

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
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 8. REST Adapter Connections
- Next Steps



Integration Development (Review)

**Define
Connections**

**Build Integration
Flow Logic**

Configure the integration trigger connection and one or more invoke connections.

Map Data

Use the OIC Data Mapper to define payload for each invoked connection.

**Activate
Integration**

Manage errors

**Monitor
Integrations**

Track payload fields in messages at run time.

Message Exchange Patterns Revisited

Synchronous request/response

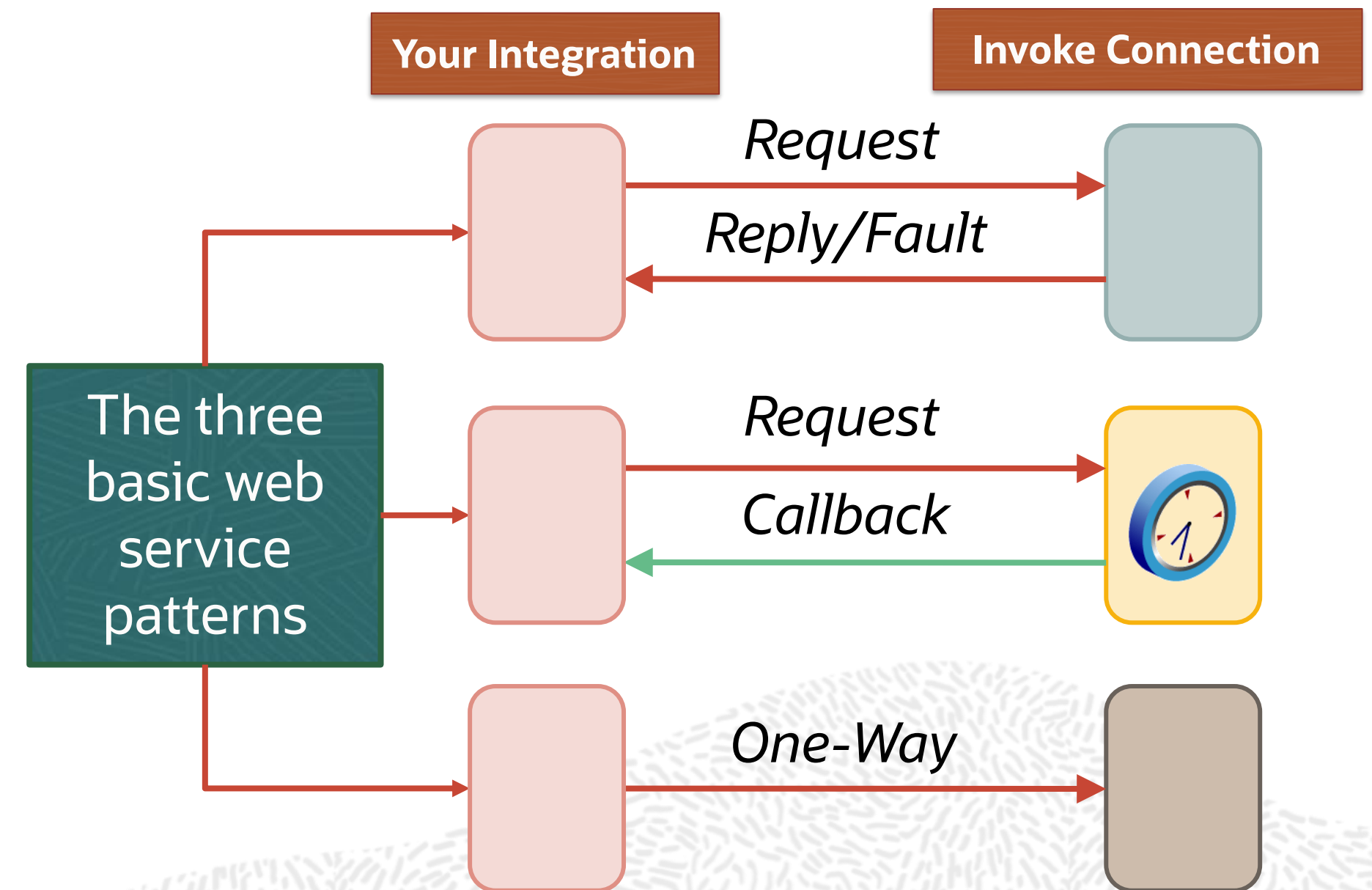
- Real-time response or error feedback
- Client blocks for the response

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.

