Oracle® Cloud

Using the Microsoft SQL Server Adapter with Oracle Integration
Oracle Cloud Using the Microsoft SQL Server Adapter with Oracle Integration,
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4 Implement Common Patterns Using the Microsoft SQL Server Adapter

Define a Select Operation on Database Tables 4-1
Preface

This guide describes how to configure the Microsoft SQL Server Adapter as a connection in an integration in Oracle Integration.

Note:

The information in this guide applies to all of your Oracle Integration instances. It doesn't matter which edition you're using, what features you have, or who manages your cloud environment. You'll find what you need here, including notes about any differences between the various flavors of Oracle Integration when necessary.

Topics

• Audience
• Documentation Accessibility
• Related Resources
• Conventions

Audience

This guide is intended for developers who want to use the Microsoft SQL Server Adapter in integrations in Oracle Integration.

Documentation Accessibility

For information about Oracle’s commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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 or visit 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
• Using Integrations in Oracle Integration
• Using the Oracle Mapper with Oracle Integration

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><code>monospace</code></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>
Understand the Microsoft SQL Server Adapter

Review the following conceptual topics to learn about the Microsoft SQL Server Adapter and how to use it as a connection in integrations in Oracle Integration. A typical workflow of adapter and integration tasks is also provided.

Topics:

- Microsoft SQL Server Adapter Capabilities
- What Application Version Is Supported?
- About Microsoft SQL Server Use Cases
- Workflow to Create and Add a Microsoft SQL Server Adapter Connection to an Integration

Microsoft SQL Server Adapter Capabilities

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

The Microsoft SQL Server Adapter provides the following capabilities:

- Support for invocation of stored procedures in the Microsoft SQL Server database.
- Support for execution of DML statements and SQL queries such as `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 on the table.
- Support for polling new and updated records for processing in the Microsoft SQL Server database. The Microsoft SQL Server Adapter supports distributed polling. Distributed polling helps eliminate duplicate polling of the same records.
- Support for updating or inserting multiple records in a single request.
• Support for a logical delete polling strategy. This strategy involves updating a special field on each row once it is processed.

• Support for performing a `SELECT` operation against database tables.

• Support for processing message payloads up to 10 MB in size. In the case of polling, you must set the `Rejected Value` property to `REJECTED` on the Polling Strategy and Options page. If the incoming message is greater than the 10 MB threshold size, that particular record is updated to `REJECTED` instead of `READ`. If the outbound operation returns a response greater than the 10 MB threshold size, the response message is ignored and a fault response is sent to the calling client.

---

**Note:**

In Java, Unicode characters are represented as 2 bytes.

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**Note:**

User-defined data types are not supported by the Microsoft SQL Server Adapter.

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Microsoft SQL Server Adapter is one of many predefined adapters included with Oracle Integration. You can configure Microsoft SQL Server Adapter as a target or invoke connection in an integration in Oracle Integration.

### 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 Microsoft SQL Server Use Cases

The Microsoft SQL Server can be used in scenarios such as the following:

You can create an integration that includes an SOAP Adapter connection on the source (inbound) side and a Microsoft SQL Server on the target (outbound) side. For example, when configuring the target Microsoft SQL Server, you can select a stored procedure that enables you to pass an employee ID as an input parameter from the SOAP Adapter to an on-premises SQL database to retrieve additional information about the employee (first name, last name, email ID, and so on). The request is sent to the on-premises agent for execution. The employee results are then returned to Oracle Integration.
Workflow to Create and Add a Microsoft SQL Server Adapter Connection to an Integration

