additional connection configuration		
Event configuration		
Event order by:	event_time, event_priority	
Event table name: *	WBIA_JDBC_EventStore	
Stored procedure to run before poll:		
Stored procedure to run after poll:		
Event query type for processing events:	Standard	
User-defined event query:		
User-defined update query:		
User-defined update query for failed event delivery:		
User-defined delete query:		
Logging and tracing		
		_
(?) < <u>B</u> a	ck <u>N</u> ext > Einish Cancel	

3. In the Specify the location Properties window, click **New**.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:		New
Namespace:	http:///JDBCInboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCInboundInterface	
	Save business objects to a library	
Library;		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Integ	ration Project	
	ntegration Project Type s integration project that you want to create.	
⊙ Module	Use a module to integrate business applications and services. A module any type of component and can be deployed on IBM Process Server. №	
O Mediation module	Use a mediation module to integrate and connect services. A mediation contain mediation flows and can be deployed on WebSphere ESB or IBP Server, <u>More</u>	
?	< <u>B</u> ack <u>N</u> ext > Einish (Cancel

5. In the Create a Module window, type **JDBCInboundTest** in the **Module Name** field and click **Finish**.

🚯 New Module	
Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on IBM Process Server.	F
Module name: JDBCInboundTest	
Location: E:\WID7.5_sample\JDBCInboundTest	Browse
? < Back	Cancel

- 6. Click **Finish** to complete service creation.
- 7. Verify the results.

🕼 Business Integration 🛛	
🌮 🖧 🛱 🖉] 👍 ▽
<all resources=""></all>	-
CWYBC_JDBC DBCInboundTest DBCInboundInterface Dependencies Dependencies Data SampleCustomer SampleCustomerBG Interfaces JDBCInboundInterface Transformations	

Set up the components to be part of the Inbound environment

Add the components and set transaction specific properties for them so that they are part of the inbound environment.

1. In the Business Integration view, double click **JDBCInboundTest** > **Assembly Diagram** to open the Assembly Diagram.

🕄 JDBCInboundTest - As	sembly Diagram 🛛
 ♦ Palette ▶ ● ● ● Pavorites ▶ Components 	JDBCInboundInterface
Components Compo	
Import Export References	
🖧 Interface Map (De 🔄 Selector	
🕞 Outbound Imports	
🔁 Inbound Exports	
🔁 Outbound Adapters	
🔁 Inbound Adapters	<

2. From the Palette, select the **Java** component and drop it on the assembly diagram.

 Palette Palette Palette Palette Decomponents Durtyped Component Human Task Java Medition Flow Proc Java Rule Group State Machine Import Export References Interface Map (De Selector Outbound Imports Outbound Imports Inbound Exports
C Outbound Adapters

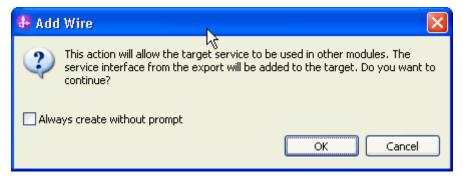
A component named **Component1** is created in the Assembly diagram.

8 *JDBCInboundTest - /	Assembly Diagram 🔀
 *JDBCInboundTest - / Palette Palette Pavorites Components Untyped Component Human Task Java Mediation Flow Process Rule Group State Machine Import Export References Interface Map (De Selector Outbound Imports Inbound Exports Outbound Adapters 	Assembly Diagram X
🗁 Inbound Adapters	<

🕄 *JDBCInboundTest - 4	Assembly Diagram 🔀
 ♦ Palette ▶ ● ● ● ● ● ■ ▶ Favorites ▶ Components 	DBCInboundInterface
Components Compon	JDBCInboundInterface
 Import Export References ▲ Interface Map (De 	
Selector Outbound Imports Inbound Exports Outbound Adapters Inbound Adapters	
🕞 Inbound Adapters	<

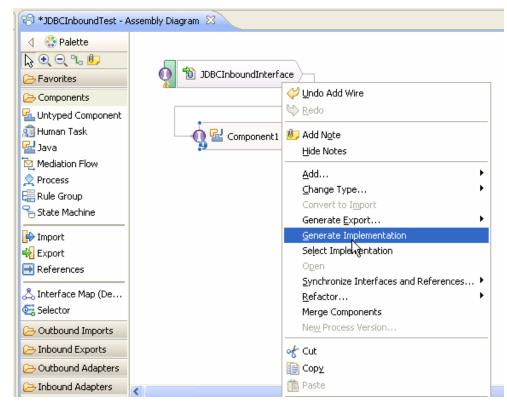
3. Wire JDBCInboundInterface to Component1 by dragging the mouse pointer from the rear end of JDBCInboundInterface to the front end of Component1.

Note: Before the preceding window, i.e., before wiring you will see the following window. Click **OK**.



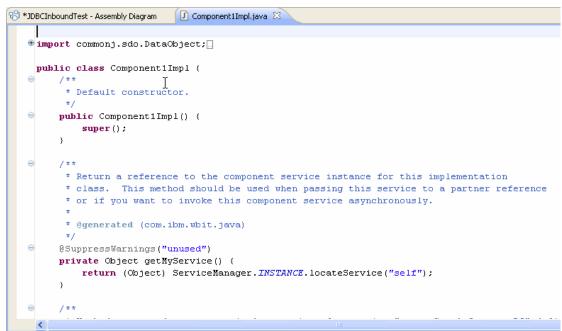
8 *JDBCInboundTest - 4	Assembly Diagram 🛛
 ↓ ♀ Palette ▶ ● ○ ♀ ኈ ₺ ▶ Favorites 	DBCInboundInterface
🔁 Components	
Untyped Component Human Task Java Java Mediation Flow Process Rule Group State Machine State Machine Export References Interface Map (De Selector Outbound Imports Outbound Exports Outbound Adapters	Component1 Interface found: JDBCInboundInterface (WSDL Interface)
🕞 Inbound Adapters	<

4. Generate the implementation for Java component. Right-click the component, and select **Generate Implementation** to complete the service creation.

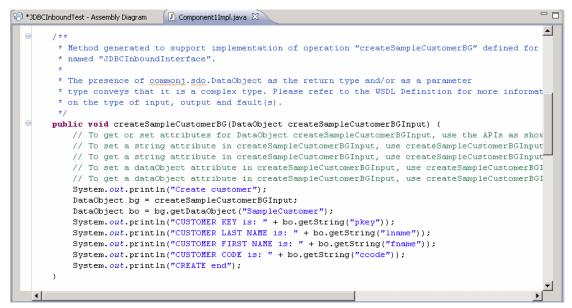


5. Highlight the default package and select **OK**.

The Java Editor displays the Component1Impl.java file.



6. Scroll down and locate the createSampleCustomer(DataObject createSampleCustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:



 Scroll down and locate the updateSampleCustomer(DataObject updateSampleCustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:

🕄 *JDBCInboundTest - Assembly Diagram 🕖 Component 1 Impl. java 🛛	- 8
0 /**	
* Method generated to support implementation of operation "updateSampleCustomerBG" de	fined for
* named "JDBCInboundInterface".	
*	
* The presence of commoni.sdo.DataObject as the return type and/or as a parameter	
* type conveys that it is a complex type. Please refer to the WSDL Definition for mor	e informat
* on the type of input, output and fault(s).	
*/	
public void updateSampleCustomerBG(DataObject updateSampleCustomerBGInput) (
// To get or set attributes for DataObject updateSampleCustomerBGInput, use the AP	
// To set a string attribute in updateSampleCustomerBGInput, use updateSampleCusto	-
// To get a string attribute in updateSampleCustomerBGInput, use updateSampleCusto	· · · · ·
// To set a dataObject attribute in updateSampleCustomerBGInput, use updateSampleC	
// To get a dataObject attribute in updateSampleCustomerBGInput, use updateSampleC	ustomerBGI
<pre>System.out.println("UPDATE customer"); Det Chief and Content of Content</pre>	
DataObject bg = updateSampleCustomerBGInput;	
<pre>DataObject bo = bg.getDataObject("SampleCustomer"); Suprement out outputs ("CUSTOMED NEW dot " to ant Station ("phone"));</pre>	
<pre>System.out.println("CUSTOMER KEY is: " + bo.getString("pkey")); System.out.println("CUSTOMER LAST NAME is: " + bo.getString("lname"));</pre>	
System.out.println("CUSTOMER FIRST NAME is: " + bo.getString("Iname"));	
System.out.println("CUSTOMER CODE is: " + bo.getString("ccode"));	
System.out.println("UPDATE end");	
Sybouri du princin (or parte cha),	
	-

8. Scroll down and locate the deleteSampleCustomer(DataObject deleteSampleCustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:

🔁 *JDBCInboundTest - Assembly Diagram	- 6
	<u> </u>
* Method generated to support implementation of operation "deleteSampleCustome	rBG" defined for
* named "JDBCInboundInterface".	
*	
* The presence of commonj.sdo.DataObject as the return type and/or as a parame	ter
* type conveys that it is a complex type. Please refer to the WSDL Definition	
* on the type of input, output and fault(s).	
*/	
public void deleteSampleCustomerBG(DataObject deleteSampleCustomerBGInput) (
// To get or set attributes for DataObject deleteSampleCustomerBGInput, use	the APIs as show
// To set a string attribute in deleteSampleCustomerBGInput, use deleteSamp	leCustomerBGInput
// To get a string attribute in deleteSampleCustomerBGInput, use deleteSamp	leCustomerBGInput
// To set a dataObject attribute in deleteSampleCustomerBGInput, use delete	SampleCustomerBGI
// To get a dataObject attribute in deleteSampleCustomerBGInput, use delete	SampleCustomerBGI
System.out.println("DELETE customer");	
DataObject bg = deleteSampleCustomerBGInput;	
<pre>DataObject bo = bg.getDataObject("SampleCustomer");</pre>	_
<pre>System.out.println("CUSTOMER KEY is: " + bo.getString("pkey"));</pre>	
<pre>System.out.println("CUSTOMER LAST NAME is: " + bo.getString("lname"));</pre>	
<pre>System.out.println("CUSTOMER FIRST NAME is: " + bo.getString("fname"));</pre>	
<pre>System.out.println("CUSTOMER CODE is: " + bo.getString("ccode"));</pre>	
<pre>System.out.println("DELETE end");</pre>	
}	

- 9. Select File -> Save to save your changes.
- 10. Close and save the Assembly Diagram. Wait for the workspace to complete building.

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) export. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows** > **Show View** > **Servers**.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start.**
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

🤀 Add and Remove			
Add and Remove Modify the resources that are configu	ured on the server		
Move resources to the right to configu	ire them on the server		
<u>A</u> vailable:		$\underline{\subset}$ onfigured:	
🗉 🛅 JDBCInboundTestApp			
	Add >		
	< <u>R</u> emove		
	Add All >>		
If server is started, publish change	es immediately		
?	< <u>B</u> ack <u>N</u> ext >	<u> </u>	Cancel

- 4. Add the SCA module to the server.
- 5. Click Finish.

🚯 Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server	
<u>A</u> vailable:	<u>C</u> onfigured:
	🗉 🛅 JDBCInboundTestApp
Add >	
< <u>R</u> emove	
Add Alj >>	
✓ If server is started, publish changes immediately	
Reack Next >	<u>Finish</u> Cancel

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. In the Business Integration view right-click on the JDBCInboundTest module, and select Test > Attach.

🗄 Business Integration 🛛 🗖 🗖	😵 JDBCInboundTest - Assembly Diagram 🛛
೫ 물 🖶 🗁 🗞 🖻 🕏 🏹	I Compare the International Compared Co
<all resources=""></all>	
	Expression DBCInboundInterface
🖻 🔁 JDBCInboundTest	Components
Assembly Diagram	💁 Untyped Component
→ DBK New →	🕫 Human Task 🛛 🕕 🚰 Component1
tepende ⊡ ∰ Integrat Open	🚰 Java
Data Open With	Nediation Flow
Sam Show Files	2 Process
Sam Copy	E Rule Group
Interfact Baste	State Machine
1 JDBC Lelete	🕞 Import
	🙀 Export
import	References
Export	🚴 Interface Map (De
🗞 Re <u>f</u> resh	Selector
Add to Asset Repository	C> Outbound Imports
Export as Image	C> Inbound Exports
Generate Documentation	
<u>T</u> est	🜔 Test Module
Validate	Attach 🔪 📃 🔨
 T <u>e</u> am ▶	🔀 Task Flows 🗟 Build Activities 🔲 Properties 🔝 Problems 🔞 Se
Comp <u>a</u> re With	
Rep <u>l</u> ace With	😑 🧱 IBM Process Server v7.5 at 9.119.154.112 [Profiling, Publishing.

Events	General Pro	perties	
This area displays the events in a test trace.	 Detailed Pro 	perties	
Select an event to display its properties in the General Properties and Detailed Properties sections. <u>More</u>	then click the Cor	iguration for the Attach ex ntinue icon in the Events ar hment session. <u>More</u>	
▶ ■ ♣ ▼ Ⅲ ▼ □ ♣ 🔚 ∰ Attach	Configuration:	Default Module Test	•
	Module:	JDBCInboundTest	
	•		
	•		
		Ν	
		6	

3. Insert a record into the Customer table:

```
INSERT INTO CUSTOMER (pkey,ccode,fname,lname)
values('Test', 'ANITA','MEHTA','IBM');
```

4. Check the output of the service:

vents		Me	idule:	IDPC	InboundTes	+	
his area displays the events in a test trace. Se		_	urce <u>c</u> omponent		Inbound res Inbound Inte	_	
o display its properties in the General Propertie			urce <u>c</u> omponence urce reference:	<exp< td=""><td></td><td>en ace</td><td></td></exp<>		en ace	
roperties sections. <u>More</u>			rget component		ionent1		
▶ ■ 🎄 • 🔳 • 🖻 🔆 🔛			rget tomponent rget interface:		ionenci InboundInte		
E Attach (Default Module Test)							
			rget operation:		eSampleCus	scomerBG	
Request (JDBCInboundInterf	ace> Compo	Rec	uest parameter:	s:			
		Va	ue Editor XML S	Source			
			. 8. E				
		۹ E	Name		Туре	Value	
	1	i	💾 createSan	nple	Sample	аь	
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			pk		string	ab Test	
				iame	string	Cab MEHTA	
				ame	string		_
				ode:	string	COD ANITA	

5. Update an existing record in the Customer table:

UPDATE CUSTOMER SET fname='ABC', lname='XYZ', ccode='' WHERE pkey='Test';

6. Check the output of the service:

	🚺 Co	mpor	nent1	Impl.java	🗄 *JDBC	CInbound	dTest_Tes ≀	3 - 6
Integration Test Client: JDBCIr	nboundT	es	t_T	est				
Events			Mod	lule:	JDBCInb	ioundTesi	F	~
This area displays the events in a test trace. Sele to display its properties in the General Properties Properties sections. <u>More</u>		_	Sou	rce <u>c</u> omponent rce re <u>f</u> erence:	: <u>JDBCInb</u> <export:< td=""><td>ioundInte ></td><td></td><td></td></export:<>	ioundInte >		
			Tarç	get c <u>o</u> mponent: get interface:	JDBCInb	oundInte		
 Attach (Default Module Test) Session Request (JDBCInboundInterface) 	:e> Compc		Requ	get operation: lest parameter:	5:	ampleCu:	<u>stomerBG</u>	
Request (JDBCInboundInterface)	:e> Compa		-	e Editor XML S				
		*		Name	nple Sa		Value	
				Sampl	eCusto Sa		ab Test	
				(‡================================	ame str	ring ring	Cabl ABC	
				∰⊐ cc	ode str	ring	a null	
				<				>
	>							~
Events Configurations								

Clear the sample content

After you have tested the application, clear the sample content to return the data to its original state.

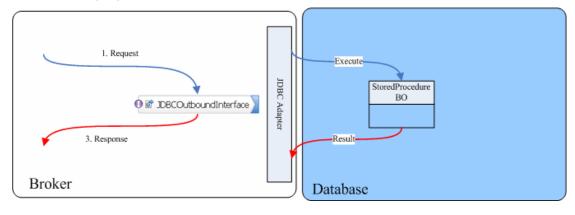
Chapter 7. Tutorial 6: Executing a business object created from a stored procedure (DB2)

This scenario demonstrates how WebSphere Adapter for JDBC 7.5.0.0 interacts with database stored procedure business object.

About this task

In this scenario, a SCA component invokes the 'Execute' operation of JDBC adapter Outbound Interface. The adapter invokes a stored procedure defined in the target database, and returns the execution result to the SCA component.

The following figure represents this scenario:



Prepare to run through the tutorial

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and stored procedure
- Create an authentication alias

Create tables and stored procedure

You must create the following tables and stored procedure in the DB2 database before starting the scenario.

a. Script for creating the Customer and Address tables

b. Scripts for inserting records to the two tables

```
INSERT INTO CUSTOMER VALUES ('100', 'fname1',
'lname1', 'IBM');
INSERT INTO CUSTOMER VALUES ('300', 'abc', 'xyz',
'IBM');
INSERT INTO ADDRESS VALUES ('100', '100', 'cxxx',
'xxxx');
INSERT INTO ADDRESS VALUES ('120', '100', 'city1',
'zipcode1');
```

c. Scripts for creating the stored procedure

The stored procedure can be created using the DB2 Development Center or IBM Integration Designer.

```
CREATE PROCEDURE CustAddrSP (
                      )
 SPECIFIC CustAddrSP
  DYNAMIC RESULT SETS 1
_____
-- SQL Stored Procedure
_____
P1: BEGIN
  -- Declare cursor
 DECLARE cursor1 CURSOR WITH RETURN FOR
    SELECT CUSTOMER.FNAME, CUSTOMER.LNAME,
ADDRESS.CITY, ADDRESS.ZIPCODE
     FROM ADDRESS JOIN CUSTOMER ON ADDRESS.CUSTID
= CUSTOMER.PKEY
     ORDER BY ADDRESS.ZIPCODE ASC;
  -- Cursor left open for client application
  OPEN cursor1;
```

```
END P1
```

Create an authentication alias

The authentication alias needs to be set because the adapter uses the username and password set in the authentication alias to connect to the database. This authentication alias will be used later when generating the artifacts for the module.

Here are the steps to set the authentication alias in IBM Process Server administration console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

🚯 Business Integration - IBM I	Integration Desi	gner 7.5 - D:\workspace\201	0\Sample75		
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roje	ect <u>R</u> un <u>D</u> iagram:	Services Samples AST JUnit Tests	Window Help		
	🗈 i 🖥 🔏 🖋	 Link Indexer FVTs Link I 	<u>N</u> ew Window New Editor	de apts 🛛 🖹 🐯 e	Business Inte
E Business 🛛 🗖			Open Perspective	Build Activities	
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		ild Activities 🔲 Properties 🔃 Pro erver v7.5 at localhost [Started, Syr	bblems 👸 Server Logs (해 Server: hthronized]	Task Flows Ivask Tasks Tasks Top TCP/IP Monitor Ivasks Visual Snippets Other	Alt+Shift+Q, Q
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2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D:\workspace\2010\Sampl 🔳 🔲 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
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8	☆ 🖸 🖉 🖉 🚽
IBM Process Server v7.5 at localhost [Stopped, Synch	
	New
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	🜔 Start 📉
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	Stop
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3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

📪 IBM Process Server v7.5 at localhost [Started, Synchr	onized1
	Ne <u>w</u>
	Open
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	🔊 Restart in Profile
	E Stop
	📳 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	😤 View and Publish Changes to Server
	🛅 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	📇 Import Dynamic Endpoint Selection Configuration
	🖓 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

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Eile	e <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>W</u> indow <u>H</u> elp	
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···· 8	Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X Admin Console X X Admin Console X	- e
臣	Integrated Solutions Console	ibm
8	Log in to the console.	
	User ID:	
	Log in	
	Note: After some period of inactivity, the system will log you out automatically and ask you to log in again.	
		and the second se
		2000-2003/4 Million/2
		✓
: ₫	Done	i = X 🖒 🗖 🕅 🦛

5. Click Security → Global security.

View: All tasks
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
1 Resources
🖯 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
Integration Applications
🗄 Users and Groups
🗄 Monitoring and Tuning
⊞ Troubleshooting
⊞ Service integration
II UDU

6. Under Java Authentication and Authorization Service, click J2C authentication data.

unctions and is used as a default security policy for user applications. Secu	ity policy. This security configuration applies rity domains can be defined to override and
pplications. Security Configuration Wizard Security Config	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expir
Application security Image: Constraint of the security	Kerberos und Errix <u>Kerberos configuration</u> O SWAM (deprecated): No authentic Authentication cache settings
Java 2 security Use Java 2 security to restrict application access to local resources W Warn if applications are granted custom permissions Restrict access to resource authentication data User account repository	 Web and SIP security RMI/IIOP security Java Authentication and Authorizat <u>Application logins</u> <u>System logins</u>
Current realm definition Federated repositories Available realm definitions	Specifies a list of user identities and pass for Java(TM) 2 connector security to use.

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

New	Delete		
	∎ ₩ ₽		
Select	Alias 🛟	User ID 🗘	Description :
You ca	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorizatio Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructur JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used b SCA to login a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authenticationalian alias for the Event Server

7. Click **New** to create a new authentication entry. Type the alias name, and a username and password that can connect to the database. Click **OK**.

Global security ? –
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias DB2
* User ID db2admin
* Password
Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global securit	y ? -
	 Messages Changes have been made to your local configuration. You can: <u>Sage</u> directly to the master configuration. <u>Reduw</u> changes before saving or discarding. <u>Reduw</u> changes before saving or discarding.
Specifies a	urity > JAAS - J2C authentication data list of user identities and passwords for Java(TM) 2 connector security to use. new alias names with the node name of the cell (for compatibility with earlier releases)

Note: You have created an authentication alias that will be used when you configure the adapter properties. Re-start the server for the changes to take effect.

Configure the adapter for outbound processing

- 1. Switch to the Business Integration perspective in IBM Integration Designer.
- 2. Select File->New->Module to create a module project.

Business Integration - IBM Integration Designe 📸 Integration Solution						
<u>File E</u> dit <u>N</u> avigate Se	e <u>a</u> rch <u>P</u> roject Al	obot Aries Test	🖉 Module			
<u>N</u> ew		Alt+Shift+N 🔸	얟 Mediation Module			
Open File <u>.</u>			🏥 Library			
⊆lose		Ctrl+W	🏰 DataPower Library			
Close All		Ctrl+Shift+W	😭 Component Test Project			
U Save		Ctrl+S	Project			
🛄 Save <u>A</u> s			😂 Artifact Evolution			
i 😭 Sav <u>e</u> All		Ctrl+Shift+S	😤 BPEL Process			
Rever <u>t</u>			BPEL Process from IBM Forms			
Moye			🎬 Business Calendar			
Rena <u>m</u> e		F2	😭 Business Object			
a Refresh		F5	🗊 Business Object from External Data			
📥 Print		Ctrl+P				

3. Specify the module name as **Tutorial6**, and click **Finish**.

🚯 New Modu	le 🥂	
	odule o integrate business applications and services. A module can e of component and can be deployed on IBM Process Server.	5
Module name: Vuse defaul	tutorial6	
	WID7.5_sample\tutorial6 odule assembly diagram	Browse
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

4. Expand Tutorial6 and select displayed. Right-click and select **New->External Service.**

🤀 Business Integration - tutorial6/sca.module - IBM Integration 🛙	Designer 7.5 - E:\WID7.5_sample
<u>File Edit Navigate Search Project Abbot Aries Test Run</u> AST JUnit Te	sts <u>W</u> indow <u>H</u> elp
📬 ▾ 🗐 🐚 🗁 🛛 📽 💣 🖶 🖉 🖋 ▾ Link Indexer ⇔ ▾ ↔ ▾ 🖓 🌣 🗂	FVTs Run Struts Smoke Test Run WDE
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🖃 🔁 tutorial6	
E Ir New	<u>P</u> roject
D Open Deployment Editor Ti Open Data Map Catalog Show Files Cham Defenses	Business Object Business Object from External Data
Sho <u>w</u> References in References View Associate with Process Center	External Service BPEL Process
Copy	BPEL Process from IBM Forms
 Paste Delete 	안 Mediation Flow 약 Mediation Subflow
Refactor or Analyze Impact	症 Human Task
import r∕a Export	😤 Business State Machine 🎎 Process Migration Specification

5. Select JDBC, and click Next.

🚯 New External Service	
Select the Service Type or Registry	
Eilter: type filter text	B
<u>A</u> vailable types:	
DBC Dotus Domino Cracle E-Business Suite Description:	 /ul>
Creates a service to access the database system using WebSphere Adapter for JDBC. Yo can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application the	ase.
(?) < <u>Back</u> <u>Next</u> > <u>Finish</u> Car	ncel

 Select IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0). Click Next.

🔂 New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
(?) < <u>Back</u> <u>Next</u> > Einish	Cancel

7. In the **Target Runtime environment** field, select the appropriate runtime and click **Next**.

🚯 New External Service	
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a lapter.
Archive file:	E:\WID75.image\ResourceAdapters\JDBC_7.5.0.0\CWYBC_JDBC .rar
Connector project: *	CWYBC_JDBC
Target runtime enviroment:	IBM Process Server v7.5
?	< <u>Back</u> Next > Einish Cancel

8. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		$\mathbf{\times}$
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.		
When deploying the application to a stand-alone server, these files must be confitte server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the database JDBC driver JAR files are shipped with the database installation. If you do not ha database installation, you can download these files from the Web site of the database vendor. JDBC driver JAR files: E:\Yuanjs\db2\db2jcc.jar E:\Yuanjs\db2\db2jcc_license_cu.jar	e server. ave a local	
Specify the location of the database-specific native system libraries required to a database server. This is required if you are using a Type 2 driver implementation native libraries are shipped with the database server and client installations. System libraries:		
	Add Remove	~
? < Back	Cancel	

9. Select **Outbound** and click **Next**.

🕀 New External Service	
Select the Processing Direction Select the direction of adapter processing at run time.	
 Inbound processing passes data from the adapter to your service export. Dutbound Outbound processing passes data from your service import to the adapter. 	
(?) < <u>Back</u> <u>Next</u> > Einish	Cancel

Set connection properties for the external service wizard

To connect to the database:

- 1. Expand the **DB2** node in the **Database system connection information** area and select appropriate version,
- 2. Enter values in the **Database**, **Host name**, **Port number**, **User name** and **Password** fields, and click **Next**.



New External Service	
Specify the Discovery Proper	rties
Connection properties	
	Properties: JDBC_driver type: IBM DB2 Universal Database: * adapter Host name: * 9.119.154.16 Port number: * 50000 JDBC driver class name: * com.ibm.db2.jcc.DB2Driver Database URL: jdbc:db2://9.119.154.16:50000 Water
?	< Back Next > Einish Cancel

Select the business objects and services to be used with the adapter

- 1. In the Find Object in the Enterprise System window, click **Run Query**.
- 2. Select **DB2ADMIN->Stored Procedures->CUSTADDRSP**, and click

New External Service	
Find Objects in the Enterprise System No discovered object is selected.	BO,
Query: SchemaFilterLabel=null,Schema name or pattern=nu Run Query	II,Supported databas Edit Query
Discovered objects: Se	elected objects:
Stored Procedures	
? < Back	Einish Cancel

3. In the **The maximum number of ResultSets returned from the stored procedure** field, enter 1. Click **Validate**. After successful validation, click **OK**.

WebSphere. s	oftware
--------------	---------

🚸 New External Service	
Specify the Configuration Properties fo $igksymbol{\mathbb{R}}$ CUSTADDR	SP'
Generate a business object for the stored procedure	
Business object Stored procedure name:	DB2ADMIN.CUSTADDRSP
Use ResultSet business object Mode	DB2ADMIN.COSTADDRSP
The maximum number of ResultSets returned from the stored procedure.:	1
Returned ResultSets	
RETRS1	
Data type:	RESULTSET
Attributes	
FNAME:	string 💌
LNAME:	string
CITY:	string 💌
ZIPCODE:	string
Validate the stored procedure Validate the syntax of the stored procedure using the sample values: Validate Result:	Validation was successful.
?	OK Cancel

4. Click Next.

New External Service	N		
Find Objects in the Enterp Use a query to find objects on the the query, then click Run Query to	enterprise system. Click	Edit Query to create	BO,
Query: SchemaFilterLabel=null,Sch Run Query	hema name or pattern=r	null,Supported databas	Edit Query
Discovered objects:	:	Selected objects:	
Stored Procedures CUSTADDRSP O INSERTEVENT IRCW000A	♣ <u>/</u> □ ● •	(1) CUSTADDRSP	
?	< <u>B</u> ack <u>N</u> ext :	> Einish (Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for the all fields and click **Next**.

New External Service		×
Specify Composite Properties Specify properties that apply to all selected objects.		
Custom Business Faults Pattern for the Custom Business Faults:		^
Pattern String Custom Fault Name	Add Edit Remove	
Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2ca/ Specify the relative folder for generated business objects Folder: Generate a business graph for each business object Advanced >>		~
(?) < <u>Back</u> <u>Next</u> > Einish	Cancel	

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) In the J2C authentication data entry field, enter Alias_DB2.
 - b) disable the Join the global transaction check box.
 - c) Select **Specify local database connection information** from the **Database connection information** list and click **Next**.

🚯 New External Service		
Specify the Service Generation Specify properties for generating the serv	T T	
⊙ Using an existing JAAS alias (recor	nmended)	<u>~</u>
A Java Authentication and Autho	rization Services (JAAS) alias is the preferred me	ethod.
J2C authentication data entry:*	Alias_DB2	Select
🔿 Using security properties from the	managed connection factory	
The properties will be stored as p	ain text; no encryption is used,	
User name:	db2admin	
Password:	****	
🔘 Other		
deployed on the server and secur name.	ill be handled by the EIS system, or the RAR will ity will be specified by the properties in the JND ioin the transaction provides a higher degree of	I lookup
	curs. To join a global transaction, specify a pred	
Deploy connector project:	With module for use by single application 🛛 💌	
Specify the settings that are used to	connect to JDBC at run time:	
Connection settings;	Specify connection properties	
Connection Properties		
	ify a predefined XA datasource or XA database It joining a global transaction, either the XA con In information can be specified.	nection
Database connection information	: Specify local database connection information	ר 🗸
Database system connection info	rmation	
Database vendor:	DB2	
Database URL:	* jdbc:db2://9.119.154.16:50000/adapter	
JDBC driver class name:	* com.ibm.db2.jcc.DB2Driver	
Advanced >>		~
?	< Back Next > Einish	Cancel

3. In the Specify the Location Properties window, click **Finish** to complete the service creation.

🚯 New Externa	al Service	
	ocation Properties roperties for where you want to save the service.	F
Properties for Ser	rvice	- 🛕
Module:	tutorial6 New	
Namespace;	http://tutorial6/JDBCOutboundInterface	
	✓ Use the default namespace	
Folder:	Browse	. =
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;	New	
Description:		~
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u> Canc	el

4. Verify the results.

5
🗄 Business Integration 🛛 📃 🗖
🐝 🔁 👘 🕞 🗞 🔽
<all resources=""></all>
🗩 👑 CWYBC_JDBC
🖻 🔁 tutorial6
😐 🖏 Assembly Diagram
- 😳 Dependencies
- 🗁 Integration Logic
🖨 🕖 Data
🛱 Db2adminCustaddrsp
🗓 Db2adminCustaddrspBG
🛱 Db2adminCustaddrspRetrs1
🦳 🗐 IntegrityConstraintFault
🦳 💭 MatchesExceededLimitFault
🦳 💭 MissingDataFault
🦳 💭 MultipleMatchingRecordsFault
🖳 💭 ObjectNotFoundFault
🦳 💭 PrimaryKeyPairType
🖳 🛱 RecordNotFoundFault
🖳 🛱 UniqueConstraintFault
🛄 WBIFault
📮 🚇 Interfaces
IDBCOutboundInterface
📜 Transformations

Deploy the module to the test environment

The result of running the external service wizard is an SCA module that contains an Enterprise Information System import. Install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start.**
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

Process		Add and Reinove	
Rule Group		Monitoring	+
State Machine		Modern Batch Job Management Console	
Import		Create Tables and Data Sources	
Export		Reconnect Debug Process	
References		😤 View and Publish Changes to Server	
Interface Map (De		🛅 Manage Server Profiles	
Selector		2 Export Dynamic Endpoint Selection Configuration	
Outbound Imports		2 Import Dynamic Endpoint Selection Configuration	
		🟥 Update Vocabularies and Related Artifacts	
Inbound Exports		Server Configuration	•
Outbound Adapters		Universal Test Client	•
Inbound Adapters		Administration	•
(0)	((=	Launch	+
Task Flows 🛛 🖒 Build /	Activities 🔲 Properties 🔀	Add and Remove Integration Solution Projects	+
BM Process Server	[Stopped] er v7.5 at 9.119.154.112 [Pro	Properties	Alt+Enter

4. In the Add and Remove Projects window, select the module created earlier and click **Add.** The project moves to the **Configured Projects** list from the **Available Projects** list.

🚯 Add and Remove 💦	
Add and Remove Modify the resources that are configured on the serve	r
Move resources to the right to configure them on the se <u>A</u> vailable: A <u>d</u> d > < <u>R</u> emove	erver <u>C</u> onfigured: The futorial6App
Add All >>> If server is started, publish changes immediately (2) (2) (3) (4) (4) (4) (5) (5) (5) (5) (5	ext > Einish Cancel

5. Click **Finish**. This deploys the project on the server. For troubleshooting issues while adding the project, see the Troubleshooting section. The Console tab in the lower-right pane displays a log while the module is being added to the server.

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client:

- 1. From the Business Integration view, right click on Tutorial6 and select Test > Test Module.
- 2. Leave all fields in the test client as default.

😵 tutorial6 - Assembly Diagram 🛛 🕞 tutorial6_	Test 🛛				- 8
Integration Test Client: tutorial	6_Test				
Events	Configuration:	Default Module Te	st	~	
This area displays the events in a test trace. Select an event to display its properties in the	Module:	tutorial6		~	
General Properties and Detailed Properties sections. More	Component:	JDBCOutboundInt	erface	*	
▶ ■ ≱ ▼ ■ ▼ ⊡ ≱ 🔛	Interface:	JDBCOutboundInt	erface	*	
10 Invoke	Operation:	executeDb2admin(CustaddrspBG	~	
	Initial request pa	-			
	Value editor	XIML editor			, =
	8 🖞 🖻				
		Name	Туре		
	🖃 🗄 exe	cuteDb2adminCu	Db2adminCustaddrspBG	аь	
		verb	verb <string></string>	🗈 Create	
	E - E		Db2adminCustaddrsp	аы	
		[I] retrs1	Db2adminCustaddrspRetrs1[]	66	
					×
Events Configurations					

- 3. Execute the service by click \triangleright .
- 4. In the Select Deployment Location window as shown below, select the server, and click **Finish**.

B Deployment Location	
Specify a runtime location where this test will deploy.	E
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at 9.119.154.112 WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run	
Use this location as the default and do not ask again	
① To change the default location elsewhere, open the Properties window for the project Business Integration > Integration Test Client.	t and select
Pinish	Cancel

5. If the deployment and execution of the test module is successful, the result set should return the expected records that reflect the conditions stipulated in the stored procedure.

Wedule.	Tuto de la
Module:	<u>Tutorial6</u>
Component:	<u> JDBCOutboundInterface</u>
\underline{I} nterface:	<u> JDBCOutboundInterface</u>
Operation:	<u>executeDb2adminCustaddrspBG</u>
-	

Return parameters:

- Detailed Properties

Name	Туре	Value	
🗏 🖻 🖳 executeDb2adminCustadd	Db2adminCustaddrspBG	×	
🗁 verb	verb <string></string>	H	
🚊 🖳 Db2adminCustaddrsp	Db2adminCustaddrsp	*	
🖃 💷 retrsl	Db2adminCustaddrspRetrs1[]	667	
🚊 🖳 retrs1[0]	Db2adminCustaddrspRetrs1	*	
Iname	string	✓ fname1	
🗁 lname	string	✓ lname1	
- 🗇 city	string	✓ CXXX	
🛄 🗁 zipcode	string	✓ xxxx	
🖻 🖳 retrs1[1]	Db2adminCustaddrspRetrs1	*	
🖳 🗔 fname	string	✓ fnamel	
🖳 🗔 🗁 🗠	string	✓ lname1	
- 🗁 city	string	✓ cityl	
🗔 🗖 🖾 🖾	string	✓ zipcodel	

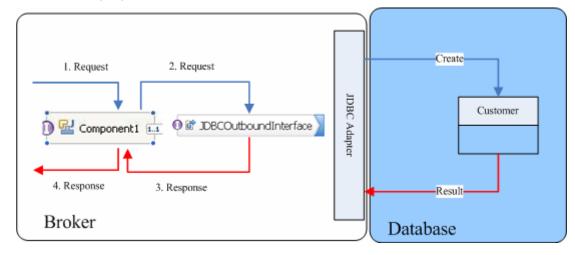
Chapter 8. Tutorial 7: Sending data to the DB2 database within XA Transaction (outbound processing)

This scenario demonstrates how WebSphere Adapter for JDBC 7.5.0.0 participates in a global transaction using XA a data source for DB2 database.

About this task

In this scenario, we will create a Java component and a JDBC adapter import component. The Java component invokes JDBC adapter to make changes to the database. Both the java component and JDBC adapter will participate in the same global transaction.

The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create a table
- Create an authentication alias
- Create a data source

Create a table

You must create the following table in the DB2 database before starting the scenario.

Script for creating the CUSTOMER table

```
CREATE TABLE CUSTOMER (

"PKEY" INTEGER NOT NULL PRIMARY KEY,

"FNAME" VARCHAR(20) ,

"LNAME" VARCHAR(20) ,

"CCODE" VARCHAR(10) ) ;
```

Create an authentication alias

The authentication alias needs to be set because the adapter uses the username and password set in the authentication alias to connect to the database. This authentication alias will be used later when generating the artifacts for the module.

Here are the steps to set the authentication alias in IBM Process Server administration console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

Business Integration - IBM Integration	ntegration Designer 7.5 - D:\workspace\	2010\Sample75	
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject	t <u>R</u> un <u>D</u> iagram Services Samples AST JUnit Te:	sts <u>W</u> indow <u>H</u> elp	
	👌 🗄 🕼 🛷 🔹 Link Indexer FVTs 🕴 L	ink] <u>N</u> ew Window New Editor	DE APTs 📑 📴 Business Inte
🔚 Business 🖾 🗖 🗖		Open Perspective	Co Build Activities
✓ ♥ ♥ ♥ ♥ ♥ ♥ ♦ CwyBc_IDBC	Start working Start to work by creatin a project into your work Learn more Getting Started with Getting Started with	Sp: Close All Perspectives Navigation + + Switch to Process Center Preferences BM	Image: Business Integration Image: Console Alt+Shift+Q, C Image: DataPower Appliances Image: Outline Alt+Shift+Q, O Image: DataPower Appliances Image: Outline Alt+Shift+Q, O Image: Patterns Explorer Image: Physical Resources Image: Problems Alt+Shift+Q, X Image: Properties Image: References Image: Server Logs Image: Properties Image: Server Logs
	Task Flows 🕜 Build Activities ा Properties 🔝		Task Flows *
D 🔁 🔓 1 items selected			1

2. In the **Servers** view, right-click the server that you want to start, and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace \2010 \Sampl 🔳 🔲 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
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8	* 0 ∅ = ₽ ⊂
IBM Process Server v7.5 at localhost [Stopped, Synch	
	New
	Open
	Show In
	📄 Сору
	🛱 Paste
	💢 Delete
	Rename
	蓉 <u>D</u> ebug
	😥 <u>S</u> tart
	profile N
	Stop
	Clean
📫 📭 🔚 1 items selected	Gean

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

🚏 IBM Process Server v7.5 at localhost [Started, Synchr	ronized]
	New
	Open
	Show In
	📄 Сору
	🛱 Paste
	💢 Delete
	Rename
	🏇 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	📕 Stop
	📳 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	🔚 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	Configuration 2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console by entering the username and password (if required).

@ [Business Integration - WebSphere Administrative Conso	le for WPS7 at localhost 📘 🗖 🔀
Eile	e <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>W</u> indow <u>H</u> elp	
1 🗖	1 • 🖫 🗅 1 📽 1 🕅 4 4 5 🖉 🥸 4 🗠 4 1 🗑 1 🖉 🛷	🖬 🖏 🐻
	Admin Console X Admin Console X Admin Console X	- <i>e</i>
te:	Integrated Solutions Console	ien en
8	Log in to the console.	
	User ID:	
	Log in	
	Note: After some period of inactivity, the system will log you out automatically and ask you to log in again.	
		✓
÷ ∎⁴	Done	i e XX 🖒 🗔 🖹 🛅 🦇

5. Click Security → Global security.

View: All tasks		
Welcome		
🗄 Guided Activities		
⊞ Servers		
🗄 Services		
1 Resources		
🗆 Security		
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security 		
🗄 Environment		
Integration Applications		
E System administration		
🗄 Users and Groups		
🗄 Monitoring and Tuning		
⊞ Troubleshooting		
🗄 Service integration		
II UDU		

6. Under Java Authentication and Authorization Service, click J2C authentication data.

Ise this panel to configure administration and the default application securit unctions and is used as a default security policy for user applications. Secur pplications.	
Security Configuration Wizard Security Configu	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expir <u>LTPA</u> Kerberos and LTPA
Application security ✓ Enable application security	Kerberos and ErrA Kerberos configuration SWAM (deprecated): No authenti Authentication cache settings
Java 2 security Use Java 2 security to restrict application access to local resources W Warn if applications are granted custom permissions Restrict access to resource authentication data	Web and SIP security RMI/IIOP security Java Authentication and Authoriza Application logins
User account repository Current realm definition Federated repositories	System logins = J2C authentication data Specifies a list of user identities and pass
Federated repositories Available realm definitions	Specifies a list of user identities and pas for Java(TM) 2 connector security to use

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

New	Delete		
D			
Select	Alias 🛟	User ID 🗘	Description 🔇
You ca	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authenticatic alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authenticatic alias for the Event Server

7. Click **New** to create a new authentication entry. Type the alias name and a username and password that can connect to the database, as shown in the figure. Click **OK**.

