

Oracle® Cloud

Using the IBM DB2 Adapter with Oracle Integration Generation 2



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The Oracle logo, consisting of the word "ORACLE" in white, uppercase, sans-serif font, centered within a solid red square.

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Preface

This guide describes how to configure this adapter as a connection in an integration in Oracle Integration.



Note:

The use of this adapter may differ depending on the features you have, or whether your instance was provisioned using Standard or Enterprise edition. These differences are noted throughout this guide.

Topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Diversity and Inclusion](#)
- [Related Resources](#)
- [Conventions](#)

Audience

This guide is intended for developers who want to use this 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>.

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Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and

partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Related Resources

See these Oracle resources:

- Oracle Cloud
<http://cloud.oracle.com>
- *Using Integrations in Oracle Integration Generation 2*
- *Using the Oracle Mapper with Oracle Integration Generation 2*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Understand the IBM DB2 Adapter

Review the following conceptual topics to learn about the IBM DB2 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:

- [IBM DB2 Adapter Capabilities](#)
- [IBM DB2 Adapter Restrictions](#)
- [What Application Version Is Supported?](#)
- [About IBM DB2 Adapter Use Cases](#)
- [Workflow to Create and Add an IBM DB2 Adapter Connection to an Integration](#)

Note:

There are overall service limits with Oracle Integration. A service limit is the quota or allowance set on a resource. See [Service Limits](#).

IBM DB2 Adapter Capabilities

The IBM DB2 Adapter enables you to integrate the IBM DB2 Database residing behind the firewall of your on-premises environment with Oracle Integration through use of the on-premises connectivity agent. Use the IBM DB2 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 IBM DB2 Database can be synchronized with Oracle Fusion Cloud Human Capital Management using Oracle Integration. In addition, use the IBM DB2 Adapter to execute SQL queries or stored procedures in the IBM DB2 Database. For example, quotes in Oracle Oracle Fusion Cloud Configure, Price, Quote can be created as `Orders` in the on-premises IBM DB2 Database by sending SQL statements or stored procedures using the IBM DB2 Adapter.

The IBM DB2 Adapter provides the following capabilities:

- Support for invocation of stored procedures in the IBM DB2 Database.
- 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 IBM DB2 Database. The IBM DB2 Adapter supports distributed polling. Distributed polling helps eliminate duplicate polling of the same records.
- 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 bulk data import and extract by choosing the **SELECT** operation from the **Perform an Operation On a Table** list on the Basic Info page.
- 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.

The IBM DB2 Adapter is one of many predefined adapters included with Oracle Integration. You can configure the IBM DB2 Adapter as a connection in an integration in Oracle Integration.

Supported Data Types for SQL Stored Procedures

The IBM DB2 Adapter supports the following data types for SQL stored procedures.

SQL Data Type	XML Schema Type
BIGINT	long
BLOB	base64Binary
CHAR FOR BIT DATA	
VARCHAR FOR BIT DATA	
CHARACTER	string
CLOB	
VARCHAR	
DATE	dateTime
TIME	
TIMESTAMP	
DECIMAL	decimal
DOUBLE	double
INTEGER	int
REAL	float
SMALLINT	short

IBM DB2 Adapter Restrictions

Note the following IBM DB2 Adapter restrictions.

- The IBM DB2 Adapter can only be used with the on-premises connectivity agent.
- Database schema names with hyphens (-) are not supported.
- The database password length cannot exceed 20 characters.
- All integrations that include stored procedure, PureSQL, or operation on table database operations must finish within 240 seconds. Otherwise, the query times out and a `Limit Exceeded` error occurs.



Note:

There are overall service limits for Oracle Integration. A service limit is the quota or allowance set on a resource. See [Service Limits](#).

What Application Version Is Supported?

For information about which application version is supported by this adapter, see the [Connectivity Certification Matrix](#).

See [Connectivity Certification Matrix](#).

About IBM DB2 Adapter Use Cases

The IBM DB2 Adapter can be used in scenarios such as the following:

- You can create an integration that includes a SOAP Adapter connection on the trigger (inbound) side and a IBM DB2 Adapter on the invoke (outbound) side. For example, when configuring the invoke IBM DB2 Adapter, you can select a stored procedure that enables you to pass an employee ID as an inbound parameter from the SOAP Adapter to an on-premises IBM DB2 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.
- You can configure the IBM DB2 Adapter as a trigger that can poll on a table. It can poll on a table with a logical delete column and send the records to the outbound adapters.

Workflow to Create and Add an IBM DB2 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.

