

# Oracle® Banking Microservices Architecture

## Routing Hub Configuration User Guide



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

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# Preface

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## Purpose

This guide enables the user to integrate Oracle Products with External Product Processor through Oracle Banking Routing Hub Platform.

## Audience

This guide is intended for the customers and partners.

## Documentation Accessibility

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## Diversity and Inclusion

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

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

## Related Resources

For more information on any related features, refer to the following documents

- *Oracle Banking Common Core User Guide*
- *Oracle Banking Getting Started User Guide*

## Conventions

The following text conventions are used in this document:

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

## Screenshot Disclaimer

Personal information used in the interface or documents is dummy and does not exist in the real world. It is only for reference purposes.

## Acronyms and Abbreviations

The list of the acronyms and abbreviations used in this guide are as follows:

**Table 1 Acronyms and Abbreviations**

Abbreviation	Description
API	Application Programming Interface
JSON	Java Script Object Notation
XML	Extensible Markup Language
WSDL	Web Services Description Language

# Basic Actions

**Table 2 Basic Actions**

Action	Description
<b>Submit</b>	Click to complete the transaction after you specify all the input parameters for a particular transaction.
<b>Cancel</b>	Click to cancel the transaction input midway without saving any data.
<b>Clear</b>	Click to clear the transaction input data. The system displays a pop-up screen with confirmation to clear data. You can click <b>OK</b> to confirm or click <b>x</b> icon to retain the data.
<b>Query</b>	On completion of input of necessary parameters, click this button to fetch and display the details.
<b>OK</b>	Click to confirm the details in the pop-up screen.
<b>Save</b>	Click to save the details specified in the screen.
<b>Exit</b>	Click to close the screen and go to Home screen.

# Symbols and Icons

This guide has the following list of symbols and icons.

**Table 3 Symbols and Icons - Common**













Symbol/Icon	Function
	Minimize
	Maximize
	Close
	Perform Search
	Open a list
	Add a new record
	Navigate to the first record
	Navigate to the last record



Table 3 (Cont.) Symbols and Icons - Common

Symbol/Icon	Function
	Navigate to the previous record
	Navigate to the next record
	Refresh
	Click this icon to delete a row, which is already added.
	Calendar
	Alerts
	Import a file
	Edit a file

# 1

## Introduction

Oracle Banking Routing Hub enables seamless and standardized integrations between FSGBU Banking Products using configurations. This component is available as part of the product Infrastructure solution. A loose couple integration between banking products is possible with Oracle Banking Routing Hub.

**Consumer Application** (An application/product that needs to integrate with another product to retrieve information or post transactions) need not know following details while coding the integration.

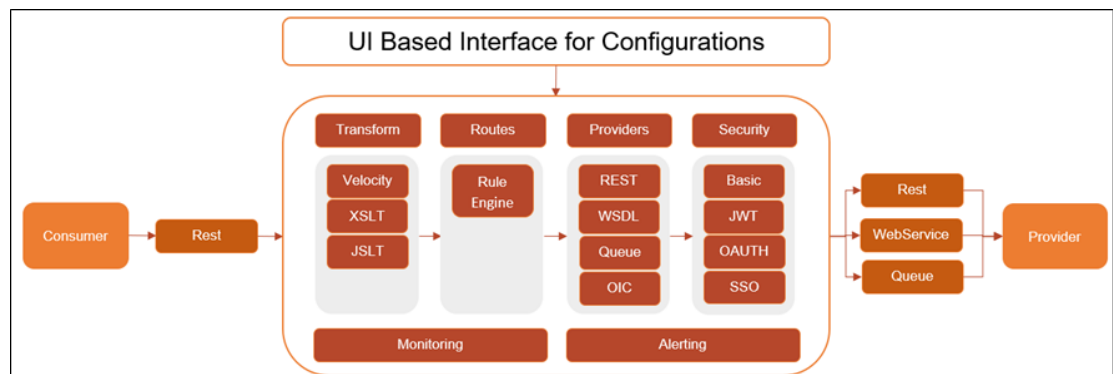
- Servicing Providers or Product Processors: Products which provides data to the Consumer Application when required or posts the transaction when initiated from a consumer application. .
- Name of the Service: Logical name of the service example: Funds Transfer, Letter of Credit Initiation to fetch the details from Service Provider product or post a transaction.
- Messaging structure of Service: Structure of the message example: JSON, XML, multipart request.
- Communication Protocol: Web services, Rest API, Queue, and OIC.

Integration can be achieved and modified anytime later through 'Oracle Banking Routing Hub' configurations. A consumer can also be integrated with different versions of a single Product processors if required.

This guide shows the maintenance of two product as given below.