Global security ? –
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias DB2
* User ID db2admin
* Password
Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global security	? -
	🖯 Messages
	 Δ Changes have been made to your local configuration. You can: Sage directly to the master configuration. Rectar to the configuration or discarding.
	Δ The server may need to be restarted for these changes to take effect.
<u>Global secu</u>	rity > JAAS - J2C authentication data
Specifies a	list of user identities and passwords for Java(TM) 2 connector security to use.
🗹 Prefix i	new alias names with the node name of the cell (for compatibility with earlier releases)
Apply	

Create a data source

1. In administrative console, select **Resources->JDBC->JDBC Providers**.

Integrated Solutions Console Welcon	me admin
View: All tasks	~
Welcome	
■ Guided Activities	
⊞ Servers	
■ Applications	
🗆 Resources	
Schedulers	
 Object pool managers 	
⊞JMS	
People directory provider	
 Extended messaging provider 	r
 WebSphere Business Integra 	tion Adapters
□ JDBC	
JDBC Providers	
Data JDBC Providers	
Data sources (WebSphere	Application
Server V4)	
 Business Integration Data 	Sources
Resource Adapters	
Asynchronous beans	
⊞ Mail	
Remote artifacts	
URL Resource Environment	
Resource Environment	
Gecurity	

On the right, select Node=nINodeO1 from the drop-down list, and click New.



Integrat	ted Solu	tions Console Welcome		Help Logout
JDB	C prov	iders		
JDB	C prov	iders		2 =
2	JDBC p	providers		
t	driver i this tas	mplementation class for access to	C provider. The JDBC provider obje the specific vendor database of yo tivity provides a list of task steps a	ur environment. Learn more about
E	∃ Scop	e: Cell =localhostNode01Cell , No	de=nlNode01	
		cope specifies the level at which t n what scope is and how it works,	he resource definition is visible. For see the scope settings help	detailed information
		Node=nlNode01	*	
E	∃ Pref	erences		
	New	Delete		
		1 🕂 🐔		
:	Select	Name 🗘	Scope 🗘	Description 🗘
		Derby JDBC Provider (XA)	Node=nlNode01	JDBC Provider for WPS/WESB

3. Select the following values for the **Database type**, **Provider type**, and **Implementation type** fields. Click **Next**.

Field	Value
Database type	DB2
Provider type	DB2 Universal JDBC Driver Provider
Implementation type	XA data source

Create a new JDBC Provider

→ Step 1: Create new JDBC	Create new JDBC provider
provider Step 2: Enter database class path information	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values.
Step 3: Summary	Scope cells:localhostNode01Cell:nodes:nlNode01
	* Database type DB2
	* Provider type DB2 Universal JDBC Driver Provider 💌
	* Implementation type XA data source
	* Name DB2 Universal JDBC Driver Provider (XA)
	Description XA DB2 Universal JDBC Driver-compliant Provider. Datasources created under this provider support the use of XA to perform 2-phase commit processing. Use of driver type 2 on WebSphere Application Server for Z/OS is not supported for datasources created under this provider.
Next Cancel	

 Enter the absolute path of the JDBC drivers (db2jcc.jar, db2jcc_license_cu.jar, db2jcc_license_cisuz.jar) directory. Click Next. Create a new JDBC Provider

Step 1: Create new JDBC	Enter database class path information
 → Step 2: Enter database class path information Step 3: Summary 	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: /home/db2inst1/sqllib/java on Linux(TM). If a value is specified for you, you may click Next to accept the value.
	Class path:
	\${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar \${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar \${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cisuz.jar
	Directory location for "db2jcc.jar, db2jcc_license_cisuz.jar" which is saved as WebSphere variable \${DB2UNIVERSAL_JDBC_DRIVER_PATH} E:\lwq\DBDriver\DB2 9.5
	Native library path Directory location which is saved as WebSphere variable \${DB2UNIVERSAL_JDBC_DRIVER_NATIVEPATH}
Previous Net	Cancel

5. Click Finish.

Create	а	new	JDBC	Provide

	Step 1: Create new JDBC	Summary	
	provider	Summary of actions:	
	Step 2: Enter	Options	Values
	database class path information	Scope	cells:localhostNode01Cell:nodes:nlNode01
→	Step 3: Summary	JDBC provider name	DB2 Universal JDBC Driver Provider (XA)
	Step 5. Summary	Description	XA DB2 Universal JDBC Driver-compliant Provider. Datasources created under this provider support the use of XA to perform 2- phase commit processing. Use of driver type 2 on WebSphere Application Server for Z/OS is not supported for datasources created under this provider.
		Class path	<pre>\${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar \${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar \${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cisuz.j</pre>
		\${DB2UNIVERSAL_JDBC_DRIVER_PATH}	E:\lwq\DBDriver\DB2 9.5
		\${UNIVERSAL_JDBC_DRIVER_PATH}	\${WAS_INSTALL_ROOT}/universalDriver/lib
		Native path	\${DB2UNIVERSAL_JDBC_DRIVER_NATIVEPATH}
		\${DB2UNIVERSAL_JDBC_DRIVER_NATIVEPATH}	
		Implementation class name	com.ibm.db2.jcc.DB2XADataSource
	Previous Finish	Cancel	

6. Click the JDBC Provider that you just created.



	dial a sec			
	viders			
BC prov	viders			
	Messages			
	-	een made to your local configura	ation. You can:	
		the master configuration.		
		s before saving or discarding.		
	45 The server may	need to be restarted for these	changes to take effect.	
JDBC	providers			
		JDBC provider. The JDBC provide		
		s to the specific vendor databas		
this ta	isk in a <u>guided activity</u> . A guideo	d activity provides a list of task s	teps and more general infor	mation
about	the topic			
	the topic.			
	the topic. pe: Cell =localhostNode01Cell			
⊡ Scor	pe: Cell=localhostNode01Cell	, Node= nlNode01 ch the resource definition is visib		
⊡ Scor	pe: Cell=localhostNode01Cell	, Node= nlNode01		
⊡ Scor	pe: Cell=localhostNode01Cell	, Node= nlNode01 ch the resource definition is visib		
Scop	pe: Cell=localhostNode01Cell cope specifies the level at whic in what scope is and how it wo Node=nlNode01	, Node= nlNode01 ch the resource definition is visib		
Scop	pe: Cell=localhostNode01Cell, icope specifies the level at whic in what scope is and how it wo	, Node= nlNode01 ch the resource definition is visib		
Scop	pe: Cell=localhostNode01Cell cope specifies the level at whic in what scope is and how it wo Node=nlNode01	, Node= nlNode01 ch the resource definition is visib		
E Scop S o Pref	pe: Cell=localhostNode01Cell, scope specifies the level at whic in what scope is and how it wo Node=nlNode01 ferences	, Node= nlNode01 ch the resource definition is visib		
Scop S o	pe: Cell=localhostNode01Cell, icope specifies the level at whic in what scope is and how it wo Node=nlNode01 ferences Delete	, Node= nlNode01 ch the resource definition is visib		
 Scolor S o Pref New Image: Construction of the second s	pe: Cell=localhostNode01Cell, icope specifies the level at whic in what scope is and how it wo Node=nlNode01 ferences Delete	, Node= nlNode01 ch the resource definition is visib rks, <u>see the scope settings help</u>		
Scop S o	pe: Cell=localhostNode01Cell, icope specifies the level at whic in what scope is and how it wo Node=nlNode01 ferences Delete Name \$, Node= nlNode01 ch the resource definition is visib prks, <u>see the scope settings help</u> ✓ Scope ≎	Description XA DB2 Universal JDB compliant Provider. D	C Driver atasour
 Scolor S o Pref New Image: Construction of the second s	pe: Cell=localhostNode01Cell, icope specifies the level at whic in what scope is and how it wo Node=nlNode01 ferences Delete Delete Name DB2 Universal, JDBC Driver	, Node= nlNode01 ch the resource definition is visib prks, <u>see the scope settings help</u> ✓ Scope ≎	Description XA DB2 Universal JDB	C Driver atasour ovider

7. Click Data sources, under Additional Properties.

Messages	
Modifying the implementation class na	
data sources and data sources version 4	
 Save directly to the master configura 	
Review changes before saving or dis	carding.
⚠ The server may need to be restarted	for these changes to take effect.
DBC providers > DB2 Universal JDBC Driver Provider ((AX
Ise this page to edit properties of a JDBC provider. The JD	BC provider object encapsulates the specific
river implementation class for access to the specific vendo	or database of your environment.
river implementation class for access to the specific vendo Configuration	or database of your environment.
	or database of your environment.
	Additional Properties
Configuration General Properties * Scope	Additional Properties
Configuration General Properties	
Configuration General Properties * Scope	Additional Properties
Configuration General Properties * Scope cells:localhostNode01Cell:nodes:nlNode01	Additional Properties Data sources Data sources Data sources Data sources Application associated with yours
Configuration General Properties * Scope [cells:localhostNode01Cell:nodes:nlNode01 * Name	Additional Properties
Configuration General Properties * Scope cells:localhostNode01Cell:nodes:nlNode01 * Name DB2 Universal JDBC Driver Provider (XA) Description XA DB2 Universal JDBC Driver-	Additional Properties Data sources Data sources Data source this page to edit t Application associated with your s source object supplies
Configuration General Properties * Scope cells:localhostNode01Cell:nodes:nlNode01 * Name DB2 Universal JDBC Driver Provider (XA) Description XA DB2 Universal JDBC Driver- compliant Provider. Datasources	Additional Properties Data sources Data sources Data source this page to edit t Application associated with your s source object supplies
Configuration General Properties * Scope cells:localhostNode01Cell:nodes:nlNode01 * Name DB2 Universal JDBC Driver Provider (XA) Description XA DB2 Universal JDBC Driver-	Additional Properties Data sources Data sources Data sources Application source object supplie

 Messages Changes have been made to your local configuration. You can: <u>Save</u> directly to the master configuration. <u>Review</u> changes before saving or discarding. The server may need to be restarted for these changes to take effect. 						
	lers > DB2 U	Iniversal JDBC Dri	ver Provider (X/) > Data sources		
Jse this pag lata source his task in a about the to	e to edit the object suppli a <u>quided activ</u> ppic.	settings of a data es your application <u>vitv</u> . A guided activit	with connections	for accessing the	database. Learn	more about
Use this pag data source	e to edit the object suppli a <u>quided activ</u> pic. es	es your application <u>ity</u> . A guided activit	with connections	for accessing the	database. Learn	more about
Use this pag data source this task in a about the to ∄ Preference	e to edit the object suppli a <u>guided activ</u> pic. es tte <u>Test c</u>	es your application <u>ity</u> . A guided activit	with connections ty provides a list (for accessing the	database. Learn	more about

9. Enter jdbc/DB2XADS for JNDI name.

10. Under Component-managed authentication alias and XA

recovery authentication alias, select the name of the authentication alias you previously created from the drop-down list. Click **Next**.

Create a data source

→ Step 1: Enter basic data	Enter basic data source information
source information Step 2: Enter database specific	Set the basic configuration values of a data source for association with your JDBC provider. A data source supplies the physical connections between the application server and the database.
properties for the data source	Requirement: Use the Data sources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans (TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification.
Step 3: Summary	Scope cells:localhostNode01Cell:nodes:nlNode01
	JDBC provider name DB2 Universal JDBC Driver Provider (XA)
	* Data source name DB2 Universal JDBC Driver XA DataSource
	* JNDI name jdbc/DB2XADS
	Component-managed authentication alias and XA recovery authentication alias Select a component-managed authentication alias. The selected authentication alias will also be set as the XA recovery authentication alias if your JDBC Provider supports XA. If you choose to <u>create a new</u> J2C authentication alias, the wizard will be canceled.
	Alias_DB2
Next Cancel	

11. Enter the values below for **Database name** and **Server name**. Click **Next**.

ate a data source	
Create a data source	
Step 1: Enter basic data source	Enter database specific properties for the data source
information	Set these database-specific properties, which are required by the database vendor JDBC driver to support the connections that are managed through this
→ Step 2: Enter database specific properties for the data source	data source. * Database name sampledb
Step 3: Summary	* Driver type
	* Server name 9.186.116.206
	* Port number 50000
	✓ Use this data source in container managed persistence (CMP)

12. Click Finish.

Create a data source

```
Create a data source
```

Step 1: Enter basic data source	Summary				
information	Summary of actions:				
Step 2: Enter	Options	Values			
database specific properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01			
data source	Data source name	DB2 Universal JDBC Driver XA DataSource			
→ Step 3: Summary	JNDI name	jdbc/DB2XADS			
	Component-managed authentication alias	Alias_DB2			
	Select an existing JDBC provider	DB2 Universal JDBC Driver Provider (XA)			
	Implementation class name	com.ibm.db2.jcc.DB2XADataSource			
	Database name	sampledb			
	Driver type	4			
	Server name	9.186.116.206			
	Port number	50000			
	Use this data source in container managed persistence (CMP)	true			
Previous Finish	Cancel				

13. In the Messages area, click **Save**. This will save changes made to the local configuration onto the master configuration.

JDBC providers

	Messages					
	 Changes have been made to your local configuration. You can: <u>Save</u> directly to the master configuration. <u>Res w</u> changes before saving or discarding. 					
	rthe∆	e server may need t	to be restarted for t	these changes to	take effect.	
1DBC I	providers > DB2	Jniversal JDBC Dri	ver Provider (XA)	> Data sources		
data s		ies your application	with connections for	or accessing the o	database. Learn	more about
data s this ta about	ource object suppl sk in a <u>quided acti</u> the topic. erences	ies your application vity. A guided activit	with connections for	or accessing the o	database. Learn	more about
data s this ta about ∄ Pref New	ource object suppl sk in a <u>quided acti</u> the topic. erences	ies your application vity. A guided activit	with connections for ty provides a list of	or accessing the o	database. Learn	more about
data se this ta about	ource object suppl sk in a <u>quided acti</u> the topic. ferences Delete Test c	ies your application vity. A guided activit	with connections for ty provides a list of	or accessing the o	database. Learn	more about

14. Select the check box next to the Data source you just created. Click **Test Connection**.

BC prov	viders					12
JDBC I	providers > DB2 L	Iniversal JDBC Dri	ver Provider (XA)	> Data sources		
data so this tas	ource object suppli	settings of a data s es your application <u>vity</u> . A guided activit	with connections for	or accessing the d	latabase. Learn	more about
⊞ Pref	erences					
New	Delete Test o	onnection Man	age state			
QC) 🕂 🐔					
Select	Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
Total	1					

The connection test should succeed as indicated by the message shown in the figure below. For troubleshooting issues while testing the connection, see the Troubleshooting section. JDBC providers

BC providers					?
 Messages The test connection operation for data source DB2 Universal JDBC Driver XA WitaSource on server server1 at node nlNode01 was successful. Information 					
JDBC providers > DB2	Jniversal JDBC Dri	ver Provider (XA)	> Data sources		
data source object supp this task in a <u>quided acti</u> about the topic.	Use this page to edit the settings of a data source that is associated with your selected JDBC provider. The data source object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.				
Preferences					
New Delete Test of	onnection Mar	nage state			
0 1 # 7					
Select Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
DB2 Universal JDBC Driver XA DataSource	jdbc/DB2XADS	Node=nlNode01	DB2 Universal JDBC Driver Provider (XA)	DB2 Universal Driver Datasource	
Total 1					

15. Close the Administrative Console tab.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

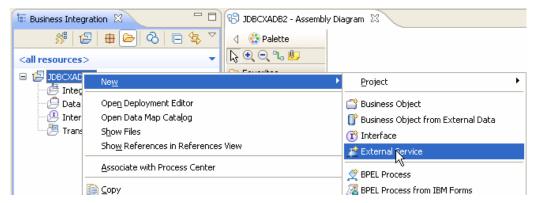
- 1. Switch to the Business Integration perspective in IBM Integration Designer.
- 2. Select **File->New->Module** to create a Module project.

🐣 Business Integration - IBM Int	egration Designe	🖄 Integration Solution
<u>Eile</u> Edit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject	Abbot Aries Test	🗳 Module
<u>N</u> ew	Alt+Shift+N 🕨	🖄 Mediatioù Module
Open File <u>.</u>		🏥 Library
⊆lose	Ctrl+W	🏰 DataPower Library
Close All	Ctrl+Shift+W	😭 Component Test Project
U Save	Ctrl+S	₽roject
Save As	CONTRACTOR	artifact Evolution
R Save All	Ctrl+Shift+S	Sector Station
Revert		BPEL Process from IBM Forms
Moue		Business Calendar
Mo <u>v</u> e Rename	F2	Business Object
Refresh	F5	Business Object from External Data
		📥 Business Service

3. Specify the module name as JDBCXADB2, and click Finish.

🚯 New Modu	le 📃 🗖 🔀
Create a Mo Use a module to module can con	o integrate business applications and services. A tain any type of component and can be deployed on
Module name:	JDBCXADB2
Location: E:\\	WID7.5_sample\JDBCXADB2
?	< Back Next > Einish Cancel

4. Right-click JDBCXADB2, select New->External Service.



5. Select JDBC, and click **Next**.

🕀 New External Service	$ \times $
Select the Service Type or Registry	
Eilter: type filter text Available types:	æ
DBC Lotus Domino Oracle E-Business Suite PeopleSoft SAP	<
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application that runs in IBM Process	<
(?) < <u>Back</u> <u>Next</u> > <u>Einish</u> Cancel	

6. Select IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0). Click Next.

🚯 New External Service	
Select an Adapter	NS3
Select the version of the adapter that you want to use.	
<u>.</u>	
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	>
C Back Next > Einish	Cancel

7. In the **Target Runtime environment** field, select the appropriate runtime and click **Next**.



🥵 New External Service)		
Import a RAR File Import a resource adapter archive (RAR) from the file system to create a connector project for the adapter.			
Archive file: Connector project: *	E:\WID75.image\ResourceAdapters\JDBC_7.8 C_JDBC.rar CWYBC_JDBC	5.0.0\CWYB	
Target runtime enviroment:	IBM Process Server v7.5	~	
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel	

8. Click **Add** to add the JDBC driver jar to the class path, and click **Next**.

🔀 New External Service				
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.				
When deploying the application to a stand-alone server, these files must configured on the server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the da server. JDBC driver JAR files are shipped with the database installation. I not have a local database installation, you can download these files from site of the database vendor. JDBC driver JAR files:	atabase If you do			
E:\Yuanjs\db2\db2jcc_jar E:\Yuanjs\db2\db2jcc_license_cu.jar	Add Remove			
Specify the location of the database-specific native system libraries required to access the database server. This is required if you are using a Type 2 driver implementation. The native libraries are shipped with the database server and client installations. System libraries:				
	Add Remove			
? < Back	Cancel			

9. Select **Outbound** and click **Next**.

🚯 New External Service				
Select the Processing Direction Select the direction of adapter processing at run_time.				
○ Inbound				
Inbound processing passes data from the adapter to your service export.				
Outbound				
Outbound processing passes data from your service import to the adapter.				
< Back				

Set connection properties for the external service wizard

To connect to the database:

- 1. Expand the **DB2** node in the **Database system connection information** area and select appropriate version,
- 2. Enter values in the **Database**, **Host name**, **Port number**, **User name** and **Password** fields, and click **Next**.

New External Service				
Specify the Discovery Prop	perties			
Connection properties Database system connection info Database system connection info DB2 UDB V7.2 V8.1 V8.2 V8.2 V9.1 Connection info V7.2 Connection info Connection info Connecti	Properties: JDBC driver type: Database: * Host name: * Port number: * JDBC driver class name: * Database URL: Additional JDBC driver	IBM DB2 Universal Image: Constraint of the second seco		
Cool Hamor	* db2admin	·		
Password: * ******** Prefix for business object names:				
?	< Back	ext > Einish Cancel		

Select the business objects and services to be used with the adapter

- 1. Click **Run Query** to list the tables, stored procedures, views, and synonyms for each schema in the database.
- 2. Select **DB2ADMIN->Tables-> CUSTOMER** and click the **> (Add)**. The CUSTOMER table is added to the **Selected objects** list.

4 New External Service	
Find Objects in the Enterprise System ^ん ② No discovered object is selected.	₽O,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database obje	Edit Query
Run Query	
Discovered objects: Selected objects:	
CUSTINFO CUSTOMER CUSTOMER_CR88528 CUSTOMERACCOUNT CUSTOMERIDENTIFIER CUSTOMERMK CUS	
(?) < <u>Back</u> Next > Einish	Cancel

3. Click Next.

🚯 New External Service	at the second se	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. query, then click Run Query to run it.	Click Edit Query to create the	HO,
Query: SchemaFilterLabel=null,Schema name or patter Run Query	rn=null,Supported database objev	Edit Query
Discovered objects:	Selected objects:	
CUST1 CUSTINFO CUSTOMER CUSTOMER_CR88528 CUSTOMERACCOUNT CUSTOMERIDENTIFIER CUSTOMERMK CUSTOMERMK CUSTOMERMK CUSTOMERMK CUSTOMERMK	CUSTOMER	
(?) < <u>B</u> ack	Next > Einish	Cancel

Generate business object definitions and related artifacts

1. In the Specify Composite Properties window, accept the default settings and click **Next**.

Rew External Service	
Specify Composite Prope	rties
Specify properties that apply to all :	selected objects.
Operations for selected business ob Operations for these functions	ojects
Create Update UpdateAll Delete DeleteAll	Add Remove
Custom Business Faults	
Pattern for the Custom Busines	
Pattern String	Custom Fault Name Add
	Remove
Create and configure user-defined Wrapper object names:	wrapper objects
	Add Remove
Business object namespace:* http	://www.ibm.com/xmlns/prod/websphere
Specify the relative folder for gener	
Folder:	
Generate a business graph for e	ach business object
Advanced >>	
? < <u>B</u> ack	Next > Einish Cancel

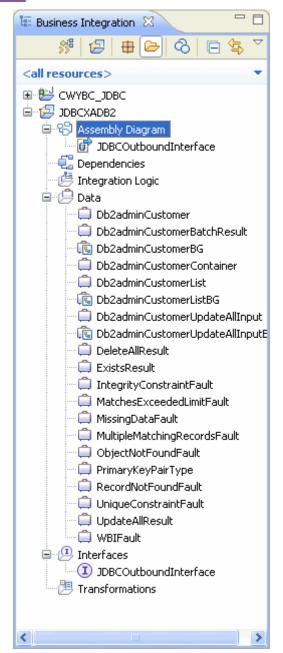
2. Select the security credential type as **Other**. Specify the **XA DataSource JNDI name** property as **jdbc/DB2XADS**. Click **Next**.

🚯 New External Service		
Specify the Service Generation Specify properties for generating the service		
Deployment Properties How do you want to specify the secu OUsing an existing JAAS alias (reco A Java Authentication and Autho		🔊
J2C authentication data entry:		Select
OUsing security properties from the	managed connection factory	
The properties will be stored as p	lain text; no encryption is used,	
User name:	db2admin	
Password:	*****	
() Other		
deployed on the server and secu name. The quality of service that is used to	vill be handled by the EIS system, or the RAR will be rity will be specified by the properties in the JNDI l join the transaction provides a higher degree of da curs. To join a gladal transaction, specify a predef ection information. <u>More</u>	ookup ata
Deploy connector project:	With module for use by single application 🛛 🗸	
Specify the settings that are used to	connect to JDBC at run time:	
Connection settings:	Specify connection properties	
Connection Properties		
	tify a predefined XA datasource or XA database ot joining a global transaction, either the XA conne on information can be specified.	ction
Database connection information	Specify predefined XA DataSource	~
Database system connection		
Database vendor:	DB2	
XA DataSource JNDI na	ne:* jdbc/DB2XADS	
? (< <u>B</u> ack <u>N</u> ext > Einish	Cancel

3. Click Finish.

🚯 New External	l Service				
Specify the Location Properties					
Properties for Serv	vice				
Module:	JDBCXADB2	New			
Namespace:	http://JDBCXADB2/JDBCOutboundInterface]			
	✓ Use the default namespace				
Folder:	1	Browse			
Name: *	JDBCOutboundInterface]			
	Save business objects to a library				
Library;	v	New			
Description:]			
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel			

Verify the results shown below.

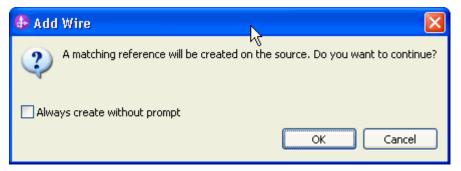


Set up the components to be part of the XA environment

- 1. In the **Business Integration** tab, under **JDBCXADB2** double-click **Assembly Diagram** to open it.
- 2. In the Palette, expand **Components** and drag **Untyped Component** to Assembly Diagram editor, and name it as **Component1**.

😵 *JDBCXADB2 - Asseml	bly Diagram 🛛	
 ✓ Selector ✓ Palette ✓ Palette ✓ Pavorites ✓ Components ✓ Components ✓ Untyped Component ✓ Human Task ✓ Java ✓ Mediation Flow ✓ Process ✓ Rule Group ✓ State Machine ✓ Import ✓ Export ✓ References ✓ Interface Map (De ✓ Selector 	JDBCXADB2/sca.module	DBCOutboundInterface
🔁 Outbound Imports		
🕞 Inbound Exports		
🔁 Outbound Adapters		
🕞 Inbound Adapters	<	

3. Wire **Component1** to **JDBCOutboundInterface**. In the Add Wire message window, click **OK**.



4. Right-click **Component1** and select **Add > Interface**.

WebSphere. software		
Cor	mponent1 \swarrow 20 20 JDBCOutboundInterface \swarrow 20 Londo Add Wire \searrow Redo \circledast Add Note Hide Notes	
	Add	Interface
	Change Type	<u>R</u> eférence
	Convert to Import	
	Generate Export	
	Generate Implementation	
	Select Implementation Open	
	Synchronize Interfaces and References •	
	 <u>R</u> efactor	
	Merge Components	
	Ne <u>w</u> Process Version	
	of Cut	
	Сору	
	C Desta	

5. In the Add Interface window, click **New**.



🤀 Add Interface	
Filter by interface or qualifier (\searrow any character, *	' = any string):
*	New
Matching interfaces:	
 Show WSDL and Java Show WSDL 	
Show Java	
Qualifier:	
Thttp://JDBCXADB2/JDBCOutboundInterface -	JDBCXADB2/JI
	>
ОК	Cancel

6. Enter CustomerInterface in the Name field. Click Finish.

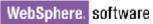
🚯 New Interfac	N N	
Create an Inte Enter a name for the new interface	the new interface and select a module and a parent fol	der (optional) where
<u>M</u> odule or library:	JDBCXADB2	Browse New
Name <u>s</u> pace: F <u>o</u> lder:	http://JDBCXADB2/CustomerInterface	Browse
N <u>a</u> me:	CustomerInterface	
?	< <u>B</u> ack <u>N</u> ext >	Einish Cancel

7. Click ³ to add a new operation for **CustomerInterface** interface.

3	*JDBCXADB2 -	Assembly Diag	ram 🕕 *CustomerIn	iterface 🛛		
-	Interface		-			
0	onfiguration					
	Name	CustomerInter	face	Refactor name		
	Namespace	http://JDBCXA	DB2/CustomerInterface	Refactor namespac	e	
	Binding Style	document liter	al wrapped	Change binding sty	le to document literal non-wrapped	More
- c	•Operations Image: Second second					
	 W operation Inputs 		input1		string	
	Outputs Output					
<						>

	DB2 - Assembly Dia	ıgram 🕕 🛈 *CustomerIn	iterface 🗙			
▼Interfac	e 🔳					
Configurati	ion					
Name	CustomerInt	erface	Refactor name			
Namespa	ce http://JDBC	ADB2/CustomerInterface	Refactor namespac	e		
Binding S	tyle document lit	eral wrapped	Change binding styl	e to d	ocument literal non-wrapped	More
▼Operatio Operations	ons 🐉 🗄	🏷 🕞 🖓 🎜 🦊 i ters	8			
		Name		Туре		
🔷 😽 inv	oke					
🗊 Input	:s	input1		string	, Γ	
📫 Outp	uts	output1		strin	Browse	~
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					🤜 boolean	=
					🔜 date	
<					ateTime	
		(= n (] n	(B			
66 Task Flow	꿈 Task Flow 🏽 🖓 Build Activi 🔲 Properties 🔝 Problems 📓 Server Lo 🏾 👫 Ser 📮 💭 Float					
	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □					
AJAX	Test Server [Stop	oped]			string	~
IBM F	Process Server v7.	5 at 9.119.154.112 [Profilin	g, Synchronized]			> .::

8. Rename the operation name to **invoke**. Click Type for Inputs parameter, and select **New**.



S *JDBC>	(ADB2 -	Assembly Diag	ram 🕕 🛈 *CustomerIr	terface 🗙			
▼Interl	face						
Configur	ation						
Name		CustomerInter	rface	Refactor name			
Names			ADB2/CustomerInterface	Refactor namespace	_		
Binding		document liter		Change binding style to document literal non-wrapped	More		
▼Opera	ations	/ 😻 🖏) 🖻 🔊 🖗 😹	8			
Operatio	ons and	their paramete	rs				
			Name		Туре		
- 😽 i	invoke						
Dl Ing	outs		input1		string]	-1
📫 Ou	Itputs		output1		strin	Browse	
			1			New	
						📮 boolean	
						alate	
						ateTime	
						G double	
						🛱 float	
						📮 hexBinary	
						🛱 int	
						🛱 string 🗸 🗸	
						<	

9. In the **New Business Object** window, enter **Source** in the **Name** field. Click **Next**.

🚯 New Busines	s Object		
Create a Busi Business objects a such as a custome	re containers for application data that represent busin	ess functions or elements,	
Module or library:	JDBCXADB2	Browse	w
Name <u>s</u> pace:	http://JDBCXADB2	✓ Default	
F <u>o</u> lder:		Browse	
N <u>a</u> me:	source		
Inherit from:	<none></none>	Browse Ne	ew
require a global ele	oy default, are created as global complex types. Howe ment. <u>More</u> ness object as an element	ver, some integration scenar	ios might
?	< <u>B</u> ack	t > <u>F</u> inish	Cancel

10. From the list of **Available business objects**, select the **Db2adminCustomer** to add all of the Customer business objects's attributes to the Source business object. Click **Finish**.

🚯 New Business Object	N			
Derived Business Object Populate the new business object with fields	ん from one or more e>	kisting business ob	ojects.	
Available business objects:	Fields to	include:	Туре	
Db2adminCustomerBatchResult Db2adminCustomerContainer Db2adminCustomerList Db2adminCustomerUpdateAllInput Db2adminCustomerUpdateAllInput DeleteAllResult ExistsResult	http:// ♥ € http:// ♥ € http:// ♥ €	pkey fname Iname ccode	string string string string	
?	< <u>B</u> ack	Next >	Einish	Cancel
Business Object editor, click	to add three	e new fields f	or Source	

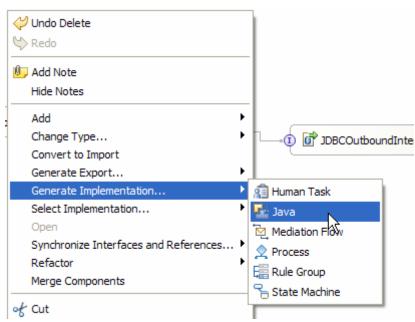
11. In the Business Object editor, click ¹ to add three new fields for **Sour** business object.

*JDBCXADB2	- Assembly Diagram	(I) *CustomerInterface	🛱 *Source 🛛
•Business o	bject 🔲		
Configuration			
Name	Source	Refactor name	
Namespace	http://JDBCXADB2	Refactor namespace	
■Definition	· 🔊	ၳ ᡧ ✖│	
📋 Source	•		
⇒i ⇒i> <click< td=""><td>to filter></td><td></td><td></td></click<>	to filter>		
e pkey	string		
e fnam	e string		
e Inam	e string		
e ccod	e string		
e field:	l string		
e field2	2 string		
e field3	string		

12. Then rename these three new fields as **operation**, **objectName** and **namespace**.

8 *JDBCXADB2	- Assembly Diagram	m (I) *CustomerInterfac	e 🗇 *Source 🛛
▼ Business o	bject 🔲		
Configuration			
Name	Source	Refactor name	
Namespace	http://JDBCXADB2	2 Refactor namespace	
e pkey	to filter> string	û û 🗶 🤅	
e fnam			
e Inam			
e ccod	e string		
e oper-	ation string		
e objec	tName string		
e name	espace string		

- 13. Select File->Save All to save all the changes.
- 14. Right click on **Component1** in the Assembly Diagram and select **Generate implementation... -> Java**.



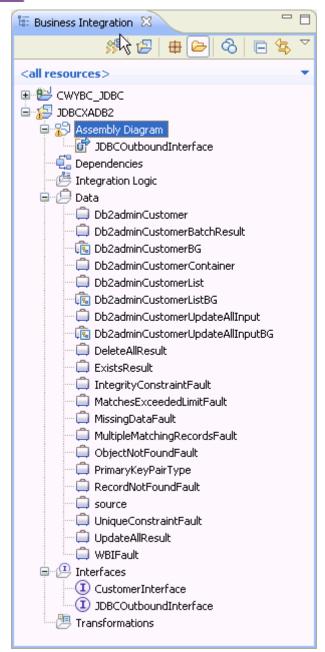
- 15. In the **Generate Implementation** window, select **default package** and click **OK**.
- 16. In the text editor of Component1Impl.java file, add the following imports.

🕄 JDBCXADB2 - Assembly Diagram 🛛 🛈 Cus	tomerInterface	📮 Source	🚺 Component1Impl.java 🛛
import com.ibm.websphere.so	ca.Service;		
import com.ibm.websphere.so	ca.Ticket;		
import commonj.sdo.DataObje	ect;		
import com.ibm.websphere.so	ca.ServiceMan	ager;	
import com.ibm.j2ca.base.Sl	OFactory;		
import com.ibm.j2ca.base.ex	ceptions.Bus	inessObject	tDefinitionNotFoundException;
public class Component1Imp:	1 {		
⊖ /**			
* Default constructor.			
*/			
public Component1Impl()	{		
<pre>super();</pre>			
}			

17. Add the following implementation for **invoke**() method.

```
public String invoke(DataObject input1) throws
BusinessObjectDefinitionNotFoundException {
     String objName =
input1.getString("objectName");
     String namespace =
input1.getString("namespace");
     DataObject customerBO =
SDOFactory.createDataObject(namespace, objName);
     DataObject customerBG =
customerBO.getContainer();
     customerBO.setString("pkey",
input1.getString("pkey"));
     customerBO.setString("fname",
input1.getString("fname"));
     customerBO.setString("lname",
input1.getString("lname"));
     customerBO.setString("ccode",
input1.getString("ccode"));
     String op = input1.getString("operation");
     String operation =
op.toLowerCase()+customerBG.getType().getName();
  locateService_JDBCOutboundInterfacePartner().in
voke(operation, customerBG);
     return "Success";
  }
```

18. Select File > Save All to save all the changes.



Deploy the module to the test environment

The result of running the external service wizard is an SCA module that contains an Enterprise Information System import. Install this SCA module in IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.
- 2. In the Servers tab in the lower-right pane of the IBM Integration Designer screen, right-click the server, and select **Start**.

3. After the server is started, right-click the server, and select **Add and Remove projects**.

Process		F _	Add and Renove		
Rule Group			Monitoring		►
State Machine			– Modern Batch Job Management Console		
Import		0	Create Tables and Data Sources		
Export		_	Reconnect Debug Process		
References		23	View and Publish Changes to Server		
Interface Map (De		fi i	Manage Server Profiles		
Selector		‡₿	Export Dynamic Endpoint Selection Configuration		
Outbound Imports		78	Import Dynamic Endpoint Selection Configuration		
		‡₿	Update Vocabularies and Related Artifacts		
Inbound Exports			Server Configuration		►
Outbound Adapters			Universal Test Client		►
Inbound Adapters			Administration		•
(0)			Launch		•
Task Flows	Activities 🖾 Properties 🛣		Add and Remove Integration Solution Projects		۲
BM Process Server	[Stopped] er v7.5 at 9.119.154.112 [Pro		Properties	Alt+Enter	

 In the Add and Remove Projects window, select the module created earlier and click Add. The project is added to the Configured Projects list from the Available Projects list.

		o configure them on the s		
<u>A</u> vailable pro	jects:		<u>C</u> onfigured projects:	
		Add > < Remove Add All >> << Remove All		
VIF correct is	atortod public	ish changes <u>i</u> mmediately		

5. Click **Finish**. This deploys the project on the server. For troubleshooting issues while adding the project, see the Troubleshooting section. The Console tab in the lower-right pane displays a log while the module is being added to the server.

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client:

1. From the Business Integration view, right click on **JDBCXADB2** and select **Test > Test Module**.

😨 Business Integration 🛛	-		😵 *JDBCXADB2 - Assem
S 🔁	🖶 🗁 🗞 🖻 🕏	$\overline{}$	• name *
			* The
<all resources=""></all>		Ť.	* type
E 😫 CWYBC_JDBC			* on t
E SDBCXADB2	_		* @thi
Assembly Diagram			*/
	Ne <u>w</u>		- 😑 public
Dependencia	<u>O</u> pen		- //
🖳 🚰 Integration l 🖃 🤔 Data	Open Wit <u>h</u>	•	11
Data Db2admi	S <u>h</u> ow Files		11
🛄 Db2admi 📄			- //
🖳 💼 Db2admi 👼	⊆opy		11
🗌 🗍 Db2admi	<u>P</u> aste		Sti
📋 Db2admi 🗙	Delete		Str
💼 Db2admi 📐	Import		Dat
📃 🔄 🔤 Dh2admi 📃			Dat
🖳 🗓 Db2admi	Export		_
🗍 💭 DeleteAl	Refresh		<
🛑 ExistsRe 🗌	-		- Task Flows 🙆 Build
🗐 Integrity	Add to Asset Repository		
🗐 Matches	Export as Image		🔒 AJAX Test Server
🦳 🧰 MissingD 😭	Generate Documentation		IBM Process Serv
— 🧰 MultipleN	Test	•	🜔 Test <u>M</u> odule
🔲 ObjectNi	<u>V</u> alidate		🔄 <u>A</u> ttach 🗟
🔲 Primaryk	<u>validate</u> T <u>e</u> am	•	
RecordN	Compare With		
UniqueC	Replace With		
UpdateA	Nopjaco men		-
	Properties		

2. From the **Component** list, select **Component1**. Specify the parameters as shown in the figure below.



Integration Test Client: JDBCXADB2_Test

Events	⊧ Ge	neral Prop	erties			
This area displays the events in a test trace. Select an event to display its properties	⊤ De	tailed Prop	erties			
This area displays the events in a test trace. Select an event to display its proper in the General Properties and Detailed Properties sections. <u>Hore</u>	Specifi the Co <u>Confi</u> <u>Modu</u> <u>Comp</u> <u>Inter</u> <u>Oper</u> Initial	y the comport intinue icon ii iguration: [Je: [joonent: [face: [ation: [ient, interface the Events a Default Modul JDBCXADB2 Component1 CustomerInte nvoke ameters: 	area to run the test. <u>Mor</u> e Test		lick
			key name name	Source string string string string string string string	 ✓ 300 ✓ abc ✓ xyz ✓ IBM ✓ Create ✓ Db2adminCustomerBG ✓ http://www.ibm.com/xmlns/pro 	

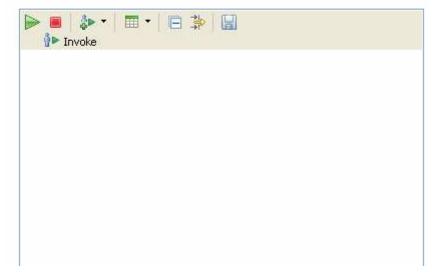
Note: Set the operation value to Create; set the objectName value to Db2adminCustomerBG; set the namespace value to http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc/db 2admincustomerbg.

3. Click k to continue.

Integration Test Client: JDBCXADB2_Test

Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. More...



4. In the Select Deployment Location window, select your server, and click Finish.

🚯 Deployment Location	
Select a Deployment Location	
This server instance is currently running.	
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at 9.119.154.112 WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run]
Use this location as the default and do not ask again	
① To change the default location elsewhere, open the Properties window for the project Business Integration > Integration Test Client.	ct and select
? Einish	Cancel

5. Once the service is executed successfully, the customer record will be created in the target database. To verify the result, connect to the database and run the following SQL query:

SELECT * FROM CUSTOMER WHERE pkey = '300';

Clear the sample content

Return the data to its original state by deleting the Customer record you created in the CUSTOMER table by connecting to the database and running the SQL query:

DELETE FROM CUSTOMER WHERE pkey = '300';

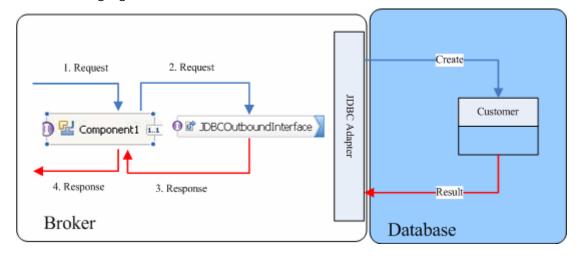
Chapter 9. Tutorial 8: Sending data to the Oracle database with XA transaction (outbound processing)

This scenario demonstrates how WebSphere Adapter for JDBC 7.5.0.0 participates in a global transaction using a XA data source for Oracle database.

About this task

In this scenario, we will create a Java component and a JDBC adapter import component. The Java component invokes JDBC adapter to make changes to the database. Both, the java component and JDBC adapter will participate in the same global transaction.

The following figure illustrates the scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create a table
- Create an authentication alias
- Create a data source

Create a table

You must create the following table in the Oracle database before starting the scenario.