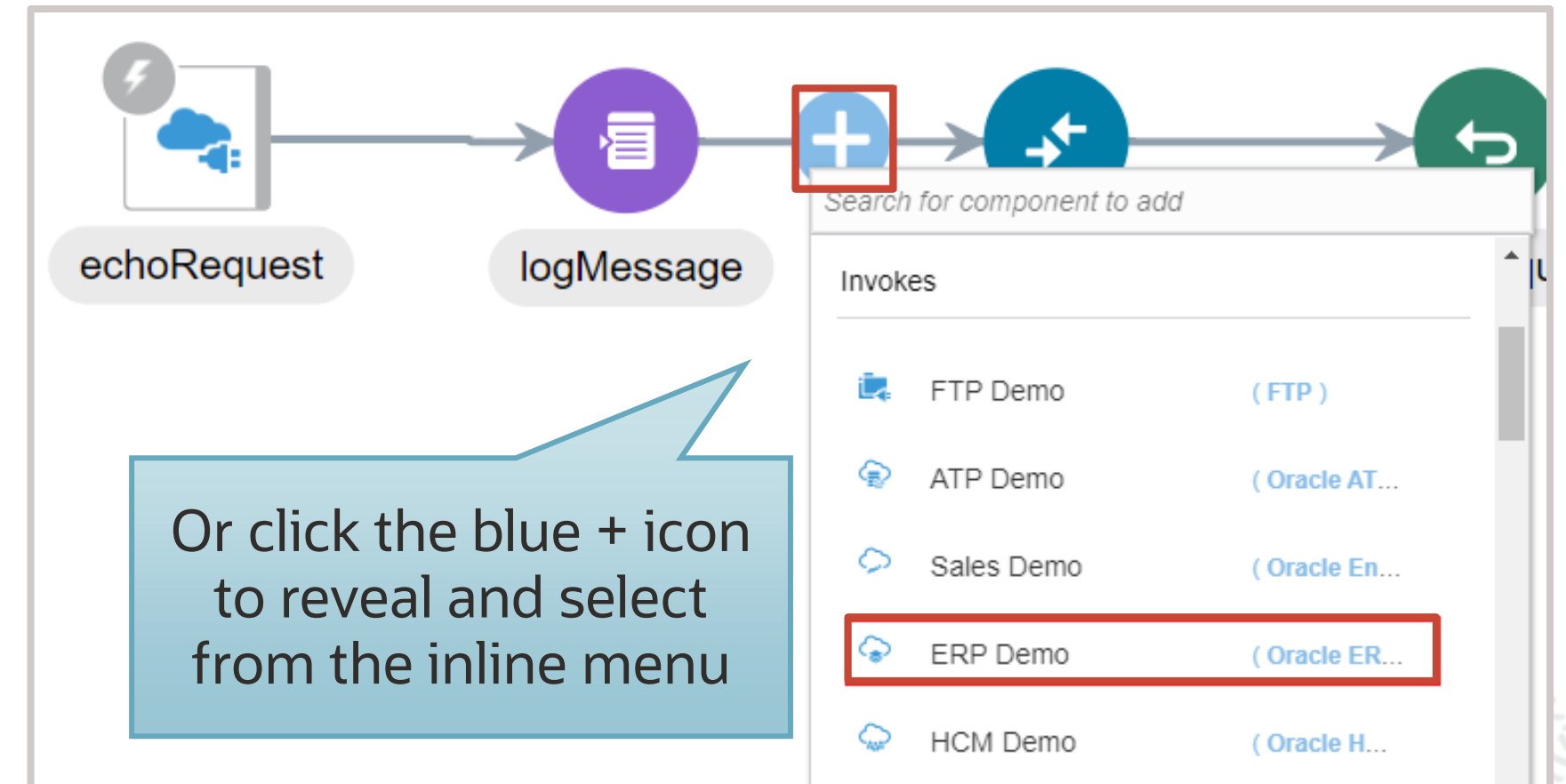
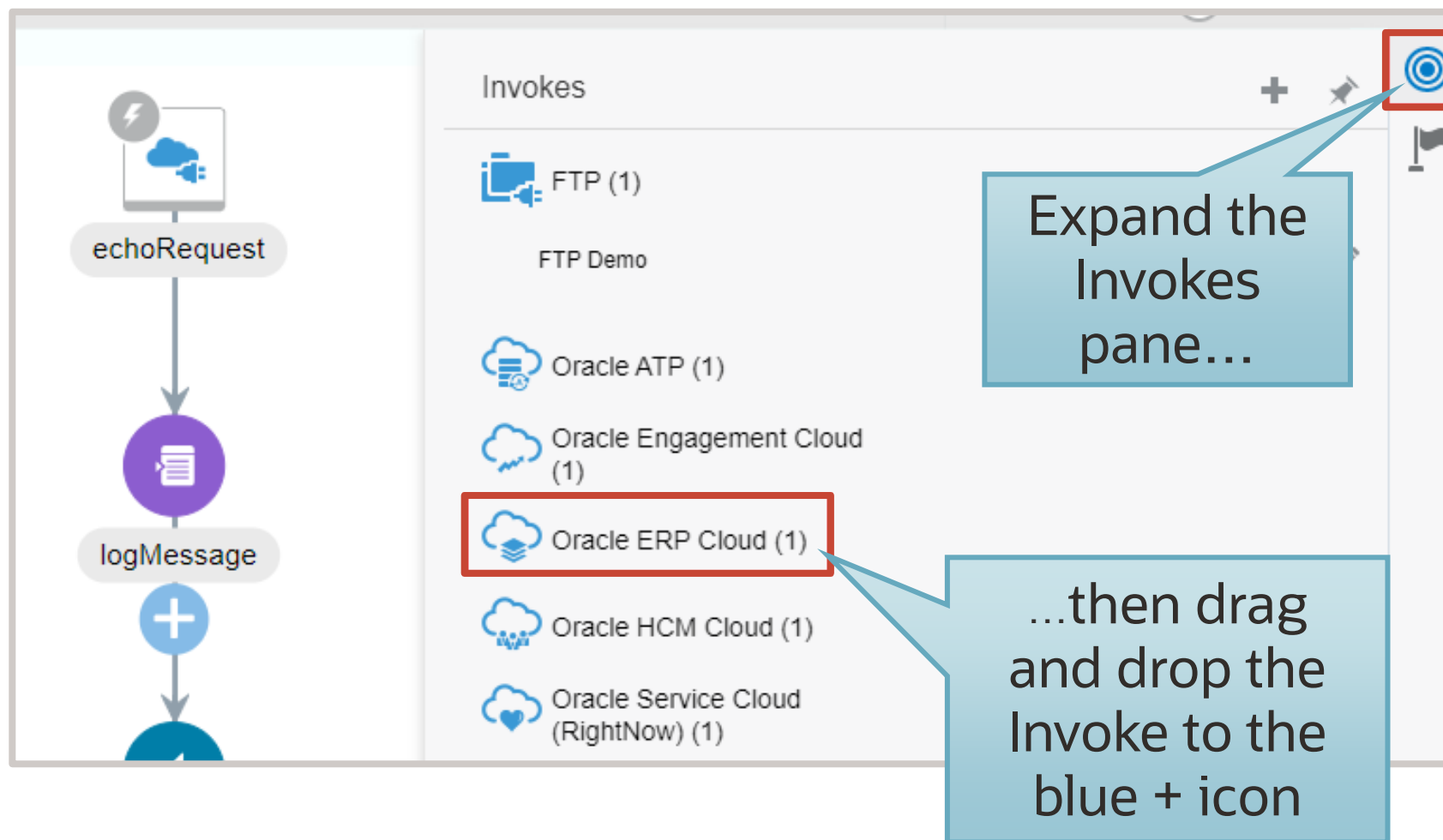
- Capabilities and details for leveraging the configuration wizard are provided for each of these separately in the OIC online documentation.



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

Configure Oracle Service Cloud (RightNow) Endpoint

Welcome to the Oracle Service Cloud (RightNow) Endpoint Configuration Wizard
This wizard helps you configure an endpoint using the Oracle Service Cloud connection. You will be asked to specify configuration parameters for performing a business task in Oracle Service Cloud.

Basic Info

* What do you want to call your endpoint?
For example, GetListOfOpportunitiesForCustomer

What does this endpoint do?
Describe the endpoint's purpose and detail

- 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.