Step	Description	More Information
1	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.	Create an IBM DB2 Adapter Connection
2	Create the integration. When you do this, you add trigger and invoke connections to the integration.	Create Integrations and Add the IBM DB2 Adapter Connection to an Integration
3	Map data between the trigger connection data structure and the invoke connection data structure.	Map Data in <i>Using Integrations in Oracle Integration Generation 2</i>
4	(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).	Manage Lookups in <i>Using Integrations in Oracle Integration Generation 2</i>
5	Activate the integration.	Manage Integrations in <i>Using Integrations in Oracle Integration Generation 2</i>
6	Monitor the integration on the dashboard.	Monitor Integrations in <i>Using Integrations in Oracle Integration Generation 2</i>
7	Track payload fields in messages during runtime.	Assign Business Identifiers for Tracking Fields in Messages and Manage Business Identifiers for Tracking Fields in Messages in <i>Using Integrations in Oracle Integration Generation 2</i>
8	Manage errors at the integration level, connection level, or specific integration instance level.	Manage Errors in <i>Using Integrations in Oracle Integration Generation 2</i>

2

Create an IBM DB2 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 for creating a connection with Oracle Integration. Contact your IBM DB2 Database administrator for this information.

1. Ensure that you have write permissions to the database.
2. Ensure that you have the required permissions to run stored procedures and SQL statements.
3. Know the database URL, including the hostname or IP address and the port number.
4. Know the database name.
5. Know the username and password for connecting to the database.

Create a Connection

Before you can build an integration, you have to create the connections to the applications with which you want to share data.

To create a connection in Oracle Integration:

1. In the left navigation pane, click **Home > Integrations > 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](#).)

3. In the **Create Connection — Select Adapter** dialog, select the adapter to use for this connection. To find the adapter, scroll through the list, or enter a partial or full name in the **Search** field and click

**Search.**

4. In the Create Connection dialog, enter the information that describes this connection.
 - a. 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, don't include blank spaces (for example, SALES OPPORTUNITY).
 - b. Enter optional keywords (tags). You can search on the connection keywords on the Connections page.
 - c. Select the role (direction) in which to use this connection (trigger, invoke, or both). Only the roles supported by the 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, you'll get an error when you try to drag the adapter into the section you didn't select. For example, let's say you configure a connection for the Oracle Service Cloud (RightNow) Adapter as only an **invoke**. Dragging the adapter to a **trigger** section in the integration produces an error.
 - d. Enter an optional description of the connection.

5. Click **Create**.

Your connection is created. You're now ready to configure the connection details, such as connection properties, security policies, connection login credentials, and (for certain connections) agent group.

Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Connection Properties** section.
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.

Configure 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. Go to the **Security** section.
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.

Configure 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**.

To configure an agent group, you must download and install the on-premises connectivity agent. See *Download and Run the Connectivity Agent Installer and About Connectivity Agents and Integrations Between On-Premises Applications and Oracle Integration in Using Integrations in Oracle Integration Generation 2*.

Test the Connection

Test your connection to ensure that it's configured successfully.

1. In the page title bar, click **Test**. What happens next depends on whether your adapter connection uses a Web Services Description Language (WSDL) file. Only some adapter connections use WSDLs.

If Your Connection...	Then...
Doesn't use a WSDL	The test starts automatically and validates the inputs you provided for the connection.
Uses a WSDL	A dialog prompts you to select the type of connection testing to perform: <ul style="list-style-type: none"> • 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.

2. Wait for a message about the results of the connection test.
 - If the test was successful, then the connection is configured properly.
 - If the test failed, then edit the configuration details you entered. Check for typos, verify URLs and credentials, and download the diagnostic logs for additional details. Continue to test until the connection is successful.
3. When complete, click **Save**.

3

Add the IBM DB2 Adapter Connection to an Integration

When you drag the IBM DB2 Adapter into an integration, the Adapter Endpoint Configuration Wizard appears. This wizard guides you through configuration of IBM DB2 Adapter endpoint properties.

These topics describe the wizard pages that guide you through configuration of the IBM DB2 Adapter as a trigger or an invoke in an integration.

Topics:

- [Basic Information Page](#)
- [Trigger Polling Page](#)
- [Invoke Stored Procedure Operation Page](#)
- [Invoke SQL Statement Page](#)
- [Summary Page](#)



Note:

- The IBM DB2 Adapter does not support the regeneration of WSDL artifacts. See *Regenerate a WSDL File for Integrations (in Using Integrations in Oracle Integration Generation 2)*.
- You cannot edit the existing trigger IBM DB2 Adapter settings or delete or re-import the previously configured IBM DB2 Adapter tables. To modify an existing integration, delete the connection, drag the IBM DB2 Adapter to the trigger or invoke area of the integration, and reconfigure the IBM DB2 Adapter endpoint properties.