Script for creating the CUSTOMER table:

```
CREATE TABLE CUSTOMER (

PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,

FNAME VARCHAR2(20) ,

LNAME VARCHAR2(20) ,

CCODE VARCHAR2(10) ) ;
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

Business Integration - IBM	Integration Des	igner 7.5 - D:\workspace\201	0\Sample75	
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> ro	iject <u>R</u> un <u>D</u> iagran	Services Samples AST JUnit Tests	<u>W</u> indow <u>H</u> elp	
	er i 🕆 🖉 🗸	🖉 🔹 🕴 Link Indexer FVTs 👘 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 📑 🐯 Business Inte
🕼 Business 🛛 🗖 🗖			Open Perspective	Co Build Activities
✓ </th <th>></th> <th>Start working Start to work by creating a a project into your worksp. Learn more</th> <th>Close All Perspectives Navigation * Switch to Process Center</th> <th>Image: Environ service of the servi</th>	>	Start working Start to work by creating a a project into your worksp. Learn more	Close All Perspectives Navigation * Switch to Process Center	Image: Environ service of the servi
Ģ		Getting Started with IBN Getting Started with IBN uld Activities The Properties Properties	<u> 1 Process Center</u>	 References Server Logs Servers Task Flows ✓ Tasks
		Server v7.5 at localhost [Started, Syn		😰 TCP/IP Monitor 🔂 Visual Snippets
				Qther Alt+Shift+Q, Q
🕴 🗘 📮 🖡 1 items selected				

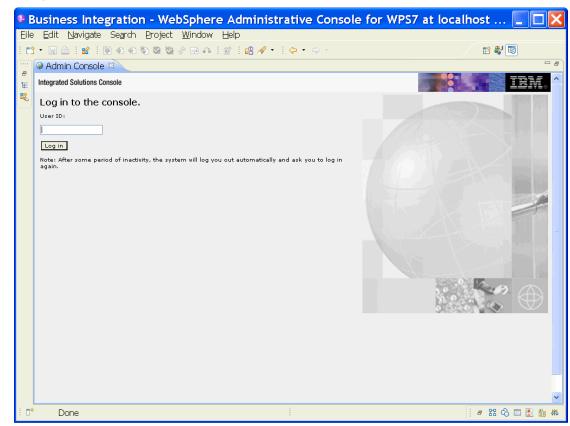
2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace \2010 \Sampl 🔳 🗖 🔀						
<u>F</u> ile <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp						
i 📬 🖬 🗟 📄 🔡 i 😭 i 😭	😤 🛷 🔹 🔛 📴 Business Inte						
Link Indexer FVTs Link Indexer APTs BTree tests WDE APTs							
🚥 🔀 Task Flow 🙆 Build Activ 🔲 Properties 🔝 Problems							
	☆ O Ø = ഈ ⊂ 🖁						
IBM Process Server v7.5 at localhost [Stopped, Synch	ronized						
	Ne <u>w</u>						
	Open						
	Show In						
	📄 Сору						
	🛱 Paste						
	💢 Delete						
	Rename						
	🏇 Debug						
	😢 Start 📉						
	profile 😽						
	🔳 Stop						
	📳 Publish						
🗄 🗋 ት 🔚 1 items selected	<u>C</u> lean						

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

😰 IBM Process Server v7.5 at localhost [Started, Synch	ronized1
	Ne <u>w</u>
	Open
	Show In
	П Сору
	Paste
	🗙 Delete
	Rename
	🐝 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	Stop
	🕮 Publish
	📇 Add and Remove
	 Monitoring
	📋 Create Tables and Data Sources
	Reconnect Debug Process
	👷 View and Publish Changes to Server
	Manage Server Profiles
	Configuration
	Import Dynamic Endpoint Selection Configuration
	Contract Contract Contracts and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.



- View: All tasks Welcome 🗄 Guided Activities 🗄 Servers 🗄 Applications 🗄 Services 🗄 Resources 🖯 Security Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security 🗄 Environment \boxplus Integration Applications \pm System administration 🛨 Users and Groups 🗄 Troubleshooting \pm Service integration 🗄 UDDI
- 5. Click Security → Global security

6. Under Java Authentication and Authorization Service, click J2C authentication data.



l=localhostNode01Cell, Profile=AppSrv01	Close page
bal security	
Global security Use this panel to configure administration and the default application security	y policy. This security configuration applies to
functions and is used as a default security policy for user applications. Securit applications.	
Security Configuration Wizard Security Configu	ration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative administrative authentication	Authentication Authentication mechanisms and expirate
Application security	Kerberos configuration SWAM (deprecated): No authenticat
Java 2 security □ Use Java 2 security to restrict application access to local resources ✓ Warn if applications are granted custom permissions □ Restrict access to resource authentication data	Authentication cache settings Web and SIP security RMI/IIOP security Java Authentication and Authorizatio Application logins
User account repository Current realm definition	System logins J2Gauthentication data
Available realm definitions	Specifies a list of user identities and passwo for Java(TM) 2 connector security to use.
Federated repositories Configure Set as current	 <u>Security domains</u> <u>External authorization providers</u> Custom properties

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

🗹 Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

٦

New Delete 00 # 4 Select Alias 🔷 User ID 🗘 Description 🗘 You can administer the following resources: BSpace JDBC Alias wbiuser Business Space Authorization Alias CommonEventInfrastructureJMSAuthAlias wbiuser Authentication alias for the Common Event Infrastructure JMS Topics and Queues SCA Auth Alias wbiuser This is the alias used by SCA to login to a secured SIBus Derby localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby authentication alias for the **Event Server** Total 4

7. Click **New** to create a new authentication entry. Type the alias name and a username and password that can connect to the database, as shown in the figure. Click **OK**.

Cell=localhostNode01Cell, Profile=AppSrv01

Global security ? –
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.
General Properties
* Alias Alias_Oracle
* User ID sample
* Password
Description
Apply OK Reset Cancel

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

	🗄 Messages
	 Changes have been made to your local configuration. You can: <u>Sauk</u> directly to the master configuration. <u>Review</u> changes before saving or discarding.
	The server may need to be restarted for these changes to take effect.
	u <mark>rity</mark> > JAAS - J2C authentication data list of user identities and passwords for Java(TM) 2 connector security to use.
cifies a	

We have created an authentication alias that will be used to configure the data source.

🕀 Pre	ferences		
New	Delete		
D	6 🗮 😤		
Select	Alias 🛟	User ID 🗘	Description 🗘
You d	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	<u>SCA Auth Alias</u>	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
	nlNode01/AliashQracle	luweiqin	
Total	5		

Create a data source

1. Click **Resources > JDBC > JDBC Providers.**

Integrated	I Solutions Console	Welcome admin
View:	All tasks	*
Welc	ome	
🖽 Guide	d Activities	
⊞ Serve	rs	
⊞ Applic	ations	
🗆 Resou	urces	
= S	chedulers	
= 0	bject pool manage	ers
⊞ JMS	-	
	eople directory pro	
E E	xtended messagin	g provider
= V	/ebSphere Busines	s Integration Adapters
	JDBCIProviders	
	JDBC Providers	
		ebSphere Application
	Server V4)	tion Data Sources
	-	nion Data Sources
	source Adapters	
	nchronous beans	
⊞ Ca	che instances a	
	II mote artifacts	
⊞ Ker		
	∟ source Environmen	t.
to Res	source Environmen	IL .
⊞ Secur	ity	

2. On the right, select **Node=nINode01** from the drop-down list.

rated Solutions Console Welcome	2	Help Logout	
BC providers			Close pag
)BC providers		?	– Help
JDBC providers Use this page to edit properties encapsulates the specific JDBC di vendor database of your environ guided activity provides a list of t El Scope: Cell=localhostNode01 Scope specifies the level at detailed information on what settings help Node=nlNode01	iver implementation class ment. Learn more about ask steps and more ger Cell, Node=nlNode01 which the resource defin	ss for access to the specific this task in a <u>quided activity</u> . A heral information about the topic nition is visible. For	Page help More information about this page Command Assistance View administrative
			scripting command for last action
New Delete			
Select Name 🗘	Scope 🗘	Description 🗘	
Derby JDBC Provider (XA)	Node=nlNode01	JDBC Provider for WPS/WESB	

3. Click **New** in the JDBC providers window.

Integrated	Solutions Console	Welcome		Help Logout		
JDBC p	providers					
JDBC	providers			? _		
JD	BC providers					
driv this	er implementat	tion class for access to	C provider. The JDBC provider obje the specific vendor database of y tivity provides a list of task steps a	our environment. Learn more about		
	Scope: Cell= loc	alhostNode01Cell, No	de=nlNode01			
			ne resource definition is visible. Fo see the scope settings help	r detailed information		
	Node=nlNode01					
E I	Preferences					
N	ew Delete					
	16 # 2					
Sel	ect Name ≎		Scope 🗘	Description 🗘		
	Derby JDB	<u>CProvider (XA)</u>	Node=nlNode01	JDBC Provider for WPS/WESB		

4. Specify the for the **Database type**, **Provider type**, and **Implementation type** fields as shown in the figure below. Click **Next**.

Integrated Solutions	Console Welco	ome	Help Logout
Create a ne	w JDBC Provider		
→ Step 1: new JD provide Step 2: databas path inf	Create BC r Enter se class ormation Summary	Preate new JDBC provider Set the basic configuration values of a JDBC provider, whi specific vendor JDBC driver implementation classes that an access the database. The wizard fills in the name and the but you can type different values. Scope cells:localhostNode01Cell:nodes:nlNode01 * Database type Oracle Oracle JDBC Driver * Implementation type XA data source * Name Oracle JDBC Driver (XA)	re required to description fields,
Next C	Cancel		2

5. Enter the absolute path of the JDBC driver (ojdbc6.jar) directory. Click **Next**.

ntegrated Solutions Console We	Icome	Help Logout
JDBC providers		
Create a new JDBC Provider		E
Create a new JDBC Provid	er	
Step 1: Create new JDBC	Enter database class path information	
 → Step 2: Enter database class path information Step 3: Summary 	Set the environment variables that represent the JD which WebSphere(R) Application Server uses to def This wizard page displays the file names; you suppl locations of the files. Use complete directory paths driver file locations. For example: /home/db2inst1/s a value is specified for you, you may click Next to ac Class path: \${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar	ine your JDBC provider. y only the directory when you type the JDBC qllib/java on Linux(TM). If
	Directory location for "ojdbc14.jar" which is saved \${ORACLE_JDBC_DRIVER_PATH} D:\lib\dbdrv\	as WebSphere variable
Previous Next (Cancel	

6. Click Finish.

	providers ate a new JDBC Provider	*	
с	reate a new JDBC Provid	ler	
	Step 1: Create new JDBC	Summary	
	provider	Summary of actions:	
	Step 2: Enter	Options	Values
	database class path information	Scope	cells:localhostNode01Cell:nodes:nlNode01
	Step 3: Summary	JDBC provider name	Oracle JDBC Driver (XA)
	• Step 5: Summary	Description	Oracle JDBC Driver (XA)
		Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar
		\${ORACLE_JDBC_DRIVER_PATH}	D:\lib\dbdrv\
		Native path	
		Implementation class name	oracle.jdbc.xa.client.OracleXADataSource
	Previous Finish	Cancel	

7. Click the JDBC Provider that you just created.

WebSphere.	software
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ated Solutions	Console Welcome		н	elp Logout	
	 <u>Save</u> directly to the <u>Review</u> changes be 	made to your local configuration. master configuration. fore saving or discarding. ed to be restarted for these chang			Help Field help For field help
driver imple this task in about the t Scope: C Scope on wh Noc	ge to edit properties of a JDB ementation class for access to a <u>guided activity</u> . A guided ac opic. :ell= localhostNode01Cell , No specifies the level at which th at scope is and how it works, de=nlNode01	ne resource definition is visible. Fo	our environment. Lea and more general inf	arn more about formation	information, select a field label or list marker when the help cursor appears. Page help More information about this page Command Assistance View administrative scripting command for last action
00#	: * *				
Select Nan	ne ≎	Scope 🗘	Description 🗘		
Der	by JDBC Provider (XA)	Node=nlNode01	JDBC Provider for V	WPS/WESB	
Ora	de JDBC Driver	Node=nlNode01	Oracle JDBC Driver		
D Ora	de JDBC Driver (XA)	Node=nlNode01	Oracle JDBC Driver	(XA)	
Total 3	V				

8. Click Data sources, under Additional Properties.

Integrated Solutions Console Welcome

۲	General Properties	Additional Properties
	* Scope cells:localhostNode01Cell:nodes:nlNode01	Data sources
	* Name Oracle JDBC Driver (XA)	 Data sou les (WebSphere Applicatic Use this page to edit the settings associated with your selected JD
	Description Oracle JDBC Driver (XA)	source object supplies your appli accessing the database.
	Class path \${ORACLE_JDBC_DRIVER_PATH}/oj dbc14.jar	
	Native library path	
	* Implementation class name oracle.jdbc.xa.client.OracleXADataSource	
<u>.</u>)	Apply OK Reset Cancel	
9 Cli	ck New .	

Help | Logout

3C providers					
BC providers					
🗆 Mes	sages				
	Changes have been m	ade to your local co	nfiguration. You	i can:	
	 <u>Save</u> directly to the m 				
	 <u>Review</u> changes before 	-	-		
	⚠ The server may need	to be restarted for	these changes	to take effect.	
	it the settings of a data supplies your applicatior		ociated with you		
Use this page to edi data source object s	it the settings of a data	n with connections	ociated with you for accessing th	e database. Learn	n more abo
Use this page to edi data source object e this task in a <u>guided</u> about the topic. Preferences	it the settings of a data supplies your application <u>d activity</u> . A guided activi	n with connections	ociated with you for accessing th	e database. Learn	n more abo
Use this page to edi data source object e this task in a <u>guided</u> about the topic. Preferences	it the settings of a data supplies your application <u>d activity</u> . A guided activi	n with connections ity provides a list o	ociated with you for accessing th	e database. Learn	n more abo
Use this page to edi data source object s this task in a <u>quided</u> about the topic. Preferences New Delete 1	it the settings of a data supplies your application <u>d activity</u> . A guided activi	n with connections ity provides a list o	ociated with you for accessing th	e database. Learn	n more abo
Use this page to edi data source object s this task in a <u>quided</u> about the topic. ■ Preferences New Delete □ +++++++++++++++++++++++++++++++++++	it the settings of a data supplies your application <u>d activity</u> . A guided activi Test connection Ma	n with connections ity provides a list o mage state	ociated with you for accessing th f task steps and	e database. Learn I more general info	n more abo

10. Enter jdbc/OracleXADS for JNDI name.

11. Under **Component-managed authentication alias and XA recovery authentication alias**, select the name of the authentication alias you previously created from the drop-down list. Click **Next**.

Integra	ted Solutions Console	Welcome Help Logout	
8	Create a data source		
	→ Step 1: Enter basic data	Enter basic data source information	
	source information Step 2: Enter	Set the basic configuration values of a data source for association with your JDBC provider. A data source supplies the physical connections between the application server and the database.	
	database specific properties for the data source	Requirement: Use the Data sources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans (TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification.	
	Step 3: Summary	Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver (XA) * Data source name Oracle JDBC Driver XA DataSource * JNDI name jdbc/OracleXADS Component-managed authentication alias and XA recovery authentication alias Select a component-managed authentication alias. The selected authentication alias will also be set as the XA recovery authentication alias if your JDBC Provider supports XA. If you choose to create a new J2C authentication alias, the wizard will be canceled. IniNode01/Alias_Oracle	
	Next Cancel		

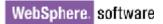
12. Enter the URL to connect to the database in the **URL** field. Click **Next**.

Integrated Solutions Console	Welcome Help Logout
JDBC providers Create a data source Create a data source	
Step 1: Enter basic data source	Enter database specific properties for the data source
 → Step 2: Enter database specific properties for the data source Step 3: Summary 	Set these database-specific properties, which are required by the database vendor JDBC driver to support the connections that are managed through this data source. * URL jdbc:oracle:thin:@9.186.116.88:1521:Ora9i * Data store helper class name Oracle9i and prior data store helper v
	☑ Use this data source in container managed persistence (CMP)
Previous Next	Cancel

13. Click Finish.

C providers		
eate a data source		
Create a data source		
Step 1: Enter basic data source	Summary	
information	Summary of actions:	
Step 2: Enter	Options	Values
database specific properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
data source	Data source name	Oracle JDBC Driver XA DataSource
→ Step 3: Summary	JNDI name	jdbc/OracleXADS
	Component-managed authentication alias	nlNode01/Alias_Oracle
	Select an existing JDBC provider	Oracle JDBC Driver (XA)
	Implementation class name	oracle.jdbc.xa.client.OracleXADataSource
	URL	jdbc:oracle:thin:@9.186.116.88:1521:Ora9i
	Data store helper class name	com.ibm.websphere.rsadapter.OracleDataStoreHelper
	Use this data source in container managed persistence (CMP)	true
	Cancel	

14. In the **Messages** area, click on **Save** link. This will save changes made to the local configuration onto the master configuration.

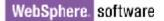


		elcome			He	lp Logout
DBC providers						
IDBC providers						
	• <u>Sav</u> • <u>Rev</u>	s nges have been ma g directly to the ma <u>g w</u> changes befor a server may need t	aster configuration. e saving or discard	ing.		
Use this page data source o this task in a	to edit the bject suppli quided activ	e JDBC Driver (XA settings of a data es your application <u>ity</u> . A guided activit	- source that is asso with connections f	or accessing the d	latabase. Learn	more about
about the top						
I Preference	5					
New Delete	Test of	onnection Mar	age state			
New Delete		onnection Mar	nage state			
New Delete		onnection Mar	nage state			
	P	JNDI name 🗘	nage state Scope ≎	Provider 🗘	Description 🗘	Category ≎
	₽ ⇒ <u>JDBC</u> XA			Provider ≎ Oracle JDBC Driver (XA)	Description New JDBC Datasource	Category 🗘
Select Name	₽ ⇒ <u>JDBC</u> XA	JNDI name 🗘	Scope 🗘	Oracle JDBC	New JDBC	Category 🗘
Select Name	₽ ⇒ <u>JDBC</u> XA	JNDI name 🗘	Scope 🗘	Oracle JDBC	New JDBC	Category 🛇
Select Name	₽ ⇒ <u>JDBC</u> XA	JNDI name 🗘	Scope 🗘	Oracle JDBC	New JDBC	Category 🗘
Select Name	₽ ⇒ <u>JDBC</u> XA	JNDI name 🗘	Scope 🗘	Oracle JDBC	New JDBC	Category 🗘

15. Select the check box next to the Data source you just created. Click **Test Connection**.

	Velcome			He	lp Logout
BC providers					
BC providers					
<u>JDBC providers</u> > <u>Orac</u>	le JDBC Driver (XA) > Data sources			
Use this page to edit the data source object supp this task in a <u>guided act</u> about the topic.	lies your application	with connections f	or accessing the	database. Learn	more about
New Delete Test	connection Mai	nage state			
¢ • ** *?	K				
Select Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
Oracle JDBC Driver XA DataSource	jdbc/OracleXADS	Node=nlNode01	Oracle JDBC Driver (XA)	New JDBC Datasource	
Total 1					

16. The connection test should succeed as indicated by the message shown in the figure below. For troubleshooting issues while testing the connection, see the Troubleshooting section.



BC prov	viders					
	Message The Datasr Informa	test connection ope purce on server serv stion	ver1 at node nlNod) > Data sources	e01 was success	ful.	
data se this ta about ⊞ Pref	ource object supp sk in a <u>quided acti</u> the topic. erences	e settings of a data lies your application <u>vity</u> . A guided activit	with connections f y provides a list of	or accessing the	database. Learn	more abo
data s this ta about	ource object supp sk in a <u>guided acti</u> the topic. erences	lies your application <u>vity</u> . A guided activit	with connections f	or accessing the	database. Learn	more abo
data se this tat about	ource object supp sk in a <u>quided acti</u> the topic. erences	lies your application <u>vity</u> . A guided activit	with connections f y provides a list of	or accessing the	database. Learn	more abo
data se this tas about ■ Pref New	ource object supp sk in a <u>quided acti</u> the topic. erences Delete Test o	lies your application <u>vity</u> . A guided activit	with connections f y provides a list of	or accessing the	database. Learn	more abo

17. Close the Administration Console tab.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

Set connection properties for the external service wizard

- 1. Switch to the Business Integration perspective in IBM Integration Designer.
- 2. Select File->New->Module to create a Module project.

() E	Busin	ess Integ	ration -	IBM Int	egratio	in Designe	😂 Integration Solution
Eile	<u>E</u> dit	<u>N</u> avigate	Se <u>a</u> rch	<u>P</u> roject	Abbot	Aries Test	😅 Module
Į	<u>V</u> ew				Alt+	Shift+N 🔷 🕨	🖄 Mediation Module
	Open F	⁼ile <u>.</u>					🏥 Library
9	Close				Ctrl-	⊦W	🏥 DataPower Library
0	Close A	All			Ctrl-	+Shift+F4	😭 Component Test Project
	5ave				Ctrl-	⊦S	🎦 P <u>r</u> oject

3. Specify the module name as **JDBCXAOracle**, click **Finish**.

🚯 New Module	
Create a Module	
Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on	
Module name: JDBCXAOracle	
✓ Use default location	
Location: E:\WID7.5_sample\JDBCXAOracle	Browse
☑ Open the module assembly diagram	
A Back Next > Einish	Cancel

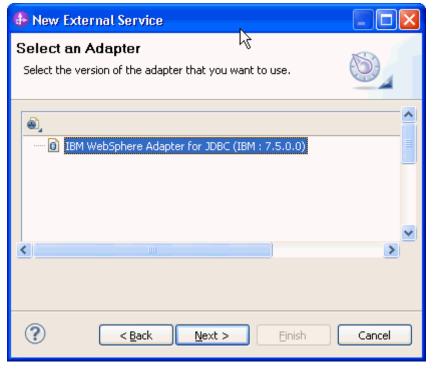
4. Right-click JDBCXAOracle->Assembly Diagram, select New->External Service.

ቹ Business Integration 🛛	- 8	🕄 JDBCXAOracle - Assembly Diagram 🛛
🌾 🖉 🖶 🗁 🙃	\$∎> ∑	👌 😳 Palette
<all resources=""></all>	•	<u>▶</u> • • • • <u>•</u>
🗉 🔁 JDBCXAOracle		🔁 Favorites
Assemble Di Depende Ne <u>w</u>	÷	Project
🚰 Integrat ᠿ Data Open With		🐮 External Service
Interfac Show Files		

5. Select JDBC, and click Next.

🚯 New External Service 💦 📄 🔀
Select the Service Type or Registry 🛛 💂 🥏
Select the type of service to create or registry to browse.
Filter: type filter text
<u>A</u> vailable types:
JDBC
📴 Lotus Domino 🕼 Oracle E-Business Suite
PeopleSoft
Siehel
Description:
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes events, and then delivers them to the export of a module that is part of an application that runs in IBM Process
(?) < <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel

6. Select IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0). Click Next.



7. In the **Target Runtime environment** field, select the appropriate runtime and click **Next**.

🚯 New External Service				
Import a RAR File Import a resource adapter archive (RAR) from the file system to create a connector project for the adapter.				
Archive file:	E:\WID75.image\ResourceAdapters\JDBC_7.5.0.0\C WYBC_JDBC.rar			
Connector project: *	CWYBC_JDBC			
Target runtime enviroment:	IBM Process Server v7.5			
? < <u>B</u> a	ck Next > Einish Cancel			

8. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service	
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.	
When deploying the application to a stand-alone server, these files configured on the server. <u>More</u> Specify the location of the JDBC driver JAR files required to access to database server. JDBC driver JAR files are shipped with the database installation. If you do not have a local database installation, you can these files from the Web site of the database vendor. JDBC driver JAR files:	the se
E:\Yuanjs\oracle\ojdbc6.jar	Add Remove
Specify the location of the database-specific native system libraries access the database server. This is required if you are using a Type implementation. The native libraries are shipped with the database s client installations. System libraries:	2 driver
	Add Remove
? < <u>Back</u> <u>Next</u> > <u>Einish</u>	Cancel

9. Click the **Outbound** radio button. Click **Next**.

🕀 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
 Inbound processing passes data from the adapter to your service export. Outbound Outbound processing passes data from your service import to the adapter.
(?) < <u>Back</u> Next > Einish Cancel

- 10. Expand the **Oracle** node in the **Database system connection information** area and then select **10**.
- 11. Enter values in the System ID, Host name, Port number, User name and Password fields, and click Next.

New External Service	N	
Specify the Discovery Prope	erties 43	
Connection properties Database system connection infor Database system connection infor DB2 UDB iSeries DB2 UDB zSeries DB2 UDB zSeries D	mation Properties: JDBC driver type: System ID: * Host name: * Port number: * JDBC driver class name: * Database URL;	9.123.98.52
Password: *	*****	
Prefix for business object names: Advanced >> Change the logging properties for the logging properties	he wizard	
?	< <u>B</u> ack	lext > Einish Cancel

12. Click **Run Query** to list the tables, stored procedures, views, and synonyms for each schema in the database.

🚯 New External Service			
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Cli then click Run Query to run it.	ck Edit (N) Query to create the query,	BO.
Query: SchemaFilterLabel=null,Schema name or pattern= Run Query	=null,Su	pported database object t	Edit Query
Discovered objects:	9	Selected objects:	
i < Run a query to populate this view with discovery	\mathbf{E}		0
2 2 2 2 2 2 2 2 2		ext > Einish	Cancel

13. Expand the schema name in which you created the CUSTOMER table. Select **Tables > CUSTOMER** and click the **> (Add)**. The CUSTOMER table is added to the **Selected objects** list.

Service	
Find Objects in the Enterprise System	HO,
Query: SchemaFilterLabel=null,Schema name or pattern=null, Run Query	Supported database object t Edit Query
Discovered objects:	Selected objects:
SAMPLE SAMPLE SAMPLE SAMPLE Solution Stables Stored Procedures Stored Procedures	
? < <u>B</u> ack	Next > Einish Cancel

14. Click Next.

new External Service				
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.				
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported database object	ct t Edit Query			
Discovered objects: Selected objects: Selected objects: Selected objects: Selected objects: CUSTOMER CUSTOMER CUSTOMER CUSTOMER CUSTOMER CUSTOMER CUSTOMER Solution Stored Procedures Synonyms - Nick Names Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Stored Procedures Solution Soluti				
< Back	Cancel			

15. In the Specify Composite Properties window, click Next.

🚯 New External Service			
Specify Composite Properties			
Operations for selected business objects Operations for these functions will be added to the service interface.:*			
	id move		
Custom Business Faults Pattern for the Custom Business Faults:			
	id		
	lit		
	id		
Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2ca/jdb			
Specify the relative folder for generated business objects Folder:			
 Generate a business graph for each business object Advanced >> 			
(?) (<u>Back</u> Next > Einish Can	cel		

16. In Specify the Service Generation and Deployment Properties area, select Other. In the XA DataSource JNDI name field enter jdbc/OracleXADS. Click Next.

🚯 New External Service		
Specify the Service Generatio Specify properties for generating the serv	. · · · · //	6)
A Java Authentication and Autho	prization Services (JAAS) alias is the preferred method.	. 🔨
J2C authentication data entry:	Sele	ect
OUsing security properties from the	managed connection factory	
The properties will be stored as p	lain text; no encryption is used.	
User name;	sample	
Password:	*****	
💽 Other		
deployed on the server and secu name.	vill be handled by the EIS system, or the RAR will be Irity will be specified by the properties in the JNDI look	
	join the transaction provides a higher degree of data curs. To join a global transaction, specify a predefined ection information. <u>More</u>	
Join the global transaction		
Deploy connector project:	With module for use by single application 💉	
Specify the settings that are used to	connect to JDBC at run time:	
Connection settings:	Specify connection properties	
Connection Properties		
	cify a predefined XA datasource or XA database ot joining a global transaction, either the XA connectio on information can be specified.	пс
Database connection information	n: Specify predefined XA DataSource	~
Database system connection	n information	
Database vendor:	ORACLE	
XA DataSource JNDI nar	me:* ⁹ jdbc/OracleXADS	
Advanced >>		~
? (< <u>B</u> ack <u>N</u> ext > Einish C	Cancel

17. In Specify the Location Properties window, click **Finish**.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the	P
Properties for Serv	vice	
Module:	JDBCXAOracle 💌	New
Namespace;	http://JDBCXAOracle/JDBCOutboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface	
	Save business objects to a library	
Library;	×	New
Description:		
?	< Back Next > Einish	Cancel

18. Verify the results shown below.

🗄 Business Integration 🖾 👘 🖓	
🔊 🖻 🖶 🔁	~
<all resources=""></all>	•
Curresources Curresources Curresources Curresources DBCAOracle Dependencies Dependencies Integration Logic Data DeleteAllResult ExistsResult Exists	

Set up the components to be part of the XA environment

- 1. In the Business Integration tab, under **JDBCXAOracle** double-click **Assembly Diagram** to open it.
- 2. In the Palette, expand **Components** and drag **Untyped Component** to Assembly Diagram editor, and name it as **Component1**.

😵 *JDBCXAOracle - Assembly Diagram 🛛						
 ✓	Component1	0 💣 JDBCOutboundInterface				
🗁 Components						
Untyped Component	k,					
🕞 Outbound Imports						
🕞 Inbound Exports						
🕞 Outbound Adapters						
🕞 Inbound Adapters						

3. Wire **Component1** to **JDBCOutboundInterface**. In the Add Wire window, click **OK**.

🤀 Add Wire
A matching reference will be created on the source. Do you want to continue?
Always create without prompt
OK Cancel

4. Right-click **Component1** and select **Add > Interface**.

🕄 *JDBCXAOracle - Asse	mbly Diagram 🔀			
 ↓ ♀ ♀ ♀ ↓ ▶ ♀ ♀ ♀ ↓ ▶ ₽ ♀ ♀ ▶ ₽ ♀ ▶ ₽ ♀ ▶ ₽ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀ ▶ ♀<	g 🚰 Con	<mark><[↓] <u>U</u>ndo Add Wire [↓] <u>R</u>edo</mark>		
ଦ୍ଧ Untyped Component 渝 Human Task 댇 Java		MJ Add Note Hide Notes		
🔁 Mediation Flow		<u>A</u> dd <u>C</u> hange Type	•	<u>I</u> nterface <u>R</u> eference
Rule Group		Convert to I <u>m</u> port Generate <u>E</u> xport	•	
🕞 Inbound Exports		<u>G</u> enerate Implementation Select Implementation	•	
Coutbound Adapters		Open Synchronize Interfaces and References	;)	

5. In the Add Interface window, click New.

🚯 Add Interface	
Filter by interface or qualifier (?	' = any character, * = any string):
*	New
Matching interfaces:	
 Show WSDL and Java Show WSDL 	
Show Java	
Qualifier:	
-	COutboundInterface - JDBCXAOra
<	
0	
	OK Cancel

6. Enter CustomerInterface in the Name field. Click Finish.

🚯 New Interfac	ce	
Create an Inte Enter a name for the new interface	the new interface and select a module and a parent fol	der (optional) where
<u>M</u> odule or library: Name <u>s</u> pace:	JDBCXAOracle	Browse New
F <u>o</u> lder: Name:	CustomerInterface	Browse
Ngine.		
?	< <u>B</u> ack <u>N</u> ext >	<u>Einish</u> Cancel

7. Click ³⁴ to add a new operation for **CustomerInterface** interface.

*JDBCXAOracl	e - Assembly Diagram	nterface 🛛	
Interface			
Configuration			
Name	CustomerInterface	Refactor name	
Namespace	http://JDBCXAOracle/CustomerInterface	Refactor namespace	
pie de la ciuda.	1		
binding style	document literal wrapped	Change binding style to document literal non-wrappe	More
Operations		Change binding style to document literal non-wrappe	More
Operations			J More
Operations	their parameters		
•Operations Operations and	their parameters		

8. Rename the operation name to **invoke**. Select "Type" for the Inputs parameter, and select **New**.

*JDBCXAOrac	le - Assembly Diagram 🛛 🛈 *CustomerI	nterface 🗙			-
•Interface					
Configuration					
Name	CustomerInterface	Refactor name			
Namespace	http://JDBCXAOracle/CustomerInterface	Refactor namespace			
Binding Style	document literal wrapped	Change binding style to document literal non-wrapp	ed Mo	<u>re</u>	
Operations	🔄 🐉 🧞 🖻 🔊 ऺ 💹 I their parameters				
	Name		Туре		
🔻 👹 invoke					
🕼 Inputs	input1		string	1	
📫 Outputs	output1		strin	Browse	
				New	
				Solean S	
				Cadate	
				Gode i ime Godoble	
				📮 float	
				a hexBinary	
				📮 int	
				🛱 string	
				×	

9. In the Create a Business Object window, enter **Source** in the **Name** field. Click **Next**.

🚯 New Busines	s Object	N	
Create a Busi Business objects a customer or an inv	are containers for application data that rep	k₹ present business functions or ele	ments, such as a
<u>M</u> odule or library: Name <u>s</u> pace:	JDBCXAOracle http://JDBCXAOracle	Browse	New
F <u>o</u> lder:		Browse	
N <u>a</u> me: <u>I</u> nherit from:	source <none></none>	Browse	New Clear
require a global ele	by default, are created as global complex ment. <u>More</u> iness object as an element	types. However, some integratio	on scenarios might
?		< <u>B</u> ack <u>N</u> ext >	Einish Cancel

10. From the list of **Available business objects**, select **SampleCustomer** to add all Customer business objects's attributes

to the Source business object. Click Finish.

Derived Business Object Populate the new business object with fields from one or more existing business objects. Available business objects: RecordNotFoundFault http://cor SampleCustomerBatchResult http://www SampleCustomerContainer http://www SampleCustomerUpdateAllInput http://www UniqueConstraintFault http://www WBIFault Http://www Http://www Http://www WBIFault Http://www Http://www Populate AllResult Http://www Http://www Populate AllResult Http://www Http://www Http://www Http://www Http://www <	New Business Object	k	
□ RecordNotFoundFault http://cor □ □ SampleCustomer http://www □ □ SampleCustomerBatchResult http://www □ □ SampleCustomerContainer http://www □ □ SampleCustomerList http://www □ □ SampleCustomerUpdateAllInput http://www □ □ UniqueConstraintFault http://www □ □ UpdateAllResult http://www □ □ WBIFault http://cor	•	lds from one or more existing business object:	s.
Image: SampleCustomer http://ww Image: SampleCustomerBatchResult http://ww Image: SampleCustomerContainer http://ww Image: SampleCustomerContainer http://ww Image: SampleCustomerContainer http://ww Image: SampleCustomerContainer http://ww Image: SampleCustomerList http://ww Image: SampleCustomerUpdateAllInput http://ww Image: SampleCustomerUpdateAllInput http://ww Image: Image: SampleCustomerUpdateAllInput http://ww Image: Image: Image: SampleCustomerUpdateAllInput http://ww Image: Im	vailable business objects:	Fields to include:	
	SampleCustomer SampleCustomerBatchResult SampleCustomerContainer SampleCustomerList SampleCustomerUpdateAllInput GUniqueConstraintFault GUpdateAllResult GWBIFault	http://ww http://ww http://ww http://ww http://ww http://ww http://cor http://cor	string string string

🕄 *JDBCXAOra	cle - Assembly Diag	Iram	(I) *CustomerInterfac	ce 🗇 *Source 🛛
▼ Business o	bject 🔲	800		
Configuration				
Name	Source	Refactor name		
Namespace	http://JDBCXAOr	acle	Refactor namespace	
■Definition ■ Source		Ŷ	⊕ X ≣	
	; to filter>			
e pkey	string			
e fnam	ie string			
e Inam	e string			
e ccod	e string			
e field:	l string			
e field2	2 string			
e field3	string			

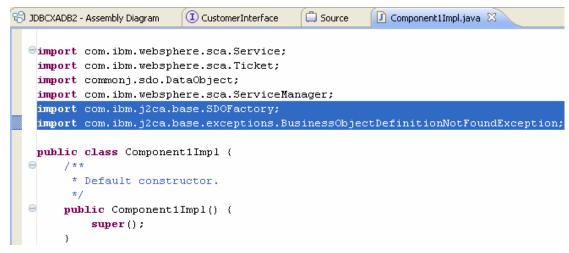
12. Rename the three new fields as **operation**, **objectName** and **namespace**.

▼Business object 📃 📴	•Rusiness of		
- • •	· DUSITICSS OL		
Configuration	Configuration		
Name Source Refactor name	Name		
Namespace http://JDBCXAOracle Refactor namespace	Namespace		
▼Definition 😥 î 歩 💥 🧮	■Definition		
🛱 Source	📋 Source		
A <click filter="" to=""></click>	⇒t <click t<="" th=""></click>		
e pkey string	e pkey		
e fname string			
e Iname string	e Iname		
Ccode string			
e operation string	e opera		
e objectName string	e objec		
e namespace string	e name		

- 13. Select File->Save All to save all the changes.
- 14. Right click **Component1** in the Assembly Diagram and select **Generate implementation -> Java.**

3DBCXAOracle - Assem	bly Diagram 🛛			
 ↓ ② Palette ↓ ④ ○ ℃ % ▷ Favorites 		ept 1 10 108COutboundInterface]
Components		♥ Brido Aud Internace ♥ Redo		
Human Task		Mote		
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Contraction Contraction		Convert to Import Generate <u>E</u> xport	•	A
C Inbound Exports		<u>G</u> enerate Implementation Select Implementation Open	•	Human Task Java
Inbound Adapters Properties		Synchronize Interfaces and References Refactor	. *	현 서origiation Flow 오 Process 문 Rule Group
🖺 Component: Con	nponent1 (Untype	Merge Components Ne <u>w</u> Process Version		State Machine

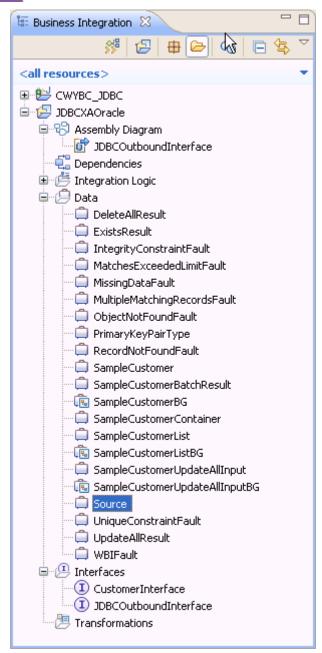
- 15. In the Generate Implementation window, select **default package** and click **OK**.
- 16. Open the Component1Impl.java file in the editor and add the imports as shown in the figure below.



17. Add the following implementation for **invoke**() method.