- Oracle Service Consumer as Service Consumer
- External Product Processor as Service Provider

**Figure 1-1 UI Based Interface for Configurations**



# 2

## Service Consumers

This topic describes the systematic instructions to configure the service consumers.

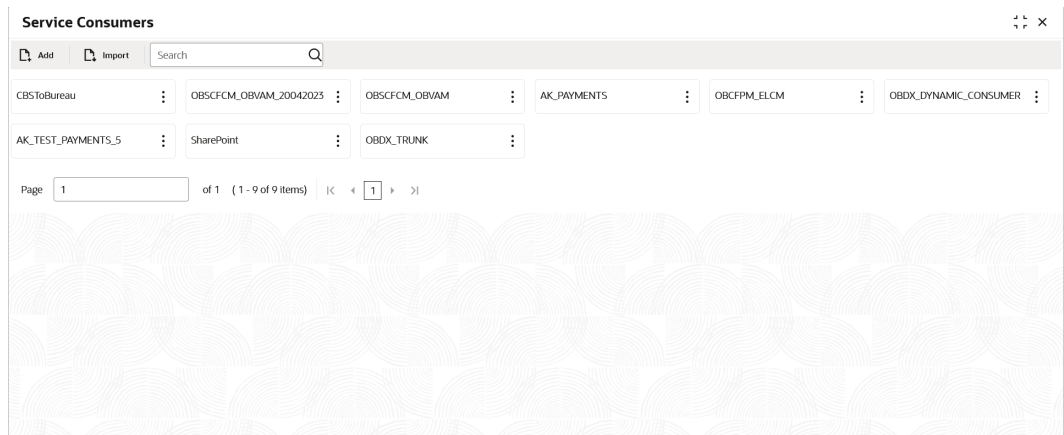
Service Consumer is an Oracle banking product which invokes Oracle Banking Routing Hub API for integration. Oracle Banking Routing Hub analysis, evaluate destination product processor and transform data into format as required by the destination product processor for service a request type

Specify **User ID** and **Password**, and login to **Home** screen.

1. On **Home** screen, click **Core Maintenance**. Under **Core Maintenance**, click **Routing Hub**.
2. Under **Routing Hub**, click **Service Consumers**.

The **Service Consumers** screen displays.

**Figure 2-1 Service Consumers**



### Add Service Consumer

In addition to importing Service Consumers, users can create Service Consumers manually using Add option..

3. Click **Add**.

The **Add Service Consumer** screen displays.

**Figure 2-2 Add Service Consumer**

- Specify the fields on **Add Service Consumer** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 2-1 Add Service Consumer - Field Description**


Field	Description
<b>Name</b>	Specify the unique service consumer name. <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>Enter 0 to maximum of 255 characters.</li> <li>No numeric value at beginning and no space allowed.</li> </ul> </div>

Table 2-1 (Cont.) Add Service Consumer - Field Description

Field	Description
<b>Audit Type</b>	Select the Audit type from the dropdownlist. The available options are: <ul style="list-style-type: none"> <li>• <b>All Requests</b> - All requests are logged in the OBRH and can be viewed later for debugging.</li> <li>• <b>Service level configuration</b> - Option has been provided at consumer services for enabling audit of requests for specific Consumer Services. Audit type should be configured as "Service level configuration" and audit option at "Consumer Services" should be selected for Consumer Services which need to be audited. Monitoring dashboard does not provide the data for requests which are not being audited.</li> <li>• <b>None</b> - Disables the audit completely. Audit logs cannot be reviewed later and monitoring dashboard does not provide the data</li> </ul>
<b>Add</b>	To add, refer to step 5. Select the group from the drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>Group</b></li> <li>• <b>Variable</b></li> </ul>
<b>Group</b>	Select the group from the drop-down list.
<b>Action</b>	Displays the action. The user can edit or delete the header.
<b>Name</b>	Displays the name of the header.
<b>Value</b>	Displays the value of the header.

**Environment Variables**

The user must define the group of variables which can be accessed throughout the specific consumer's configuration. The syntax for accessing environment variables is below: \$env.Environment\_Group\_Name.Environment\_Variable\_Name

**For example,** \$env.COMMON.BRANCH\_CODE

5. To add **Environment Variables**, follow the below steps.
  - a. Click **Add** on the **Add Service Consumers** screen, and select **Group** from drop-down list to add the group.

The **Add Environment Group** screen displays.

**Figure 2-3 Add Environment Group**


- b. Specify the fields on **Add Environment Group** screen and click **OK**.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 2-2 Add Environment Group - Field Description**

Field	Description
<b>Name</b>	Specify the name of the environment group. <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul> </div>

- c. Click **Add** on **Add Service Consumer** screen and select **Variable** from drop-down list to add the variable.

