ORACLE

7

Configuring Invoke Connections

Objectives

After completing this lesson, you should be able to:

- Use the Adapter Endpoint Configuration Wizard for Invoke Connections
- Understand common operation invoke options for Oracle SaaS application adapters
- Create SQL statements or execute stored procedures using the ATP/ADW adapters
- Configure the six operations available in the FTP adapter
- Invoke SOAP or REST web service endpoints from an OIC integration

Agenda

- Using the Adapter Endpoint Configuration Wizard
    1. Oracle Service Cloud (RightNow)
    2. Oracle Engagement Cloud
    3. Oracle ERP Cloud
    4. Oracle HCM Cloud
    5. Oracle ATP/ADW Databases
    6. FTP Adapter Connections
    7. SOAP Adapter Connections
    8. REST Adapter Connections
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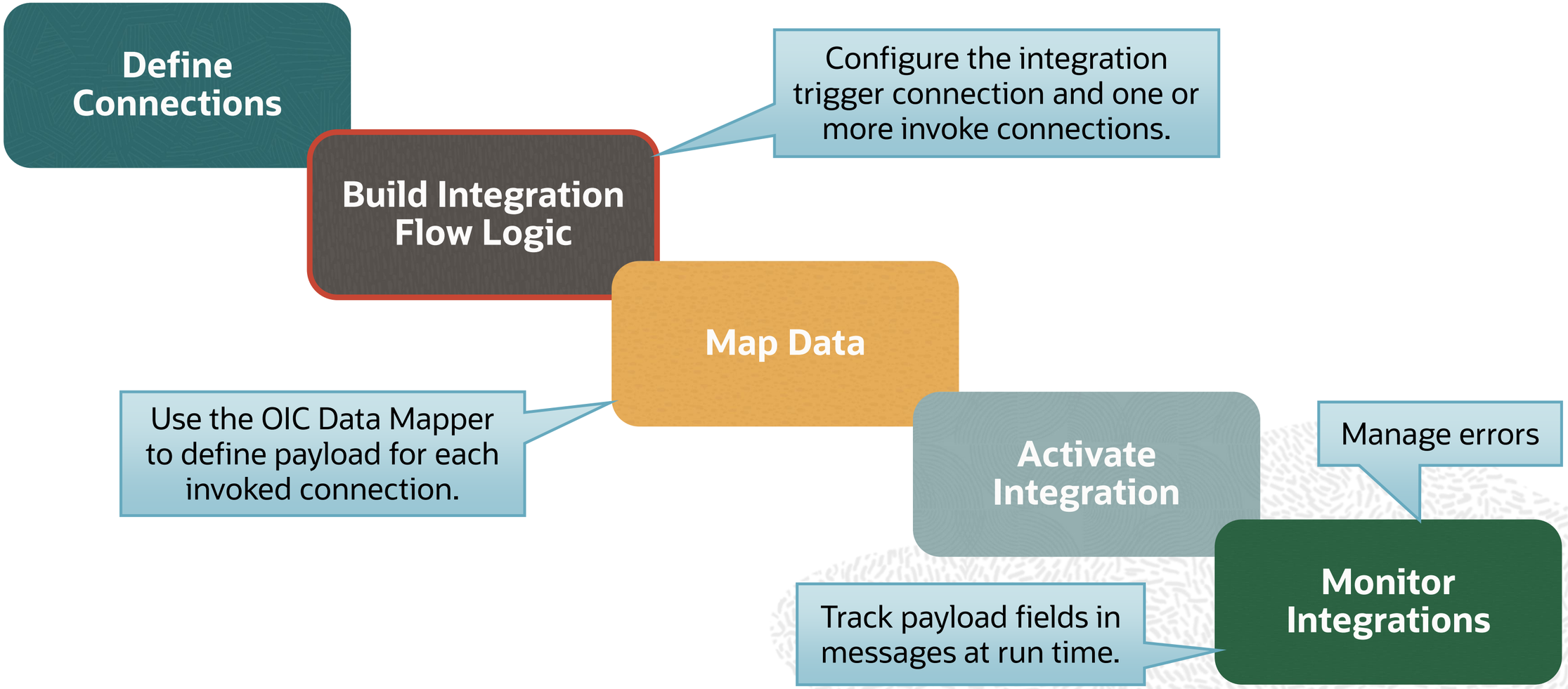
Integration Development (Review)



Message Exchange Patterns Revisited

Synchronous request/response

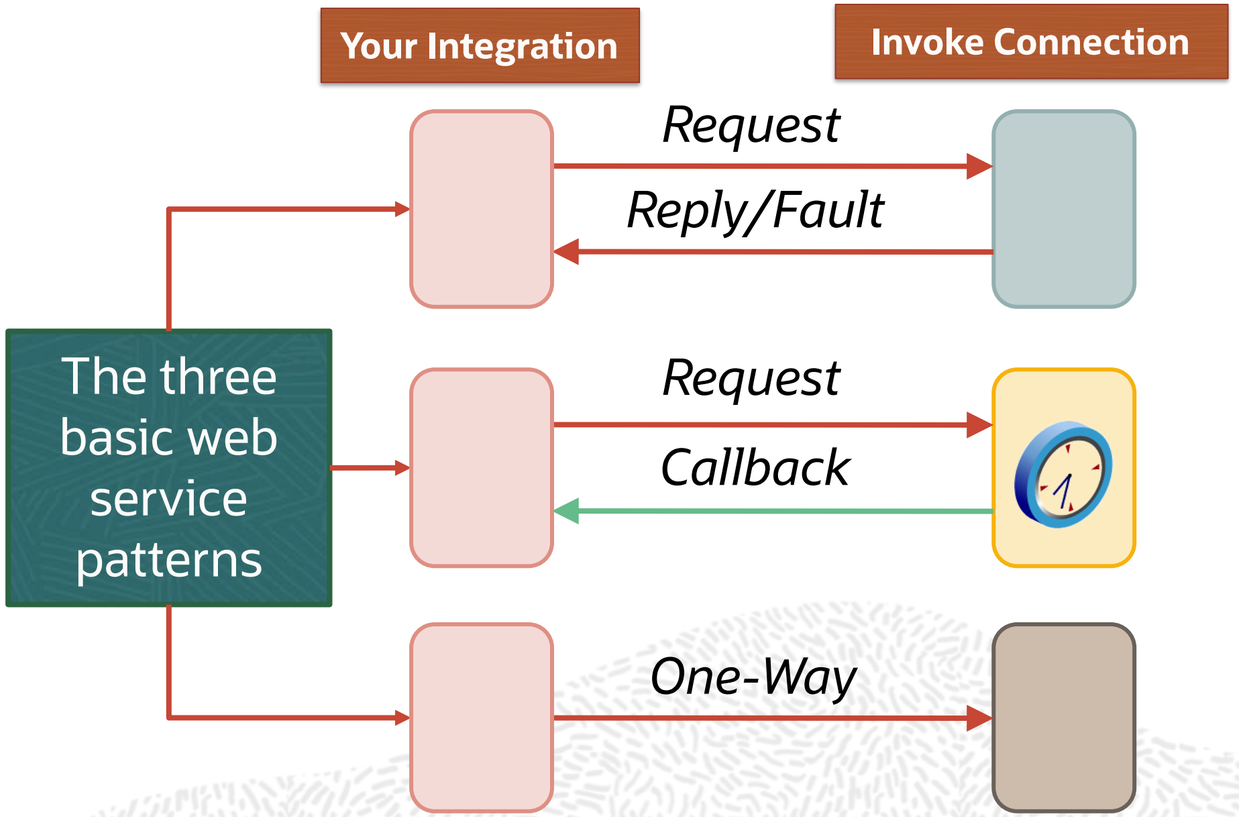
- Real-time response or error feedback
- Client blocks for the response

Asynchronous request/callback

- Client free after submission and *ACK*
- Separate service invocation for response

Asynchronous request (one-way)

- Also known as “fire and forget”
- No response message (*ACK* only)



We now consider this from the perspective of your OIC integration as the client. This lesson provides examples of Invoke Connection configuration options based on various adapter types.

Using the Adapter Endpoint Configuration Wizard

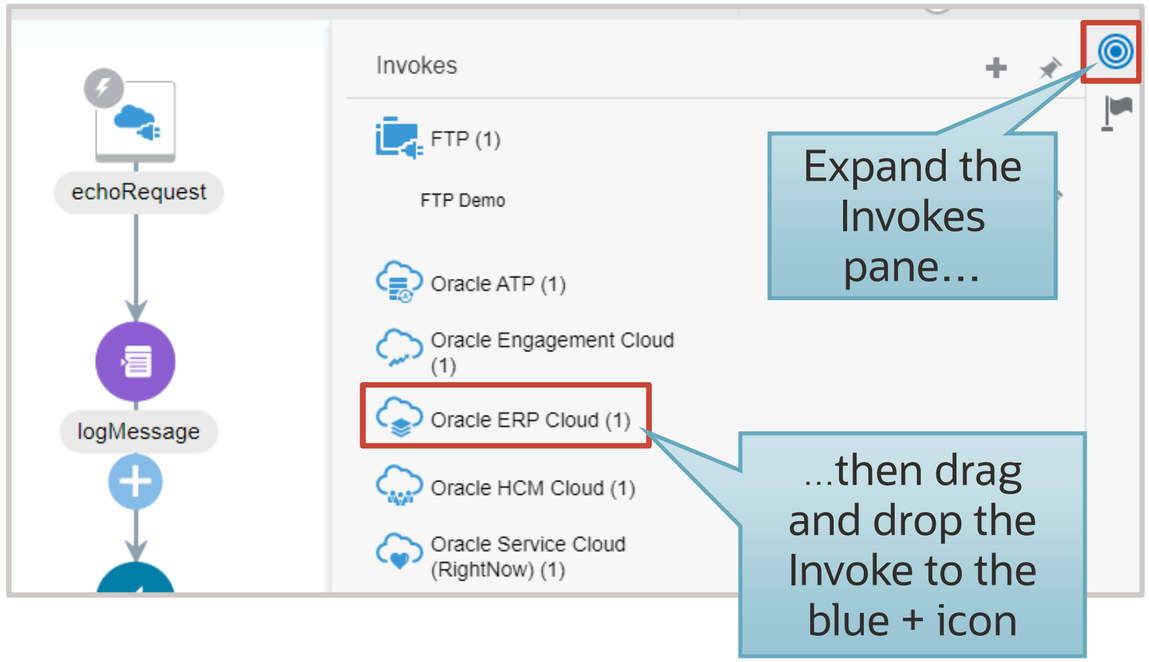
Over 60 adapters are preinstalled in your OIC environment. Almost every adapter type can be used in the Invoke role for an Integration flow.

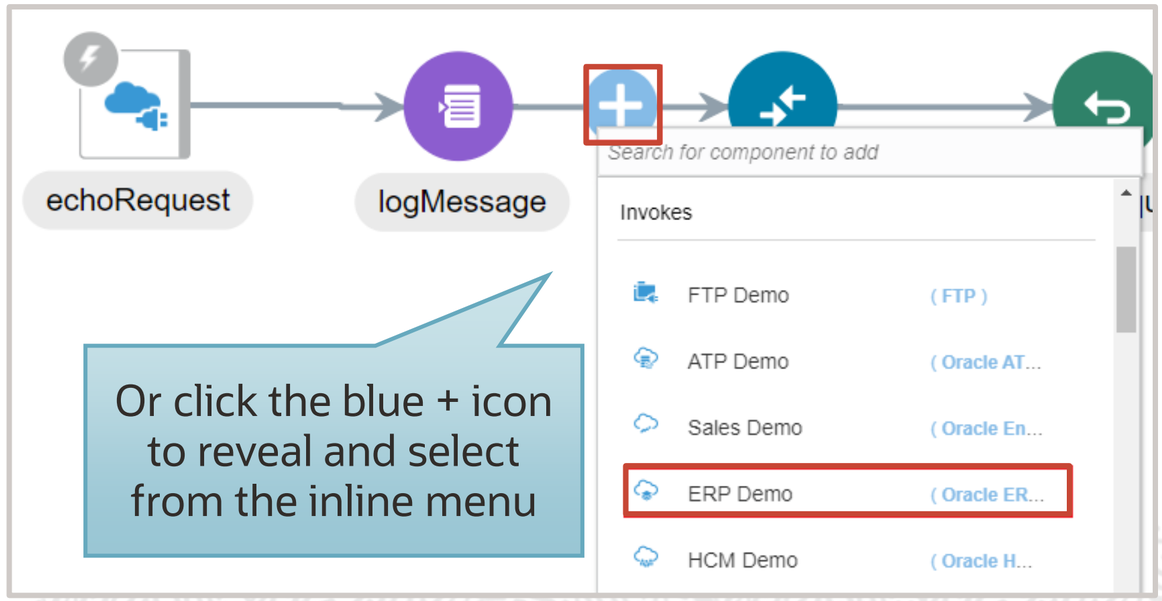
- Capabilities and details for leveraging the configuration wizard are provided for each of these separately in the OIC online documentation.

Getting Started—Invoke Connections (Review)

Anywhere within the Orchestration design canvas:

- Select an Invoke Connection to start the Adapter Endpoint Configuration Wizard

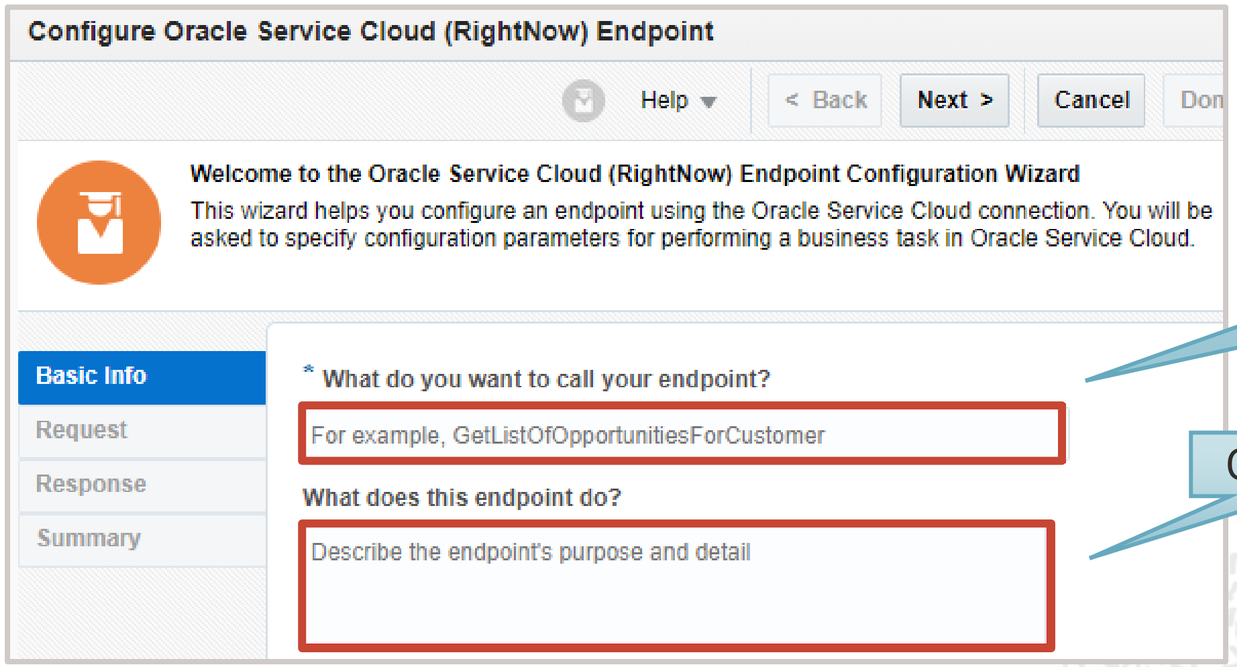




Basic Info Page (Review)

The first page of the wizard is the same for most adapters.

- Just provide a meaningful name and description



- Required
- No blank spaces or special characters
- Name must be unique within this integration flow

Optional

Let's now look at six different adapter examples…

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1. Oracle Service Cloud (RightNow)

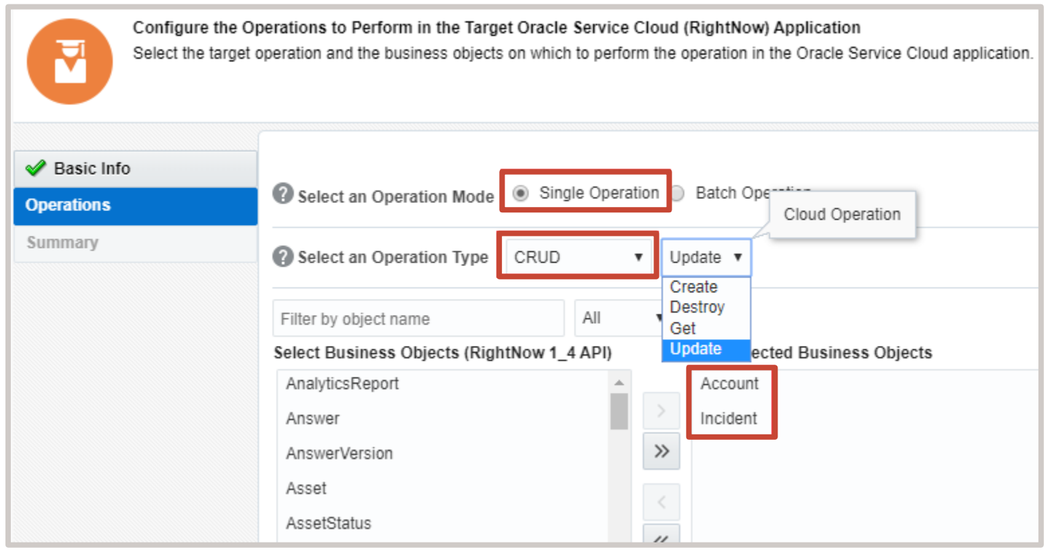
The Oracle Service Cloud Adapter enables you to invoke operations, execute ROQL queries, or download business objects as files in Oracle Service Cloud applications.

