



webMethods Integration Workshop – Day 5



Recap – Day 4

Learnt So Far (Recap & assessment)

- Broker Architecture
- Starting & Stopping Broker
- Documents, Clients, Client Groups
- Triggers
- Publish Subscribe Model
- Local Publishing
- Trigger

Introduction

- ⑩ This course will help participants to understand the basics about webMethods Adapters and Notifications.
- ⑩ Participants will get hands on basic creation of adapter in code.
- ⑩ This course will help in building the basic knowledge on Notifications.

Objectives

- 10 Get hands on experience adapter creation and management
- 10 Get hands on Adapter Notification models, creation and management.
- 10 How to Configure an Adapter
- 10 How to use Adapter Service templates
- 10 Receive a Published Document from the Broker and send it to a resource via an Adapter
- 10 Create a notification on insert of a new order

Software versions

- 10 This class focuses on the webMethods suite

Broker/UM

Software AG Designer

webMethods Integration Server

webMethods Adapters

Chapters

Day 4

Adapters

Adapter Connection Types

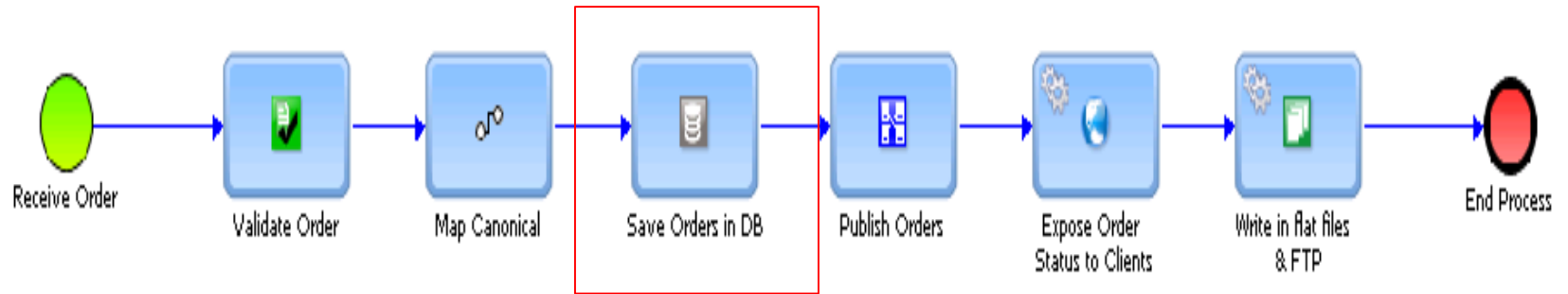
Service Templates

Notification

Creation & Scheduling

Handling Duplicate documents

webMethods Pilot Project Progress

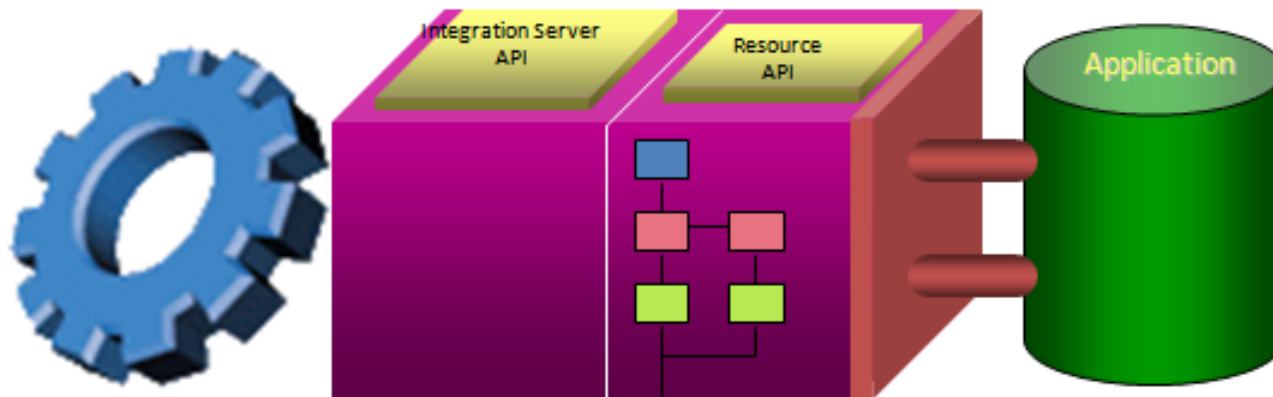


Outcome of this course :

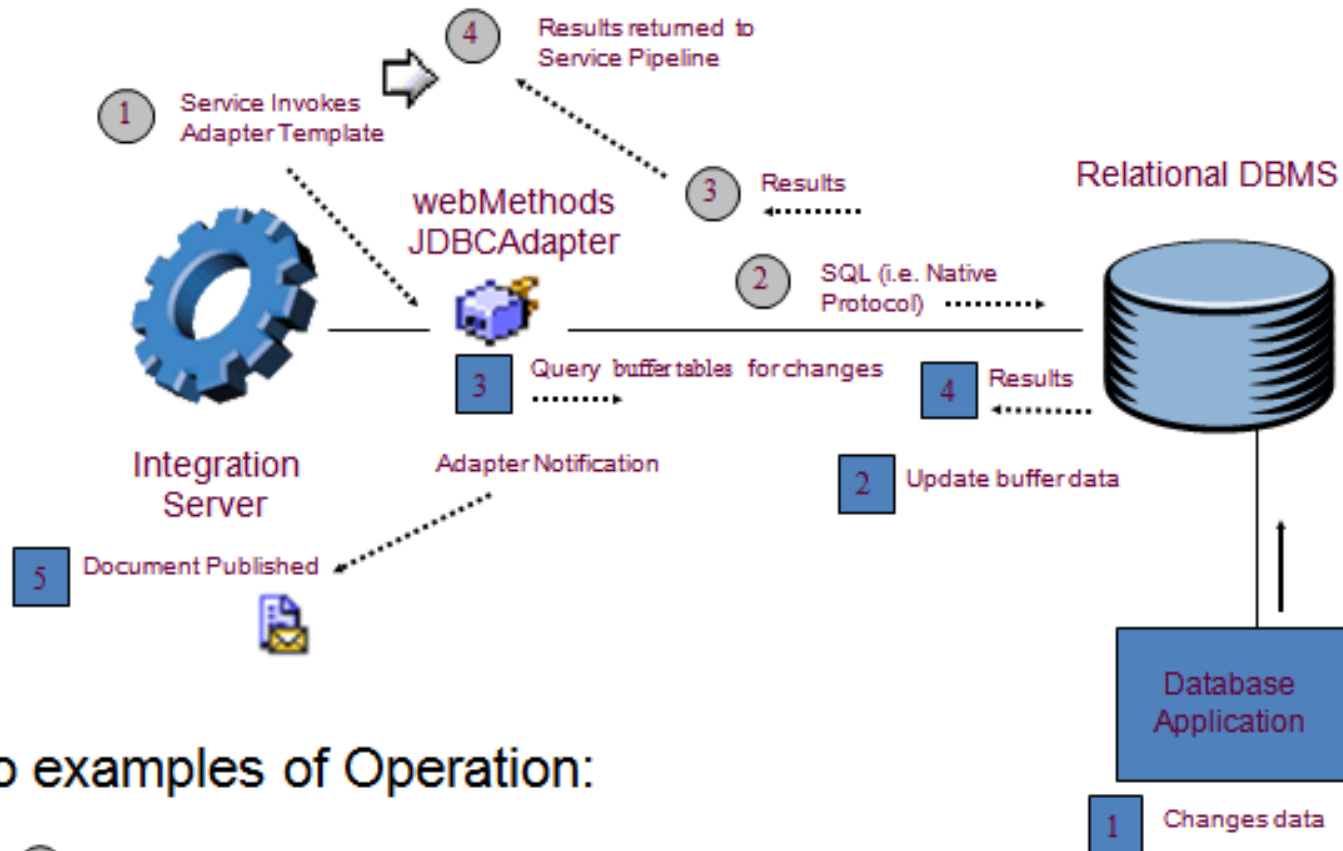
Trainees should be able to create a flow service which saves the OrderCustomer information into the database as part of Practical session

