ORACLE

Creating OIC Adapter Connections

Objectives

After completing this lesson, you should be able to:

- Describe the use of adapters in Oracle Integration Cloud (OIC) Integrations
- Understand the roles used for OIC Connections
- Create OIC Adapter Connections
- Understand the OIC Connectivity Agent Framework





- OIC Adapters and Features
- Creating OIC Connections
- Additional Considerations
- On-Premises Connectivity Agent





Oracle Cloud Adapters: Benefits

Adapters simplify and accelerate integration with SaaS and on-premises applications. Benefits include:

- Abstract the complexities of transports and protocols
- Automatic discovery of application assets:
 - Business objects, services, and events
 - Support for standard and custom objects
- Requiring you to only point and click to start using new adapter wizards
- Can be configured as part of an Integration flow
- Improving developer productivity



Oracle Cloud Adapters: Supported Features

Adapters provide both design-time and runtime features for implementing and deploying specific integration use cases.

The commonly supported features include:

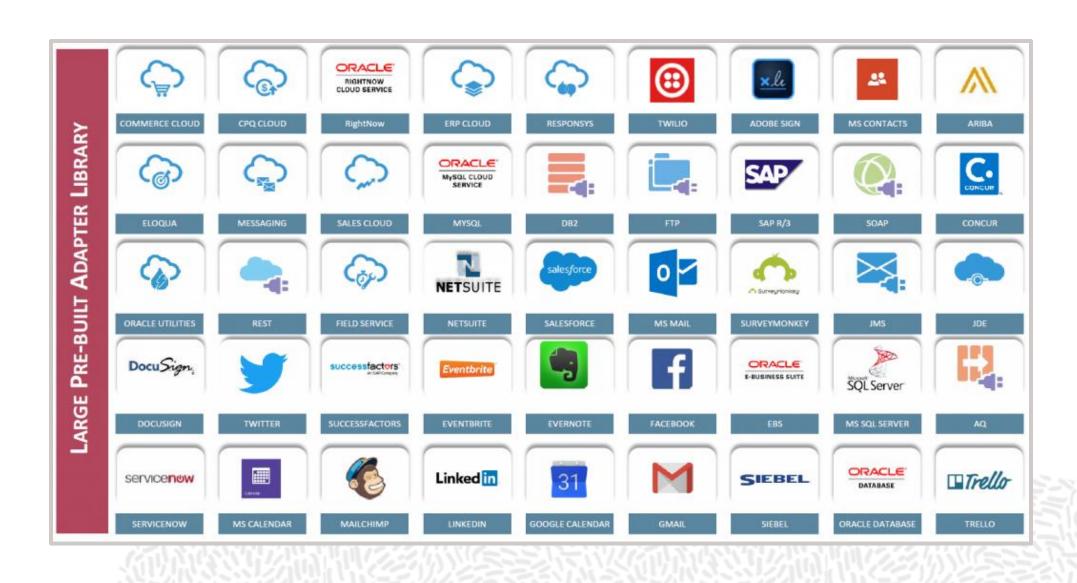
- Discovery of standard and custom business objects via the graphical catalog
 - Events can also be discovered and configured for integration triggers.
- Native support (via object query languages) for integration capability
- Simple to configure yet powerful security model
- Session management
- Standard error-handling capabilities
- High availability, scalability, and reliability



Available OIC Adapters

Over 60 adapters are preinstalled in your OIC environment.

- Oracle Cloud SaaS Applications
- Third-Party Cloud SaaS Applications
- On-Premises Enterprise Applications
- Social/Productivity Applications
- Generic Technology Adapters
 - Databases
 - FTP/File Servers
 - REST
 - SOAP



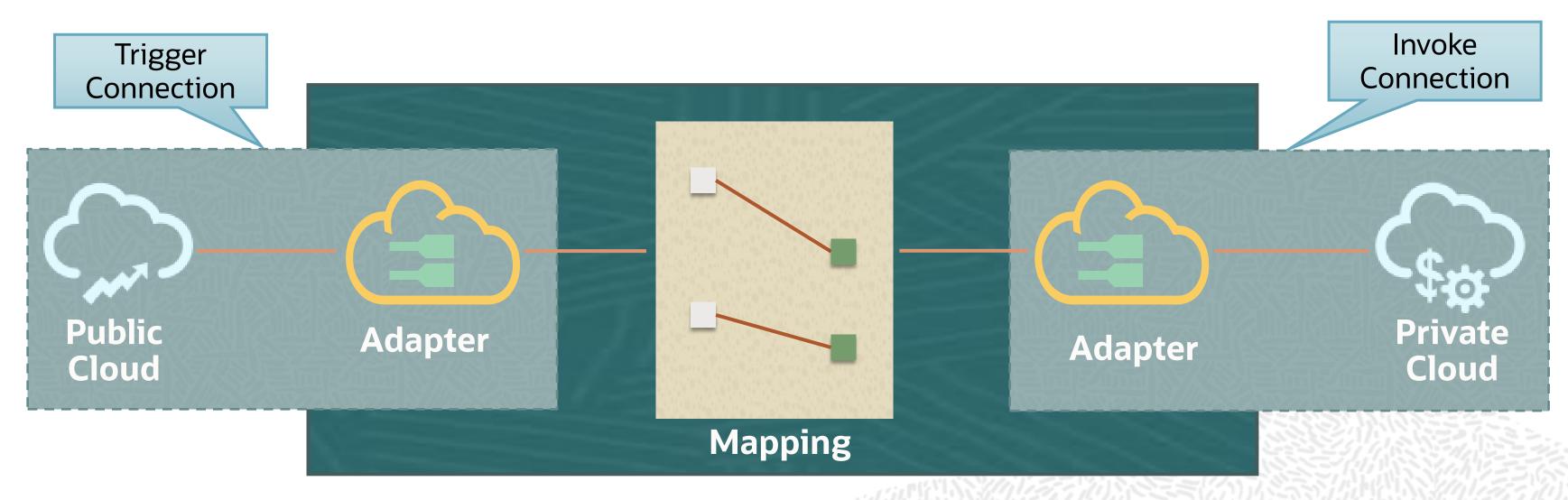


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OIC Connections Review



OIC Integration Flow



What Is a Connection?

An OIC Connection is a resource that represents either a new OIC interface or an existing external application or system.

Connections are used in one of two roles:

- Trigger (inbound)
 - Defines a SOAP or REST interface allowing clients to invoke an integration flow
 - Allows for defining an event subscription or SOAP interface for a SaaS application
 - Defines a polling trigger to consume a file or message from an upstream system
- Invoke (outbound)
 - Used to define an external service or system that can be called from an integration



Creating a Connection

Select an Adapter

- Creating a connection requires only basic information and defined connection and security policies.
- Specific use cases are facilitated later when configuring a connection to be used within an integration flow.

Provide Basic Info

Configure Connection Properties These are specific to the chosen adapter.

Configure Security

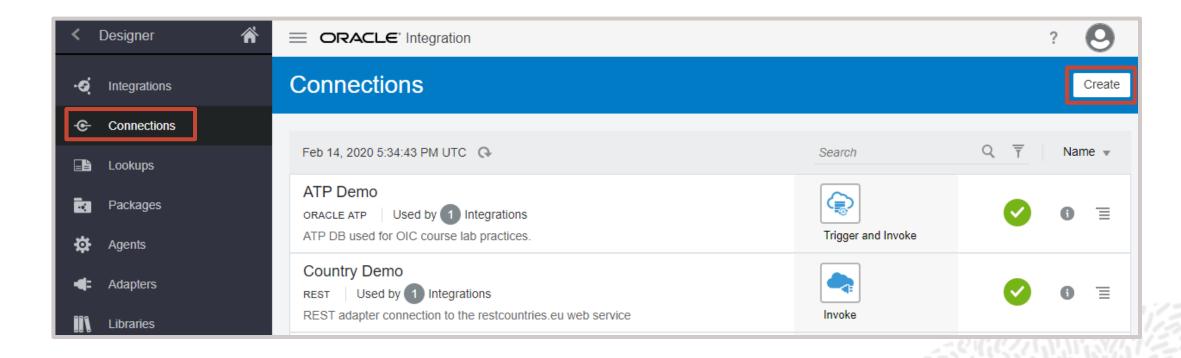
Test the Connection

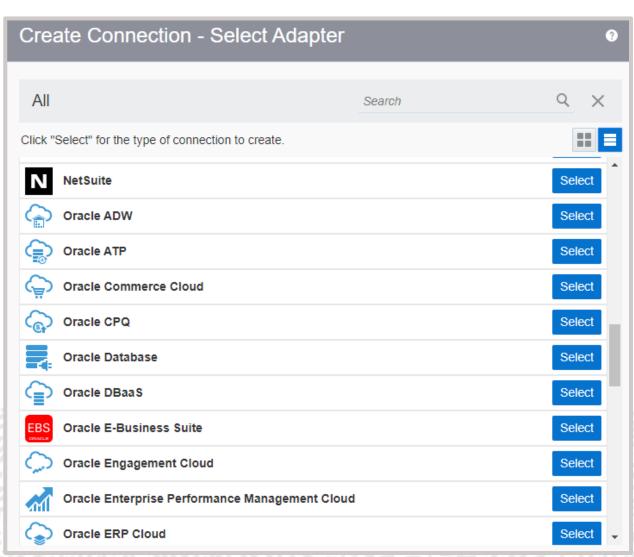
 Normally, only one connection per each external system or application is created.

 Multiple runtime connections are managed by OIC for each integration flow as needed.

Getting Started (Review)

- On the Designer Portal, click Connections.
- Click Create.
- Select an adapter from the dialog box or perform a search.