You follow a very simple workflow to create a connection with an adapter and include the connection in an integration in Oracle 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>Create a Microsoft SQL Server Adapter Connection</td>
</tr>
<tr>
<td>2</td>
<td>Create the integration. When you do this, you add source and target connections to the integration.</td>
<td>Create Integrations and Add the Microsoft SQL Server Adapter Connection to an Integration</td>
</tr>
<tr>
<td>3</td>
<td>Map data between the source connection data structure and the target connection data structure.</td>
<td>Map Data of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>4</td>
<td>Specify the primary business identifier to track a field across an integration flow during runtime.</td>
<td>Assign Business Identifiers of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>5</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>Manage Lookups of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>6</td>
<td>Activate the integration.</td>
<td>Manage Integrations of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>7</td>
<td>Monitor the integration on the dashboard.</td>
<td>Monitor Integrations of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>8</td>
<td>Track payload fields in messages during runtime.</td>
<td>Assign Business Identifiers for Tracking Fields in Messages and Manage Business Identifiers for Tracking Fields in Messages of Using Integrations in Oracle Integration</td>
</tr>
<tr>
<td>9</td>
<td>Manage errors at the integration level, connection level, or specific integration instance level.</td>
<td>Manage Errors of Using Integrations in Oracle Integration</td>
</tr>
</tbody>
</table>
Create a Microsoft SQL Server Adapter Connection

A connection is based on an adapter. You define connections to the specific cloud applications that you want to integrate.

Topics:
• Prerequisites for Creating a Connection
• Create a Connection

Prerequisites for Creating a Connection

You must satisfy the following prerequisites to create a connection with the Microsoft SQL Server Adapter:
• Ensure that you have write permissions on the database.
• Ensure that you have the required permissions to run stored procedures and packages and SQL statements against the SQL Server.
• Know the database hostname or IP address and the port number.
• Know the database or instance name.
• Know the username and password for connecting to the database.

Create 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 navigation pane, click Integrations, then click Connections.
2. Click Create.

Note:
You can also create a connection in the integration canvas of:
• An orchestrated integration (See Define Inbound Triggers and Outbound Invokes.)
• A basic routing integration (See Add a Trigger (Source) Connection.)

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.

**Add a Contact Email**

From the Connection Administrator section of the connection, you can add a contact email address for notifications.
Configure 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 optional database server port number.

4. Enter the optional database name.

5. Enter the optional instance name.

6. From the **Encrypt Connection** list, select **Yes** if you want to encrypt your connection to the SQL Server instance. Selecting **Yes** causes the **Validate Server Certificate** list to be enabled.

7. From the **Validate Server Certificate** list, select **Yes** if you want to upload a certificate. See Upload an SSL Certificate.

8. Click **OK**.

9. Configure connection security. See **Configure Connection Security**.

Configure Connection Security

Configure security for your Oracle SQL Server Cloud adapter connection by selecting the security policy and security token.

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**.

Test the Connection

Test your connection to ensure that it is successfully configured.

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

2. If your adapter connection uses a WSDL, you are prompted to 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**.
Add the Microsoft SQL Server Adapter Connection to an Integration

When you drag the Microsoft SQL Server Adapter into the trigger or invoke area of an integration, the Adapter Endpoint Configuration Wizard appears. This wizard guides you through the configuration of the Microsoft SQL Server Adapter endpoint properties.

These topics describe the wizard pages that guide you through configuration of the Microsoft SQL Server Adapter as a trigger and invoke in an integration.

Topics:
- Basic Information Page
- Stored Procedure Page
- SQL Statement Page
- Polling Properties
- Summary Page

Basic Information Page

The Basic Info page appears when you drag an adapter onto the integration canvas. Review these topics to learn more about Microsoft SQL Server Adapter basic information settings.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What do you want to call your endpoint?</strong></td>
<td>Provide a meaningful name so that others can understand the connection. For example, if you are creating a database connection for adding new employee data, you may want to name it CreateEmployeeInDB. You can include English alphabetic characters, numbers, underscores, and dashes in the name. You cannot include the following:</td>
</tr>
<tr>
<td></td>
<td>- Blank spaces (for example, My DB Connection)</td>
</tr>
<tr>
<td></td>
<td>- Special characters (for example, #;83% or righ(t) now4)</td>
</tr>
<tr>
<td></td>
<td>- Multibyte characters</td>
</tr>
</tbody>
</table>
Element | Description
--- | ---
What operation do you want to perform? | Select the type of operation for this connection to perform:

- **Invoke a Stored Procedure**: Select to invoke a stored procedure in the database.
- **Run a SQL Statement**: Select to run a SQL query against the database.
- **Perform an Operation On a Table** — Select to perform one of the following operations on a table. You can update or insert multiple records in a single request.
  - Insert
  - Update
  - Insert or Update (Merge)
  - Select