Adapters

- 10 A gateway between the Integration Server System and other resources
- 10 Hosted on the Integration Server
- 10 Communicates with IS and Resources
- 10 Ready to run – no coding required – configuration needed



Adapter Operations

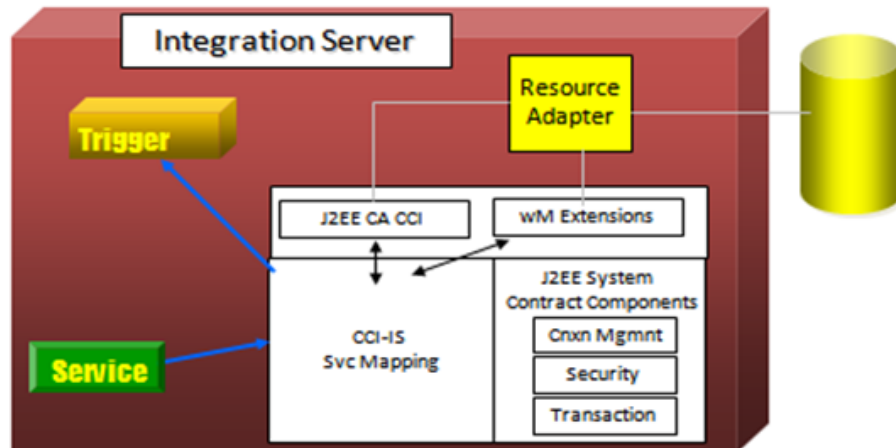
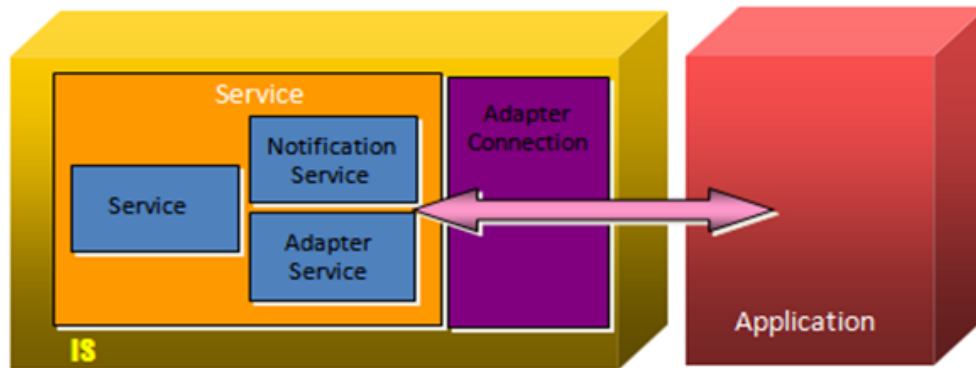


Two examples of Operation:

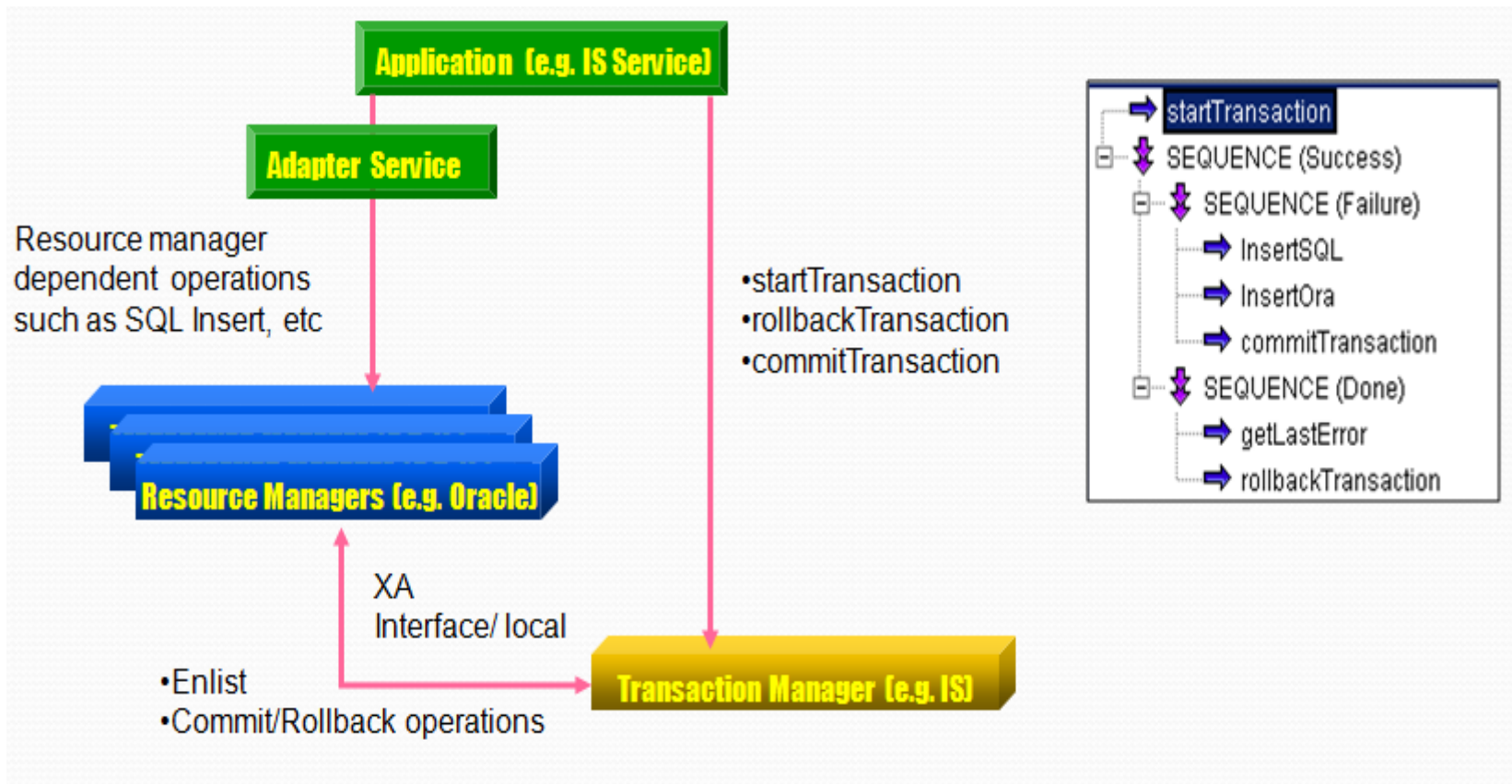
- 1 Invocation Model
- 2 Notification Model