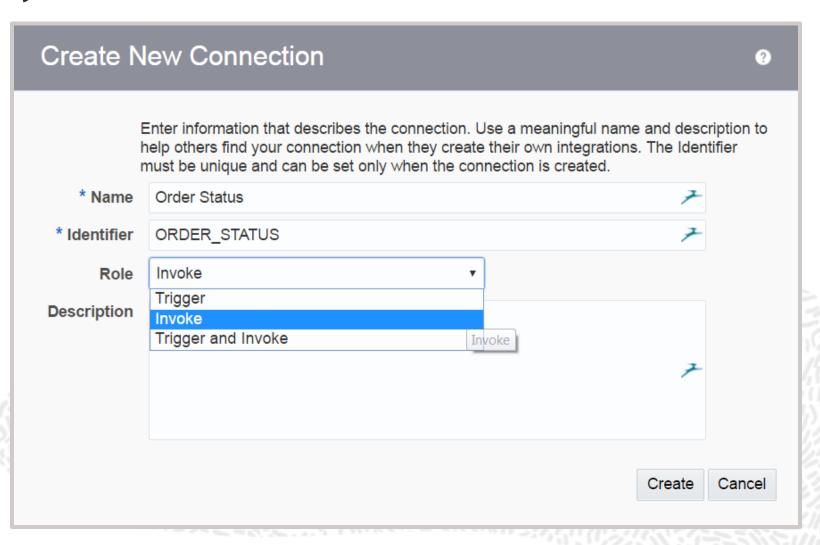




Providing Basic Connection Information (Review)

- Provide a meaningful name to help others find the connection when using it for their integrations.
 - Typically, this is related to a specific endpoint use case or a new interface.
 - An identifier in uppercase is automatically created.
- Select the role:
 - Trigger (interface or event)
 - Invoke (service endpoint)
 - Both

Only the roles supported by the selected adapter are displayed.

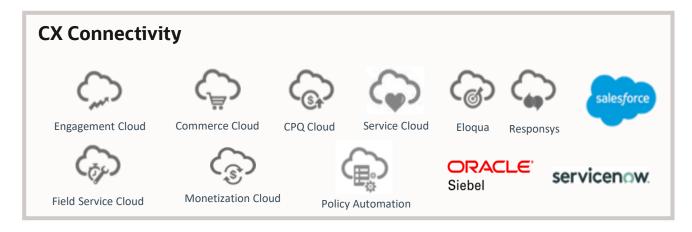




Defining Connection and Security Properties

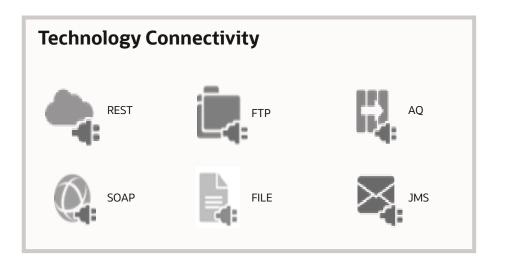
60+ Adapters – consult the OIC documentation for specific options and details

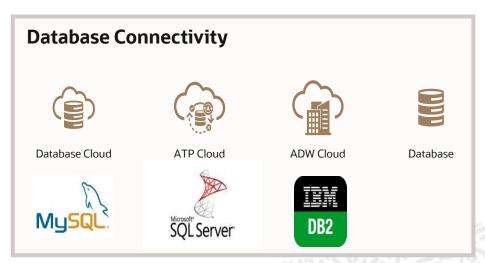


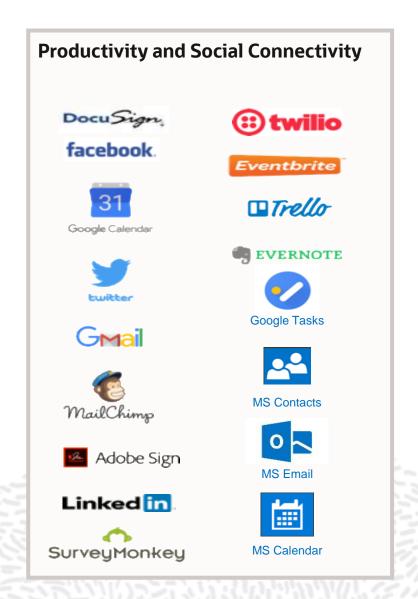












We'll look at 11 adapters in the upcoming slides...



- OIC Adapters and Features
- Creating OIC Connections
 - Oracle Service Cloud (RightNow)
 - 2. Oracle Engagement Cloud
 - 3. Oracle ERP Cloud
 - 4. Oracle HCM Cloud
 - 5. Salesforce
 - 6. ATP/ADW Databases
 - 7. Oracle Siebel
 - 8. Oracle E-Business Suite
 - 9. FTP Connections
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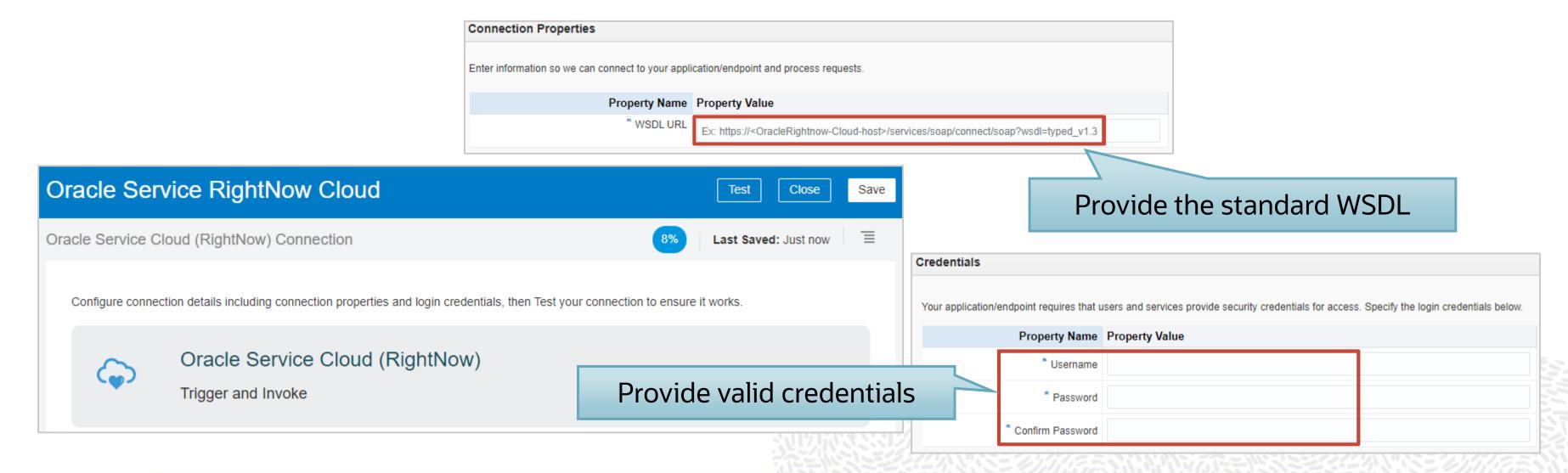




1. Oracle Service Cloud Adapter Connection



The standard WSDL can include support for both business objects and event subscriptions. This enables you to receive either a business object or an event subscriptions as a request from the Oracle Service Cloud (RightNow) application.



The developer creating an Oracle Service Cloud connection must work with the Oracle Service Cloud service administrator to obtain the URL and credentials.



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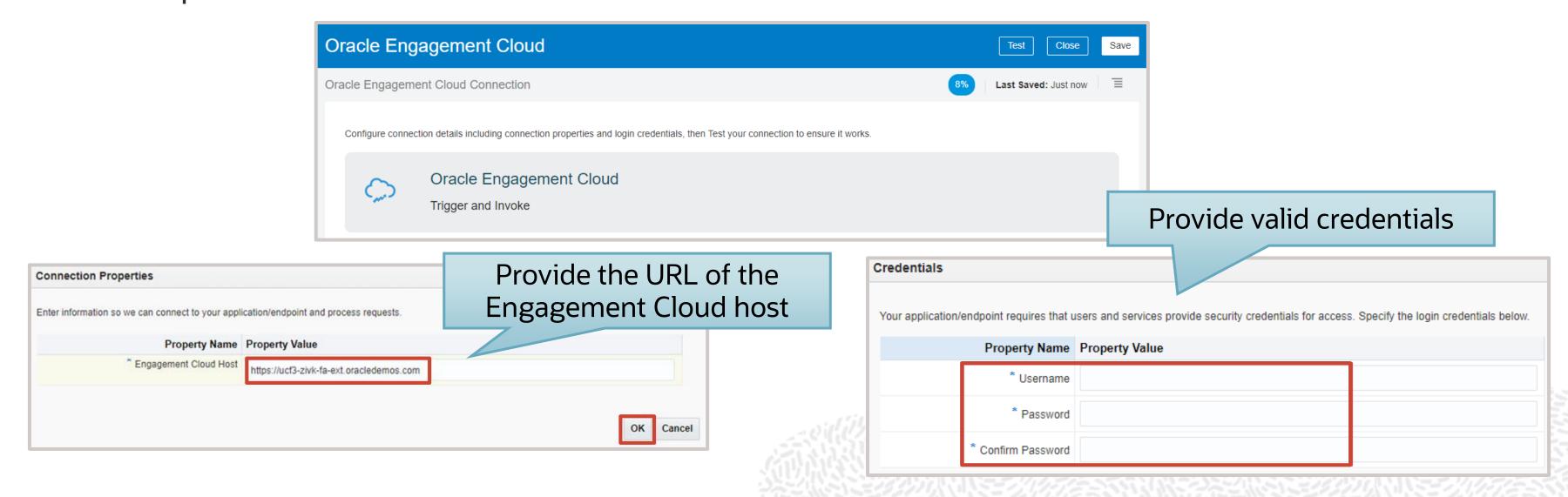




2. Oracle Engagement Cloud Adapter Connection



The service catalog service is a Fusion Application service that returns a list of external services available for integration. It allows clients to retrieve information about all public Fusion Application service endpoints available for that instance.



The developer creating an Oracle Engagement Cloud connection must work with the Oracle Engagement Cloud service administrator to obtain the URL and credentials.



