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#### Adding the Oracle Database Adapter Connection to an Integration

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Preface

*Using the Oracle Database Adapter* describes how to configure the Oracle Database Adapter as a connection in an integration in Oracle Integration Cloud Service.

**Topics**

- Audience
- Documentation Accessibility
- Related Resources
- Conventions

**Audience**

*Using the Oracle Database Adapter* is intended for developers who want to use the Oracle Database Adapter in integrations in Oracle Integration Cloud Service.

**Documentation Accessibility**


**Access to Oracle Support**

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit [http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info) or visit [http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs](http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs) if you are hearing impaired.

**Related Resources**

See these Oracle resources:

- **Oracle Cloud**
  [http://cloud.oracle.com](http://cloud.oracle.com)
- *Using Oracle Integration Cloud Service*
- *Using the Oracle Mapper*

**Conventions**

The following text conventions are used in this document:
<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>boldface</strong></td>
<td>Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.</td>
</tr>
<tr>
<td><strong>monospace</strong></td>
<td>Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.</td>
</tr>
</tbody>
</table>
Review the following conceptual topics to learn about the Oracle Database Adapter and how to use it as a connection in integrations in Oracle Integration Cloud Service. A typical workflow of adapter and integration tasks is also provided.

### Topics

- **Oracle Database Adapter Capabilities**
- **Oracle Database Adapter Limitations**
- **What Application Version Is Supported?**
- **About Oracle Integration Cloud Service**
- **About Oracle Integration Cloud Service Connections**
- **About Oracle Integration Cloud Service Integrations**
- **About Oracle Database Adapter Use Cases**
- **Typical Workflow for Creating and Including an Adapter Connection in an Integration**

### Oracle Database Adapter Capabilities

The Oracle Database Adapter enables you to integrate the Oracle database residing behind the firewall of your on-premises environment with Oracle Integration Cloud Service through use of the on-premises connectivity agent. Use the Oracle Database Adapter to poll for new and updated records for processing in Oracle Integration Cloud Service. For example, any new record added to the Employee table in your Oracle database can be synchronized with Oracle HCM Cloud using Oracle Integration Cloud Service. In addition, use the Oracle Database Adapter to execute SQL queries or stored procedures in the Oracle database. For example, quotes in Oracle CPQ Cloud can be created as Orders in the on-premises Oracle database by sending SQL statements or stored procedures using the Oracle Database Adapter.

The Oracle Database Adapter provides the following capabilities:

- Support for invocation of stored procedures in the Oracle database.
- Support for non-JDBC (PL/SQL) datatypes in outbound invocations of stored procedures.
- Support for execution of DML statements and SQL queries: `Select`, `Insert`, `Update`, and `Delete`.

Select the **Run a SQL Statement** option on the Basic Info page of the Adapter Endpoint Configuration Wizard to execute simple SQL queries. For complex SQL queries, use stored procedures by selecting the **Invoke a Stored Procedure** option on the Basic Info page of the Adapter Endpoint Configuration Wizard. Stored procedures can reduce the complexity of a SQL query.
• Support for generating XSD from PureSQL. This feature generates an XSD from a PureSQL statement provided by dynamically querying the table.

• Support for polling new and updated records for processing in the Oracle database. The Oracle Database Adapter supports distributed polling and multithreading. Distributed polling helps eliminate duplicate polling of the same records while multithreading provides optimum performance.

• Support for a logical delete polling strategy. This strategy involves updating a special field on each row once it is processed.

• Support for database fault mapping. See Defining Fault Mapping in Orchestrated Integrations with the Oracle Database Adapter.

The Oracle Database Adapter is one of many predefined adapters included with Oracle Integration Cloud Service. You can configure the Oracle Database Adapter as a connection in an integration in Oracle Integration Cloud Service. See the following sections:

• About Oracle Integration Cloud Service
• About Oracle Integration Cloud Service Connections
• About Oracle Integration Cloud Service Integrations

Oracle Database Adapter Limitations

Note the following Oracle Database Adapter limitations in Oracle Integration Cloud Service.

• If stored procedures contain arguments of PL/SQL boolean, PL/SQL record, and PL/SQL table types, wrappers are generated. Otherwise, you must generate your own wrappers.

• Cross schema stored procedures are not allowed in cases where Oracle Integration Cloud Service must generate the wrappers.