The **Add Environment Variable** screen displays.

**Figure 2-4 Add Environment Variable**


- d. Specify the fields on **Add Environment Variable** screen and click **OK**.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 2-3 Add Environment Variable - Field Description**

Field	Description
<b>Name</b>	Specify the name of the environment variable.   <b>Note:</b> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul>
<b>Value</b>	Specify the value of the environment variable. The value can either be hardcoded or Velocity mapping.

6. Click **Save** to save the details.  
The **Confirmation** screen displays.

**Figure 2-5 Confirmation - Add Service Consumers**

A confirmation dialog box titled "Confirmation" with a close button (X) in the top right corner. The text inside asks, "Do you want to save the record?". At the bottom right, there are two buttons: "Cancel" (outlined) and "Confirm" (solid green).

7. Click **Confirm** to save the record.

### Import Service Consumer

The user can create a service consumer by importing the JSON file and manually selecting the service providers or select all providers that needs to be imported. The user can also import zip file in order to import all the configuration JSON files together.

8. Click **Import**.

The **Import Service Consumer** screen displays.

**Figure 2-6 Import Service Consumer**

The "Import Service Consumer" screen features a title bar with a close button (X). Below the title, there is a "File" section with a text input field, a "Select" button, and an "Extract" button. The "Name" section has a text input field with a "Required" label below it. There are two radio button groups: "Overwrite extended templates" (with "Yes" and "No" options, "No" selected) and "Overwrite environment variables" (with "Yes" and "No" options, "No" selected). A "Service Providers" section is collapsed, showing a checkbox and a "Name" label. Below this, it says "No data to display." At the bottom right, there is an "Import" button.

9. Specify the fields on **Import Service Consumer** screen.





 **Note:**

The fields marked as **Required** are mandatory.

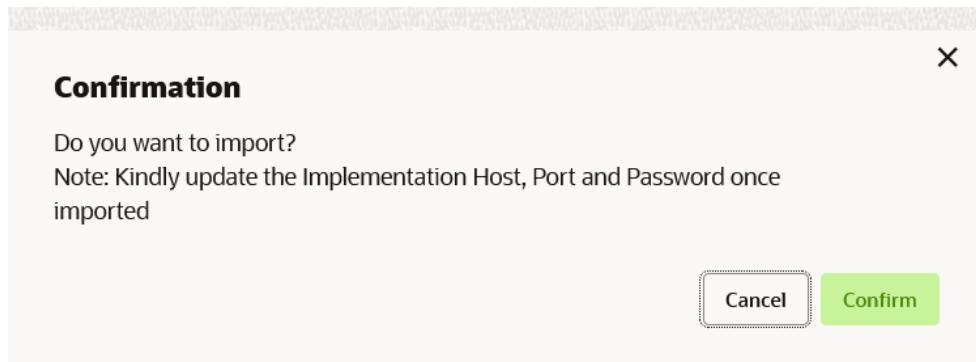
For more information on fields, refer to the field description table.

**Table 2-4 Import Service Consumer - Field Description**

Field	Description
<b>File</b>	<p>Select the file using <b>Select</b>.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> <b>Note:</b></p> <p>Allows only to select one file and accepts JSON and ZIP file.</p> </div>
<b>Extract</b>	Extracts the consumer name and service provider list from JSON file only and displays it in the respective elements.
<b>Name</b>	<p>Specify the name of the service provider.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>Name cannot be blank and required only for JSON file.</li> <li>Enter 0 to maximum of 255 characters.</li> <li>No numeric value at beginning and no space allowed.</li> </ul> </div>
<b>Overwrite extended templates</b>	<p>Select the respective radio button to overwrite the extended templates.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li><b>Yes</b> - This option overwrites the extended templates.</li> <li><b>No</b> - This option retains the existing extended templates.</li> </ul>
<b>Overwrite environment variables</b>	<p>Select the respective radio button to indicate whether environment variables (JSON file) should overwrite existing environment variables or not</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li><b>Yes</b> - This option overwrites the environment variables.</li> <li><b>No</b> - This option retains the existing environment variables.</li> </ul>
<b>Service Providers</b>	Displays the service provider details.
<b>Name</b>	Displays the list of service providers names that are present in JSON file only.

10. Click **Import** to import the selected service consumer file.

The **Confirmation** screen displays.