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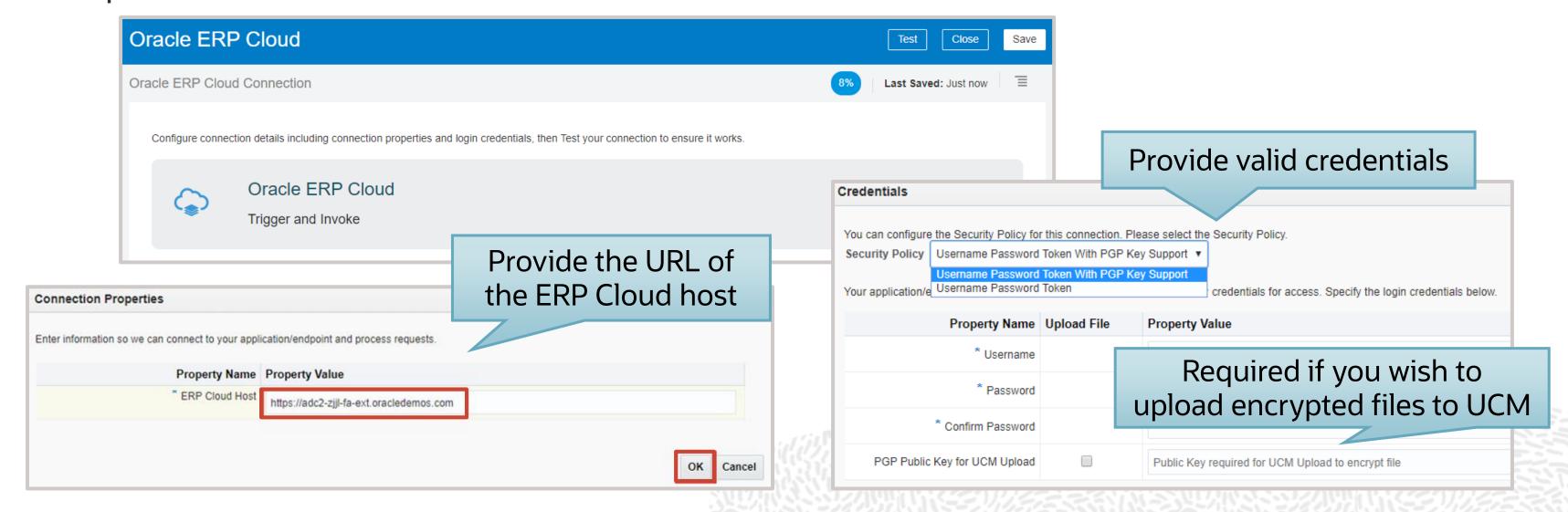




3. Oracle ERP Cloud Adapter Connection



The service catalog service is a Fusion Application service that returns a list of external services available for integration. It allows clients to retrieve information about all public Fusion Application service endpoints available for that instance.



The developer creating an Oracle ERP Cloud connection must work with the Oracle ERP Cloud service administrator to obtain the URL and credentials.



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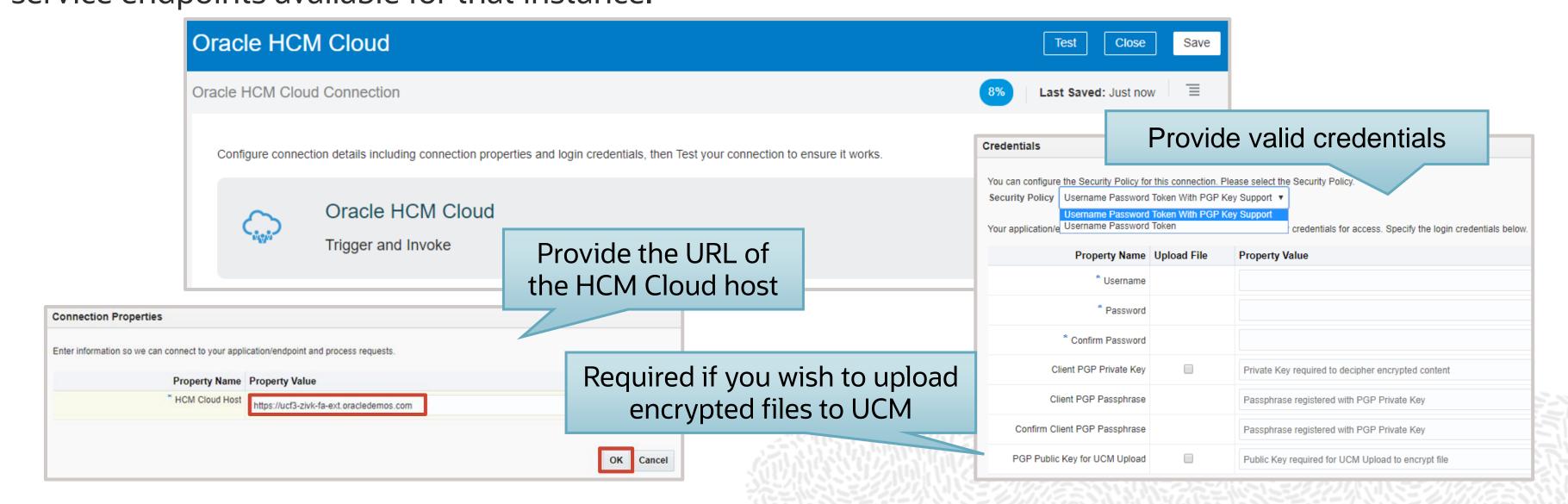




4. Oracle HCM Cloud Adapter Connection



The service catalog service is a Fusion Application service that returns a list of external services available for integration. It allows clients to retrieve information about all public Fusion Application service endpoints available for that instance.



The developer creating an Oracle HCM Cloud connection must work with the Oracle HCM Cloud service administrator to obtain the URL and credentials.



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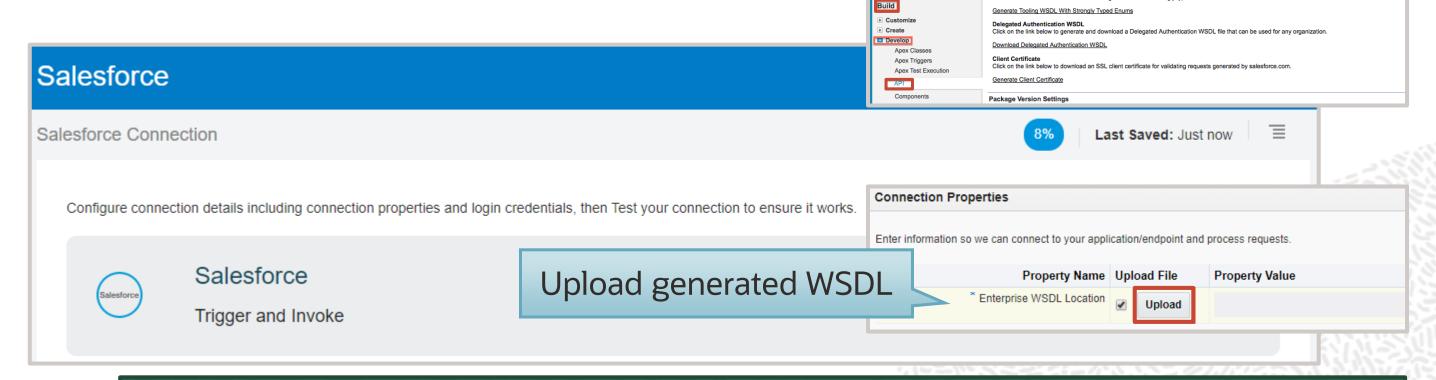
5. Salesforce Adapter Connection



An enterprise WSDL must be created by the Salesforce service administrator.

Three security policy options are available:

- Salesforce Username Password
- Authorization Code Credentials
- Resource Owner Password Credentials



The developer creating a Salesforce connection must work with the Salesforce service administrator to obtain the enterprise WSDL and credentials.



Salesforce Login Gmail (Corp) GDocs (Corp) GCal (Corp) apex:selectOptions

Generate Enterprise WSDL

Generate Partner WSDL

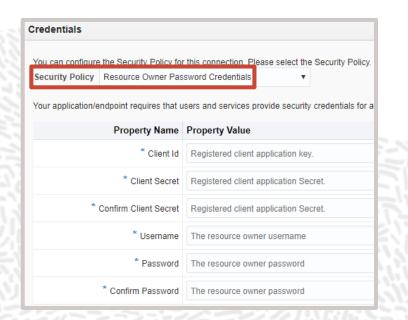
Generate Apex WSDL

Generate Metadata WSDL

Generate Tooling WSDL

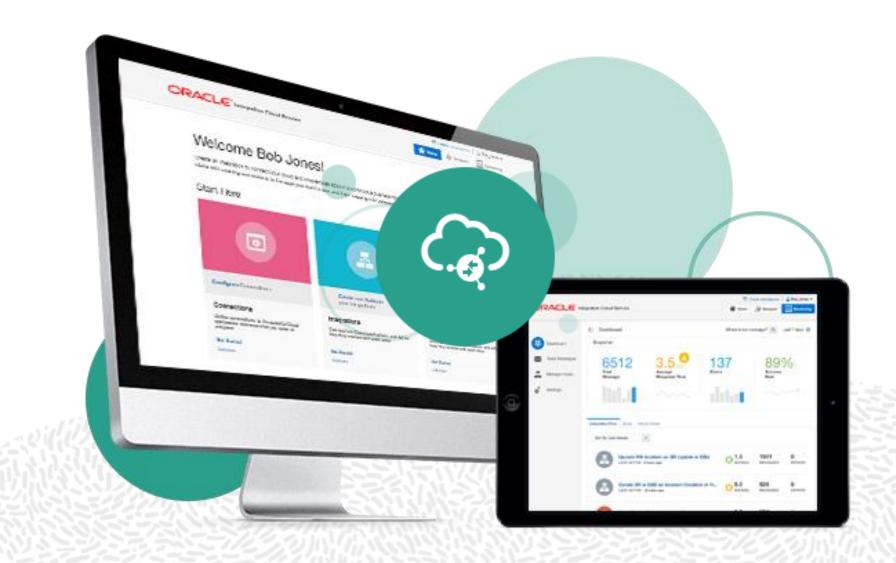
Apex WSDL
Click on the link below to download an Apex programming WSDL

Credentials	
You can configure the Security Policy for this connection. Please select the Security Policy. Security Policy	
Your application/endpoint requires that users and services provide security credentials for a Property Name Property Value	
Property Name	Property Value
* Client Id	Registered client application key.
* Client Secret	Registered client application Secret.
* Confirm Client Secret	Registered client application Secret.
Scope	for example: read,write.





