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## WebSphere® Adapters V6.0.2

### *IBM WebSphere Adapter for Oracle® E-Business Suite V6.0.2*



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This presentation will focus on the WebSphere Adapter for Oracle E-Business Suite V6.0.2

## Agenda

- **Overview**
- Installation
- Enterprise service discovery
- Configuration properties
- Summary and references

This section will provide an overview of the WebSphere Adapter for Oracle E-Business Suite. Note that the installation and deployment of the WebSphere Adapter for Oracle E-Business Suite is also covered in a separate presentation common for all WebSphere Adapters.



The WebSphere Adapter for Oracle E-Business Suite (EBS) allows bi-directional connectivity, both inbound and outbound, with Oracle E-Business Suite applications using a JDBC Adapter.

The adapter includes samples with Oracle E-business Suite. They are outbound events for creating and retrieving customer information from Oracle EBS, inbound events for retrieving customer data generated or modified in Oracle EBS, and an outbound event to process an Oracle EBS API call. These samples provide a basic understanding on how to use the IBM WebSphere Adapter for JDBC to interface with Oracle E-Business Suite data.



For those samples that are shipped with the adapters, these security requirements must be met in order to run through these samples and scripts. You need permissions to modify and create content, to add and remove and tables, and to run required executable files in the APPS schema. You may need to check with your Oracle administrator to determine which account to use to run the sample and to ensure that you have the necessary permissions to access database artifacts. For the Oracle E-Business Suite, you will need an account with Workflow Administrator Web Applications, System Administrator, and Receivables Manager permissions.

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# Overview



5

Here is the description of each scenario provided in the samples. The outbound scenario 1 involves using the JDBC adapter to create a customer in the Oracle EBS Financials database and then retrieve the customer information back. The inbound scenario 2 involves using Oracle's built in event system to populate entries in an event table when customers are created inside Oracle. Another outbound scenario demonstrates how to call Oracle EBS Database APIs. One example provided here is to call the Executable API to create a concurrent program.

## Overview

- Creates and Updates are made to the Oracle EBS Interface tables and a stored procedure moves the updates to the Base tables
- Retrieves can be done directly from the Base Tables as retrieve operation does not modify values in the tables

Here is more information on how the examples run with Oracle EBS. Creates and updates are made to the Oracle EBS interface tables. One of the scripts allows you to create a Stored Procedure from Oracle EBS and moves the updates from the interface to the base tables when those operations have been invoked. Since the retrieve operation is not making any changes to the table, it can be done directly from the base tables.

## Overview

- Create synonyms when working with your Oracle objects
  - ▶ Due to size of database and large number of artifacts in the Oracle EBS database, synonyms make it easier to search when running Enterprise Service Discovery
  - ▶ Known issue that can occur in relation to the Oracle database driver (see [IBM Technote #1218775](#))
  - ▶ To create synonyms in the Oracle EBS database, run the `lbn_create_synonyms.sql` using SQL\*Plus tool (or some other tool to run SQL scripts)

There is a sample script to create synonyms when working with the Oracle objects. Synonyms are helpful due to size of the database and the large number of artifacts in the Oracle EBS database. Synonyms also make those objects easier to search when running Enterprise Service Discovery.

There is a known issue with some JDBC drivers through the Oracle database driver, so you can reference to that tech

note here. You can create synonyms in the Oracle EBS database by running the provided script using the SQL\*Plus tool or other tool to run SQL scripts.

## Overview: WebSphere Adapter for JDBC

The IBM WebSphere Adapter for JDBC implements the JCA 1.5 specification and enables bi-directional connectivity, both inbound and outbound, with those Enterprise Information System business applications that communicate with database applications. The JDBC driver supports the JDBC 2.0 or higher specification and the adapter uses JDBC APIs to retrieve and update information in the database by running SQL statements or stored procedures, depending on what you specify. This is stored and specified in the business object. A stored procedure is a group of SQL statements that form a logical unit and perform a particular task. A stored procedure encapsulates a set of operations or queries for the adapter to run on an object in a database server. The JDBC Adapter supports both local transactions and global XA transactions. This version of the adapter provides Global XA support for outbound connections, and can configure an XA Data Source through the WebSphere Process Server data source. `DataSourceJNDIName` is a new property in the Managed Connection Factory where the Data Source name is specified. In this case, it supports all databases and is no longer restricted to just DB2 and Oracle.