**Note**: 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:

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

```
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.

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**Stored Procedure Page**

Enter the stored procedure parameters.

**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.
<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select Schema</td>
<td>Select a database schema from the list that includes the data you want to query (for example, you want to query details about an employee based on their employee ID). This action refreshes the page to display fields for selecting a package or procedure to invoke.</td>
</tr>
<tr>
<td>Select Package</td>
<td>Select the database package. This action refreshes the page to display the procedures available for the package.</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>

## SQL Statement Page

Enter the SQL statement parameters. The Run a SQL Statement page is the wizard page that is displayed if you selected SQL statements as the operation type on the Basic Info 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)
  ```
### SQL Query
Identifies the SQL query.

### Status
After you click Validate SQL Query, ensure the Status field displays Success!.

---

## Polling Properties

Import the tables and select the root database table for the service query.

**Note:**
No order is maintained while polling records.

### Topics
- **Polling Page**
- **Manage Tables Page**
- **Relations Page**
- **Polling Strategy and Options Page**

## 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 tables. Select Remove Tables, clear the checkbox to the right of the table you want to remove, and click Ok. You cannot remove the root database table.</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>
<tr>
<td>Polling Strategy and Options</td>
<td>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.</td>
</tr>
</tbody>
</table>
Manage Tables Page

The following table describes the key information on the Manage Tables page. The Manage Tables page appears when you select Schema on the Manage Tables page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema</td>
<td>Selects the schema for the tables and views you are importing.</td>
</tr>
</tbody>
</table>
| Table Type| The type of the table to which the schema or view is applied. The list 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. |
| Table Name | Specify the table name. Table names are case sensitive.                    |
| Search    | Click to search for the specified table.                                   |
| 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. |

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 adapter Poll for a New or Changed Records page.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
</table>
| Create New| Opens the Create Relation page with these options:  
• Parent Table — selects the parent table for the relationship between tables.  
• Child Table — selects the child table for the relationship between tables.  
• Relationship — defines the relationship between the parent and child tables.  
• Attribute Name — Applies attributes to the table relationship.  
• Mapping — Displays the mapping for the table relationship. |
| Detach    | Opens the Relationships list in a new window.                              |
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 adapter Poll for a New or Changed Records 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 for new records or events.</td>
</tr>
<tr>
<td>Rejected Value</td>
<td>Set to <strong>REJECTED</strong>. If the incoming message is greater than the 10 MB threshold size, that particular record is updated to <strong>REJECTED</strong> instead of <strong>READ</strong>. If the outbound operation returns a response greater than the 10 MB threshold size, the response message is ignored and a fault response is sent to the calling client.</td>
</tr>
</tbody>
</table>

Table Operation Page

You can update or insert multiple records in a single request.

**Topics:**
- Relationships Page
- Create Relationship Page
- Attribute Filtering Page
- Operations on Table Page

Import Tables Page

Filter and select the tables to import based on the selected schema. These tables are used to generate a SQL statement based on the operation selected.

You can import the following number of tables:
- A maximum of three tables for insert, update, and insert or update actions
- A maximum of five tables for the select - operation on table feature
- A maximum of five tables for the polling feature
Relationships Page

Review the relationships between the selected tables and optionally create, remove, or rename relationships. These relationships are used in the insert or update SQL statements.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships Table</td>
<td>Displays the relationships defined on the root database table and any related tables (one-to-one or one-to-many).</td>
</tr>
<tr>
<td>Create</td>
<td>Click to create new relationships.</td>
</tr>
<tr>
<td>Remove</td>
<td>Click to remove a selected relationship.</td>
</tr>
<tr>
<td>Rename</td>
<td>Click to rename a selected relationship.</td>
</tr>
</tbody>
</table>