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6. Oracle ATP/ADW Adapter Connections



Access the Oracle Cloud Infrastructure (OCI) console to obtain: Instance Wallet **Connection Properties** You can configure the Security Policy for this connection. Please select the Security Policy **TNS Name** Security Policy | JDBC Over SSL Database Connection Enter information so we can connect to your application/endpoint and process requests You will need the client credentials and connection information to connect to your database. The client credentials include the wallet, which is required for all types of connections Host/Port Info Property Name | Property Value Download Client Credentials (Wallet) adb.us-ashburn-1.oraclecloud.com To download your client credentials, select the type of wallet, then click Download Wallet. You will be * Wallet Password asked to create a password for the wallet. * Confirm Wallet Password Wallet Type (i) Provide connection SID Database Service Username properties * Database Service Password Rotate Wallet Service Name * Confirm Database Service Passw. Wallet last rotated: Connection Strings Oracle ADW Database Use the following connection strings or TNS names for your connections. See the documentation for details. Oracle recommends using TLS connections to connect to your Autonomous Database. Upload wallet Oracle ADW Connection Connection String (i) TNS Name (i) ATPDBOIC1_HIGH _atpdboic1_high.atp.oraclecloud.com Show Copy Provide wallet password ATPDBOIC1_MEDIUM ..tpdboic1_medium.atp.oraclecloud.com Show Copy Configure connection details including connection properties and login credentials, then Test your connection to ens Provide database credentials ATPDBOIC1 LOW ..b_atpdboic1_low.atp.oraclecloud.com Sh ATPDBOIC1_TPURGENT ..dboic1_tpurgent.atp.oraclecloud.com Show Copy Oracle ADW ATPDBOIC1_TP ..cb_atpdboic1_tp.atp.oraclecloud.com Show Copy Invoke

The developer creating an ATP or ADW connection must work with the OCI administrator to obtain the service name, database credentials, and wallet.



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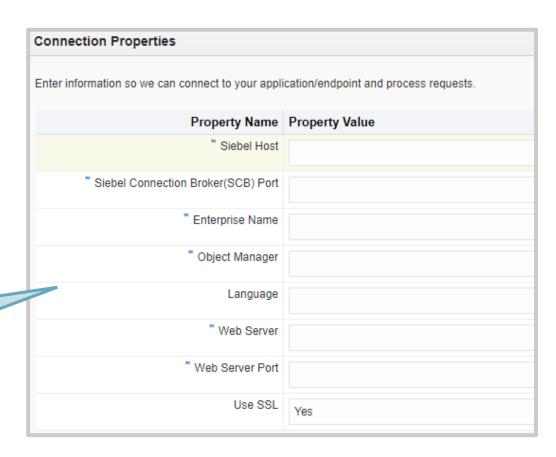


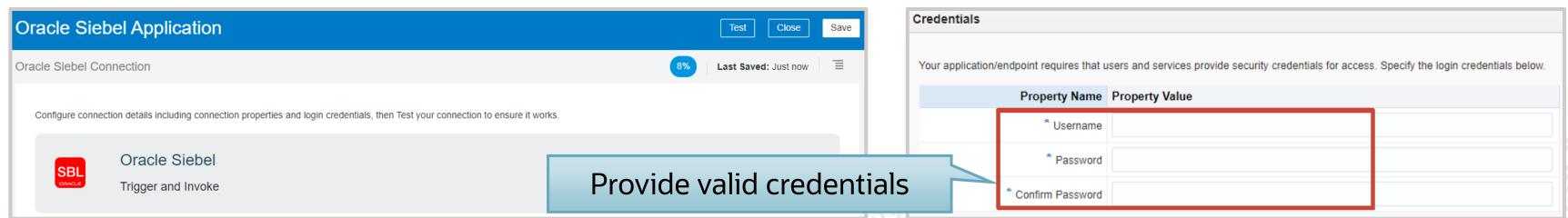
7. Oracle Siebel Adapter Connection



- Provides bidirectional connectivity to Siebel and exposes the published web services.
- An OIC connectivity agent must first be installed on premises behind the firewall.

Provide connection properties





The developer creating an Oracle Siebel connection must work with the Oracle Siebel service administrator to obtain the connection properties and credentials.



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8. Oracle E-Business Suite Adapter Connection



Provides bidirectional connectivity to E-Business Suite leveraging the functionality of the Integrated SOA Gateway (ISG). The EBS administrator needs to:

- Set up and configure the ISG
- Deploy the Metadata Provider/Integration Repository service
- Deploy the Event Manager service
- Deploy business function-related APIs as EBS REST services

Oracle E-Business Suite

Integrated SOA Gateway
(REST Service Framework)

Inbound

PL/SQL API, Java API
Concurrent Program
Open Interface Table/View

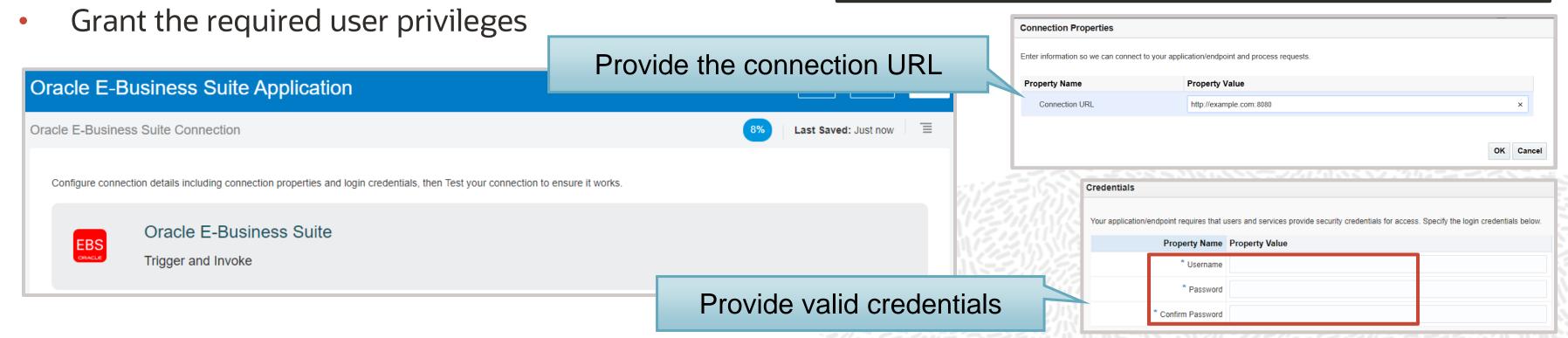
Outbound
Business Event, XML Gateway

Firewall

ON-PREMISES

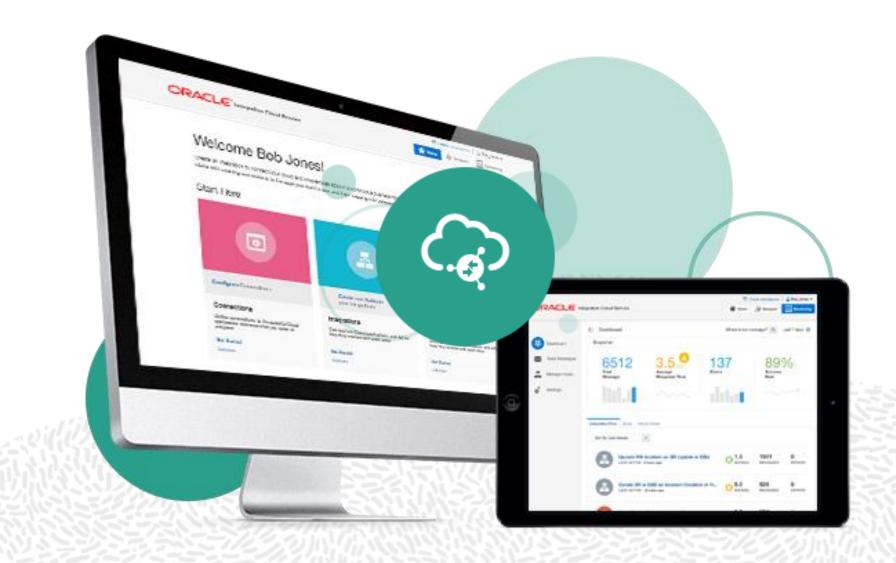
ORACLE CLOUD

To access REST services, an OIC connectivity agent is needed if the ISG is not set up in a DMZ configuration.





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9. FTP Adapter Connection

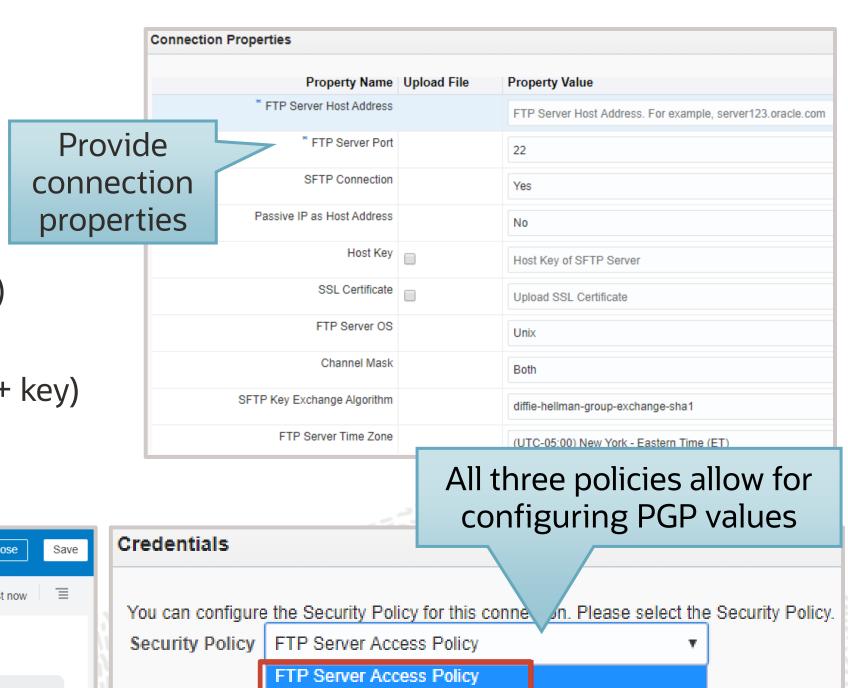


Connect to any publicly accessible FTP or sFTP server.