**Figure 2-7 Confirmation - Import Service Consumer**

11. Click **Confirm** to import the file.

 **Note:**


Below data needs to be changed after importing provider configuration file:

- Implementation Host and Port
- Implementation Authentication Password

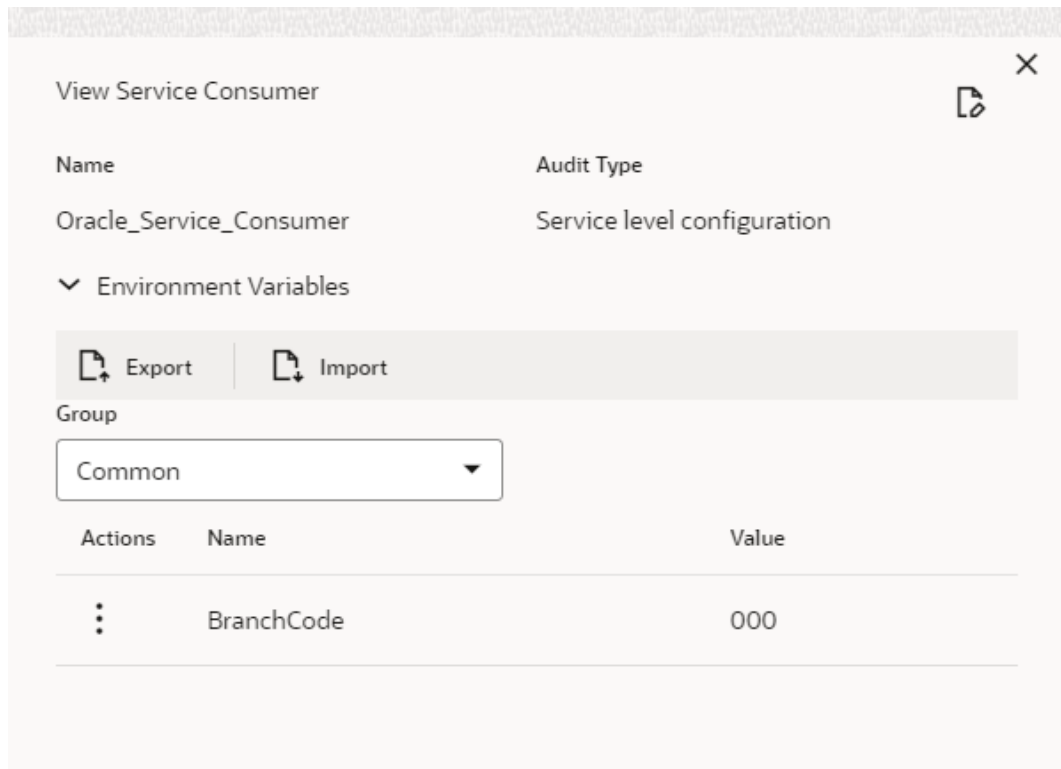
### View Service Consumer

The user can view consumer details and can also switch to edit form by clicking on edit icon.

The user can also export and import only for the environment variables.

12. On the **Service Consumer** tile, click  , and select **View** from the dropdown list.

The **View Service Consumer** screen displays.

**Figure 2-8 View Service Consumer**

13. Click **Edit** icon to edit the Service Consumer.

#### **Edit Service Consumer**

The user can modify the consumer details.

14. On the **Service Consumer** tile, click **Operation Menu** (3 dot icon), and select **Edit** from the dropdown list.

The **Edit Service Consumer** screen displays.

**Figure 2-9 Edit Service Consumer**

Edit Service Consumer

Name: CBSToBureau

Audit Type: Service level configurator

Environment Variables: EXPERIAN

Actions	Name	Value
⋮	REPORT_TYPE	\$headers["reportType"][0]

Save

- Click **Save** to save the modified consumer details.  
The **Confirmation** screen displays.

**Figure 2-10 Confirmation - Edit Service Consumer**

**Confirmation**

Do you want to save the record?

Cancel Confirm

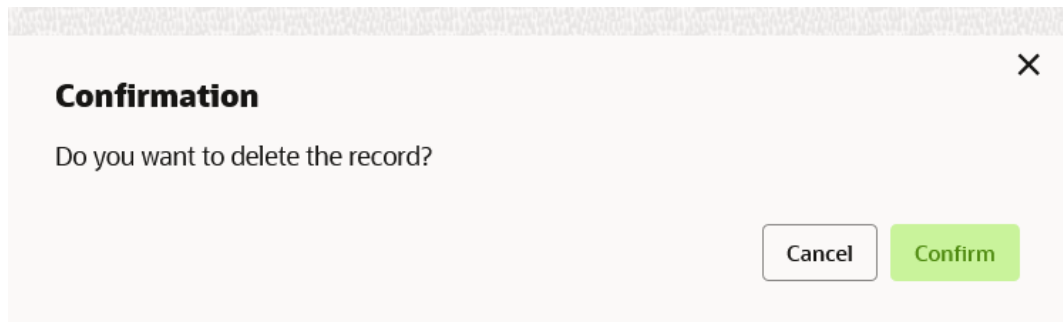
- Click **Confirm**.