Create Relationship Page

Specify the parent and child relationships to use in the SQL statement.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Table</td>
<td>Select the parent table.</td>
</tr>
<tr>
<td>Child Table</td>
<td>Select the child table.</td>
</tr>
</tbody>
</table>
| Mapping Type     | Select the mapping type (one-to-many, one-to-one, or one-to-one with the foreign key on the child table). For example, if you selected Employees as the parent table and Departments as the child table, the following options are displayed:  
  • Employees has a 1:1 Relationship with Departments  
  • Employees has a 1:1 Relationship with Departments (Foreign Key on Child table)  
  • Employees has a 1:M Relationship with Departments |
| Parent and Child Table | Associate the foreign key fields to the primary key fields. |
| Relationship Name | Optionally name the relationship (a default name is generated). |
Attribute Filtering Page

Filter out the attributes to exclude.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes Tree</td>
<td>Deselect any attributes to exclude from the database query. You cannot exclude primary key attributes.</td>
</tr>
</tbody>
</table>

Operations on Table Page

Select the database tables. To use the bulk extract feature, you must choose the SELECT operation from the Perform an Operation On a Table list on the Basic Info page.

<table>
<thead>
<tr>
<th>Element on Table Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema</td>
<td>Select the database schema that includes the tables to process.</td>
</tr>
<tr>
<td>Table Name</td>
<td>Enter a filter with which to search the schema (for example, %TAB to search for tables with TAB in the name).</td>
</tr>
<tr>
<td>Table Type</td>
<td>Specify the table type filter to get a subset of the appropriate database objects, then click Search. • ALL • TABLE • VIEW</td>
</tr>
<tr>
<td>Filter By</td>
<td>Enter the initial letters to filter the display of table names.</td>
</tr>
<tr>
<td>Table Names</td>
<td>Select the tables to import.</td>
</tr>
<tr>
<td></td>
<td>Note: It is recommended that you to import the tables together for the adapter to automatically recognize the relationship. If you import the tables separately, you must explicitly create the table relationship.</td>
</tr>
<tr>
<td>Import Tables</td>
<td>Click to import the tables. The page is refreshed for you to select the parent database table.</td>
</tr>
<tr>
<td>Select the parent database table</td>
<td>Select the parent (root) table from the list. If using multiple related tables, this is the top-level parent table in the relationship. After making your selection, the page is refreshed for you to view and edit the table relationships.</td>
</tr>
<tr>
<td>Add</td>
<td></td>
</tr>
<tr>
<td>Review and manage parent database table relationships</td>
<td>Click Edit to view and edit the table relationships. The relationships automatically identified by the adapter are displayed. See Review and manage parent database table relationships Option.</td>
</tr>
</tbody>
</table>
**Review and filter columns from selected database tables**

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review and filter columns from selected database tables</td>
<td>Click <strong>Edit</strong> to view and edit the table attributes. You can deselect any attributes to exclude from the database queries. Primary key attributes cannot be excluded. See Review and filter columns from selected database tables Option.</td>
</tr>
</tbody>
</table>
| Review and edit SQL query | Click **Edit** to view and edit the default SQL query. See Review and edit SQL query Option.  
**Note:** This field is available for a Select operation on the table. |

**Review and manage parent database table relationships Option**

**Table 3-1**  - Review and manage parent database table relationships Option

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create New Relations</td>
<td>Click to create a new relationship.</td>
</tr>
<tr>
<td>Relations</td>
<td>View the existing parent and child table relations automatically created by the adapter.</td>
</tr>
</tbody>
</table>

**Review and filter columns from selected database tables Option**

**Table 3-2**  - Review and filter columns from selected database tables Option

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes Tree</td>
<td>View and deselect attributes automatically created by the adapter.</td>
</tr>
</tbody>
</table>

**Review and edit SQL query Option**

**Note:**

This is only applicable for a Select operation on a table.

**Table 3-3**  - Review and edit SQL query Option

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Edit</td>
<td>Click to manually edit the query in the SQL Query field.</td>
</tr>
</tbody>
</table>
Table 3-3  (Cont.) - Review and edit SQL query Option

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
</table>
| Edit using Expression Builder | Click to edit the query in the Expression Builder.  
  • **Add New**: Click to add new criteria to the SQL query.  
    1. Click **Add New**.  
    2. In the **First Argument** field, click **Edit**, and select the argument to add (for example, `deptno`).  
    3. In the **Operator** field, select the operator to use for the comparison from the dropdown list (for example, `=`).  
    4. In the **Second Argument** field, select the option to use:  
      -- **Literal**: Click to specify a value.  
      If selected, you are prompted to select the data type (for example, integer) and specify the value.  
      -- **Parameter**: Click to specify a bind parameter.  
      -- **Query Key**: Click to run the comparison against another column in the table.  
  