```
public String invoke(DataObject input1) throws
BusinessObjectDefinitionNotFoundException {
     String objName =
input1.getString("objectName");
     String namespace =
input1.getString("namespace");
     DataObject customerBO =
SDOFactory.createDataObject(namespace, objName);
     DataObject customerBG =
customerBO.getContainer();
     customerBO.setString("pkey",
input1.getString("pkey"));
     customerBO.setString("fname",
input1.getString("fname"));
     customerBO.setString("lname",
input1.getString("lname"));
     customerBO.setString("ccode",
input1.getString("ccode"));
     String op = input1.getString("operation");
     String operation =
op.toLowerCase()+customerBG.getType().getName();
  locateService_JDBCOutboundInterfacePartner().in
voke(operation, customerBG);
     return "Success";
   }
```

18. Select File > Save All to save all the changes.



Deploy the module to the test environment

The result of running the external service wizard is an SCA module that contains an Enterprise Information System import. Install this SCA module in IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.

- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start.**
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

Process		🏪 Add and Rei <mark>v</mark> ove	
Rule Group		Monitoring V	•
State Machine		Modern Batch Job Management Console	
Import		Create Tables and Data Sources	
Export		Reconnect Debug Process	
References		👷 View and Publish Changes to Server	
Interface Map (De		Manage Server Profiles	
Selector		2 Export Dynamic Endpoint Selection Configuration	
Outbound Imports		🖓 Import Dynamic Endpoint Selection Configuration	
		🖓 Update Vocabularies and Related Artifacts	
Inbound Exports		Server Configuration	+
Outbound Adapters		Universal Test Client	+
Inbound Adapters		Administration	+
(0)		Launch	+
Task Flows 🏾 🏠 Build A	Activities 🔲 Properties 🔝	Add and Remove Integration Solution Projects	+
B AJAX Test Server	[Stopped] er v7.5 at 9.119.154.112 [Pro	Properties	Alt+Enter

4. Add JDBCXAOracleApp into the Configured projects panel. Click Finish.

⊕Add and Remove Projects	
Add and Remove Projects Modify the projects that are configured on the server	
Move projects to the right to configure them on the server <u>Available projects:</u> <u>Add ></u> <u>Add ></u> <u>Add All >></u> <u>Add All >></u> <u>Configured projects:</u> <i>Add All >></i> <u>Configured projects:</u>	
☑If server is started, publish changes immediately	
⑦ < Back Next > Finish Ca	ncel

5. Click **Finish**. This deploys the project on the server. For troubleshooting issues while adding the project, see the Troubleshooting section. The Console tab in the lower-right pane displays a log while the module is being added to the server.

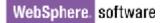
Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client:

1. From the Business Integration view, right click **JDBCXAOracle** and select **Test > Test Module**.

😨 Business In	tegration 🛛 🗖 🛱 JDBCXAOracle -	- Assembly Diagram 🛛
	🎊 🔁 🖶 🗁 🗞 🖻 🕏 🗸 🔅 Palette	۲) 🔁 🖢
<all resource<="" td=""><td>es> 🗸 🔍 🕹 🕹</td><td></td></all>	es> 🗸 🔍 🕹 🕹	
🕀 🔁 CWYBC	JDBC 🔂 🔁 Favorites	🕕 🚰 Component1 💷
🗄 🖅 🔁 JDBCX	Ne <u>w</u>	
	Open Deployment Editor	ient
	Open Data Map Catalog	
	Show Files	
	Show References in References View	
		-
	Associate with Process Center	_
	Copy	:5
	Taste	
		ers
	Refactor or Analyze Impact	···
	Mport	-
	Z Export	<u></u>
	Export	-
	🐉 Re <u>f</u> resh	Parsing Mode
	Clo <u>s</u> e Project	
	Add to Asset Repository	- bries Test McNules
	Compare Business Objects	Attach to Modules
	Configure Business Object Parsing Mode	
	Convert Mediation Flow Format	🚺 Generic S <u>e</u> rvice Client
	 Generate Documentation	Stoad Test Configuration
	Generate Human Task User Interface	Load Test Trace
	New Process Version	-
	Synchronize with the WebSphere Business Modeler Export	🔩 Loa <u>d</u> Emulator
	_ <u>T</u> est →	跭 Test Event Definition

2. From the **Component** list, select **Component1**. Specify the parameters as shown below.



Integration Test Client: JDBCXAOracle_Test

ice	g	c	LIC.	21

vents		General Prop	oerties			
is area displays the events in a test trace. Select an event to display its properties in the	 Detailed Properties 					
eneral Properties and Detailed Properties sections. <u>More</u>					input parameter values for the Invol rea to run the test. <u>More</u>	ke
🕴 Invoke	<u>Co</u>	onfiguration:	Default Mo	idule Test		-
	Mo	odule:	JDBCXAOr	acle		•
	<u>Co</u>	mponent:	Componen	t1		•
	Int	terface:	CustomerI	nterface		•
	<u></u>	peration:	invoke			•
		tial request pa Val <u>u</u> e editor		tor		E
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		nan Nan	ie j		Value	
		🗆 🗄 inpu		Source	value	
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		🖃 🔡 inpu	t1	Source	*	
		□ 🕒 inpu	t1 pkey	Source string	✓ ✓ 300	
		•••	t1 pkey fname	Source string string	✓ ✓ 300 ✓ abc	
			t1 pkey fname Iname	Source string string string string	✓ 300 ✓ abc ✓ xyz	
			t1 pkey fname Iname ccode	Source string string string string string	✓ 300 ✓ abc ✓ xyz ✓ IBM	

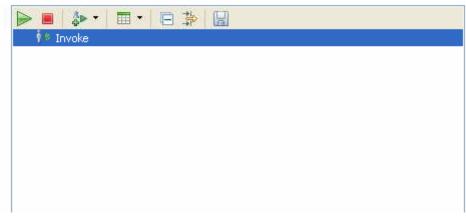
Note: Set the operation value to Create; set the objectName value to SampleCustomerBG; set the namespace value to http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc/Sa mplecustomerbg.

3. Click let to continue.

Integration Test Client: JDBCXAOracle_Test

Events

This area displays the events in a test trace. Select an event to display its properties in the General Properties and Detailed Properties sections. <u>More...</u>



4. In the Select Deployment Location window, select the server, and click **Finish**.

Deployment Location	
Select a Deployment Location	
This server instance is currently running.	
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at 9.119.154.112 WebSphere Enterprise Service Bus Server	New Server
Mode: Run]
Use this location as the default and do not ask again	
(i) To change the default location elsewhere, open the Properties window for the proje Business Integration > Integration Test Client.	ct and select
? <u>Einish</u>	Cancel

6. After the service is executed successfully, the customer record will be created in the target database. To verify the result, connect to the database and run the following SQL query:

SELECT * FROM CUSTOMER WHERE pkey = '300';

Clear the sample content

Return the data to its original state by deleting the Customer record you created in the CUSTOMER table by connecting to the database and running the SQL query:

DELETE FROM CUSTOMER WHERE pkey = '300';

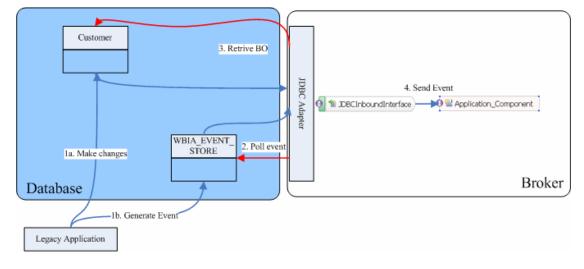
Chapter 10. Tutorial 9: Receiving events from the Oracle database using data source with prepared statement cache (inbound processing)

This tutorial demonstrates how the WebSphere Adapter for JDBC 7.5.0.0 receives events from the Oracle database using a data source with a prepared statement cache. WebSphere JDBC adapter interact with database by polling database event from an event table.

About this task

In this scenario, a legacy application makes a change to the CUSTOMER table in a single operation. Here we will insert an event record into the event table (WBIA_EVENT_TABLE). The JDBC adapter will poll the events from the database periodically. If a new event is found, it will fetch the event and corresponding business objects from database. Finally, the JDBC adapter will convert the event to a SDO and send it to the destination SCA component.

The following figure shows the whole scenario:

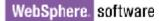


Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).



Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and stored procedures
- Create an authentication alias
- Create a data source

Create tables and stored procedures

You must create the following tables and stored procedures in the Oracle database before starting the scenario.

a. Script for creating the tables

```
CREATE TABLE CUSTOMER
                         (
        PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,
        FNAME VARCHAR2(20),
        LNAME VARCHAR(20)
        CCODE VARCHAR2(10) ) ;
CREATE SEQUENCE EVENT_SEQ INCREMENT BY 1 START WITH
1 MINVALUE 1 CACHE 20 ;
CREATE TABLE wbia jdbc eventstore
(
  event id
                         NUMBER(20) PRIMARY KEY,
              VARCHAR2(200),
  xid
                         VARCHAR2(80)
  object_key
                                         NOT NULL,
  object_key VARCHAR2(80) NOT
object_name VARCHAR2(40) NOT NULL,
  object_function VARCHAR2(40) NOT NULL,
  event_priority NUMBER(5) NOT NOTE,
overt time DATE DEFAULT SYSDATE NOT NULL,
```

event_status NUMBER(5) NOT NULL, event_timeout TIMESTAMP, connector_ID VARCHAR2(40), event_comment VARCHAR2(100));

b. Script for creating triggers for Inbound

```
CREATE OR REPLACE TRIGGER EVENT_CREATE AFTER INSERT
ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name,object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:N.pkey,
'SampleCustomerBG', 'Create', 1, 0);
END;
CREATE OR REPLACE TRIGGER EVENT_DELETE AFTER DELETE
ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name,object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:0.pkey,
'SampleCustomerBG', 'Delete', 1, 0);
END;
CREATE OR REPLACE TRIGGER EVENT_UPDATE AFTER UPDATE
OF PKEY, CCODE, FNAME, LNAME ON CUSTOMER
REFERENCING OLD AS O NEW AS N
FOR EACH ROW
BEGIN
INSERT INTO wbia_jdbc_eventstore (event_id,
object_key, object_name, object_function,
event_priority, event_status)
VALUES (event_seq.nextval,:N.pkey,
'SampleCustomerBG', 'Update', 1, 0);
  END;
/
```

c. Script for inserting data into the CUSTOMER table

CREATE OR REPLACE PROCEDURE INSERTCUSTRECORDS AS BEGIN FOR cntr in 1..100 LOOP INSERT INTO CUSTOMER (pkey,ccode,fname,lname) values(to_char(cntr), 'ANITA','MEHTA','IBM'); End Loop; END;

Note: After running this procedure, verify whether the records are inserted correctly into the WBIA_JDBC_EVENTSTORE table.

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console. 1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

Business Integration - IBM Integration	n Designer 7.5 - D:\workspace\201	0\Sample75		
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> i	agram Services Samples AST JUnit Tests	<u>Window</u> Help	_	
	🔏 🛷 🔹 🕴 Link Indexer FVTs 🕴 Link I	<u>N</u> ew Window New Editor	DE APTS 📑 🐯 BU	usiness Inte
E Business 💥 🗖 🗖		Open Perspective		
		Show View 🕨 🕨	🗞 Build Activities	
	 Start working Start to work by creating a a project into your workspa 	Tiese Leisbergie	Eusiness Integration Console DataPower Appliances Outline Autorns Explorer	Alt+Shift+Q, C Alt+Shift+Q, O
E 🔛 CWYBC_JDBC		Navigation	🖏 Physical Resources	
	Learn more Getting Started with IBN Getting Started with IBN	et Switch to Process Center Preferences	Properties References Server Logs Servers Rask Flows	Alt+Shift+Q, X
	Build Activities 🔲 Properties 🔝 Process Server v7.5 at localhost [Started, Syr		 Tasks TCP/IP Monitor Visual Snippets 	
			Other	Alt+Shift+Q, Q
🕴 🗗 🚦 🖡 1 items selected			1	

2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5 - D): \workspace \2010 \Sampl 🔳 🔲 🔀			
<u>Eile E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>Project R</u> un <u>D</u> iagram Services Sampl	es ASTJUnitTests <u>W</u> indow <u>H</u> elp			
i 📬 • 🖬 🖻 📄 👘 🖆 🕯 📽 🕴 🖀 🖉	🔗 🔹 🔛 📴 Business Inte			
Link Indexer FVTs Link Indexer APTs BTree tests WDE APTs				
· · · · ·				
😳 🔀 Task Flow 🙆 Build Activ 🔲 Properties 🔝 Problems 👔	Server Lo 😽 Servers 🛛 🖵 🗗 🚥			
8	🎋 🖸 🖉 🔳 😰 🎽			
IBM Process Server v7.5 at localhost [Stopped, Synchron				
	New			
_	Show In			
	Сору			
	a Paste			
•	Collete Rename			
	_			
	s <u>D</u> ebug			
) Start)™ Profile →			
	Stop			
	Publish			
🔤 🗘 🔚 1 items selected	<u>C</u> lean			

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

🖗 IBM Process Server v7.5 at localhost [Started, Syr	nchr <mark>onized]</mark>
	New
	Open
	Show In
	📄 Сору
	💼 Paste
	💢 Delete
	Re <u>n</u> ame
	🐝 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	Stop
	📳 Publish
	<u>⊆</u> lean
	📇 Add and Remove
	 Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	👷 View and Publish Changes to Server
	脂 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

()	usiness Integration - WebSphere Administrative Cons	ole for WPS7 at localhost 💶 🗖 🗙
Eile	Edit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>W</u> indow <u>H</u> elp	
1 🖬	▼ 🖫 🗁 ! 📽 ! 🖹 ④ ଈ ካ ካ 🎕 🎕 🗞 🗠 🗠 ! 🖆 ! 🙆 🖋 ▼ ! ⇔ ▼ ↔	
te:	Integrated Solutions Console	
	Log in to the console. User ID: Log in Note: After some period of inactivity, the system will log you out automatically and ask you to log in again.	
8 ∎⁴	Done	i = XX 🖒 🔲 🖁 🐐

5. Click Security → Global security.

View: All tasks 💌
Welcome
🗄 Guided Activities
🛨 Servers
Applications
🗄 Services
🗄 Resources
🖂 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
🗄 Integration Applications
🛨 Users and Groups
🗄 Monitoring and Tuning
I UDDI

6. Under Java Authentication and Authorization Service, click **J2C authentication data**.

=localhostNode01Cell, Profile=AppSrv01	Close page
bal security	
Global security	
Jse this panel to configure administration and the default application securi functions and is used as a default security policy for user applications. Secure applications.	
Security Configuration Wizard Security Config	uration Report
Administrative security	Authentication
Enable administrative security	Authentication mechanisms and expirati
 Administrative group roles Administrative authentication 	
	O Kerberos and LTPA
Application security	Kerberos configuration
Enable application security	
	Authentication cache settings
Java 2 security	→ Web and SIP security
Use Java 2 security to restrict application access to local resources	RMI/IIOP security
Warn if applications are granted custom permissions	
Restrict access to resource authentication data	Java Authentication and Authorizatio
User account repository	 Application logins System logins
Current realm definition	 J2Qauthentication data
Federated repositories	
Available realm definitions	Specifies a list of user identities and passwo
Available realm definitions Federated repositories V Configure Set as current	for Java(TM) 2 connector security to use.
rederated repositories	 Security domains External authorization providers
	Custom properties

A list of existing aliases is displayed.

ilobal sec	urity		? -	
<u>Global</u>	security > JAAS - J2C authentication data	1		
Specifi	es a list of user identities and passwords f	or Java(TM) 2 connector security t	o use.	
🗹 Pr	efix new alias names with the node name	of the cell (for compatibility with e	arlier releases)	
Apply				
INEW	New Delete			
Select	Select Alias 🗘 User ID 🗘 Description 🗘			
You c	You can administer the following resources:			
	CEIME_ibm- cq9mnv0lvouNode02.server1_Auth_Alias	bpmadmin	Connection ID for WBI	
	<u>CommonEventInfrastructureJMSAuthAlias</u>	admin	Authentication alias for the Common Event Infrastructure JMS Topics and Queues	
	<u>EventAuthDataAliasDerby</u>	none	Derby authentication alias for the Common Event Infrastructure	

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

bal security	
<u>Global security</u> > JAAS - J2C a	authentication data > New
Specifies a list of user identitie	ies and passwords for Java(TM) 2 connector security to use.
General Properties	
* Alias	
Alias_Oracle	
	-
User ID	7
sample1	
* Password	
•••••	7
Description	7
Apply OK Reset Car	ncel
Apply on Reset Cal	

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

Global security	? .
	🖯 Messages
	 Changes have been made to your local configuration. You can: Sage directly to the master configuration. <u>Review</u> changes before saving or discarding.
	Δ The server may need to be restarted for these changes to take effect.
Specifies a li	ity > JAAS - J2C authentication data st of user identities and passwords for Java(TM) 2 connector security to use.
Prefix n	ew alias names with the node name of the cell (for compatibility with earlier releases)

You have created an authentication alias that will be used to configure the data source.

New	New Delete		
D			
Select	Alias 🛟	User ID 💲	Description 💲
You c	an administer the following resources:		
	CEIME_ibm- cq9mnv0lvouNode02.server1_Auth_Alias	bpmadmin	Connection ID for WBI
	<u>CommonEventInfrastructureJMSAuthAlias</u>	admin	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	<u>EventAuthDataAliasDerby</u>	none	Derby authentication alias for the Common Event Infrastructure
	SCAAPPME00 Auth Alias	bpmadmin	Connection ID for WBI
	SCASYSMEOD Auth Alias	bpmadmin	Connection ID for WBI
	<u>SCA Auth Alias</u>	admin	This is the alias used by SCA to login to a secured SIBus
	WPSDB Auth Alias	bpmadmin	
	ibm-cq9mnv0lvouNodhg2/Alias_Oracle	sample1	

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source is used later when generating the artifacts for the module.

Note: This tutorial uses Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment** → **WebSphere Variables**.

View: All tasks 💌
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🖯 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared libh es Replication WebSphere variables Maming
Integration Applications
\boxplus System administration
🗄 Users and Groups
🗄 Monitoring and Tuning
🕀 Troubleshooting
I UDDI

2. On the right page, select **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.



YebSphere Variables ?
WebSphere Variables > ORACLE_JDBC_DRIVER_PATH
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cell variables.
Configuration
General Properties * Name ORACLE_JDBC_DRIVER_PATH Value D:\Lib Description
The directory that contains the Oracle thin or oci8 JDBC Driver.
Apply OK Reset Cancel

3. Click **Save** to save the changes.

b Sphere	Variables	
	 Messages Changes have been made to your local configuration. You can: Same directly to the master configuration. R Jew changes before saving or discarding. 	
	The server may need to be restarted for these changes to take effect.	

The variable has been added and appears in the list.

🕀 Pret	ferences		
New	Delete		
	C # \$		
Select	Name 🛟	Value 🗘	Scope 🗘
You c	an administer the following resources:		
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01
_	CVRACE IDDC DDD(ED DATU		N-JN-J-04

4. Select **Resources → JDBC -> JDBC Providers**.

View:	All tasks
Welco	ime
🗄 Guide	d Activities
🗄 Serve	irs
🗄 Appli	cations
🗄 Servi	ces
🖯 Reso	urces
= So	hedulers
= 0	bject pool managers
⊞ JΜ	s
	ople directory provider
	tended messaging provider
	ebSphere Business Integration lapters
ar 🛛	вс
	JDBC profiders
	Data soul
	Data sour JDBC providers Application Server V4)
	Business Integration Data Sourc
🗄 Re	source Adapters
🗄 As	ynchronous beans
🗄 Ca	che instances
🗄 Ma	il
🗄 Re	mote artifacts
🗄 UR	L
🗄 Re	source Environment
🗄 Secu	rity
_	
🗄 Envir	onment

5. Click **New** in the JDBC providers window.

BC providers		?
JDBC providers		
encapsulates the specific JD specific vendor database of	BC driver implemen your environment. tivity provides a list	ider. The JDBC provider object ntation class for access to the Learn more about this task in a of task steps and more general
Scope: Cell=localhostNo	de01Cell , Node= nl N	ode01
definition is visible scope is and how <u>help.</u> Node=nlNode0:	e level at which the e. For detailed infor it works, <u>see the so</u> 1	mation on what
Preferences		
New Delete		
Select Name 🔷	Scope 🗘	Description 🗘
None		
Total 0		

6. Select an Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 * Database type Oracle * Provider type Oracle Connection pool data source * Name Oracle JDBC Driver
	Description
	Oracle JDBC Driver

- 7. In the Enter database classpath information page, enter the following value for the **Class path** field:
 - \$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.
- 8. Click Next.

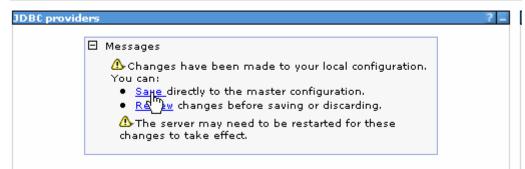
Cell=localhostNode01Cell, Profile=AppSrv01

Cr	eate	e a new JDBC Provider	
	A	ate a new IDBC Provide	
	Cre	ate a new JDBC Provid:	
		Step 1: Create new JDBC provider	Enter database class path information
	→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
			If a value is specified for you, you may click Next to accept the value.
			Class path:
			\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
			Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib
	F	Previous Next (Cancel

9. In the Summary page, click Finish.

Create a new JDBC Provider		
Step 1: Create new JDBC provider	Summary	
Step 2: Enter	Summary of actions:	
database class path	Options	Values
information	Scope	cells:localhostNode01Cell:nodes:nlNode01
→ Step 3: Summary	JDBC provider name	Oracle JDBC Driver
	Description	Oracle JDBC Driver
	Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
	\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSourc

10. Click Save.



The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC pro	viders		
encapsul specific v <u>quided a</u>	ates the specific JD endor database of	rties of a JDBC provider. T DBC driver implementation your environment. Learn i tivity provides a list of task	class for access to the more about this task in a
∃ Scope	: Cell =localhostNo	de01Cell, Node=nlNode01	
	scope is and how	it works, <u>see the scope se</u>	ttings
	scope is and how <u>help.</u> Node=nlNode0		ttings
± Prefer	<u>help.</u> Node=nlNode0		<u>ttings</u>
+ Prefer	<u>help.</u> Node=nlNode0		<u>ttings</u>
	<u>help.</u> Node=nINode0 ences		<u>ttings</u>
New	help. Node=nlNode0 ences Delete		ttings Description ≎
New I	help. Node=nlNode0 ences Delete	1 V Scope 🗘	

11. Select the Oracle JDBC provider you just created. Under Additional Properties, click Data sources. Click New.

		racle JDBC Drive	er > Data so	urces		
JDBC p accessi	rovider. The ing the datab	t the settings of datasource objec ase. Learn more :k steps and mo	t supplies y about this t	our applicatio task in a <u>quic</u>	n with connectio led activity. A gu	ns for
⊕ Pref	erences		-			
New	Delete .	Test connection	Manage	state		
- Colé	h ## #?					
000	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

13. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



Step 1: Enter basic data source	Enter database specific prop	erties for the data source
information		
→ Step 2: Enter database specific properties for the	Set these database-specific prop database vendor JDBC driver to s managed through the datasource	support the connections that are
data source	Name	Value
Step 3: Setup security aliases	* URL	jdbc:oralce:thin:@9.181.84.1
Step 4: Summary	* Data store helper class name Oracle10g data store helper 💙	•
security aliases	* Data store helper class name	

14. Select the authentication alias you just created from the **Component-managed authentication alias** field and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basi	setup security aliases
data source information	
Step 2: Enter	Select the authentication values for this resource.
database specific properties for the	Component-managed authentication alias
data source	nlNode01/Alias_Oracle
 Step 3: Setup security aliases 	Mapping-configuration alias (none)
Step 4: Summary	Container-managed authentication alias
otep 4. odminary	(none) 💌
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost. <u>Global J2C authentication alias</u> <u>Security domains</u>

15. In the Summary page, review the values entered for the data source and click **Finish**.

Close

Create a data source

	Step 1: Enter basic data source	Summary	
	information	Summary of action	ISI
	Step 2: Enter	Options	Values
	database specific properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
	data source	Data source name	Oracle JDBC Driver DataSource
	tep 3: Setup	JNDI name	OracleDS
•	security aliases Step 4: Summary	Select an existing JDBC provider	Oracle JDBC Driver
	Step 4. Summary	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
		URL	jdbc:orade:thin:@9.181.84.136:1521:ord
		Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe
		Use this data source in container managed persistence (CMP)	true
		Component- managed authentication alias	nlNode01/Alias_Oracle
		Mapping- configuration alias	(none)
		Container- managed authentication alias	(none)

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

3C providers		
E	 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. Red w changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

17. Select the data source you just created and click **Test connection**.

<u>JDBC providers</u> > <u>Oracle JDBC Driver</u> > Data sources						
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of tas steps and more general information about the topic.						
🕀 Pref	erences					
New	Delete Tes	t connection	Manage state			
D	ð 👯 🧐	Ů				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Catego
You c	an administer th	e following reso	urces:			
✓	<u>Oracle JDBC</u> <u>Driver</u> DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

Messages							
The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node nlNode01 was successful. Information							
JDBC p	roviders > Orac	le JDBC Driver	> Data sources				
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.							
🕀 Pref	erences						
New	Delete Tes	st connection	Manage state				
0	i 👯 🥰						
	D 👑 🗐 Name ≎	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘	
Select	Name 🛟	JNDI name 🗘 ne following resou	· •	Provider 🗘	Description 🗘	Category 🗘	
Select	Name 🛟	×	· •	Provider 🗘 Oracle JDBC Driver	Description 🗘 New JDBC Datasource	Category 🔇	

The data source is created and it will be used by the adapter to connect to the database.

Configure data source statement cache

1. Click the data source you just created.



rated Solutions Console	Velcome			He	lp Logout		
DBC providers							
BC providers							
JDBC providers > Orac	JDBC providers > Oracle JDBC Driver > Data sources						
data source object supp	Use this page to edit the settings of a data source that is associated with your selected JDBC provider. data source object supplies your application with connections for accessing the database. Learn more a this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic						
Preferences							
New Delete Test	connection Ma	nage state					
Select Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category		
Oracle JDBC Driven DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource			
Total 1	·		·				

2. On the right, under Additional Properties click WebSphere Application Server data source properties.



3. In the Statement cache size field, enter the value 20. Click OK.

General Properties Statement cache siz		
20	statements	
Enable multithre	aded access detection	
🗌 Enable databas	e reauthentication	
Enable IMC and	place estimization support	
Enable JMS one	phase optimization support	
Managa analysis		
Manage cached	nandies	
_		
 Manage cached Log missing trai 		
Log missing transformed to the second sec	operties	
 Log missing trans Pretest connection p Pretest existing 	isaction context	
 Log missing trans Pretest connection p Pretest existing Retry interval 	pooled connections	
 Log missing transformed pretest connection p Pretest existing Retry interval 0 	pooled connections seconds	
 Log missing tran Pretest connection p Pretest existing Retry interval Pretest new co 	pooled connections seconds	
 Log missing tran Pretest connection p Pretest existing Retry interval Pretest new co Number of retr 	pooled connections seconds	
 Log missing trans Pretest connection p Pretest existing Retry interval Pretest new connection Number of retr 100 	pooled connections seconds	
 Log missing trans Pretest connection p Pretest existing Retry interval Pretest new connection Number of retring Retry interval 	pooled connections seconds es	
 Log missing trans Pretest connection p Pretest existing Retry interval Pretest new connection Number of retr 100 	pooled connections seconds	

Reset Cancel

Apply QK

4. In the Messages area, click **Save**.

Ξ	Messages
	 Changes have been made to your local configuration. You can: Save directly to the master configuration. Refer to the saving or discarding. The server may need to be restarted for these changes to take effect.

5. Select the data source you just created and click Test Connection.

JDBC provide

<u>JDBC providers</u> > <u>Oracle JDBC Driver</u> > Data sources

Use this page to edit the settings of a data source that is associated with your selected JDBC provider. The data source object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u>. A guided activity provides a list of task steps and more general information about the topic.

	Preferences							
New Delete Test connection Manage state								
Select	Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description \Diamond	Category 🗘		
	<u>Oracle JDBC</u> <u>Driver</u> <u>DataSource</u>	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource			
Total	1							

The connection test should succeed as indicated by the message shown in the figure below. For troubleshooting issues while testing the connection, see the Troubleshooting section.

DBC provide	DBC providers							
 Messages The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node nlNode01 was successful. 								
JDBC prov	iders > <u>Oracle</u>	<u> JDBC Driver</u> > Da	ata sources					
data source this task in about the	Use this page to edit the settings of a data source that is associated with your selected JDBC provider. The data source object supplies your application with connections for accessing the database. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic.							
Description: Preference	nces							
New De	lete Test co	onnection Man	age state					
004	* *2							
Select Na	me 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description \Diamond	Category 🗘		
Driv	Oracle JDBC Driver DataSource OracleDS Node=nlNode01 Oracle JDBC Driver New JDBC Datasource							
Total 1								

6. Close the Admin Console tab.

Configure the adapter for inbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- In the Available Types area, select Adapters > JDBC and click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Eilter: type filter text dvailable types:	Z.
DBC DBC Domino Oracle E-Business Suite A PeopleSoft Cup	<
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	<
(<u>Back</u> <u>Next</u> > Einish Cancel	

4. Select IBM WebSphere Adapter for JDBC and click Next.

New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
 IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0) 	
	↓
? < <u>Back</u> <u>Next</u> > Einish	Cancel

5. In the Connector project field, enter CWYBC_JDBC.

6. In the **Target runtime environment** field, select appropriate runtime and click **Next**.

🤀 New External Service	3	
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	S
Archive file: Connector project: * Target runtime enviroment:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	_JDBC.rar
?	< Back Next > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		×
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.		
When deploying the application to a stand-alone server, these files must be configur the server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the database ser		~
driver JAR files are shipped with the database installation. If you do not have a loca installation, you can download these files from the Web site of the database vendor JDBC driver JAR files:	l database	
D:\workspace_lib\JDBCdrivers\Oracle\ojdbc6\ojdbc6.jar	Add Remove	
Specify the location of the database-specific native system libraries required to acce database server. This is required if you are using a Type 2 driver implementation. Th libraries are shipped with the database server and client installations.		
System libraries:	Add	~
? < Back	Cancel]

8. Select **Inbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
• Inbound Inbound processing passes data from the adapter to your service export.
Outbound processing passes data from your service import to the adapter.
? < <u>Back Next</u> > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node in the **Database system connection information** area, and then select **10**.
- 2. Enter values in the System ID, Host name, Port number, User name and Password fields, and click Next.



Bew External Service			
Specify the Discovery Properties			
Connection properties	lation		
DB2 UDB iSeries DB2 UDB zSeries DB2 UDB zSeries Oracle	Properties: JDBC driver type: System ID: * Host name: *	Oracle Thin Driver	~
	Port number: * JDBC driver class name: * Database URL:	1521 oracle.jdbc.driver.OracleDriver jdbc:oracle:thin:@9,123,108,86	
	sample1 ******		
Prefix for business object names: Advanced >> Change the logging properties for the	e wizard		
?	< <u>B</u> ack Nex	xt > Einish Cano	el

Select the business objects and services to be used with the adapter

Follow these steps to select the data for Inbound Processing:

1. In the Find Objects in Enterprise System window, click **Run Query**.

A New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	80
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported datat	Edit Query
DiscoverRun the query. Selected objects:	0
····· i < Run a query to populate this view with	
(?) (<u>Back</u> <u>N</u> ext > <u>Finish</u>	Cancel

2. Expand the **SAMPLE** (for this tutorial only) node, select **Tables** and expand it.

🚱 New External Service	
Find Objects in the Enterprise System No discovered object is selected.	HO,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported da Run Query	Edit Query
Discovered objects: Selected objects:	
RECOV_HR SAMPLE SAMPLE1 CUSTOMER WBIA_JDBC_EVENTSTORE Wews Views	d objects to selec
(?) < <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

- 3. Select the **CUSTOMER** table and click
- 4. Click Next.

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	BO.
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported da	Edit Query
Discovered objects: Selected objects:	
RECOV_HR SAMPLE SAMPLE1 Tables CUSTOMER UBIA_JDBC_EVENTSTORE Views	
[inish] [inish]	Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values and click **Next**.

🚯 New External Service	
Specify Composite Properties	
Specify properties that apply to all selected objects.	
Operations for selected business objects	
Operations for these functions will be added to the service interface.:*	
Create	Add
Update Delete	Remove
	Keniove
Create and configure user-defined wrapper objects	
Wrapper object names:	
	Add
	Remove
	TKOINO YC
Business object namespace: http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc	
Specify the relative folder for generated business objects	
Folder:	7
Generate a business graph for each business object	
(?) < Back	Cancel

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select Using security properties from the managed connection factory.
 - b) Select **Specify predefined DataSource** from the **Database connection information** list and input the preconfigured JNDI name of oracle data source in **DataSource JNDI name**.
 - c) Click Advanced.

🔂 New External Service	\mathbf{X}
Specify the Service Generation and Deployment Properties Specify properties for generating the service and running it on the server.	1
Service Operations To modify the names, or add a description to the operations to be generated in the interface file, click Edit Operations. Deployment Properties How do you want to specify the security credentials? O Using an existing JAAS alias (recommended) A Java Authentication and Authorization Services (JAAS) alias is the preferred method. J2C authentication data entry: Select O Using security properties from the activation specification The properties will be stored as plain text; no encryption is used. User name: * sample1 Password: * ******* O Other Use if no security is required or will be handled by the EIS system, or the RAR will be deployed on the server and security will be specified by the properties in the JNDI lookup name.	
Deploy connector project: With module for use by single application	
Specify the settings that are used to connect to JDBC at run time:	
Connection settings; Specify connection properties	
Connection Properties	
Database connection information: Specify predefined DataSource Database system connection information Database vendor: ORACLE DataSource JNDI name: * OracleDS Advanced >>	>
Pack Next > Einish Cancel	

 d) In the Even Configuration area, enter the values for the Event Order By, Event Table Name fields and click Next.

Event delivery configuration				٦.	
 Processing methods for illegal XML characters 					
Additional connection configuration					
 Event configuration 					
Event order by:		event_time, event_priority			
Event table name:	*	WBIA_JDBC_EventStore			
Stored procedure to run before poll:					
Stored procedure to run after poll:					
Event query type for processing events:		Standard	~		
User-defined event query;					
User-defined update query;					
User-defined undate query for failed event del	iverv:				1

3. In the Specify the location Properties window, click New.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:	JDBCInboundTest	New
Namespace;	http://JDBCInboundTest/JDBCInboundInterface1	Create
	Use the default namespace	
Folder:	1	Browse
Name: *	JDBCInboundInterface1	
	Save business objects to a library	
Library:	~	New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

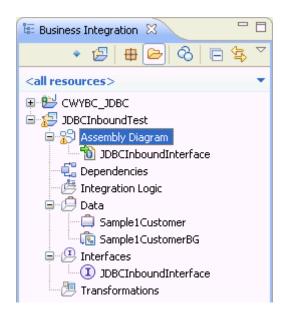
4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Inte	gration Project 📃 🗖 🔀
	Integration Project Type ss integration project that you want to create.
	Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server. <u>More</u>
O Mediation module	Use a mediation module to integrate and connect services. A mediation module can contain mediation flows and can be deployed on WebSphere ESB or WebSphere Process Server. <u>More</u>
0	< <u>B</u> ack <u>N</u> ext > Einish Cancel

5. In the Create a Module window, type **JDBCInboundTest** in the **Module Name** field and click **Finish**.

🚯 New Module
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.
Module name: JDBCInboundTest
Use default location Location: D:\Workspaces\WID7_0806\JDBCInboundTest Browse
✓ Open module assembly diagram
? < Back

- 6. Click **Finish** to complete service creation.
- 7. Verify the results.



Set up the components to be part of the inbound environment

Add the components and set transaction specific properties for them so that they are part of the inbound environment.

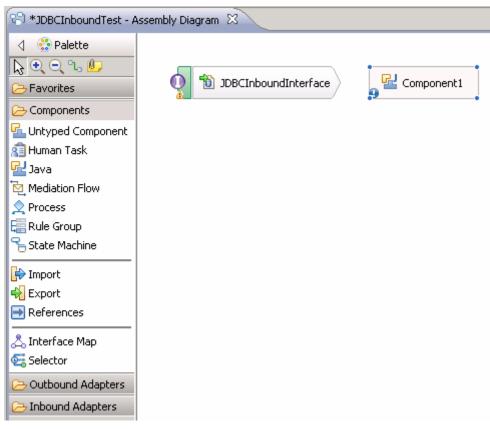
1. Open the Assembly Diagram. It shows the **JDBCInboundInterface** that was generated when the artifacts were created.

3DBCInboundTest - As	isembly Diagram 🕱
 ↓ Palette ▶ ● ● ● ● ● ▶ Favorites 	DBCInboundInterface
 Components Untyped Component Human Task Java Mediation Flow Process Rule Group State Machine State Machine Export References Interface Map Selector 	
C Outbound Adapters	

2. From the Palette, select the **Java** component and drop it on the assembly diagram.

😵 JDBCInboundTest - As	sembly Diagram 🕱
 ↓ ♀ ♀ ♀ ↓ ↓ ♀ ♀ ↓ ↓ ← Favorites ← Components 	DBCInboundInterface
Components Component	
 Interface Map Selector Outbound Adapters Inbound Adapters 	

A component named **Component1** is created in the Assembly diagram.

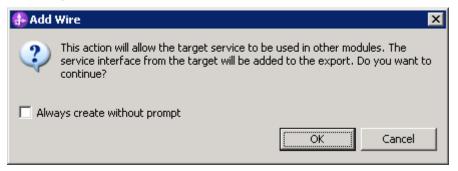




3. Wire **JDBCInboundInterface** to **Component1** by dragging the mouse pointer from the rear end of **JDBCInboundInterface** to the front end of **Component1**.

🕄 *JDBCInboundTest - Assembly Diagram 🛛				
 Palette <	DBCInboundInterface			
Java Mediation Flow Process Rule Group State Machine Import Export				
References References Interface Map Selector Outbound Adapters Inbound Adapters				

Note: Before the preceding window, i.e., before wiring you will see the following window. Click OK.



The Assembly diagram now looks like the figure below.

🕄 *JDBCInboundTest - Assembly Diagram 🛛				
👌 😳 Palette				
💫 🗨 🗨 🖏 🕼				
🔁 Favorites	0 3DBCInboundInterface			
🗁 Components				
💁 Untyped Component				
🗐 Human Task				
🛃 Java				
🔁 Mediation Flow				
👤 Process				
🔚 Rule Group				
State Machine				
🕞 Import				
🐳 Export				
📑 References				
📩 Interface Map				
😔 Selector				
🕞 Outbound Adapters				
🕞 Inbound Adapters				

4. Generate the implementation for Java component. Right-click the component, and select **Generate Implementation** to complete service creation.

👌 😳 Palette		۲ 🔁	0-
O ℃ ∅	0 10 JDBCInboundInterface	👷 妃 Component 1	1
		<u>p</u>	💛 Undo Add Wire
Components			Redo
Lintyped Component			
🗊 Human Task			🖲 Add Note
🛃 Java			Hide Notes
🔁 Mediation Flow			Add •
👷 Process			Change Type
Rule Group			Convert to Import
State Machine			Generate Export
+> Import			Generate Implementation
Export			Select Implementation
-			Open
References			Synchronize Interfaces and References 🕨
🖧 Interface Map			Refactor
Selector			Merge Components
🗁 Outbound Adapters			o∱ <u>C</u> ut
> Inbound Adapters			Сору
			Paste

5. Highlight the default package and select **OK**.

The Java Editor displays the Component1Impl.java file.

😌 *JDBCInboundTest - Assembly Diagram 🛛 D Component 11mpl. java 🕴
*import commonj.sdo.DataObject;
public class Component1Imp1 (
G /**
* Default constructor.
*/
public Component1Impl() (
<pre>super();</pre>
}
⊖ /**
* Return a reference to the component service instance for this implementation
* class. This method should be used when passing this service to a partner reference
* or if you want to invoke this component service asynchronously.
* @generated (com.ibm.wbit.java) */
-/ -/ -/ -/ -/ -/ -/ -/ -/ -/ -/ -/ -/ -
private Object getMyService() (
<pre>return (Object) ServiceManager.INSTANCE.locateService("self");</pre>
)
e /**
* /** * Method generated to support implementation of operation "createSampleCustomerBG" defined for WSDL port type
 nemed guilerated to support implementation of operation createsamplecuscomerba defined for supp port type named "JDBCInhoundInterface".
*
* The presence of <u>commonj.sdg</u> .DataObject as the return type and/or as a parameter
* type conveys that it is a complex type. Please refer to the WSDL Definition for more information
* on the type of input, output and fault(s).
<pre>*/ */ */ *****************************</pre>

6. Scroll down and locate the createSample1Customer(DataObject createSample1CustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:

Admin Conso	le 🕒 *JDBCInboundTest_Test 🕖 Component1Impl.java 🛛
	*
	* The presence of commonj.sdo.DataObject as the return type and/or as a parameter
	* type conveys that it is a complex type. Please refer to the WSDL Definition for more inf
	* on the type of input, output and fault(s).
	*/
e p	ublic void createSample1CustomerBG(DataObject createSample1CustomerBGInput) (
	// To get or set attributes for DataObject createSample1CustomerBGInput, use the APIs s
	// To set a string attribute in createSample1CustomerBGInput, use createSample1Customer
	// To get a string attribute in createSample1CustomerBGInput, use createSample1Customer
	// To set a dataObject attribute in createSample1CustomerBGInput, use createSample1Cust
	// To get a dataObject attribute in createSample1CustomerBGInput, use createSample1Cust
	System.out.println("Create customer.");
	DataObject bg = createSample1CustomerBGInput;
	DataObject bo = bg.getDataObject("Sample1Customer");
	System.out.println("Customer's key is: " + bo.getString("pkey"));
	System. <i>out</i> .println("Customer's firstname is: " + bo.getString("fname"));
	<pre>System.out.println("Customer's lastname is: " + bo.getString("lname"));</pre>
	System. <i>out</i> .println("Customer's code is: " + bo.getString("ccode"));
	System.out.println("Create end.");
}	
<	

7. Scroll down and locate the updateSample1Customer(DataObject updateSample1CustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:

🎯 Admin Console 🛛 🖹 *JDBCInboundTest_Test 🕢 Component1Impl.java 🛛	- e
*	~
* The presence of commonj.sdo.DataObject as the return type and	or as a parameter
* type conveys that it is a complex type. Please refer to the W	DL Definition for more inf
* on the type of input, output and fault(s).	
*/	
public void updateSample1CustomerBG(DataObject updateSample1Cust	merBGInput) (
// To get or set attributes for DataObject updateSample1Cust	merBGInput, use the APIs a
// To set a string attribute in updateSample1CustomerBGInput	use updateSample1Customer
// To get a string attribute in updateSample1CustomerBGInput	use updateSample1Customer
// To set a dataObject attribute in updateSample1CustomerBGI	put, use updateSample1Cust
// To get a dataObject attribute in updateSample1CustomerBGI	put, use updateSample1Cust
System.out.println("Update customer.");	
<pre>DataObject bg = updateSample1CustomerBGInput;</pre>	
<pre>DataObject bo = bg.getDataObject("Sample1Customer");</pre>	
System. <i>out</i> .println("Customer's key is: " + bo.getString("pke	·"));
System. <i>out</i> .println("Customer's firstname is: " + bo.getStrin	("fname"));
System. <i>out</i> .println("Customer's lastname is: " + bo.getString	"lname"));
System. <i>out</i> .println("Customer's code is: " + bo.getString("cc	de"));
<pre>System.out.println("Update end.");</pre>	
}	
	>

8. Scroll down and locate the deleteSample1Customer(DataObject deleteSample1CustomerBGInput) method that needs to be implemented. Write the code into the method so the complete method looks as follows:



- 9. Select File -> Save to save your changes.
- 10. Close and save the Assembly Diagram. Wait for the workspace to complete building.

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) export. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.
- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

🤀 Add and Remove Projects			
Add and Remove Projects Modify the projects that are configu			
Move projects to the right to configu	ure them on the server		
<u>A</u> vailable projects:		Configured projects:	
JDBCBatchTestApp JDBCInboundTestApp TestConnectionPoolApp TestCreateSPSQLServerA TestStructArrayApp	Add All >>		
✓ If server is started, publish chan	<< Remove All		
0	< <u>B</u> ack Next >	Einish	Cancel

4. Add the SCA module to the server.

Add and Remove Projects		
Add and Remove Projects Modify the projects that are configu		
Move projects to the right to configu	ire them on the server	
<u>Available projects:</u>		<u>C</u> onfigured projects:
JDBCBatchTestApp TestConnectionPoolApp TestCreateSPSQLServerA TestStructArrayApp	Add > < Remove Add All >> << Remove All	E 🚡 JDBCInboundTestApp
 ✓ If server is started, publish change 	ges įmmediately	
0	< <u>B</u> ack <u>N</u> ext >	<u>F</u> inish Cancel

5. Click Finish.

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. In the Business Integration view right-click on the JDBCInboundTest module, and select Test > Attach.

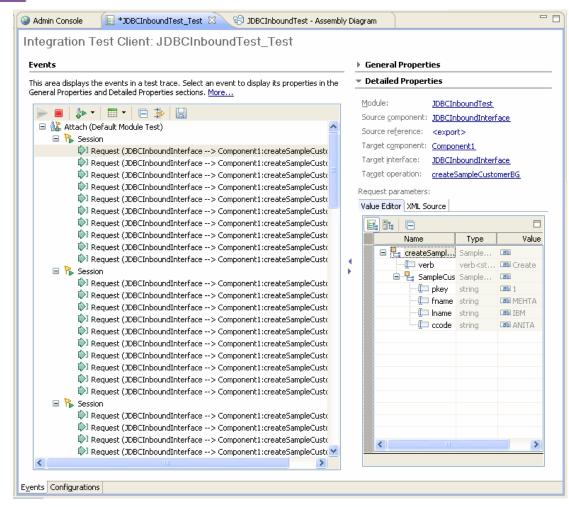
🕼 Business Integration 🛛 📃 🗖	S Admin Console 😵 JDBCInboundTest - Assembly Diagram 🕅
+ 월 월 🖨 🗟 🖻 🕏 ▼	👌 🛟 Palette
<all resources=""></all>	
New	•
Ope <u>n</u> Deployment Editor	
Open Data Map Catalog	
Show Files	
Show References in References Vi	ew
Associate with Process Center	
Refresh and P <u>u</u> blish	
Refresh from Process Center	
📄 Сору	
💼 <u>P</u> aste	
🗙 Delete	
Refactor or Analyze Impact	•
import	
Export	
🔊 Re <u>f</u> resh	
Clo <u>s</u> e Project	
Add to Asset Repository	
Compare <u>B</u> usiness Objects	
Configure Business Object Parsing	Mode
Convert Mediation Flow Format	
Generate Documentation	
🖵 Generate Human Tas <u>k</u> User Interfa	ace
New Process Version	
Synchronize with the WebSphere B	
Iest	Test Modules
Validate	
T <u>e</u> am	Generic S <u>e</u> rvice Client
Comp <u>a</u> re With	►
Properties	Ecola Test Comgatation
Migrate adapter artifacts	Load Emulator
	Prest Event Definition
	🔀 Task Flows 🕝 Build Activities 🔲 Properties 🔛 Problems 👸
	IBM Process Server v7.5 at localhost [Started, Synchronized]

Integration Test Client: JDBCInboundTest_Test	
Events	
This area displays the events in a test trace. Select an event to	
display its properties in the General Properties and Detailed Properties sections. More	
Continue icon in the Events area to start the attachment ses	sion.
Image: Second second	*
Module: JDBCInboundTest	
4	
Events Configurations	

- 2. To execute the service, click **b**.
- 3. Execute the **INSERTCUSTRECORDS** stored procedure to insert records into the Customer table:

```
BEGIN
    INSERTCUSTRECORDS();
END;
```

4. Check the output of the service:



Clear the sample content

Nothing is required to clean up after this tutorial.

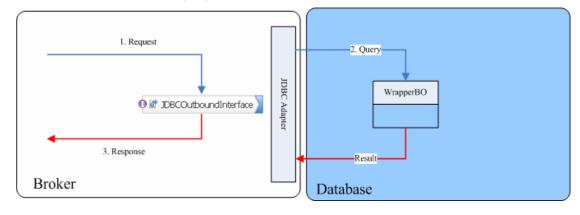
Chapter 11. Tutorial 10: Generate wrapper business objects (Oracle)

Wrapper business object is a top-level business object in business object hierarchy and it used to relate unrelated child business objects. Wrapper object needs a minimum of two table business objects to wrap them together.

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 generates wrapper business objects and creates record in tables using wrapper business objects.

About this task

In this scenario, an application SCA component raises a retrieve test request to the JDBC Outbound Interface. The JDBC adapter executes a SQL query to select all specific records back. Finally, the JDBC adapter converts the test result to a SDO and gives a response to the SCA component. The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).



Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create a table
- Create an authentication alias
- Create a data source

Create a table

You must create the following table in the Oracle database before starting the scenario.