Invoke connections can be configured to invoke single or batch operations:

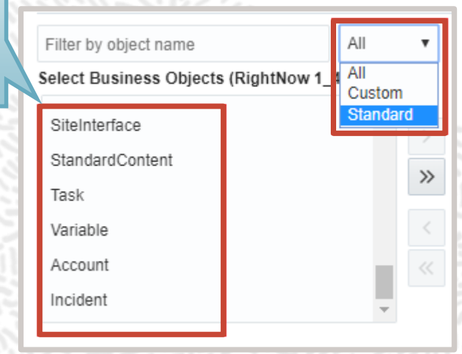
- **CRUD Operation** *(on one or more Service Cloud business objects)*
  - Create
  - Get
  - Update
  - Destroy
- **ROQL Query** *(RightNow Object Query Language)*
  - QueryCSV (with condition expression)
  - QueryObjects (with parameters)
- **File Attachment** *(Download a business object as a file attachment)*

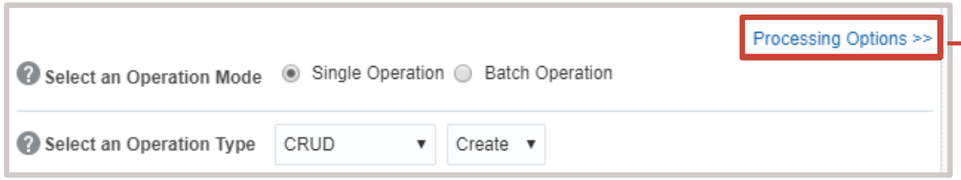
Operations Page – CRUD Operations

- Select the CRUD operation.
- Select one or more business object types to be affected by that operation.
  - *The data mapping in your integration will define the identifier(s) of which specific object(s) will be impacted.*
- Define additional processing options:
  - Suppress External Events
  - Suppress Rules
  - Suppress Response (Create only)



Both standard and custom business objects are available.





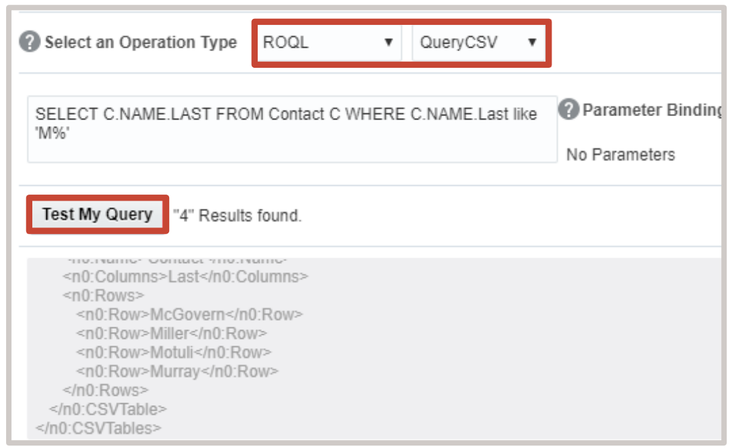
Operations Page – File Attachment or ROQL

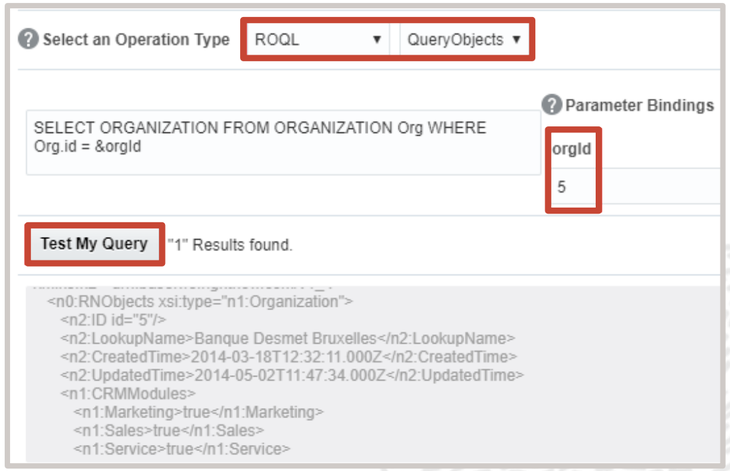
Select **File Attachment** and then select the desired business object type to be returned.

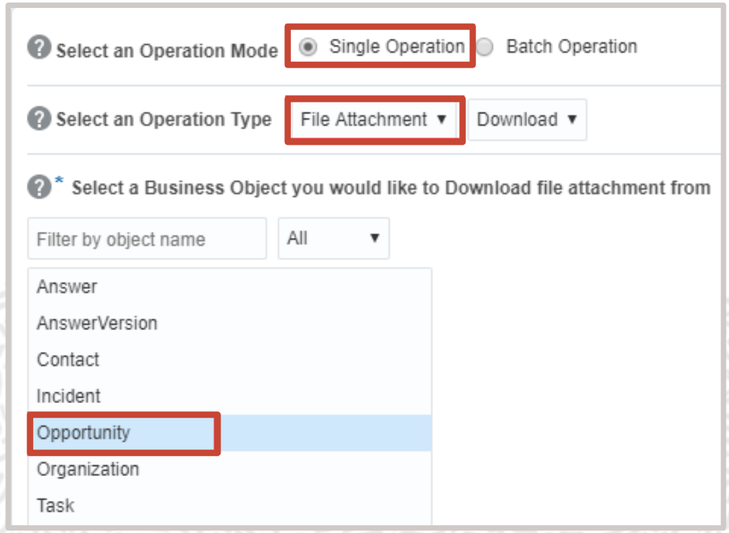
- *The data mapping in your integration will define the identifier of which object is to be returned.*

Select **ROQL** and then write the SELECT statement.

- Use the *Test My Query* button to validate.



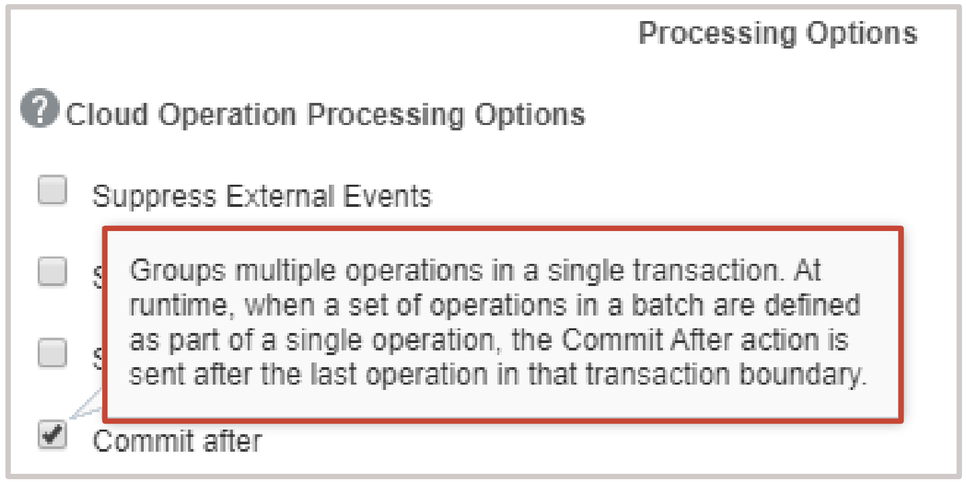


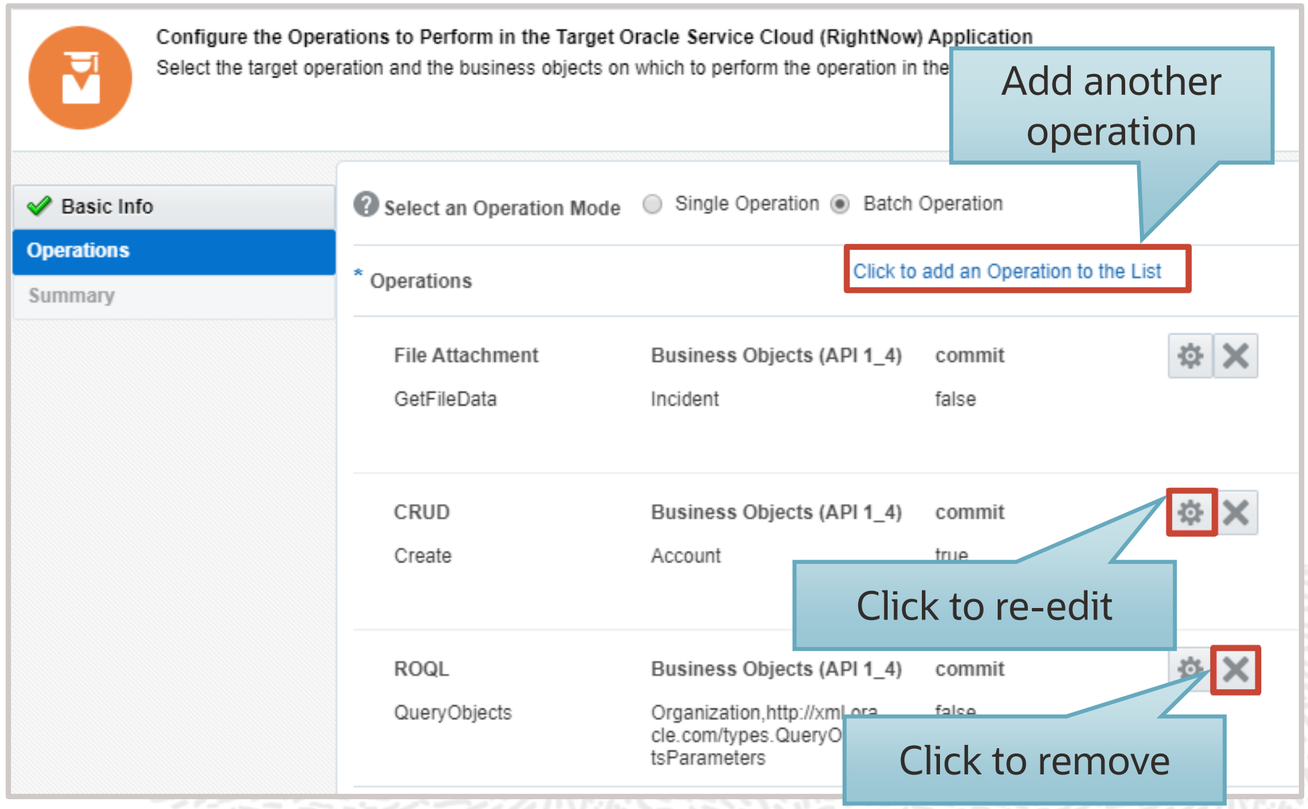


Operations Page – Batch Operations

Alternatively, you can build a collection of operations to be executed as a batch job.

- Each operation is configured separately in the configuration wizard.
- You can mix and match operation types.
- Each operation can define its own processing options, including the option to participate in a batch transaction.





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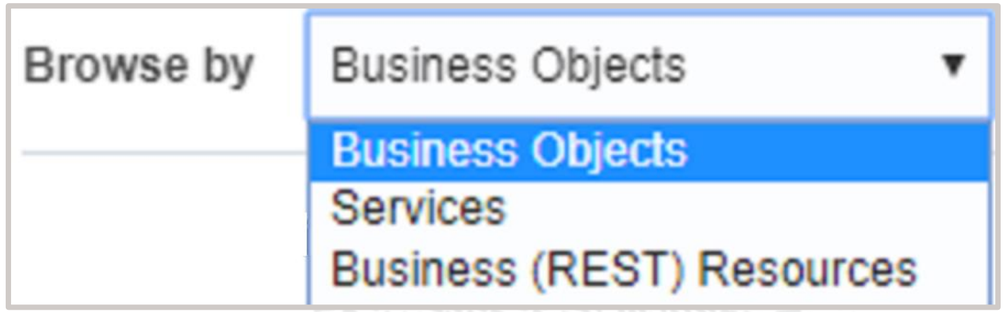
2. Oracle Engagement Cloud

The Oracle Engagement Cloud Adapter enables you to invoke operations in Oracle Engagement Cloud applications.

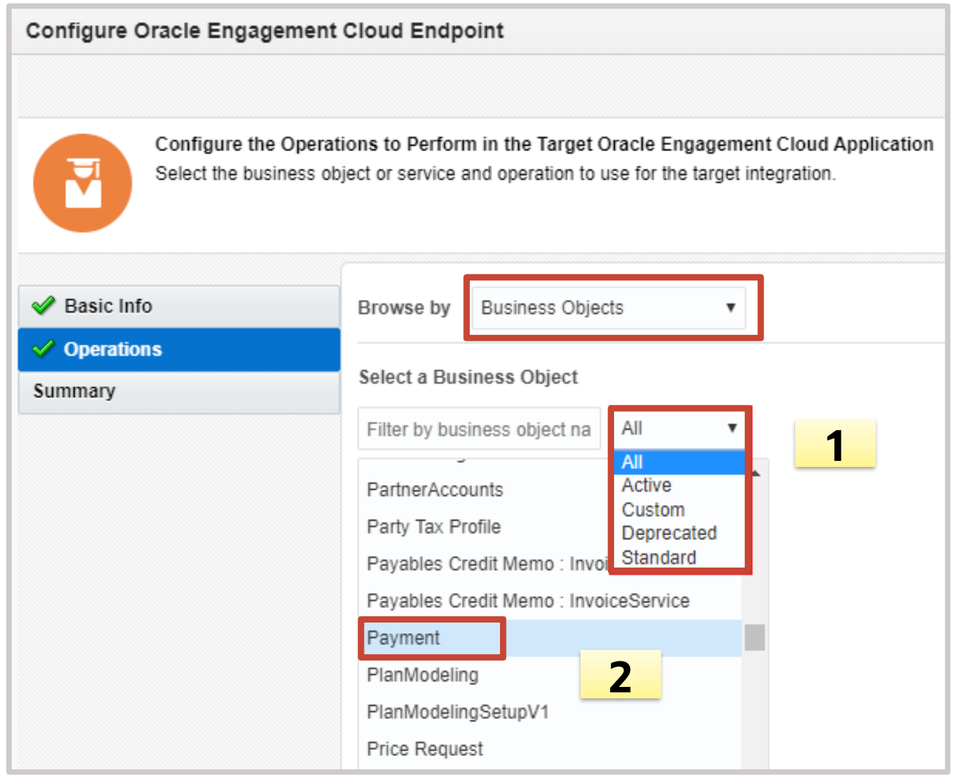
Invoke connections can be configured to invoke an operation by browsing for:

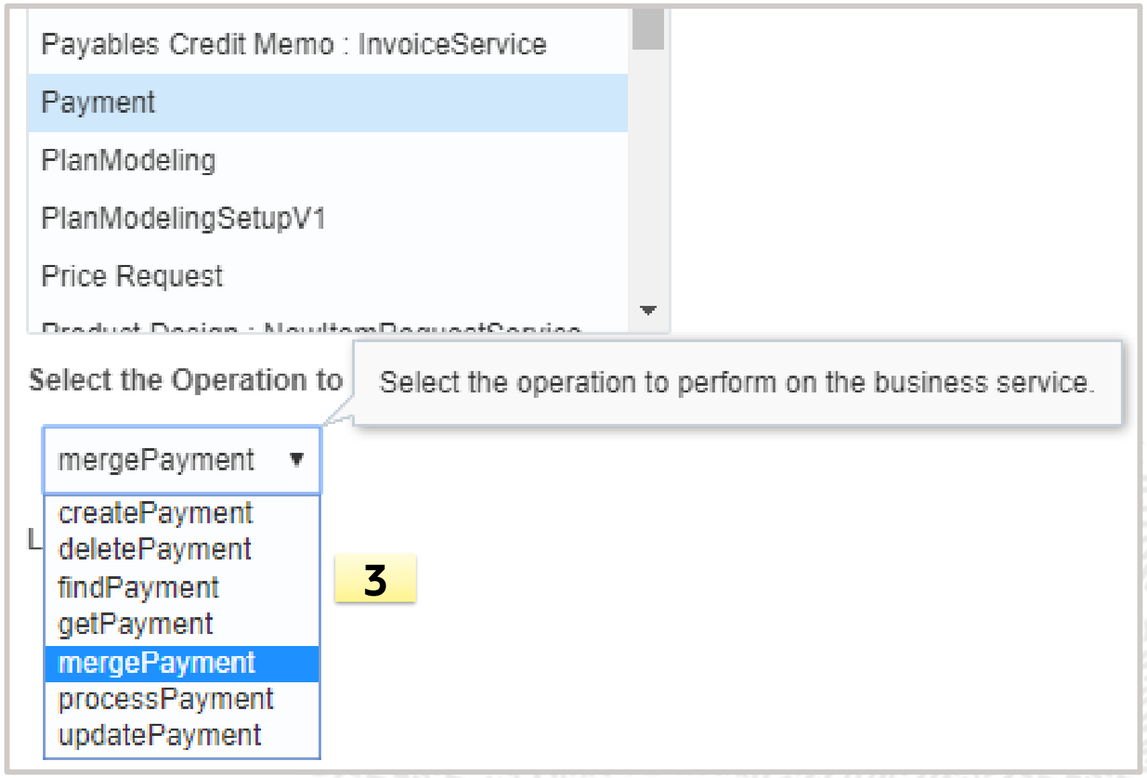
- **Business Objects**
  - Choose an available business object
  - Select an available operation on that object
- **Services**
  - Choose an available service
  - Select an available service operation
- **Business (REST) Resources**
  - Select a service application
  - Choose an available business resource (or child resource)
  - Select an available resource operation



Operations Page – Business Objects

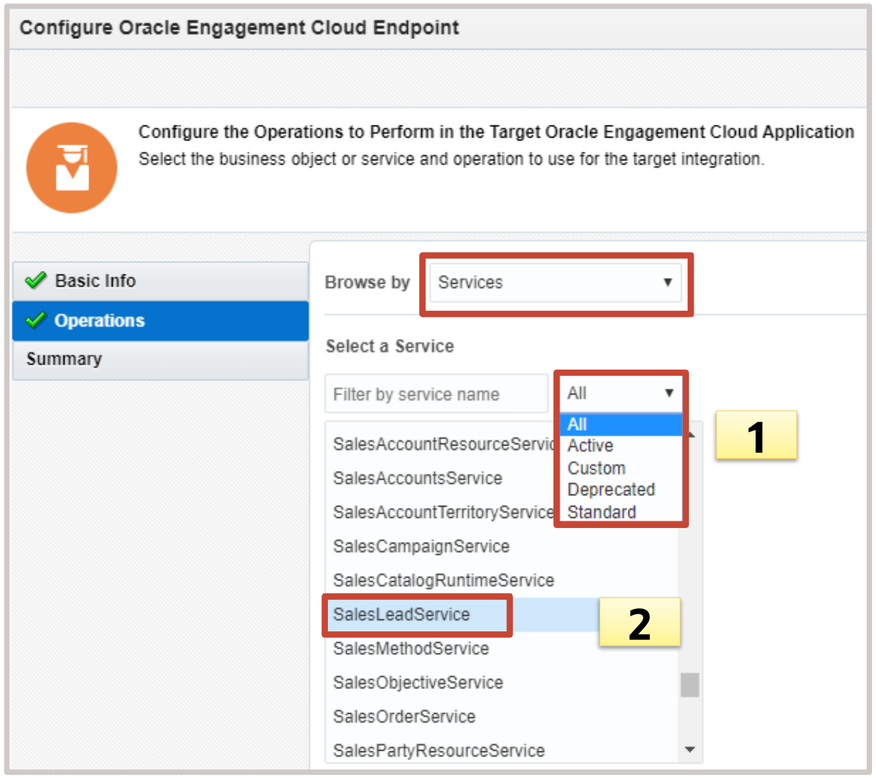
1. Filter to display the available business objects.
2. Select the business object to use.
3. Select the operation to invoke on the business object.