• When importing a predefined integration package containing PLS or SQL stored procedures, the wrapper package is not recreated in the target database. To add the wrapper package, confirm JPublisher is installed on the target database and define the original stored procedure. After confirming JPublisher is installed and the stored procedure is defined, open the PL/SQL Wrapper utility and execute the add scripts command to add the scripts included in the exported inventory archives (IAR) file.

What Application Version Is Supported?

For information about which application version is supported by this adapter, see the Oracle Integration Adapters Certification Matrix under section Oracle Integration Adapters Certification at the top of the page:

Oracle Integration Adapters Certification Matrix

About Oracle Integration Cloud Service

Oracle Integration Cloud Service is a complete, secure, but lightweight integration solution that enables you to connect your applications in the cloud. It simplifies
connectivity between your applications and connects both your applications that live in the cloud and your applications that still live on premises. Oracle Integration Cloud Service provides secure, enterprise-grade connectivity regardless of the applications you are connecting or where they reside.

Oracle Integration Cloud Service provides native connectivity to Oracle Software as a Service (SaaS) applications, such as Oracle Sales Cloud, Oracle RightNow Cloud, and so on. Oracle Integration Cloud Service adapters simplify connectivity by handling the underlying complexities of connecting to applications using industry-wide best practices. You only need to create a connection that provides minimal connectivity information for each system. Oracle Integration Cloud Service lookups map the different codes or terms used by the applications you are integrating to describe similar items (such as country or gender codes). Finally, the visual data mapper enables you to quickly create direct mappings between the trigger and invoke data structures. From the mapper, you can also access lookup tables and use standard XPath functions to map data between your applications.

Once you integrate your applications and activate the integrations to the runtime environment, the dashboard displays information about the running integrations so you can monitor the status and processing statistics for each integration. The dashboard measures and tracks the performance of your transactions by capturing and reporting key information, such as throughput, the number of messages processed successfully, and the number of messages that failed processing. You can also manage business identifiers that track fields in messages and manage errors by integrations, connections, or specific integration instances.

### About Oracle Integration Cloud Service Connections

Connections define information about the instances of each configuration you are integrating. Oracle Integration Cloud Service includes a set of predefined adapters, which are the types of applications on which you can base your connections, such as Oracle Sales Cloud, Oracle Eloqua Cloud, Oracle RightNow Cloud, and others. A connection is based on an adapter. For example, to create a connection to a specific RightNow Cloud application instance, you must select the Oracle RightNow adapter and then specify the WSDL URL, security policy, and security credentials to connect to it.

![Video](image)

### About Oracle Integration Cloud Service Integrations

Integrations are the main ingredient of Oracle Integration Cloud Service. An integration includes at least a trigger (source) connection (for requests sent to Oracle Integration Cloud Service) and invoke (target) connection (for requests sent from Oracle Integration Cloud Service to the target) and the field mapping between those two connections.

When you create your integrations, you build on the connections you already created by defining how to process the data for the trigger (source) and invoke (target) connections. This can include defining the type of operations to perform on the data, the business objects and fields against which to perform those operations, required schemas, and so on. To make this easier, the most complex configuration tasks are handled by Oracle Integration Cloud Service. Once your trigger (source) and invoke (target) connections are configured, the mappers between the two are enabled so you can...
can define how the information is transferred between the trigger (source) and invoke (target) data structures for both the request and response messages.

Video

About Oracle Database Adapter Use Cases

The Oracle Database Adapter can be used in scenarios such as the following.

- Defining Fault Mapping in Orchestrated Integrations with the Oracle Database Adapter

Defining Fault Mapping in Orchestrated Integrations with the Oracle Database Adapter

You can define fault mappings in integrations that include the Oracle Database Adapter. This mapping transforms an Oracle Database Adapter fault when used as a target into the source format defined in its WSDL. You add the Oracle Database Adapter to a scope action in an orchestrated integration and select this fault in the **Fault Handler** part of the scope action.

Assume an exception (for example, `NumberFormatException`) occurs in an invoke (outbound) Oracle Database Adapter. Exceptions are mapped in fault mappings and returned to the source format as defined in its WSDL contract. In this use case, a stored procedure is used that accepts only an integer type. If you invoke the Oracle Database Adapter by passing a noninteger value, Oracle Integration Cloud Service reports the fault back to you.