## Agenda

- Overview
- **Installation**
- Enterprise service discovery
- Configuration properties
- Summary and references

This section will provide the steps in installation, development, and deployment of the WebSphere Adapter for Oracle E-Business Suite. Note that the installation and deployment of the WebSphere Adapter for Oracle E-Business Suite is also covered in a separate presentation common for all WebSphere Adapters.

## Installation preparation steps

- Unzip oracleEBSSamples.zip in the samples folder

<i>File Name</i>	<i>Description</i>
lbm_websphere_event_table_create.sql	Event table creation script
lbm_websphere_events_s.sql	Event Id Sequence creation script
lbm_customer_event_pkg.pls	Package creation script for the procedures used in customer object creation sample scenarios
lbm_customer_event_key_s.sql	Event Key Sequence create script
lbm_submit_request.sql	SQL script to insert SP to be called after event entries have been made to the Interface tables to move the data to the Base tables
raise_inbound_event.sql	SQL script to raise customer inbound event
lbm_create_synonyms.sql	Creates the synonym names that will be used in creating business objects for the samples

The adapter is now included in the Resource Adapters directory of WebSphere Integration Developer. Inside the OracleEBS directory, there is a sample folder with a file called oracleEBSSamples.zip. Shown here is a list of scripts and packages that will help you to create the necessary tables and stored procedures. These scripts are needed in order to go through three scenarios that are provided.

## Installation Preparation Steps



The JCA adapters are packaged as resource adapter archive (RAR) files. The Adapter for Oracle EBS and the Adapter for JDBC are now packaged in WebSphere Integration Developer. The RAR files are located in Resource Adapter directory.

Any JDBC 2.0 driver specific to the database that you will be integrating with must be added to the class path. Other information necessary in preparation for use of the adapter are the databases and tables used by the adapter.

The sample script is provided for the Oracle event table for inbound processing. The WebSphere Adapter for Oracle E-Business Suite uses its own event system to look for change to Oracle data by populating necessary key values to the adapter's event table.

## Agenda

- Overview
- Installation
- **Enterprise service discovery**
- Configuration properties
- Summary and references

This section will provide an overview of the Enterprise Service Discovery



## Enterprise Service Discovery

- Configure Settings for Discovery Agent
  - ▶ Properties: Username, Password, Database URL, JDBCDriverClass, Prefix

**Enterprise Service Discovery**

**Configure Settings for Discovery Agent**

Specify the properties to initialize the resource adapter and the enterprise service discovery agent.

Connection Configuration

Miscellaneous

Prefix:

User Credentials

Username: \*

Password: \*

Machine Credentials

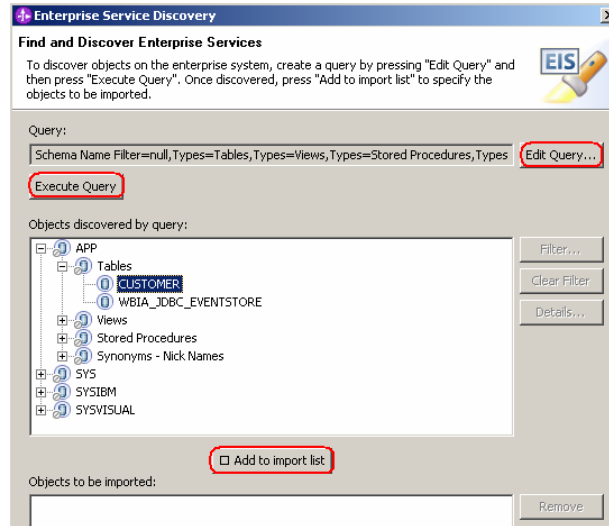
Database URL: \*

Jdbc Driver Class: \*

Here is a screen capture of the 'Configure Settings for Discovery Agent' panel. User and Machine Credentials are required properties. They include Username, Password, Database URL, and JDBC Driver Class.