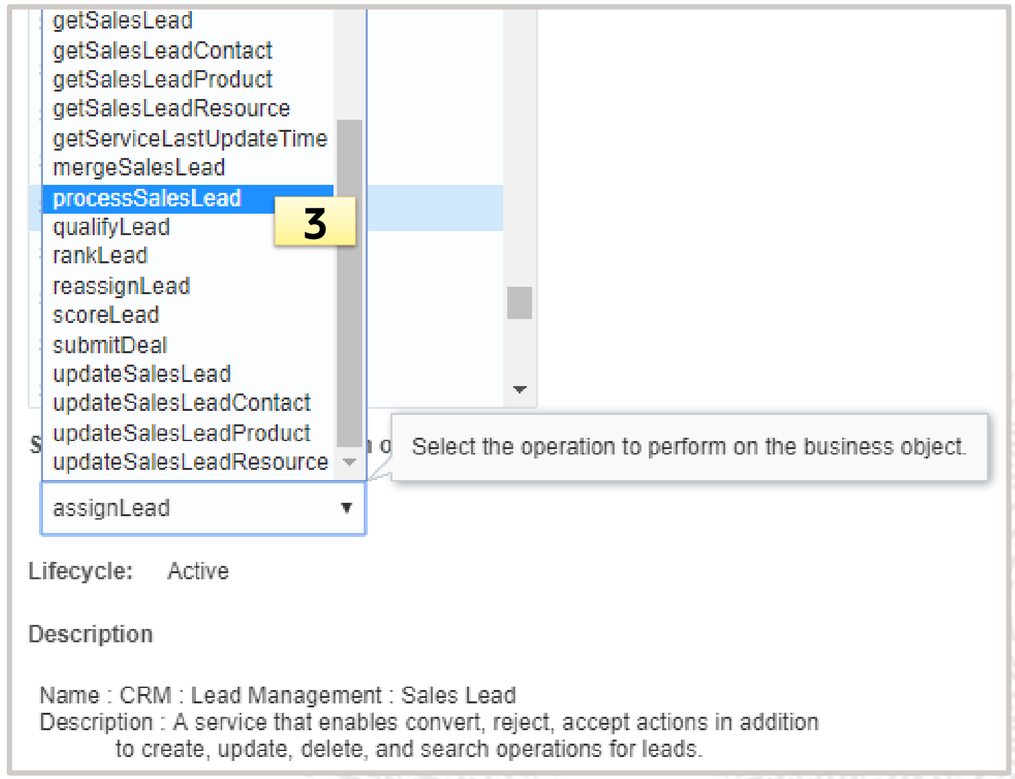




Operations Page – Services

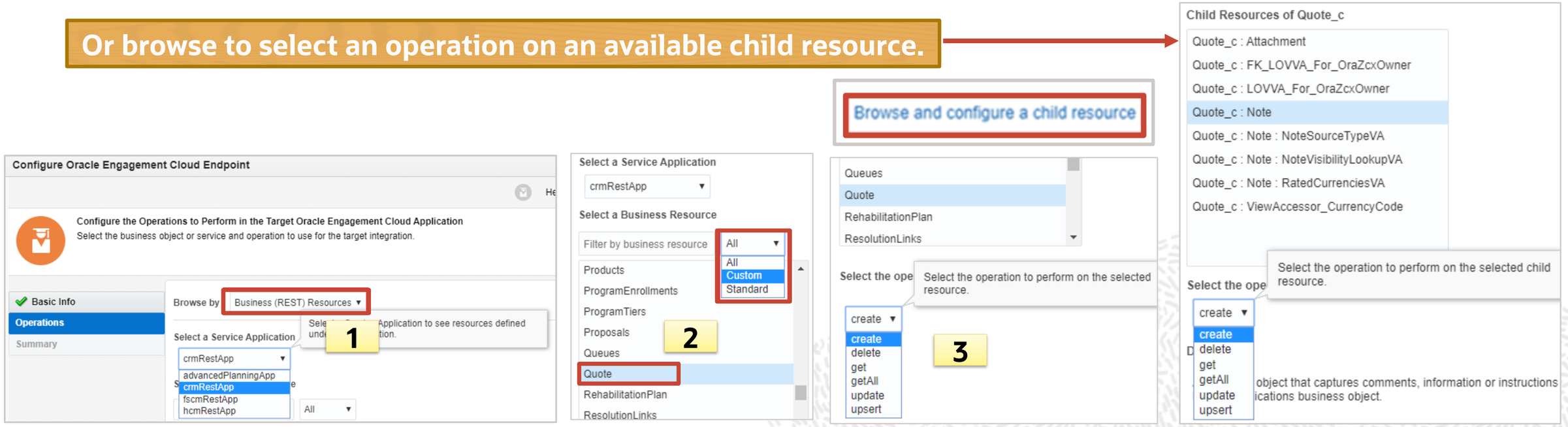
1. Filter to display the available services.
2. Select the service to use.
3. Select one of the available service operations to invoke.





Operations Page – Business (REST) Resources

1. Select the service application to see the business resources that have been defined.
2. Select the business resource to use.
3. Select the operation to invoke on the REST resource.



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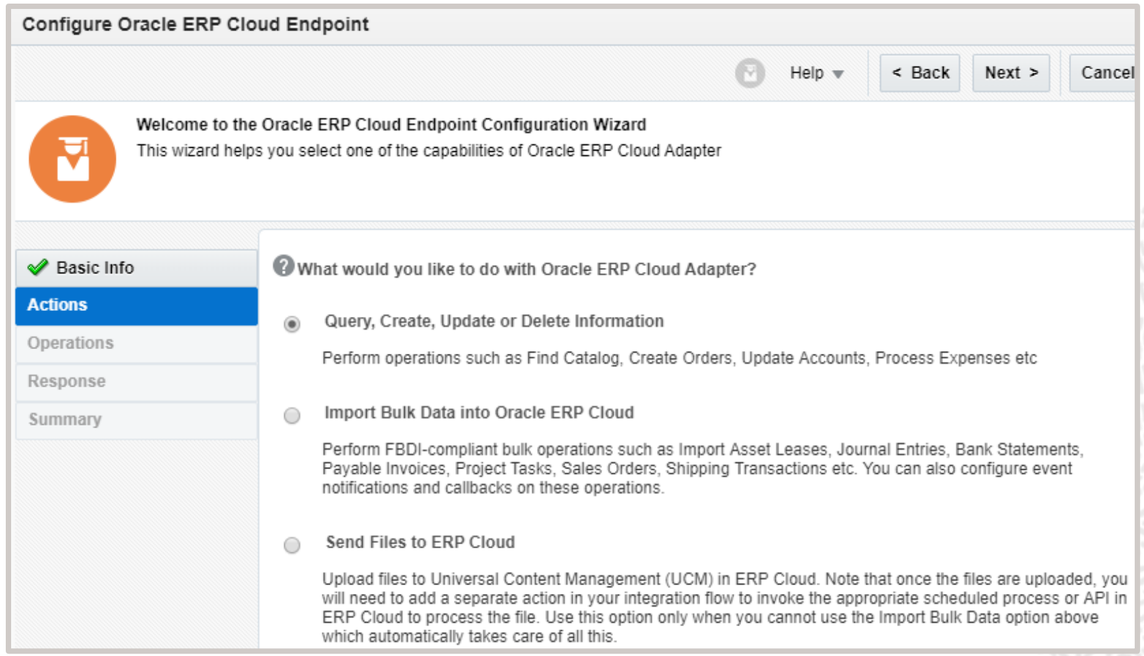
3. Oracle ERP Cloud

The Oracle ERP Cloud Adapter enables you to invoke operations or perform FBDI-compliant bulk operations in Oracle Enterprise Resource Planning (ERP) applications.

Start by selecting from one of the three following options on the Invoke **Actions** page:

- **Query, Create, Update, or Delete Information** (default)
- **Import Bulk Data into Oracle ERP Cloud**
- **Send Files to ERP Cloud**

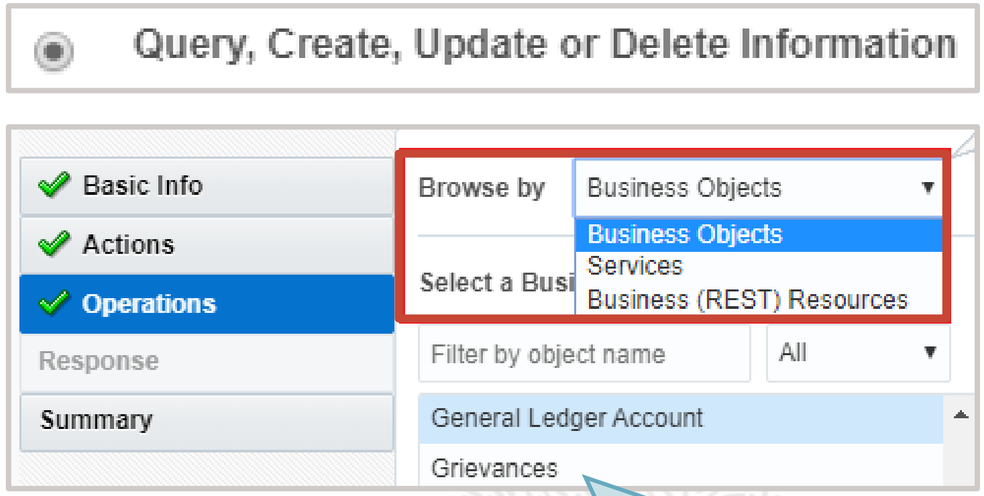


Query, Create, Update or Delete Information

Selecting this option provides common Fusion Application CRUD choices.

Choose an operation by browsing for:

- **Business Objects**
  - Choose an available business object
  - Select an available operation on that object
- **Services**
  - Choose an available service
  - Select an available service operation
- **Business (REST) Resources**
  - Select a service application
  - Choose an available business resource (or child resource)
  - Select an available resource operation

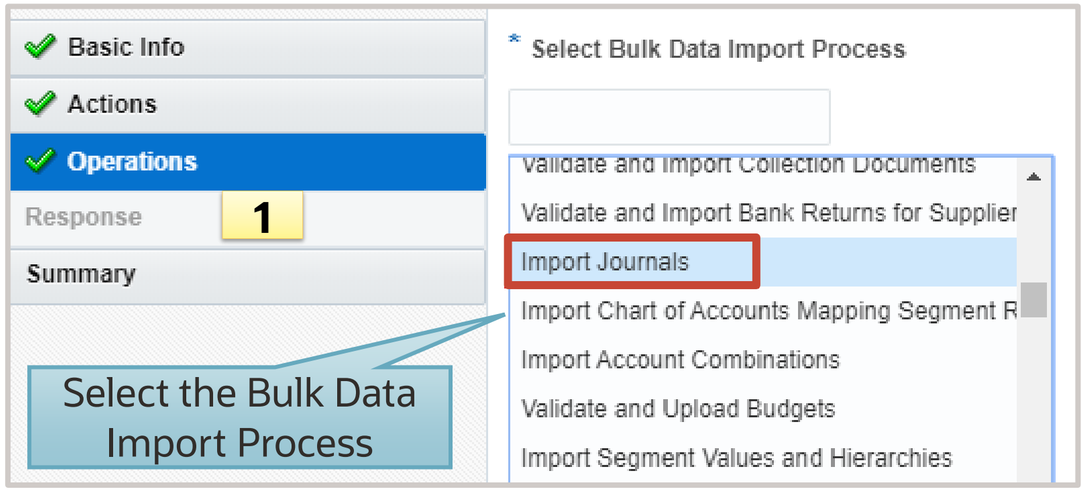


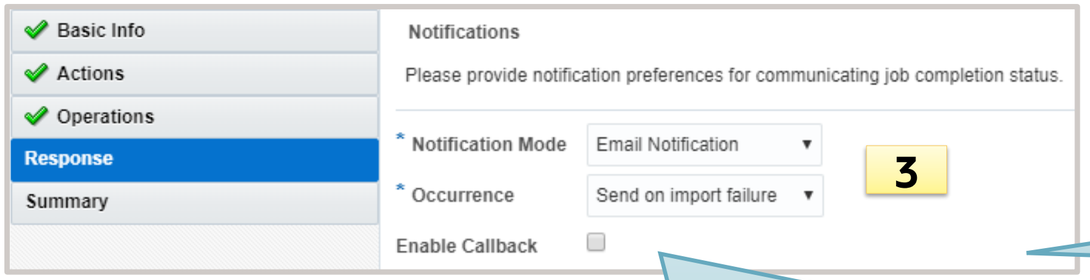
Over 755 Standard Business Objects

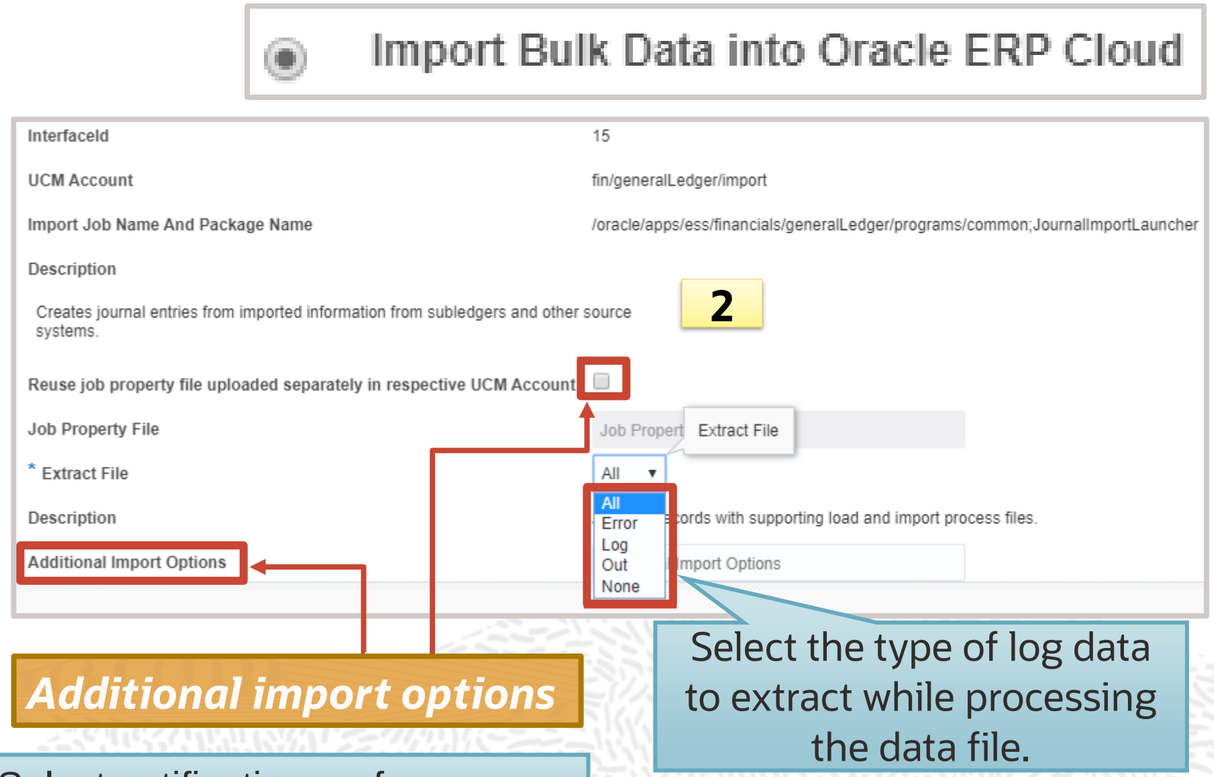
Wizard usage details are the same as we outlined earlier for the Oracle Engagement Cloud.

Import Bulk Data into ERP Cloud

Select this option to perform an FBDI-compliant bulk operation.

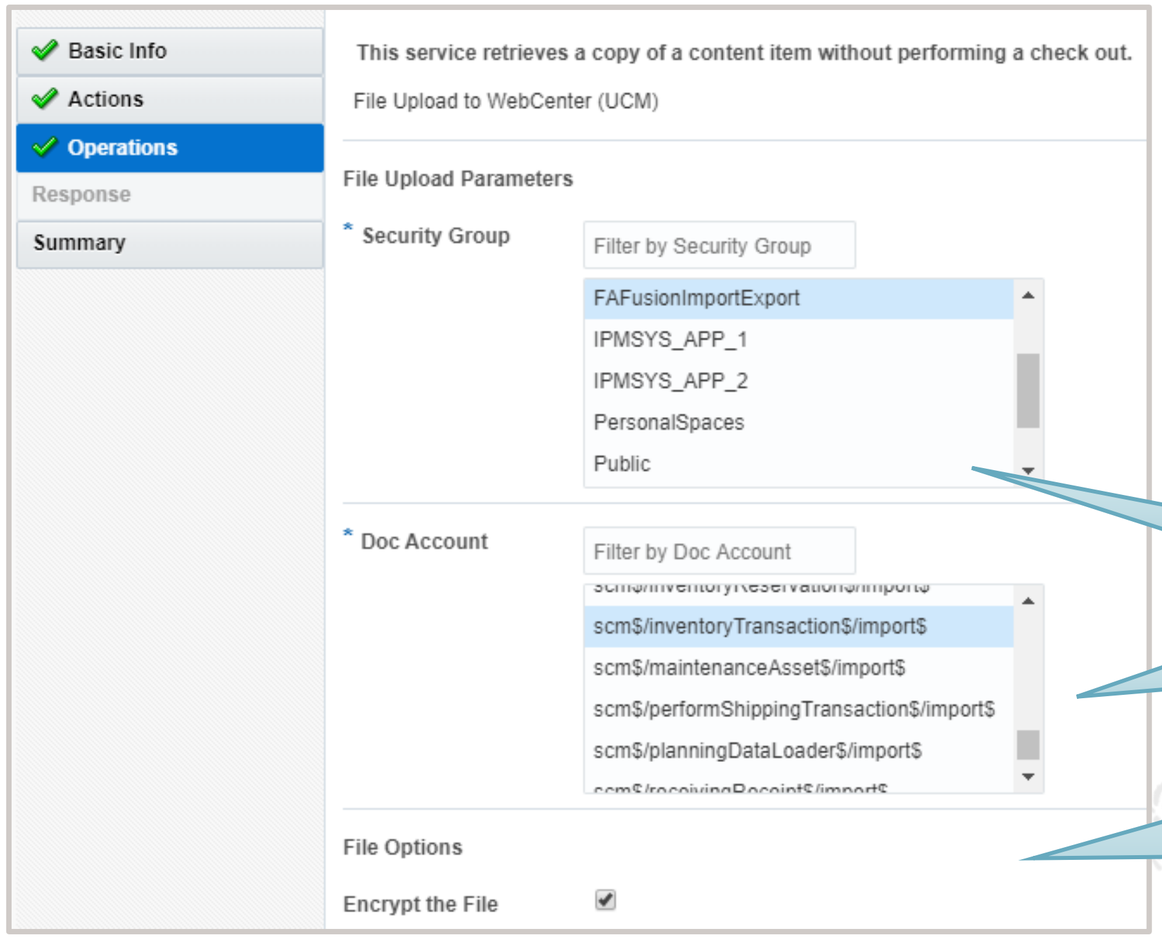






Send Files to ERP Cloud

Select this option to upload a file to UCM.