To define fault mapping:

1. Create connections for the SOAP Adapter and Oracle Database Adapter.
2. Create an orchestrated integration.
3. Drag the SOAP Adapter into the integration canvas as a trigger.
   The Adapter Endpoint Configuration wizard is displayed.
4. Configure the SOAP Adapter (for this example, named `s1`).
5. From the **Actions** palette, drag a **Scope** action below the SOAP Adapter.
6. From the **Invokes** palette, drag the Oracle Database Adapter inside the scope.
The Adapter Endpoint Configuration wizard is displayed.

7. Select an operation to invoke any stored procedure that accepts only an integer as the input parameter (for this example, the adapter is named `db1`).

8. Define mappings for the Oracle Database Adapter.

9. In the integration canvas, click **Reposition** and move the `s1` map inside the scope.

10. Define mappings for `s1`. 
11. Click the Fault Handler part and select Oracle Database: servicInvocationError db1.

12. From the Actions palette, drag a Fault Return action inside the Fault Handler part.

The root element for the fault is serviceInvocationError. The fault includes other elements that carry the fault details: type, title, detail, errorCode, and remedialAction. The detail element carries information about the fault cause. The remedialAction element suggests the action to fix the fault.

14. From the menu, select Tracking and define the tracking field.

15. Activate and invoke the integration by passing a string value (that is, a noninteger value) from the SOAP UI.

<typ:getOrganization>
   <typ:partyId>test</typ:partyId>
</typ:getOrganization>

The fault response returns information similar to the following:

<nstrgmpr:code>XSD object conversion error</nstrgmpr:code>
   <nstrgmpr:message>An error occurred while parsing XML representing a Java object.</nstrgmpr:message>
   <nstrgmpr:severity>Unable to convert the XSD element DATA_IN whose SQL type is INTEGER and JDBC type is INTEGER. Cause: java.lang.NumberFormatException: For input string: "test"
</nstrgmpr:severity>
   <nstrgmpr:detail>
      <nstrgmpr:code>serviceInvocationError</nstrgmpr:code>
      <nstrgmpr:message>Check to ensure that the XML data describing the object matches the definition of the element in the XSD.</nstrgmpr:message>
   </nstrgmpr:detail>
</nstrgmpr:ServiceErrorMessage>
</detail>

Typical Workflow for Creating and Including an Adapter Connection in an Integration

You follow a very simple workflow to create a connection with an adapter and include the connection in an integration.
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Create the adapter connections for the applications you want to integrate. The connections can be reused in multiple integrations and are typically created by the administrator.</td>
<td>Creating an Oracle Database Adapter Connection</td>
</tr>
<tr>
<td>2</td>
<td>Create the integration. When you do this, you add trigger and invoke connections to the integration.</td>
<td>Creating an Integration and Adding the Oracle Database Adapter Connection to an Integration</td>
</tr>
<tr>
<td>3</td>
<td>Map data between the trigger connection data structure and the invoke connection data structure.</td>
<td>Mapping Data of Using Oracle Integration Cloud Service</td>
</tr>
<tr>
<td>4</td>
<td>(Optional) Create lookups that map the different values used by those applications to identify the same type of object (such as gender codes or country codes).</td>
<td>Creating Lookups of Using Oracle Integration Cloud Service</td>
</tr>
<tr>
<td>5</td>
<td>Activate the integration.</td>
<td>Managing Integrations of Using Oracle Integration Cloud Service</td>
</tr>
<tr>
<td>6</td>
<td>Monitor the integration on the dashboard.</td>
<td>Monitoring Integrations of Using Oracle Integration Cloud Service</td>
</tr>
<tr>
<td>7</td>
<td>Track payload fields in messages during runtime.</td>
<td>Assigning Business Identifiers for Tracking Fields in Messages and Managing Business Identifiers for Tracking Fields in Messages of Using Oracle Integration Cloud Service</td>
</tr>
<tr>
<td>8</td>
<td>Manage errors at the integration level, connection level, or specific integration instance level.</td>
<td>Managing Errors of Using Oracle Integration Cloud Service</td>
</tr>
</tbody>
</table>
Creating an Oracle Database Adapter Connection

A connection is based on an adapter. You define connections to the specific cloud applications that you want to integrate. The following topics describe how to define connections:

Topics

• Prerequisites for Creating a Connection
• Creating a Connection
• Editing a Connection
• Cloning a Connection
• Deleting a Connection

Prerequisites for Creating a Connection

You must satisfy the following prerequisites for creating a connection with Oracle Integration Cloud Service.