? Select an Operation Type **ROQL** QueryCSV

SELECT C.NAME.LAST FROM Contact C WHERE C.NAME.Last like 'M%'

? Parameter Bindings
No Parameters

Test My Query "4" Results found.

```
<?xml version='1.0' encoding='UTF-8'>
<n0:Columns>Last</n0:Columns>
<n0:Rows>
  <n0:Row>McGovern</n0:Row>
  <n0:Row>Miller</n0:Row>
  <n0:Row>Motuli</n0:Row>
  <n0:Row>Murray</n0:Row>
</n0:Rows>
</n0:CSVTable>
</n0:CSVTables>
```

? Select an Operation Type **ROQL** QueryObjects

SELECT ORGANIZATION FROM ORGANIZATION Org WHERE Org.id = &orgId

? Parameter Bindings
orgId
5

Test My Query "1" Results found.

```
<?xml version='1.0' encoding='UTF-8'>
<n0:RObjects xsi:type="n1:Organization">
  <n2:ID id="5"/>
  <n2:LookupName>Banque Desmet Bruxelles</n2:LookupName>
  <n2:CreatedTime>2014-03-18T12:32:11.000Z</n2:CreatedTime>
  <n2:UpdatedTime>2014-05-02T11:47:34.000Z</n2:UpdatedTime>
  <n1:CRMModules>
    <n1:Marketing>true</n1:Marketing>
    <n1:Sales>true</n1:Sales>
    <n1:Service>true</n1:Service>
  </n1:CRMModules>
</n0:RObjects>
```

? Select an Operation Mode ☒ Single Operation ☐ Batch Operation

? Select an Operation Type **File Attachment** Download

? * Select a Business Object you would like to Download file attachment from

Filter by object name All

Answer
AnswerVersion
Contact
Incident
Opportunity
Organization
Task



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.

Processing Options

Cloud Operation Processing Options

☐ Suppress External Events

☐ Groups multiple operations in a single transaction. At runtime, when a set of operations in a batch are defined as part of a single operation, the Commit After action is sent after the last operation in that transaction boundary.

☒ Commit after

Configure the Operations to Perform in the Target Oracle Service Cloud (RightNow) Application

Select the target operation and the business objects on which to perform the operation in the

Basic Info

Operations

Summary

Select an Operation Mode

Single Operation

Batch Operation

* Operations

Click to add an Operation to the List

File Attachment	Business Objects (API 1_4)	commit	<div><div></div><div></div></div>
GetFileData	Incident	false	
CRUD	Business Objects (API 1_4)	commit	<div><div></div><div></div></div>
Create	Account	true	
ROQL	Business Objects (API 1_4)	commit	<div><div></div><div></div></div>
QueryObjects	Organization,http://xml.org/2001/XMLSchema-instance,http://xmlns.oracle.com/types.QueryObjectsParameters	false	

Add another operation

Click to re-edit

Click to remove



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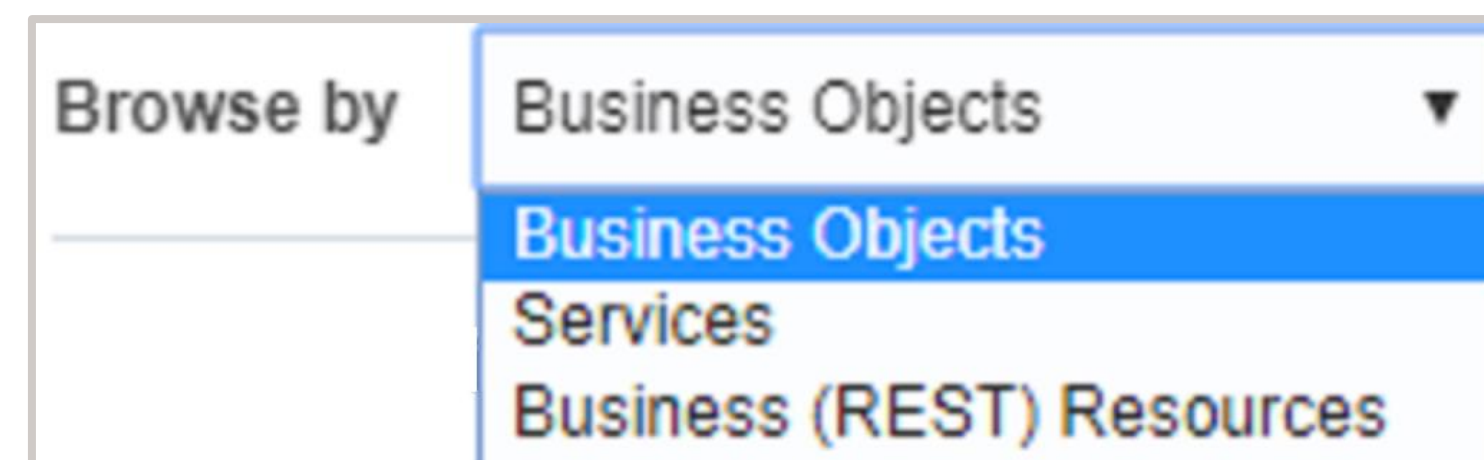


2. Oracle Engagement Cloud

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.

Configure Oracle Engagement Cloud Endpoint

Configure the Operations to Perform in the Target Oracle Engagement Cloud Application

Select the business object or service and operation to use for the target integration.

Basic Info

Operations

Summary

Browse by

Business Objects

Select a Business Object

Filter by business object na

All

All

Active

Custom

Deprecated

Standard

PartnerAccounts

Party Tax Profile

Payables Credit Memo : Invo

Payables Credit Memo : InvoiceService

Payment

PlanModeling

PlanModelingSetupV1

Price Request

Payables Credit Memo : InvoiceService

Payment

PlanModeling

PlanModelingSetupV1

Price Request

Product Design : NewItemRequestService

Select the Operation to

mergePayment

createPayment

deletePayment

findPayment

getPayment

mergePayment

processPayment

updatePayment

Select the operation to perform on the business service.





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.

Configure Oracle Engagement Cloud Endpoint

Configure the Operations to Perform in the Target Oracle Engagement Cloud Application
Select the business object or service and operation to use for the target integration.