Basic Information Page

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

Element	Description
What do you want to call your endpoint?	<p>Identifies the connection with a meaningful name that defines the purpose of connection. For example, <code>CreateEmployeeInDB</code> for a database connection that adds new employee data. The name can include English alphabetic characters, numbers, underscores, and dashes. The name cannot include:</p> <ul style="list-style-type: none"> • Blank spaces (for example, <code>My DB Connection</code>) • Special characters (for example, <code>#;83&</code> or <code>right)now4</code>) • Multibyte characters
What does this endpoint do?	<p>Enter an optional description of the connection's responsibilities. For example: <code>This connection receives an inbound request to synchronize account information with the cloud application.</code></p>
What operation do you want to perform?	<p>Selects the operation performed by the connection in the outbound (invoke) direction:</p> <ul style="list-style-type: none"> • Invoke a Stored Procedure: Allows the selection of a stored procedure to run on the database. • Run a SQL Statement: Allows the selection of a SQL query to run against the database. • Perform an Operation On a Table — Select to perform one of the following operations on a table. You can insert, update, or extract multiple records in a single request. <ul style="list-style-type: none"> – Insert – Update – Insert or Update (Merge) – Select <p>In the inbound (trigger) direction, you can only poll for new or changed records.</p> <p>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:</p> <pre>select concat(empname, 'ss') from DB_AQ where empno=#empno</pre> <pre>select empno from DB_AQ where empname=concat(#empname, 'YY')</pre> <p>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.</p>

Trigger Polling Page

Select the root database table for the service query.

**Note:**

No order is maintained while polling records.

Topics

- [Polling Page](#)
- [Manage Tables Page](#)
- [Attributes Filtering Page](#)
- [Table Relationships Page](#)
- [Polling Strategy and Options Page](#)

Polling Page

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

Element	Description
Import Tables	Imports the schema, tables, and primary keys that you select for the service query.
Remove Tables	Removes the selected table from the service query tables list.
Review and Manage root database table relationships	Appears after importing tables. Select Edit to open the Relations page where you can view, create, and remove relationships between tables.
Review and verify tables and relationship attributes	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.
Review the polling strategy and specify polling 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.

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 Polling page.

Element	Description
Schema	Selects the schema for the tables and views you are importing.

Element	Description
Table Type	The type of the table to which the schema or view is applied. The list allows these selections: <ul style="list-style-type: none"> • 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.

Table Relationships 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 root database table relationships** option on the Polling page.

Element	Description
Create New	Opens the Create Relation page with these options: <ul style="list-style-type: none"> • 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.

Attributes Filtering Page

The following table shows the attributes in the object model created from the imported tables and the defined relationships. The Attributes Filtering page appears when you select **Review and verify table and relationship attributes** on the Polling page.

Element	Description
Attributes	Deselect any attributes to exclude from the database queries. Primary key attributes cannot be excluded.

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 **Review the polling strategy and specify polling options** on the Polling page.

Element	Description
Logical Delete Field	Selects a field in the root database table. To allow the selection, polling must be enabled in the Status column.
Read Value	Identifies the value that is used to indicate a row has been read. For example, PROCESSED. Surrounding quotes are not required.
Unread Value	Indicates the rows to process. Only rows with Logical Delete Field and column values that match the Unread Value are read.
Polling Frequency (Sec)	Specifies the polling frequency (in seconds) for new records or events.
Rejected Value	Set to REJECTED . 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.
Advanced Options	Click Edit to access the Batch Size field to specify the number of table rows to process during a single transaction. The default value is 10 .

Invoke Stored Procedure Operation Page

Enter the stored procedure operation parameters.

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.

Note:

- 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.
- 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.

Element	Description
Select Schema	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.
Select Package	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.
Select Procedure	Displays the in (inbound), out (outbound), and in/out (inbound/outbound) parameters for the selected package.
Arguments	Display the in, out, and in/out parameters that are passed with this procedure.

Invoke SQL Statement Page

Enter the SQL statement properties.