## Enterprise Service Discovery

- Metadata Discovery System Capabilities
  - ▶ Analyze database to identify schemas
  - ▶ Set filter properties to limit number of objects displayed and whether to set ASI values for the business objects



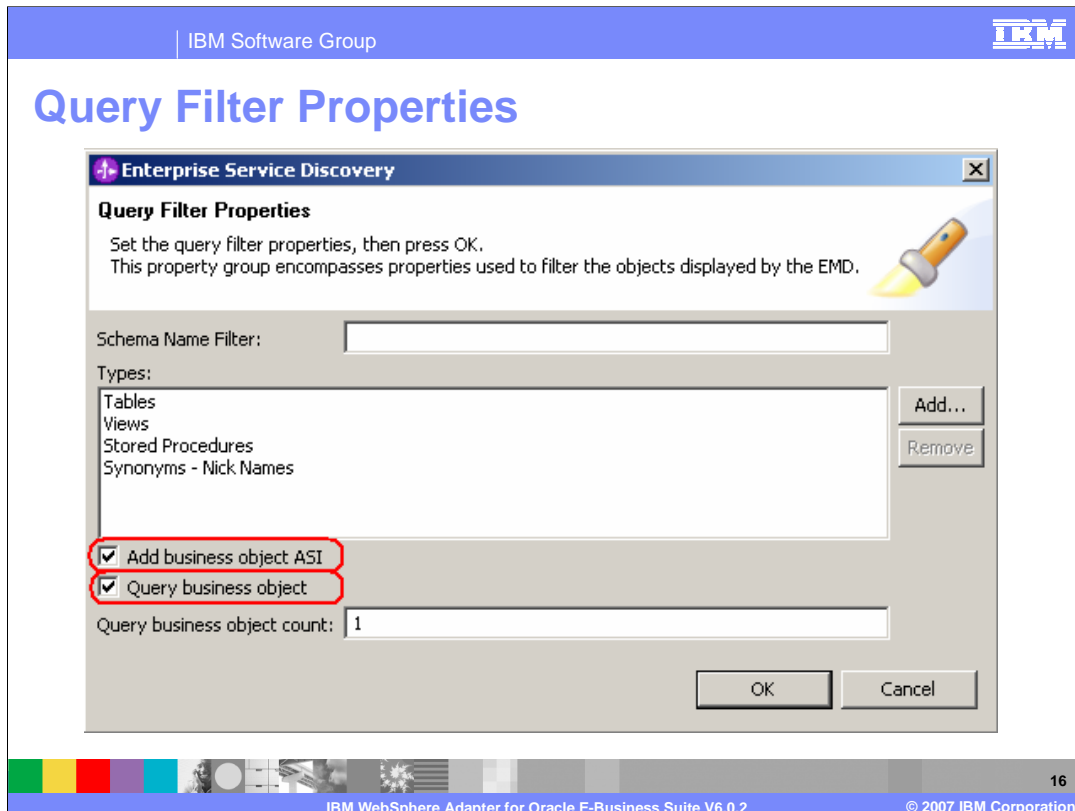
15

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Metadata Discovery System Capabilities Schemas will be displayed as top-level nodes in a tree. Nodes, labeled Tables, Views, Stored Procedures, and Synonyms/Nicknames for that schema are found under each schema. These nodes are selectable. Before displaying the tree, the SchemaNameFilter property will be used to filter the list of schemas displayed. If the SchemaNameFilter property is not set, all schemas will be displayed. The Types property will then be used to determine which type nodes to add under the schemas listed. Upon expanding a node, the ObjectNameFilter property will be used to determine which database objects to display.