Basic Info

Operations

Summary

Browse by: **Services**

Select a Service

Filter by service name: **All**

1

2

SalesAccountResourceService

SalesAccountsService

SalesAccountTerritoryService

SalesCampaignService

SalesCatalogRuntimeService

SalesLeadService

SalesMethodService

SalesObjectiveService

SalesOrderService

SalesPartyResourceService

3

getSalesLead

getSalesLeadContact

getSalesLeadProduct

getSalesLeadResource

getServiceLastUpdateTime

mergeSalesLead

processSalesLead

qualifyLead

rankLead

reassignLead

scoreLead

submitDeal

updateSalesLead

updateSalesLeadContact

updateSalesLeadProduct

updateSalesLeadResource

assignLead

Select the operation to perform on the business object.

Lifecycle: Active

Description

Name : CRM : Lead Management : Sales Lead

Description : A service that enables convert, reject, accept actions in addition to create, update, delete, and search operations for leads.





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.

Or browse to select an operation on an available child resource.

Configure Oracle Engagement Cloud Endpoint

Configure the Operations to Perform in the Target Oracle Engagement Cloud Application

Select the business object or service and operation to use for the target integration.

Basic Info

Operations

Summary

Browse by

Business (REST) Resources

Select a Service Application

crmRestApp

advancedPlanningApp

crmRestApp

fscmRestApp

hcmRestApp

All

1

Select the service application to see resources defined under.

Select a Service Application

crmRestApp

Select a Business Resource

Filter by business resource

All

All

Custom

Standard

2

Quote

Browse and configure a child resource

Queues

Quote

RehabilitationPlan

ResolutionLinks

3

create

create

delete

get

getAll

update

upsert

Select the operation to perform on the selected resource.

Child Resources of Quote_c

Quote_c : Attachment

Quote_c : FK_LOVVA_For_OraZcxOwner

Quote_c : LOVVA_For_OraZcxOwner

Quote_c : Note

Quote_c : Note : NoteSourceTypeVA

Quote_c : Note : NoteVisibilityLookupVA

Quote_c : Note : RatedCurrenciesVA

Quote_c : ViewAccessor_CurrencyCode

Select the operation to perform on the selected child resource.

create

create

delete

get

getAll

update

upsert

object that captures comments, information or instructions for a business object.



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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**

Configure Oracle ERP Cloud Endpoint

Welcome to the Oracle ERP Cloud Endpoint Configuration Wizard
This wizard helps you select one of the capabilities of Oracle ERP Cloud Adapter

Basic Info
Actions
Operations
Response
Summary

? What would you like to do with Oracle ERP Cloud Adapter?

- ☒ **Query, Create, Update or Delete Information**
Perform operations such as Find Catalog, Create Orders, Update Accounts, Process Expenses etc
- ☐ **Import Bulk Data into Oracle ERP Cloud**
Perform FBDI-compliant bulk operations such as Import Asset Leases, Journal Entries, Bank Statements, Payable Invoices, Project Tasks, Sales Orders, Shipping Transactions etc. You can also configure event notifications and callbacks on these operations.
- ☐ **Send Files to ERP Cloud**
Upload files to Universal Content Management (UCM) in ERP Cloud. Note that once the files are uploaded, you will need to add a separate action in your integration flow to invoke the appropriate scheduled process or API in ERP Cloud to process the file. Use this option only when you cannot use the Import Bulk Data option above which automatically takes care of all this.



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

☒ Query, Create, Update or Delete Information

✓ Basic Info

✓ Actions

✓ Operations

Response

Summary

Browse by

Business Objects

Select a Business Object

Filter by object name

All

General Ledger Account

Grievances

Business Objects

Services

Business (REST) Resources

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.

✓ Basic Info

✓ Actions

✓ Operations

Response

Summary

Select Bulk Data Import Process

Validate and Import Collection Documents

Validate and Import Bank Returns for Supplier

Import Journals

Import Chart of Accounts Mapping Segment R

Import Account Combinations

Validate and Upload Budgets

Import Segment Values and Hierarchies

Select the Bulk Data Import Process

✓ Basic Info

✓ Actions

✓ Operations

Response

Summary

Notifications

Please provide notification preferences for communicating job completion status.

* Notification Mode

Email Notification

* Occurrence

Send on import failure

Enable Callback

Select notification preferences.

Selecting this option will enable the ability to create an event trigger in another callback integration.

Import Bulk Data into Oracle ERP Cloud

Interfaceld15

UCM Accountfin/generalLedger/import

Import Job Name And Package Name/oracle/apps/ess/financials/generalLedger/programs/common;JournalImportLauncher

Description

Creates journal entries from imported information from subledgers and other source systems.

Reuse job property file uploaded separately in respective UCM Account

Job Property File

Job Property Extract File

* Extract File

All

Description

Records with supporting load and import process files.

Additional Import Options

Import Options

Select the type of log data to extract while processing the data file.

Additional import options

Select notification preferences.





Send Files to ERP Cloud

Select this option to upload a file to UCM.

✓ Basic Info

✓ Actions

✓ Operations

Response

Summary

This service retrieves a copy of a content item without performing a check out.

File Upload to WebCenter (UCM)

File Upload Parameters

* Security Group

Filter by Security Group

FAFusionImportExport

IPMSYS_APP_1

IPMSYS_APP_2

PersonalSpaces

Public

* Doc Account

Filter by Doc Account

scm\$/inventoryReservation\$/import\$

scm\$/inventoryTransaction\$/import\$

scm\$/maintenanceAsset\$/import\$

scm\$/performShippingTransaction\$/import\$

scm\$/planningDataLoader\$/import\$

scm\$/receivingReceipt\$/import\$

File Options

Encrypt the File ☒



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**

A screenshot of the 'Configure Oracle HCM Cloud Endpoint' wizard. The title bar at the top says 'Configure Oracle HCM Cloud Endpoint'. Below the title bar, there's a welcome message: 'Welcome to the Oracle HCM Cloud Endpoint Configuration Wizard. This wizard helps you select one of the capabilities of Oracle HCM Adapter.' To the left of the main content area is a sidebar with a navigation menu. The menu has four items: 'Basic Info' (with a green checkmark), 'Actions' (highlighted in blue), 'Operations', and 'Summary'. The main content area displays the question: '? What would you like to do with Oracle HCM Cloud Adapter?'. There are four radio button options: 1. 'Query, Create, Update or Delete Information' (selected) with the description 'Query business objects such as employee records etc or perform operations for employee onboarding, data sync etc.' 2. 'Extract Bulk Data using HCM Extracts' with the description 'Receive several records as data file on payroll records, timesheet etc'. 3. 'Subscribe to Updates (via ATOM Feed)' with the description 'Receive latest updates since a specific date on new hires, jobs etc.' 4. 'Send Files to HCM Cloud' with the description 'Upload files to Universal Content Management (UCM) in 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)
 - Select an available resource operation