- Transfers files in either binary or ASCII format
- Streaming support for transferring large files (>10 MB)
- Optionally, encrypt or decrypt files using PGP

Three security policy options are available:

- FTP Server Access (username/password, FTP/FTPS or sFTP)
- FTP Public Key Authentication (used only for sFTP servers)
- FTP Multi Level Authentication (sFTP access w/ credentials + key)

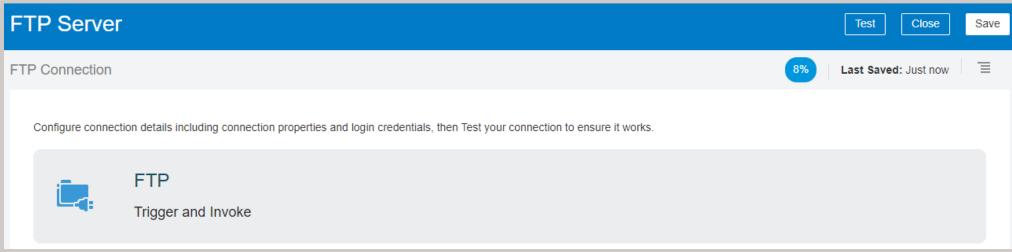


FTP Public Key Authentication

FTP Multi Level Authentication

Property Name Upload File

Your application.





credentials for a

Property Value

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10. SOAP Adapter Connection (Trigger)

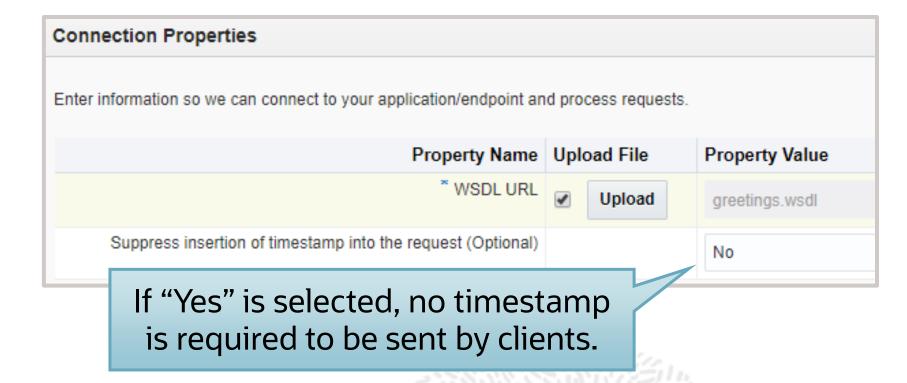


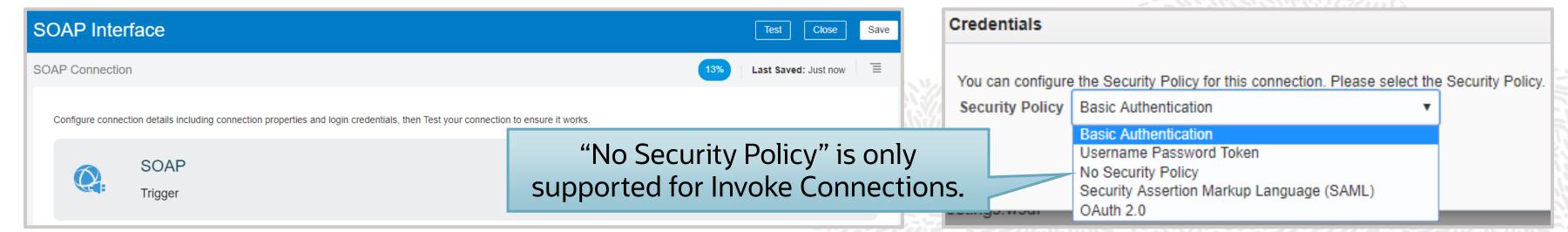
The trigger role is used to define a new interface for accepting SOAP requests from OIC clients addressed to a specific URI. The request body is available within the integration as the message

payload, along with the SOAP and HTTP headers.

To create a new inbound SOAP interface:

- 1. Design and create an abstract WSDL
- 2. Upload the WSDL file
- 3. Choose a security policy
 - All OIC inbound interfaces require security.







10. SOAP Adapter Connection (Invoke)



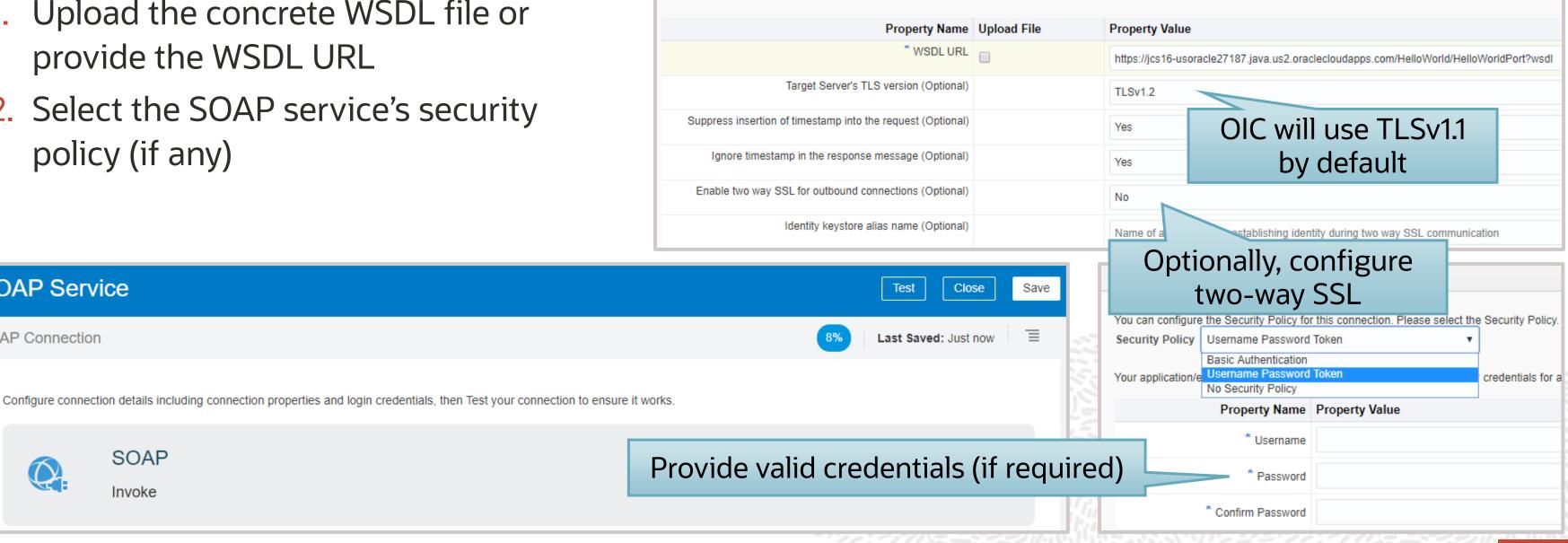
The invoke role is used to consume an external SOAP API from an OIC integration. Any response received from the endpoint is available within the integration for further processing.

Connection Properties

Enter information so we can connect to your application/endpoint and process requests

To define the SOAP Connection:

- 1. Upload the concrete WSDL file or provide the WSDL URL
- 2. Select the SOAP service's security policy (if any)





SOAP Service

SOAP

Invoke

SOAP Connection

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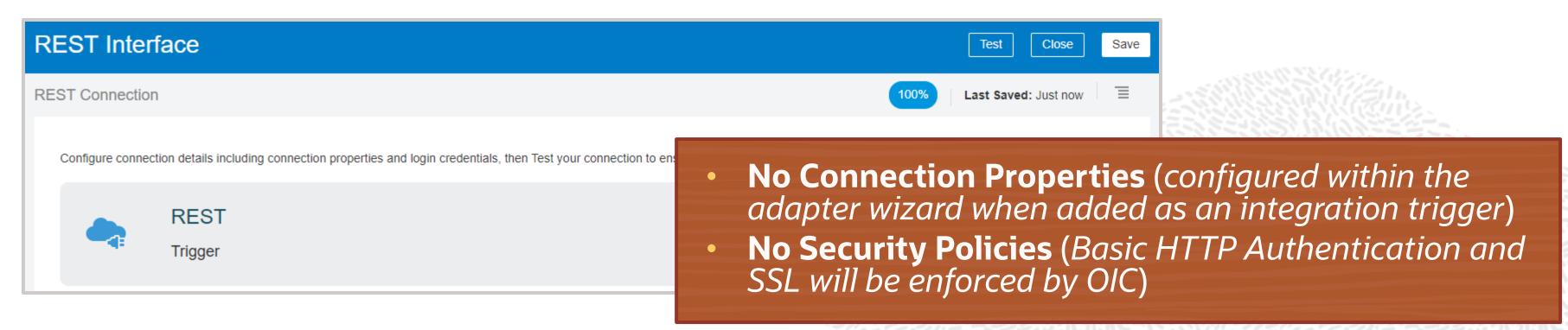
11. REST Adapter Connection (Trigger)



The trigger role is used to define an inbound interface for accepting HTTP requests from OIC clients addressed to a specific URI. The request body is available within the integration as the message payload, along with the HTTP headers.

Only one REST Adapter trigger connection is needed within any OIC instance.

• Each integration that chooses to define a REST interface will leverage the design wizard when adding the connection as a trigger, creating a specific configuration for their interface.



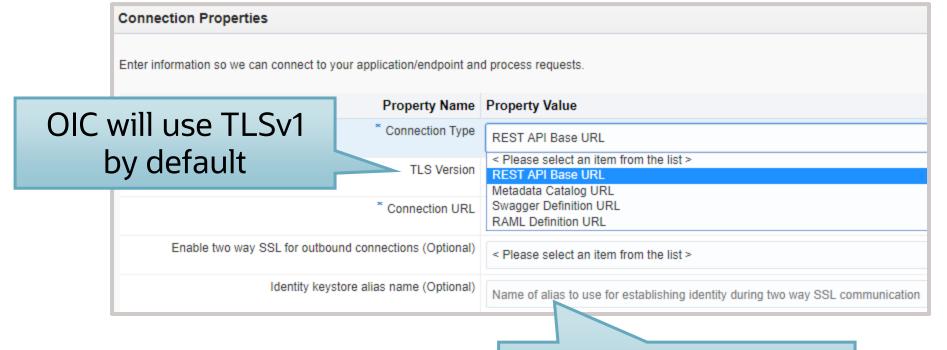
11. REST Adapter Connection (Invoke)

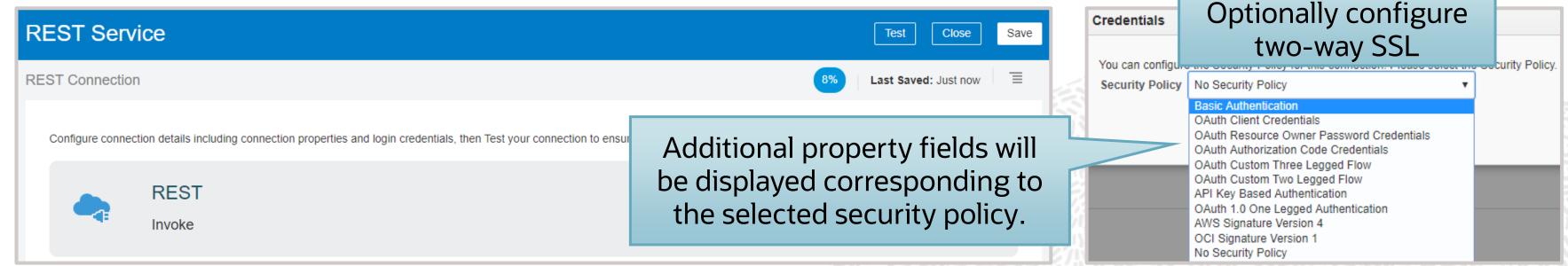


The invoke role is used to consume external REST APIs from a specific service provider. Any response received from the endpoint is available within the integration for further processing.