Components of ART

10 What is ART – Adapter Run Time. Components - *Connection Manager*, *Transaction Manager*, *Adapter Services*, *Notifications*, *Adapter Administration and Configuration*

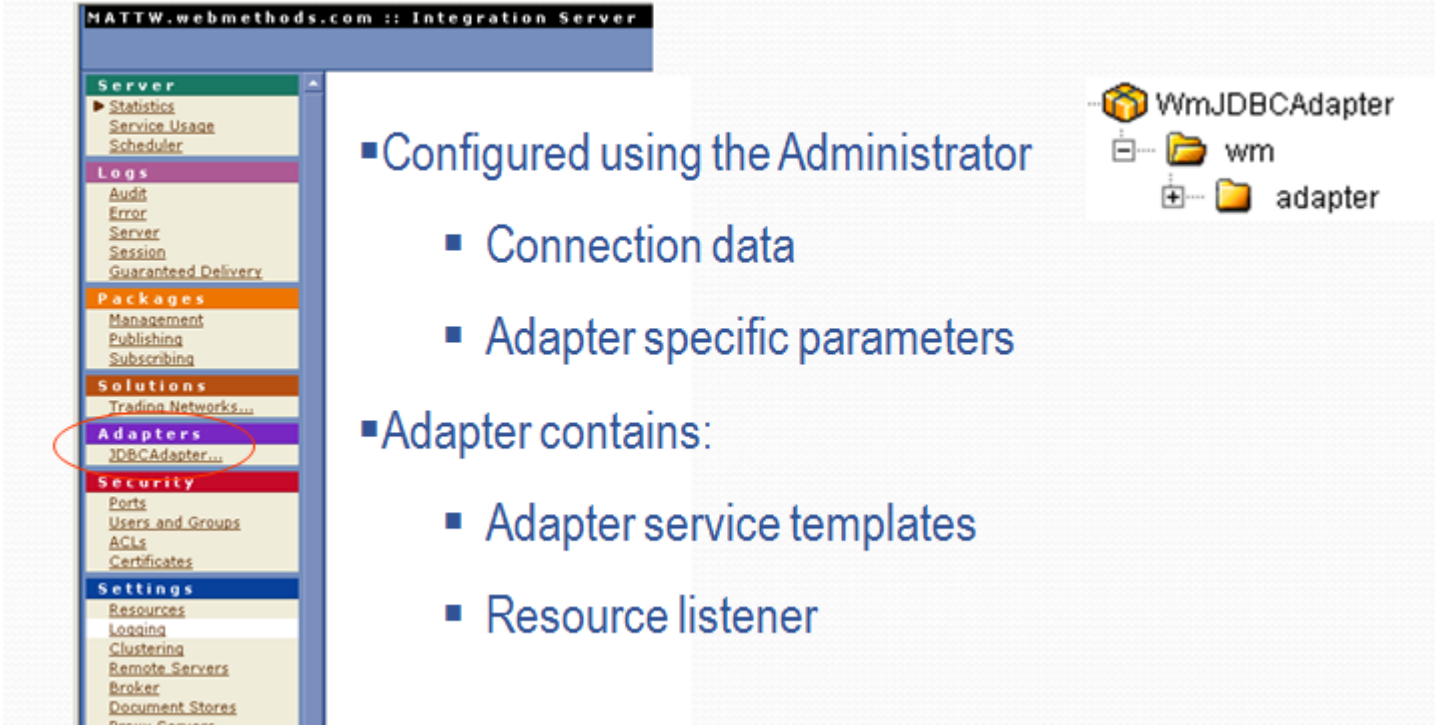


IS Transaction Model



Working with Adapters

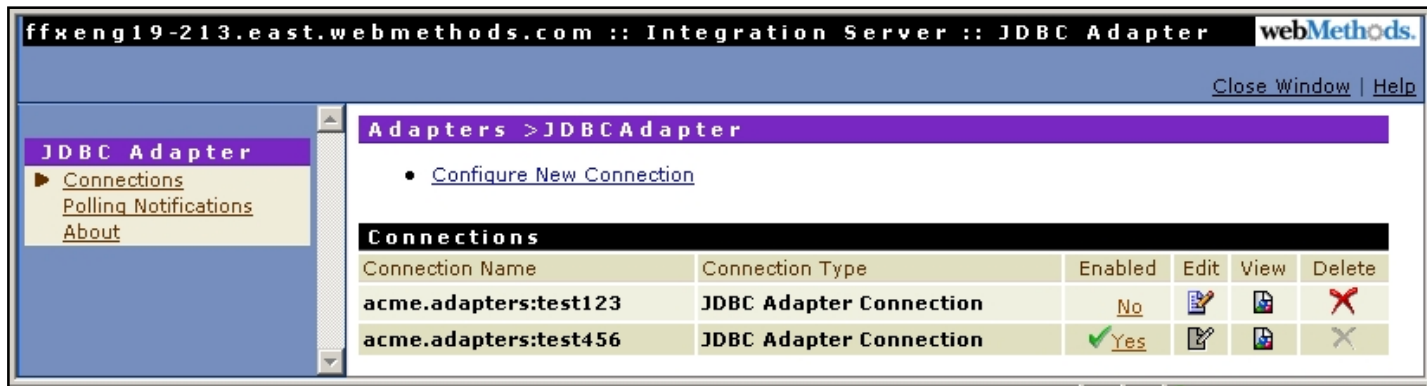
10 webMethods Adapters are deployed as Packages



- Configured using the Administrator
 - Connection data
 - Adapter specific parameters
- Adapter contains:
 - Adapter service templates
 - Resource listener