**Delete Service Consumer**

The user can delete the Service Consumer.

- On the **Service Consumer** tile, click **Operation Menu** (3 dot icon), and select **Delete** from the dropdown list.  
The **Confirmation** screen displays.

Figure 2-11 Confirmation - Delete



18. Click **Confirm** to delete the service consumer.

### JSON Export

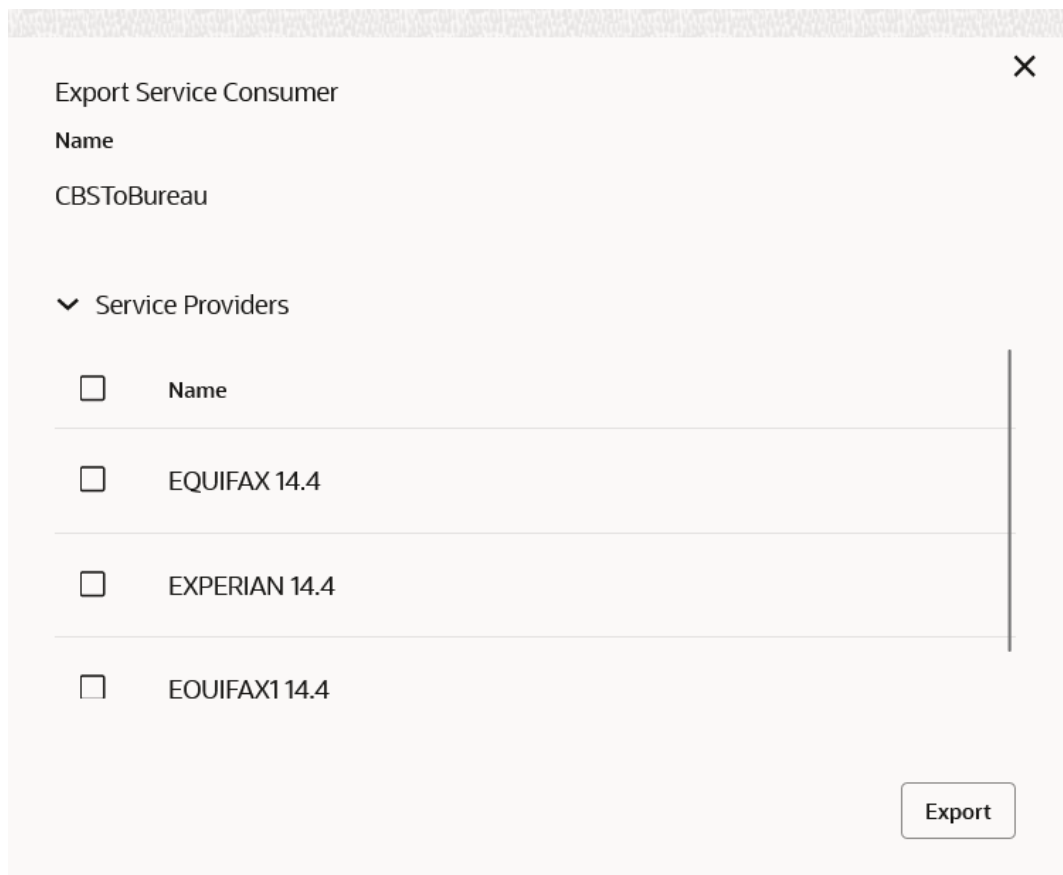
User can export the consumer configuration as JSON file. The option for Export is provided to move the configurations from one environment to another.

19. On **Service Consumer** tile, click **Operation Menu** (3 dot icon).

20. On **Export** option, select **JSON** from the list.

The **Export Service Consumer** screen displays.