Edit query can be selected to set query filters based on schema name, type. It also allows to check the “add Business object ASI” and “query business objects” boxes to select stored procedures or set custom query business objects.



From the Query Filter Properties panel, you can filter on schema names or types and optionally select "Add business object ASI" to specify stored procedures. Or you can select "Query business object" to set query business object.

The query business count, which represents the maximum integer value of Query Business Objects, can be generated at one time. Only when the value of the property QueryBO is 'true' will this property be enabled. Its default value is 1.



## Business object application specific information

- **StatusColumnName**
  - Name of the database column used to perform logical deletes
- **StatusValue**
  - Value that specifies whether a business object is inactive or deleted
- **StoredProcedureName**
  - Associate with the Stored Procedure Type

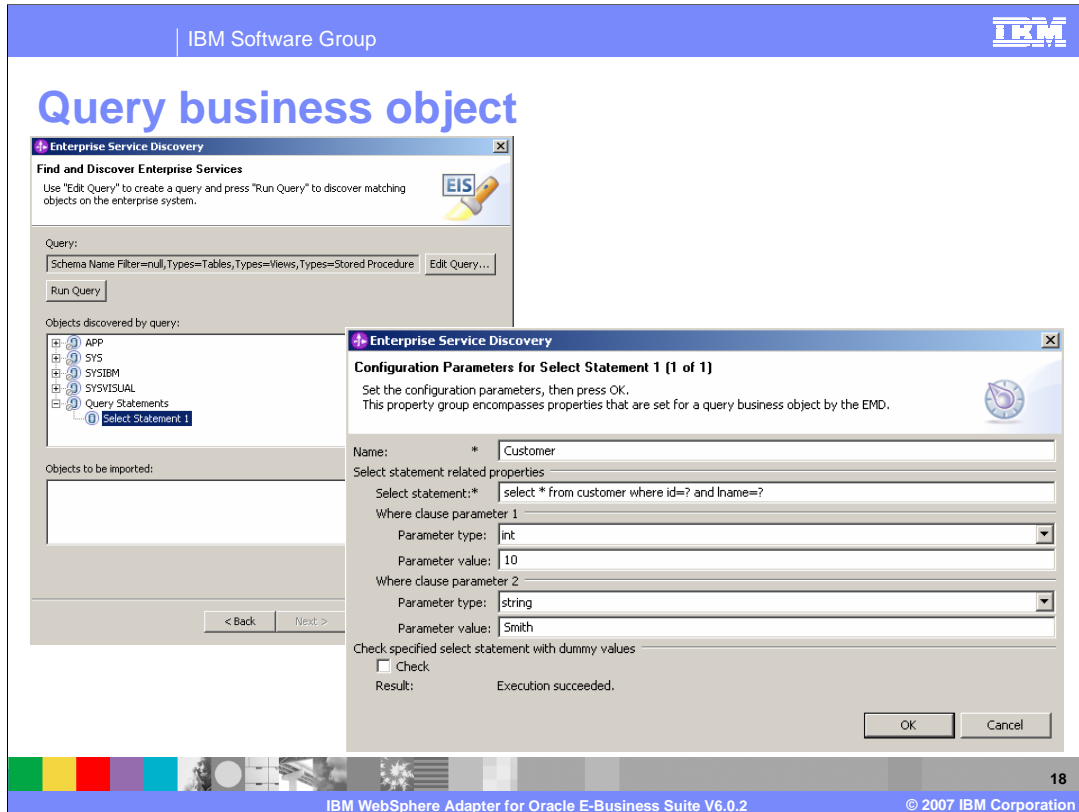
**Enterprise Service Discovery**  
**Configuration Parameters for ADDRESS (1 of 2)**  
 Set the configuration parameters, then press OK.  
 This property group encompasses properties that are set for a business object by the EMD.