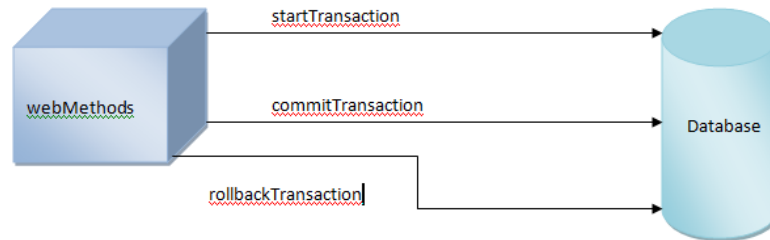
Configuring Adapter – connection Alias

- 10 Select Adapter Type (Server Admin)
- 10 Configure New Connection (Adapter UI)
- 10 Select Connection Type (Adapter UI)
- 10 Enter Connection Type Info (Package/Folder)
- 10 Connection Properties (Connection Type dependant, adapter author defined)
- 10 Connection Management Properties (ART defined)



Adapter connection Types

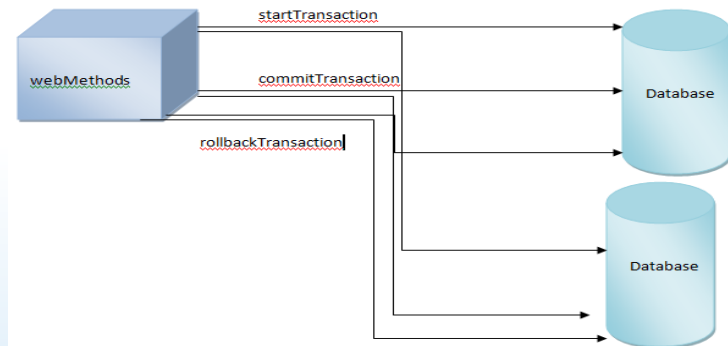
10 Local Transaction



10 No Transaction



10 XA Transaction



Example JDBC Adapter (Oracle XA)

In this case, be sure to move classes12.zip to lib\jars first

The screenshot shows the 'JDBCAapter' configuration window with the 'Configure Connection Type' tab selected. The left sidebar has links for 'Connections', 'Polling Notifications', and 'About'. The main area is divided into three sections: 'Configure Connection Type', 'Connection Properties', and 'Connection Management Properties'.

Configure Connection Type

Package	Shopping
Folder Name	ShoppingCart.JDBC
Connection Name	OrderDB

Connection Properties

Data source class	oracle.jdbc.xa.client.OracleXADataSource
Transaction Type	XA_TRANSACTION
serverName	localhost
user	JSP
password	***
databaseName	ora
portNumber	1521
networkProtocol	
Other Properties	driverType=thin

Connection Management Properties

Enable Connection Pooling	true
Minimum Pool Size	2
Maximum Pool Size	10
Pool Increment Size	1
Block Timeout (msec)	60000
Expire Timeout (msec)	60000

Oracle's 2-phase commit protocol

Use ISV6
and your
DB name

Default=tcp

0 = infinite

JDBC Adapter – SQL Server

In this case, copy the following 3 files from HOME\Microsoft SQL Server 2000 Driver for JDBC\lib\ to IS lib\jars – DO THIS FIRST then restart IS

- msbase.jar, mssqlserver.jar, msutil.jar

SQLServer:SQLServerCon Details	
Connection Type	JDBC Adapter Connection
Adapter Type	JDBCAdapter
Connection Properties	
Transaction Type	XA_TRANSACTION
DataSource Class	com.microsoft.jdbcx.sqlserver.SQLServerDataSource
serverName	ebensc610
user	sa
password	*****
databaseName	pubs
portNumber	1433
networkProtocol	
Other Properties	SelectMethod=cursor
Connection Management Properties	
Enable Connection Pooling	true
Minimum Pool Size	1
Maximum Pool Size	10
Pool Increment Size	1
Block Timeout (msec)	1000
Expire Timeout (msec)	1000

JTA does not support SelectMethod=direct

Service Templates

- 10 Adapter Services use Service Templates to perform Resource operations
Included with adapters
- 10 Perform very specific operations with the target resource of the adapter
- 10 Communicate with the resource
- 10 Are aware of the expected format that the resource expects for input and output
- 10 Must be configured before usage
- 10 Example: Oracle Adapter templates
 - SELECT
 - INSERT
 - UPDATE
 - DELETE



Creating an Adapter Service

- 10 Start Developer New wizard
- 10 Select Adapter Service, click Next
- 10 Select Adapter Type, click Next
- 10 Select Adapter Connection Name
- 10 Select a Template Name, click Finish
- 10 Enter name/folder info
- 10 View new Adapter Service
- 10 Configure the template appropriately

Select Adapter Type

Select an Adapter Type

Adapter Type
JDBC Adapter
Oracle Apps Adapter
Siebel Adapter
EntireX Adapter
MSMQ Adapter
Salesforce.com Adapter
Sample Adapter
webMethods Tamino Adapter

Select an Adapter Connection Alias

Select an Adapter Connection Alias

Adapter Connection Name
Adapter:RevueAdapter
ED_ExceptionHandler.connections:JDBC_Connection
IngAdminServerPaisResources.connections.jdbcConi
JDBCAdapterConnections:firstSQLConnection
InJ_POC_JDBC_Connection:WinBidPOCConnection
NewBizInsuranceJDBC:NewBizInsuranceJDBC
RevueAdapter:firstSQLConnection
SQLConnection:connectSQLServer
connectionMe:TestConnectionForWMTrain
jdbcAdapterConnection:wMCoverage