To define the REST Connection:

- Select the Connection Type
 - Swagger, RAML, Metadata Catalog, or Base URL
- 2. Provide the URL for the connection resource
- 3. Select the service's security policy (if any)
 - Provide valid credentials as required







Agenda

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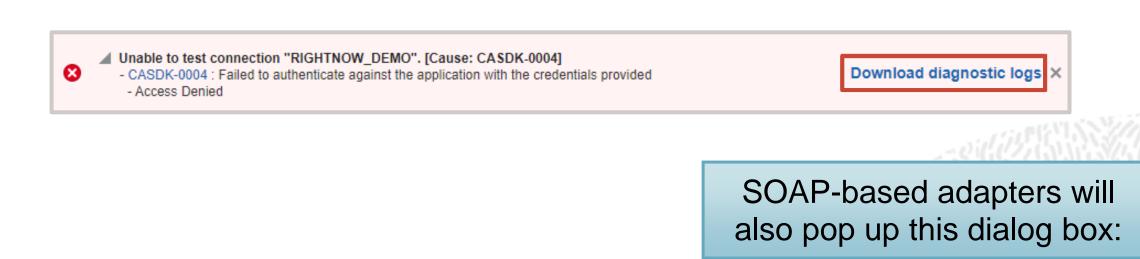


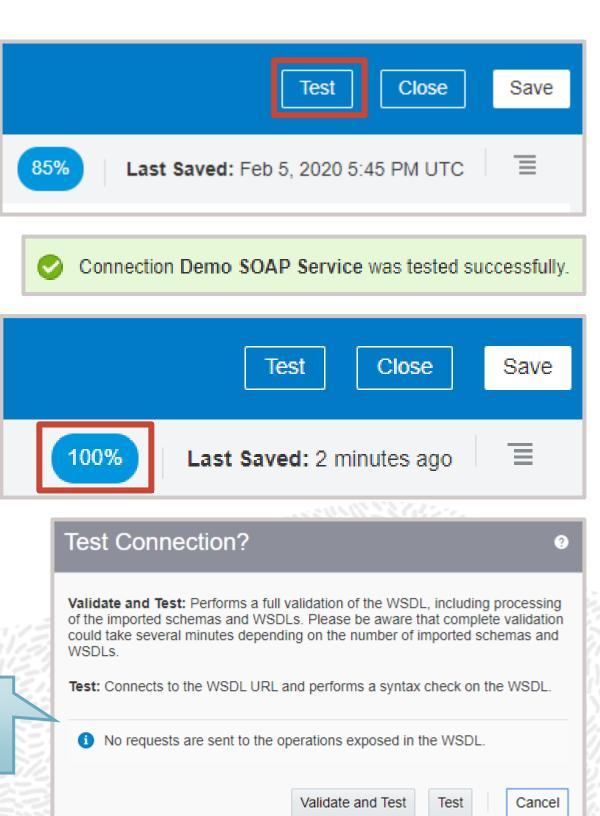
Testing the Connection

You must execute a successful test before your connection can be used in an integration flow.

(The configuration status must display at 100%.)

- Click Test.
- If unsuccessful, consult the error message and diagnostic logs to troubleshoot your configuration error.

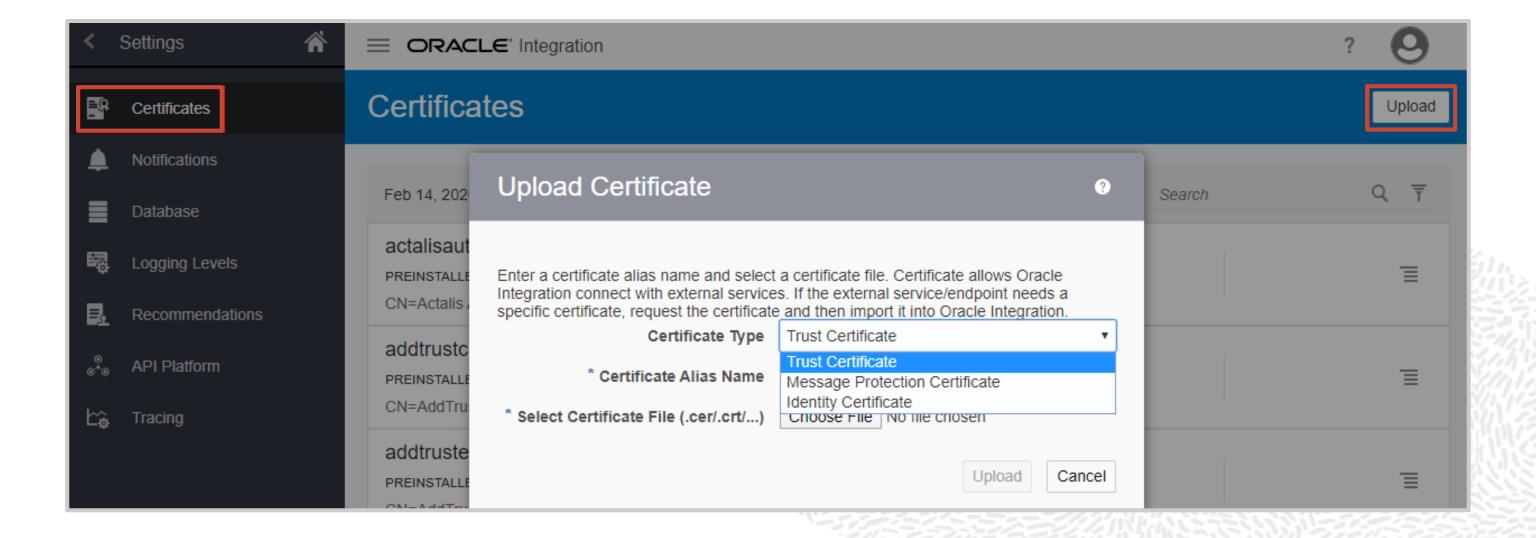




Uploading SSL Certificates

Certificates are used to validate outbound SSL connections.

Import the appropriate trust certificate if the root certificate does not already exist in your
 Oracle Integration Cloud (OIC) instance environment.



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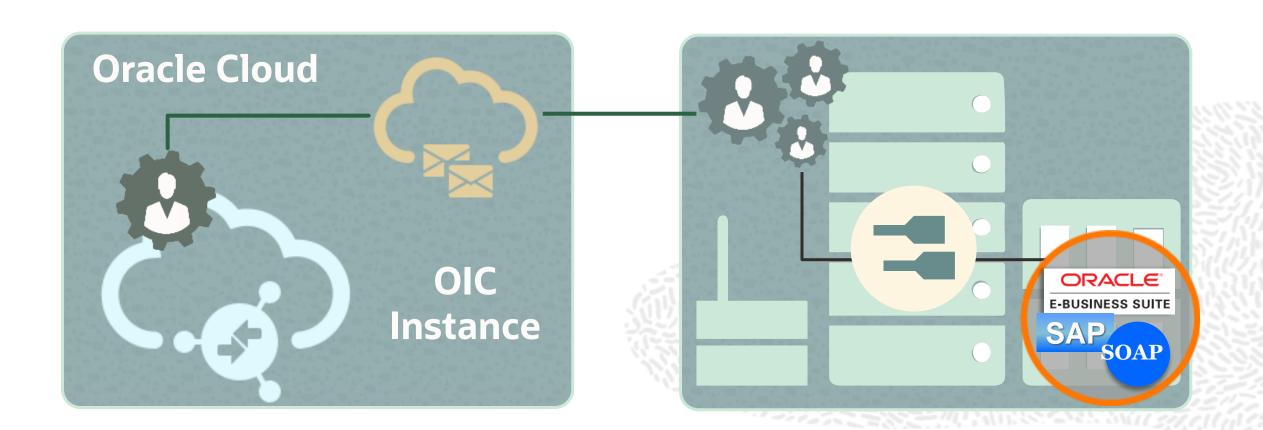




On-Premises Connectivity Agent Framework

The agent framework uses an OIC message channel, an OIC SaaS agent, and one or more OIC connectivity agents.

- Agents continually poll for requests from OIC integration outbound invocations.
- It also facilitates integrations in which the trigger connection has been associated with a Connectivity Agent group.



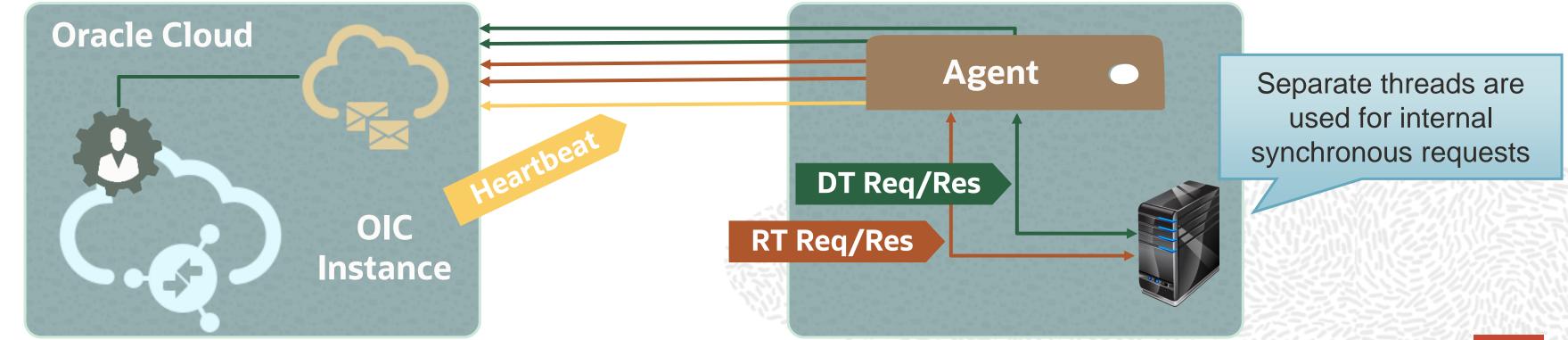


Agent Runtime Behavior

All communications are initiated by the agent to OIC. They include:

- Heartbeats to OIC instance signaling health status.
- Continuously polling for both design-time and run-time work requests.
- "Pull" design-time work requests; "Push" DT responses.
- "Pull" run-time work requests; "Push" RT responses.