```
CREATE TABLE CUSTOMER (

PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,

FNAME VARCHAR2(20) ,

LNAME VARCHAR2(20) ,

CCODE VARCHAR2(10) ) ;
```

Insert a record into the table you just created.

```
insert into customer values ('1000', 'testFname',
'testLname', 'testCcode')
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Window > Show View > Servers**.

Business Integration - IBM Integr	ration Designer 7.5 - D:\workspace\201	0\Sample75	
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> u	un <u>D</u> iagram Services Samples AST JUnit Tests	<u>Window</u> <u>H</u> elp	_
	🚡 🥵 🛷 🔹 Link Indexer FVTs 🕴 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 📑 📴 Business Inte
🔚 Business 🛛 🗖		Open Perspective	🗞 Build Activities
	Start working Start to work by creating a a project into your workspa	Close Perspective	Image: Business Integration Console Alt+Shift+Q, C DataPower Appliances Dutine Alt+Shift+Q, O Reg Dutine Alt+Shift+Q, O Patterns Explorer
E 🔛 CWYBC_JDBC		· · ·	Patterns Explorer Physical Resources Problems Alt+Shift+O, X
	Learn more Getting Started with IBM Getting Started with IBM	<u>1 Process Center</u>	Properties References Server Logs Server Logs
	Flows 🕜 Build Activities 🔲 Properties 🔝 Pro BM Process Server v7.5 at localhost [Started, Syn	blems 👔 Server Logs 👯 Servers	R Task Flows ^{VN} 결 Tasks 로 TCP/IP Monitor 툲 Visual Snippets
			<u>Q</u> ther Alt+Shift+Q, Q
🗄 🗘 🕄 🖡 1 items selected			

2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace\2010\Sampl 🔳 🗖 🔀
<u>F</u> ile <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
	😤 🛷 🔹 📑 🐯 Business Inte
Link Indexer FVTs Link Indexer APTs BTree tests	WDE APTs
😳 🔀 Task Flow 🕝 Build Activ 🔲 Properties 🔝 Problems	🕅 Server Lo 🙌 Servers 🛛 🗖 🗝
8	* 0 ∅ = ₽ ⊂ _
IBM Process Server v7.5 at localhost [Stopped, Synch	
	Ne <u>w</u>
	Open
	Show In
	📄 Сору
	💼 Paste
	💢 Delete
	Rename
	参 Debug
	😥 Start
	profile 😽
	Stop
	20 Publish
📫 💭 🔚 1 items selected	

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

🚏 IBM Process Server v7.5 at localhost [Started, Synchr	ronized]
	New
	Open
	Show In
	Сору
	The Paste
	🔀 Delete
	Rename
	🐝 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	📕 Stop
	📳 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	🛅 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

🥹 Admin Console 🛛	
Integrated Solutions Console	iem. 4
Log in to the comsole. User ID: admin	
Password: ••••• Log in	
<	

5. Click Security → Global security.

🗄 Guided Activities					
⊞ Servers					
🗄 Services					
🖯 Security					
 Business Integration Sec Global security Security domains Administrative Authorizat SSL certificate and key m Security auditing Bus security 					

6. Under Java Authentication and Authorization Service, click J2C authentication Data.

ure administration, a	pplications, and infrastructure	Close page
cure administration, a	applications, and infrastructure	
Socuro administratio	n, applications, and infrastructure	
		administration is restricted. The applications and the infrastruct
	ration and applications also are secured.	
Configuration		
Security	Configuration Wizard S	Security Configuration Report
Administrative se	curity	Authentication
	inistrative security = <u>Administrative User Roles</u>	
	Administrative Group Role	
Application securi	tv	■ RMI/IIOP security
Enable appl		Java Authentication and Authorization Servic
		Application logins
Java 2 security		System logins
🗌 Use Java 2 s	ecurity to restrict application access to local i	resources
🗹 Warn if	applications are granted custom permissions	Authenticati Specifies a list of user identities and passwo
	access to resource authentication data	Java(TM) 2 connector security to use.
Restrict		
User account repo	sitory	External authorization providers
		 External authorization providers Custom properties

A list of existing aliases is displayed.

Integ	grated Solu	utions Console Welcome admin	Help L	ogout	
		dministration, applications, and infrastructure			Close page
	<mark>Secure</mark> Specifi ⊞ Pref	dministration, applications, and infrastructure a administration, applications, and infrastructure > JAAS - J2C es a list of user identities and passwords for Java(TM) 2 connect ierences Delete			 Help Field help For field help information, select field label or list may when the help curs appears.
		〕 ₩ ♥			Page help More information a
	Select	Alias 🗘	User ID 🗘	Description 🗘	this page
		BSpace JDBC Alias	TEST	Business Space Authorization Alias	
		CommonEventInfrastructureJMSAuthAlias	CEI	Authentication alias for the Common Event Infrastructure JMS Topics and Queues	
		SCA Auth Alias	SCA	This is the alias used by SCA to login to a secured SIBus	
		localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDer	by	Derby authentication alias for the Event Server	

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

Integrated Solutions Console	Welcome Help Logout	IBM.
View: All tasks	Cell=localhostNode01Cell, Profile=AppSrv01	Close page
 Guided Activities E Servers 	Global security > JAAS - J2C authentication data > New Specifies a list of user identities and passwords for	Field help Specifies the password to use for the target enterprise information
 ➡ Applications ➡ Services ➡ Resources 	Java(TM) 2 connector security to use. General Properties * Alias node1/Oracle	system (EIS). Page help More information about this page
 Security Business Integration Sec Global security Security domains Administrative Authorizat SSL certificate and key m Security auditing 	* User ID sample * Password ••••••	Command Assistance View administrative scripting command for last action
Bus security Environment Integration Applications System administration	Apply OK Reset Cancel	
< >		

You have created an authentication alias that will be used to configure the adapter properties.

Integrated Solutions Console	Welcon	ne	Help Logout		M
View: All tasks			BSpace JDBC Alias	wbiuser	B S A A
Servers Applications Services Resources			<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	A a C E Ii JI a
 Security Business Integration Sec Global security 			<u>SCA Auth Alias</u>	wbiuser	T a S a S
 Security domains Administrative Authorizat SSL certificate and key m Security auditing 			localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		D a E
 Bus security 			nlNode01/luweigin	luweiqin	
⊞ Environment ⊞ Integration Applications			nlNode01/node1/Oracle	sample	0 0
E System administration		Fotal	6		
	4				►

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source will be used in generating the artifacts for the module.

Note: This tutorial will use Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** variables

ΞEn	vironment	
	Virtual hosts	
-	Update global Web server plug-in configuration	
	WebSphere variables	
	Shared libraries	
	Replication doma WebSphere variable	s
Ŧ	Naming	

2. On the right, click **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

rties	
	or oci8
Reset Cancel	
	Prties C_DRIVER_PATH Oracle10 y that contains the Oracle thin of Reset Cancel

The variable is added and appears in the list.

Integrated Solutions Console Welcom	he	Help Logout	
View: All tasks		JAVA HOME	\${WAS_INSTALL_KOUT}/Java
Welcome		JVM_CACHE	
🗄 Guided Activities		LOCALHOST NAME	localhost
🗄 Servers		LOG ROOT	\${USER_INSTALL_ROOT}/logs
Applications		MICROSOFT JDBC DRIVER NATIVEPATH	
🗄 Services		MICKOSOFT JOBC DRIVER MATTVEPATH	
🗄 Resources		MICROSOFT JDBC DRIVER PATH	
🗄 Security		MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/W
🗆 Environment		ORACLE JDBC DRIVER PATH	F:\DBDriver\Orade10
 Virtual hosts 		 OS400 NATIVE JDBC40 DRIVER PATH	
 Update global Web server plug-in configuration 		OS400 MATTVE JDBC40 DRIVER PATH	
 WebSphere variables 		OS400 NATIVE JDBC DRIVER PATH	
 Shared libraries 		 OS400 TOOLBOX JDBC DRIVER PATH	
Replication domains		OS400 TOOLBON JDBC DRIVER PATH	
⊞ Naming		SCA BUS ID	localhostNode01Cell
		SERVER LOG ROOT	\${LOG_ROOT}/server1
🗄 System administration 🗸 🗸		SYBASE JDBC DRIVER PATH	
			•

3. Select **Resources → JDBC -> JDBC Providers.**

🗆 Re	sources
	Schedulers
1.1	Object pool managers
Ŧ	SWC
1.1	People directory provider
1.1	Extended messaging provider
	WebSphere Business Integration
,	Adapters
Ξ	JDBC
	 JDBC providers
	Data sources
	 Data JDBC providers phere Application Server V4)
	Application Server V4)
	 Business Integration Data Source
_	

4. Click **New** in the JDBC providers window.

BC prov			2	- Help
JDBC I Use thi encaps vendor guided Socor S d S d S E Pref	providers is page to edit properties of ulates the specific JDBC dri database of your environn	ver implementation classent Learn more about isk steps and more ger cell, Node=nlNode01 vhich the resource defin	ss for access to the specific this task in a <u>quided activity</u> . A heral information about the topic.	Field help For field help information, select a field label or list mar when the help curso
Select	Name 🗘	Scope 🗘	Description 🗘	
		Scope ≎ Node=nlNode01	Description JDBC Provider for WPS/WESB	

5. Click **New**. Select the Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Step 1: Create new IDDC creater	Create new JDBC provider
JDBC provider Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 * Database type Oracle Provider type Oracle V * Implementation type Connection pool data source V
	Oracle JDBC Driver

6. In the Enter database classpath information page, enter the following value for the **Class path** field:

\$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time. Because you have added the ojdbc6.jar file to this path, you must specify that path here.

7. Click Next.

eate	e a new JDBC Provider	
Cre	ate a new JDBC Provid	er
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JD provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths whe you type the JDBC driver file locations. For example: C:\SQLLIB\jav on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the valu
		Class path:
		\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} F:\DBDriver\Oracle10
F	Previous Next (Cancel

8. Click Finish.

	Step 1: Create new	Fummann	
	JDBC provider	Summary	
	Step 2: Enter	Summary of actions:	
	database class path information	Options	Values
	monnauon	Scope	cells:localhostNode01Cell:nodes
→	Step 3: Summary	JDBC provider name	Oracle JDBC Driver
		Description	Oracle JDBC Driver
		Class path	\${ORACLE_JDBC_DRIVER_PATH}
		\${ORACLE_JDBC_DRIVER_PATH}	F:\DBDriver\Oracle10
		Implementation class name	oracle.jdbc.pool.OracleConnectio

9. Under Additional Properties, select Data sources. Click New.

JDBC p	roviders > <u>Or</u>	acle JDBC Drive	er > Data so	urces				
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.								
🕀 Pref	erences							
New	Delete 1	Test connection	Manage	state				
0	ð 👯 🐓							
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (
None								
Total	n							

10. Type any value in the **JNDI name** field, and select the authentication alias "OracleDS" that you created earlier from the **Component-managed authentication alias and XA recovery authentication alias** list. Click **Next**.

>	Step 1: Enter basic data source	Enter basic data source information
	information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

11. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.

ta source ormation ep 2: Enter	Set these database-specific prope	
tabase specific operties for the	database vendor JDBC driver to su managed through the datasource.	
ta source	Name	Value
Step 3: Setup security aliases	* URL	jdbc:orade:thin@9.181.84.13
ep 4: Summary	* Data store helper class name Oracle10g data store helper ❤	
	ta source p 3: Setup curity aliases	Name Name Name Name * URL surity aliases * Data store helper class name

12. In the Setup security aliases window, configure the aliases.

	Step 1: Enter basic data source	Setup security aliases
	information	
	Step 2: Enter	Select the authentication values for this resource.
	database specific properties for the data source	Component-managed authentication alias
÷	Step 3: Setup security aliases	Mapping-configuration alias (none)
	Step 4: Summary	Container-managed authentication alias (none)
		Note: You can create a new J2C authentication alias by accessing one following links. Clicking on a link will cancel the wizard and your currer selections will be lost. <u>Global J2C authentication alias</u> <u>Security domains</u>

13. In the Summary page, review the values entered for the data source and click **Finish**.

eate a data source		
Create a data source		
Step 1: Enter basic data source	Summary	
information	Summary of action	15 :
Step 2: Enter database specific	Options	Values
properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
data source	Data source name	Oracle JDBC Driver DataSource
Step 3: Setup	JNDI name	OracleDS
security aliases	Select an existing JDBC provider	Oracle JDBC Driver
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
	URL	jdbc:oracle:thin:@9.181.84.136:1521:ord
	Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe
	Use this data source in container managed persistence (CMP)	true
	Component- managed authentication alias	nlNode01/node1/Oracle
	Mapping- configuration alias	(none)
	Container- managed authentication alias	(none)

14. Click **Save** to save the changes.

		anges have beer	n made to your lo	cal configurati	on. You can:	
	• <u>S</u>	<u>ave</u> directly to th	e master configur	ation.		
			efore saving or di	-		
	effec		eed to be restarte	d for these ch	anges to take	
		- 10.00 D.i	> D-4			
	POVIDERS > LIPA	cle JDBC Driver	> Data sources			
Use thi	is page to edit t		datasource that is			
Use thi provide	is page to edit t er. The datasour	rce object suppli	es your applicatior	n with connecti	ons for accessin	g the
Use thi provide databa	is page to edit t er. The datasour ise. Learn more	rce object suppli	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	g the
Use thi provide databa steps a	is page to edit t er. The datasour ise. Learn more and more gener.	rce object suppli about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	g the
Use thi provide databa steps a	is page to edit t er. The datasour ise. Learn more	rce object suppli about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	g the
Use thi provide databa steps a	is page to edit t er. The datasou ise. Learn more and more gener. Ferences	rce object suppli about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	g the
Use thi provide databa steps a Pref	is page to edit t er. The datasou ise. Learn more and more gener. Ferences	rce object suppli about this task al information al	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	g the
Use thi provide databa steps a Pref	is page to edit t er. The datasou ise. Learn more and more gener. Ferences	rce object suppli about this task al information al	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	g the
Use thi provide databa steps a	is page to edit t er. The datasour ise. Learn more and more gener erences Delete Te	rce object suppli about this task al information al	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	g the
Use thi provide databa steps a Pref New Select	is page to edit t er. The datasour se. Learn more and more gener erences Delete Te: Delete Te: Name \$	rce object suppli about this task al information al st connection	es your application in a <u>quided activit</u> bout the topic. Manage state Scope \$	n with connecti y. A guided an	ons for accessin tivity provides a	g the 1 list of task
Use thi provide databa steps a Pref New Select	is page to edit t er. The datasour se. Learn more and more gener erences Delete Te: Delete Te: Name \$	rce object suppli- about this task al information al st connection	es your application in a <u>quided activit</u> bout the topic. Manage state Scope \$	n with connecti y. A guided an	ons for accessin tivity provides a Description 🔅	g the 1 list of task

15. Select the data source you just created and click Test connection.

DBC prov	iders						Close pa
DBC prov	/iders					? -	Help
Use thi provide databa steps a	is page to edit t er. The data sou use. Learn more	the settings of a urce object suppl	r > Data sources data source that i ies your applicatio in a <u>guided activit</u> out the topic.	s associated v	tions for access	ing the	Field help Select Row 1 Page help More information about this page
				_			Command Assistance
New	Delete Te:	st connection	Manage state				View administrative
) 👯 🧐	ů					scripting command for last action
Select	Name ≎	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘	
	<u>Oracle JDBC</u> <u>Driver</u> DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource		
Total	1						

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

	viders						Close pag
OBC pro	viders					?	– Help
Use th provid databa steps Pref	providers > Ora is page to edit t er. The data sou ase. Learn more and more gener. ferences	test connection ource on server lation the JDBC Drive the settings of a rce object suppl about this task al information ab		Node01 was s associated v n with connect	successful. with your selected	ing the	Field help For field help information, select a field label or list marker when the help cursor appears. Page help More information about this page
New	Delete Tes	t connection	Manage state				
Q							
Select	Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘	
	Oracle JDBC Driver	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource		
	DataSource						

The data source is created and it will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- In the Available Types area, select Adapters > JDBC and click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Filter: type filter text Available types:	ß
DBC DBC Lotus Domino Oracle E-Business Suite A PeopleSoft COD	<
Description: Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	<
Cancel Can	

4. Select IBM WebSphere Adapter for JDBC and click Next.

B New External Service	
Select an Adapter Select the version of the adapter that you want to use.	6
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	~
	>
< Back Next > Einish	Cancel

5. In the Connector project field enter CWYBC_JDBC.

6. In the **Target runtime environment** field, select the appropriate runtime and click **Next**.

🚯 New External Service	3					
Import a RAR File						
	Import a resource adapter archive (RAR) from the file system to create a connector project for the adapter.					
Archive file:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC	_JDBC.rar				
Connector project: *	CWYBC_JDBC					
Target runtime enviroment:	IBM Process Server v7.5	*				
?	< Back Next > Einish	Cancel				

7. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		×
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.		-
When deploying the application to a stand-alone server, these files must be configured the server. <u>More</u>	on	
Specify the location of the JDBC driver JAR files required to access the database server driver JAR files are shipped with the database installation. If you do not have a local dat installation, you can download these files from the Web site of the database vendor.		
JDBC driver JAR files: D:\workspace_lib\JDBCdrivers\Oracle\ojdbc6\ojdbc6.jar	Add	=
	emove	
Specify the location of the database-specific native system libraries required to access t database server. This is required if you are using a Type 2 driver implementation. The n libraries are shipped with the database server and client installations.		
System libraries:		
	Add	_
< Back	Cancel	

8. Select **Outbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
 Inbound processing passes data from the adapter to your service export. Inbound Inbound Inbound Outbound Outbound processing passes data from your service import to the adapter.
(?) < <u>Back Next</u> > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node in the **Database system connection information** area and select **10**.
- 2. Enter values in the System ID, Host name, Port number, User name and Password fields, and click Next.

🚯 New External Service		
Specify the Discovery Prope	rties	5
Connection properties Database system connection inform	nation Properties:	
DB2 UDB iSeries OB2 UDB zSeries Oracle Oracle OB2 DB2 UDB zSeries Oracle OSU SU S	JDBC driver type: System ID: * Host name: * Port number: * JDBC driver class name: * Database URL: *********	Oracle Thin Driver
Change the logging properties for th		kt > Einish Cancel

Select the business objects and services to be used with the adapter

Follow these steps to select the Customer and Address business object:

1. In the Find Objects in Enterprise System window, click **Run Query**.

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	8-0,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported datat	Edit Query
DiscoverRun the query. Selected objects:	
1 2 4	0
i < Run a query to populate this view with	
(?) (< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

- 2. In the Discovered objects pane, select the **SAMPLE** (for this tutorial only) node, expand it and then select the **Tables** node and expand it.
- 3. Select the **CUSTOMER** and **CUSTADD** tables and click

New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	E.
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported dat Run Query	Edit Query
Discovered objects: Selected objects:	
Image: Constraint of the second s	
Einish	Cancel

Note: Remember Wrapper business objects needs minimum two table objects.

- 4. Click **Next.** The Specify Composite Properties window is displayed.
- 5. In the Wrapper object names area, click Add.

🚯 New External Service		×			
Specify Composite Properties Specify properties that apply to all selected objects.					
Pattern String Custom Fault Name	Add Edit Remove	~			
Create and configure user-defined wrapper objects Wrapper object names:	Add Remove				
Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2c Specify the relative folder for generated business objects Folder:	aį				
Generate a business graph for each business object					
Back Next > Finish	Cancel	_			

6. In the Add Value window, specify the name for the wrapper. Enter **Wrapper1** and click **OK**.

🚯 Add Value	
Value:	
Wrapper 1	
0	OK Cancel

Wrapper1 is added into the Wrapper object names area.

7. In the **Table**, **View or nickname child business objects for the selected wrapper object** area, click **Add** to add child table business objects for the wrapper.



⊕ N	ew External Service			
-	cify Composite Prope			
Spei	ify properties that apply to all s	elected objects.		
	Pattern String	Custom Fault Name		🛛 🗛 🖂
				Edit
				Remove
	<		>	
	ate and configure user-defined (Wrapper object names:	wrapper objects		
	Wrapper1			Add
				Remove
	∟ Table, view, synonym, or nickn	ame child business objects for	the selected wrap	per object:
				Add
				Remove
	Service functions for selected w	rapper object:		_
<				
<u> </u>				
?		< Back Next >	Einish	Cancel

8. In the Add Value window, select CUSTADD and CUSTOMER tables and click **OK**.

🚯 Add Value	
Select values from the list	t below:
CUSTADD CUSTOMER	
0	OK Cancel
U.	

Both CUSTADD and CUSTOMER tables are added into child business objects for the selected wrapper object.



9. In the Service functions for the selected wrapper object area, click Add to add service functions to the wrapper.

🕀 New External Service				
Specify Composite Properties Specify properties that apply to all selected objects.				
		Edit		
Create and configure us Wrapper object nan	er-defined wrapper objects			
Wrapper1		Add		
Table, view, synony CUSTADD CUSTOMER	m, or nickname child business objects for the select	Add		
Service functions fo	r selected wrapper object:			
<		Add 🗸		
3	< Back Next > Einish	Cancel		

10. In the Add Value window, select the Create and click **OK**.

6	Add Value
5	Select values from the list below:
	Create Delete
	Retrieve Update
	OK Cancel

The selected service operation is added into the **Service functions** for the selected wrapper object area.

11. Accept the default values for the other fields and click Next.

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

- 1. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Other** for security options under **Deployment Properties.** Clear the **Join the global transaction** check box.
 - b) Select Specify predefined connection pool DataSource from the Database connection information list.
 - c) Enter OracleDS in the Connection pool DataSource JNDI Name field, and click Next.

🏶 New External Service				
Specify the Service Generation and Deployment Properties Specify properties for generating the service and running it on the server.				
Service Operations To modify the names, or add a description to the interface file, click Edit Operations. Deployment Properties How do you want to specify the security credent O Using an existing JAAS alias (recommended) A Java Authentication and Authorization Ser J2C authentication data entry: O Using security properties from the managed of The properties will be stored as plain text; in User name: Password;	tials? vices (JAAS) alias is the preferred method. connection factory			
 Other Use if no security is required or will be handle server and security will be specified by the p The quality of service that is used to join the transpecially when a failure occurs. To participate in database connection information must be specified Join the global transaction 	nsaction provides a higher degree of data integrity, n a global transaction, a predefined XA DataSource or XA			
	run time: nnection properties			
	efined XA datasource or XA database connection saction, either the XA connection information or the local Specify predefined connection pool DataSource ORACLE e:* OracleDS			
0	< Back Next > Einish Cancel			

2. Click $\ensuremath{\textbf{New}}$ in the Specify the Location Properties window.

🚯 New External	Service	
	cation Properties operties for where you want to save the service.	
Properties for Serv	ice	
Module:	JDBCInboundTest	New
Namespace;	http://JDBCInboundTest/JDBCOutboundInterface	Create a n
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface]
	Save business objects to a library	
Library;		New
Description:]
?	< <u>Back</u> Next > Finish	Cancel

3. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🤀 New Business Integration Project			
Select a Business Integration Project Type Select the type of business integration project that you want to create.			
	Use a module to integrate business applications and services. A modu any type of component and can be deployed on WebSphere Process : <u>More</u>		
Mediation module	Use a mediation module to integrate and connect services. A mediation module can contain mediation flows and can be deployed on WebSphere ESB or WebSphere Process Server. <u>More</u>		
0	< <u>B</u> ack <u>N</u> ext > Einish	Cancel	

4. In the Create a Module window, type **TestWrapper** in the **Module Name** field and click **Finish**.

🚯 New Module	×
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.	
Module name: TestWrapper	
Location: D:\Workspaces\WID7_0806\TestWrapper Browse	
✓ Open module assembly diagram	
⑦ < <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel)

5. In the Specify the Location Properties window, accept the default values for all fields and click **Finish**.

🚯 New Externa	Service	
	ocation Properties operties for where you want to save the service.	P
Properties for Serv	vice	
Module:	TestWrapper 🗸	New
Namespace;	http://TestWrapper/JDBCOutboundInterface]
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface]
	Save business objects to a library	
Library;		New
Description:		
0	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

6. Open the Project Explorer and verify business objects are created correctly.

🖮 🔁 TestWrapper
Ė₽S Assembly Diagram
JDBCOutboundInterface
/ Integration Logic
🛱 🕖 Data
🖨 DeleteAllResult
🛱 ExistsResult
🛱 IntegrityConstraintFault
🛱 MatchesExceededLimitFault
🛱 MissingDataFault
🛱 MultipleMatchingRecordsFault
🛱 ObjectNotFoundFault
🖳 💭 PrimaryKeyPairType
💭 RecordNotFoundFault
🛱 Sample1Custadd
💭 Sample1CustaddBatchResult
🗓 Sample1CustaddBG
🛱 Sample1CustaddContainer
🛱 Sample1CustaddList
🗓 Sample1CustaddListBG
💭 Sample1CustaddUpdateAllInput
📲 🗓 Sample1CustaddUpdateAllInputBG
🛱 Sample1Customer
🖳 🛄 Sample1CustomerBatchResult
🖳 🗓 Sample1CustomerBG
- 🛱 Sample1CustomerContainer
🛱 Sample1CustomerList
📲 💼 Sample1CustomerListBG
💭 Sample1CustomerUpdateAllInput
🗓 Sample1CustomerUpdateAllInputBG
🖳 🛄 UniqueConstraintFault
🖨 UpdateAllResult
🖨 WBIFault
🖨 Wrapper1
🖳 🕼 Wrapper1BG
🗐 💷 Interfaces
I) JDBCOutboundInterface
🗁 🕮 Transformations

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an EIS import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.

- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

_{аа} кие стоцр 🏪 State Machine		New	
		Open	F3
🔶 Import		Show In	Alt+Shift+W
🛃 Export		П Сору	Ctrl+C
References		Reste	Ctrl+V
🖧 Interface Map (De		X Delete	Delete
Selector		Rename	F2
		🏇 Restart in Debug	Ctrl+Alt+D
Inbound Exports		Restart	Ctrl+Alt+R
Outbound Adapters		🔊 Restart in Profile	
Inbound Adapters		Stop	Ctrl+Alt+S
		📳 Publish	Ctrl+Alt+P
		<u>C</u> lean	
		🎽 Add and Remove	
		Monitbying	
		Create Tables and Data Sources	
		Reconnect Debug Process	
		🞢 View and Publish Changes to Server	
		Manage Server Profiles	
		Export Dynamic Endpoint Selection Configuration	
		着 Import Dynamic Endpoint Selection Configuration	
		着 Update Vocabularies and Related Artifacts	
		Server Configuration	
		Universal Test Client	
		Administration	
		Launch	
9		Add and Remove Integration Solution Projects	
	Activities 🔲 Properties 🚼 er v7.5 at localhost (Started,	Properties	Alt+Enter

The Add and Remove Projects window lists the available projects in the IBM Integration Designer workspace.

🚯 Add and Remove			
Add and Remove Modify the resources that are			
Move resources to the right to Available: TestWrapperApp	Add > Add All >> Add All >>		
✓ If server is started, publish changes immediately If server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentration of the server is started, publish changes immediately Image: Concentrati			

4. Select your project (**TestWrapperApp**) and click **Add** to configure the project on the server and click **Finish**.

🤀 Add and Remove				
Add and Remove Modify the resources that are	configured on the server			
Move resources to the right to	configure them on the serv	ver		
<u>A</u> vailable:		<u>C</u> onfigured:		
DBCInboundTestAp	Add > < <u>R</u> emove	▪ 🛅 TestWrapperApp		
✓ If server is started, publish changes immediately If server is started, publish changes immediately (?) < Back				

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

 Select the TestWrapper module, right-click, and select Test > Test Module. The Test Client window is displayed.

🛓 🔁 TestWrapper	a there Tech	
New	•	
Open Deployment Editor		
Open Data Map Catalog		
Show Files		
Show References in References	: View	
Associate with Process Center	1	
Refresh and Publish		
Refresh from Process Center		
[]] ⊆ору		
💼 <u>P</u> aste		
💢 <u>D</u> elete		
Refactor or Analyze Impact	►	
≥_ Import		
Kana Export	-	
🔊 Re <u>f</u> resh		
Clo <u>s</u> e Project		
Add to Asset Repository		
Compare <u>B</u> usiness Objects		
Configure Business Object Parsi	ng Mode	
Convert Mediation Flow Format.		
💣 Generate Documentation		
😱 Generate Human Task User Inte	erface	
New Process Version		
Synchronize with the WebSpher	e Business Modeler E <u>x</u> port	
<u>T</u> est	•	🔰 <u>T</u> est Modules
Validate		🕌 Attach to Moduរសិន
T <u>e</u> am	•	Seneric Service Client
_ Comp <u>a</u> re With	• -	
Properties	1	Stoad Test Configuration
Migrate adapter artifacts		Load Test Trace
Migrate adapter artifacts	🛛 📥 Lask Flows 🔽 Bui –	Loa <u>d</u> Emulator
		Solution Event Definition

2. Select createWrapper1 from the Operation list and set "Create" as verb. Right-click custaddobj and select Add Elements.

Select the component, interface, and operation you would like to invoke. Click Continue to run.
Funct:
Funct:

Events	→ General Prop	perties				
≱ ▾ ☶ ▾ 🖻 🔆 🕑 🔳 🔚	• Detailed Pro	 Detailed Properties 				
≬⊳ Invoke	Configuration:	Default Module Tes	t	*		
	Module:	TestWrapper	TestWrapper JDBCOutboundInterface			
	Component:	JDBCOutboundInterf				
	Interface:	JDBCOutboundInterf	ace	*		
	Operation:	createWrapper1		*		
	Initial reques	Type	Value			
	📃 🕒 🖳 create	Wrapp Wrapper1BG	~	~		
	- 🖵 verb	verb <string></string>	🗸 Create			
	🖃 🖶 Wrap	per1 Wrapper1	×			
		rapcu string	×			
		apcu string	~			
		ustad JabdullaCust		~		
	<	IabdullaCust	6131	>		
		- IIII				

3. Enter 1 and click OK.

🚯 Add Element	3
Enter the number of new elements to add:	
0	
OK Cancel	

4. Enter the input values for custaddobj[0] as shown in the below figure.

Initial request parameters

Name	Туре	Value
🖃 🖳 createWrapper1Input	Wrapper1BG	×
- 🖵 verb	verb <string></string>	🗸 Create
🖕 🖳 Wrapperl	Wrapper1	×
🚽 🖵 wrapcustaddaddrid	string	✓
🖳 🗁 wrapcustomerpkey	string	×
📮 回 custaddobj	JabdullaCustadd[]	ഒ
😑 🖳 custaddobj[0]	JabdullaCustadd	×
💷 addrid	string	✓ 100
custid	string	✓ 100
💷 city	string	🖌 Beijing
🛄 zipcode	string	✓ 100000
[D] customerobj	JabdullaCustomer[]	667

5. Now, right-click over customerobj and select **Add Elements** and enter 1 and click **OK**.

🚯 Add Element	×
Enter the number of new elements to add:	
0	
OK Cancel	

6. Enter the input values for customerobj[0] as shown in the below figure.

Initial	request	parameters
m o l		

\$\begin{aligned} \$		
Name	Туре	Value
🖃 🖳 createWrapper1Input	Wrapper1BG	×
- 🖵 verb	verb <string></string>	🗸 Create
🚊 🖳 Wrapper1	Wrapper1	×
— 💭 wrapcustaddaddrid	string	×
🖳 💭 wrapcustomerpkey	string	×
📮 回 custaddobj	JabdullaCustadd[]	ഒ
🖕 🖳 custaddobj[0]	JabdullaCustadd	×
— 🖵 addrid	string	✓ 100
🖳 🖵 custid	string	✓ 100
🖳 🖵 city	string	🗸 Beijing
🛄 🖵 zipcode	string	✓ 100000
🖻 🛄 customerobj	JabdullaCustomer[]	ഒ
🖕 🖳 customerobj[0]	JabdullaCustomer	×
🖳 🖵 pkey	string	✓ 100
🖳 🖵 fname	string	🖌 IBMer
🖳 💷 lname	string	🖌 IBMer
🛄 💷 ccode	string	🖌 IBM

7. To execute the service, click Continue \mathbf{O} .

8. In the Select Deployment location window, select the server and click **Finish.**

Deployment Location	
Select a Deployment Location Specify a runtime location where this test will deploy.	E
Deployment location:	
IBM Process Servers IBM Process Server v7.5 at localhost WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run	
Use this location as the default and do not ask again	
① To change the default location elsewhere, open the Properties wir project and select Business Integration > Integration Test Client.	ndow for the
	Cancel

9. Check the output of the service, and check the data in the enterprise information system (EIS) to ensure it matches the expected values.

Module: TestWrapper
Component: JDBCOutboundInterface
Interface: JDBCOutboundInterface
Operation: createWrapper1

Return parameters:

Name	Туре	Value
🖃 🖳 createWrapper1(Wrapper1BG	*
🖵 💷 verb	verb <string></string>	🗸 Create
🖻 🖳 Wrapper1	Wrapper1	×
🚽 🗁 wrapcustad	string	×
🕀 wrapcuston	string	×
😑 💷 custaddobj	JabdullaCustadd[]	ଜ
😑 💾 custadd	JabdullaCustadd	×
🖵 💷 addri	string	✓ 100
— 🗇 custi	string	✓ 100
🖵 💭 city	string	🛩 Beijing
🖵 🖵 zipco	string	✓ 100000
😑 💷 customerok	JabdullaCustomer[]	667
😑 💾 custome:	JabdullaCustomer	×
👘 💭 pkey	string	✓ 100
💷 🗇 💭 fname	string	✓ IBMer
💷 💷 💷	string	✓ IBMer
🛄 ccode	string	✓ IBM

Clear the sample content

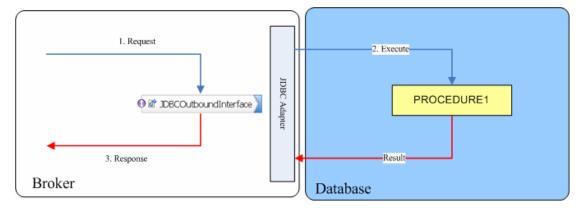
Return the data to its original state. Nothing is required to clean up after this tutorial.

Chapter 12. Tutorial 11: Creating business objects for stored procedure and executing stored procedure with Execute operation (SQL Server)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 creates business object for stored procedure and execute the stored procedure with execute operation. It also demonstrates the support for result sets returned by stored procedure.

About this task

In this scenario, an application SCA component raises an execute request to the JDBC Outbound Interface. The JDBC adapter generates an execute SQL statement to call the corresponding stored procedure. The stored procedure executes its internal business logic and generates output. Finally, JDBC adapter generates response according to the execution status and the output of the stored procedure. The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables and stored procedure
- Create an authentication alias
- Create a data source

Create tables and stored procedure

You must create the following tables and stored procedure in the SQL Server database before starting the scenario.

a. Script for creating the reference types

Execute the below scripts to create CUSTOMER and ADDRESS tables.

```
CREATE TABLE CUSTOMER (

PKEY VARCHAR(10) NOT NULL PRIMARY KEY,

FNAME VARCHAR(20) ,

LNAME VARCHAR(20) ,

CCODE VARCHAR(10) ) ;

CREATE TABLE ADDRESS (
```

```
ADDRID VARCHAR(10) NOT NULL PRIMARY KEY,
CUSTID VARCHAR(10) ,
CITY VARCHAR(20) ,
ZIPCODE VARCHAR (10) );
```

Execute the below scripts to enter the following records in the customer table.

```
INSERT INTO CUSTOMER VALUES ('100', 'fname1',
'lname1', 'IBM');
INSERT INTO CUSTOMER VALUES ('200', 'fname2',
'lname2', 'IBM');
```

Execute the below scripts to enter the following records in the address table

```
INSERT INTO ADDRESS VALUES ('100', '100', 'test1',
'12345');
INSERT INTO ADDRESS VALUES ('200', '200', 'test2',
'12346');
```

b. Script for creating the stored procedure

The stored procedure can be created using the SQL Server Client.

Create a stored procedure that has one input string and one output string parameter, and returns two result sets. Stored Procedures in SQL Server Database always have return value.