Creating an Adapter Service

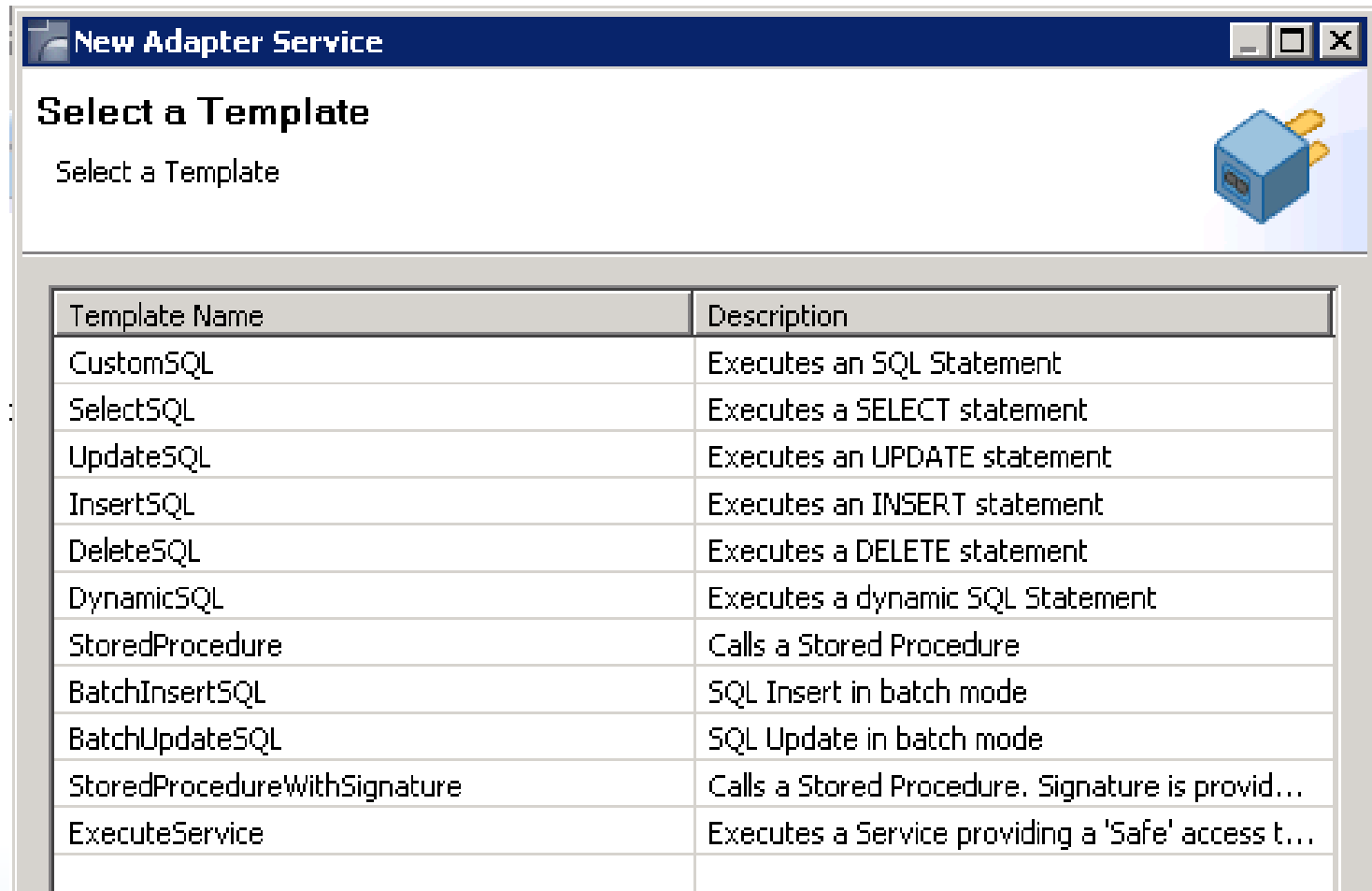
The screenshot displays the SAP Studio interface. On the left, the Package Navigator shows a project structure with folders 'Training', 'Archana', and 'Gobi_415507'. Under 'Gobi_415507', there is an 'Adapters' folder containing several objects, including 'Select_AdapterService' which is currently selected. Other objects in the 'Adapters' folder include 'Handle_Service', 'Notification_Trigger', 'Basic_adapterNotificationf', and 'Basic_adapterNotification'. Below the 'Adapters' folder is a 'Test_Consumer_' folder containing 'Add_Int', 'Debug_Consumer', 'Exit_Step', and 'Loop_Service'.

On the right, a table editor window is open, showing a table with the following data:

Table Alias	Table Name	Type
t1	<current catalog>. <cu...	TABLE

At the bottom of the table editor, there are tabs for 'Tables', 'Joins', 'SELECT', 'WHERE', 'Adapter Settings', 'Input/Output', and 'Logged Fields'. The 'Tables' tab is currently active.

Adapter Templates Support



Stored Procedure – Adapters Support

- 10 Stored Procedure - A StoredProcedure service calls a stored procedure to perform database operations.
- 10 Stored Procedure With Signature - The StoredProcedureWithSignature service enables you to automatically obtain a stored procedure's parameters by introspecting and listing the signature of the stored procedure at the time you configure the adapter service.
- 10 ExecuteService - An ExecuteService allows a Java or a flow service to use a connection from the adapter's connection pool.

StoredProcedure	Calls a Stored Procedure
StoredProcedureWithSignature	Calls a Stored Procedure. Signature is provid...
ExecuteService	Executes a Service providing a 'Safe' access t...

Notifications

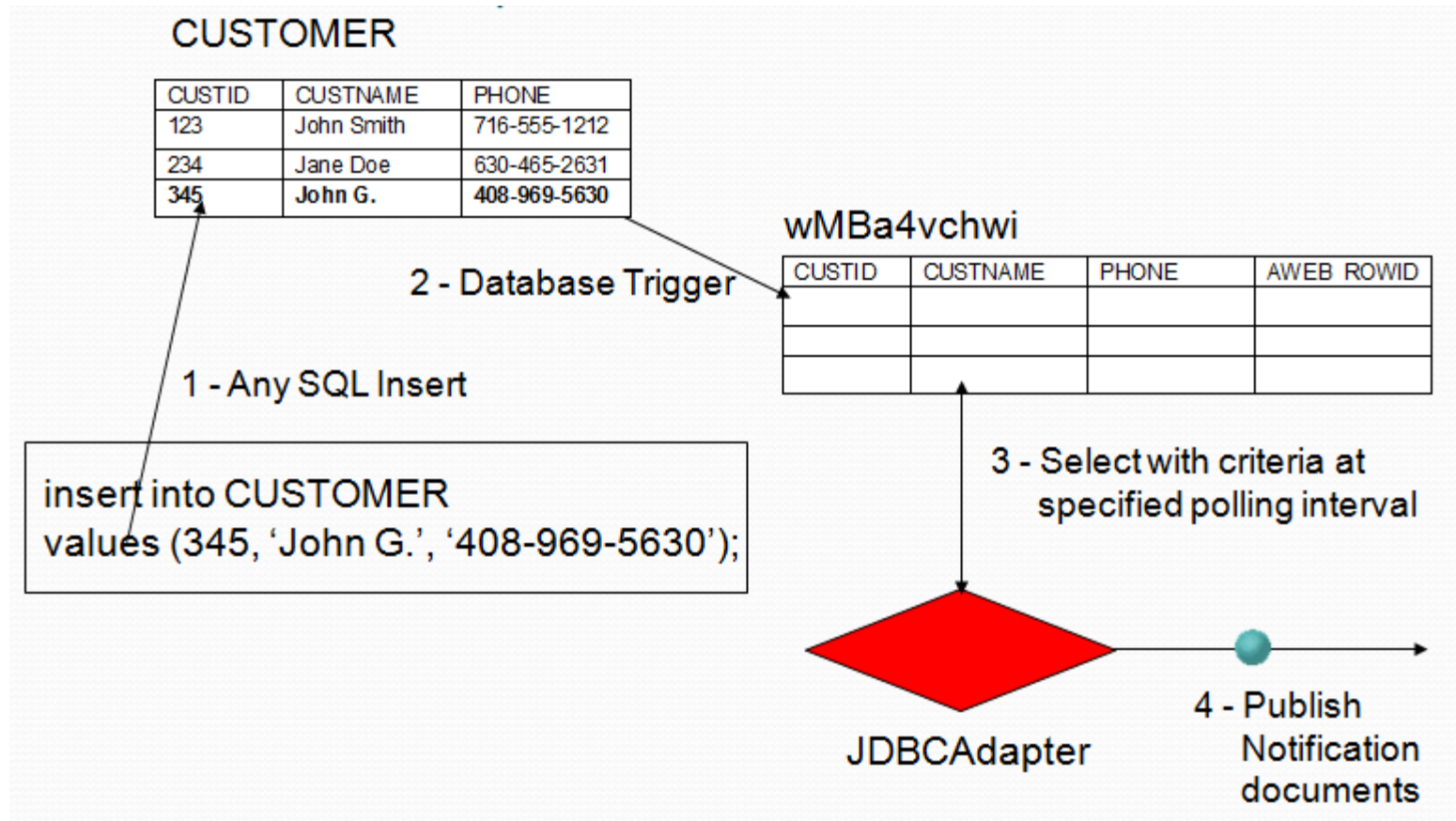
10 Adapter publishes a selected document in response to a specified database activity