Pulled work requests and pushed responses are handled asynchronously

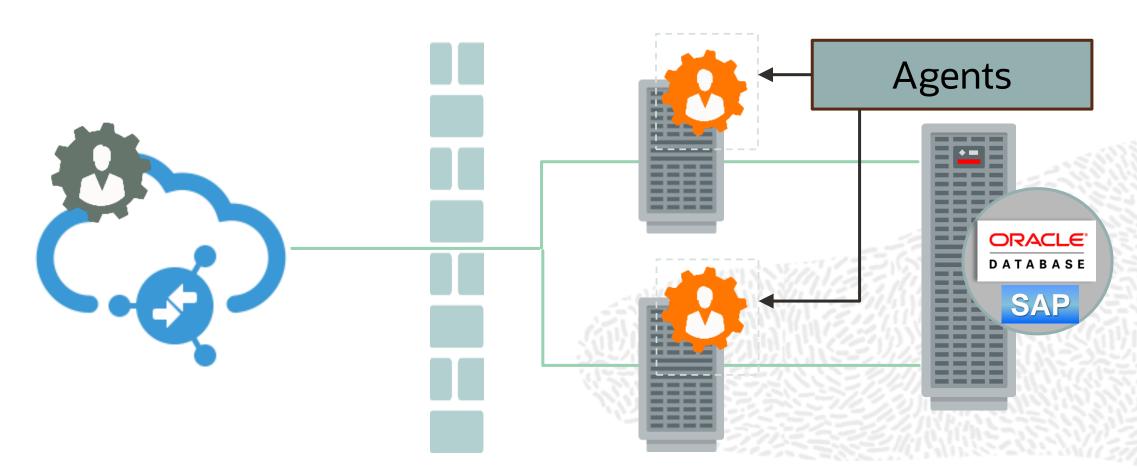


Available Adapters for On-Premises Use Cases

Adapter Type	Invoke Role	Trigger Role
JMS		X
File	X	X
FTP	X	X
DB2	X	X
Microsoft SQL Server	X	X
MySQL Database	X	X
Oracle Database	X	X
Oracle E-Business Suite	X	X
Siebel	X	X
SAP	X	X
REST	X	
SOAP	X	

Deployment Topology

- An agent can be installed on any host machine from which the agent can establish a TCP/IP connection to the application(s) on the same internal network.
- An agent group can contain one or two agents (for HA).
- Multiple agent groups can be used for functional, process, or organization-level isolation.



Workflow For Using the Connectivity Agent

1 Create an agent group.

- Create an adapter connection and associate the connection with the agent group.
- Design an integration that uses this connection.
- Activate the integration.

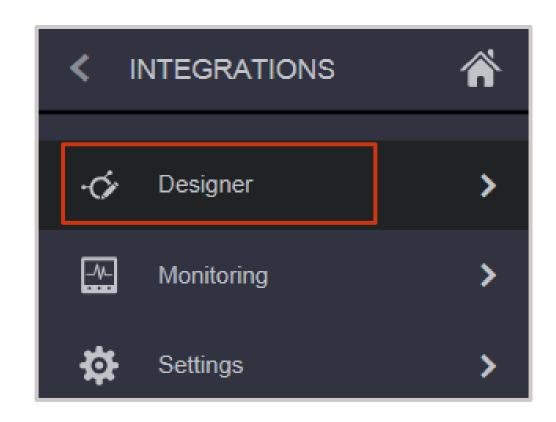
Download and run the on-premises agent installer on your host.

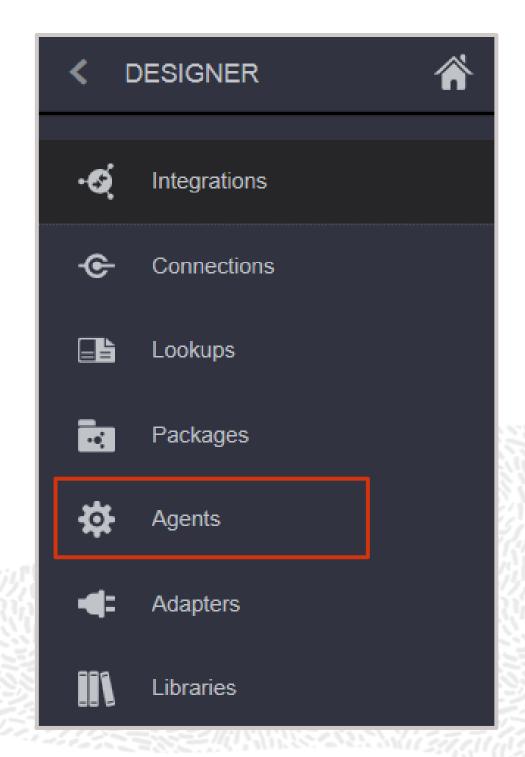




Getting Started

- On the toolbar, click **Designer**.
- On the Designer toolbar, click Agents.







Creating an Agent Group in OIC

Agents Create Agent Group Download ▼ Search IF Last Update ▼ Jul 28, 2017 6:57:57 PM UTC 👈 Demo Group **New Agent Group - Information** CONNECTIVITY AGENTS GROUP AGENT(S) Create a new agent group. Use a meaningful name and description to help others find and understand this **Execution Agent Group** agent group. The ID must be unique, and it cannot be changed after you close this dialog. **EXECUTION AGENTS GROUP** AGENT(S) Default group used for Execution Agents * Agent Group Name Finance SOAPAG * Identifier FINANCE_SOAPAG Connectivity Agent Agent Type Description Enter a brief description... Unique identifier in uppercase, used when installing the agents Create Cancel



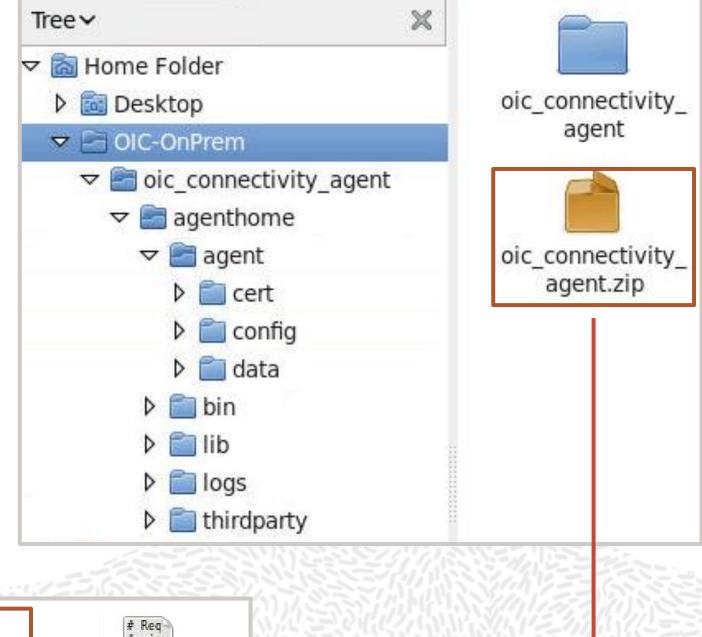
Downloading the Agent Installer

Agents Create Agent Group Download Connectivity Agent Jul 23, 2018 8:09:13 PM UTC (4) Last Updated w Search Finance_SOAPAG CONNECTIVITY AGENTS GROUP AGENT(S) Opening oic_connectivity_agent.zip You have chosen to open: in oic_connectivity_agent.zip Windows OS is which is: Zip archive (142 MB) also supported from: ...1-ocuocictrng23.uscom-central-1.oraclecloud.com What should Firefox do with this file? Open with Archive Manager (default) oic_connectivity_agent.zip File name: Save File Save as type: Compressed (zipped) Folder Do this <u>automatically</u> for files like this from now on. Cancel Save Cancel OK de Folders



Preparing to Run the Connectivity Agent Installer – 1

- After extraction, the executable JAR and configuration and property files are located in this directory structure.
- Add a certificate to the agent keystore using keytool if the agent is to be used:
 - with an SSL proxy.
 - to invoke secure on-premises endpoints.
- Copy any required third-party JARs into the agenthome/thirdparty/lib directory.





Preparing to Run the Connectivity Agent Installer – 2

- Ensure that you have JDK 8 or 9 installed on the host machine.
- Set \$JAVA HOME and update \$PATH to include \$JAVA HOME/bin.
- Modify the InstallerProfile.cfg file.
 - Your OIC instance URL
 - A valid agent group identifier

oic_URL=https://OICdemo-ocuocictrng23.uscom-central-1.oraclecloud.com:443
agent GROUP IDENTIFIER=FINANCE SOAPAG

Additional parameters are available for on-premise proxy configurations

InstallerProfile.cfg example



Executing the Connectivity Agent Installer

- Start in the foreground using: java jar connectivityagent.jar
- Alternatively, you specify credentials in the InstallerProfile.cfg file and run as a background process. (nohup in Linux; start /B in Windows)
- Windows example: (running in the foreground)



