

Oracle® Cloud

Using the IBM DB2 Adapter with Oracle Integration 3



F45558-07
September 2024



Oracle Cloud Using the IBM DB2 Adapter with Oracle Integration 3,

F45558-07

Copyright © 2022, 2024, Oracle and/or its affiliates.

Primary Author: Oracle Corporation

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, MySQL, and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Contents

Preface

Audience	v
Documentation Accessibility	v
Diversity and Inclusion	v
Related Resources	vi
Conventions	vi

1 Understand the IBM DB2 Adapter

IBM DB2 Adapter Capabilities	1-1
Supported Data Types for SQL Stored Procedures	1-2
IBM DB2 Adapter Restrictions	1-3
What Application Version Is Supported?	1-3
About IBM DB2 Adapter Use Cases	1-3
Workflow to Create and Add an IBM DB2 Adapter Connection to an Integration	1-3

2 Create an IBM DB2 Adapter Connection

Prerequisites for Creating a Connection	2-1
Create a Connection	2-1
Configure Connection Properties	2-2
Configure Connection Security	2-3
Configure the Endpoint Access Type	2-3
Test the Connection	2-4

3 Add the IBM DB2 Adapter Connection to an Integration

Basic Information Page	3-1
Trigger Polling Page	3-2
Polling Page	3-3
Manage Tables Page	3-3
Table Relationships Page	3-4
Attributes Filtering Page	3-4
Polling Strategy and Options Page	3-4

Invoke Stored Procedure Operation Page	3-5
Invoke SQL Statement Page	3-7
Table Operation Page	3-7
Import Tables Page	3-8
Relationships Page	3-8
Create Relationship Page	3-9
Attribute Filtering Page	3-9
Operations on Table Page	3-9
Summary Page	3-11

4 Implement Common Patterns Using the IBM DB2 Adapter

Define a Select Operation on Database Tables	4-1
--	-----

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 <https://www.oracle.com/corporate/accessibility/>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <https://support.oracle.com/portal/> or visit [Oracle Accessibility Learning and Support](#) if you are hearing impaired.

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 at <http://cloud.oracle.com>
- *Using Integrations in Oracle Integration 3*
- *Using the Oracle Mapper with Oracle Integration 3*
- Oracle Integration documentation on the Oracle Help Center.

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.
monospace	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 connecting to an IBM DB2 database hosted in the cloud. Connectivity is supported only through use of the connectivity agent and the Username Password Token security policy. Direct connectivity (that is, without the connectivity agent) is not supported. To acquire a connection, you must copy the supporting JAR files to the `agenthome/thirdparty/lib` directory, and then restart the connectivity agent.
- Supports integrating with an IBM DB2 database on-premises and in the cloud using the connectivity agent.
- 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

SQL Data Type	XML Schema Type
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](#).

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 3</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 3</i>
5	Activate the integration.	Manage Integrations in <i>Using Integrations in Oracle Integration 3</i>
6	Monitor the integration on the dashboard.	Monitor Integrations in <i>Using Integrations in Oracle Integration 3</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 3</i>
8	Manage errors at the integration level, connection level, or specific integration instance level.	Manage Errors in <i>Using Integrations in Oracle Integration 3</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 must create the connections to the applications with which you want to share data.

To create a connection in Oracle Integration:

1. In the navigation pane, click **Design**, then **Connections**.
2. Click **Create**.

Note:

You can also create a connection in the integration canvas. See Define Inbound Triggers and Outbound Invokes.

3. In the Create connection panel, 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.
4. Enter the information that describes this connection.

Element	Description
Name	Enter a meaningful name to help others find your connection when they begin to create their own integrations.

Element	Description
Identifier	Automatically displays the name in capital letters that you entered in the Name field. If you modify the identifier name, don't include blank spaces (for example, SALES OPPORTUNITY).
Role	<p>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.</p> <p>For example, assume 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.</p>
Keywords	Enter optional keywords (tags). You can search on the connection keywords on the Connections page.
Description	Enter an optional description of the connection.
Share with other projects	<p>Note: This field only appears if you are creating a connection in a project.</p> <p>Select to make this connection publicly available in other projects. Connection sharing eliminates the need to create and maintain separate connections in different projects.</p> <p>When you configure an adapter connection in a different project, the Use a shared connection field is displayed at the top of the Connections page. If the connection you are configuring matches the same type and role as the publicly available connection, you can select that connection to reference (inherit) its resources.</p> <p>See Add and Share a Connection Across a Project.</p>

5. Click **Create**.

Your connection is created. You're now ready to configure the connection properties, security policies, and (for some connections) access type.

Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Properties** section.
2. Enter the host name or IP address of the database server.
3. Enter the database name.
4. Enter the port number.
5. Select the appropriate driver class.

- **weblogic.jdbc.db2.DB2Driver**: Select this option if you are using the DB2 – i7Rx or 10.5 version.
 - **com.ibm.db2.jcc.DB2Driver**: Select this option if you are using the DB2 11.x version. Download the appropriate version JAR file. See [DB2 JDBC Driver Versions and Downloads \(ibm.com\)](#). If you select this option, you must maintain the third-party JAR files in the connectivity agent directory.
 - a. Download the JAR files from [DB2 JDBC Driver Versions and Downloads \(ibm.com\)](#) based on the database version you are using.
 - b. Copy the JAR files to the `agenthome/thirdparty/lib` directory.
 - c. Restart the agent. See *Restart the Connectivity Agent in Using Integrations in Oracle Integration 3*.
6. If the DB2 server is SSL-enabled, perform the following steps:
- a. Install an SSL certificate. See *Install a Certificate on the Agent Host in Using Integrations in Oracle Integration 3*.
 - b. Add the command `:sslConnection=true;` after the database name on the Connections page. For example:

```
database_name:sslConnection=true;
```

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.