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)
```

Element	Description
SQL Query	Identifies the SQL query.
Validate SQL Query	Validates the SQL query syntax.
Status	Displays the SQL query syntax validation status. When syntax validation is successful, the message <code>Success!</code> appears.

Table Operation Page

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

 **Note:**

When you change the structure of a table (for example, you add or delete a column), you must re-import the table by doing a re-edit in the Adapter Endpoint Configuration Wizard. Go to the Import Tables page and re-import the same table, then click **OK** > **Next** > **Done** to complete the wizard. Only then are the table changes reflected in the integration.

Topics:

- [Import Tables Page](#)
- [Relationships Page](#)
- [Create Relationship Page](#)
- [Attribute Filtering 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

Element	Description
Schema	Select the schema to use. The page is refreshed to display the tables available for selection.
Name Filter	Filter the display of tables.
Available	Select the tables on which to insert or update records.
Selected	Displays the selected tables.

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.

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

Create Relationship Page

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

Element	Description
Parent Table	Select the parent table.
Child Table	Select the child 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: <ul style="list-style-type: none"> • 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.

Element	Description
Attributes Tree	Deselect any attributes to exclude from the database query. You cannot exclude primary key attributes.

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.

Operations on Table Page

Element	Description
Schema	Select the database schema that includes the tables to process.
Table Name	Enter a filter with which to search the schema (for example, %TAB to search for tables with TAB in the name).
Table Type	Specify the table type filter to get a subset of the appropriate database objects, then click Search . <ul style="list-style-type: none"> • ALL • TABLE • VIEW
Filter By	Enter the initial letters to filter the display of table names.

Element	Description
Table Names	Select the tables to import. 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.
Import Tables	Click to import the tables. The page is refreshed for you to select the parent database table.
Select the parent database table	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.
Add Remove Tables	Click to add more tables or remove tables no longer in use.
Review and manage parent database table relationships	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 .
Review and filter columns from selected database tables	Click Edit 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 .
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 <code>Select</code> operation on the table.

Review and manage parent database table relationships Option

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