- Record insertion, update, or deletion

10 Best accomplished by attaching database triggers to columns and tables

- DB Triggers store data in a buffer table
- Adapter performs notification by periodically checking the buffer table for entries

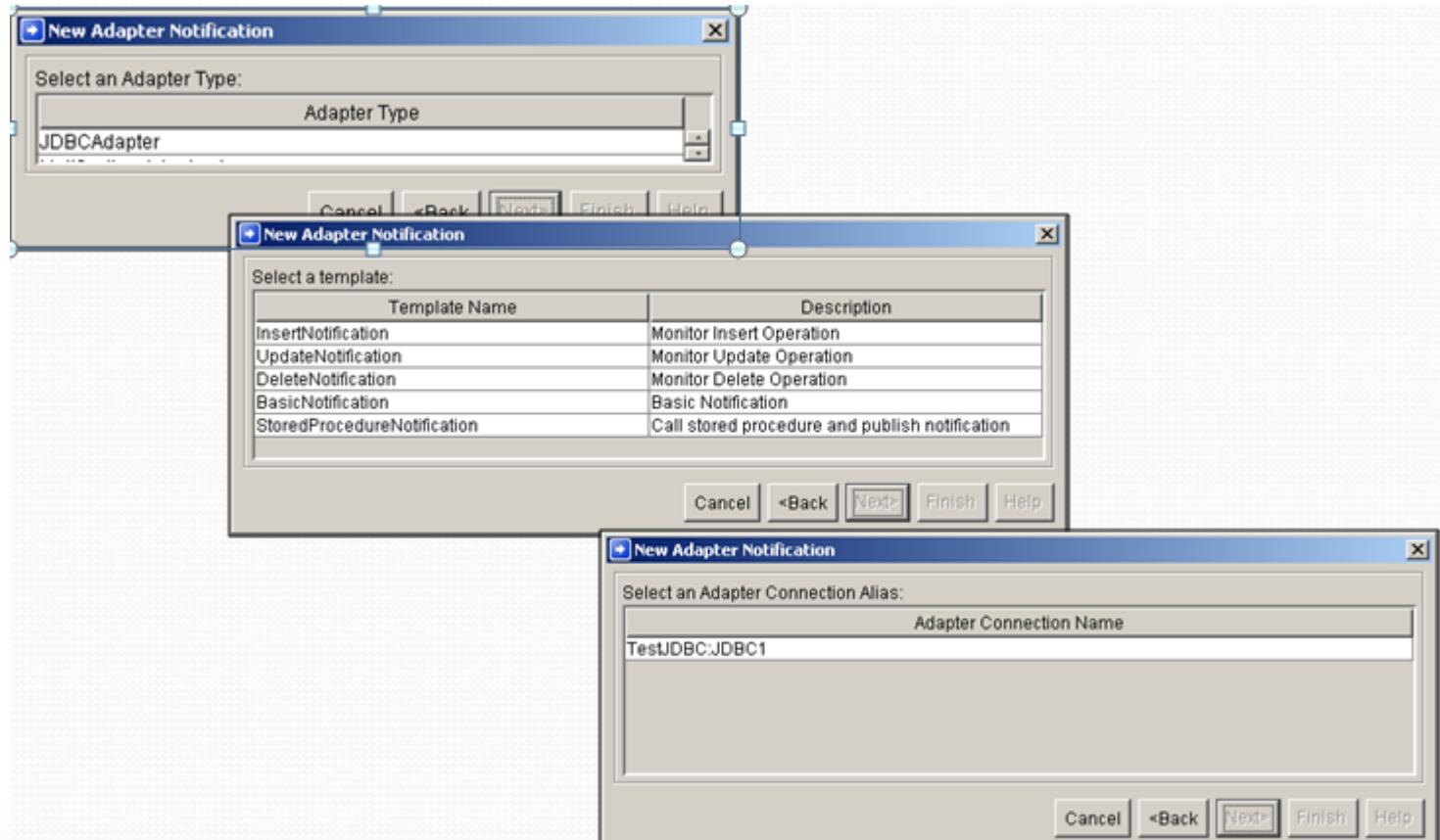
Notification Example



Creating a Notification

- 10 Developer New...Adapter Notification, click Next
- 10 Select Adapter Type, click Next
- 10 Select a Template Name, click Next
- 10 Select Adapter Connection Name, click Next
- 10 Enter name/folder info, click Next
- 10 View new publishable Document Name, click Finish
- 10 Configure Notification properties (table, etc)
- 10 Create handling Flow Service
- 10 Setup Trigger

Example - Notifier



Notifier – Buffer Table

Each buffer table needs to have a unique name. Use this field to provide a base name (e.g. NewOrders).

Notification Configure | Tables | Joins | SELECT | WHEN | Adapter Settings | Permissions

Base Name:

Resource Type	Resource Name
Buffer Table	WMBufferTbl
Trigger	WMTriggerTbl
Sequence	WMSeqTbl

The names of the tables, triggers and sequences that will be created in the DB
= Base Name + Resource Name

Note the newly created publishable document type

Notifier- Contd..