Send Files to ERP Cloud

Use this option only when you cannot use the Import Bulk Data option.

Otherwise, you will need to invoke the appropriate scheduled process or API in ERP Cloud to process the file in a separate action.

Select the security group in which to upload the file.

Select the document account to assign to the file.

Choose to encrypt the file (requires PGP Public Key configuration on the Connection).

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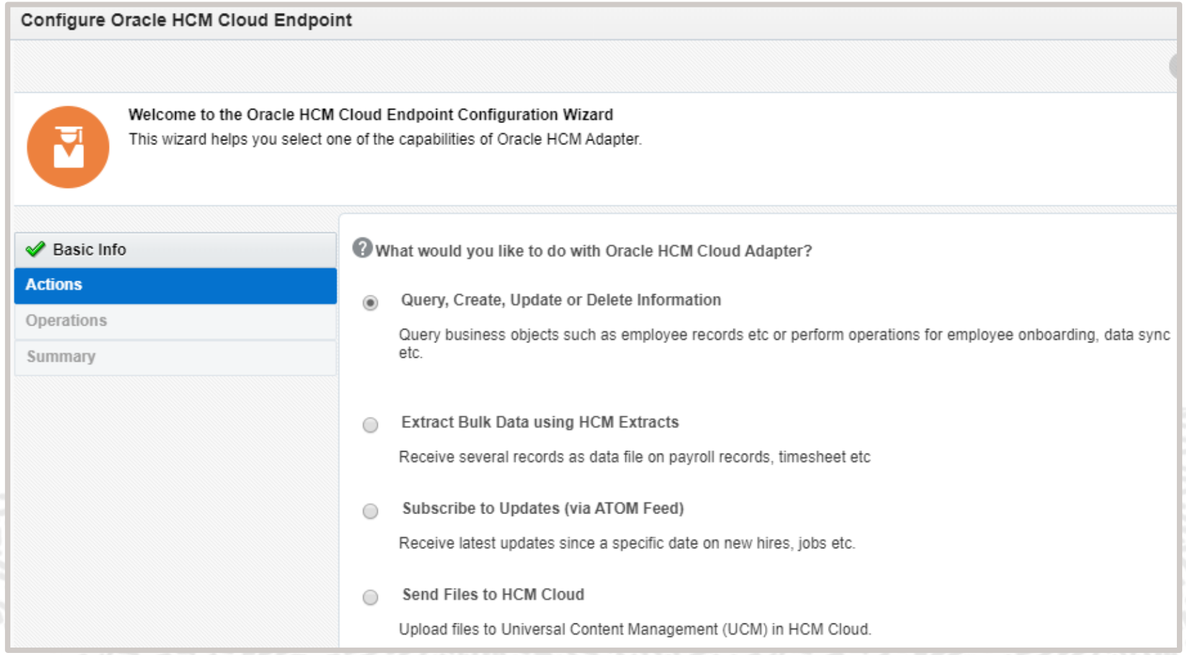
4. Oracle HCM Cloud

The Oracle HCM Cloud Adapter enables you to invoke operations, extract bulk data, or subscribe to updates in Oracle Human Capital Management (HCM) Cloud applications.

Start by selecting from one of the four following options on the Invoke **Actions** page:

- **Query, Create, Update, or Delete Information** (default)
- **Extract Bulk Data using HCM Extracts**
- **Subscribe to Updates (via Atom Feed)**
- **Send Files to HCM Cloud**



Query, Create, Update, or Delete Information

Selecting this option provides common Fusion Application CRUD choices.

Choose an operation by browsing for:

- **Business Objects**
  - Choose an available business object
  - Select an available operation on that object
- **Services**
  - Choose an available service
  - Select an available service operation
- **Business (REST) Resources**
  - Select a service application
  - Choose an available business resource (or child resource)
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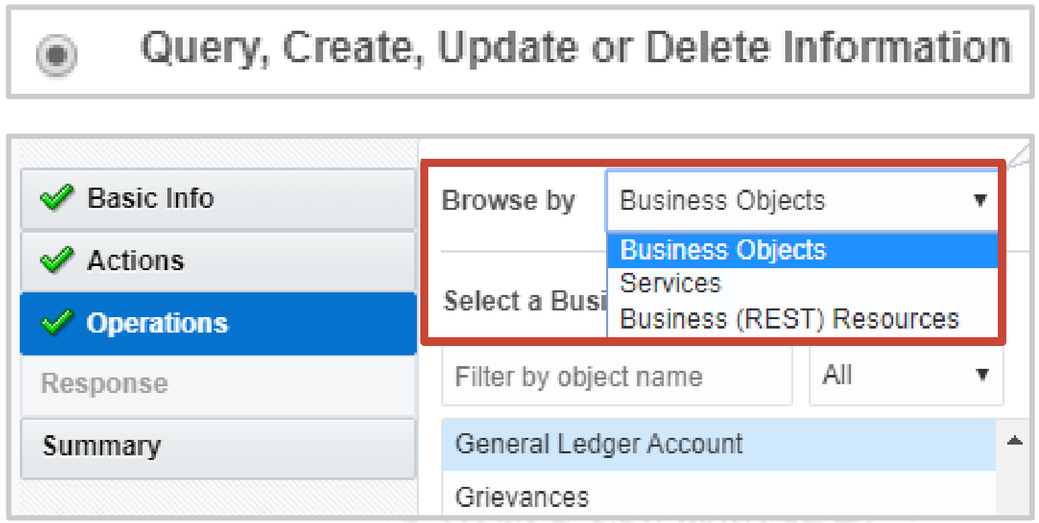


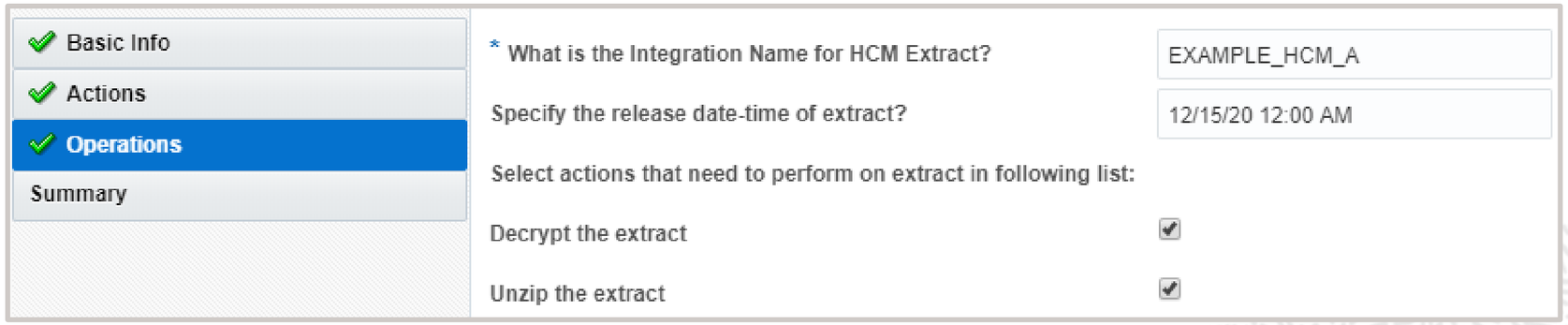
Wizard usage details are the same as we outlined earlier for the Oracle Engagement Cloud.

Confidential - Oracle Restricted

Extract Bulk Data Using HCM Extracts

Select this option to process one or more data extracts previously exported to UCM.

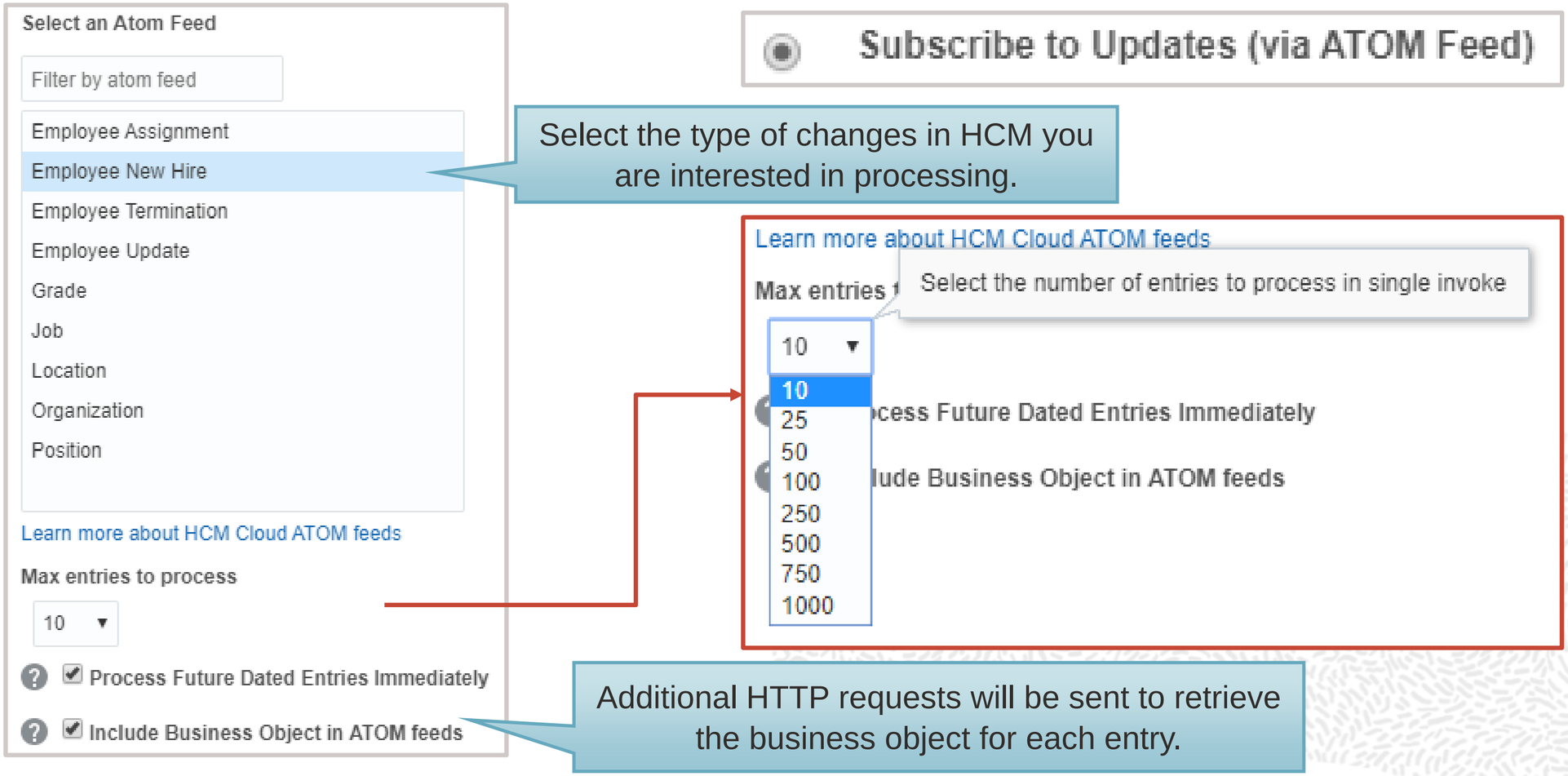
- Specify the HCM Extract Integration Name
- Specify a date-time *(all extracts released after this time are eligible for download)*
- Optionally, provide to decrypt and/or unzip the extract if needed



Once downloaded to the OIC VFS, you can use Stage File Action operations to retrieve and process the data as required by the business use case.

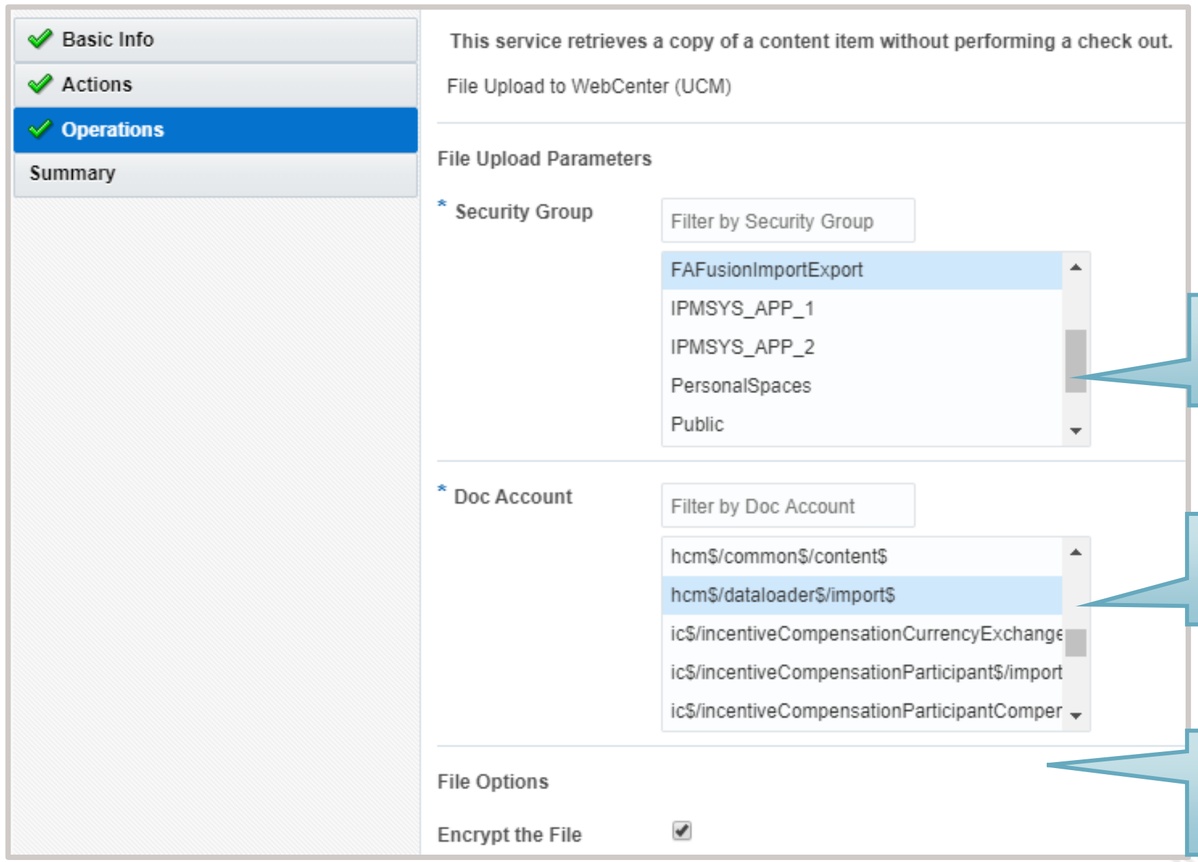
Subscribe to Updates (via Atom Feed)

Select this option to retrieve up to 1000 entries from an HCM Atom feed.



Send Files to HCM Cloud

Select this option to upload a file to UCM.



Select the security group in which to upload the file.

Select the document account to assign to the file.

Choose to encrypt the file (requires PGP Public Key configuration on the Connection).

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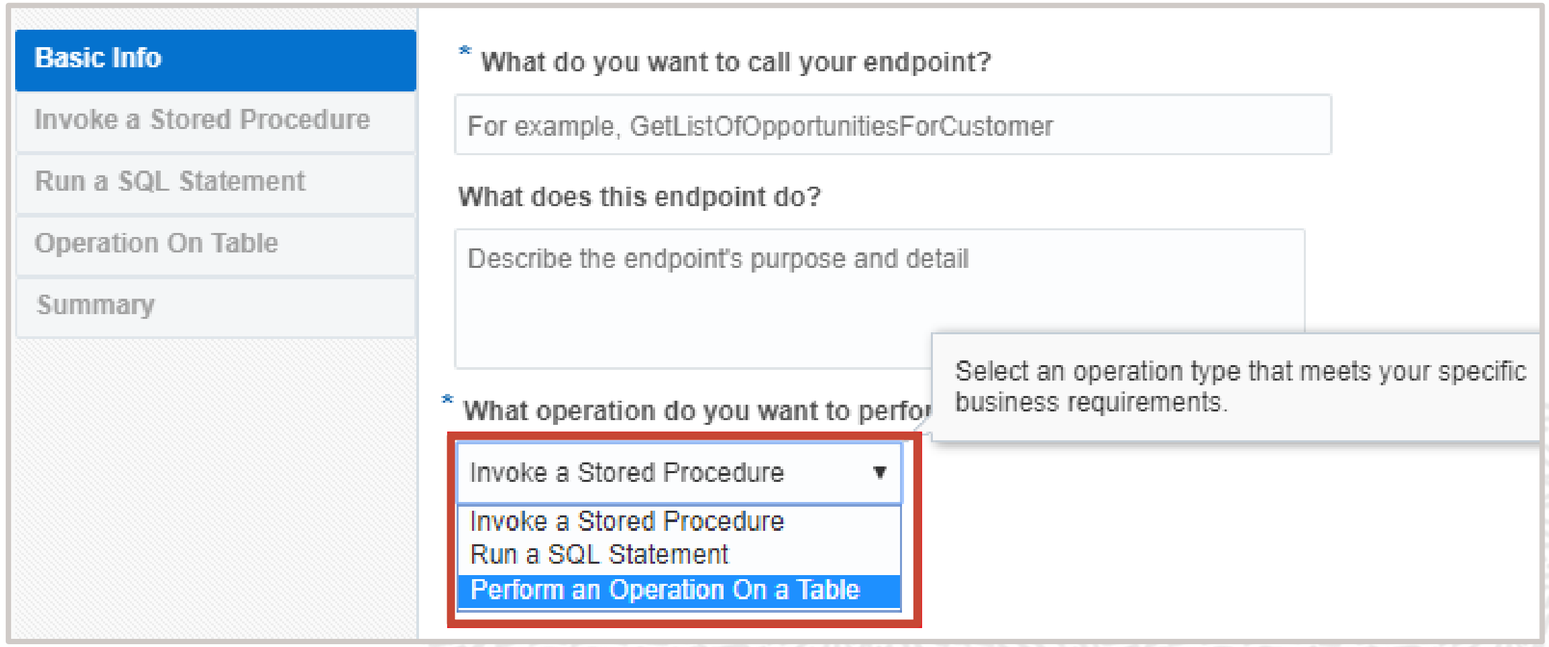
5. Oracle ATP/ADW Databases

The Oracle ATP & ADW Adapters enable you to execute SQL queries or stored procedures in Oracle ATP & Oracle ADW databases.