1. Ensure that the target database is publicly accessible.
2. Ensure that you have write permissions to the database.
3. Ensure that you have the required permissions to run stored procedures and SQL statements.
4. Know the database URL, including the hostname or IP address and the port number.
5. Know the database system ID and service name.
6. Know the username and password for connecting to the database.
7. Know the agent group if you are connecting to an on-premises application.
8. The Oracle Database Adapter is certified to connect to Oracle Database Cloud Service through the on-premises agent. You install the on-premises agent on the Oracle Database Cloud Service instance. On the Connections page of Oracle Integration Cloud Service, you provide Oracle Database Cloud Service instance-specific connection parameters, including the host, port, service ID, username, and password. You associate the respective agent group and then test the connection. To install the on-premises agent, see Downloading and Running the On-Premises Agent Installer in Using Oracle Integration Cloud Service. See Oracle Database Cloud Service for details about Oracle Database Cloud Service.
9. Oracle Integration Cloud Service can connect to Oracle Real Application Clusters (RAC) databases with the on-premises connectivity agent using Single Client Access Name (SCAN) as the hostname while configuring the connection. SCAN
provides a single name for clients to access any Oracle Database running in a cluster.

Creating a Connection

The first step in creating an integration is to create the connections to the applications with which you want to share data.

1. In the Oracle Integration Cloud Service home page, click Connections.
2. Click Create.
   The Create Connection — Select Adapter dialog is displayed.
3. Select an adapter from the dialog. You can also search for the type of adapter to use by entering a partial or full name in the Search field, and clicking Search.
   The Create New Connection dialog is displayed.
4. Enter the information to describe the connection.
   • Enter a meaningful name to help others find your connection when they begin to create their own integrations. The name you enter is automatically added in capital letters to the Identifier field. If you modify the identifier name, do not include a blank space (for example, Sales Opportunity).
   • Select the role (direction) in which to use this connection (trigger, invoke, or both). Only the roles supported by this adapter are displayed for selection. When you select a role, only the connection properties and security policies appropriate to that role are displayed on the Connections page. If you select an adapter that supports both invoke and trigger, but select only one of those roles, then try to drag the adapter into the section you did not select, you receive an error (for example, configure an Oracle Service Cloud (RightNow) Adapter as only an invoke, but drag the adapter to the trigger section).
   • Enter an optional description of the connection.
5. Click **Create**.
   
   Your connection is created and you are now ready to configure connection details, such as email contact, connection properties, security policies, connection login credentials, and (for certain connections) agent group.

### Adding a Contact Email

From the Connection Administrator section of the connection, you can add a contact email address for notifications.

1. In the **Email Address** field, enter an email address to receive email notifications when problems occur.
2. In the upper right corner, click **Save**.

### Configuring Connection Properties

Enter connection information so your application can process requests.

1. Click **Configure Connectivity**.
   
   The Connection Properties dialog is displayed.
2. Enter the host name or IP address of the database server.
3. Enter the database server port number.
4. Enter the system ID.
5. Enter the service name.
6. Click **OK**.

   You are now ready to configure connection security.

### Configuring Connection Security

Configure security for your database connection by selecting the security policy and setting login credentials. A database connection is only allowed for publicly accessible databases.

1. Click **Configure Credentials**.
2. Enter your login credentials.
   
   a. Select the security policy. Only the Username Password Token policy is supported. It cannot be deselected.
   b. Enter a username and password to connect to the database.
   c. Reenter the password a second time.
3. Click **OK**.

   You are now ready to configure an Agent Group.
Configuring an Agent Group

Configure an agent group for accessing the service hosted on your premises behind the fire wall.

1. Click **Configure Agents**.
   
   The Select an Agent Group page appears.

2. Click the name of the agent group.

3. Click **Use**.

4. Test the connection. See Testing the Connection.

**Related Topics**

- About Agents and Integrations Between On-Premises Applications and Oracle Integration Cloud Service
- Managing Agent Groups and the On-Premises Agent
- Monitoring Agents

Testing the Connection

Test your connection to ensure that it is successfully configured.

1. In the upper right corner of the page, click **Test**.

2. Select the type of connection testing to perform:
   
   - **Validate and Test**: Performs a full validation of the WSDL, including processing of the imported schemas and WSDLs. Complete validation can take several minutes depending on the number of imported schemas and WSDLs. No requests are sent to the operations exposed in the WSDL.
   