☒ Query, Create, Update or Delete Information

<div style="padding: 2px;">✓ Basic Info</div> <div style="padding: 2px;">✓ Actions</div> <div style="padding: 2px; background-color: #0070c0; color: white;">✓ Operations</div> <div style="padding: 2px;">Response</div> <div style="padding: 2px;">Summary</div>	<div style="border: 2px solid red; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> Browse by <div style="border: 1px solid #ccc; padding: 2px;"> Business Objects ▼ Business Objects Services Business (REST) Resources </div> </div> <div style="display: flex; justify-content: space-between;"> Select a Busi <div style="border: 1px solid #ccc; padding: 2px;"> All ▼ </div> </div> <div style="border: 1px solid #ccc; padding: 2px; margin-top: 5px;"> General Ledger Account Grievances </div> </div>
--	--

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





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

☒ Extract Bulk Data using HCM Extracts

✓ Basic Info

✓ Actions

✓ Operations

Summary

* What is the Integration Name for HCM Extract?

EXAMPLE_HCM_A

Specify the release date-time of extract?

12/15/20 12:00 AM

Select actions that need to perform on extract in following list:

Decrypt the extract☒

Unzip the extract☒

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.

Select an Atom Feed

Filter by atom feed

Employee Assignment

Employee New Hire

Employee Termination

Employee Update

Grade

Job

Location

Organization

Position

[Learn more about HCM Cloud ATOM feeds](#)

Max entries to process

10

?

☒

Process Future Dated Entries Immediately

?

☒

Include Business Object in ATOM feeds

Subscribe to Updates (via ATOM Feed)

Select the type of changes in HCM you are interested in processing.

Learn more about HCM Cloud ATOM feeds

Max entries

Select the number of entries to process in single invoke

10

10

25

50

100

250

500

750

1000

Process Future Dated Entries Immediately

Include Business Object in ATOM feeds

Additional HTTP requests will be sent to retrieve the business object for each entry.





Send Files to HCM Cloud

Select this option to upload a file to UCM.

✓ Basic Info

✓ Actions

✓ Operations

Summary

This service retrieves a copy of a content item without performing a check out.

File Upload to WebCenter (UCM)

File Upload Parameters

* Security Group

Filter by Security Group

FAFusionImportExport

IPMSYS_APP_1

IPMSYS_APP_2

PersonalSpaces

Public

* Doc Account

Filter by Doc Account

hcm\$/common\$/content\$

hcm\$/dataloader\$/import\$

ic\$/incentiveCompensationCurrencyExchange

ic\$/incentiveCompensationParticipant\$/import

ic\$/incentiveCompensationParticipantComper

File Options

Encrypt the File ☒

 **Send Files to HCM Cloud**

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**

Basic Info

Invoke a Stored Procedure

Run a SQL Statement

Operation On Table

Summary

* What do you want to call your endpoint?

For example, GetListOfOpportunitiesForCustomer

What does this endpoint do?

Describe the endpoint's purpose and detail

* What operation do you want to perform?

Invoke a Stored Procedure ▼

Invoke a Stored Procedure

Run a SQL Statement

Perform an Operation On a Table

Select an operation type that meets your specific business requirements.



Invoke a Stored Procedure



Select the Schema, Package, and Procedure to execute.

What operation do you want to perform?

Invoke a Stored Procedure

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

Select Schema, Package and Procedure

Select the schema, package, and procedure for the Oracle adapter endpoint.

1

Select Schema

SYS

Select Package

SP1579194263_IUA
SP1579194263_IUA_APPEND
SP1579194263_IUA_VIEWER
SP1579194263_MDS
SP1579194263_OPSS
SP1579194263_SOAINFRA
SP1579194263_STB
SP1579194263_UMS
SP1579194263_WLS
SP1579194263_WLS_RUNTIME
SSB
SYS
SYS\$UMF

Select Package

2

Search Pattern

<default package>
AS_REPLAY
CS_RESOURCE_MANAGER
DBMSZEXP_SYSPKGRNT
DBMS_ADDM
DBMS_ADVANCED_REWRITE

Select Procedure

3

Search Pattern

SYS_IXQAGGSUM
SYS_NT_COLLECT
SYS_XMLAGG
TIMESTAMP_TO_SCN
TSDP\$VALIDATION_CHECK
VERIFY_FUNCTION

Basic Info

Invoke a Stored Procedure

Run a SQL Statement

Operation On Table

Summary

InvokeSP

Next Steps

Next Steps to be taken

1. Please ensure stored procedure gets completed by 4 minutes, inorder to avoid time outs.
2. For use cases involving long running Stored Procedures,Please follow the steps 3 and 4.
3. Model a wrapper procedure as fire-and-forget.
4. Invoke the actual procedure from the wrapper.

Selected API

Stored Procedures

Schema

SYS

Procedure

TIMESTAMP_TO_SCN

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

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Confidential - Oracle Restricted



Run a SQL Statement

Provide a valid SQL statement.

What operation do you want to perform?

Run a SQL Statement

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

Basic Info

Invoke a Stored Procedure

Run a SQL Statement

Operation On Table

Summary

SQL Query

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

Validate SQL Query

Status Success!

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

Run a SQL Statement

Operation On Table

Summary

Schema File [InvokeDB.xsd](#)

Summary page provides a link to the generated XSD.