Figure 2-12 Export Service Consumer



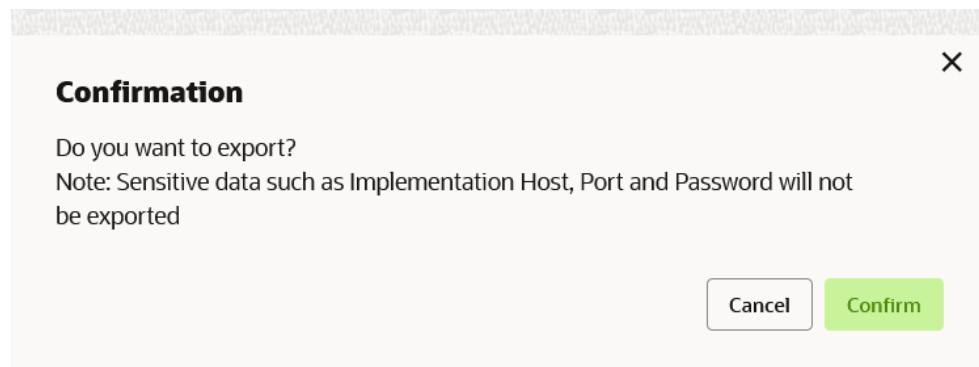
 **Note:**

- The user has an option to select the service providers from the list which needs to be exported or can click on select all for all service providers.
- The JSON Export feature exports below data:
  - Selected service consumer
  - All consumer services
  - Selected service providers with services
  - All implementations of selected service providers with services (without Host, Port and Authentication Password)
  - All transformations
  - All routes

21. Select the required service providers and click **Export**.

The **Confirmation** screen displays.

**Figure 2-13 Confirmation - JSON Export**



22. Click **Confirm** to export the service consumer in JSON file.

### SQL Export

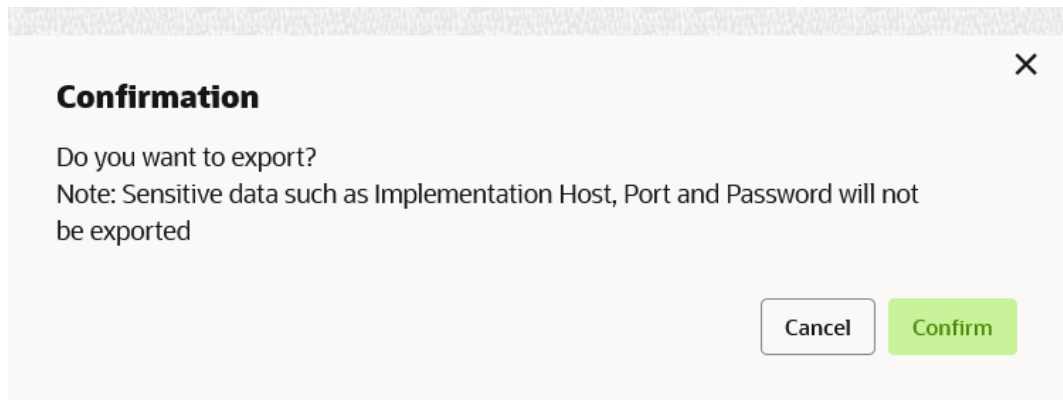
The user can export the consumer configuration as SQL file.

23. On **Service Consumer** tile, click **Operation Menu** (3 dot icon).

24. On **Export** option, select **SQL** from the list.

The **Confirmation** screen displays.

Figure 2-14 Confirmation

 **Note:**

The SQL Export feature exports entire configuration without Host, Port, and Authentication Password details.

25. Click **Confirm** to export the consumer configuration as SQL file.

**Configuration**

26. On **Service Consumer** tile, click **Operation Menu** (3 dot icon), and click **Configuration**. The **Configuration** screen displays.

 **Note:**

Refer to **Configuration** topic for the screen and field description.

**Request Audit**

27. On **Service Consumer** tile, click **Operation Menu** (3 dot icon), and click **Request Audit**. The **Request Audit** screen displays.

 **Note:**

Refer to **Request Audit** topic for the screen and field description.

# 3

## Service Providers

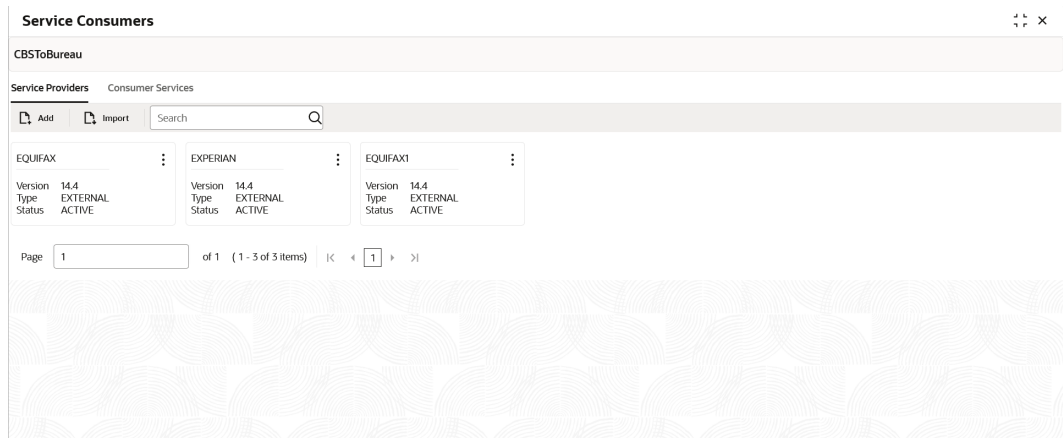
This topic describes the systematic instructions to configure the service providers.