   - **Test**: Connects to the WSDL URL and performs a syntax check on the WSDL. No requests are sent to the operations exposed in the WSDL.

   If successful, the following message is displayed and the progress indicator shows 100%.

   Connection *connection_name* was tested successfully.

3. If your connection was unsuccessful, an error message is displayed with details. Verify that the configuration details you entered are correct.

4. When complete, click **Save**, then click **Close**.

Editing a Connection

You can edit connection settings after creating a new connection.

1. On the Oracle Integration Cloud Service home page, click **Connections**.

2. On the Connections page, search for the connection name.

3. Select **Edit** from the connection **Actions** menu or click the connection name.
4. Make any necessary edits.

If you edit a connection currently used by an active integration, a dialog is displayed indicating that you must re-activate the integration for the connection updates to take effect.

## Cloning a Connection

You can clone a copy of an existing connection, even if the connection is locked. This provides a quick way to create a new connection.

1. On the Oracle Integration Cloud Service home page, click **Connections**.
2. On the Connections page, search for the connection name.
3. Select **Clone** from the connection **Actions** menu.

The Clone Connection dialog is displayed.

4. Enter the connection information.
5. Click **Clone**.
6. Click **Edit** to configure the credentials of your cloned connection. Cloning a connection does not copy the credentials.

See [Editing a Connection](#) for instructions.

### Deleting a Connection

You can delete a connection from the connection menu.

1. On the Oracle Integration Cloud Service home page, click **Connections**.
2. On the Connections page, search for the connection name.
3. Click **Delete** from the connection **Actions** menu.

The Delete Connection dialog is displayed if the connection is not used in an integration.

4. Click **Yes** to confirm deletion.
Creating an Integration

Integrations use the adapter connections you created to your applications, and define how information is shared between those applications. You can create, import, modify, or delete integrations; create integrations to publish or subscribe to messages; add and remove request and response enrichment triggers; and create routing paths for different invoke endpoints in integrations. Click the following topic for more information:

**Topic**
- Creating Integrations (in *Using Oracle Integration Cloud Service*)
Adding the Oracle Database Adapter Connection to an Integration

When you drag the Oracle Database Adapter into an integration, the Adapter Endpoint Configuration Wizard appears. This wizard guides you through configuration of Oracle Database Adapter endpoint properties.

The following sections describe the wizard pages that guide you through configuration of the Oracle Database Adapter as a trigger and an invoke in an integration.

Topics

• Configuring Basic Information Properties
• Configuring Oracle Database Adapter Trigger Polling Properties
• Configuring Oracle Database Adapter Invoke Stored Procedure Properties
• Configuring Oracle Database Adapter Invoke SQL Statement Properties
• Reviewing Configuration Values on the Summary Page

See Oracle Database Adapter Capabilities.

Note:

The Oracle Database Adapter does not support the regeneration of WSDL artifacts. See Regenerating a WSDL File for Integrations (in Using Oracle Integration Cloud Service).

Configuring Basic Information Properties

You can enter a name and description on the Basic Info page of each trigger and invoke adapter in your integration.

Topics

• What You Can Do from the Basic Info Page
• What You See on the Basic Info Page

What You Can Do from the Basic Info Page

You can specify the following values on the Basic Info page. The Basic Info page is the initial wizard page that is displayed when you drag the Oracle Database Adapter onto the integration canvas.

• Specify a meaningful name.
• Specify the operation type in outbound connections:
What You See on the Basic Info Page

The following table describes the key information on the Basic Info page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
</table>
| What do you want to call your endpoint? | Identifies the connection with a meaningful name that defines the purpose of connection. For example, CreateEmployeeInDB for a database connection that adds new employee data. The name can include English alphabetic characters, numbers, underscores, and dashes. The name cannot include:
  • Blank spaces (for example, My DB Connection)
  • Special characters (for example, #;83& or righ(t)now4)
  • Multibyte characters |
| What operation do you want to perform? | Selects the operation performed by the connection:
  • Invoke a Stored Procedure — allows the selection of a stored procedure to run on the database.
  • Run a SQL Statement — allows the selection of SQL query to run on the database.