  New criteria is appended to the SQL query with a **WHERE** clause. If you add subsequent SQL queries, they are appended to the SQL query with an **AND** clause  
  • **Add Nested**: Click to add nested criteria to the SQL query.  
  • **Edit**: Click the edit the SQL criteria you specified.  
  • **Remove**: Click the edit the SQL criteria you specified.  
  Click to edit the query with the Expression Builder.  

| Maximum Number of Records to be fetched | Select the number of records to fetch with this SQL query. |
Summary Page

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

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
</table>
| Summary   | 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 Back. Click Cancel to cancel your configuration details. |
Implement Common Patterns Using the Microsoft SQL Server Adapter

You can use the Microsoft SQL Server Adapter to implement the following common patterns.

Topics:
• Define a Select Operation on Database Tables

Define a Select Operation on Database Tables

You can define a `SELECT` operation to perform against database tables. This section provides a high level overview of creating an integration in which a Microsoft SQL Server Adapter is configured as an invoke connection to retrieve table records from the Microsoft SQL Server.

To define a `SELECT` operation on database tables:
1. Configure SOAP Adapter and Microsoft SQL Server Adapter connections.
2. Select **App Driven Orchestration** in the Create Integration - Select a Style dialog.
3. Add and configure the SOAP Adapter as a trigger connection in the integration. The SOAP Adapter is configured to accept an input and return the response received from the invoke connection.
4. Add the Microsoft SQL Server Adapter as an invoke connection in the integration. This invokes the Adapter Endpoint Configuration Wizard.
5. On the Basic Info page, select **Perform an Operation On a Table** as the type of operation to perform and **Select** as the operation to perform on the table.
6. On the Operate On Table page, specify the schema and tables to import, and click **Import Tables**. For this example, the following values are specified.
   • **Schema**: HR
   • **Table Type**: TABLE
   • **Table Name**: %TAB
   • **Selected Tables**: EMPLOYEE_TAB and DEPARTMENT_TAB. The tables are imported together for the Microsoft SQL Server Adapter to recognize the relation between the tables.
The page is refreshed for you to select the parent (root) database table.

7. Select the parent table (for this example, `DEPARTMENT_TAB` is selected).

This page enables you to:
- View the automatically created table relationships and create new ones.
- View and deselect attributes.
- View and edit the automatically created SQL query.

8. If you want to edit the automatically created SQL query, click **Edit** to the right of **Review and edit SQL Query**.
   a. Click **Edit using Expression Builder**. You can also manually edit the SQL query by clicking **SQL Edit**.
b. Click **Add New** to add new criteria to the SQL query. The automatically created SQL query is displayed below the link.

![Add New Criteria](image)

```
SELECT DEPTNO, DEPTNAME, LOC FROM DEPARTMENT_TAB
```

c. Specify values for the following fields, and click **OK**.
   - **First Argument**
   - **Operator**
   - **Second Argument**

For example:

![Expression](image)

The criteria you specify are appended to the existing SQL query as part of a **WHERE** clause. Any additional SQL query criteria you specify are appended as part of an **AND** clause. For example:

```
SELECT DISTINCT t0.DEPTNO, t0.DEPTNAME, t0.LOC FROM DEPARTMENT_TAB t0, EMPLOYEE_TAB t1
WHERE ((t0.DEPTNO = #deptno) AND (t1.EMPID > 999)) AND ((1.DEPTNO = t0.DEPTNO))
```

d. Click **OK**.

9. Click **Next**.

10. View your selections on the Summary page. Links to the tables you selected to import and SQL query you specified are provided.

![Summary](image)

11. Click **Done** to exit the Adapter Endpoint Configuration Wizard.
12. Complete the integration by performing mapping and tracking tasks.

13. Activate the integration.

14. Copy the link to invoke the integration from under the How to Run link.

15. Invoke the integration from a tool such as the SOAP UI.

16. Review the values returned by the Microsoft SQL Server Adapter.