CustomerUpdate

Notification Configure | Tables | Joins | SELECT | WHEN | Adapter Settings | Permissions

Table Alias	Table Name	Type
t1	int schema> SRC_CUSTOMERAd	TABLE

Select a table

Columns

Notification Configure | Tables | Joins | SELECT | WHEN | Adapter Settings | Permissions

ALL DISTINCT:

Expression	Column Type	Output Field Type	Output Field	Notify On Update
t1.CUSTOMER_NO	VARCHAR(20)	java.lang.String	CUSTOMER_NO	Yes
t1.CUSTOMER_NAME	VARCHAR(40)	java.lang.String	CUSTOMER_NAME	Yes

Select which fields to check for updates, and which fields to be published in the doc type

Notifier – Handler service creation

The screenshot displays the SAP Studio interface for creating a handler service. On the left, the Package Navigator shows a project structure with folders like Training, Archana, and Gobi_415507. Under Gobi_415507, there is an Adapters folder containing Handle_Service, Basic_adapterNotificationPublishDocument, and Basic_adapterNotification. The main editor area on the right is titled '*Handle_Service' and shows the configuration for the Basic_adapterNotification service. It includes fields for Specification Reference, Input, and Output, along with checkboxes for Validate input and Validate output. A large text area below these fields contains the path 'Training.Gobi_415507.Adapters.Basic_adapterNotificationPublishDocument'. At the bottom, there are tabs for Tree, Layout, Input/Output, and Logged Fields.

Notifier – Trigger Creation

The screenshot displays the Cognizant IDE interface. On the left, the Package Navigator shows a project structure with folders like Training, Archana, and Gobi_415507. Under Gobi_415507, there is an Adapters folder containing Handle_Service, Notification_Trigger, Basic_adapterNotificationPublishDocument, and Basic_adapterNotification. Below this, there is a Test_Consumer_ folder with various services like Add_Int, Debug_Consumer, Exit_Step, Loop_Service, Map_Service, Repeat_Service, Test_Service, Customer_Details, Add_Int_WSD, and Test_Consumer. At the bottom, there are several other packages like Training_28022014, Varun, webMethodsCoverage, webMethodsToJava, WmART, WmARTExtDC, and WmAssetPublisher.

The main window shows the configuration for the Notification_Trigger. It has a tabbed interface with tabs for *Debug_Consumer, *Handle_Service, Basic_adapter..., and *Notification... The *Notification... tab is active, showing the following configuration:

Conditions

Name	Service	Document Types	Join Type
Condition1	Training.Gobi_415507.A...	Basic_adapterNotificatio...	N/A

Condition detail

Name: Condition1

Service: Training.Gobi_415507.Adapters:Handle_Service

Document Types

Document Type	Conne...	Filter	Provid...
Training.Gobi_415507.Adapters:Basic_adapterNotificationPublishDocument	DEFAUL...		

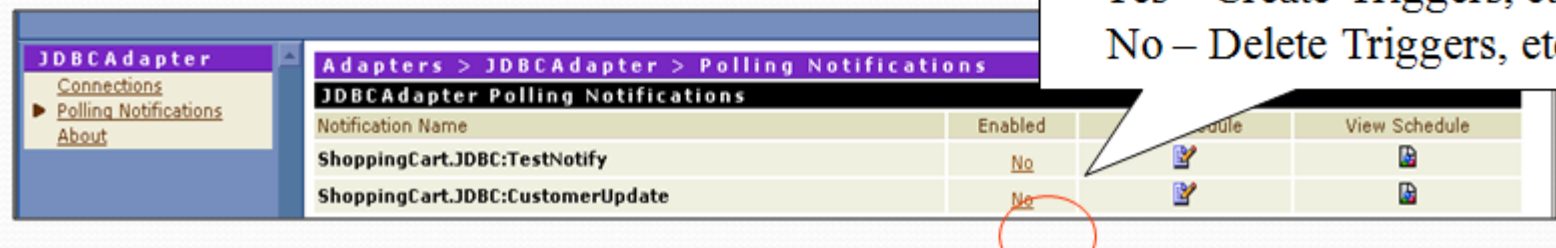
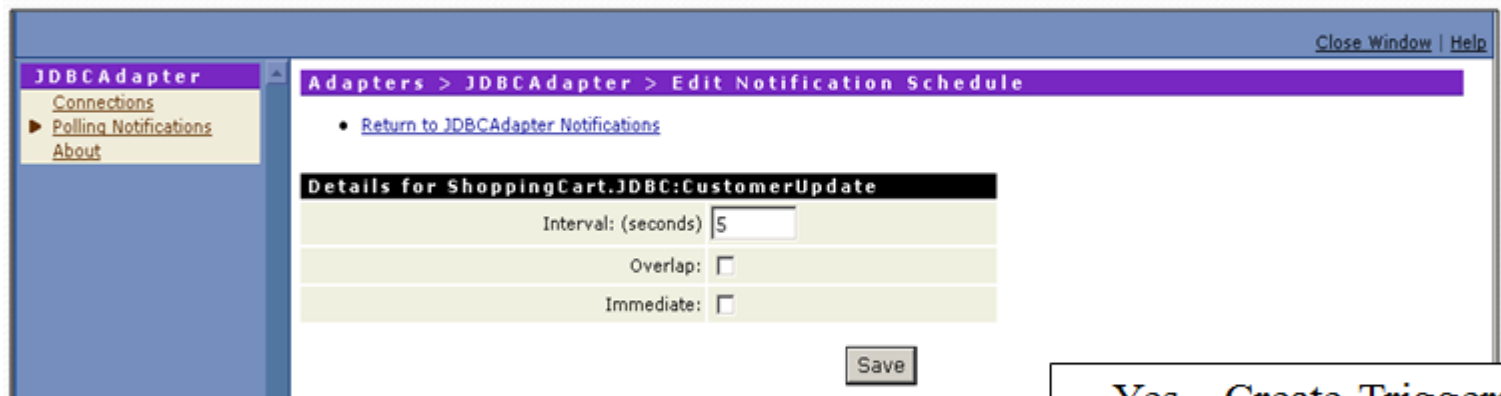
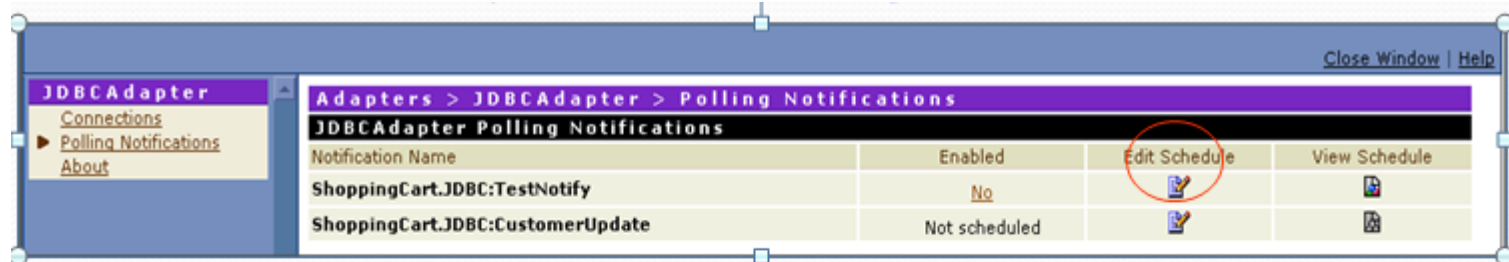
Annotations in the image:

- An arrow points from the text "Handler service" to the Service field in the Condition detail section.
- An arrow points from the text "Notification Document" to the Document Type field in the Document Types table.