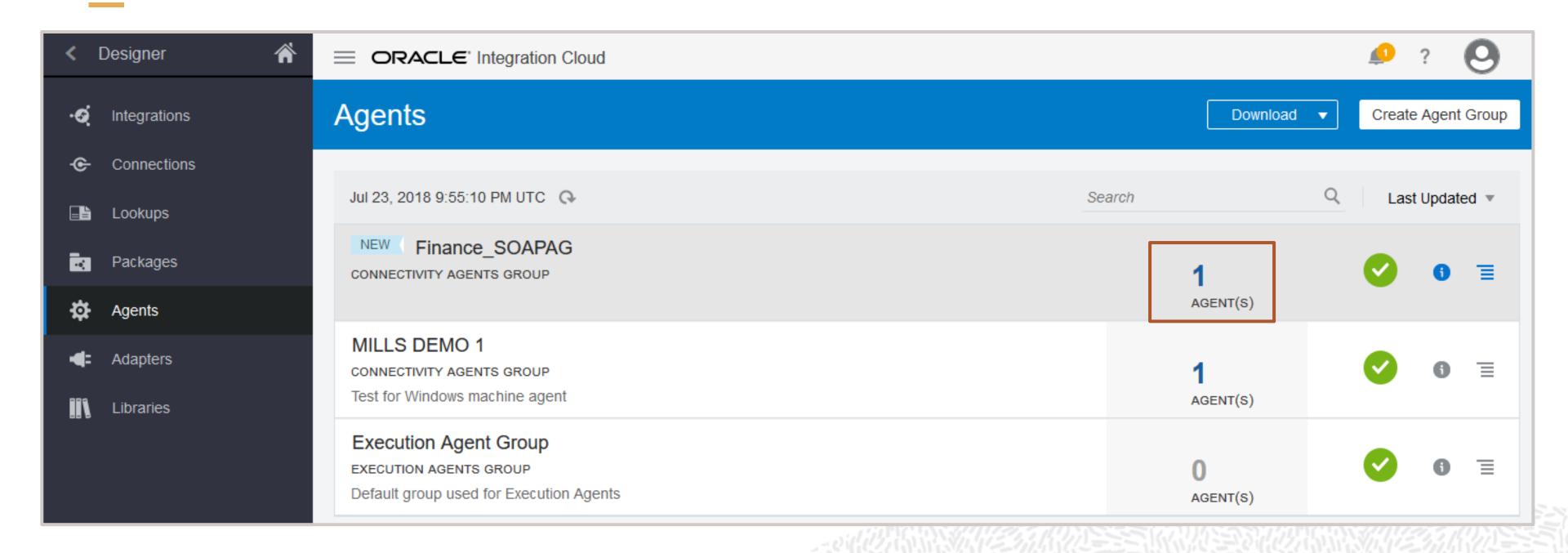
Post-Installation: Examining the Files

All Connectivity Agent files are located in the install directory: /agenthome

- The agent configuration file CpiAgent.properties
 - Contains information about the OIC connection and agent infrastructure
 - Located in the agenthome/agent/config directory
- The logger configuration file logging.properties
 - Allows you to configure logging severity levels and limits
 - Located in the agenthome/agent/config directory
- The agent diagnostic log files (for troubleshooting info)
 - Located in the agenthome/logsdirectory

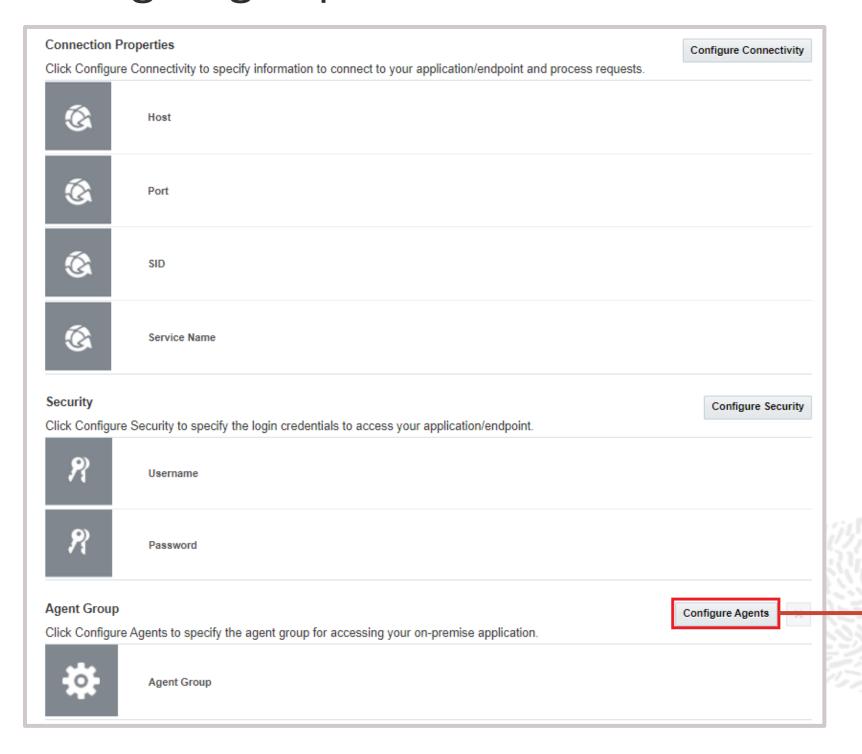


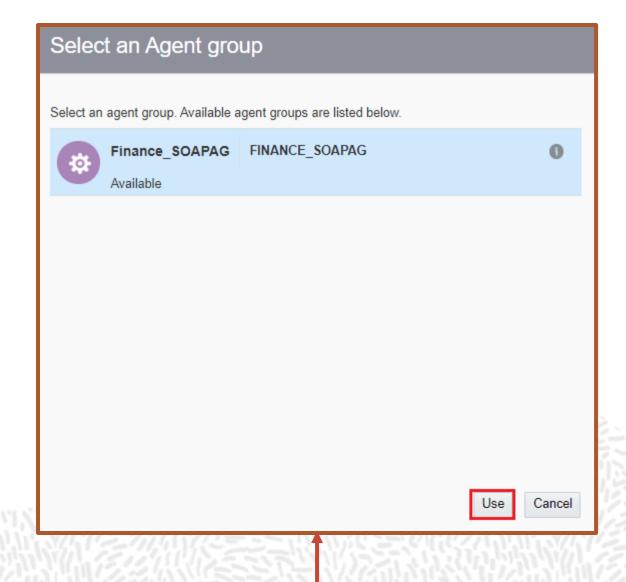
Verifying the Agent Connectivity in the OIC Console



Associating the Connection With the Agent Group

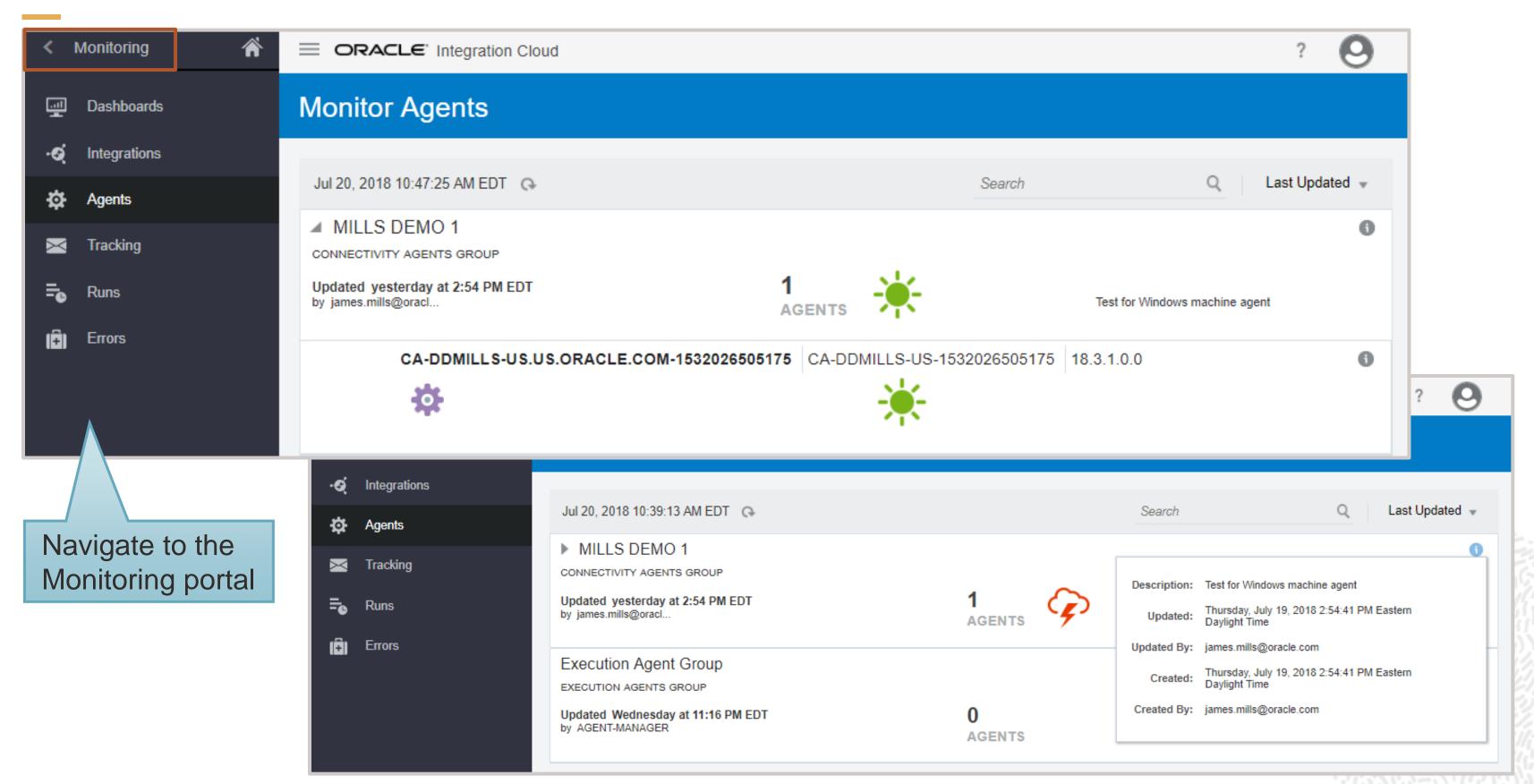
When creating the connection, click the **Configure Agents** button to select the appropriate agent group.







Agent Monitoring



Manually Restarting the Installed Agent

1. Stop the agent on the on-premises host:

```
CTRL-C or kill -e agent PID number
```

2. Restart the agent.

```
D:\OU>java -jar connectivityagent.jar
Existing Agent installation found... Starting Agent for message processing.
Checking for already running instances of this agent. This might take up to 15 seconds ...
Initializing the credential store ...
Agent started successfully...Now available for new messages...
```



See notes below regarding Backing Up and Recovering the Connectivity Agent.



Summary

In this lesson, you should have learned how to:

- Describe the use of adapters in OIC Integrations
- Understand the roles used for OIC Connections
- Create OIC Adapter Connections
- Understand the On-Premises Connectivity Agent Framework





Practice 5-1 (Instructor Demo): Creating OIC Adapter Connections

This practice includes the creation of the following:

- PART 1 FTP Adapter Connection
- PART 2 Oracle ATP Adapter Connection
- PART 3 Oracle Service Cloud (RightNow) Connection
- PART 4 Oracle SaaS Fusion Application Connections (ERP, HCM, Sales)
- PART 5 REST Adapter Connections

In OIC environments with more than one student assigned, the instructor will create these resources to be shared later by all students configuring their separate integrations.