The **Service Providers** are the product processors configure to process request send by Oracle Banking Routing Hub on behalf of service consumers. It comprises destination integration details.

1. On **Service Consumers** screen, click the required service consumer.

The **Service Providers** screen displays.

**Figure 3-1 Service Providers**



### Add Service Provider

The user can create Service Provider manually.

2. Click **Add**.

The **Add Service Provider** screen displays.



**Figure 3-2 Add Service Provider**

Add Service Provider ×

Product Name  Required

Version  Required

Type  Required

Active

Validation Provider  
 Yes  No

> Headers

Service

Type  URL  Required

Service	Operation
No data to display.	

- Specify the fields on **Add Service Provider** screen.

**Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 3-1 Add Service Provider - Field Description**

Field	Description
<b>Product Name</b>	Specify the product name of the service provider.  <b>Note:</b> <ul style="list-style-type: none"> <li>Enter 0 to maximum of 255 characters.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>

Table 3-1 (Cont.) Add Service Provider - Field Description



Field	Description
<b>Type</b>	Select the type of service provider from drop-down list The available options are: <ul style="list-style-type: none"> <li>• <b>INTERNAL</b>: Used for Oracle products</li> <li>• <b>EXTERNAL</b>: Used for non-Oracle products</li> </ul>
<b>Version</b>	Specify the provider version.   <b>Note:</b> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• Only numeric or decimal values are allowed.</li> </ul>
<b>Active</b>	Predefined values are Active / Inactive If provider is marked as inactive, then all related routes will be stopped.
<b>Validation Provider</b>	Predefined values are Yes / No This property can be enabled to use a separate provider service for validating the requests before sending it for processing.
<b>Add</b>	To add, refer to the below steps.
<b>Actions</b>	Displays the action. The user can edit or delete the header.
<b>Name</b>	Displays the name of the header.
<b>Value</b>	Displays the value of the header.
<b>Type</b>	Select the type of service from drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>WSDL</b></li> <li>• <b>SWAGGER</b></li> <li>• <b>OTHERS</b></li> </ul>
<b>Name</b>	Specify the name of the operation.   <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b> .

Table 3-1 (Cont.) Add Service Provider - Field Description







Field	Description
<b>Http Method</b>	<p>Select the HTTP method. The available options are:</p> <ul style="list-style-type: none"> <li>• <b>GET</b></li> <li>• <b>POST</b></li> <li>• <b>PUT</b></li> <li>• <b>PATCH</b></li> <li>• <b>DELETE</b></li> </ul> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>Endpoint</b>	<p>Specify the endpoint URL for the operation.</p> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>URL</b>	<p>Specify the service URL of the file location.</p> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>WSDL</b> and <b>SWAGGER</b>.</p>
<b>Import</b>	<p>Click <b>Import</b> to extract the service information from URL.</p> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>WSDL</b> and <b>SWAGGER</b>.</p>
<b>Context Path</b>	<p>Context path of below formatted URL http://host:port/context-path/endpoint</p>

Table 3-1 (Cont.) Add Service Provider - Field Description

Field	Description
<b>Service Headers</b>	<p>Specify the Endpoint specific headers. Value can either be hardcoded or can be Velocity mapping.</p> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>Service Query Params</b>	<p>Specify the Endpoint specific query parameters. Value can either be hardcoded or can be Velocity mapping.</p> <p> <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>Service</b>	Displays the extracted service from the selected URL.
<b>Operation</b>	Displays the extracted operation from the selected URL.

### Headers

A product processor might require some standard headers to be passed along with the request. The user can specify the headers which are required by service endpoints for its all implementations but not present in swagger file.



#### Note:

Content-type header will be removed from Provider request if header value is NONE.

4. To add **Headers**, follow the below steps.
  - a. Under **Headers** section, click **Add**.  
The **Add Header** screen displays.

**Figure 3-3 Add Header**

- b. Specify the fields on **Add Header** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 3-2 Add Header - Field Description**

Field	Description
<b>Name</b>	Specify the name of the header.
<b>Value</b>	Specify the value of the header.

5. Click **OK** to save the details.  
The **Confirmation** screen displays.
6. Click **Confirm**.

**Service**

- **WSDL:**  
The Web Services Description Language (WSDL) is an XML-based interface description language that is used for describing the functionality offered by a web service.

Both SSL and non-SSL WSDL URL are supported.