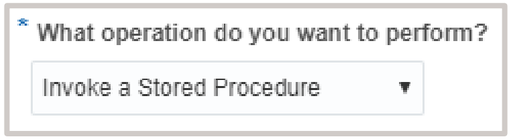
Start by selecting from one of the three following options on the **Basic Info** page:

- **Perform an Operation On a Table**
- **Invoke a Stored Procedure**
- **Run a SQL Statement**

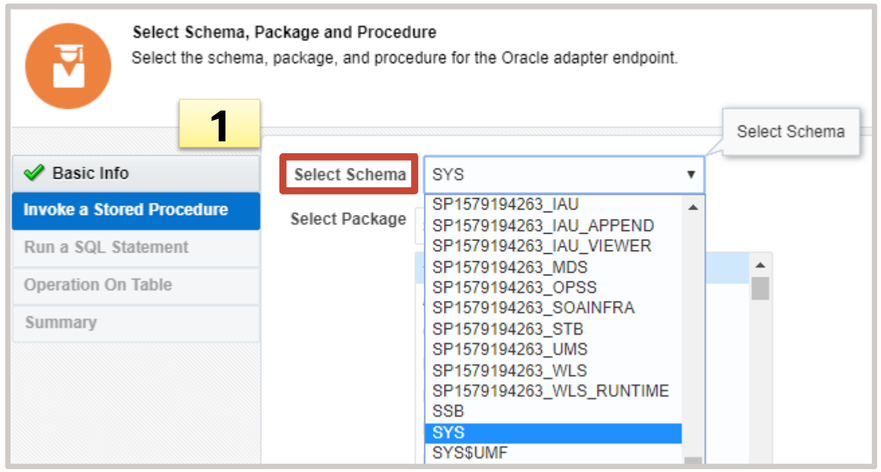


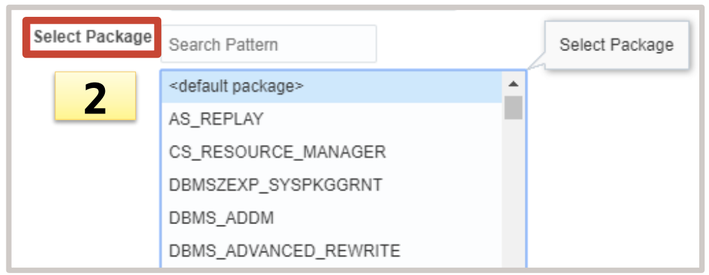
Invoke a Stored Procedure

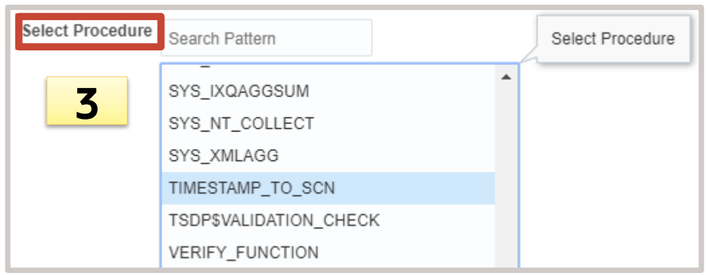
Select the Schema, Package, and Procedure to execute.

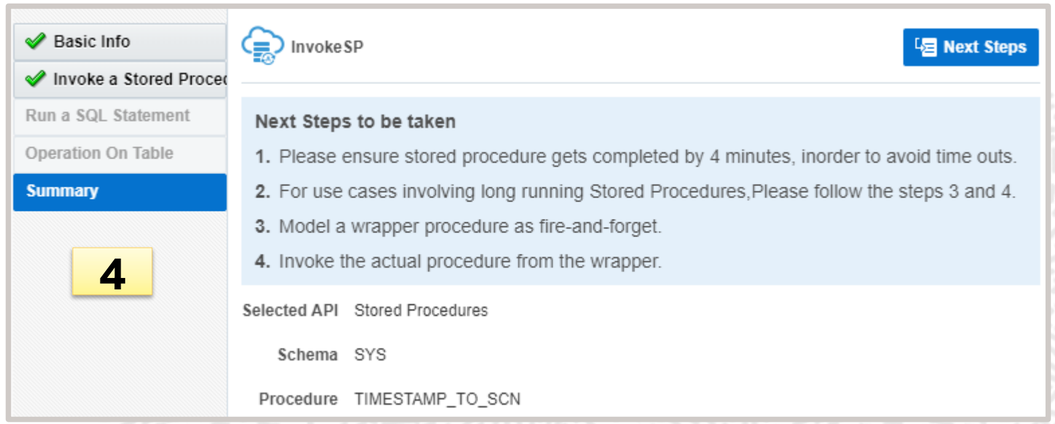


- *Data mapping in your integration will provide the opportunity to pass any required parameters.*





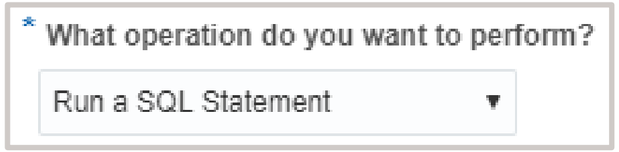




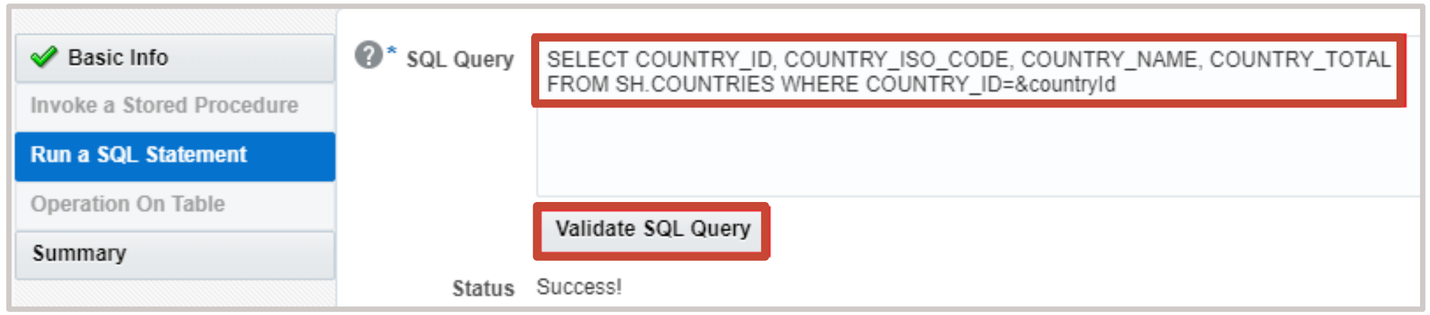
NOTE: Any synchronous procedures that take over 4 minutes to execute will encounter a timeout in the OIC environment.

Run a SQL Statement

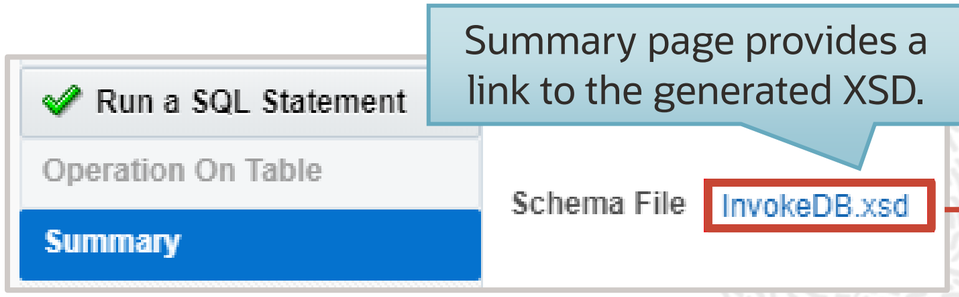
Provide a valid SQL statement.



- *Data mapping in your integration will provide the opportunity to pass any required parameters.*



NOTE: Any statements that take over 4 minutes to execute will encounter a timeout in the OIC environment.

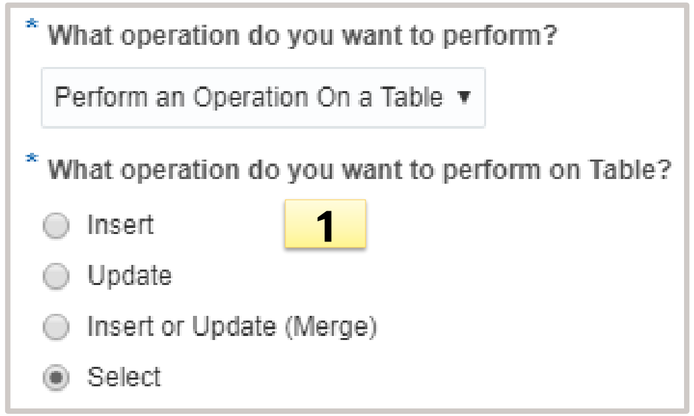


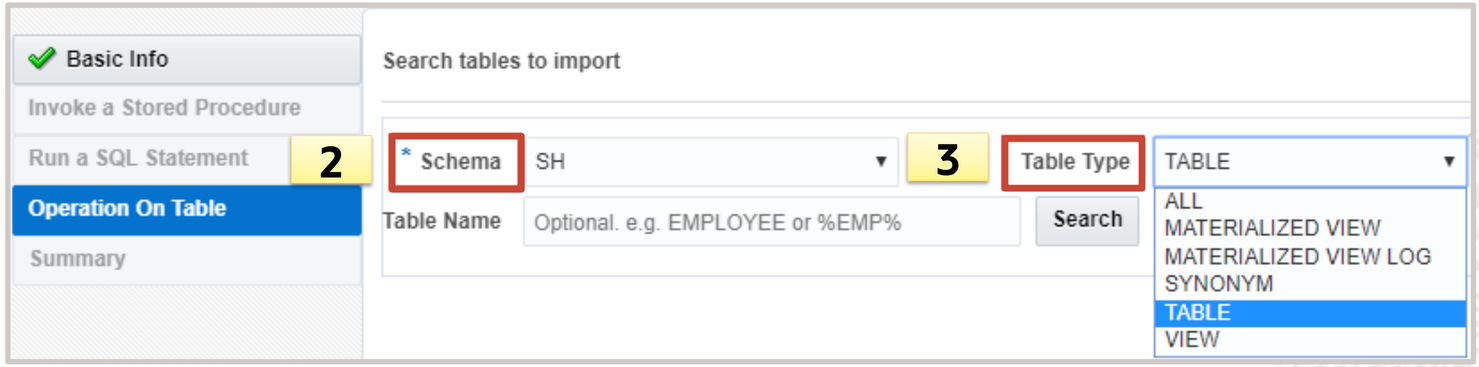
Perform an Operation On a Table

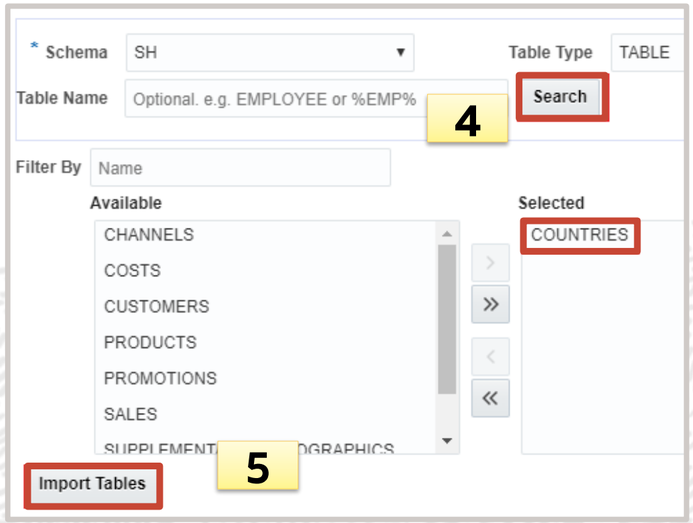
1. Select the desired operation on the **Basic Info** page.

On the **Operation On Table** page:

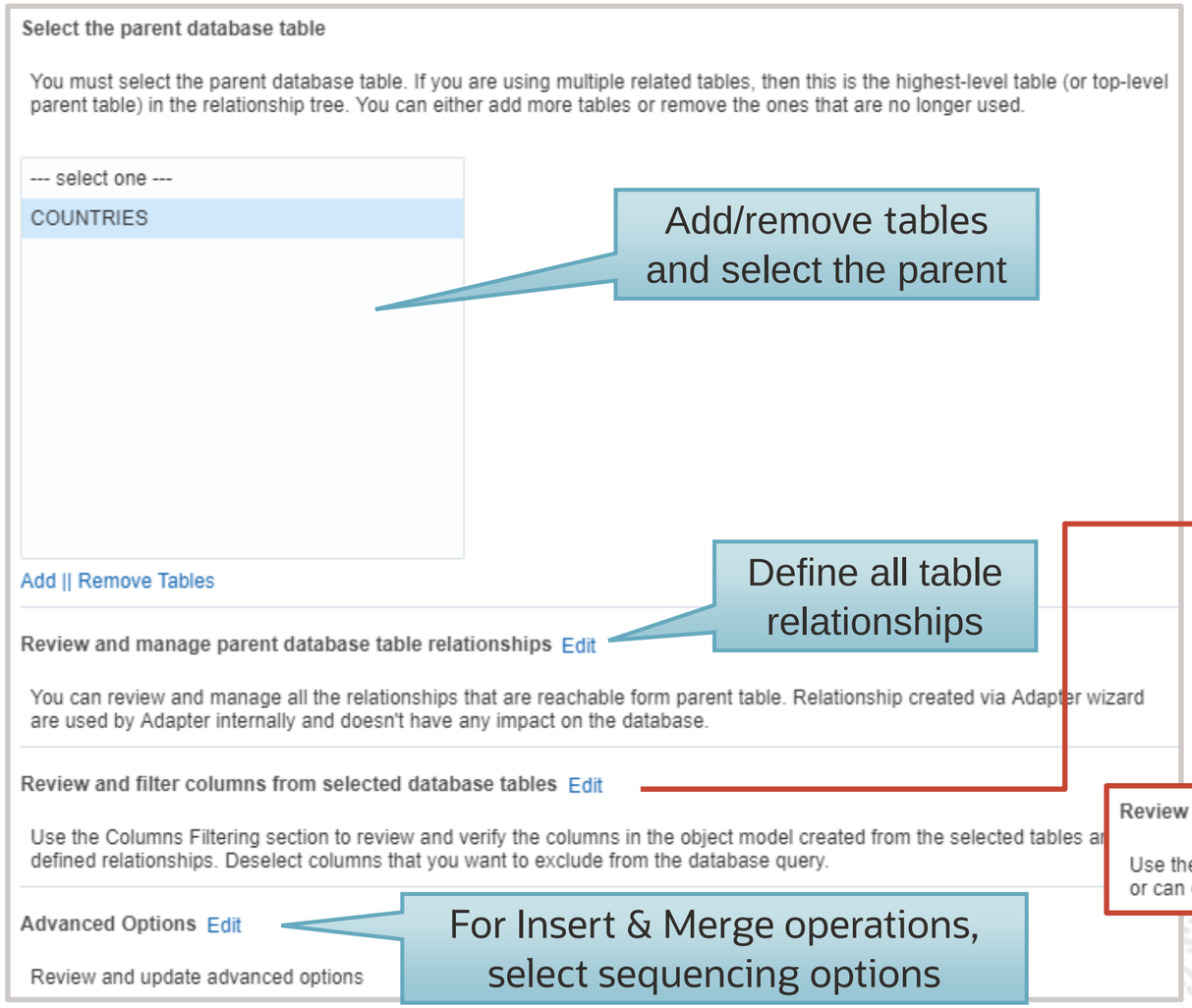
2. Select the Schema to use
3. Select the Table Type
4. Optionally filter for a table name and then click **Search**
5. Select one or more tables and then click **Import Tables**







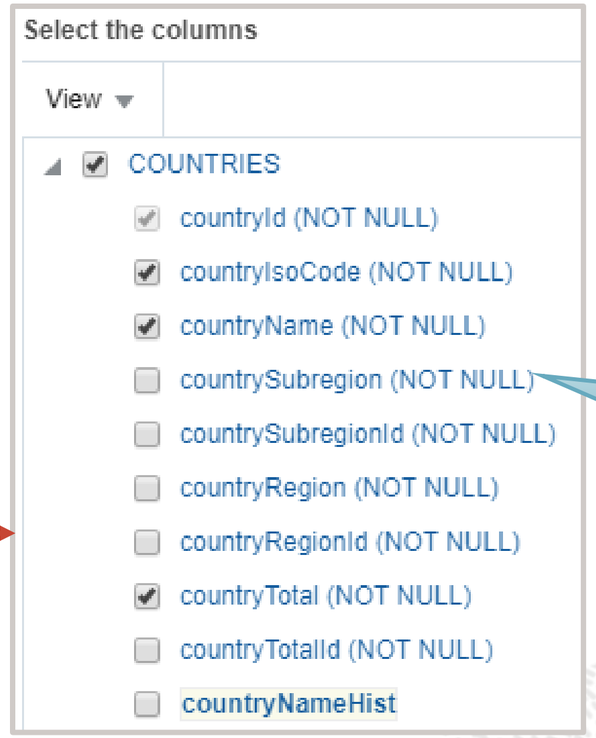
Additional Editing Options



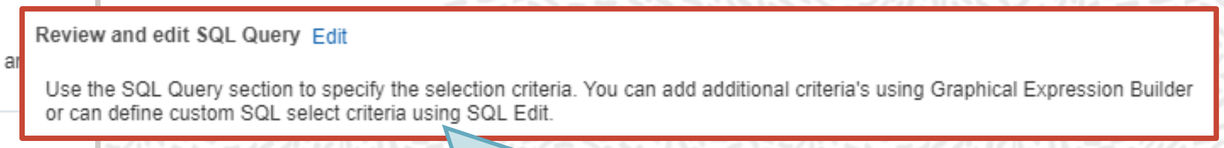
Add/remove tables and select the parent

Define all table relationships

For Insert & Merge operations, select sequencing options



Deselect any attributes to exclude from a query



For Select queries, edit further…

SQL Editor and Expression Builder

SQL Edit | Edit using Expression Builder

Maximum Number of Records to be fetched:

Limit the max # of records

SQL Query

SELECT COUNTRY_ID, COUNTRY_ISO_CODE, COUNTRY_NAME, COUNTRY_TOTAL FROM SH.COUNTRIES WHERE COUNTRY_ID=&countryId

Parameters

countryId

SQL Edit Tool

Query Criteria Add New

SELECT COUNTRY_ID, COUNTRY_ISO_CODE, COUNTRY_NAME, COUNTRY_TOTAL FROM SH.COUNTRIES WHERE COUNTRY_ID = #countryId

SQL Expression Builder Tool

Expression

First Argument

countryId Edit

Operator

EQUAL

EQUAL
NOT EQUAL
EQUALS IGNORE CASE
GREATER THAN
GREATER THAN EQUAL
LESS THAN
LESS THAN EQUAL
LIKE
NOT LIKE
LIKE IGNORE CASE
IS NULL
NOT NULL

Second Argument

Literal
Parameter
Query Key

countryId

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- Next Steps

6. FTP Adapter Connections

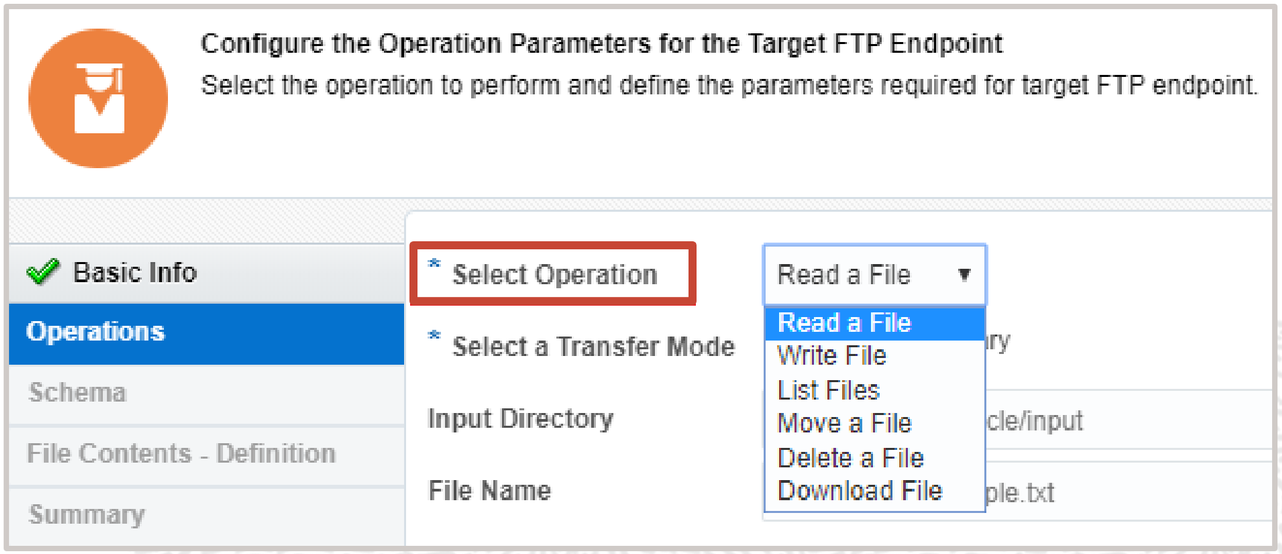
The FTP Adapter enables the integration of the File Transfer Protocol (FTP) and the Secure Shell (SSH) File Transfer Protocol (sFTP) into OIC.

Using the FTP Adapter, OIC can retrieve files for processing or can upload files and messages to a directory on a remote FTP server.

Start by selecting from one of six operations on the **Operations** page:

- **Read a File**
- **Write File**
- **List Files**
- **Move a File**
- **Delete a File**
- **Download File**

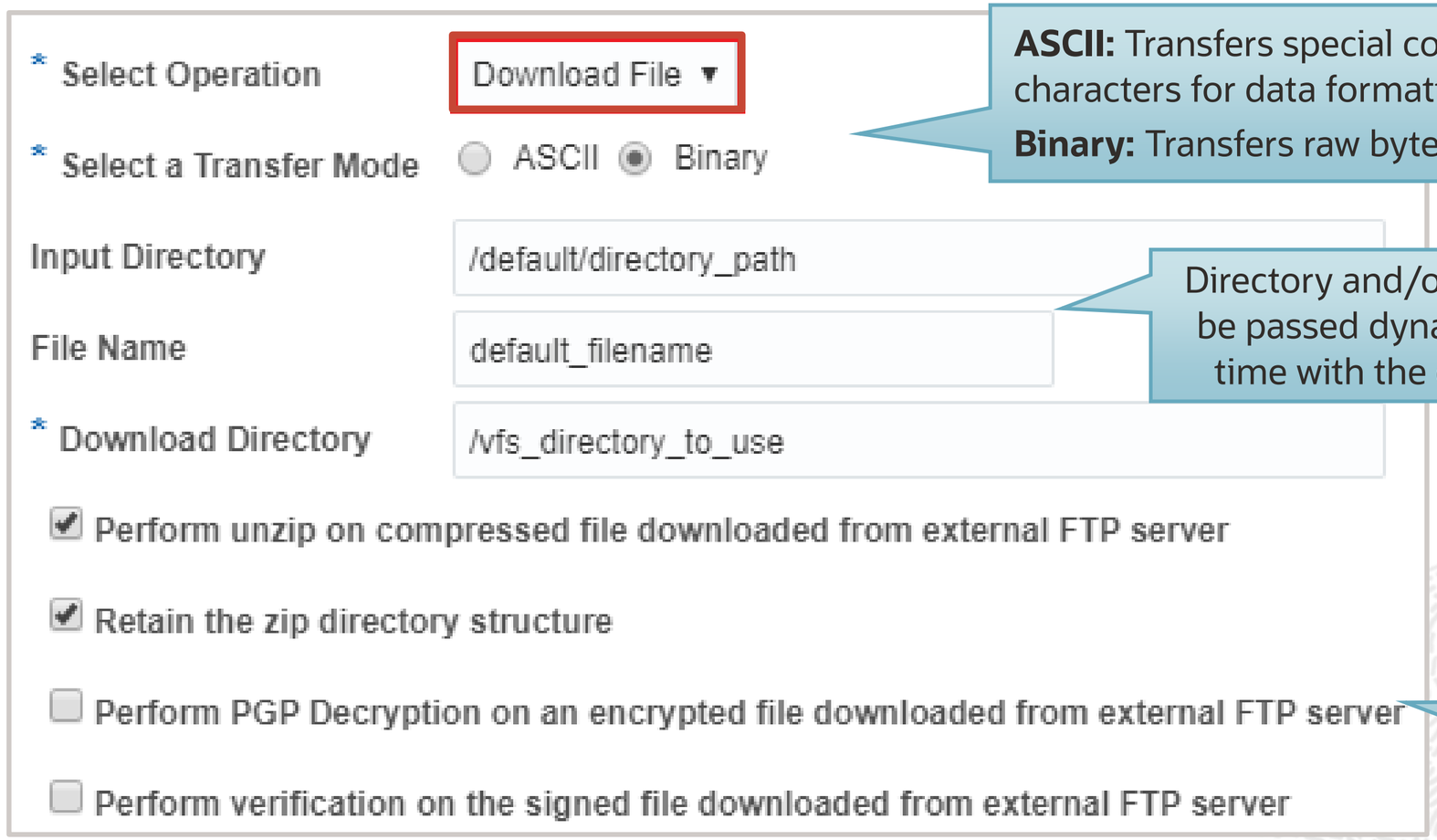
Subsequent configuration wizard options will vary based on chosen operation.



Download File

Download a file from the target FTP server to the local VFS in order to be processed by the integration.

File sizes up to 1 GB



ASCII: Transfers special control characters for data formatting

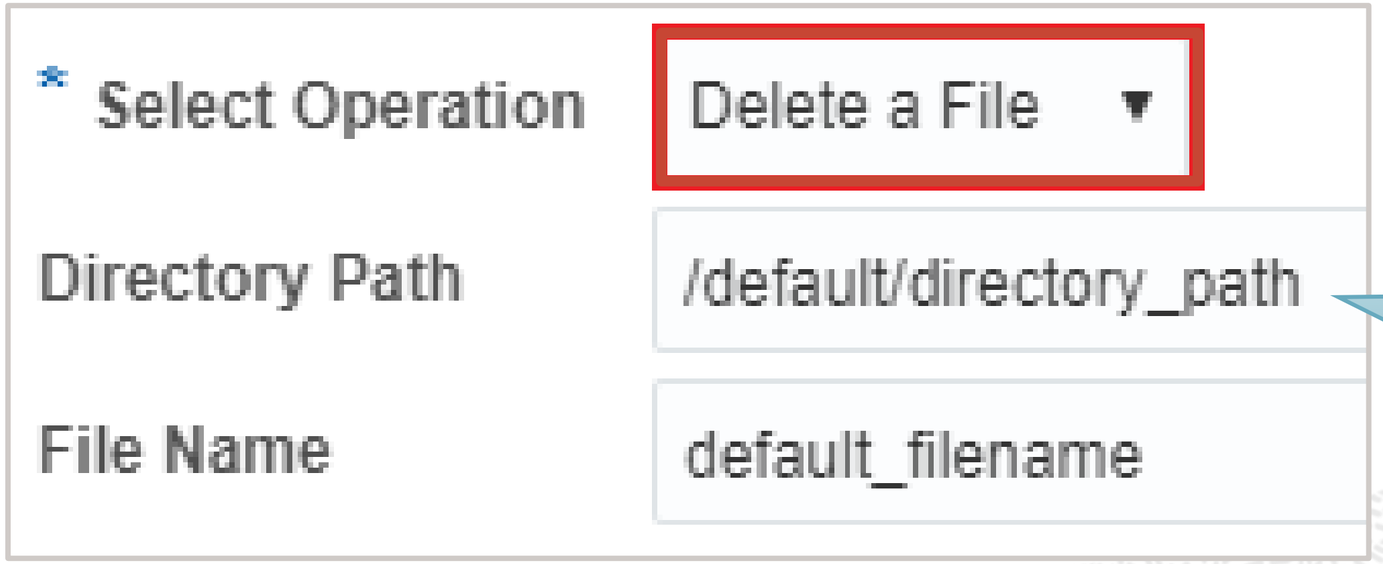
Binary: Transfers raw bytes of file data

Directory and/or file name can be passed dynamically at run time with the data mapper.

Requires PPK-pair configuration for this FTP Connection

Delete a File

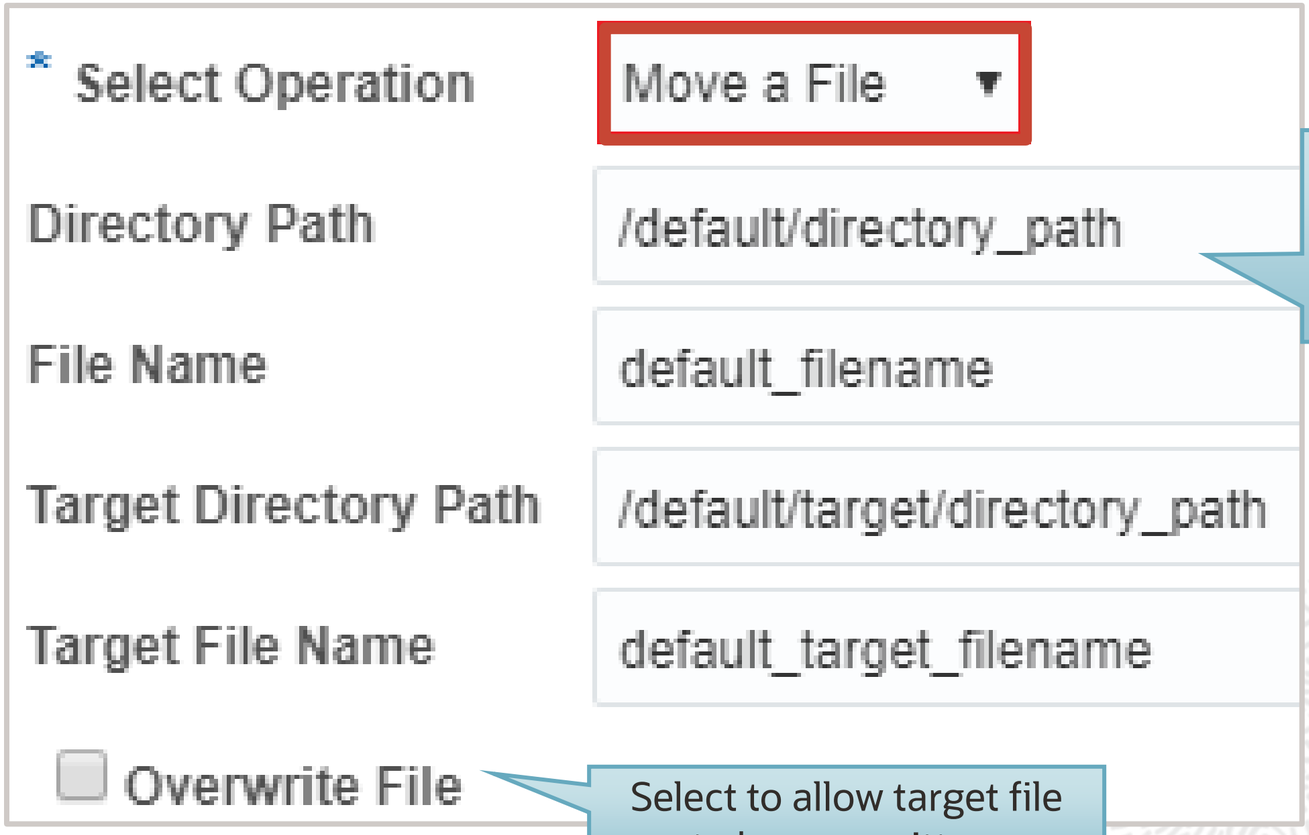
Delete a file in the target FTP server.



Directory and/or file name can be passed dynamically at run time with the data mapper.

Move a File

Move a file from one location to another in the target FTP server.

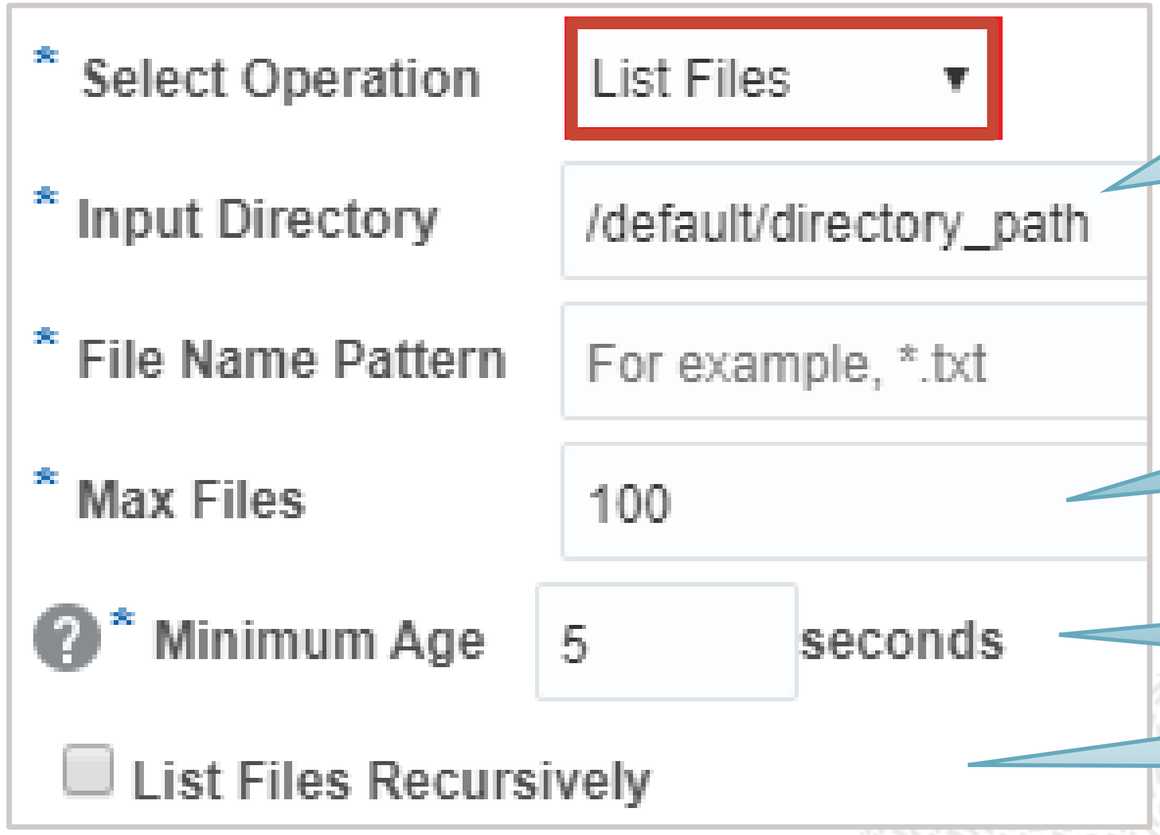


Directory paths and/or file names can be passed dynamically at run time with the data mapper.

Select to allow target file to be overwritten.

List Files

Returns a list of file names in the specified directory of the target FTP server.