Notes
  • When operations in a SQL statement such as Update, Concat, and Merge accept values for the inbound invocation of an integration, they do not work. For example, the following query does not work:

    ```sql
    select concat(empname, 'ss') from DB_AQ
    where empno=#empno
    ```

    ```sql
    select empno from DB_AQ where
    empname=concat(#empname, 'YY')
    ```

    As a workaround, handle these scenarios during payload mapping. For example, perform a concatenation during mapping of the payload. The final output can then be passed as input to the SQL query.
  • IN/BETWEEN operators are not supported with bind parameters. Use greater than (>) and less than (<) operators instead. |
Configuring Oracle Database Adapter Trigger Polling Properties

Select the root database table for the service query.

Topics

Note:
No order is maintained while polling records.

• What You Can Do from the Polling Page
• What You See on the Polling Page
• What You See on the Manage Tables Page
• What You See on the Relations Page
• What You See on the Polling Strategy and Options Page

What You Can Do from the Polling Page

You can import root database tables on the Polling page.

Note:
The Oracle Database Adapter does not support polling when the logical delete column is in lower case.

What You See on the Polling Page

The following table describes the key information on the Polling page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import Tables</td>
<td>Imports tables and the root database table for the service query.</td>
</tr>
<tr>
<td>Remove Tables</td>
<td>Removes the selected table from the service query tables list.</td>
</tr>
<tr>
<td>Review and Manage relationships reachable from the root database table.</td>
<td>Appears after importing tables. Select Edit to open the Relations page where you can view, create, and remove relationships between tables.</td>
</tr>
<tr>
<td>Review and verify the attributes created from the imported tables and relationships.</td>
<td>Appears after importing tables. Select Edit to open the Attributes Filtering page where you can review, verify, select or deselect the attributes in the object model created from the imported tables and the defined relationships.</td>
</tr>
</tbody>
</table>
Polling Strategy and Options

Appears after importing tables. Select Edit to open the Polling Strategy and Options page where you can define the polling strategy and specify polling options.

What You See on the Manage Tables Page

The following table describes the key information on the Manage Tables page. The Manage Tables page appears when you select Import Tables on the Oracle Database Adapter Polling page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema</td>
<td>Select the schema for the tables and views you are importing. Special characters (for example, #) are not supported in schema names. See Special Characters are Not Supported in Schema Names.</td>
</tr>
</tbody>
</table>
| Tables          | The name of the table to which the schema or view is applied. The list next to the Tables field allows these selections:  
                         • All — selects all available tables and views.  
                         • Materialized View — selects materialized views.  
                         • Materialized View Log — selects materialized view logs.  
                         • Synonym — selects the alias for the schema object.  
                         • Table — selects tables.  
                         • View — selects views. |
| Available Tables| Lists the tables that meet the selection criteria.                           |
| Selected Tables | Lists your table selection.                                                 |
| Primary Keys    | Appears when you select tables without a primary key defined. Selects the virtual primary key for the table. Note: Having the primary key at the database level is the best practice. |

What You See on the Relations Page

The following table describes the key information on the Relations page. The Relations page appears when you select Edit for the Review and Manage relationships.
reachable from the root database table option on the Oracle Database Adapter Polling page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create New</td>
<td>Opens the Create Relation page with these options:</td>
</tr>
<tr>
<td></td>
<td>• Parent Table — selects the parent table for the relationship between tables.</td>
</tr>
<tr>
<td></td>
<td>• Child Table — selects the child table for the relationship between tables.</td>
</tr>
<tr>
<td></td>
<td>• Relationship — defines the relationship between the parent and child tables.</td>
</tr>
<tr>
<td></td>
<td>• Attribute Name — Applies attributes to the table relationship.</td>
</tr>
<tr>
<td></td>
<td>• Mapping — Displays the mapping for the table relationship.</td>
</tr>
<tr>
<td>Detach</td>
<td>Opens the Relationships list in a new window.</td>
</tr>
</tbody>
</table>

**What You See on the Polling Strategy and Options Page**

The following table describes the key information on the Polling Strategy and Options page. The Polling Strategy and Options page appears when you select **Edit** for Polling Strategy and Options on the Oracle Database Adapter Polling page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Delete Field</td>
<td>Selects a field in the root database table. To allow the selection, polling must be enabled in the Status column.</td>
</tr>
<tr>
<td>Read Value</td>
<td>Identifies the value that is used to indicate a row has been read. For example, PROCESSED. Surrounding quotes are not required.</td>
</tr>
<tr>
<td>Unread Value</td>
<td>Indicates the rows to process. Only rows with Logical Delete Field and column values that match the Unread Value are read.</td>
</tr>
<tr>
<td>Polling Frequency (Sec)</td>
<td>Specifies the polling frequency (in seconds) for new records or events.</td>
</tr>
</tbody>
</table>

**Configuring Oracle Database Adapter Invoke Stored Procedure Properties**

Enter the Oracle Database Adapter invoke a a stored procedure properies.