Status Column Name: ADDRID  
 Status Value:  
 VerbASL:  
 CreateSP  
 Add...  
 Remove

CreateSP  
 Schema Name Filter:  
 Schema: ADDCUSER  
 SP Name Filter:  
 Stored Procedure: CREATEADDRESS  
 Stored Procedure Parameters  
 VAR0: addrid  
 VAR1: custid  
 VAR2: city  
 VAR3: zipcode  
 OK Cancel

17

You can set configuration properties such as StatusColumnName and StatusValue, which come into play when you want to use logical deletes from the database. This is also where you would associate the stored procedure type.



In the Configuration Parameters for Select Statement panel, you can select the check box “Check” to see if the specified select statement with dummy values runs correctly. If the statement is valid, you will see the message indicating that the query ran successfully. Otherwise, you will need to double check the select statement or configurations for ‘WHERE’ clause parameters.

## Enterprise Service Discovery - Inbound

- Activation Specification Properties
- Delivery Mode and Polling Info, Credentials, and Miscellaneous

Properties for Activation Spec

BO Namespace: \*

Delivery Mode and Polling Information

Delivery Type:

Poll period [Int]:

Poll quantity [Int]:

Retry interval [Integer]:

Retry limit [Integer]:

Stop polling on error [Boolean]

Assured once delivery [Boolean]

Filter future events [Boolean]

Event Type filter [String]:

User Credentials

Username: \*

Password: \*

Machine Credentials

Data Source JNDI Name:

Database URL: \*

Jdbc Driver Class: \*

Miscellaneous

Event Order By:

Event Table Name: \*

SP Before Poll:

SP After Poll:

Event Query Type:

19

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Once the query has been run and the selection of business objects has been done, you then specify inbound or outbound service type. Here you see an example of the set of properties specified with an inbound service type.

## Enterprise Service Discovery - Outbound

- J2C Authentication Data Entry and other Managed Connection Factory Properties
- Resource Adapter Properties and Miscellaneous

Deploy connector with module

Specify the connection properties which will be used to connect to the Enterprise Information System at runtime:

Use connection properties specified on server

Use discovered connection properties

J2C Authentication Data Entry:

Managed Connection Properties

User Credentials

Username:

Password:

Machine Credentials

Auto Commit

XA Data Source Name:

XA Database Name:

Data Source JNDI Name:

Database URL: \*

Jdbc Driver Class: \*

Resource Adapter Properties

Logging and Tracing

Adapter ID (String): \*

Log file size (Integer):

Log file name (String):

Log Files (Integer):

Trace file size (Integer):

Trace file name (String):

Trace files (Integer):

Miscellaneous

Ping Query:

Database Vendor: \*

QueryTimeOut:

Return Dummy BO For SPI:

Here you see an example of the set of properties specified with an outbound service type including Miscellaneous

## Enterprise Service Discovery

- Parent and child Business Object relationships will need to be set using the Business Object Editor in Integration Developer.
- Set Application Specific Information (ASI) foreign key relationships between the parent and child objects.
  - ▶ Refer to WebSphere Adapter for JDBC User Guide

Once you run through the Enterprise Service Discovery process, you will be setting the relationship between parents and child using the Business Object Editor in Integration Developer. You also need to set Application Specific Information, aka ASI foreign key relationships between the parent and child objects. The WebSphere Adapter for JDBC User Guide had additional information on how to set up those relationships.

## Agenda

- Overview
- Installation
- Enterprise service discovery
- **Configuration properties**
- Summary and references

This section will provide details of the configurations properties of the WebSphere Adapter for Oracle E-Business Suite.

## Configuration properties

- Configuration Properties used by the adapter to communicate with the specific database application
- Types of Properties
  - ▶ Application sign-on
    - Required properties
  - ▶ Activation Specification
  - ▶ Activation Specification for Inbound requests
  - ▶ Managed Connection Factory for Outbound requests
  - ▶ Deployment Descriptor

Configuration properties are used to communicate with the specific database application. There are various types of properties used such as application sign on, activation specification, managed connection factory, and custom properties.