Configure the Endpoint Access Type

Configure access to your endpoint. Depending on the capabilities of the adapter you are configuring, options may appear to configure access to the public internet, to a private endpoint, or to an on-premises service hosted behind a fire wall.

Select the Endpoint Access Type

Select the option for accessing your endpoint.

Option	This Option Appears If Your Adapter Supports ...
Connectivity agent	<p>Connections to on-premises endpoints through the connectivity agent.</p> <ol style="list-style-type: none"> 1. Click Associate agent group. The Associate agent group panel appears. 2. Select the agent group, and click Use. <p>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 Creating Hybrid Integrations Using Oracle Integration in <i>Using Integrations in Oracle Integration 3</i>.</p>

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	<p>A dialog prompts you to select the type of connection testing to perform:</p> <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 and verify URLs and credentials. 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 3)*.
- 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.
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.

Element	Description
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.

Element	Description
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 threshold size, that particular record is updated to REJECTED instead of READ . If the outbound operation returns a response greater than the size allowed, the response message is ignored and a fault response is sent to the calling client. For details about supported sizes, see Service Limits in <i>Provisioning and Administering Oracle Integration 3</i> .
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. Use this field to add any necessary arguments or parameters.
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 Go 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:

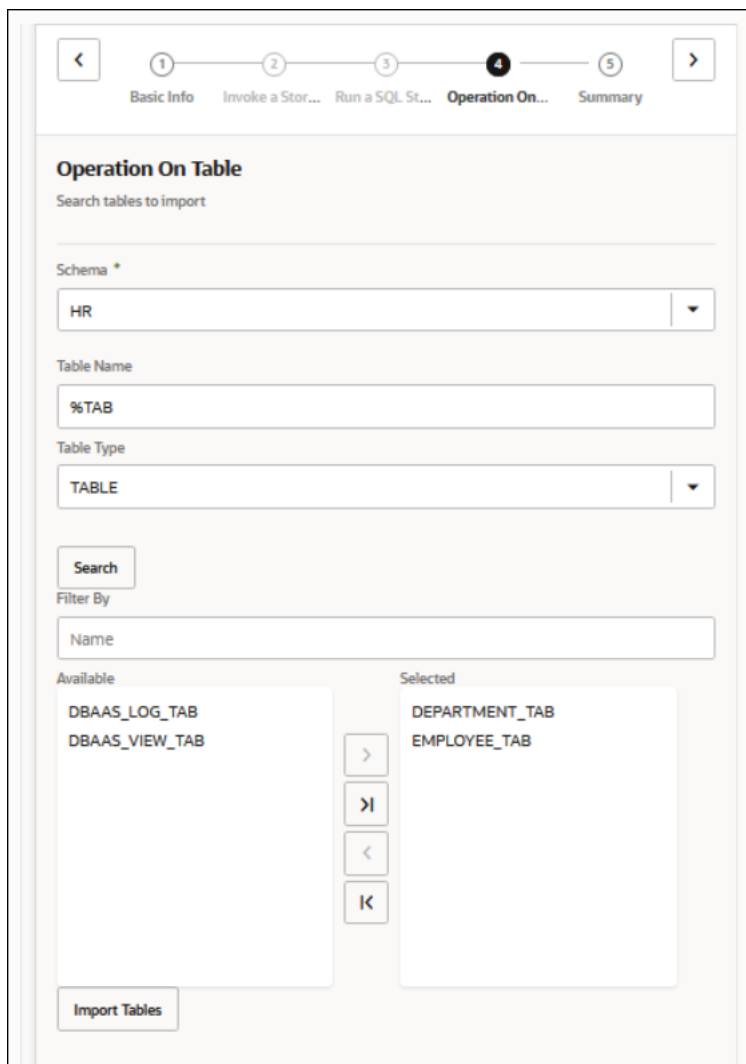
- [Define a Select Operation on Database Tables](#)

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 **Application** in the Create integration panel.
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.

Operation On Table

Select the parent database table

You must select the parent database table. If you are using multiple related tables, then this is the highest-level table (or top-level parent table) in the relationship tree. You can either add more tables or remove the ones that are no longer used.

--- select one ---

DEPARTMENT_TAB

EMPLOYEE_TAB

[Add](#) | [Remove Tables](#)

Review and manage parent database table relationships
[Edit](#)

You can review and manage all the relationships that are reachable from parent table. Relationship created via Adapter wizard are used by Adapter internally and doesn't have any impact on the database.

Review and filter columns from selected database tables
[Edit](#)

Use the Columns Filtering section to review and verify the columns in the object model created from the selected tables and the defined relationships. Deselect columns that you want to exclude from the database query.

Review and edit SQL Query
[Edit](#)

Use the SQL Query section to specify the selection criteria. You can add additional criteria's using Graphical Expression Builder or can define custom SQL select criteria using SQL Edit.

8. View your selections on the Summary page. Links to the tables you selected to import are provided.
9. Click **Done** to exit the Adapter Endpoint Configuration Wizard.
10. Complete the integration by performing mapping and tracking tasks.
11. Activate the integration.
12. Copy the link to invoke the integration from under the **How to Run** link.
13. Invoke the integration from a tool such as the SOAP UI.
14. Review the values returned by the IBM DB2 Adapter.