XSD Schema

```
<?xml version = '1.0' encoding = 'UTF-8'?>
<xs:schema targetNamespace="http://xmlns.oracle.com/cloud/adapters/atpdatabase/InvokeDB/types"
xmlns="http://xmlns.oracle.com/cloud/adapters/atpdatabase/InvokeDB/types" elementFormDefault="qualified"
attributeFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="InvokeDBInput" type="InvokeDBInput"/>
  <xs:complexType name="InvokeDBInput">
    <xs:sequence/>
  </xs:complexType>
  <xs:element name="InvokeDBOutputCollection" type="InvokeDBOutputCollection"/>
  <xs:complexType name="InvokeDBOutputCollection">
    <xs:sequence>
      <xs:element name="InvokeDBOutput" type="InvokeDBOutput" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="InvokeDBOutput">
    <xs:sequence>
      <xs:element name="COUNTRY_ID" type="xs:string" nillable="true"/>
      <xs:element name="COUNTRY_ISO_CODE" type="xs:string" nillable="true"/>
      <xs:element name="COUNTRY_NAME" type="xs:string" nillable="true"/>
      <xs:element name="COUNTRY_TOTAL" type="xs:string" nillable="true"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```





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**

* What operation do you want to perform?

Perform an Operation On a Table ▼

* What operation do you want to perform on Table?

☐ Insert

☐ Update

☐ Insert or Update (Merge)

☒ Select

Basic Info

Invoke a Stored Procedure

Run a SQL Statement

Operation On Table

Summary

Search tables to import

* Schema SH

Table Name Optional. e.g. EMPLOYEE or %EMP%

Search

Table Type

TABLE

ALL

MATERIALIZED VIEW

MATERIALIZED VIEW LOG

SYNONYM

TABLE

VIEW

* Schema SH

Table Type TABLE

Table Name Optional. e.g. EMPLOYEE or %EMP%

Search

Filter By Name

Available

CHANNELS

COSTS

CUSTOMERS

PRODUCTS

PROMOTIONS

SALES

SUPPLEMENT

GRAPHICS

Selected

COUNTRIES

Import Tables





Additional Editing Options

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 ---

COUNTRIES

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 defined relationships. Deselect columns that you want to exclude from the database query.

Advanced Options [Edit](#)

Review and update advanced options

Add/remove tables and select the parent

Define all table relationships

For Insert & Merge operations, select sequencing options

Select the columns

View ▾

▲ ☒ COUNTRIES

☒ countryId (NOT NULL)

☒ countryIsoCode (NOT NULL)

☒ countryName (NOT NULL)

☐ countrySubregion (NOT NULL)

☐ countrySubregionId (NOT NULL)

☐ countryRegion (NOT NULL)

☐ countryRegionId (NOT NULL)

☒ countryTotal (NOT NULL)

☐ countryTotalId (NOT NULL)

☐ countryNameHist

Deselect any attributes to exclude from a 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.

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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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.

Configure the Operation Parameters for the Target FTP Endpoint
Select the operation to perform and define the parameters required for target FTP endpoint.

Basic Info (checked)
Operations
Schema
File Contents - Definition
Summary

* Select Operation: Read a File (selected)
* Select a Transfer Mode
Input Directory
File Name

Read a File dropdown menu options:
Read a File
Write File
List Files
Move a File
Delete a File
Download File





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

* Select Operation

Download File ▾

* Select a Transfer Mode

☐ ASCII ☒ Binary

Input Directory

/default/directory_path

File Name

default_filename

* Download Directory

/vfs_directory_to_use

☒ Perform unzip on compressed file downloaded from external FTP server

☒ Retain the zip directory structure

☐ Perform PGP Decryption on an encrypted file downloaded from external FTP server