Scheduling a Notification

- 10 Create a Notification in Developer
- 10 Go to Polling Notifications Screen (Adapter UI)
- 10 Disable Notification
- 10 Schedule the Notification
- 10 Set Polling Interval
- 10 Set other options
- 10 Enable Notification

Scheduling Contd..



Enabling Notification

webMethods Integration Server

```
2002-08-07 09:31:20 EDT [ADA.0001.0108D] Look up resource domain "con.wm.adapter.wmjdbc.notifications.UpdateNo
: "columnName".
2002-08-07 09:31:20 EDT [ADA.0001.0108D] Look up resource domain "con.wm.adapter.wmjdbc.notifications.UpdateNo
: "columnName".
2002-08-07 09:31:20 EDT [ADA.0001.0108D] Look up resource domain "con.wm.adapter.wmjdbc.notifications.UpdateNo
: "notifyOnUpdate".
2002-08-07 09:31:20 EDT [ADA.0001.0108D] Look up resource domain "con.wm.adapter.wmjdbc.notifications.UpdateNo
: "notifyOnUpdate".
2002-08-07 09:34:12 EDT [ADA.0001.0109D] In notification callback updateCallBack().
2002-08-07 09:37:15 EDT [ISS.0026.0001U1] Loading service ShoppingCart.JDBC:HandleCu
2002-08-07 09:37:15 EDT [ISC.0081.0001E] New ShoppingCart.JDBC:HandleCustUpdate
FROM SRC_CUSTOMERS t1
Table: SRC_CUSTOMERS
2002-08-07 09:49:13 EDT [ADA.0001.0109D] In notification callback enableCallBack().
2002-08-07 09:49:13 EDT [ADA.0001.0109D] Execute SQL statement: "CREATE SEQUENCE WMSa4vchwi ORDER"
2002-08-07 09:49:13 EDT [ADA.0001.0109D] Execute SQL statement: "CREATE TABLE WMBa4vchwi (CUSTOMER_NO VARCHAR2
MER_NAME VARCHAR2(40), wm_rowid NUMBER(9, 0) PRIMARY KEY, wm_sendTime NUMBER(14, 0))"
2002-08-07 09:49:14 EDT [ADA.0001.0110D] Execute SQL statement: "CREATE TRIGGER WMTa4vchwi AFTER UPDATE OF CUS
CUSTOMER_NAME ON SRC_CUSTOMERS FOR EACH ROW BEGIN INSERT INTO WMBa4vchwi (CUSTOMER_NO, CUSTOMER_NAME, wm_rowi
:new.CUSTOMER_NO, :new.CUSTOMER_NAME, WMSa4vchwi.NEXTVAL); END;"
2002-08-07 09:49:19 EDT [ADA.0001.0109D] In notification callback runCallBack().
2002-08-07 09:49:19 EDT [ADA.0001.0110D] Execute SQL statement: "SELECT t1.CUSTOMER_NO,t1.CUSTOMER_NAME,t1.wm_
_sendTime FROM WMBa4vchwi t1 WHERE (wm_rowid) ? ) ORDER BY wm_rowid"
```

Create Sequence (note the name)

Create Buffer Table

Create Trigger

Poll Buffer Table every 5 seconds

Resource Type	Resource Name
Buffer Table	WMBa4vchwi
Trigger	WMTa4vchwi
Sequence	WMSa4vchwi

DB Lookup

File Navigator Object Tools Configuration Help

ORACLE Enterprise Manager

JSP

- Tables
 - ORDERDETAILS
 - ORDERS
 - PRODUCTCATALOG
 - SRC_CUSTOMERS
- Indexes
- Materialized View Logs
- Triggers

Schema	Trigger	Type	Event	Status
JSP	WMTA4VCHWI	AFTER EACH ROW	UPDATE	Valid

The Update Trigger and its SQL to populate the Buffer Table

```
BEGIN INSERT INTO WMBa4vchwi (CUSTOMER_NO, CUSTOMER_NAME, wm_rowid) VALUES (:new.CUSTOMER_NO, :new.CUSTOMER_NAME, WMSa4vchwi.NEXTVAL);
```

Materialized View Logs

- Triggers
- SRC_ORDERS
- SRC_ORDER_DETAILS
- SRC_ORDER_PRODUCT
- TGT_CUSTOMERS
- TGT_PICK_LIST
- TGT_WAREHOUSE_PRO
- WMBa4VCHWI

Name	Datatype	Size	Scale	Nulls?	Default Value
CUSTOMER_NO	VARCHAR2	20		✓	
CUSTOMER_NAME	VARCHAR2	40		✓	
WM_ROWID	NUMBER	9	0		
WM_SENDTIME	NUMBER	14	0	✓	

The Buffer Table

Resource Type	Resource Name
Buffer Table	WMBa4vchwi
Trigger	WMTa4vchwi
Sequence	WMSa4vchwi

Handling duplicate documents

- 10 Most adapter notifications, such as Insert Notifications and Update Notifications, can use the Exactly Once notification feature. This feature ensures that notification data will not be duplicated even if a failure occurs during processing.
- 10 To maintain duplicate detection and ordering, your polling notification schedules must not run with the Overlap option selected. (To access the Overlap option, click the Edit Schedule icon.)
- 10 Running a Basic Notification may generate a duplicate message error; the Integration Server will ignore the duplicate notification document. In this case, you should check if **the Delete selected records option on the SELECT tab** and choose a column with sequentially unique values as the Record ID Column value.
- 10 If you choose Only Once Notification, you must also check the Delete Selected Records box to avoid duplicate document warning messages.

Summary

What have we learnt today ?

- Adapter
- Adapter Run Time
- Adapter Service Templates, Connection Types
- Creation & Configuration of an Adapter
- Notifications
- Buffer table, trigger and handling service
- Scheduling Notifications

Q & A

- ❖ What is Adapter Run Time ART ?
- ❖ What is the difference between LOCAL_TRANSACTION & NO_TRANSACTION
- ❖ What are the inbuilt services used for explicit Transaction Handling ?
- ❖ What is Adapter Notification?
- ❖ What are the Adapter Service Templates available for Stored Procedure ?
- ❖ What is the difference between Invocation model & Notification model ?
- ❖ What are the critical elements which gets created after creating an Adapter Notification ?
- ❖ How do we handle duplicate notification documents in notification?



Thank you