Element	Description
Create New Relations	Click to create a new relationship. View the existing parent and child table relations automatically created by the adapter.

Review and filter columns from selected database tables Option

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

Element	Description
Attributes Tree	View and deselect attributes automatically created by the adapter.

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

Element	Description
SQL Edit	Click to manually edit the query in the SQL Query field.
Edit using Expression Builder	<p>Click to edit the query in the Expression Builder.</p> <ul style="list-style-type: none"> • Add New: Click to add new criteria to the SQL query. <ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> – 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. <p>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</p> <ul style="list-style-type: none"> • Add Nested: Click to add nested criteria to the SQL query. • Edit: Click to edit the SQL criteria you specified. • Remove: Click to edit the SQL criteria you specified. <p>Click to edit the query with the Expression Builder.</p>
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.

Element	Description
Summary	<p>Displays a summary of the configuration values you defined on previous pages of the wizard.</p> <p>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.</p> <p>To return to a previous page to update any values, click the appropriate tab in the left panel or click Back.</p> <p>To cancel your configuration details, click Cancel.</p>

4

Implement Common Patterns Using the IBM DB2 Adapter

You can use the IBM DB2 Adapter to implement common patterns.

Topics:

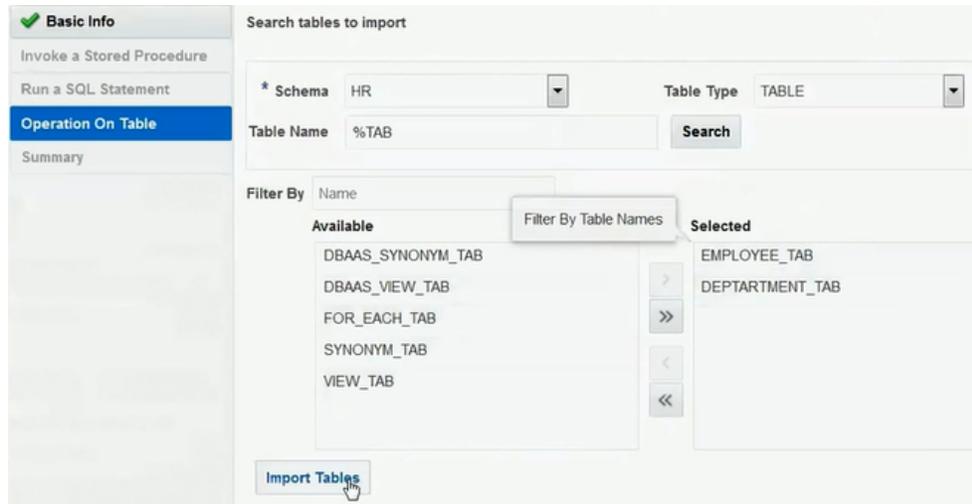
- [Define a Select Operation on Database Tables](#)

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 an IBM DB2 Adapter is configured as an invoke connection to retrieve table records from the IBM DB2 Database.

To define a `SELECT` operation on database tables:

1. Configure SOAP Adapter and IBM DB2 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 IBM DB2 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 IBM DB2 Adapter to recognize the relation between the tables.

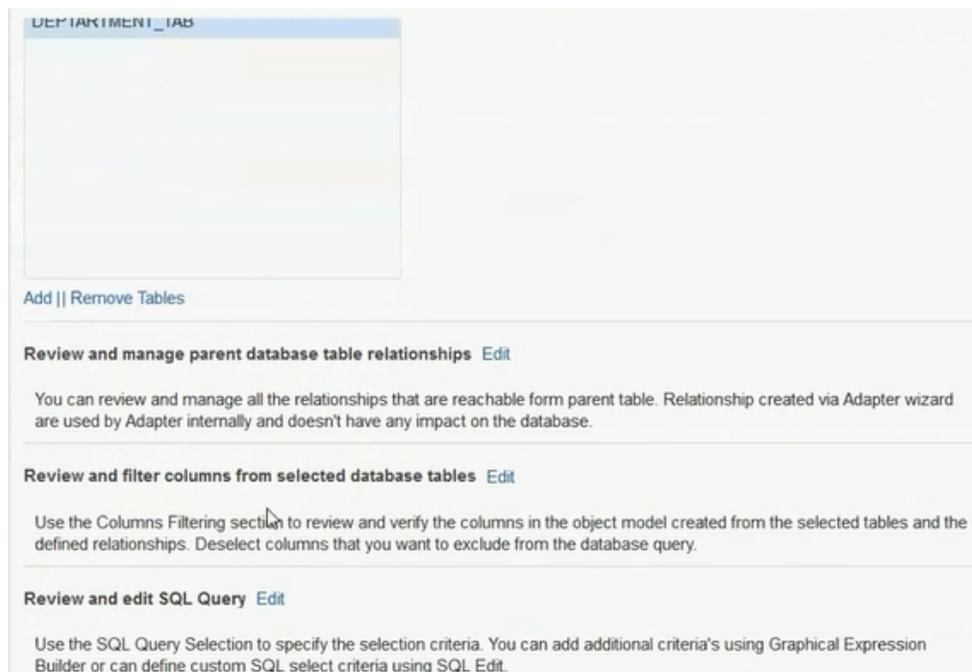


The page is refreshed for you to select the parent (root) database table.

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.



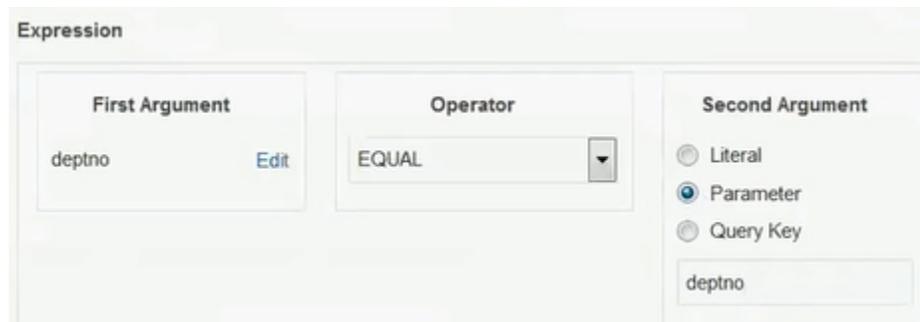
8. If you want to edit the automatically created SQL query, click **Edit** to the right of **Review and edit SQL Query**.
 - a. Click **Edit using Expression Builder**. You can also manually edit the SQL query by clicking **SQL Edit**.

- b. Click **Add New** to add new criteria to the SQL query. The automatically created SQL query is displayed below the link.



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

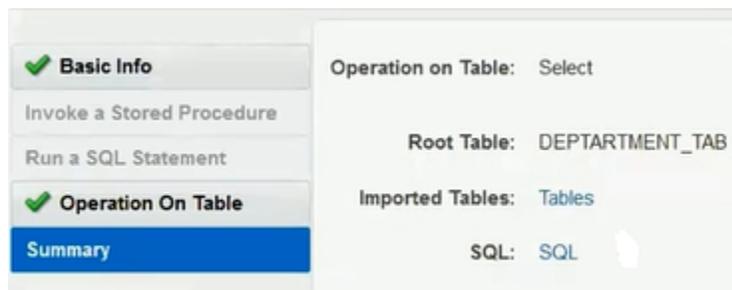
For example:



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 (t1.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.



- 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 IBM DB2 Adapter.