**Topics**

- What You Can Do from the Invoke a Stored Procedure Page
- What You See on the Invoke a Stored Procedure Page
What You Can Do from the Invoke a Stored Procedure Page

The Invoke a Stored Procedure page appears when **Invoke a Stored Procedure** is selected as the operation to perform on the Basic Info page. You can specify the following values on the Invoke a Stored Procedure page.

- Select the database schema that includes the data you want to query (for example, you want to query details about an employee based on their employee ID).
- Select a stored procedure or package from the list that is displayed after you select the database schema.

**Note:**

- Stored procedures return binary large objects (for example, BLOB database data types) as base64Binary types in XML. Depending upon the use cases, these can be decoded during transformation using inbuilt functions such as decodeBase64 or can be passed as-is for downstream processing.
- Adapter input/output parameters are defined based on the stored procedure IN/OUT parameters. The IN parameter corresponds to the request and the OUT parameter is translated as the response.

What You See on the Invoke a Stored Procedure Page

The following table describes the fields that appear on the Invoke a Stored Procedure page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Select Schema</strong></td>
<td>Select a database schema from the list. This action refreshes the page to display fields for selecting a package or procedure to invoke. Special characters (for example, #) are not supported in schema names. See <a href="#">Special Characters are Not Supported in Schema Names</a>.</td>
</tr>
<tr>
<td><strong>Select Package</strong></td>
<td>Select the database package. This action refreshes the page to display the procedures available for the package. When importing a predefined integration package containing PLS or SQL stored procedures, the wrapper package is not recreated in the target database. To add the wrapper package, confirm JPublisher is installed on the target database and define the original stored procedure. After confirming JPublisher is installed and the stored procedure is defined, open the PL/SQL Wrapper utility and execute the add scripts command to add the scripts included in the exported inventory archives (IAR) file.</td>
</tr>
<tr>
<td>Element</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Select Procedure</td>
<td>Displays the in (inbound), out (outbound), and in/out (inbound/outbound) parameters for the selected package.</td>
</tr>
<tr>
<td>Arguments</td>
<td>Display the in, out, and in/out parameters that are passed with this procedure.</td>
</tr>
</tbody>
</table>

Configuring Oracle Database Adapter Invoke SQL Statement Properties

Enter the Oracle Database Adapter SQL statement properties.

Topics

- What You Can Do from the Run a SQL Statement Page
- What You See on the Run a SQL Statement Page
Note:

- Do not use schema/database names in SQL queries. Configure the details in the connection. For example:

  Update HR.employee set HR.employee.first_name = 'Name' where HR.employee.employee_id='1'

  can be changed to a simple query, such as:

  Update employee set first_name = 'Name' where employee_id='1'

  where HR is used in the connection details. This restricts a user with specific privileges to a particular schema/database.

- When configuring the adapter as an invoke connection, ensure that proper spaces are provided between key words for a pure SQL statement. For example, the following statement fails during integration activation because there is no blank space between VALUES and (\#).

  INSERT INTO table_name VALUES(#EMPNO, #EMPNAME)

  Add a blank space between VALUES and (\#, and the statement is successfully processed.

  INSERT INTO table_name VALUES (#EMPNO, #EMPNAME)

- When configuring the Oracle Database Adapter as an invoke connection, define all bind parameters in the same order and define the parameters that takes absolute values at the end.

  INSERT INTO table_name (EMPNO, EMPNAME, EMPUUID, EMPPHONE, EMPHIREDATE) VALUES (#EMPNO, #EMPNAME, Sys_guid(), NULL, SYSDATE)

What You Can Do from the Run a SQL Statement Page

The Run a SQL Statement page appears when Run a SQL Statement is selected as the operation to perform on the Basic Info page. You can specify the following values on the Run a SQL Statement page.