☐ Perform verification on the signed file downloaded from external 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.


Requires PPK-pair configuration for this FTP Connection





Delete a File

Delete a file in the target FTP server.

 Select Operation	Delete a File ▼
Directory Path	/default/directory_path
File Name	default_filename

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.

Select Operation

Move a File

Directory Path

/default/directory_path

File Name

default_filename

Target Directory Path

/default/target/directory_path

Target File Name

default_target_filename

☐ Overwrite File

Select to allow target file to be overwritten.

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.



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.

* Select Operation **Write File** ▼

* Select a Transfer Mode ☐ ASCII ☒ Binary

* Output Directory

? * File Name Pattern

☐ Append to Existing File

* PGP Encryption / Decryption

OIC can do PGP Encryption using public key on the file to be sent to external FTP servers for protection of sensitive data and to preserve confidentiality and privacy. Similarly, OIC can do PGP Decryption using private key on the incoming file to decrypt the encrypted contents.

☐ Perform PGP Encryption on the file to be sent to external FTP Server

☐ Perform PGP Decryption on an encrypted file to be sent to external FTP Server as clear text

☒ No PGP Encryption/Decryption on the file to be sent to external FTP Server

* Sign / Verify Signature

OIC can do the signing using the private key to allow the receiver to verify that the file contents were not altered during the transit. Similarly, OIC can do Signature Verification using the public key on the incoming file to verify that the contents were not altered during the transit.

☐ Perform signing on the file to be sent to external FTP Servers

☐ Perform verification on the incoming signing file that needs to be sent to external FTP Server

☒ No Signing/Verification on the file to be sent to external 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.

* Select Operation

Read a File

* Select a Transfer Mode

☒ ASCII

☐ Binary

Input Directory

/default/directory_path

File Name

default_filename

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

? Do you want to specify the structure for the contents of the file?

☐ Yes
 ☒ No

2

- ✓ Basic Info
- ✓ Operations
- ✓ Schema
- File Contents - Definition
- Summary

? Do you want to specify the structure for the contents of the file?

☒ Yes
 ☐ No

? Which one of the following choices would be used to describe the structure of the file contents?

Sample delimited document (e.g. CSV) ▼

Sample delimited document (e.g. CSV)

XML schema (XSD) document

Sample XML document (Single or No NameSpace)

Sample JSON document

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.).

Select an existing XML schema or schema archive from the file system.

Schema archive can have a single top level schema with nested imports and includes containing absolute or relative paths.

Select a New File No file chosen

Selected File Name

Select the Schema Element

✓ Basic Info

✓ Operations

✓ Schema

File Contents - Definition

Provide a sample JSON document from the file system

Select a New File No file chosen

Selected File Name

Select the Schema Element

Create a New Schema from a CSV file

Select a New Delimited Data File No file chosen

Selected File Name

* Enter the Record Name

* Enter the Recordset Name

Select the Field Delimiter

Character Set

Optionally Enclosed By

Terminated By

☐ Detach ☐ Use First Row as Column Headers ☐ Mark All As Optional

C1	C2	C3	C4	C5
String	String	String	String	String
Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Salutation	FirstName	LastName	CorrespondenceL...	PersonNu

Provide a sample XML document from the file system.