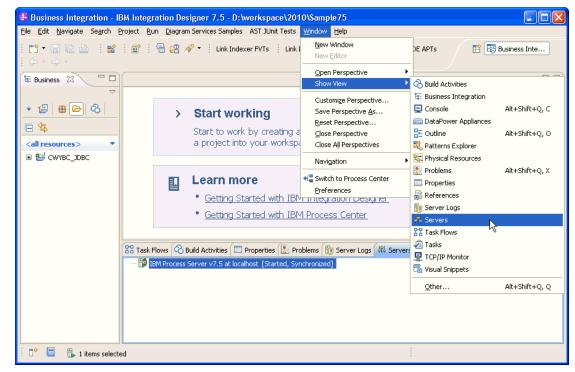
```
CREATE PROCEDURE PROCEDURE1 @var0 varchar(10),
@var1 varchar(10) OUT
AS
SELECT PKEY,LNAME,FNAME,CCODE FROM CUSTOMER;
SELECT ADDRID,CUSTID,CITY,ZIPCODE FROM ADDRESS;
Set @var1= @var0;
Return (@var1)
GO
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

 In IBM Integration Designer, switch to the Servers view by selecting Windows > Show View > Servers.



2. In the **Servers** view, right-click the server that you want to start and select **Start**.

🚯 Bi	usiness Integ	ration -	IBM Int	egrati	ion Desig	ner 7.5	D:\work	space\2010\Sam	pl 🔳 🗖	
Eile	<u>E</u> dit <u>N</u> avigate	Se <u>a</u> rch	Project	<u>R</u> un	<u>D</u> iagram Se	rvices Sar	nples AST	JUnit Tests <u>W</u> indov	v <u>H</u> elp	
1 📬	🗄 📩 🕶 🔡 🔡 🛗 🕼 🖓 🕶 🔛 📴 Business Inte									
: Lini	Link Indexer FVTs Link Indexer APTs BTree tests WDE APTs									
! ⇔	* 🔶 *									
••••	Task Flow	🗞 Build	Activ 🔲	Prope	erties 🔝 P	roblems	🤠 Server I	Lo 👭 Servers 🛛		****
8								参 🔾 🖉	■ ₽ 🏹	8
t ::	🔁 IBM Pro	ocess Serv	/er v7.5 a	t localh	ost (Stoppe	ed, Synchi	onized]			
							Ne <u>w</u>			
							Open			
							Show 1	In		
							📄 Сору			
							💼 Paste			
							💢 Delete			
							Re <u>n</u> am	ne		
							🐞 <u>D</u> ebug	I		
							🜔 <u>S</u> tart	N		
							Profile	43		
							🔳 S <u>t</u> op			
							📳 Publist	ı		
! □\$	📒 🖡 1 i	tems sele	cted				<u>⊂</u> lean.			

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

🚏 IBM Process Server v7.5 at localhost [Started, Synchr	ronized]
	Ne <u>w</u>
	Open
	Show In
	📄 Сору
	Paste
	💢 Delete
	Re <u>n</u> ame
	🕸 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	📕 Stop
	📳 Publish
	⊆lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	hanage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	Configuration 2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

@ E	Business Integration - WebSphere Administrative Conso	le for WPS7 at localhost 🔳 🗖 🗙
Eile	: <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>W</u> indow <u>H</u> elp	
1 🖬	i • 📰 💩 i 📽 i 🖹 🌢 🗉 🖏 🦉 🥸 🆓 🖉 💀 🕫 i 🕼 i 🖉 🛷 • i 🗇 •	🖬 🖏 🗟
	⊗ Admin Console ¤	- e
÷.	Integrated Solutions Console	iem
8	Log in to the console.	
	User ID:	
	Log in Note: After some period of inactivity, the system vill log you out automatically and ask you to log in	
	Note: Arter some period of inactivity, the system will log you out automatically and ask you to log in again.	
i ∎<	Done	i a XX 🗘 🗖 🖹 👸 👭

5. Click Security → Global security.

View: All tasks
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
1 Resources
🖯 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
Integration Applications
🗄 Users and Groups
🗄 Monitoring and Tuning
⊞ Troubleshooting
⊞ Service integration
II UDU

6. Under Java Authentication and Authorization Service, click J2C authentication data.

Ise this panel to configure administration and the default application securit unctions and is used as a default security policy for user applications. Secur pplications.	
Security Configuration Wizard Security Configu	uration Report
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expir <u>LTPA</u> Kerberos and LTPA
Application security ✓ Enable application security	Kerberos and ErrA Kerberos configuration SWAM (deprecated): No authenti Authentication cache settings
Java 2 security Use Java 2 security to restrict application access to local resources W Warn if applications are granted custom permissions Restrict access to resource authentication data	Web and SIP security RMI/IIOP security Java Authentication and Authoriza Application logins
User account repository Current realm definition Federated repositories	System logins = J2C authentication data Specifies a list of user identities and pass
Federated repositories Available realm definitions	Specifies a list of user identities and pas for Java(TM) 2 connector security to use

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Арр	ly		
🕀 Pr	eferences		
Nev	Delete		
D			
Selec	t Alias 🛟	User ID 🗘	Description 🗘
You	can administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
Tota	14		

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

bal security	17
Global security > JAAS - J2C authentication data > New	
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.	
General Properties	
* Alias	
Alias_SQLServer	
* User ID	
sa	
* Password	
•••••	
Description	
Description	
Apply OK Reset Cancel	
Apply OK Keset Califer	

8. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

oal security	
E	 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. Refine the master configuration. Refine the master configuration. The server may need to be restarted for these changes to take effect.

You have created an authentication alias that will be used to configure the data source.

Preferences

New Delete		
Select Alias 💠	User ID 🗘	Description 🗘
You can administer the following resources:		
BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
CommonEventInfrastructureJMSAuthAlias	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
IocalhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
nlNode01/Alias Oracle	sample	
nlNode01/Alias SpLServer	sample	
Total 6		

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source is used later when generating the artifacts for the module.

Note: This tutorial uses SQL Server as the database and the SQL Server JDBC driver sqljdbc.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** Variables.

View: All tasks 💌
Welcome
⊕ Guided Activities ■
Applications
🗄 Services
1 Resources
🗄 Security
🖯 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared lib Replication WebSphere variables Replication
Integration Applications
\pm System administration
🗄 Users and Groups
🗄 Monitoring and Tuning
🗄 Troubleshooting
100U

2. On the right, select **MICROSOFT_JDBC_DRIVER_PATH** and specify the path of the sqljdbc.jar file in the **Value** field. Click **OK**.

Cell=localhostNode01Cell, Profile=AppSrv01

<u>WebSphere Variables</u> > MICROSOFT_JDBC_DRIVER_PATH
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.
Configuration
General Properties * Name MICROSOFT_JDBC_DRIVER_F Value D:\Lib
Description The directory that contains the Microsoft SQL Server JDBC Driver.
Apply OK Reset Cancel

3. Click **Save** to save the changes.

WebSphere Variables	?
🕀 Messages	
 Changes have been made to your local configuration. You can: Specificatly to the master configuration. R Lew changes before saving or discarding. 	
Δ The server may need to be restarted for these changes to take effect.	

The variable is added and appears in the list.

	ç		
⊕ Pret	ferences		
New	Delete		
D	6 # 4		
Select	Name 🛟	Value 🗘	Scope 🗘
You c	an administer the following resources:		
	MICROSOFT JDBC DRIVER NATIVEPATH		Node=nlNode01
	MICROSOFT JDBC DRIVER PATH	D:\Lib	Node=nlNode01
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01
	ORACLE JDBC DRIVER PATH	D:\Lib	Node=nlNode01
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01
	SCA BUS ID	localhostNode01Cell	Cell=localhostNode01Cell
	SERVER LOG ROOT	\${LOG_ROOT}/server1	Node=nlNode01,Server=serve
	SYBASE JDBC DRIVER PATH		Node=nlNode01
	UNIVERSAL JOBC DRIVER PATH	\${WAS_INSTALL_ROOT}/universalDriver/lib	Node=nlNode01

4. Select **Resources** → **JDBC** -> **JDBC** Providers.

View:	All tasks
Welco	ome
🗄 Guid	ed Activities
🗄 Serv	ers
🗄 Appli	ications
🗄 Servi	ices
🗆 Reso	urces
= S	chedulers
= 0	bject pool managers
MC 🗄	15
= P	eople directory provider
= E:	xtended messaging provider
	ebSphere Business Integration dapters
D T D	вс
	JDBC propiders
	Data soul
	Data sour JDBC providers Application Server V4)
	Business Integration Data Sourc
🗄 Re	source Adapters
⊞ As	synchronous beans
±ca	ache instances
⊞ Ma	ail
🗄 Re	mote artifacts
± UF	RL .
🗄 Re	source Environment
🗄 Secu	rity
_	•
ELENVI	ronment

5. Click **New** in the JDBC providers window.

Cell=localhostNode01Cell, Profile=AppSrv01
--

DBC providers		? -				
JDBC providers						
Use this page to edit properties of a JDBC provider. The JDBC provider object encapsulates the specific JDBC driver implementation class for access to the specif vendor database of your environment. Learn more about this task in a <u>guided</u> <u>activity</u> . A guided activity provides a list of task steps and more general informatio about the topic.						
Scope: Cell=localhostNode01Cell, Node=nlNode01						
Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings</u> <u>help.</u> Node=nlNode01						
New Delete						
Select Name 🛟	Scope 🗘	Description 🔷				
You can administer the following	g resources:					
Oracle JDBC Driver	Node=nlNode01	Oracle JDBC Driver				
Total 1						

6. Select **SQL Server** database with a connection pool data source for the SQL Server JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

>	Step 1: Create new	Create new JDBC provider
	JDBC provider Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type differen- values. Scope cells:localhostNode01Cell:nodes:nlNode01 * Database type SQL Server V * Provider type Microsoft SQL Server JDBC Driver * Implementation type Connection pool data source V * Name Microsoft SQL Server JDBC Driver Description Microsoft SQL Server JDBC Driver Microsoft SQL Server JDBC Driver

7. In the Enter database classpath information page, enter the following value for the **Class path** field:

\$(MICROSOFT_JDBC_DRIVER_PATH)/sqljdbc.jar, where \$(MICROSOFT_JDBC_DRIVER_PATH) is library path for the run time.

8. Click Next.

Cell=localhostNode01Cell, Profile=AppSrv01

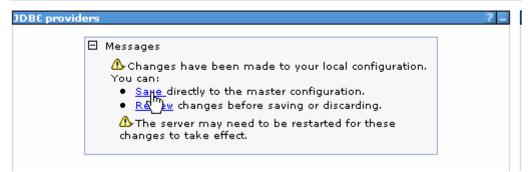
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the value.
		Class path:
		\${MICROSOFT_JDBC_DRIVER_PATH}/sqljdbc.jar
		Directory location for "sqljdbc.jar" which is saved as WebSphere variable \${MICROSOFT_JDBC_DRIVER_PATH}
		D:\Lib
		Native library path
		Directory location which is saved as WebSphere variable \${MICROSOFT_JDBC_DRIVER_NATIVEPATH}

9. In the Summary page, click Finish.

Create a new JDBC Provide	r	
Step 1: Create new JDBC provider	Summary	
Step 2: Enter	Summary of actions:	
database class path information	Options	Values
	Scope	cells:localhostNode01Cell:nodes:nlNode01
Step 3: Summary	JDBC provider name	Microsoft SQL Server JDBC Driver
	Description	Microsoft SQL Server JDBC Driver. This provider is configurable in version 6.1.0.15 and later nodes.
	Class path	\${MICROSOFT_JDBC_DRIVER_PATH}/sqljdbc.jar
	\${MICROSOFT_JDBC_DRIVER_PATH}	D:\Lib
	Native path	\${MICROSOFT_JDBC_DRIVER_NATIVEPATH}
	\${MICROSOFT_JDBC_DRIVER_NATIVEPATH}	
	Implementation class name	com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSourc

10. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01



The JDBC provider is added and appears in the list.

Cell=localhostNode01Cell, Profile=AppSrv01

BC prov	viders		
JDBC p	providers		
JDBC o more a	friver implementation class for a	OBC provider. The JDBC provider (ccess to the specific vendor datab ty. A guided activity provides a lis	base of your environment. Learn
🖯 Sco	pe: Cell =localhostNode01Cell , N	ode=nlNode01	
		which the resource definition is vis scope is and how it works, <u>see th</u>	
⊕ Pret	ferences		
D	6 # ¥		
Select	Name ᅌ	Scope 🗘	Description 🗘
You c	an administer the following reso	urces:	
	Microsoft SQL Server JDBC Driver	Node=nlNode01	Microsoft SQL Server JDBC Driver. This provider is configurable in version 6.1.0.15 and later nodes.
	Oracle JDBC Driver	Node=nlNode01	Oracle JDBC Driver
Total	2		

11. Select the SQL Server JDBC provider you created. Under Additional Properties, click Data sources. Click New.

Cell=localhostNode01Cell, Profile=AppSrv01

<u>JDBC providers</u> > <u>Microsoft SQL Server JDBC Driver</u> > Data sources						
Use this page to edit the settings of a datasource that is associated with your selected JDBC provid						
The datasource object supplies your application with connections for accessing the database. Learn m about this task in a guided activity. A guided activity provides a list of task steps and more general						
nformation about the					general	
∓ Preferences						
New Delete Test connection Manage state						
1						
<u> </u>						
Select Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🔇	

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell,	Profile=AppSrv01	

÷	Step 1: Enter basic data source	Enter basic data source information
	Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Microsoft SQL Server JDBC Driver * Data source name Microsoft SQL Server JDBC Driver - DataSource
		* JNDI name SQLServerDS

13. Provide the appropriate **Database name**, **Port number**, **Server name** value. Click **Next**.

Step 1: Enter basic		Enter database spec	ific properties for the data source
	data source information		
•	Step 2: Enter database specific properties for the data source		cific properties, which are required by the driver to support the connections that are latasource.
	data source	Name	Value
	Step 3: Setup security aliases	Database name	sample
	Step 4: Summary	Port number	1433
		Server name	9.123.108.86
		Use this data sour	ce in container managed persistence (CMP

14. Select the authentication alias you just created from the **Component-managed authentication alias** field and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Setup security aliases
data source information Step 2: Enter database specific properties for the data source → Step 3: Setup security aliases	Select the authentication values for this resource. Component-managed authentication alias nINode01/Alias_SQLServer Mapping-configuration alias (none) Container-managed authentication alias
Step 4: Summary	(none)

15. In the Summary page, review the values entered for the data source and click **Finish**.



Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Summary		
information	Summary of act	ions:	
Step 2: Enter database specific	Options	Values	
properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01	
data source Step 3: Setup	Data source name	Microsoft SQL Server JDBC Driver - DataSource	
security aliases	JNDI name	SQLServerDS	
→ Step 4: Summary	Select an existing JDBC provider	Microsoft SQL Server JDBC Driver	
	Implementation class name	com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSource	
	Database name	sample	
	Port number	1433	
	Server name	9.181.84.136	
	Use this data source in container managed persistence (CMP)	true	
	Component- managed authentication alias	nlNode01/Alias_SQLServer	
	Mapping- configuration alias	(none)	
	Container- managed authentication alias	(none)	

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

C providers		
	Messages	
	 Changes have been made to your local configuration. You can: Save directly to the master configuration. Red by changes before saving or discarding. 	
	Δ The server may need to be restarted for these changes to take effect.	

17. Select the check box for the newly created data source and click **Test connection**.

Cell=localhostNode01Cell, Profile=AppSrv01

The da about	atasource object s	e settings of a da [;] upplies your appli <u>ded activity</u> . A guio opic.	ication with connec	tions for accessi	ing the database	a. Learn mo
🕂 Pre	ferences					
New	Delete Test		Manage state			
	ē 👯 📽	0				
Select	Name 🔷	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category
You d	You can administer the following resources:					
	<u>Microsoft SQL</u> <u>Server JDBC</u> <u>Driver -</u> <u>DataSource</u>	SQLServerDS	Node=nlNode01	Microsoft SQL Server JDBC Driver	Data source for the Microsoft SQL Server JDBC Driver. This data source	

data source type is configurable in version 6.1.0.15 and later nodes.

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

Total 1

BC provider	5					
Messages The test connection operation for data source Microsoft SQL Server BC Driver - DataSource on server server1 at node nlNode01 was successful with 6 warning(s). <u>View JVM logs</u> for further details.						
JDBC provid	ders > <u>Micros</u>	soft SQL Server J	DBC Driver > Dat	a sources		
The dataso about this t	urce object s ask in a <u>quic</u> about the to	upplies your appli led activity, A gui	tasource that is a: ication with connec ded activity provid	tions for accessi	ing the database	Learn mor
New Del	ete Test	connection	Manage state			
	**					
Select Nam	ne 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
You can ad	dminister the	following resourc	es:			
Microsoft SQL Server JDBC Driver - DataSource SQLServerDS Node=nlNode01 Microsoft SQL Server JDBC Driver Data source for the Microsoft SQL Server JDBC Driver. This data source type is configurable in version 6.1.0.15 and later nodes.						
Total 1			<u> </u>			

Note: The data source is created which will be used by the adapter to connect to the database.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- 2. Start the external service wizard by selecting File-> New -> External Service.
- 3. In the Available Types area, select Adapters > JDBC and then click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Eilter: type filter text	8_
DBC DDBC Dotus Domino Oracle E-Business Suite A PeopleSoft COD	~
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	< >
(?) < Back Next > Einish Cancel	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

🔂 New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	\$
? < Back	Cancel

5. In the **Connector project** field enter **CWYBC_JDBC**, and in the **Target runtime environment** field, select the appropriate runtime. Click **Next**.

🚯 New External Service	3			
Import a RAR File Import a resource adapter archive (RAR) from the file system to create a connector project for the adapter.				
Archive file: Connector project: *	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC	_JDBC.rar		
Target runtime enviroment:	IBM Process Server v7.5	*		
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel		

6. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🖶 New External Service		×
Locate the Required Files and Libraries		
Connector projects require system-specific libraries and JAR files.		
When deploying the application to a stand-alone server, these files must be configur the server. <u>More</u>	red on	^
Specify the location of the JDBC driver JAR files required to access the database ser driver JAR files are shipped with the database installation. If you do not have a loca installation, you can download these files from the Web site of the database vendor JDBC driver JAR files:	l database	
D:\workspace_lib\JDBCdrivers\SQLServer2005\sqljdbc4.jar	Add Remove	
Specify the location of the database-specific native system libraries required to acce database server. This is required if you are using a Type 2 driver implementation. Th libraries are shipped with the database server and client installations. System libraries:		
	Add Remove	
(?) (<u>Back</u> <u>N</u> ext > Einish	Cancel	

7. Select **Outbound** and click **Next**.

🖶 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
 Inbound processing passes data from the adapter to your service export. Dutbound Outbound processing passes data from your service import to the adapter.
Cancel Can

Set connection properties for the external service wizard

To connect to the SQL Server:

- 1. Expand the **SQL Server** node in the Database system connection information area and select 2005.
- 2. Enter Database, Host name, Port number, User name and Password fields, and click Next.

Bew External Service	
Specify the Discovery Properti	es
Connection properties Database system connection informat DB2 UDB DB2 UDB V7.2 V8.1 V8.2 V9.1 DB2 UDB iSeries DB2 UDB iSeries Oracle SQL Server SQL Server V2.000 Connection informat Generic JDBC	ion Properties: JDBC driver type: Microsoft SQLServer 2005 for JDI Database: * sample Host name: * 9.123.108.86 Port number: * 1433 JDBC driver class name: * com.microsoft.sqlserver.jdbc.SQLServe Database URL: jdbc:sqlserver://9.123.108.86:1433;da Additional JDBC driver connection properties [name:value;name:value]: These additional JDBC drive establishing the database of
User name: * 52 Password: * * Prefix for business object names: Advanced >> Change the logging properties for the v	******
?	< <u>Back</u> <u>N</u> ext > Einish Cancel

Select the business objects and services to be used with the adapter

1. In the Find Objects in Enterprise System window, click **Run Query**.

🚯 New External Service			
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.			
Query: SchemaFilterLabel=null,Schema name or Run Query	pattern=null,Supported datał Edit Query		
DiscoverRun the query.	Selected objects:		
i < Run a query to populate this view with			
?	Next > Einish Cancel		

- 2. Expand the **dbo** (for this tutorial only) node and select **Stored Procedures** and expand it.
- 3. Select **PROCEDURE1;1** and click

🚯 New External Service
Find Objects in the Enterprise System No discovered object is selected.
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported dat Edit Query Run Query Discovered objects: Selected objects: Selected objects: Selected objects: Selected objects: Selected object
< Back Next > Einish Cancel

4. Change the maximum number of resultsets to 2 and select String as data type for **@RETURN_VALUE**, **@var0** and **@var1**.

WebSphere.	software
------------	----------

🕀 New External Service	
Specify the Configuration Properties for 'PR	OCEDURE1;1'
Generate a business object for the stored procedure Business object Stored procedure name:	dbo.PROCEDURE1;1
Return value:	@RETURN_VALUE
The maximum number of ResultSets returned from the stored procedure.:	2
Attributes @RETURN_VALUE	
Data type: @var0	string
Data type: Sample Value:	string
@var1	string
Sample Value:	
Returned ResultSets None:	
Validate the stored procedure Validate the syntax of the stored procedure using the sa	mple values:
Validate Result:	
	>
?	OK Cancel

5. Enter sample values for the stored procedure input types, which are **@var0** and **@var1** and click **Validate** to verify if the stored procedure executes successfully. Verify the result from the validation and click **OK**.

🚯 New External Service	2	×
Specify the Configuration Properties for 'PROCEDURE1;1'		
	-	
Returned ResultSets		^
RETR51		
Data type: Attributes	RESULTSET	
PKEY:	string	
LNAME:	string	
FNAME:	string	
CCODE:	string	
RETR52		
Data type:	RESULTSET	
Attributes		
ADDRID:	string	
CUSTID:	string	
CITY:	string	
ZIPCODE:	string	
Validate the stored procedure		
Validate the syntax of the stored procedure using the sample values:		
Validate		
Result:	Validation was successful.	
	>	
\odot	OK Cancel	J

6. Make sure procedure1 is added to the selected objects list and click **Next**.

🚯 New External Service				
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. create the query, then click Run Query to run it.	Click Edit Query to			
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported d Edit Query Run Query				
Discovered objects:	Selected objects:			
추 亿 미	0			
How Security and Stored Procedures How Security 1 How	() PROCEDURE1;1			
? < Back	Einish Cancel			

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for all fields and **c**lick **Next**.

🚯 New External Service			
Specify Composite Properties			
Specify properties that apply to all selected objects.			
Custom Business Faults			
Pattern for the Custom Business Faults:			
Pattern String	Custom Fault Name	Add	
		Edit	
		Remove	
Business object namespace:* http://www.ibm.com/xmlns/prod/webspf			
Specify the relative folder for generated business objects			
Folder:			
Generate a business graph for each business object			
Advanced >>			
Cancel			

- 2. In the Specify the Service Generation and Deployment Properties window, select **Other** for security options under **Deployment Properties**.
 - a) Clear the Join the global transaction check box.
 - b) Select Specify predefined connection pool DataSource from the Database connection information list.
 - c) Enter SQLServerDS in the Connection pool DataSource JNDI Name field, and click Next.

🏶 New External Service 📃 🗖 🔀				
Specify the Service Generation Specify properties for generating the ser	•	· ·	0	
Service Operations To modify the names, or add a descr interface file, click Edit Operations. Deployment Properties How do you want to specify the secu		-	Edit Opera	
🔘 Using an existing JAAS alias (reco	mmended)			
A Java Authentication and Autho	prization Servic	es (JAAS) alias is the preferred m	ethod,	
J2C authentication data entry:			s	
OUsing security properties from the	e managed con	nection factory		
The properties will be stored as p	olain text; no e	ncryption is used,		
User name:	sa			
Password:	****			
• Other				
server and security will be specif The quality of service that is used to especially when a failure occurs. To j database connection information. Mo	join the transa oin a global tra	ction provides a higher degree of		
Deploy connector project:	With module f	or use by single application	~	
Specify the settings that are used to	connect to JDI	BC at run time:		
Connection settings:	Specify conne	ection properties	~	
Connection Properties				
	global transact	ed XA datasource or XA database ion, either the XA connection info		
Database connection information	n:	Specify predefined connection p	ool DataSour	
Database system connection inf	ormation			
Database vendor:		MSSQLSERVER		
Connection pool DataSource	e JNDI name:*	SQLServerDS	<u> </u>	
<			Σ	
?	< <u>B</u> ack	<u>N</u> ext > Einish	Cancel	

3. Click **New** in the Specify the Location Properties window.

🚯 New External	Service	
	cation Properties operties for where you want to save the service.	Ħ
Properties for Serv	ice	
Module:	TestWrapper	New
Namespace;	http://TestWrapper/JDBCOutboundInterface1	Create a
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface1	
	Save business objects to a library	
Library;		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🤂 New Business Integration Project 📃 🗖 🔀				
	Integration Project Type ss integration project that you want to create.			
	Use a module to integrate business applications and services. A modul any type of component and can be deployed on WebSphere Process : <u>More</u>			
Mediation module	Use a mediation module to integrate and connect services. A mediatio contain mediation flows and can be deployed on WebSphere ESB or W Process Server. <u>More</u>			
0	< <u>B</u> ack <u>N</u> ext > Einish	Cancel		

5. In the Create a Module window, type **TestExecuteSPSQLServer** in the **Module Name** field and click **Finish**.

🚯 New Module
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.
Module name: TestExecuteSPSQLServer
✓ Use default location
Location: D:\Workspaces\WID7_0806\TestExecuteSPSQLServer Browse
☑ Open module assembly diagram
⑦ < <u>Back</u> Next > <u>Finish</u> Cancel

6. Accept the default values and click **Finish**.

🚯 New External	Service	
	cation Properties operties for where you want to save the service.	
Properties for Serv	ice	
Module:	TestExecuteSPSQLServer	New
Namespace;	http://TestExecuteSPSQLServer/JDBCOutboundInterface1	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface1	
	Save business objects to a library	
Library;		New
Description:		
0	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

7. Expand the created Business Integration Project and verify whether the artifacts are generated correctly.

😑 🔁 TestExecuteSPSQLServer
🖨 😵 Assembly Diagram
JDBCOutboundInterface1
🖳 🛄 Dependencies
- 🗁 Integration Logic
🖨 🕖 Data
- 💭 DboProcedure1U591
- 🗓 DboProcedure1U591BG
DboProcedure1U591Retrs1
🖳 🛱 DboProcedure1U591Retrs2
🖳 💭 IntegrityConstraintFault
🦳 🛱 MatchesExceededLimitFault
- 💭 MissingDataFault
🖳 💭 MultipleMatchingRecordsFault
🖳 🖨 ObjectNotFoundFault
🗐 PrimaryKeyPairType
🗐 RecordNotFoundFault
🗐 UniqueConstraintFault
🔄 🖨 WBIFault
🖃 🚇 Interfaces
IDBCOutboundInterface1
😕 Transformations

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.
- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

The Add and Remove Projects window lists the available projects in the IBM Integration Designer workspace.

🤀 Add and Remove			
Add and Remove Modify the resources that are confi	gured on the server		
Move resources to the right to confi	gure them on the server		
<u>A</u> vailable:		<u>C</u> onfigured:	
BOCustAddrDB2App JDBCInboundTestApp TestExecute5PSQLServer TestExistsApp TestWrapperApp TestWrapperInboundApp	Agd >		
	Add All >>		
☑ If server is started, publish chan	ges immediately		
?	< <u>B</u> ack <u>N</u> ext >	<u> </u>	Cancel

4. Select your project (**TestExecuteSPSQLServerApp**) and click **Add** to configure the project on the server.

🚯 Add and Remove	
Add and Remove Modify the resources that are configured on the serv	er
Move resources to the right to configure them on the	server
<u>A</u> vailable:	⊆onfigured:
Image: Construction of the second state of the second	
(?) < Back !	Vext > Einish Cancel

5. Click Finish.

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. Select the **TestExecuteSPSQLServer** Module, right-click it, and select **Test > Test Module.** The Test Client window is displayed.

- 	estExecuteSPSQLServer	Mediation Flow		
⊡ -₹	New	•]	
	Ope <u>n</u> Deployment Editor			
	Open Data Map Cata <u>l</u> og		L	
	Show Files			
	Show References in References View			
	Associate with Process Center			
	Refresh and P <u>u</u> blish		F	
	Refresh from Process Center		ľ	
	📄 Сору			
	📋 Paste			
	💢 <u>D</u> elete			
	Refactor or Analyze Impact	+	-	
	≧nport			
	🛃 Export			
- (🔊 Re <u>f</u> resh			
	Clo <u>s</u> e Project			
	Add to Asset Repository			
⊎~ <u>~</u> 7 ⇔ 451 -	Compare <u>B</u> usiness Objects			
■	Configure Business Object Parsing Mode			
	Convert Mediation Flow Format			
	😭 Generate Documentation			
	🖫 Generate Human Task User Interface			
	New Process Version			
	Synchronize with the WebSphere Busine	ss Modeler E <u>x</u> port		
	<u>T</u> est	•		<u>T</u> est Modules
	Validate		ų,	Attach to Modules
	T <u>e</u> am	•	C	Generic Service Client
	Comp <u>a</u> re With	•	_	
	P <u>r</u> operties			Load Test Configuration
	Migrate adapter artifacts			Load Test T <u>r</u> ace
		🖃 🚏 IBM Process S	4	▶ coa <u>u</u> chiulacuf
			2	Test Event Definition

2. Select executeDboProcedure1U591BG operation.

Detailed Properties

Specify the component, interface, operation, and input parameter values for the Invoke event, and then click the Continue icon in the Events area to run the test. <u>More...</u>

Configuration:	Default Module Test	*
Module:	TestExecuteSPSQLServer	~
Component:	JDBCOutboundInterface1	۷
Interface:	JDBCOutboundInterface1	*
Operation:	executeDboProcedure1U591BG	~

Initial request parameters:

R 🛱 🗌	—		E
	Name	Туре	Value
	executeDboProcedure1U5	DboProcedure1U591BG	ав
(📁 verb	verb <string></string>	📧 Create
اE	🗄 DboProcedure1U591 *	DboProcedure1U591	ав
	👘 💷 u64return_value	string	ав
	🖳 🛄 u64var0 *	string	аь
	— 🛄 u64var1	string	аь
	[I] retrs1	DboProcedure1U591Retr	66
	 retrs2 	DboProcedure1U591Retr	667

- 3. Enter value for the input type **var0**.
- 4. Unset the value for the output type **var1** and **return_value**. Right-click **u64return_value**, and select Set To > Unset.

Name	Type	Value		
executeDboProcedure	e1U5 DboProcedu	×		
🖳 💭 verb	verb <string></string>	×,		
😑 🖳 DboProcedure 1U	591 DboProcedu	×		
🖳 🛄 u64r <u>eturn</u> va	lue string	✓		
👘 🛄 u64 👔 👔 🖓	Copy Value	0		
🖳 🛄 u64 👘 👘	aste Value			
	elect All			
[III] retrs				
S	et To	Value		
S	et Required to Defau	ult Default		
	dd Value to Pool	Un et Nul		

An unset field is indicated by a ' \mathbf{X} ' mark.

Name	Туре	Value
😑 🖳 executeDboProcedure1U	DboProcedu	¥
···· 💭 verb	verb <string></string>	26
🖮 💾 DboProcedure 1U591	DboProcedu	¥
🦳 🛄 u64return_value	string	8
🛄 u64var0	string	✓ 100
🛄 u64var 1	string	84
[I] retrs1	DboProcedu	667
[1] retrs2	DboProcedu	667

- 5. To execute the service, click \triangleright .
- 6. In the Select Deployment location window, select the server, and click **Finish**.

🚯 Deployment Location				
Select a Deployment Location Specify a runtime location where this test will deploy.	E			
Deployment location:				
IBM Process Servers IBM Process Server v7.5 at localhost WebSphere Enterprise Service Bus Server	New <u>S</u> erver			
Mode: Run Use this location as the default and do not ask again To change the default location elsewhere, open the Properties window for the project and select Business Integration > Integration Test Client.				
? Einish	Cancel			

7. Check the output of the service, and check the data in the Enterprise Information System to ensure it matches the expected values.

Name	Туре	Value
🗆 💾 executeDboPro	DboProcedure1U591BG	×
🖵 verb	verb <string></string>	86
🛓 🗄 DboProcedure1U5	DboProcedure1U591	×
💷 u64return_val	string	✓ 100
💷 u64var 0	string	✓ 100
💷 u64var1	string	✓ 100
📮 💷 retrsl	DboProcedure1U591Retrs1[]	66
🖃 🖳 retrs1[0]	DboProcedure1U591Retrs1	×
🖳 💭 pkey	string	✓ 100
🖳 🛄 lname	string	🖌 lname
🖳 💭 fname	string	🖌 fname
🛄 ccode	string	🖌 IBM
🖃 🖳 retrs1[1]	DboProcedure1U591Retrs1	×
🖳 🛄 pkey	string	✓ 200
🖳 🛄 lname	string	🖌 lname
🖳 💷 fname	string	🖌 fname
🛄 ccode	string	🖌 IBM
🚊 💷 💷 retrs2	DboProcedure1U591Retrs2[]	66
🛓 🖳 retrs2[0]	DboProcedure1U591Retrs2	×
🖳 💷 addrid	string	✓ 100
🖳 💷 custid	string	✓ 100
🖳 🛄 city	string	🗸 testl
🛄 zipcode	string	✓ 12345
😑 🏪 retrs2[1]	DboProcedure1U591Retrs2	×
💷 addrid	string	✓ 200
🖵 custid	string	✓ 200
🖵 city	string	🖌 test2
🛄 zipcode	string	✓ 12346
<		

Clear the sample content

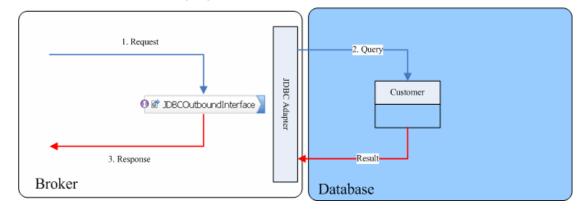
Return the data to its original state. Nothing is required to clean up after this tutorial.

Chapter 13. Tutorial 12: Retrieve business object from database using user defined query (DB2)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 populates customer information into an application's database using user defined query where CUSTOMER and ADDRESS tables have a parent-child relationship.

About this task

In this scenario, an application SCA component raises a retrieveAll test request to the JDBC Outbound Interface. The JDBC adapter executes a SQL query to select all specific records back. Finally, JDBC adapter convert the test result to a SDO and give a response to the SCA component. The following figure represents this scenario:



Prerequisites to run the scenario

Extract the sample files

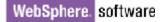
Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables
- Create an authentication alias



Create tables

You must create the following tables in the DB2 database before starting the scenario.

Script for creating the CUSTOMER and ADDRESS tables

```
CREATE TABLE CUSTOMER (

PKEY VARCHAR(10) NOT NULL,

FNAME VARCHAR(20),

LNAME VARCHAR(20),

CCODE VARCHAR(10),

PRIMARY KEY(PKEY));

CREATE TABLE ADDRESS (

ADDRID VARCHAR(10) NOT NULL,

CUSTID VARCHAR(10),

CITY VARCHAR(20),

ZIPCODE VARCHAR(10),

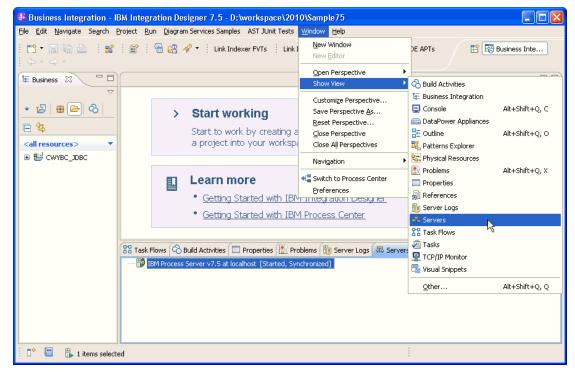
PRIMARY KEY(ADDRID));
```

Create an authentication alias

The authentication alias needs to be set because the adapter uses the username and password to connect to the database. This authentication alias will be used later when generating the artifacts for the module.

Here are the steps to set the authentication alias in IBM Process Server administration console.

 In IBM Integration Designer, switch to the Servers view by selecting Window > Show View > Servers.



2. In the **Servers** view, right-click the server that you want to start and select **Start**.

🚯 Bu	isiness Integ	ration -	IBM Int	egrat	ion Des	igner	7.5	D:\works	pace\2010\Sampl 🔳 🗖 🗙
<u>F</u> ile <u>E</u>	<u>E</u> dit <u>N</u> avigate	Se <u>a</u> rch	Project	<u>R</u> un	Diagram	n Servia	es Sam	nples AST J	IUnit Tests <u>W</u> indow <u>H</u> elp
1 📬	- 8 6 2	5		-	8	1	· 🔒 🧯	8 🛷 -	😭 🐯 Business Inte
j. Link	Indexer FVTs	Link I	ndexer AP	Ts	BTre	e tests	i į v	VDE APTs	
: ¢	* 🔶 *								
	🖁 Task Flow	🗞 Build	Activ 🔳	Prope	erties [🖁 Prob	lems (🔋 Server Lo	
8									☆ ♥ ₽ ♥ ♥ ♥
te:	🔡 IBM Pro	cess Ser	ver v7.5 al	: localh	iost (Sta	opped,	Synchr	onized]	
								Ne <u>w</u>	
								Open	
								Show In	1
								📄 Сору	
								💼 Paste	
								💢 Delete	
								Rename	•
								🏇 <u>D</u> ebug	
								🜔 <u>S</u> tart	<u>N</u>
								🄊 Profile	2
								🔳 Stop	
				_				🗐 Publish	
: □\$	📒 🖡 1 i	tems sele	cted					<u>⊂</u> lean	

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

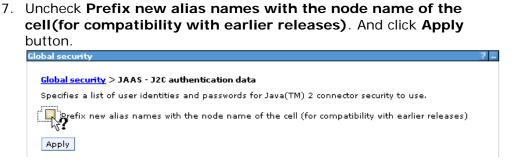
🎁 IBM Process Server v7.5 at localhost [Started, Synchi	ronized]
	Ne <u>w</u>
	Open
	Show In
	Сору
	Paste
	Rename
	🐝 Restart in Debug
	Restart
	profile €
	Stop
	🗐 Publish
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	😤 View and Publish Changes to Server
	🔚 Manage Server Profiles
	Configuration Configuration
	Configuration 2 Import Dynamic Endpoint Selection Configuration
	2 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.

	Integrated Solutions Console
	Log in to the console. User ID:
	Log in
	Note: After some period of inactivity, the system will log you out automatically and ask you to log in again.
•	In the administrative console, click Security -> Global security.
	Under Java Authentication and Authorization Service, click

lobal security	
-	a la meta la ser la la se
se this panel to configure administration and the default application secur unctions and is used as a default security policy for user applications. Secu pplications.	
Security Configuration Wizard Security Config	juration Report
Administrative security	Authentication
Enable administrative security	Authentication mechanisms and expiration
 Administrative group roles Administrative authentication 	
= <u>Administrative adtientication</u>	Kerberos and LTPA
Application security	Kerberos configuration
Enable application security	SWAM (deprecated): No authenticated
	Authentication cache settings
Java 2 security	₩ Web and SIP security
📃 Use Java 2 security to restrict application access to local resources	
Warn if applications are granted custom permissions	RMI/IIOP security
Restrict access to resource authentication data	Java Authentication and Authorization
	Application logins
User account repository	 System logins J2C authentication data
Current realm definition Federated repositories	Use realm-quainfied user names
· · · · · · · · · · · · · · · · · · ·	
Available realm definitions Federated repositories V Configure Set as current	1 .
rederated repositiones	 Security domains External authorization providers
	Custom properties

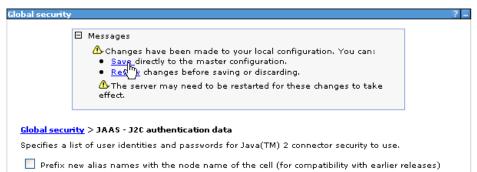
A list of existing aliases is displayed.



8. Click **New** to create a new authentication entry. Type the alias name, username and password to connect to the database. Click **OK**.

Global security ? –				
Clobal cognity > 10.05 - 120 authoritization data > Nom				
<u>Global security</u> > <u>JAAS - J2C authentication data</u> > New				
Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.				
General Properties				
* Alias				
DB2_Alias				
* User ID				
db2admin				
* Password				
••••••				
Description				
Apply OK Reset Cancel				

9. Click **Save** to save the changes.



You have created an authentication alias that will be used to configure the adapter properties. Restart the server for the changes to take effect.

Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

The wizard will guide you to do the following steps:

- Setting connection properties for the enterprise service discovery wizard
- Selecting the business objects and services to be used with the adapter
- Generating business object definitions and related artifacts

Follow these instructions to launch the Enterprise Service Discovery (ESD) wizard.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration (default).
- 2. Start the external service wizard by selecting File-> New -> External Service.
- In the Available Types area, select Adapters > JDBC and click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Filter: type filter text	B_
<u>A</u> vailable types:	
DBC Dotus Domino Oracle E-Business Suite A PeopleSoft Cup	<
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	<
(?) < Back Next > Einish Cancel	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

B New External Service	
Select an Adapter Select the version of the adapter that you want to use.	0
۵,	
■ IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	=
	V
	N)
(?) < <u>Back</u> <u>Next</u> > <u>Finis</u>	h Cancel

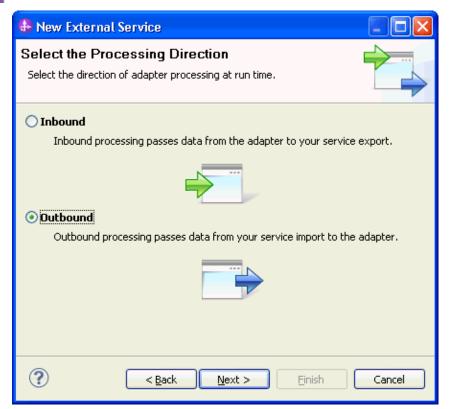
- 5. In the **Connector project** field enter CWYBC_JDBC.
- 6. In the **Target runtime environment** field, select appropriate runtime and click **Next**.

🥵 New External Service		
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	
Archive file: Connector project: * Target runtime enviroment:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	I_JDBC.rar
?	< Back Next > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

New External Service		×
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.		F
When deploying the application to a stand-alone server, these files must be configure server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the database server driver JAR files are shipped with the database installation. If you do not have a local installation, you can download these files from the Web site of the database vendor. JDBC driver JAR files: D:\workspace_lib\JDBCdrivers\DB2\DB295\db2jcc_license_cu.jar D:\workspace_lib\JDBCdrivers\DB2\DB295\db2jcc4.jar	er, JDBC	
Specify the location of the database-specific native system libraries required to acces database server. This is required if you are using a Type 2 driver implementation. The libraries are shipped with the database server and client installations.	sthe	
System libraries:		
	Add	~
< Back Next > Einish	Cancel	

8. Select **Outbound** and click **Next**.



Set connection properties for the external service wizard

To connect to the preferred database:

- 1. Select the appropriate database server in the **Database system** connection information area.
- 2. Enter values in the System ID, Host name, Port number, User name and Password fields, and click Next.

WebSphere. s	oftware
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New External Service		
Specify the Discovery Prope	erties	
Connection properties Database system connection inform	Properties: JDBC driver type:	IBM DB2 Universal SAMPLE 9.119.154.129 50000 com.ibm.db2.jcc.DB2Driver jdbc:db2://9.119.154.129:50000/
User name: *	db2admin	
Password: *	****	
Prefix for business object names:		
Advanced >>	he wizard	
?	< <u>B</u> ack	

Database connection is established to retrieve the database schema.

Select the business objects and services to be used with the adapter

1. In the Find Objects in Enterprise System window, click Edit Query.

🚯 New External Service	
Find Objects in the Enterprise S Use a query to find objects on the enterprise Query to create the query, then click Run C	se system. Click Edit 🛛 🗖 🦷
Query: SchemaFilterLabel=null,Schema nar Run Query	ne or pattern=null,Sut Edit Query
Discovered objects:	Selected objects:
추 /2 대	0
i < Run a query to populate this v	
Rext 2	Einish Cancel

2. In the Specify the Query Properties window, select **Create a query business object to build user-defined select statements** check box and enter the number of query business objects you want to create. Click **OK**.

WebSphere.	software
------------	----------

🚯 New External Service	×
Specify the Query Properties	<u></u>
Specify the pattern for the schema name filter (for Schema name or pattern: Supported database object types:	example, ADMIN* or SCOT?)
Tables Views Stored Procedures Synonyms - Nick Names	Add Remove
 Map JDBC Date/Time/Timestamp types to date/ Prompt for additional configuration settings whe Create a query business object to build user-de 	en adding business object
Number of select queries to create:	1
The Select statements are listed under the Query S	-
?	OK Cancel

3. Click Run Query.

🚯 New External Service	
Find Objects in the Enterprise System No discovered object is selected.	80
Run Query	Edit Query
Discovered objects: Selected objects:	
Image: SQLJ Image: SySCAT I	l objects to selec
Compared Rest > Einish	Cancel

4. Span Expand the Query Statements node, select the Select Statement 1 and click . The window to configure the query object is displayed.

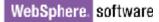
🚯 New External Service	\mathbf{X}
Specify the Configuration Properties for 'Select Statement 1'	1
Name of the business object:* TestQuery1 Type the Select statement, then configure its parameters. Provide sample values if you want to validate the statement.	^
Select statement: * select * from customer a, address b where a.pkey=b.cu	
Validate the select statement Validate Result: Validation was successful.	
Advanced >>	>
OK Cancel	

- 5. In the Name of the business object field, type a name for the business object. The name can contain spaces and national language characters.
- 6. In the Select statement field, type the SELECT statement you want to run. Indicate each parameter with a question mark (?).
- 7. Click **Validate**. The Result area displays the result of the validation. Click **OK**.
- 8. Click Next.

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, click the **Advanced** button, collapse the **RetrieveAll configuration properties**, accept the default values for all fields in this group and click **Next**.



🔂 New External Service	X
Specify Composite Properties Specify properties that apply to all selected objects.	-
Edit Edit Remove Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/j2ca Specify the relative folder for generated business objects Folder: Image: Comparison of the second state of the second st	•
<< Advanced	111
Return specified number of records per page beginning with the starting index Starting index to return records: Number of records per page:	
UpdateAll configuration properties DeleteAll configuration properties	>
< Back Next > Einish Cancel	

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps;
 - a) Select **Using an existing JAAS alias** for security options under **Deployment Properties**.
 - b) Enter the authentication alias that you created in previews section into the **J2C Authentication data entry** field.
 - c) Clear the Join the global transaction check box.
 - d) Select **Specify local database connection information** from the **Database connection information** list, and click **Next**.

🚯 New External Service		
Specify the Service Generation Specify properties for generating the service		
How do you want to specify the securit		^
Using an existing JAAS alias (recoming JAAS alias) (recoming a large outbentication and outboy)	mended) zation Services (JAAS) alias is the preferred	method
J2C authentication data entry:*		Select
	-	Delection
Using security properties from the n The properties will be stored as pla		
_	db2admin	
Password;	*****	
	be handled by the EIS system, or the RAR (y will be specified by the properties in the J	
XA data source or XA database connec Join the global transaction Deploy connector project:	tion information. <u>More</u> With module for use by single applicatior <mark>v</mark>	
Specify the settings that are used to co	onnect to JDBC at run time:	
Connection settings;	Specify connection properties 🛛 💉	
Connection Properties		
To join a global transaction, specif connection information. When not information or the local connection	y a predefined XA datasource or XA databa joining a global transaction, either the XA c information can be specified.	se onnection
Database connection information:	Specify local database connection informal	tion 🔽
Database system connection infor	mation	
Database vendor:	DB2	
Database URL: *	jdbc:db2://9.119.154.129:50000/SAMPLE	
JDBC driver class name: *	com.ibm.db2.jcc.DB2Driver	
Advanced >>		~
?	< Back Next > Einish	Cancel

3. Click **New** in the Specify the Location Properties window.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:	TestWrapper	New
Namespace;	http://TestWrapper/JDBCOutboundInterface1	Create a
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCOutboundInterface1	
	Save business objects to a library	
Library;	· · · · · · · · · · · · · · · · · · ·	New
Description:		
?	< <u>B</u> ack Next > Einish	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Inte	gration Project	
	Integration Project Type ess integration project that you want to create.	
	Use a module to integrate business applications and services. A module can any type of component and can be deployed on WebSphere Process Server <u>More</u>	
Mediation module	Use a mediation module to integrate and connect services. A mediation mod contain mediation flows and can be deployed on WebSphere ESB or WebSph Process Server. <u>More</u>	
?	< <u>B</u> ack <u>N</u> ext > Einish Car	ncel

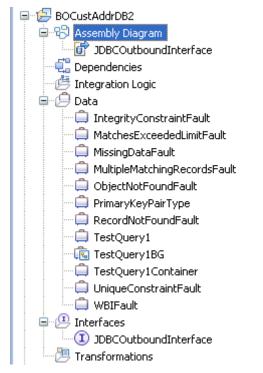
5. In the Create a Module window, type **BOCustAddrDB2** in the **Module Name** field, and click **Finish**.

🚯 New Module 📃 🗖 🔀
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.
Module name: BOCustAddrDB2
✓ Use default location
Location: D:\Workspaces\WID7_0806\BOCustAddrDB2 Browse
✓ _pen module assembly diagram
⑦ < <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel

6. Accept the default values and click **Finish**.

🚯 New Externa	al Service	
	ocation Properties properties for where you want to save the service.	
Properties for Se	rvice	
Module:	BOCustAddrDB2	✓ New
Namespace:	http://BOCustAddrDB2/JDBCOutboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	* JDBCOutboundInterface	
	Save business objects to a library	
Library;		Vew
Description:		
?	< <u>B</u> ack <u>N</u> ext >	<u>Finish</u> Cancel

Expand the created Business Integration Project and verify whether the artifacts are generated correctly.



Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System import. You must install this SCA module in the IBM Integration Designer integration test client. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.
- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.
- 4. Add the BOCustAddrDB2App module to the server.

🚯 Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server Available: ⊆onfigured: Image: DDBCInboundTestApp Image: TestExistsApp Image: TestWrapperInbound Image: TestWrapperInbound Add All >>	
<< Remove All	Cancel

5. Click Finish.

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client by following these steps:

1. Based on the SCA module file, **sca.module**, double-click to display it as an assembly diagram and right-click anywhere within the diagram to bring up the context menu for creating a test module, select **Test Module**.

BOCustAddrD	B2 🔁 Favorites	
🖨 🕄 Assembly	Ne <u>w</u>	•
🔤 🔐 🔐 JDBCO	Open Deployment Editor	
🖳 💶 Depender	Open Data Map Catalog	
🛛 💆 Integratio	Show Files	
🖻 🕖 Data	Show References in References View	
🗌 🛄 Integr		-
- 🛄 Match		
Missin		
- 🛄 Multip		
- 🗍 Objec	E Copy	
Primar		
Recor		
📃 🗍 TestQ	· ····	_
🖨 Upiqu	🚵 Import	
	r∠i Export	
🖃 🚇 Interface:	l 🔅 D - Guarda	-
📜 🛄 Transform		_
🕀 🔛 CWYBC_JDBC		
🗎 🖶 CWYBC_JDBC		
B	Lonridure business Udiect Parsind Mode	
E 2 TestExists	Convert Mediation Flow Format	
	😭 Generate Documentation	
· · · · · · · · · · · · · · · · · · ·	🖫 Generate Human Tas <u>k</u> User Interface	
	New Process Version	
	Synchronize with the WebSphere Business Modeler Export	
	<u>I</u> est	• 🚺 <u>T</u> est Modules
	<u>V</u> alidate	E Attach to Modules

2. A test client is created with input fields.

ents	General Properties	
▶ • ☶ • 듣 券 🖸 🔳 🖫	 Detailed Properties 	
å▶ Invoke	Configuration: Default Module Test	
	Module: BOCustAddrDB2	
	Component: JDBCOutboundInterface	
	Interface: JDBCOutboundInterface	
	Operation: retrievealIDb2adminCustomerE	
	Initial request parameters	
	Initial request parameters Initial request parameters Image: Name	
	Initial request parameters	
	Initial request parameters Name Type Value Name Type Value Name Type Value DeaminCus ObzadminCustomerBG ✓ DebadminCus ObzadminCustomer DebadminCus ObzadminCustomer Implex string	
	Initial request parameters Initial request parameters Name Type Value Name Type Value Value Db2adminCustomerBG Create Db2adminCus Ob2adminCustomer Db2adminCus Ob2adminCustomer Iname string Iname string Iname string	
	Initial request parameters Initial request parameters Name Value alue Value Value Value Value Value Value Value Value Value Value Value Value Value Value Val	
	Initial request parameters Name Type Value Name Value Verb verb string Create Db2adminCustomerBG Create Db2adminCustomer Create reate C	

A test client page is automatically created and displayed and it is ready to accept values before the test execution. The first invocation is created by default. Subsequent invocation can be created by clicking

Invoke 降.

- 3. Determine the type of operation. The verb prefix indicates the type of operation. For example, one of the operation names for selection, **retrievealITestQuery1BG**, is a named combination of the verb prefix (retrievealI), business object name (TestQuery1BG), and an abbreviation for Business Graph (BG).
- Based on the type of operation, double-click the field under Value column for the corresponding field under Name column to enter an appropriate value. Simply, unset all existing Value fields of the relevant business object.

Name	Туре		Value
🖃 🏪 retrieveallTest	TestQuery1BG	аы	
🖳 🛄 verb	verb <string></string>	вы Cr	eate
🖻 🤮 Testou	TechOuerv1	аы	
	<u>C</u> opy Value		
ter i de la composición de la composicinde la composición de la composición de la co	Paste Value		
···· [Select <u>A</u> ll		
	Set To	•	Value
	Set Reguired to Defau	lt	<u>D</u> efault
	Add Val <u>u</u> e to Pool Use Value <u>f</u> rom Pool		<u>U</u> nset <u>N</u> ull
i	Import from File	•	nere a.pkey=b.custio

5. To run the test client, click **Continue** on the top of the page. The result of the test execution is displayed.

Module:	BOCustAddrDB2		
	<u>JDBCOutboundInterface</u>		
Interface:	JDBCOutboundInterface		
Operation:	retrieveallTestQuery1BG		
Return paran	neters:		
Value Editor	XML Source		
E. 8.			
	Name	Туре	Value
🛛 🗆 💾	retrieveallTestQuery1BGOutpu	TestQuery1Container	ав
÷.	[I] TestQuery1 *	TestQuery1[]	66
	🖃 🏪 TestQuery1[0]	TestQuery1	ab
	🖳 🛄 pkey	string	ab ⊂1
	🖳 🛄 fname	string	B FNAME1
	抑 Iname	string	INAME1
	💭 ccode	string	ab 001
	💭 addrid	string	ab A1
	💭 custid	string	IIIIIIIIIIIII
	💭 city	string	BEIJING
	zipcode	string	ab 010
	🛄 jdbcwhereclause	string	×,
	🖃 🏪 TestQuery1[1]	TestQuery1	аь
	🖳 💭 pkey	string	ab C2
	🖳 🛄 fname	string	ED FNAME2
	🖳 🛄 Iname	string	INAME2
	ccode	string	ab 002
	💭 addrid	string	ab A2
	💭 custid	string	ab C2
	💭 city	string	I GUANGZHOU
	ipcode	string	ab 020
	🛄 jdbcwhereclause	string	8

③ Type: http://www.w3.org/2001/XMLSchema#string

Clear the sample content

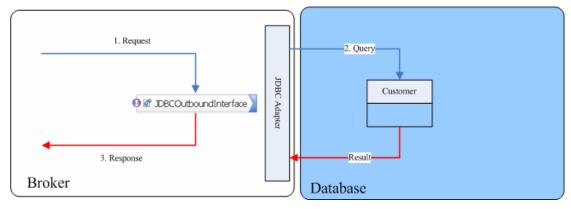
After a record has been created with the IBM Integration Designer environment, it can be removed with the Delete operation, determine the key field that uniquely represent the record just created and enter its value.

Chapter 14. Tutorial 13: Checking for the existence of a business object (Oracle)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 checks for the existence of a business object.

About this task

In this scenario, an application SCA component raises an existence test request to the JDBC Outbound Interface. The JDBC adapter executes a SQL query to determine whether specific records exist or not. Finally, JDBC adapter convert the test result to a SDO and give a response to the SCA component. The following figure represents this scenario:



Prepare to run through the tutorial

Extract the sample files

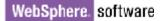
Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create a table
- Create an authentication alias
- Create a data source



Create a table

You must create the following table in the Oracle database before starting the scenario.