Directory path and/or file name pattern can be passed dynamically at run time with the data mapper.

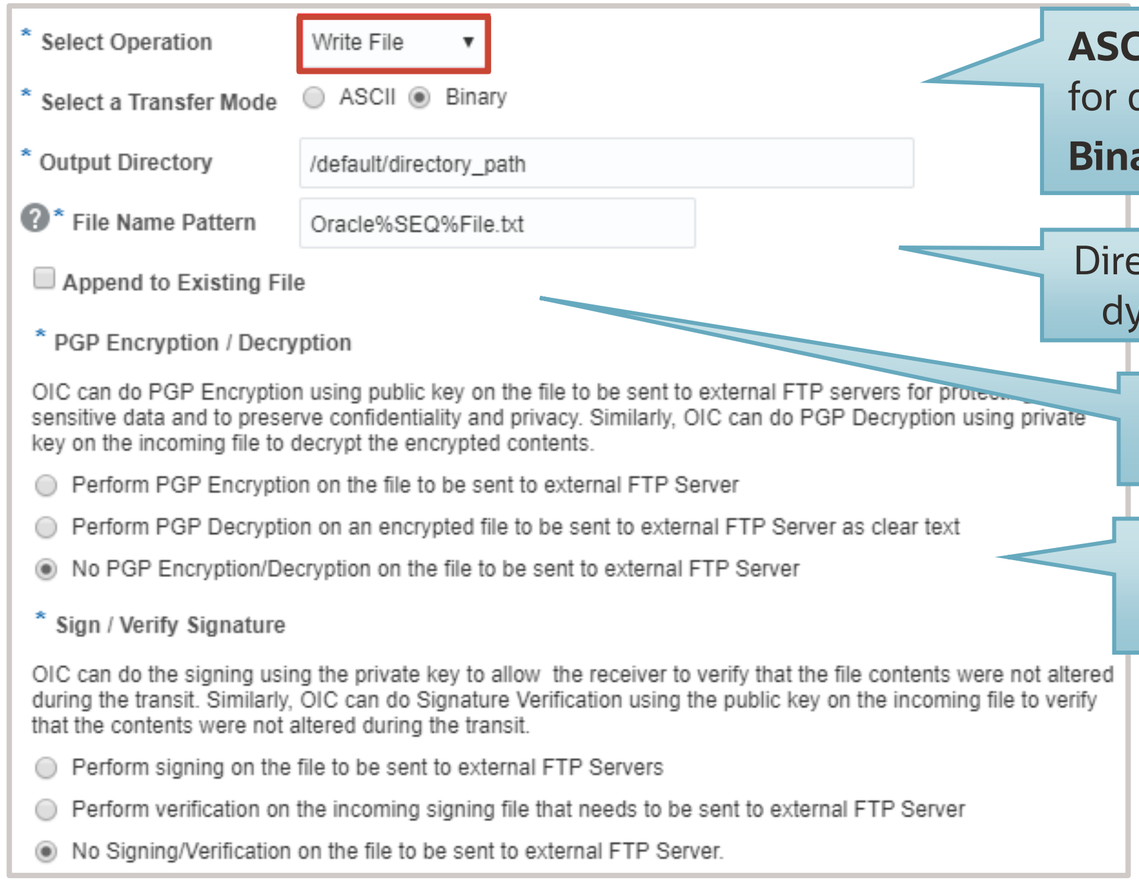
No more than 1000 (also, see notes)

Comparing current time to file timestamp

Check to list subdirectory files recursively

Write File

Write a file to the output directory of the target FTP server.



ASCII: Transfers special control characters for data formatting

Binary: Transfers raw bytes of file data

Directory and/or file name pattern can be passed dynamically at run time with the data mapper.

If selected, contents will be appending rather than overwriting the file.

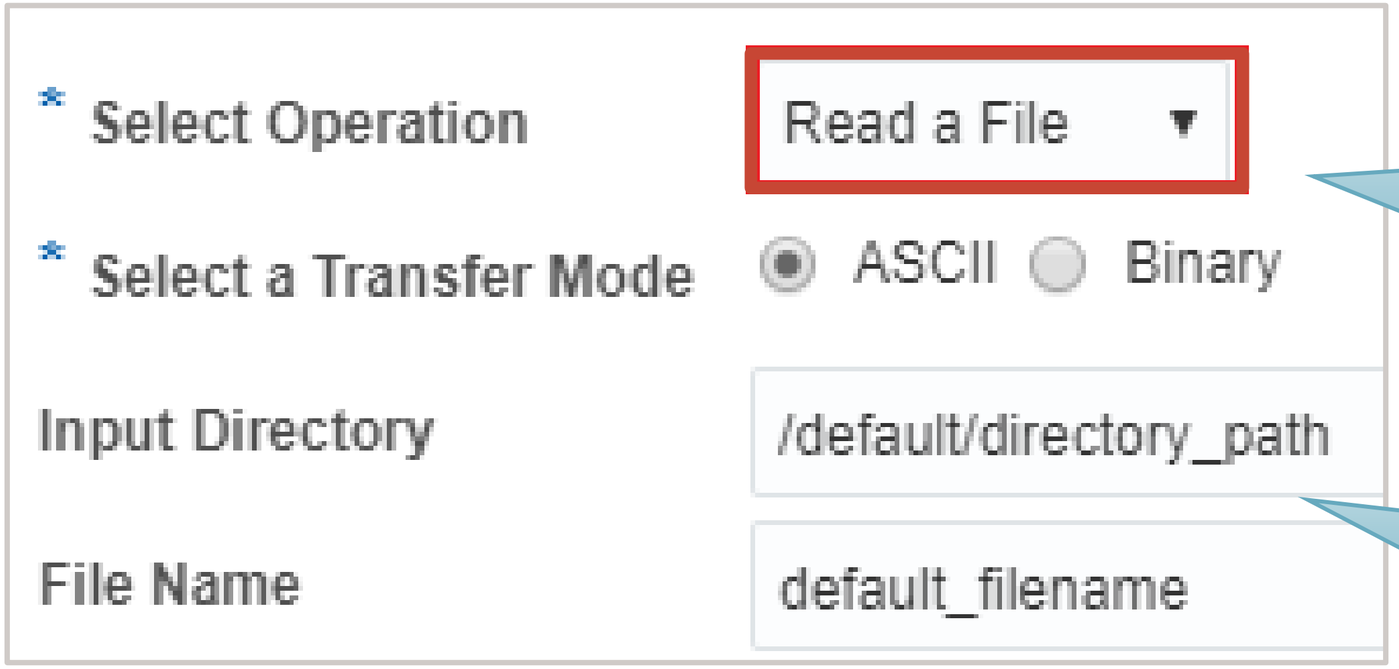
Requires PPK-pair configuration for this FTP Connection

Structured file sizes up to 10MB

Opaque file sizes up to 1 GB

Read a File

Read a file from the specified directory in the target FTP server.



ASCII: Transfers special control characters for data formatting

Binary: Transfers raw bytes of file data

Directory and/or file name can be passed dynamically at run time with the data mapper

Structured file sizes up to 10MB

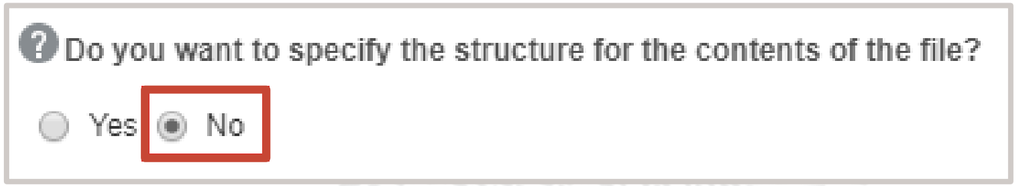
Opaque file sizes up to 1 GB

File Schema Options

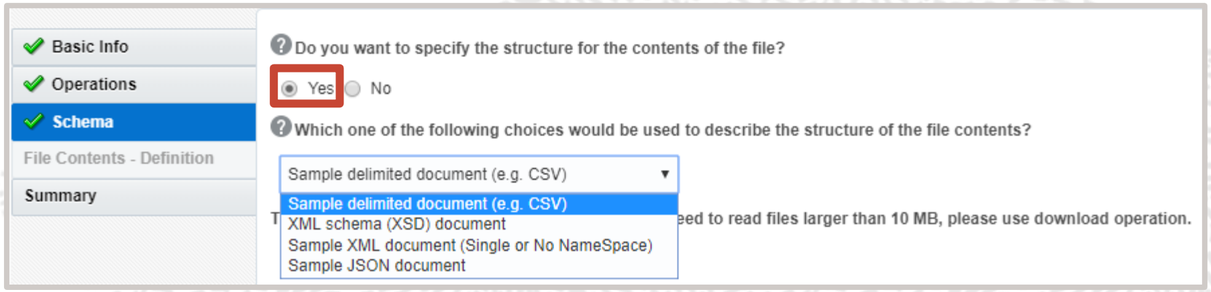
For **Read a File** and **Write File** FTP adapter operations, there are two options:

1. Process as an opaque file:
   - Exposed within the integration data mappers as a file reference
   - Up to 1 GB file sizes supported
2. Specify a schema defining a structure for the file:
   - Select how you will describe the file structure of the ***File Contents – Definition*** page
   - Exposed within the integration data mappers as an XSD structure
   - Maximum allowed file size is 10 MB

1



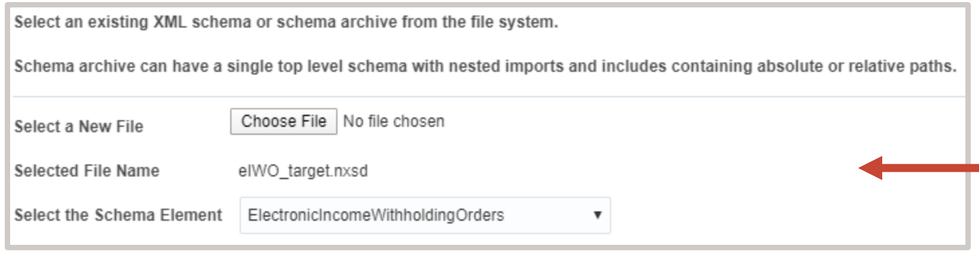
2

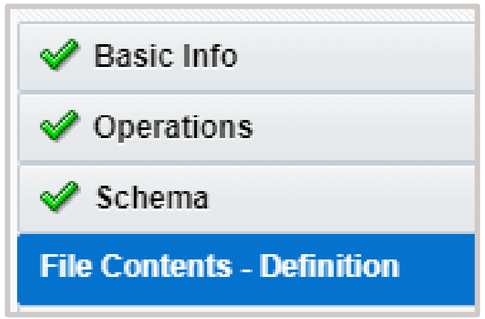


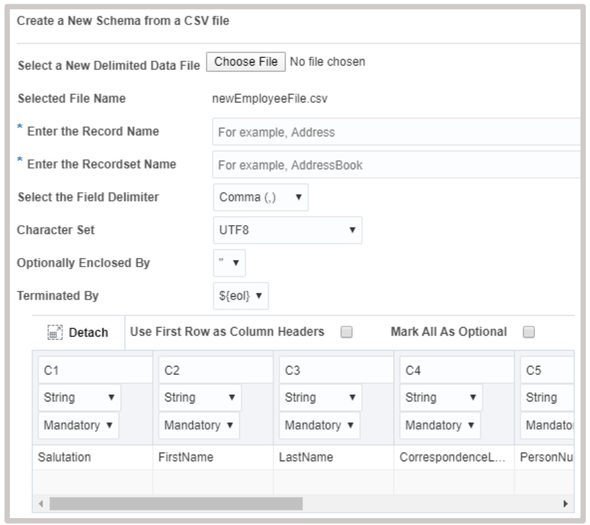
Configure the File Contents Definition (Review)

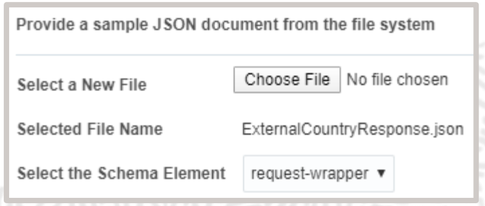
On the **File Contents – Definition** page:

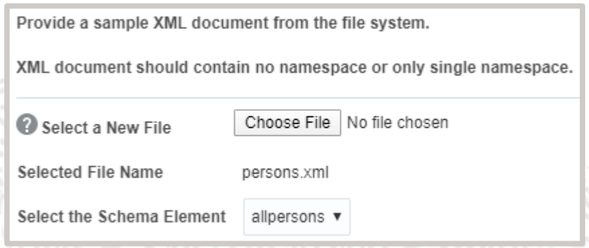
- If providing a sample CSV file, a new schema is created based on the file structure.
- If providing a sample JSON or XML file, select the schema element to be used.
- If providing an XSD file, select the schema element.
  - Can be used for processing JSON or XML files
  - If a native schema (.nxsd) is provided, it can be used for processing CSV or any other native file formats (such as fixed length, complex types, etc.).











More information on native file formats in the **lesson titled** "File Handling Concepts & Options."

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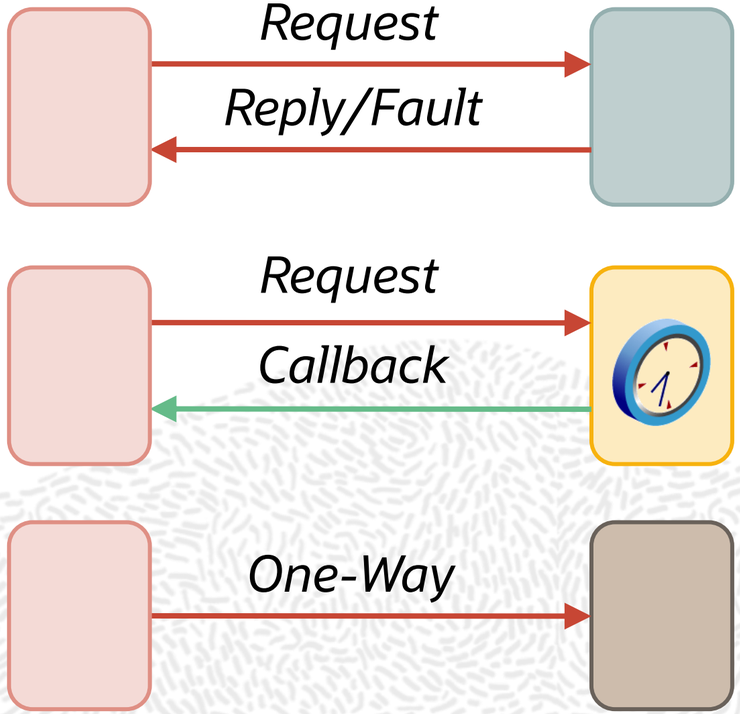
- Next Steps

7. SOAP Adapter Connections

The SOAP Adapter can consume an external SOAP API in an integration in OIC. The message received from OIC can be passed as payload to an external SOAP endpoint by the SOAP Adapter. Any response received from the endpoint can be sent to the next action in the integration for further processing.

Invoke connections can be configured to invoke a SOAP operation on the endpoint specified as either:

- Synchronous (request/response)
- Asynchronous (one-way)
- Asynchronous w/ callbacks



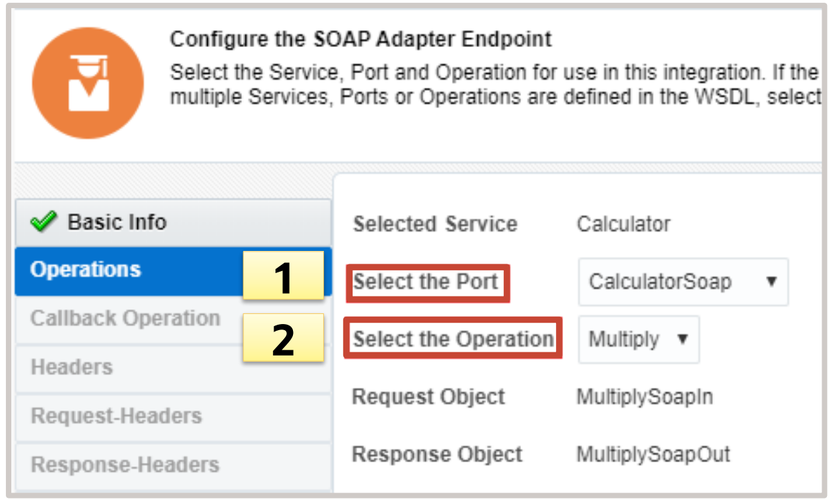
Configuring the SOAP Invoke Connection

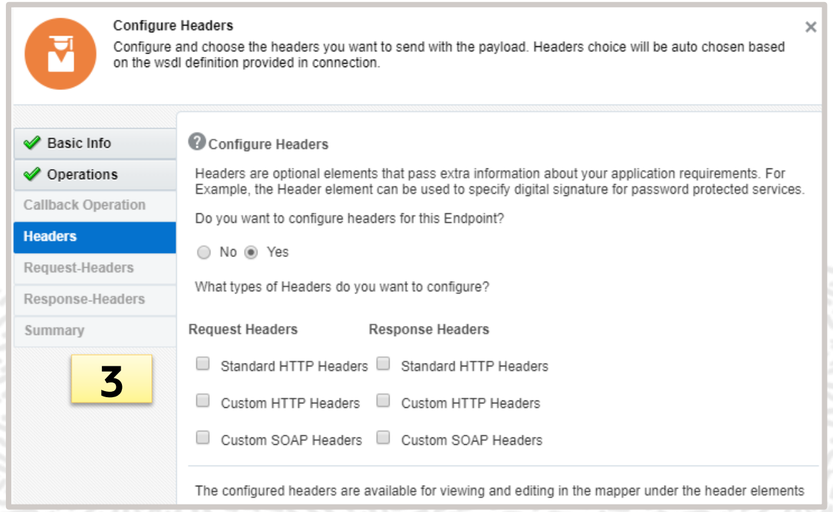
To configure the Invoke use case for an integration:

1. Select the port (interface)
2. Select the operation

> *The interface operation options and request/response objects are all defined in the WSDL provided with this SOAP Connection's definition.*

3. Optionally, configure Headers:
   - Standard or Custom HTTP headers
   - Custom SOAP headers.





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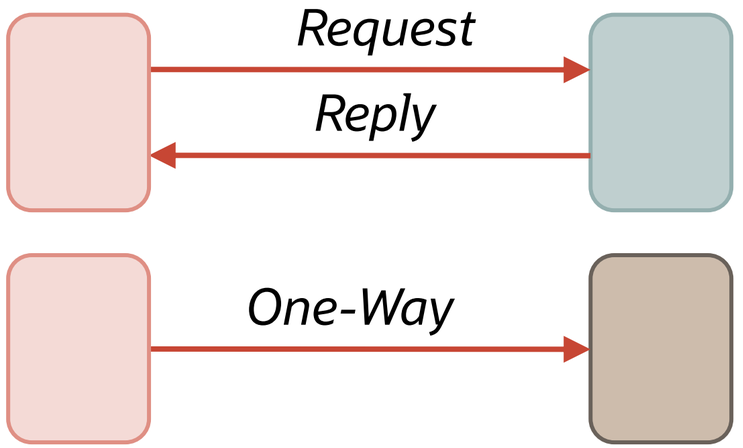
8. REST Adapter Connections

The REST Adapter can consume any external REST API by configuring a REST Adapter connection as an Invoke.