## Enterprise Service Discovery connection properties

Property	Description
UserName	▪ UserName to connect to the database
Password	▪ Password for corresponding UserName
Database URL	▪ DatabaseURL used to connect to the database
Prefix	▪ The prefix to be added to the name of the business object.
JDBCDriverClass	▪ JDBC Driver class for the driver used to connect to the database

Shown here is a list of connection properties for Enterprise Service Discovery, which are defined in the Adapter User Guide and Information Center. These properties are required for both inbound and outbound services. These properties are similar to the previous version.



## Activation specification properties

Property	Description
SPBeforePoll	<ul style="list-style-type: none"> <li>This would be any stored procedure that user wants to run before the actual poll query is called. It will take one input parameter for poll quantity.</li> </ul>
SPAfterPoll	<ul style="list-style-type: none"> <li>This would be any stored procedure that user wants to run after each poll cycle. It will take one input parameter for poll quantity.</li> </ul>
Retry Interval	<ul style="list-style-type: none"> <li>Time in milliseconds between retries in case of EIS connection failure</li> </ul>
Retry Limit	<ul style="list-style-type: none"> <li>Number of times to attempt to retry the inbound connection</li> </ul>
Stop Polling on Error	<ul style="list-style-type: none"> <li>Stop the adapter when an error is encountered while polling. The default value is False.</li> </ul>
Assured Once Delivery	<ul style="list-style-type: none"> <li>This option provides once-and-only-once event delivery. Turning it off may provide a performance benefit.</li> </ul>
EventFilterType	<ul style="list-style-type: none"> <li>This option will allow to filter the events to be processed by business object type. It has a comma delimited list of business object types, and only the types specified in the property are picked up for processing.</li> </ul>

Here are just highlights of some new activation specification properties available in V6.0.2. These properties hold the inbound event processing configuration information for a message endpoint. They can be set through the enterprise service discovery wizard, the WebSphere Application Server, or WebSphere Enterprise Service Bus administrative console.

More information on a complete list of activation specification properties can be found in the WebSphere Adapter Information Center. The link to the Information Center is provided at the end of this presentation.

## Activation specification properties (cont.)

Property	Description
Filter Future Events	<ul style="list-style-type: none"> <li>If the value is true, the adapter will not process events that have a timestamps in the future.</li> </ul>
EventQueryType	<ul style="list-style-type: none"> <li>This property values will decide whether to use standard event store or custom query. The valid values are Standard (for the standard event store) and Dynamic (for custom event processing)</li> </ul>
CustomEventQuery	<ul style="list-style-type: none"> <li>The SQL query, stored procedure or stored function for custom event processing. This will be run during each poll cycle when the EventQueryType is set to Dynamic.</li> </ul>
CustomUpdateQuery	<ul style="list-style-type: none"> <li>The custom update query that will be run after each event is processed so that the same event does not get picked up for processing in the subsequent event cycles.</li> </ul>
CustomDeleteQuery	<ul style="list-style-type: none"> <li>The custom delete query that will be run after each event is processed.</li> </ul>
DataSourceJNDIName	<ul style="list-style-type: none"> <li>This is the JNDI data source name to be used by the adapter to establish connection to the database.</li> </ul>

Continue with Activation Specification Properties. New additional inbound properties are added to support user-customizable event processing. These include properties for custom event query, custom update query, custom delete query, SP before and after poll. An event query type property will determine if custom query or standard event store should be used for event processing.