XML document should contain no namespace or only single namespace.

? Select a New File No file chosen

Selected File Name

Select the Schema Element

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



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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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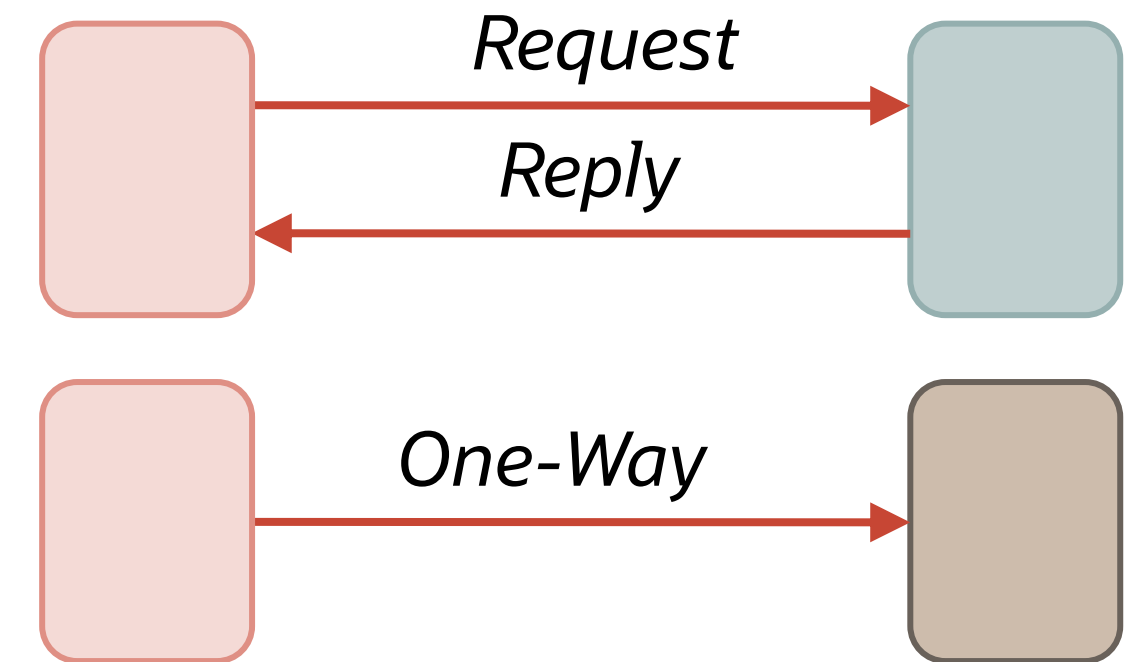


8. REST Adapter Connections

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)





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)

Basic Info

Request Parameters

Request

Request Headers

Response

Response Headers

Summary

* What do you want to call your endpoint?

GetDistance

1

What does this endpoint do?

Invokes the ZipCode REST API web service retrieving the distance between two provided zip codes

* What is the endpoint's relative resource URI?

/zip_code1/zip_code2/units

2

* What action do you want to perform on the endpoint?

GET

3

Based on your selections, you can add parameters or configure a re

Select any options that you want to configure:

☒ Add and review parameters for this endpoint
 ☐ Configure a request payload for this endpoint
 ☒ Configure this endpoint to receive the response

Configure Request Headers?

Standard

Custom

Configure Response Headers?

Standard

Custom

4

5



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

Name	Data Type
param2	string boolean double float integer short

Select the attachment processing options

☒ Accept attachments from request

☐ Request is HTML form

Select the request payload format

XML Schema

Schema Location: Choose File No file chosen

Select the media type which you want the endpoint to receive

☒ multipart/mixed

☐ multipart/form-data

Select the request payload format

Binary

Select the media type which you want the endpoint to receive

application/zip

application/octet-stream

application/pdf

application/msword

application/zip

image/jpeg

image/png

image/bmp

image/gif

Other Media Type

Operation Name: addOrderItem

Resource URI: /orders/{order-id}/items/

HTTP Method: POST

Select the attachment processing options

☐ Accept attachments from request

☐ Request is HTML form

Select the request payload format

JSON Sample

XML Schema

JSON Sample

XML Sample (Single or No NameSpace)

Binary





Response Options

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

✔ Basic Info

✔ Request Parameters

Request

Request Headers

✔ Response

Response Headers

Summary

Select the attachment processing options

☐ Process attachments from response

☐ Response is HTML form

Select the response payload format

JSON Sample

Schema Location

Choose File

No file chosen

--OR-- enter sample JSON <<< inline >>>

Select the media type which you want the endpoint to reply

☐ XML

☐ XML(text)

☒ JSON

☐ Other Media Type

Media Type

For example, application/oracle.cloud+json, applic

Select the attachment processing options

☒ Process attachments from response

☐ Response is HTML form

Select the response payload format

XML Schema

Schema Location

Choose File

No file chosen

Select the media type which you want the endpoint to reply

☒ multipart/mixed

☐ multipart/form-data

Select the response payload format

Binary

Select the media type which you want the endpoint to reply

application/octet-stream

application/octet-stream

application/pdf

application/msword

application/zip

image/jpeg

image/png

image/bmp

image/gif

Other Media Type



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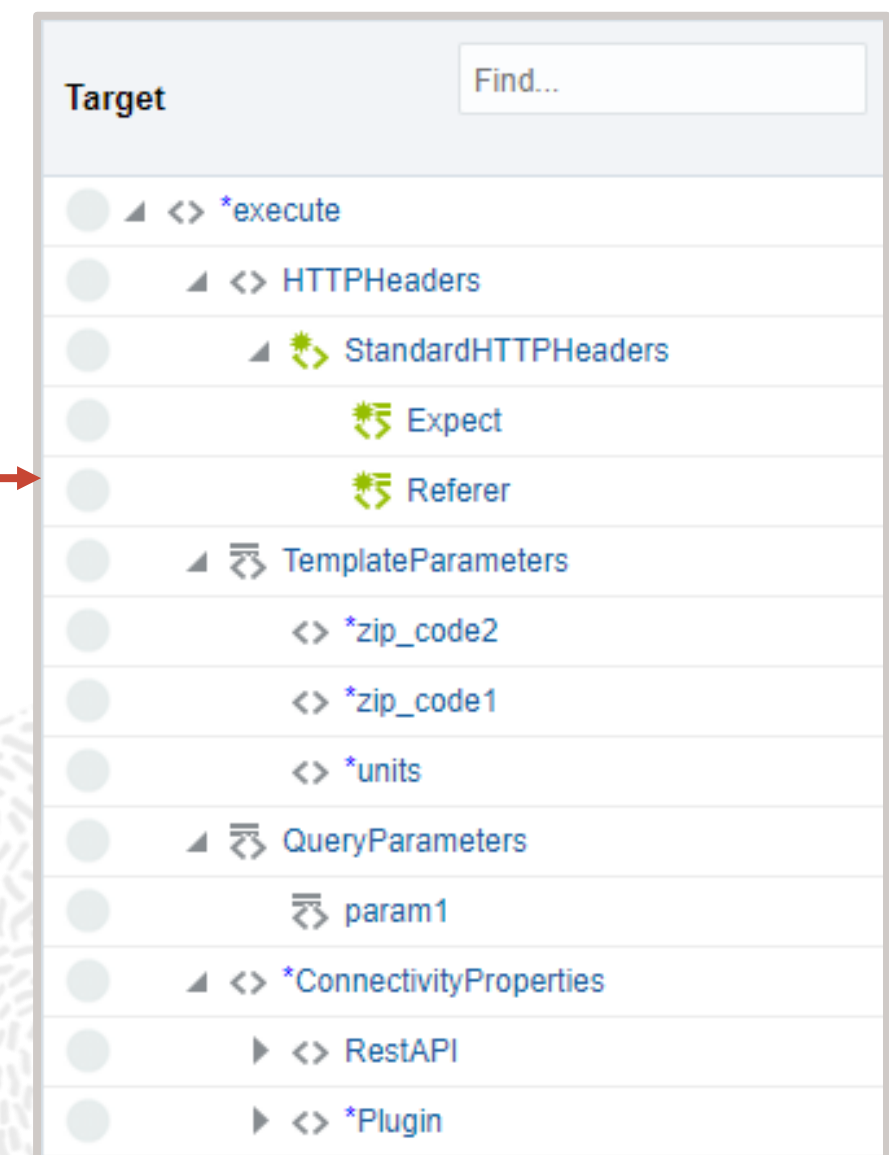
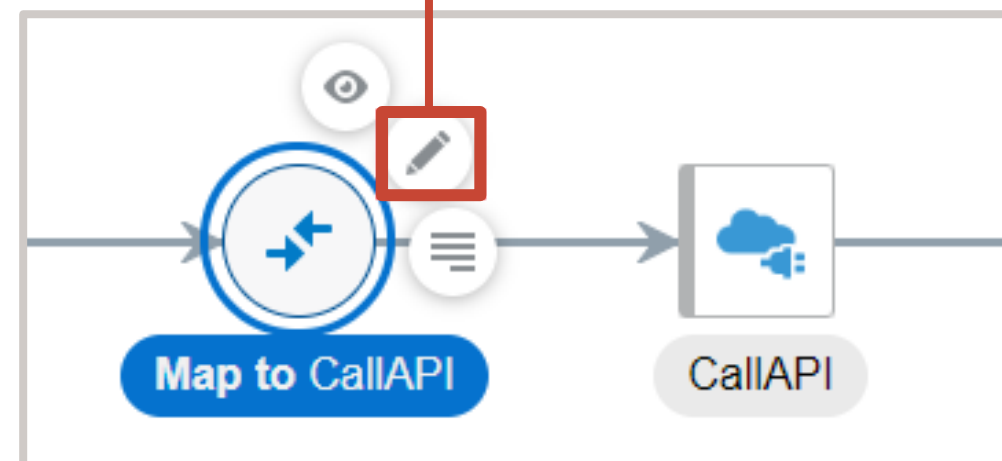
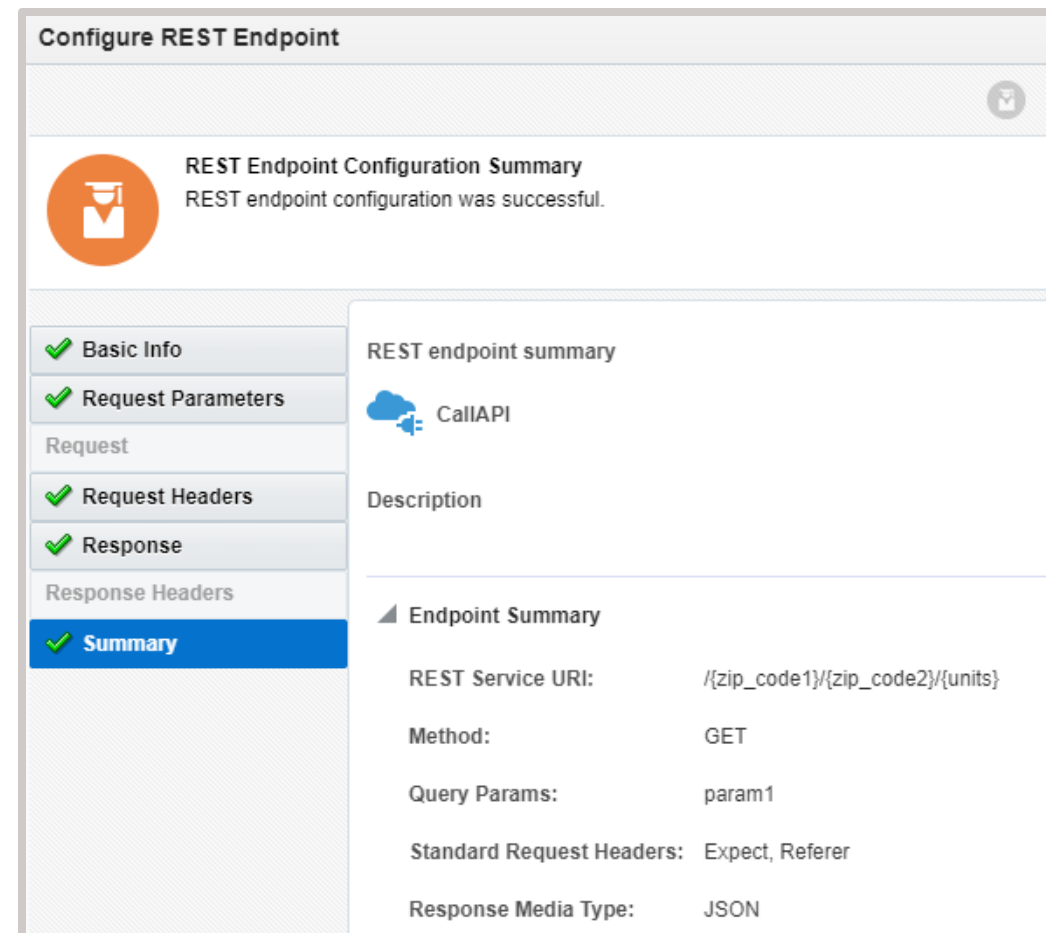


Wrapping Up: Completing the Invoke Configuration

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