```
CREATE TABLE CUSTOMER (

PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,

FNAME VARCHAR2(20) ,

LNAME VARCHAR2(20) ,
```

```
CCODE VARCHAR2(10) ) ;
```

Insert a record into the table you just created.

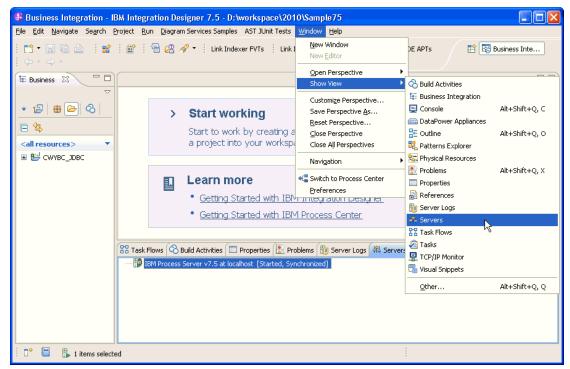
```
insert into customer values ('1000', 'testFname',
'testLname', 'testCcode')
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Window > Show View > Servers**.



2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace\2010\Sampl 📃 🗖 🔀
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
i 💕 ▾ 🔚 😨 🖆 i 😭 🔡 i 😭 i Link Indexer FVTs i Link Indexer APTs i BTree tests i i ↔ ▾ ↔ ▾	
🚟 🔀 Task Flow 🔇 Build Activ 🔲 Properties 🔝 Problems	
	☆○ ∅ ■ ₽ ▽ [●]
IBM Process Server v7.5 at localhost [Stopped, Synch	rronized]
	Ne <u>w</u>
	Open
	Show In
	E Copy
	💼 Paste
	💢 Delete
	Re <u>n</u> ame
	参 <u>D</u> ebug
	💓 <u>S</u> tart
	profile 🔨
	Stop
	📳 Publish
🗄 🗖 📲 🔒 1 items selected	ean

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

ronized]
New
Open
Show In
Е Сору
💼 Paste
💢 Delete
Rename
🕸 Restart in Debug
🜔 <u>R</u> estart
🌮 Restart in Profile
📕 Stop
📳 Publish
<u>⊂</u> lean
Add and Remove
Monitoring
Create Tables and Data Sources
Reconnect Debug Process
💒 View and Publish Changes to Server
🛅 Manage Server Profiles
2 Export Dynamic Endpoint Selection Configuration
2 Import Dynamic Endpoint Selection Configuration
2 Update Vocabularies and Related Artifacts
Server Configuration
Universal Test Client
Administration

4. Log on to the administrative console.

🥹 Admin Console 🖾	
Integrated Solutions Console	
Log in to the comsole.	
Password: •••••	

5. Click Security → Global security.

11

🗄 Guided Activities
🛨 Servers
🗄 Services
🗄 Resources
🖯 Security
 Business Integration Sec Global security Security domains
 Administrative Authorizat SSL certificate and key m
 Security auditing Bus security

6. Under Java Authentication and Authorization Service, click J2C authentication Data.

Integrated Solutions Co	nsole Welcome admin		Help Logout	IBM.
Secure administrat	tion, applications, and infrastruct	ture		Close page
Secure adminis	tion, applications, and infrastruct tration, applications, and infrastr serving environment is completely Iministration and applications also	r ucture secured when administratio	on is restricted. The applications and	che infrastructure
Configuration	curity Configuration Wizard	Security Co	nfiguration Report	
Administra	tive security e administrative security = <u>Adminis</u>		Authentication Use domain-qualified user na Web security	mes
	e application security		RMI/IIOP security Java Authentication and Autho <u>Application logins</u>	rization Service
✓ w	wity va 2 security to restrict application (arn if applications are granted cus estrict access to resource authentice)	tom permissions	System logins J2C authentication data Authenticati Specifies a list of user ide Java(TM) 2 connector see	ntities and passwords for curity to use.
Current re	nt repository salm definition srating system		 External authorization providers <u>Custom properties</u> 	
				P

A list of existing aliases is displayed.

cure ac	dministration, applications, and infrastructure			? _	Help
Specifi ⊡ Pref	e administration, applications, and infrastructure > J es a list of user identities and passwords for Java(TM) erences				Field help For field help information, s field label or li when the help
New	Delete				appears.
	b ₩ \$				Page help More informat
Select	Alias 🗘		User ID 🗘	Description 🗘	this page
	BSpace JDBC Alias		TEST	Business Space Authorization Alias	
	CommonEventInfrastructureJMSAuthAlias	Å	CEI	Authentication alias for the Common Event Infrastructure JMS Topics and Queues	
	SCA Auth Alias		SCA	This is the alias used by SCA to login to a secured SIBus	
	localhostNode01Cell/nlNode01/server1/EventAuthDat	taAliasDerby		Derby authentication alias for the Event Server	

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

Integrated Solutions Console	Welcome Help Logout	
View: All tasks	Cell=localhostNode01Cell, Profile=AppSrv01	Close page
Welcome	Global security ? –	Help –
🗄 Guided Activities	Global security > JAAS - J2C authentication data >	Field help
🗄 Servers	New	Specifies the password to use for the target
	Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.	enterprise information system (EIS).
🗄 Services	General Properties	Page help
🗄 Resources 📃	* Alias	More information about
🗆 Security	node1/Oracle	this page
 Business Integration Sec Global security Security domains Administrative Authorizat SSL certificate and key m Security auditing Bus security 	* User ID sample * Password ••••••• Description	Command Assistance <u>View administrative</u> <u>scripting command for last</u> <u>action</u>
Environment Integration Applications ■	Apply OK Reset Cancel	
System administration		

You have created an authentication alias that will be used to configure the adapter properties.

Integrated Solutions Console	Welcome	Help Logout		£.
View: All tasks		BSpace JDBC Alias	wbiuser	B S A A
		CommonEventInfrastructureJMSAuthAlias	wbiuser	A C E JI JI
Resources Security Business Integration Sec Global security		SCA Auth Alias	wbiuser	T a S a S
 Security domains Administrative Authorizat SSL certificate and key m Security auditing 		localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		D a a E
 Bus security 		nlNode01/luweigin	luweiqin	
🗄 Environment		nlNode01/node1/Orade	sample	с 0
 ■ Integration Applications ■ System administration 	Total	6		
System administration	•			► ►

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. This data source will be used in generating the artifacts for the module.

Note: This tutorial will use Oracle as the database and the Oracle thin driver, ojdbc6.jar.

Here are the steps to create the data source in the IBM Process Server administrative console.

1. In the administrative console, select **Environment → WebSphere** variables

ΞEr	vironment
	Virtual hosts
	Update global Web server plug-in configuration
	WebSphere variables
	Shared libraries
	Replication doma WebSphere variables
+	Naming

2. On the right, click **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

Configuration	
General Properties	
* Name ORACLE_JDBC_DRIVER_PATH	
Value F:\DBDriver\Oracle10	
Description The directory that contains the Oracle thin or oci8	
JDBC Driver.	
Apply OK Reset Cancel	

The variable is added and appears in the list.

Integrated Solutions Console Welcom	e		Help Logout	
View: All tasks			JAVA HOME	\${WAS_INSTALL_KOUT}/java
= Welcome			JVM_CACHE	
🗄 Guided Activities			LOCALHOST NAME	localhost
🗄 Servers			LOG ROOT	\${USER_INSTALL_ROOT}/logs
		_	MICROSOFT IDEC DEDUCE NATIONALI	
🗄 Services			MICROSOFT JDBC DRIVER NATIVEPATH	
🗄 Resources 📲			MICROSOFT JDBC DRIVER PATH	
🗄 Security			MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/W
Environment			ORACLE JDBC DRIVER PATH	F:\DBDriver\Orade10
 Virtual hosts Update global Web server plug-in configuration 			OS400 NATIVE JDBC40 DRIVER PATH	
 WebSphere variables 			OS400 NATIVE JDBC DRIVER PATH	
 Shared libraries Replication domains 			OS400 TOOLBOX JDBC DRIVER PATH	
⊞ Naming			SCA BUS ID	localhostNode01Cell
			SERVER LOG ROOT	\${LOG_ROOT}/server1
🗄 System administration 🗸 🗸			SYBASE JDBC DRIVER PATH	
	•			Þ

3. Select Resources → JDBC -> JDBC Providers.

🗆 Re	sources			
	Schedulers			
	Object pool managers			
+	JMS			
	People directory provider			
	Extended messaging provider			
-	WebSphere Business Integration Adapters			
Ξ	JDBQ			
	 JDBC providers 			
	 Data sources Data JDBC providers phere Application Server V4) 			
_	Business Integration Data Source			

4. Click **New** in the JDBC providers window.

Integrated Solutions Console Welcome		Help Logout	
JDBC providers			Close page
JDBC providers		? =	Help –
JDBC providers Use this page to edit properties of encapsulates the specific JDBC drivendor database of your environm guided activity provides a list of ta Scope: Cell=localhostNode01C Scope specifies the level at v detailed information on what settings help Node=nlNode01	ver implementation class for ent. Learn more about thi sk steps and more genera ell , Node= nlNode01 /hich the resource definitio	or access to the specific s task in a <u>quided activity</u> . A l information about the topic. n is visible. For	Field help For field help information, select a field label or list marker when the help cursor appears. Page help More information about this page Command Assistance View administrative scripting command for
☑ Preferences			last action
New Delete			
Select Name 🗢	Scope 🗘	Description 🗘	
Derby JDBC Provider (XA)	Node=nlNode01	JDBC Provider for WPS/WESB	

5. Click **New**. Select the Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

JDBC provider Step 2: Enter	Set the basic configuration values of a JDBC provider, which
database class pat information Step 3: Summary	 encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNode01Cell:nodes:nlNode01 * Database type Oracle
	Connection pool data source 💌
	* Name Oracle JDBC Driver

6. In the Enter database classpath information page, enter the following value for the **Class path** field:

\$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time. Because you have added the ojdbc6.jar file to this path, you must specify that path here.

7. Click Next.

eate	e a new JDBC Provider	
Cre	ate a new JDBC Provid	er
	Step 1: Create new JDBC provider	Enter database class path information
→	Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JD provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths whe you type the JDBC driver file locations. For example: C:\SQLLIB\jav on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
		If a value is specified for you, you may click Next to accept the valu
		Class path:
		\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
		Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} F:\DBDriver\Oracle10
F	Previous Next (Cancel

8. Click Finish.

	Step 1: Create new JDBC provider	Summary	
	Step 2: Enter	Summary of actions:	
	database class path	Options	Values
	information	Scope	cells:localhostNode01Cell:nodes:
→	Step 3: Summary	JDBC provider name	Oracle JDBC Driver
		Description	Oracle JDBC Driver
		Class path	\${ORACLE_JDBC_DRIVER_PATH}/
		\${ORACLE_JDBC_DRIVER_PATH}	F:\DBDriver\Oracle10
		Implementation class name	oracle.jdbc.pool.OracleConnection

9. Under Additional Properties, select Data sources. Click New.

JDBC p	roviders > <u>Or</u>	acle JDBC Drive	r > Data so	urces					
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.									
🕀 Pref	erences								
New	Delete 1	Test connection	Manage	state					
0	•								
Select	Select Name 🔅 JNDI name 🗘 Scope 🗘 Provider 🗘 Description 🗘 Category 🗘								
None									
Total	n								

10. Type any value in the **JNDI name** field, and select the authentication alias "OracleDS" that you created earlier from the **Component-managed authentication alias and XA recovery authentication alias** list. Click **Next**.

÷	Step 1: Enter basic data source	Enter basic data source information
	information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

11. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.

ta source ormation ep 2: Enter	Set these database-specific prope	
tabase specific operties for the	database vendor JDBC driver to su managed through the datasource.	
ta source	Name	Value
Step 3: Setup security aliases	* URL	jdbc:orade:thin@9.181.84.13
ep 4: Summary	* Data store helper class name Oracle10g data store helper ❤	
	ta source p 3: Setup curity aliases	Name Name Name Name * URL surity aliases * Data store helper class name

12. In the Setup security aliases window, configure the aliases.

Cre	ate a data source	
	Step 1: Enter basic data source	Setup security aliases
	information	
	Step 2: Enter	Select the authentication values for this resource.
	database specific properties for the	Component-managed authentication alias
	data source	nlNode01/node1/Oracle
→	Step 3: Setup security aliases	Mapping-configuration alias (none)
	Step 4: Summary	Container-managed authentication alias
		(none)
		Note: You can create a new J2C authentication alias by accessing on following links. Clicking on a link will cancel the wizard and your curre selections will be lost.
		<u>Global J2C authentication alias</u> <u>Security domains</u>
F	Previous Next C	Cancel

13. In the Summary page, review the values entered for the data source and click **Finish**.

Step 1: Enter basic data source	Summary	
information	Summary of action	IS :
Step 2: Enter database specific	Options	Values
properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
data source	Data source name	Oracle JDBC Driver DataSource
Step 3: Setup	JNDI name	OracleDS
security aliases	Select an existing JDBC provider	Oracle JDBC Driver
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
	URL	jdbc:oracle:thin:@9.181.84.136:1521:ord
	Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelp
	Use this data source in container managed persistence (CMP)	true
	Component- managed authentication alias	nlNode01/node1/Oracle
	Mapping- configuration alias	(none)
	Container- managed authentication alias	(none)

14. Click **Save** to save the changes.

	🖯 Messag	jes						
		-	n made to your lo 1e master configur	-	on. You can:			
			efore saving or di					
	▲ The server may need to be restarted for these changes to take effect.							
1DBC r	envidees > Ora	cle JDBC Driver	> Data cources					
20001	roviders > Orac	LIE JUBL DRVEP						
			datasource that is es your application					
provide	er. The datasou	rce object suppli	datasource that is es your applicatior in a <u>guided activit</u>	n with connecti	ons for accessin	ig the		
provide databa	er. The datasou ase. Learn more	rce object suppli	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	ig the		
provide databa steps a	er. The datasou ase. Learn more	rce object suppli about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	ig the		
provide databa steps a Pref	er, The datasou ase, Learn more and more gener ferences	rce object suppli about this task al information a	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	ig the		
provide databa steps a	er, The datasou ase, Learn more and more gener ferences	rce object suppli about this task	es your applicatior in a <u>quided activit</u>	n with connecti	ons for accessin	ig the		
provide databa steps a ⊕ Pref	er, The datasou ase, Learn more and more gener ferences	rce object suppli about this task al information a	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	ig the		
provide databa steps a Pref New	er. The datasou ase. Learn more and more gener ferences Delete Te	rce object suppli about this task al information a	es your applicatior in a <u>quided activit</u> bout the topic.	n with connecti	ons for accessin	ig the		
provide databa steps a	er. The datasour ase. Learn more and more gener ferences Delete Te Delete Te Name \$	rce object suppli about this task al information a st connection	es your applicatior in a <u>quided activit</u> bout the topic. Manage state Scope \$	n with connecti w. A guided a	ons for accessin tivity provides a	ng the a list of task		

15. Select the data source you just created and click Test connection.

DBC prov	iders						Close pa
IDBC prov	/iders					?	- Help
Use thi provide databa steps a	is page to edit t er. The data sou use. Learn more	the settings of a urce object suppl	r > Data sources data source that i ies your applicatio in a <u>quided activit</u> out the topic.	s associated i in with connec	tions for access	ing the	Field help Select Row 1 Page help More information about this page
New	Delete Te	st connection	Manage state				Command Assistance
D) *** *2	v					scripting command for last action
Select	Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘	
	<u>Oracle JDBC</u> <u>Driver</u> DataSource	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource		
Total	1						

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

BC prov	viders						Close pag
OBC pro	viders					?	- Help
Use th provid databa steps Pre	providers > Or inis page to edit t er. The data so ase. Learn more and more gener ferences	a test connection Source on server nation acle JDBC Drive the settings of a urce object suppl about this task al information ab		Node01 was s associated v n with connect	successful. with your selected	ing the	Field help For field help information, select a field label or list marker when the help cursor appears. Page help More information about this page
New	Delete Te:	st connection	Manage state				
D	ð 👯 🥰						
Select	Name 🗘	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘	
	Oracle JDBC Driver	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource		
	DataSource						

The data source is created and it will be used by the adapter to connect to the database.

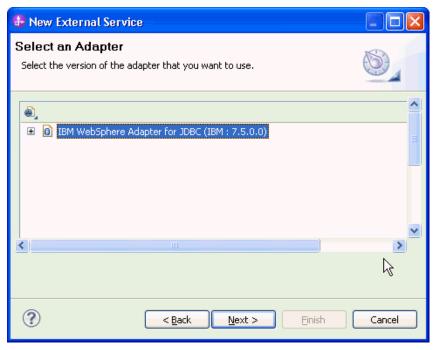
Configure the adapter for outbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- In the Available Types area, select Adapters > JDBC and click Next.

🚯 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Filter: type filter text	Ø.
DBC Dotus Domino Oracle E-Business Suite PeopleSoft	
Description:	
Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	<
(?) < Back Next > Einish Cancel	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.



- 5. In the **Connector project** field enter CWYBC_JDBC.
- 6. In the **Target runtime environment** field, select appropriate runtime and click **Next**.

🚯 New External Service	1	
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	S
	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	_JDBC.rar
?	< <u>B</u> ack <u>N</u> ext > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add** to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service		×
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.		
When deploying the application to a stand-alone server, these files must be configure the server. <u>More</u> Specify the location of the JDBC driver JAR files required to access the database ser	rver. JDBC	^
driver JAR files are shipped with the database installation. If you do not have a loca installation, you can download these files from the Web site of the database vendor JDBC driver JAR files: D:\workspace_lib\JDBCdrivers\Oracle\ojdbc6\ojdbc6.jar		
	Remove	
Specify the location of the database-specific native system libraries required to acce database server. This is required if you are using a Type 2 driver implementation. Th libraries are shipped with the database server and client installations. System libraries:		
	Add	~
Eack Next > Einish	Cancel	

8. Select **Outbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
 Inbound processing passes data from the adapter to your service export. Dutbound Outbound Outbound processing passes data from your service import to the adapter.
(?) < Back Next > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand **Oracle** from **Database system connection information** then select **10**.
- 2. Enter values in the **System ID**, **Host name**, **User name** and **Password** fields, and click **Next**.

WebSphere.	software
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🖶 New External Service				
Specify the Discovery Properties				
Connection properties	rmation			
-+1 -+1	- Properties:			
⊕ ··· ◇ DB2 UDB iSeries ⊕ ··· ◇ DB2 UDB zSeries	JDBC driver type:	Oracle Thin Driver		
Gracle	System ID: *	ord		
- ◇ 8	Port number: *	1521		
→ 10	JDBC driver class name: *	oracle.jdbc.driver.OracleDriver		
	Database URL:	jdbc:oracle:thin:@9.123.108.86		
User name: *	sample1			
Password: *	*****			
Prefix for business object names:				
Advanced >>				
?	< <u>B</u> ack <u>N</u> ex	t > Einish Cancel		

Select the business objects to be used with the adapter

1. In the Find Objects in Enterprise System window, click **Run Query**.

New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to the query, then click Run Query to run it.	ocreate
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported Run Query	
Kun a query to populate this view with	
Einish	Cancel

2. In the Discovered objects pane, select the JABDULLA (for this tutorial only) node and expand it. Expand Tables, select the CUSTOMER

table and click

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	BO,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported da Run Query	Edit Query
Discovered objects: Selected objects:	
CUSTOMER	
? Einish	Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, accept the default values for the Maximum records for RetrieveAll operation and Business object namespace fields. Leave the Generate business graph for each business object fields check box selected and click Next.

🚯 New	External Service				×
Specify	y Composite Prope	erties			
Specify	properties that apply to al	l selected objects.			
	Pattern String	Custom Fault Name		Add	^
				Edit	
				Remove	
<					
Create a	and configure user-defined	wrapper objects			
Wra	apper object names:				
				Add	
				Remove	
Business	s object namespace:* ht	tp://www.ibm.com/xmlns	/prod/websphere/j2ca/jdbc		
Specify	the relative folder for gen	erated business objects			
Folder:					
🗹 Gene	erate a business graph for	each business object			
<< Adv	vanced				
- 9et	rieveAll configuration prop	ertied			
	cify how the adapter retu		ation	!	
· ·	OReturn all records				
	Return all records ma				
	 Return specified numb 				
		records to be returned:*			
			eginning with the starting inde>	:	
	Starting index to retu		0		
	Number of records pe		100		
I ► Upd	lateAll configuration prope	rties			~
?		< Back	Next > Einish	Cancel	٦
\odot				Cuncer	

- 2. In the Specify the Service Generation and Deployment Properties window, perform the following steps:
 - a) Select **Other** for security options under **Deployment properties**.
 - b) Clear the Join the global transaction check box.
 - c) Select Specify predefined connection pool DataSource from the Database connection information list.
 - d) Enter OracleDS in the Connection pool DataSource JNDI Name field, and click Next.

🤀 New External Service				×
Specify the Service Generation a Specify properties for generating the service		•		1
Service Operations To modify the names, or add a descriptio interface file, click Edit Operations.	n to the operati	ions to be generated in the	Edit Operations	^
Deployment Properties How do you want to specify the security Ousing an existing JAAS alias (recomme				
A Java Authentication and Authoriza		IAAS) alias is the preferred method.		
J2C authentication data entry:				
OUsing security properties from the ma	naged connecti	ion factory		
The properties will be stored as plain				
User name; sa	nple	·		
Password:	kokokok			=
• Other				
and security will be specified by the p The quality of service that is used to join when a failure occurs. To participate in a connection information must be specified Join the global transaction	the transaction global transacti	n provides a higher degree of data i ion, a predefined XA DataSource oi		
Deploy connector project: Wi	h module for us	se by single application	~	
Specify the settings used to connect to J	DBC at run time	91		
Connection settings: Sp	cify connection	n properties	~	
Connection Properties				
To join a global transaction, specify When not joining a global transactio information can be specified.				
Database connection information:	Spe	ecify predefined connection pool Da	taSource 🔽	
Database system connection inform	ition			
Database vendor:	OR/	ACLE		
Connection pool DataSource JNI	I name:* Ora	acleDS		
Advanced >>				~
0		< Back Next > Ei	nish Cancel	

3. Click **New** in the Specify the Location Properties window.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	/ice	
Module:	TestWrapper	New
Namespace;	http://TestWrapper/JDBCOutboundInterface1	Create a
	✓ Use the default namespace	
Folder:	1	Browse
Name: *	JDBCOutboundInterface1]
	Save business objects to a library	
Library;		New
Description:]
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

4. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🕀 New Business Inte	gration Project		
	Integration Project Type ess integration project that you want to create.		
	Use a module to integrate business applications and services. A mode any type of component and can be deployed on WebSphere Process <u>More</u>		
O Mediation module	Use a mediation module to integrate and connect services. A mediation module can contain mediation flows and can be deployed on WebSphere ESB or WebSphere Process Server. <u>More</u>		
0	< <u>B</u> ack <u>N</u> ext > Einish	Cancel	

5. In the Create a Module window, type **TestExists** in the **Module Name** field and click **Finish**.

🕀 New Module	
Create a Module Use a module to integrate business applications and services. A module can contain any type of ² component and can be deployed on WebSphere Process Server.	-
Module name: TestExists	
Use default location Location: D:\Workspaces\WID7_0806\TestExists	Browse
☑ Open module assembly diagram	
⑦ < <u>Back</u> <u>Next</u> > <u>Finish</u>	Cancel

6. In the Specify the Location Properties window, click **Finish** to finish the service creation.

🚯 New External Service				
Specify the Location Properties Specify location properties for where you want to save the service.				
Properties for Serv	vice			
Module:	TestExists	New		
Namespace;	http://TestExists/JDBCOutboundInterface1			
	Use the default namespace			
Folder:		Browse		
Name: *	JDBCOutboundInterface1			
	Save business objects to a library			
Library:		New		
Description:				
?	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel		

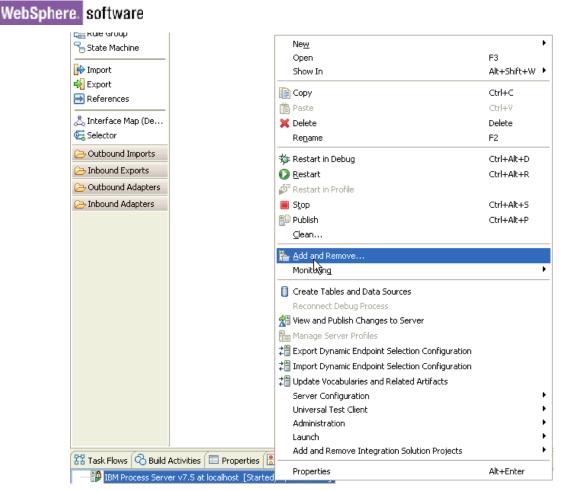
7. Open the Project Explorer and verify that the business objects are created correctly.

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) import. You must install this SCA module in the IBM Integration Designer integration test client to deploy it. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- In IBM Integration Designer, switch to the Servers view by selecting from the toolbar Window > Show View > Servers.
- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.



The Add and Remove Projects window lists the available projects in the IBM Integration Designer workspace.

Add and Remove Projects	
Add and Remove Projects Modify the projects that are configured on the server	
Move projects to the right to configure them on the server <u>A</u> vailable projects: <u>C</u> onfigured projects:	
<pre> G BOCustAddMssqlAppApp G BOCustAddrDB2App G BOCustAddrExecDB2App G JDBCBatchSQLTestApp G JDBCInboundTestApp G JDBCInboundTestApp G TestApp G TestCreateSPApp G TestExecuteSPApp G TestExistApp G TestExistApp G TestStructArrayApp G TestStruc</pre>	
⑦ < Back Next > Finish Car	ncel

4. In the Add and Remove Projects window, select your project (TestExistsApp) and click **Add** to configure the project on the server. Click **Finish**.

Add and Remove Projects				
Add and Remove Projects Modify the projects that are	configured on the server			
Move projects to the right to Available projects: BOCustAddMssqlAppApp BOCustAddrDB2App BOCustAddrExecDB2App BOCustAddrExecDB2App JDBCBatchSQLTestApp JDBCInboundTestApp G TestApp G TestApp G TestCreateSPApp G TestExecuteSPApp G TestStructArrayApp G TestWrapperApp	configure them on the set Add > Add All >> << Remove All	erver Configured projects: TestExistApp		
☑If server is started, publish changes <u>i</u> mmediately				
0 <u>Sa</u> a	ck <u>N</u> ext >	<u>Einish</u> Ca	ncel	

Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. Select the **TestExists** module, right-click, and select **Test > Test Module.** The Test Client window is displayed.

ė 6 1	FestExists	🔚 🔤 ontyped compone		
		I and Human Tack	1	
۰ ۱	Ne <u>w</u>	•		
	Ope <u>n</u> Deployment Editor			
	Open Data Map Catalog			
91	S <u>h</u> ow Files			
	Show References in References View			
	Associate with Process Center		\vdash	
	Refresh and Publish			
	Refresh from Process Center			
	Paste			
	Refactor or Analyze Impact	•		
	🔤 Import			
	Export		5	
	🔊 Refresh			
	Clo <u>s</u> e Project			
	Add to Asset Repository			
	Compare <u>B</u> usiness Objects			
	Configure Business Object Parsing Mode			
	Convert Mediation Flow Format			
	😭 Generate Documentation			
⊕(⊒)	Generate Human Task User Interface			
	New Process Version			
	Synchronize with the WebSphere Busine	ss Modeler Export		
	<u>T</u> est	•		Test Modules
	<u>V</u> alidate		La	Attach to Modulus
		•		
	T <u>e</u> am Companya With		O	Generic S <u>e</u> rvice Client
	Comp <u>a</u> re With		89	Load Test Configuration
	Properties			Load Test Trace
	Miarato adaptor artifacto		_	
	Migrate adapter artifacts		4	Loa <u>d</u> Emulator

2. Select ${\it existsJabdullaCustomerBG}$ from the ${\it Operation}$ list.

Configuration:	Default Module Test	*
Module:	TestExists	*
Component:	JDBCOutboundInterface1	*
Interface:	JDBCOutboundInterface1	*
Operation:	existsSample1CustomerBG	*

Initial request parameters:

	Name	Туре	Value	
	🖃 🏪 existsSample1Custo	Sample1CustomerBG	ав	
	🖳 💭 verb	verb <string></string>	Create	
	🚊 🖳 Sample1Customer *	Sample1Customer	ав	
	🖳 🛄 pkey	string	ав	
	🖳 🛄 fname	string	ав	
	🛄 Iname	string	ав	
	🛄 ccode	string	ав	

3. Right-click **verb**, select **Set To > Unset**. Enter 1000 for pkey, and unset Iname, fname and ccode.

Initial request parameters:

⊙ Value editor OXML editor

Name	Туре	Value		
📄 🖳 existsSample1Customer	Sample1CustomerBG	[a6]		
👘 💭 verb	verb <string></string>	20		
Sample1Customer *	Sample1Customer	(ab)		
pkey	string	ab 1000		
fname	string			
	string	2 0		
	strina	(ab)		
	<u>⊇</u> opy Value			
	Paste Value			
	Select <u>A</u> ll			
	Set <u>T</u> o 🔸	Value		
	Set Reguired to Default	Default		
	Add Val <u>u</u> e to Pool	Unset		
	Use Value from Pool	<u>N</u> ull ^I NS		
	Import from File			
		-		
	Expo <u>r</u> t to File			
	Use Derived Type			

- 4. To execute the service, click Continue \mathbf{O} .
- 5. In the Select Deployment location window, select the server and click **Finish.**

Deployment Location	
Select a Deployment Location	
Specify a runtime location where this test will deploy.	
Deployment location:	
BM Process Servers BM Process Server v7.5 at localhost WebSphere Enterprise Service Bus Server	New <u>S</u> erver
Mode: Run]
Use this location as the default and do not ask again	
① To change the default location elsewhere, open the Properties window for the proje Business Integration > Integration Test Client.	ct and select
? Einish	Cancel

6. Check the return value to ensure it matches expected values.

Module:	TestExists
Component:	JDBCOutboundInterface1
Interface:	JDBCOutboundInterface1
Operation:	existsSample1CustomerBG
Return param	eters:

Value Editor XML Source

Name Type Value	
ExistsResult ExistsResult	
boolean 🖬 true	
int 💷 1	

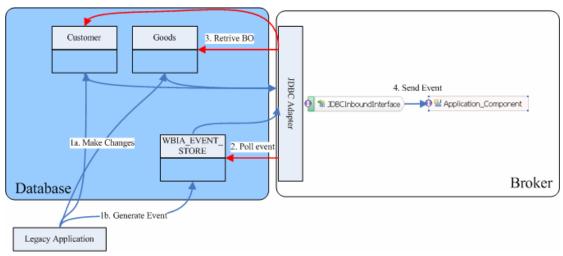
Chapter 15. Tutorial 14: Generate Wrapper business objects for Inbound (Oracle)

This tutorial demonstrates how WebSphere Adapter for JDBC 7.5.0.0 retrieves customer information from an application's database. A wrapper business object is used to retrieve records from multiple tables with one event entry.

About this task

This scenario illustrates the ability of WebSphere JDBC adapter to interact with database by polling database event from an event table. In this scenario, a legacy application makes some change of the CUSTOMER table and the GOODS table in a single operation. Then, insert an event entry record into the event table

(WBIA_EVENT_TABLE). Then, the event will be polled by JDBC adapter and send it to one SCA component. JDBC adapter screen all the database operation details, event quality assuring details and provide a simple event interface for the application component. The following figure shows the whole scenario:



This case has three steps:

1. The legacy application will make the changes and then generate an event record. For simplify reason, we will insert records using SQL statement directly.

2. JDBC adapter will poll the event from database periodically. Thus, it will find the new events and fetch the event and corresponding business objects from database.

3. At last, JDBC adapter will convert the event to a SDO and send it to the destination SCA component.

Prepare to run through the tutorial

Extract the sample files

Replicas of the artifacts that you create when using the external service wizard are provided as sample files for your reference. Use these files to verify if the files you create using the external service wizard are correct.

Download the sample zip file and extract it into a directory of your choice (you may want to create a new directory).

Configuration prerequisites

Before configuring the adapter, you must complete the following tasks:

- Create tables
- Create an authentication alias
- Create a data source

Create tables

You must create the following tables in the Oracle database before starting the scenario.

```
CREATE TABLE CUSTOMER
                       (
        PKEY VARCHAR2(10) NOT NULL PRIMARY KEY,
        FNAME VARCHAR2(20) ,
        LNAME VARCHAR2(20)
        CCODE VARCHAR2(10) ) ;
CREATE TABLE CUSTADD
                      (
       ADDRID VARCHAR2(10) NOT NULL PRIMARY KEY,
        CUSTID VARCHAR2(10) ,
        CITY VARCHAR2(20) ,
        ZIPCODE VARCHAR2(10) ) ;
CREATE TABLE WBIA_JDBC_EVENTSTORE
(
  EVENT ID INTEGER NOT NULL PRIMARY KEY,
  XID
         VARCHAR2(200),
  OBJECT_KEY
                                       NOT NULL,
                   VARCHAR2(80)
  OBJECT_NAME VARCHAR2(40) NOT NULL,
  OBJECT_FUNCTION VARCHAR2(40) NOT NULL,
  EVENT_PRIORITYINTEGEREVENT_TIMETIMESTAMP,EVENT_STATUSINTEGEREVENT_COMMENTVARCHAR2(100)
                        INTEGER
                                          NOT NULL,
                                    NOT NULL,
  );
```

Insert records into the tables we just created.

```
INSERT INTO CUSTOMER (PKEY, FNAME, LNAME, CCODE)
VALUES ('C1', 'JONE', 'TIGER', '1');
INSERT INTO CUSTOMER (PKEY, FNAME, LNAME, CCODE)
VALUES ('C2', 'ROTH', 'GREEN', '1');
INSERT INTO CUSTADD (ADDRID, CUSTID, CITY, ZIPCODE)
VALUES ('A1', 'C1', 'BEIJING', '100000');
INSERT INTO CUSTADD (ADDRID, CUSTID, CITY, ZIPCODE)
VALUES ('A2', 'C2', 'SHANGHAI', '200000');
```

Create an authentication alias

The authentication alias needs to be set because the data source created in the next section uses the username and password set in the authentication alias to connect to the database.