## Managed (J2C) connection factory properties

Property	Description
UserName	▪ UserName to connect to the EIS
Password	▪ Associated password for UserName
DatabaseURL	▪ DatabaseURL used to connect to the database
DataSourceJNDIName	▪ JNDI name of the data source used to get the JDBC connection
AutoCommit	▪ Autocommit to be set on the connection
JDBCDriverClass	▪ JDBC Driver class for the driver used to connect to the database
XADataSourceName	▪ XA data source name to be used to establish an XA connection to the database
XADatabaseName	▪ Database name to be used for the XA connection

Here are highlights of some of managed connection factory (MCF) configuration properties. They are used at run time to create an outbound connection instance with an enterprise information system. Once the MCF properties are created, they are stored in the deployment descriptor.

A J2C connection factory manages connection pooling. It provides configuration information for outbound connectivity to a single JDBC application instance from an application by way of the adapter.

## Resource adapter properties

Property	Description
PingQuery	<ul style="list-style-type: none"> <li>SQL Query is test valid connection to the database</li> </ul>
DatabaseVendor	<ul style="list-style-type: none"> <li>Specifies which RDBMS the adapter uses for special processing (DB2, Oracle, or SQL Server, Other for Cloudscape)</li> </ul>
enableHASupport	<ul style="list-style-type: none"> <li>When the enableHASupport property is set to true, only one of the replicated adapter instances actively polls for events while other instances are in standby mode. If the enableHASupport property is set to false, all of the adapter instances replicated on cluster members actively poll for events. This may result in event duplication. Do <i>not</i> change the value of enableHASupport to false for a single server environment.</li> </ul>
QueryTimeOut	<ul style="list-style-type: none"> <li>Sets the QueryTimeOut for all SQL statements to the number of seconds specified. SQL exception is captured for timeout</li> </ul>
ReturnDummyBOForSP	<ul style="list-style-type: none"> <li>Used to return output parameters even when the result set is empty (Dummy business object with values from output/input parameters will be returned)</li> </ul>

Resource adapter properties consist of logging and tracing and activities specific to the adapter, such as the default configuration properties of the adapter. Here are just some highlight of these properties in the deployment descriptor. One new property in V6.0.2 is enableHASupport which supports multiple adapter instances in clustered environment. So setting enableHASupport to true, only one of the replicated adapter instances actively polls for events while other instances are in standby mode. And if set to false, all of the adapter instances replicated on cluster members actively poll for events. This capability would improve adapter performance and availability. You configure these properties using the enterprise service discovery wizard or the administrative console of the server.

## Agenda

- Overview
- Installation
- Enterprise service discovery
- Configuration properties
- **Summary and references**

This section will provide a summary of the WebSphere Adapter for Oracle E-Business Suite.

## Summary

- WebSphere Adapter for Oracle E-Business Suite provides samples and integrates with Oracle E-Business Suite using the WebSphere Adapter for JDBC
  - ▶ Inbound and Outbound support
- Provided preparation steps in installing WebSphere Adapter for Oracle E-Business Suite
- Supported for Enterprise Metadata Discovery for discovering services
- Looked at configuration properties for inbound and outbound services

To summarize this presentation, the WebSphere Adapter for Oracle E-Business Suite (EBS) allows to bi-directional connectivity, both inbound and outbound, with Oracle E-Business Suite applications using JDBC Adapter. The adapter supports both inbound and outbound interaction. Providing installation preparation steps in installing WebSphere Adapter for Oracle E-Business Suite. Enterprise service discovery is used for discovery of services and creating the service description. It is also used to specify values for custom adapter properties and discovery of business objects.

## Reference Information

- WebSphere Adapter for JDBC User Guide
- Java Connector Architecture
  - ▶ <http://java.sun.com/j2ee/connector/index.jsp>
- Enterprise MetaData Discovery
  - ▶ <http://www.ibm.com/developerworks/java/library/j-emd/>
- WebSphere Adapter Information Center
  - ▶ <http://www-306.ibm.com/software/integration/wbiadapters/library/infocenter/>
- WebSphere Process Integration Information Center
  - ▶ <http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/index.jsp>



Additional reference information may be found at these URLs.

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