Invoke connections can be configured to invoke a REST resource as specified by the endpoint:

- Synchronous (request/response)
- Asynchronous (one-way)



Confidential - Oracle Restricted

Configuring the REST Invoke Connection

When you drag the REST Adapter onto the Orchestration design canvas, the Adapter Endpoint Configuration Wizard is invoked.

Based on your selections in the wizard, the following pages can be displayed:

- Basic Information Page
- Request Parameters Page
- Request Page
- Request Header Page
- Response Page
- Response Header Page

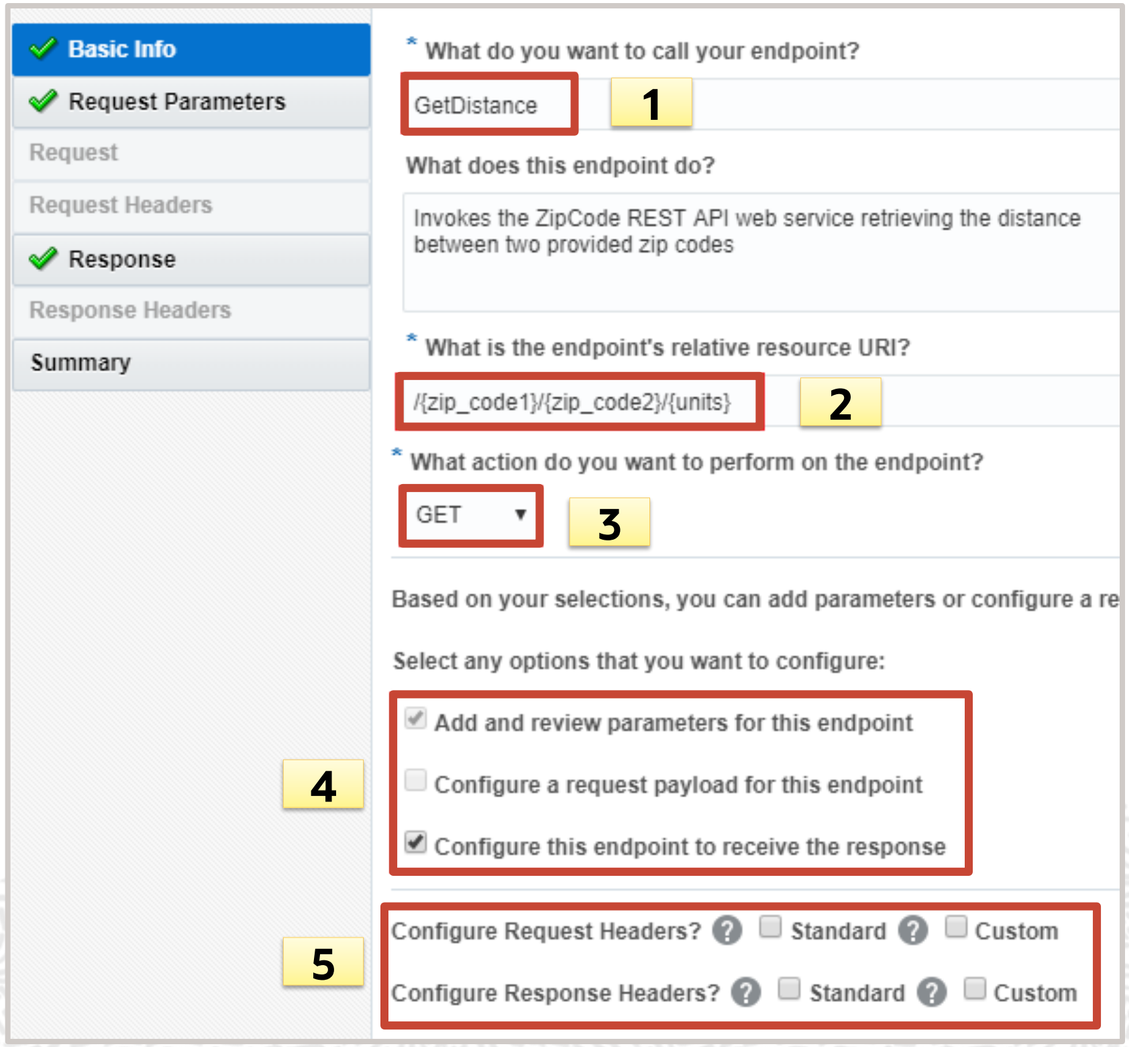
Basic Info Page

1. Provide an endpoint name
2. Provide the relative resource URI

   (as defined by the REST service's API)
3. Choose the appropriate HTTP method
4. Select to define request and/or response payloads

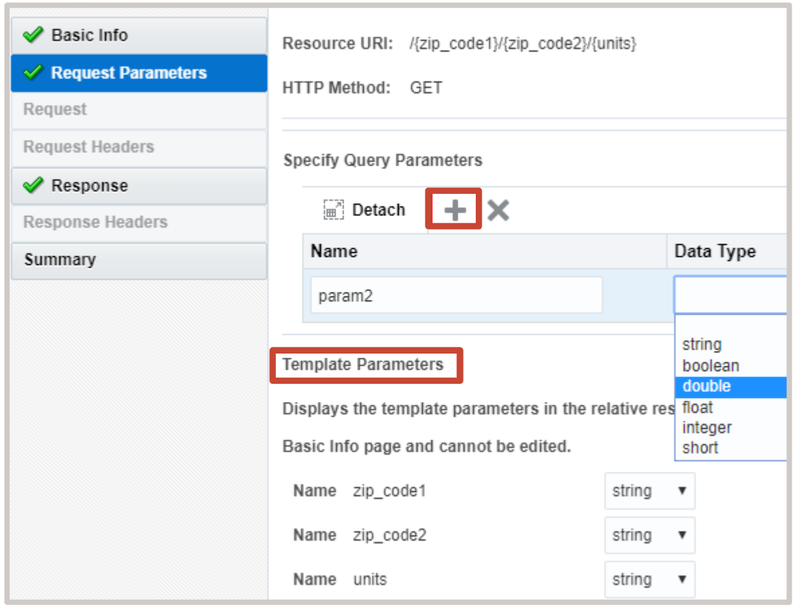
   (if defined by the REST service's API)
5. Select to configure request and/or response HTTP headers

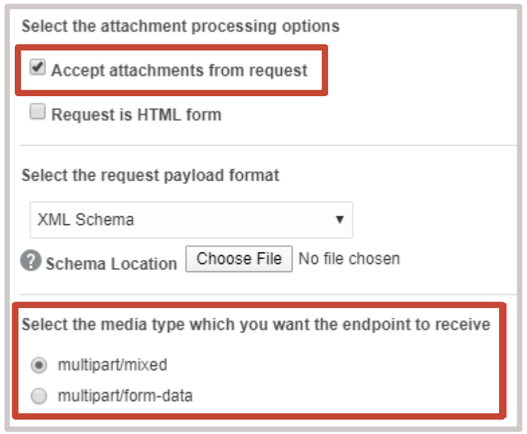
   (if defined by the REST service's API)

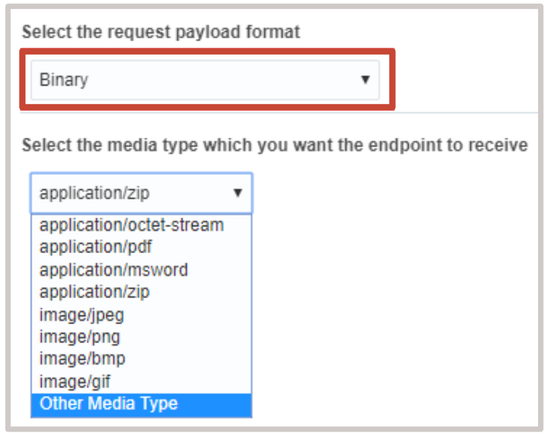


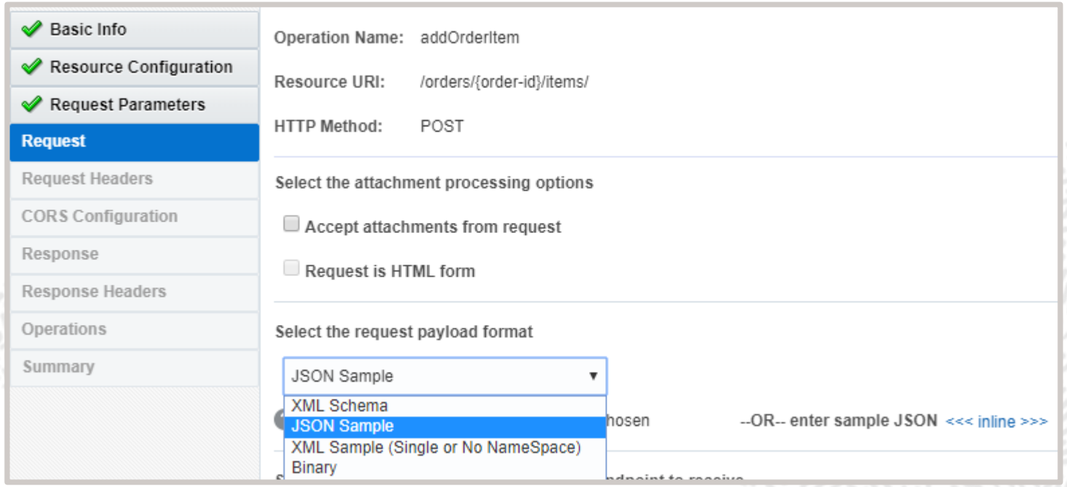
Request Options

- Query Parameters can be added to define additional required data.
- Template Parameters are carried forward from the previous page.
  - Define the data type if needed
- For POST, PUT, or PATCH methods, choose the payload type and format.
  - Or select the attachment type



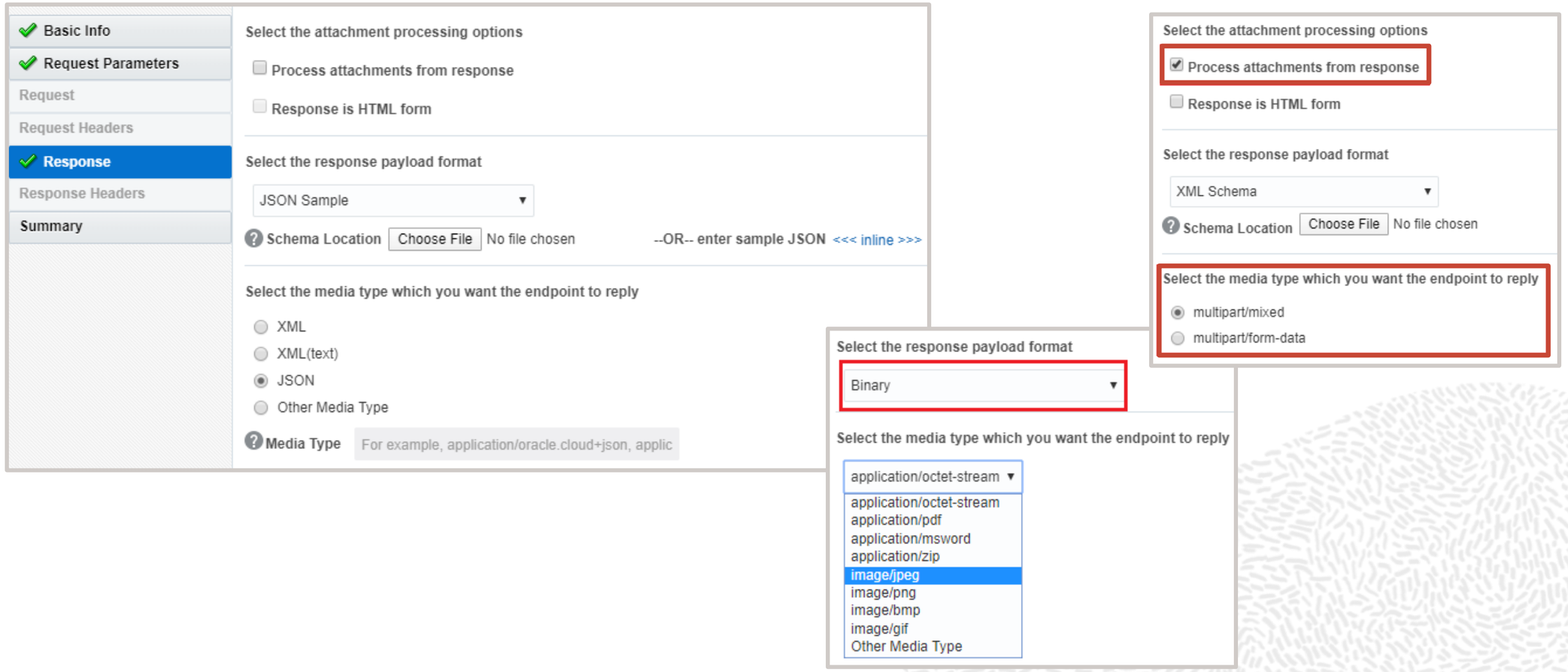






Response Options

Similar options are provided for defining the **Response** payload.



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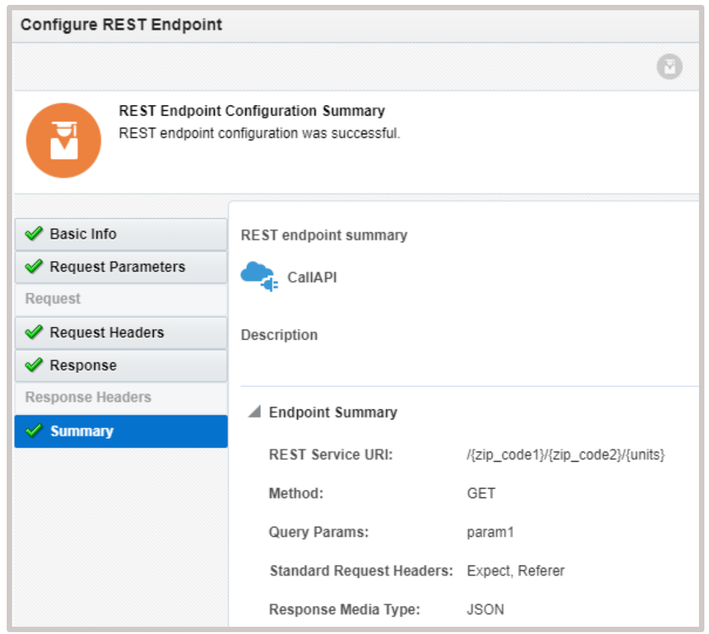
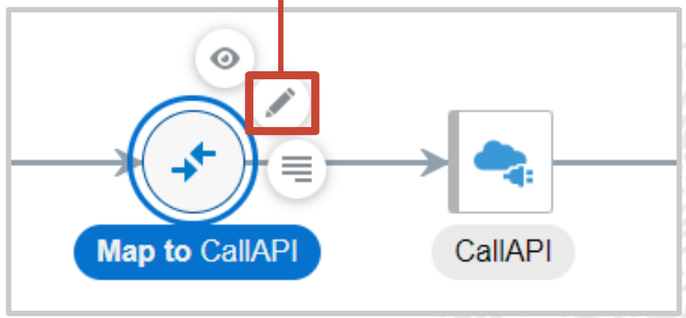
Wrapping Up: Completing the Invoke Configuration

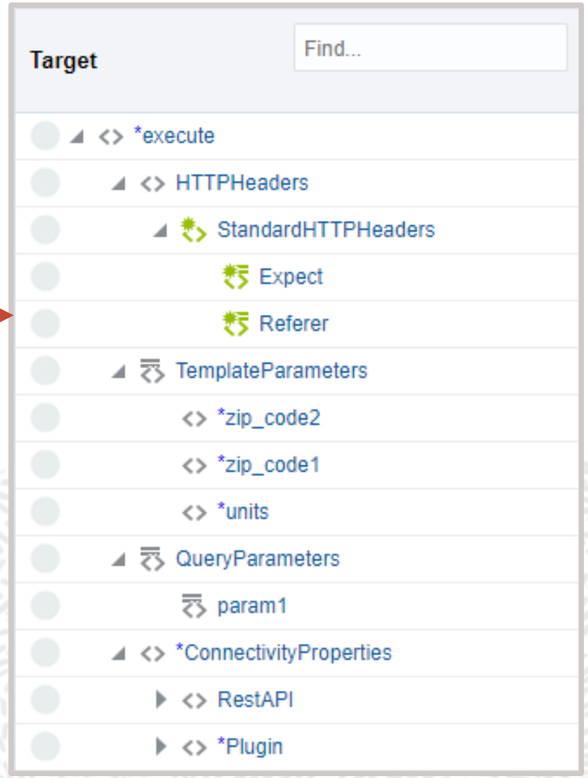
The last page of the wizard provides a summary of the endpoint configuration.

Once completed, the Orchestration design canvas will include:

- A **Map** action just prior to your new Invoke action
  - Used for defining payload data for the targeted service call







Summary

In this lesson, you should have learned how to:

- Use the Adapter Endpoint Configuration Wizard for Invoke Connections
- Understand common operation invoke options for Oracle SaaS application adapters
- Create SQL statements or execute stored procedures using the ATP/ADW adapters
- Configure the six operations available in the FTP adapter
- Invoke SOAP or REST web service endpoints from an OIC integration

Practice 7-1: Configuring ATP & REST Invoke Connections

This practice includes the following topics:

- PART 1 – Creating the Integration Flow
  - Configure the REST Trigger Connection
- PART 2 – Configure the ATP Invoke and Mapping
- PART 3 – Complete the Integration Flow Configuration
  - Configure the REST Invoke Connection & Data Mapping
- PART 4 – Activate and Test the Integration Flow