Follow these steps to set the authentication alias in the IBM Process Server administrative console.

1. In IBM Integration Designer, switch to the **Servers** view by selecting **Windows > Show View > Servers**.

Business Integration - IBM Int	tegration Des	igner 7.5 - D:\workspace\201	0\Sample75		
<u>File E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject	<u>R</u> un <u>D</u> iagran	n Services Samples - AST JUnit Tests	<u>Window</u> Help		
📬 • 🗐 🖻 📄 🔡 🕍 🖆	1 🔓 🔏 🗸	🖉 🔹 Link Indexer FVTs 👘 Link I	<u>N</u> ew Window New <u>E</u> ditor	DE APTs 📑 🐯 Business Inte	
E Business 🕱 🗖 🗖			Open Perspective	Dudd Antonios	
		Start working Start to work by creating a a project into your worksp. Learn more • Getting Started with IBN • Getting Started with IBN solid Activities 🔲 Properties 🕅 Pro Server v7.5 at localhost [Started, Sys	Close All Perspectives Navigation	C Build Activities C Servers C Servers C Tasks C Tasks C Turk C Servers C Server Appliances C Server Logs C Task Flows C Task S 2, 0 2, 0	
🗄 🗘 📮 👫 1 items selected					

2. In the **Servers** view, right-click the server that you want to start and select **Start**.

Business Integration - IBM Integration Designer 7.5	- D: \workspace \2010 \Sampl 🔳 🔲 🔀
<u>File Edit N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> un <u>D</u> iagram Services Sa	mples AST JUnit Tests <u>W</u> indow <u>H</u> elp
i 📬 • 🔛 🕼 🗁 🛛 🕴 🔐 i 😭 i 😭	😤 🛷 🔹 📑 🐯 Business Inte
Link Indexer FVTs Link Indexer APTs BTree tests	WDE APTs
😳 🔀 Task Flow 📀 Build Activ 🔲 Properties 🔝 Problems	👸 Server Lo 🕴 Servers 🛛 👘 🖶 🚥
8	☆ ○ 🖉 = 😰 🎽
📳 🔤 🔚 IBM Process Server v7.5 at localhost [Stopped, Synch	
	New
	Open
	Show In
	📄 Сору
	💼 Paste
	💢 Delete
	Rename
	参 <u>D</u> ebug
	🔅 Start
	profile
	Stop
	Publish
🕴 📮 🔚 1 items selected	ean

3. After the server is started, right-click the server, and select **Administration > Run administrative console**.

📪 IBM Process Server v7.5 at localhost [Started, Synchr	onized1
	Ne <u>w</u>
	Open
	Show In
	Copy
	Paste
	💢 Delete
	Rename
	🏇 Restart in Debug
	🜔 <u>R</u> estart
	🔊 Restart in Profile
	E Stop
	🔑 Publish
	<u>C</u> lean
	Add and Remove
	Monitoring
	Create Tables and Data Sources
	Reconnect Debug Process
	💒 View and Publish Changes to Server
	🛅 Manage Server Profiles
	2 Export Dynamic Endpoint Selection Configuration
	着 Import Dynamic Endpoint Selection Configuration
	着 Update Vocabularies and Related Artifacts
	Server Configuration
	Universal Test Client
	Administration

4. Log on to the administrative console.



5. Click Security → Global security.

View: All tasks
Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
1 Resources
🖂 Security
 Business Integration Security Global security Security domains Administrative Authorization Groups SSL certificate and key management Security auditing Bus security
🗄 Environment
🗄 Users and Groups
🗄 Monitoring and Tuning
🗄 Troubleshooting
🗄 Service integration
I UDDI

6. On the right, click J2C Authentication Data under Java Authentication and Authorization Service.

se this panel to configure administration and the default application securit unctions and is used as a default security policy for user applications. Secur pplications. Security Configuration Wizard	ity domains can be defined to override and
Administrative security Administrative user roles Enable administrative security Administrative group roles Administrative authentication Administrative authentication	Authentication Authentication mechanisms and expi
Application security Image: security Image: security	Kerberos configuration O SWAM (deprecated): No authenti Authentication cache settings
Java 2 security Use Java 2 security to restrict application access to local resources W Warn if applications are granted custom permissions Restrict access to resource authentication data	 Web and SIP security RMI/IIOP security Java Authentication and Authoriza Application logins
User account repository Current realm definition Federated repositories Available realm definitions Federated repositories Configure Set as current	System logins System logins Specifies a list of user identities and pass for Java(TM) 2 connector security to use Security domains External authorization providers

A list of existing aliases is displayed.

<u>Global security</u> > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

✓ Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply			
🕂 Pre	ferences		
New	Delete		
D	□ ₩ ₹		
Select	Alias 🛟	User ID 🗘	Description 🗘
You d	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
Total	4		

7. Click **New** to create a new authentication entry. Type the alias name, and username and password to connect to the database. Click **OK**.

lobal security >]/	AS - J2C authen	tication data >	New		
pecifies a list of u	er identities and	passwords for .	Java(TM) 2 connec	tor security to use.	
eneral Properties					
Alias					
Alias_Oracle					
User ID					
sample1					
Password					
•••••					
Description					
Apply OK Re:	et Cancel				
прри	ouncer				

8. Click **Save** to save the changes.

	🖂 Messages
	 Changes have been made to your local configuration. You can: Saik directly to the master configuration. Rei k changes before saving or discarding.
	Δ The server may need to be restarted for these changes to take effect.
al secu	rity > JAAS - J2C authentication data
cifies a	list of user identities and passwords for Java(TM) 2 connector security to use.

You have created an authentication alias that will be used to configure the data source.

🕂 Pret	ferences		
New	Delete		
D	ē # 4		
Select	Alias 🛟	User ID 🗘	Description 🗘
You c	an administer the following resources:		
	BSpace JDBC Alias	wbiuser	Business Space Authorization Alias
	<u>CommonEventInfrastructureJMSAuthAlias</u>	wbiuser	Authentication alias for the Common Event Infrastructure JMS Topics and Queues
	SCA Auth Alias	wbiuser	This is the alias used by SCA to login to a secured SIBus
	localhostNode01Cell/nlNode01/server1/EventAuthDataAliasDerby		Derby authentication alias for the Event Server
	nlNode01/AliashGracle	luweiqin	
Total	5		

Create a data source

Create a data source in IBM Process Server, which the adapter will use to connect to the database. Here are the steps to create the data source in the IBM Process Server administrative console. This data source will be used later when generating the artifacts for the module.

Note: This tutorial will use Oracle as the database and the Oracle thin driver, ojdbc6.jar.

1. In the administrative console, select **Environment → WebSphere** Variables.

View: All tasks 💌
= Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🕀 Resources
🗄 Security
🗆 Environment
 Virtual hosts Update global Web server plug-in configuration WebSphere variables Shared lib Replication WebSphere variables Replication
Integration Applications
🗄 Users and Groups
🗄 Troubleshooting
🗄 Service integration
I UDDI

2. On the right, select **ORACLE_JDBC_DRIVER_PATH** and specify the path of the ojdbc6.jar file in the **Value** field. Click **OK**.

WebSphere Variables	? -
WebSphere Variables > ORACLE_JDBC_DRIVER_PATH	
Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directorie Variables have a scope level, which is either server, node, cluster, or cell. Valu one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at gr scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.	es at eater
Configuration	
General Properties * Name ORACLE_JDBC_DRIVER_PATH Value D:\Lib	
Description	
The directory that contains the Oracle thin or oci8 JDBC Driver.	
Apply OK Reset Cancel	

3. Click **Save** to save the changes.

WebSphere Variables	?.
 Messages Changes have been made to your local configuration. You can: Superint directly to the master configuration. R lew changes before saving or discarding. The server may need to be restarted for these changes to take effect. 	

The variable is added and appears in the list.

🕀 Pref	erences		
New	Delete		
	∎ ₩ ₽		
Select	Name 🛟	Value 🗘	Scope 🗘
You a	an administer the following resources:		
	MQ INSTALL ROOT	\${WAS_INSTALL_ROOT}/lib/WMQ	Node=nlNode01
	ORACLE JOBC DRIVER PATH	D:\Lib	Node=nlNode01
	OS400 NATIVE JDBC40 DRIVER PATH		Node=nlNode01
	OS400 NATIVE JDBC DRIVER PATH		Node=nlNode01
	OS400 TOOLBOX JDBC DRIVER PATH		Node=nlNode01
_	CVRACE IDDC DDD/ED DATU		NERSON ALON

4. Select **Resources** → JDBC -> JDBC Providers.

View: All tasks
= Welcome
🗄 Guided Activities
🗄 Servers
Applications
🗄 Services
🗆 Resources
Schedulers
 Object pool managers
⊞ JMS
People directory provider
Extended messaging provider
 WebSphere Business Integration Adapters
🖂 ЈОВС
 JDBC proniders
Data soul is
 Data sour JDBC providers Application Server V4)
Business Integration Data Source
🗄 Resource Adapters
🗄 Asynchronous beans
🛨 Cache instances
🗄 Mail
⊞ Remote artifacts ■
🗄 Resource Environment
🗄 Security
Environment
Es Environment

5. Click **New** in the JDBC providers window.

JDBC providers Use this page to edit properties of a JDBC provider. The JDBC provider object encapsulates the specific JDBC driver implementation class for access to the specific vendor database of your environment. Learn more about this task in a guided activity. A guided activity provides a list of task steps and more general information about the topic. Scope : Cell=localhostNode01Cell, Node=nlNode01 Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, see the scope settings help. Node=nlNode01 Preferences Select Name Scope None Total 0	BC providers
encapsulates the specific JDBC driver implementation class for access to the specific vendor database of your environment. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general information about the topic. Scope : Cell= localhostNode01Cell , Node= nlNode01 Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings help.</u> Node=nlNode01 Preferences Select Name Scope Sc	JDBC providers
Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings</u> <u>help.</u> Node=nlNode01 Preferences Preferences Select Name \diamond Scope \diamond Description \diamond None	encapsulates the specific JDBC driver implementation class for access to the specific vendor database of your environment. Learn more about this task in a <u>quided activity</u> . A guided activity provides a list of task steps and more general
definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings</u> <u>help.</u> Node=nlNode01 Preferences Preferences Select Name \bigcirc Scope \bigcirc Description \bigcirc None	Scope: Cell=localhostNode01Cell, Node=nlNode01
New Delete Select Name Scope Description None	definition is visible. For detailed information on what scope is and how it works, <u>see the scope settings</u>
Select Name Scope Description None	Node=nlNode01
Select Name 🗘 Scope 🗘 Description 🗘	
None	Preferences Internal and a second seco
	Preferences Delete
Total 0	Preferences Delete Delete Delete
	Preferences

6. Select Oracle database with a connection pool data source for the Oracle JDBC driver. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Create new JDBC provider	Create new JDBC provider
JDBC provider Step 2: Enter database class path information Step 3: Summary	Set the basic configuration values of a JDBC provider, which encapsulates the specific vendor JDBC driver implementation classes that are required to access the database. The wizard fills in the name and the description fields, but you can type different values. Scope cells:localhostNodeO1Cell:nodes:nlNodeO1 * Database type Oracle V Provider type Oracle JDBC Driver * Implementation type Connection pool data source V * Name Oracle JDBC Driver Description Oracle JDBC Driver

- 7. In the Enter database classpath information page, enter the following value for the Class path field: \$(ORACLE_JDBC_DRIVER_PATH)/ojdbc6.jar, where \$(ORACLE_JDBC_DRIVER_PATH) is library path for the run time.
- 8. Click Next.

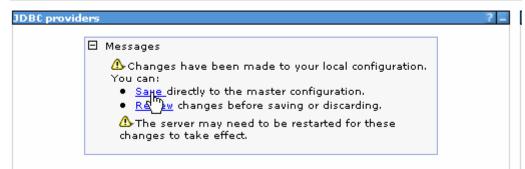


Cr	eate	e a new JDBC Provider	E
	Cre	ate a new JDBC Provid	er
		Step 1: Create new	Enter database class path information
	→	JDBC provider Step 2: Enter database class path information Step 3: Summary	Set the environment variables that represent the JDBC driver class files, which WebSphere(R) Application Server uses to define your JDBC provider. This wizard page displays the file names; you supply only the directory locations of the files. Use complete directory paths when you type the JDBC driver file locations. For example: C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).
			If a value is specified for you, you may click Next to accept the value.
			Class path:
			\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
			Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH} D:\Lib
	F	Previous Next	Cancel

9. In the Summary page, click Finish.

Create a new JDBC Provider		
Step 1: Create new JDBC provider	Summary	
Step 2: Enter	Summary of actions:	
database class path	Options	Values
information	Scope	cells:localhostNode01Cell:nodes:nlNode01
→ Step 3: Summary	JDBC provider name	Oracle JDBC Driver
	Description	Oracle JDBC Driver
	Class path	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar
	\${ORACLE_JDBC_DRIVER_PATH}	D:\Lib
	Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSourc

10. Click $\ensuremath{\textbf{Save}}$ to save the changes.



The JDBC provider is added and appears in the list.

```
Cell=localhostNode01Cell, Profile=AppSrv01
```

JDBC pro	viders		
encapsul specific v <u>quided a</u>	ates the specific JD endor database of	rties of a JDBC provider. T DBC driver implementation your environment. Learn i tivity provides a list of task	class for access to the more about this task in a
∃ Scope	: Cell =localhostNo	de01Cell, Node=nlNode01	
	scope is and how	it works, <u>see the scope se</u>	ttings
	scope is and how <u>help.</u> Node=nlNode0		ttings
± Prefer	<u>help.</u> Node=nlNode0		<u>ttings</u>
+ Prefer	<u>help.</u> Node=nlNode0		ttings
	<u>help.</u> Node=nINode0 ences		<u>ttings</u>
New	help. Node=nlNode0 ences Delete		ttings Description ≎
New I	help. Node=nlNode0 ences Delete	1 V Scope 🗘	

11. Select the Oracle JDBC provider you created. Under Additional Properties, select Data sources. Click New.

		racle JDBC Drive	er > Data so	urces		
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.						
⊕ Pref	erences		-			
New	Delete .	Test connection	Manage	state		
- Colé	h ## #?					
000	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category (

12. Type any value in the **JNDI name** field, and select the authentication alias. Click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Enter basic data source information
information Step 2: Enter database specific properties for the data source Step 3: Setup security aliases Step 4: Summary	Set the basic configuration values of a datasource for association with your JDBC provider. A datasource supplies the physical connections between the application server and the database. Requirement: Use the Datasources (WebSphere(R) Application Server V4) console pages if your applications are based on the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification. Scope cells:localhostNode01Cell:nodes:nlNode01 JDBC provider name Oracle JDBC Driver * Data source name Oracle JDBC Driver DataSource * JNDI name OracleDS

13. Provide the appropriate URL value and select a data store helper class name from the **Data store helper class name** list as shown in the following figure. Click **Next**.



	Step 1: Enter basic data source	Enter database specific prope	rties for the data source
→	information Step 2: Enter database specific	Set these database-specific proper database vendor JDBC driver to su managed through the datasource.	pport the connections that are
	properties for the data source Step 3: Setup	Name * URL	Value
	security aliases Step 4: Summary	* Data store helper class name	jdbc:oralce:thin:@9.181.84.1
		Oracle10g data store helper 💌	iner managed persistence (CMP)

14. Select the authentication alias you just created from the **Component-managed authentication alias** field and click **Next**.

Cell=localhostNode01Cell, Profile=AppSrv01

Step 1: Enter basic data source	Setup security aliases
information	
Step 2: Enter	Select the authentication values for this resource.
database specific properties for the	Component-managed authentication alias
data source	nlNode01/Alias_Oracle
 Step 3: Setup security aliases 	Mapping-configuration alias (none)
Step 4: Summary	Container-managed authentication alias
step 4: summary	(none)
	Note: You can create a new J2C authentication alias by accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be lost.
	Global J2C authentication alias Security domains

15. In the Summary page, review the values entered for the data source and click **Finish**.

Close

Create a data source

	Step 1: Enter basic data source	Summary	
	information	Summary of action	ISI
	Step 2: Enter	Options	Values
	database specific properties for the	Scope	cells:localhostNode01Cell:nodes:nlNode01
	data source	Data source name	Oracle JDBC Driver DataSource
	Step 3: Setup	JNDI name	OracleDS
•	security aliases Step 4: Summary	Select an existing JDBC provider	Oracle JDBC Driver
		Implementation class name	oracle.jdbc.pool.OracleConnectionPoolDataSource
		URL	jdbc:orade:thin:@9.181.84.136:1521:ord
		Data store helper class name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelpe
		Use this data source in container managed persistence (CMP)	true
		Component- managed authentication alias	nlNode01/Alias_Oracle
		Mapping- configuration alias	(none)
		Container- managed authentication alias	(none)

16. Click **Save** to save the changes.

Cell=localhostNode01Cell, Profile=AppSrv01

ders	
	 Messages Changes have been made to your local configuration. You can: Save directly to the master configuration. Rev // changes before saving or discarding. A The server may need to be restarted for these changes to take effect.

17. Select the newly created data source and click **Test connection**.

JDBC p	roviders > Orac	le JDBC Driver	> Data sources			
provide databa	er. The datasour ise. Learn more	ce object supplie	datasource that is as your applicatior in a <u>quided activit</u> oout the topic.	n with connecti	ons for accessin	ig the
🕀 Pref	erences					
New	Delete Tes	t connection	Manage state			
D	ð 👯 🦃	Ū				
Select	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Catego
You c	an administer th	e following reso	urces:			
V	Oracle JDBC Driver	OracleDS	Node=nlNode01	Oracle JDBC Driver	New JDBC Datasource	

The connection should succeed as indicated by the message shown in the following figure. If you experience problems with the test connection, refer to the "Troubleshooting" section.

Cell=localhostNode01Cell, Profile=AppSrv01

🖂 Messages						
The test connection operation for data source Oracle JDBC Driver DataSource on server server1 at node nlNode01 was successful.						
<u>JDBC providers</u> > <u>Oracle JDBC Driver</u> > Data sources						
Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object supplies your application with connections for accessing the database. Learn more about this task in a <u>guided activity</u> . A guided activity provides a list of task steps and more general information about the topic.						
Ð Pref	erences					
New	Delete Tes	t connection	Manage state			
					Decision A	Category (
	Name 🛟	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category ,
Select	*	JNDI name 🗘 e following reso	· •	Provider 💭	Description 🤤	Category (
Select	*	*	· •	Provider 🗘	Description Ç	varei

The data source is created and it will be used by the adapter to connect to the database.

Configure the adapter for inbound processing

Run the external service wizard to specify business objects, services, and configuration details.

- Switch to the Business Integration Perspective in IBM Integration Designer by selecting Window -> Open Perspective Business Integration.
- Start the external service wizard by selecting File-> New -> External Service.
- 3. In the Available Types area, select Adapters > JDBC and click Next.

🤂 New External Service	×
Select the Service Type or Registry Select the type of service to create or registry to browse.	
Eilter: type filter text Available types:	æ
DBC Lotus Domino Oracle E-Business Suite PeopleSoft COD	< >
Description: Creates a service to access the database system using WebSphere Adapter for JDBC. You can create integrated processes, which includes the exchange of information with a database, without special coding. During the outbound processing the adapter converts a request from the application to an outbound operation, which it runs to create, retrieve, update, or delete data in the database or to run a database program stored in the database. During inbound processing, the adapter polls the event store, retrieves and processes	<
Cancel Can	

4. Select the IBM WebSphere Adapter for JDBC (IBM: 7.5.0.0) and click Next.

New External Service	
Select an Adapter Select the version of the adapter that you want to use.	(5)
	Z 4
IBM WebSphere Adapter for JDBC (IBM : 7.5.0.0)	
	▼ ♪ ♪
? < Back	Cancel

- 5. In the Connector project field, enter CWYBC_JDBC.
- 6. In the **Target runtime environment** field, select the appropriate runtime and click **Next**.

🚯 New External Service		
Import a RAR File Import a resource adapter a connector project for the ad	rchive (RAR) from the file system to create a apter.	S
Archive file: Connector project: * Target runtime enviroment:	E:\WID75\ResourceAdapters\JDBC_7.5.0.0\CWYBC CWYBC_JDBC IBM Process Server v7.5	_JDBC.rar
?	< <u>B</u> ack Next > Einish	Cancel

7. In the **JDBC driver JAR files** field, click **Add**, to add the JDBC driver class to connect to the database. Browse to select the driver JAR file and click **Next**.

🚯 New External Service	\mathbf{X}
Locate the Required Files and Libraries Connector projects require system-specific libraries and JAR files.]
When deploying the application to a stand-alone server, these files must be configured on the server. <u>More</u>	^
Specify the location of the JDBC driver JAR files required to access the database server. JDBC driver JAR files are shipped with the database installation. If you do not have a local database installation, you can download these files from the Web site of the database vendor. JDBC driver JAR files:	
D:\workspace_lib\JDBCdrivers\Oracle\ojdbc6\ojdbc6.jar Add Remove	III
Specify the location of the database-specific native system libraries required to access the database server. This is required if you are using a Type 2 driver implementation. The native libraries are shipped with the database server and client installations. System libraries:	
Add	~
< Back Next > Einish Cancel	

8. Select **Inbound** and click **Next**.

🚯 New External Service
Select the Processing Direction Select the direction of adapter processing at run time.
Inbound Inbound processing passes data from the adapter to your service
export.
🔿 Outbound
Outbound processing passes data from your service import to the adapter.
< Back Next > Einish Cancel

Set connection properties for the external service wizard

To connect to the Oracle database:

- 1. Expand the **Oracle** node in the **Database system connection information area** and select **10**.
- 2. Enter values in the **System ID**, **Host name**, **Port number**, **User name** and **Password** fields, and click **Next**.



🚯 New External Service	
Specify the Discovery Pro	perties
Connection properties Database system connection in	formation
→ → → → → → → → → →	▲ JDBC driver type: Oracle Thin Driver System ID: * orcl Host name: * 9.123.108.86 Port number: * 1521 JDBC driver class name: * oracle.jdbc.driver.OracleDriver Database URL: jdbc:oracle:thin:@9.123.108.86 * sample1
Password: Prefix for business object name Advanced >> Change the logging properties for	

Select the business objects to be used with the adapter

1. In the Find Objects in Enterprise System window, click **Run Query**.

🚯 New External Service	
Find Objects in the Enterprise Syste Use a query to find objects on the enterprise sys the query, then click Run Query to run it.	
Query: SchemaFilterLabel=null,Schema name or Run Query	pattern=null,Supported datat Edit Query
DiscoverRun the query.	Selected objects:
中 2 年	0
\mathbf{i} < Run a query to populate this view with	
? <back< td=""><td>Next > Finish Cancel</td></back<>	Next > Finish Cancel

- 2. In the Discovered objects pane, expand the **SAMPLE** (for this tutorial only) node, select **Tables** and expand it.
- 3. Select the CUSTOMER and CUSTADD tables and click
- 4. Click Next.

🚯 New External Service	
Find Objects in the Enterprise System Use a query to find objects on the enterprise system. Click Edit Query to create the query, then click Run Query to run it.	Ro,
Query: SchemaFilterLabel=null,Schema name or pattern=null,Supported dat (Run Query	Edit Query
Discovered objects: Selected objects:	
⇒ 2 □	0
PLSQL CUSTADD CUSTOMER O SAMPLE O SAMPLE1 O CUSTADD O	
Reck Next > Finish	Cancel

Generate business object definitions and related artifacts

Follow these steps to generate the business object definitions.

1. In the Specify Composite Properties window, click **Add** and enter the name for the new wrapper business object. Click **OK**.

🚯 New External Service
Specify Composite Properties Specify properties that apply to all selected objects.
Operations for selected business objects Operations for these functions will be added to the service interface.:*
Create Add Update Delete Add Value Remove
Create and c Wrapper
Business object namespace:* http://www.ibm.com/xmlns/prod/websphere/ Specify the relative folder for generated business objects Folder:
Generate a business graph for each business object ✓ <tr< td=""></tr<>

2. In the **Table**, **view**, **synonym**, **or nickname child objects for the selected wrapper** area, click **Add** to add CUSTOMER and CUSTADD table business objects for the wrapper.

🚯 New External Service	
Specify Com Specify propertie	
Select values from the list below:	
Create and confi Wrapper obj	
Wrapper	Add
Table, view,	Add
Service funct OK Cancel	Add
	Remove V
C Back Next > Einish	Cancel

3. In the Service **functions for selected wrapper object** area, click **Add** to add functions for the wrapper.



🕀 New External Service	
Specify Composite Properties	
Specify properties that apply to all selected objects.	
🕂 🔂 Add Value	
Select values from the list below: Table, view, syn	d wrapper object:
CUSTADD	Add
CUSTOMER Create Delete	Remove
Update	
Service functions	
	Add
	Remove
Business object name OK Cancel	j2ca/j
Specify the relative f	
Generate a business graph for each business object	×
	>
	.0
A Back Next > Einish A	Cancel

4. Accept the default for the other fields, and click **Next**.

🔀 New External Service		X
Specify Composite Properties Specify properties that apply to all selected objects.		
Operations for selected business objects Operations for these functions will be added to the service interface.:* Create	Add	~
Update Delete	Remove	
Create and configure user-defined wrapper objects Wrapper object names:		
Wrapper	Add Remove	=
Table, view, synonym, or nickname child business objects for the selected wrapper object:		=
CUSTADD CUSTOMER	Add Remove	
Service functions for selected wrapper object:		
Create Delete Update	Add Remove	
Business object namespace: http://www.ibm.com/xmlns/prod/websphere/j2ca/jdbc		~
⑦ < <u>Back</u> <u>Next</u> > Einish	Cancel	

5. In the Specify the Service Generation and Deployment Properties window, select the security credential as **Other**. Select **Specify predefined DataSource** form the **Database connection information** list.

Bew External Service		×
Specify the Service Generatio ② DataSource JNDI name: cannot be em		F
interface file, click Edit Operations. Deployment Properties How do you want to specify the secu Using an existing JAAS alias (reco A Java Authentication and Author J2C authentication data entry: Using security properties from the The properties will be stored as pr User name: Password: Other	mmended) rization Services (JAAS) alias is the preferred method.	
Server and security will be specific Deploy connector project: Specify the settings used to connect Connection settings: Connection Properties	ed by the properties in the JNDI lookup name. With module for use by single application to JDBC at run time: Specify connection properties	
Database connection information Database system connection info Database vendor: DataSource JNDI name: Advanced >>	I: Specify predefined DataSource Image: Specify predefined DataSource Image: ORACLE Image: Specify predefined DataSource Image: Specify predefined DataSource Image: Specify predefined DataSource Image: Specify predefined DataSo	
0	< <u>B</u> ack <u>N</u> ext > <u>E</u> inish Cancel	

6. In the **DataSource JNDI name** field, enter the JNDI name of the data source, which you created in the previous section. Click **Next**.

🚯 New External Service			×
Specify the Service Generatio Specify properties for generating the serv		0	-
 interface file, click Edit Operations. Deployment Properties How do you want to specify the secu Using an existing JAAS alias (record) A Java Authentication and Authord J2C authentication data entry: Using security properties from the The properties will be stored as provide user name: Password: Other Use if no security is required or will be stored or will be security or will be security or will be security or will be security or will be security and the security of the security is required or will be security	mmended) rization Services (JAAS) alias is the preferred method, activation specification		(>)
Deploy connector project:	With module for use by single application	*	
Database system connection info Database vendor:	Specify connection properties		
0	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel	

7. Click **New** in the Specify the Location Properties window.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Ser	vice	
Module:	TestExists	New
Namespace;	http://TestExists/JDBCInboundInterface	Create a r
	✓ Use the default namespace	
Folder:		Browse
Name: *	JDBCInboundInterface	
	Save business objects to a library	
Library;	· · · · · · · · · · · · · · · · · · ·	New
Description:		
0	< <u>B</u> ack <u>N</u> ext > <u>Finish</u>	Cancel

8. In the Select a Business Integration Project Type window, select **Module** and click **Next**.

🚯 New Business Inte	gration Project 📃 🗖 🔀
	Integration Project Type ss integration project that you want to create.
	Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server. <u>More</u>
Mediation module	Use a mediation module to integrate and connect services. A mediation module can contain mediation flows and can be deployed on WebSphere ESB or WebSphere Process Server. <u>More</u>
?	< <u>B</u> ack <u>N</u> ext > Einish Cancel

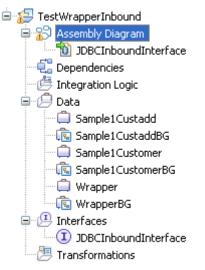
9. In the Create a Module window, type **TestWrapperInbound** in the **Module Name** field, click **Finish.**

🚯 New Module
Create a Module Use a module to integrate business applications and services. A module can contain any type of component and can be deployed on WebSphere Process Server.
Module name: TestWrapperInbound
✓ Use default location
Location: D:\Workspaces\WID7_0806\TestWrapperInbound Browse
♥ Open module assembly diagram
? < Back

10. In the Specify the Location Properties window, click **Finish** to finish the wizard.

🚯 New Externa	l Service	
	ocation Properties operties for where you want to save the service.	
Properties for Serv	vice	
Module:	TestWrapperInbound	New
Namespace;	http://TestWrapperInbound/JDBCInboundInterface	
	Use the default namespace	
Folder:		Browse
Name: *	JDBCInboundInterface	
	Save business objects to a library	
Library;		New
Description:		
?	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

11. Expand the created Business Integration Project and verify whether the artifacts are generated correctly.



Set up the components to be part of the inbound environment

Next, we add and set up components that to be part of the inbound environment.

1. In the **Assembly Diagram**, in the Palette, expand **Components** and click **Java** component.

🕫 TestWrapperInt	bound - Assembly Diagram 🛛	- 0
े 😳 Palette ि ् € ⊂् ኈ 🕼	0 🐿 JDBCInboundInterface	
➢ Favorites		
Components		
🖺 Untyped Co		
🔊 Human Task		
🚰 Java 🚬		
🔁 Medikation Fl		
오 Proce <mark>Java</mark>		
l≣Rule Group		
State Machine		
🕞 Import		
🕄 Export		
🖻 References		
⊖Outbound		
🗁 Inbound Ad		

2. Click anywhere in the **TestWrapperInbound -Assembly Diagram** window (white part) to create the **Java** component, **Component1.**

🕄 *TestWrapperI	nbound - Assembly Diagram 🛛	
 d [©] Palette ▶ • • • • • • ▶ • • • • • ► Favorites 	👰 🐿 JDBCInboundInterface	
🗁 Components		
Lontyped Co 創Human Task ピJava	\sim	
™ Mediation Fl		
₩Rule Group State Machine		
i≫ Import € Export		
References Outbound		
≥ Inbound Ad		

3. To wire **JDBCInboundInterface** to **Component1** hover the cursor over the right end of **JDBCInboundInterface** until a yellow wire appears.

🕄 *TestWrapperIi	nbound - Assembly Diagram 🛛	- 0
 ✓ Palette ➢ Palette ➢ Palette ➢ Palette ➢ Palette ➢ Palette Ø Palett	IDBCInboundInterface	
 Import Export References Outbound Inbound Ad 		

4. Click on the yellow wire and drag it to the left end of **Component1.** When the Add Wire pop-up window displays click **OK**.

ଷ *TestWrapperIn	nbound - Assembly Diagram 🛛	
 Image: Second second		
▷ Favorites	👷 🐿 JDBCInboundInterface 🦳 🤷 🚰 Component1	
🗁 Components		
💁 Untyped Co		
🔊 Human Task		
🚰 Java		
🍳 Mediation Fl		
2 Process		
🖫 Rule Group		
🕆 State Machine		
🕞 Import		
🕄 Export		
🖻 References		
⊖Outbound		
🕞 Inbound Ad		

- 5. Click **File > Save** from the toolbar to save changes made.
- 6. Right-click on **Component1** in the **Assembly Diagram** and select **Generate implementation.**

🕫 *TestWr	🖉 Add Note			3
🔄 😳 Pale	<u>H</u> ide Notes			٦
₽ € € ₽	<u>A</u> dd	►	Component1	
🗁 Favorite	<u>o</u> range rype	►		
🗁 Compor				
- Untypec		►		
a Human				
🛃 Java	Select Implementation			
🖻 Mediatic	Open			
2 Process	Synchronize Interfaces and References	►		
≣Rule Gro	Relacion	•		
State Ma	Merge Components			
🔛 Import				
🕄 Export	P Copy			
🖻 Referen:	i Paste			
🔁 Outbour				
🗁 Inbound	× <u>D</u> elete			

7. In the Generate Implementation window, select **default package** and click **OK**.

Generate Implementation	_ 🗆 🗙
Select the package where the Java implementation will be	generated:
New Package	
0 <u>K</u>	Cancel

8. The Java Editor will open showing the **Component1Impl.java** file.



- 9. Scroll down and locate the createwrapperBG method.
- 10. Replace the entire method so that it looks like the one shown below:

```
public void createwrapperBG(
       DataObject wrapper =
createwrapperBGInput.getDataObject("wrapper");
 System.out.println("-----");
       System.out.println("Wrapper was created.");
       DataObject customer = (DataObject)
wrapper.getList("customerobj").get(0);
       DataObject addr = (DataObject)
wrapper.getList("custaddobj").get(0);
       System.out.println("CUSTOMER info as below:");
       System.out.println("PKEY is: "+
          customer.getString("pkey"));
       System.out.println("FNAME is: "+
          customer.getString("fname"));
       System.out.println("LNAME is: "+
          customer.getString("lname"));
       System.out.println("CCODE is: "+
          customer.getString("ccode"));
       System.out.println();
       System.out.println("CUSTADD info as below:");
       System.out.println("ADDRID is: "+
             addr.getString("addrid"));
       System.out.println("CUSTID is: "+
             addr.getString("custid"));
       System.out.println("CITY is: "+
             addr.getString("city"));
       System.out.println("ZIPCODE is: "+
             addr.getString("zipcode"));
 System.out.println("-----");
       System.out.println();
 }
      11. Scroll down and locate the deletewrapperBG method.
      12. Replace the entire method so that it looks like the one shown below:
public void deletewrapperBG(
DataObject deletewrapperBGInput) {
    DataObject wrapper =
deletewrapperBGInput.getDataObject("wrapper");
    System.out.println("-----");
    System.out.println("Wrapper was deleted.");
    System.out.println("PKEY of customer is: "+
       wrapper.getString("wrapcustomerpkey"));
    System.out.println("ADDRID custadd is: "+
       wrapper.getString("wrapcustaddaddrid"));
    System.out.println("-----");
    System.out.println();
 }
      13. Scroll down and locate the updatewrapperBG method.
```

14. Replace the entire method so that it looks like the one shown below:

```
public void updatewrapperBG(
DataObject updatewrapperBGInput) {
    DataObject wrapper =
updatewrapperBGInput.getDataObject("wrapper");
    System.out.println("-----");
    System.out.println("Wrapper was updated.");
    DataObject customer = (DataObject)
wrapper.getList("customerobj").get(0);
    DataObject addr = (DataObject)
wrapper.getList("custaddobj").get(0);
    System.out.println("CUSTOMER info as below:");
    System.out.println("PKEY is: "+
       customer.getString("pkey"));
    System.out.println("FNAME is: "+
       customer.getString("fname"));
    System.out.println("LNAME is: "+
       customer.getString("lname"));
    System.out.println("CCODE is: "+
       customer.getString("ccode"));
    System.out.println();
    System.out.println("CUSTADD info as below:");
    System.out.println("ADDRID is: "+
          addr.getString("addrid"));
    System.out.println("CUSTID is: "+
          addr.getString("custid"));
    System.out.println("CITY is: "+
          addr.getString("city"));
    System.out.println("ZIPCODE is: "+
          addr.getString("zipcode"));
    System.out.println("-----");
    System.out.println();
 }
```

15. Click on **File > Save** from the toolbar to save the changes made.

Deploy the module to the test environment

After running the external service wizard, you will have an SCA module that contains an Enterprise Information System (EIS) export. You must install this SCA module in the IBM Integration Designer integration test client to deploy it. To do this, you must add the SCA module you created earlier to the server using the **Servers** view in IBM Integration Designer.

Steps for adding the SCA module to the server:

- 1. In IBM Integration Designer, switch to the **Servers** view by selecting from the toolbar **Window** > **Show View** > **Servers**.
- 2. In the **Servers** tab in the lower-right pane right click the server, and select **Start**.
- 3. After the server is started, right-click the server, and select **Add and Remove projects**.

Ne <u>w</u> Open Show In	F3 Alt+Shift+W	*
 ■ Copy ■ Paste ➤ Delete Rename 	Ctrl+C Ctrl+V Delete F2	
 Restart in Debug Restart Restart in Profile Stop Publish Clean 	Ctrl+Alt+D Ctrl+Alt+R Ctrl+Alt+S Ctrl+Alt+P	
Hand Remove Projects Monitoring		•
 Create tables and data sources Reconnect debug process View and publish the changes to the server Manage server profiles Server configuration Universal test client Administration Launch Add and Remove Integration Solution Projects 		* * * *
Properties	Alt+Enter	

A window is displayed that shows the available projects on the IBM Integration Designer workspace.

🔂 Add and Remove	
Add and Remove Modify the resources that are configured on the server	
Move resources to the right to configure them on the server Available: Configured: DDBCInboundTestApp Add > Add All >> Add All >> Add All >> If server is started, publish changes immediately	
(?) < <u>Back</u> <u>Next</u> > <u>Finish</u>	Cancel

 In the Add and Remove Projects window, select your project (TestWrapperInbound) and click Add to configure the project on the server. Click Finish.

🔂 Add and Remove		
Add and Remove Modify the resources that are cor	figured on the server	
Move resources to the right to cor	figure them on the server	
<u>A</u> vailable:		<u>C</u> onfigured:
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Test the assembled adapter application

Test the assembled adapter application using the IBM Integration Designer integration test client.

1. In the Business Integration view right-click on the TestInboundWrapper module, and select Test > Attach.

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	🛃 Export		
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	Add to Asset Repository		
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	Configure Business Object Parsing Mode		
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	General Properties			
his area displays the events in a test trace. Select an event	 Detailed Properties Select a test configuration for the Attach event, then click the Continue icon in the Events area to start the attachment session. <u>More</u> 			
o display its properties in the General Properties and Detailed roperties sections. <u>More</u>				
Mattach	Configuration:	Default Module Test	~	
	Module:	TestInboundWrapper		
	•			

- 2. To execute the service, click \bowtie .
- 3. Execute below SQL scripts to generate events:

```
INSERT INTO WBIA_JDBC_EVENTSTORE
 (EVENT_ID,OBJECT_KEY,OBJECT_NAME,OBJECT_FUNCTIO
N,EVENT_PRIORITY,EVENT_TIME,EVENT_STATUS) VALUES
 (1,'A1;C1','WrapperBG','Create',1,
SYSTIMESTAMP,0);
INSERT INTO WBIA_JDBC_EVENTSTORE
 (EVENT_ID,OBJECT_KEY,OBJECT_NAME,OBJECT_FUNCTIO
N,EVENT_PRIORITY,EVENT_TIME,EVENT_STATUS) VALUES
 (2,'A2;C2','WrapperBG','Update',1,
SYSTIMESTAMP,0);
INSERT INTO WBIA_JDBC_EVENTSTORE
 (EVENT_ID,OBJECT_KEY,OBJECT_NAME,OBJECT_FUNCTIO
N,EVENT_PRIORITY,EVENT_TIME,EVENT_STATUS) VALUES
 (3,'A3;C3','WrapperBG','Delete',1,
SYSTIMESTAMP,0);
```

Note: in a real environment, a trigger or another application, which can access the database, may insert the event record.

4. Check the output of the service:

vents	Þ	Ge	neral Properties			
nis area displays the events in a test trace. Select an event to display its		De	tailed Properties			
operties in the General Properties and Detailed Properties sections. More	_		· · · · · · · · · · · · · · · · · · ·			
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Kattach (Default Module Test) E Kession		Sour	ce reference: <export></export>			
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Chapter 16. Troubleshooting

1. **Symptom**: Error while attempting to connect to Oracle database with Enterprise Metadata Discovery tool.

Resolution:

Verify whether the connection parameters have been entered correctly.

2. **Symptom**: There are no tables listed in the tree view the **Discovered objects** area.

Resolution:

Verify whether the tables are added to the **Supported database object types** property in the Query Properties window.

3. **Symptom**: A ClassNotFoundException exception is generated from the external service wizard or at runtime:

Cause: This is usually caused by configuration issues with the Oracle JDBC driver path.

Resolution:

Verify that the WebSphere variable such as ORACLE_JDBC_DRIVER_PATH is the path contains the JDBC DB driver.

Verify that the oracle driver jar is exactly the jar required.

4. **Symptom**: A primary key does not exist exception is generated from the external service wizard or at runtime.

Cause: The table does not have a primary key defined. Hence, the PrimaryKey ASI on the business object is not set to true.

Resolution:

Define a primary key in the table.

Set a PrimaryKey column on the business object.

5. **Symptom**: A record already exists exception is generated at runtime.

Cause: A record with the primary key already exists in the database.

Resolution:

Insert a record with a primary key that does not exist in the database.

 Symptom: Test failed with following Exception message: javax.resource.ResourceException: LoginException getting Subject, and with following Exception trace.

```
Caused by:
javax.security.auth.login.LoginException:
Incorrect authDataEntry and alias is: <AliasName>
    at
    com.ibm.ws.security.auth.j2c.WSDefaultPrincipalMap
ping.getMappedSubject(WSDefaultPrincipalMapping.ja
va:505)
    at
    com.ibm.ejs.j2c.PrivExAction.run(PrivExAction.java
:145)
    ... 53 more
```

Cause: This is usually caused by configuration issues such as incorrect J2C Authentication Data Entry value entered in the Service Generation and Deployment Configuration window.

Resolution:

Verify that the authentication alias is a full authentication alias which could be exactly found in the JAAS - J2C authentication data view under administrative console.

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