- Enter a SQL query.
- Validate the SQL query to make sure the query syntax is correct and the specified tables, fields, and values exist.

  When a SQL query is successfully validated, the Status field displays Success!
What You See on the Run a SQL Statement Page

The following table describes the fields that appear on the Run a SQL Statement page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Query</td>
<td>Identifies the SQL query.</td>
</tr>
<tr>
<td>Validate SQL Query</td>
<td>Validates the SQL query syntax.</td>
</tr>
<tr>
<td>Status</td>
<td>Displays the SQL query syntax validation status. When syntax validation is</td>
</tr>
<tr>
<td></td>
<td>successful, the message <strong>Success!</strong> appears.</td>
</tr>
</tbody>
</table>

Reviewing Configuration Values on the Summary Page

You can review the specified adapter configuration values on the Summary page.

**Topics**

- What You Can Do from the Summary Page
- What You See on the Summary Page

What You Can Do from the Summary Page

You can review configuration details from the Summary page. The Summary page is the final wizard page for each adapter after you have completed your configuration.

- View the configuration details you defined for the adapter. For example, if you have defined an inbound trigger (source) adapter with a request business object and immediate response business object, specific details about this configuration are displayed on the Summary page.
- Click **Done** if you want to save your configuration details.
- Click a specific tab in the left panel or click **Back** to access a specific page to update your configuration definitions.
- Click **Cancel** to cancel your configuration details.
What You See on the Summary Page

The following table describes the key information on the Summary page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>Displays a summary of the configuration values you defined on previous pages of the wizard. The information that is displayed can vary by adapter. For some adapters, the selected business objects and operation name are displayed. For adapters for which a generated XSD file is provided, click the XSD link to view a read-only version of the file. To return to a previous page to update any values, click the appropriate tab in the left panel or click <strong>Back</strong>.</td>
</tr>
</tbody>
</table>
Creating Mappings and Lookups in Integrations

You must map data between trigger (source) connections and invoke (target) connections in integrations. You can also optionally create lookups in integrations.

Topics
- Mapping Data (in Using Oracle Integration Cloud Service)
- Creating Lookups (in Using Oracle Integration Cloud Service)
Administering Integrations

Oracle Integration Cloud Service provides you with the information and tools required to activate, monitor, and manage your integrations in the runtime environment.

Topic

- Administering Oracle Integration Cloud Service (in Using Oracle Integration Cloud Service)
Troubleshooting the Oracle Database Cloud Adapter

Review the following topic to learn about troubleshooting issues with Oracle Database Cloud adapter.

**Topics**

- Recovering from a CLOUD-0005: Unable to Establish Connection Error
- Special Characters are Not Supported in Schema Names
- Resolving Message Time Out Errors

**Recovering from a CLOUD-0005: Unable to Establish Connection Error**

If you receive the following error:

```
CLOUD-0005: Unable to establish connection.
Please check connection parameters · IO Error: Invalid connection string format, a valid format is: "host:port:sid" and the Service Name contains HYPHEN "-
```

Perform the following steps:

1. Check if the service name can be modified to remove the hyphen (-).
2. If you cannot remove the hyphen, prefix the host name in the database connection with // (for example, //host.test.com).

**Special Characters are Not Supported in Schema Names**

If you use schema names with special characters such as #, integration activation fails. For stored procedures, the schema derives the names of the types in the XSD. If the type name contains #, the XSD has problems with the name. Use a schema name that does not contain any special characters.

**Resolving Message Time Out Errors**

The following error can occur during both design time (in both the inbound and outbound directions) and runtime.

```
Message not received within X seconds of wait interval
```
There can be multiple reasons for a time out occurring, such as connectivity issues between Oracle Integration Cloud Service and the connectivity agent or the connectivity agent being disabled. Ensure that the connectivity agent is up and running if you see this error. Check the status of the agent under **Dashboards > Agents** in Oracle Integration Cloud Service.

**Note:**

When using the Oracle Database Adapter to connect to an Oracle E-Business Suite database instance and this error continuously occurs, review the SQL query plans and other SQL tuning aspects. The adapter relies on JDBC driver APIs to fetch metadata such as table details, stored procedure details, and so on. This involves execution of certain SQL queries by the JDBC driver involving SYS tables such as the `ALL_TYPES` table. Since Oracle E-Business Suite has a large data dictionary, these metadata queries requires tuning consideration to improve overall performance of the adapter.