 **Note:**

If there is a change in wsdl file, then same wsdl file need to be imported again to update the provided service information in Routing Hub.

- **SWAGGER:**  
Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

 **Note:**

If there is a change in swagger file, then same swagger file need to be imported again in order to update the provided service information in Routing Hub.

- **OTHERS:**  
OTHERS option is selected for adding REST API details manually when provider does not have swagger file.

 **Note:**

If there is a change in existing endpoint, then the same endpoint details need to be entered again with the new changes in order to update the existing provided service information in Routing Hub.

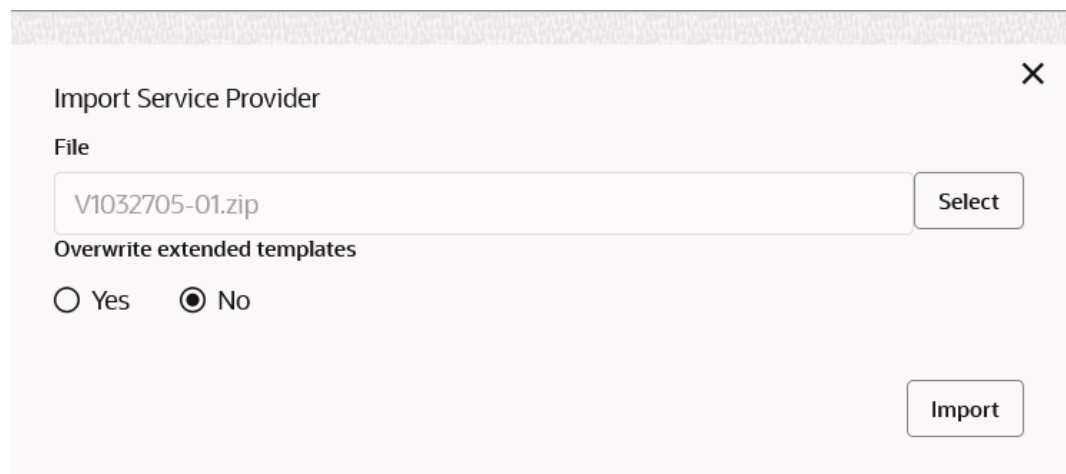
### Import Service Provider

The user can create a service provider by importing the JSON file and also can import zip file in order to import all the configuration JSON files together (except parent level configuration JSON files).

7. Click **Import**.

The **Import Service Provider** screen displays.

**Figure 3-4 Import Service Provider**



Import Service Provider

File

V1032705-01.zip

Select



Overwrite extended templates

Yes  No

Import

For more information on fields, refer to the field description table below.

**Table 3-3 Import Service Provider - Field Description**

Field	Description
<b>File</b>	<p>Select the file using <b>Select</b> button.</p> <p> <b>Note:</b></p> <p>Allows only to select one file and accepts JSON and ZIP file.</p>
<b>Overwrite extended templates</b>	<p>Select the respective radio button to overwrite extended templates.</p> <p>The options are:</p> <ul style="list-style-type: none"> <li>• <b>Yes</b> - This option overwrites the extended templates in configuration.</li> <li>• <b>No</b> - This option retains the existing extended templates in configuration.</li> </ul> <p> <b>Note:</b></p> <p>This field appears only if the ZIP File is selected.</p>

8. Click **Import** to import the selected file.

The **Confirmation** screen displays.

 **Note:**

The following data needs to be changed after importing provider configuration file:

- Implementation Host and Port
- Implementation Authentication Password

#### View Service Provider

9. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **View**.

The **View Service Provider** screen displays.

**Figure 3-5 View Service Provider**

View Service Provider ✕

Product Name	Type
EQUIFAX	EXTERNAL
Version	Active
14.4	On

▼ Headers

Actions	Name	Value
⋮	Authorization	

▼ Service

Service	Operation
/reports/credit-report	requestConsumerCreditReport
/v2/oauth/token	equifaxAuth
/reports/credit-report/{pdf-request-id}	

10. Click **Edit** button to edit the Service Provider.

#### **Edit Service Provider**

The user can modify the provider details.

11. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Edit**.

The **Edit Service Provider** screen displays.



**Figure 3-6 Edit Service Provider**

Edit Service Provider ✕

Product Name: EQUIFAX

Version: 14.4

Type: EXTERNAL

Active:

▼ Headers

+ Add

Actions	Name	Value
⋮	Authorization	

▼ Service

Type: WSDL

URL:  Import

Required

Service	Operation
/reports/credit-report	requestConsumerCreditReport
/v2/oauth/token	equifaxAuth
/reports/credit-report/{pdf-request-id}	

Save

12. Click **Save** once the edit is done.

The **Confirmation** screen displays.

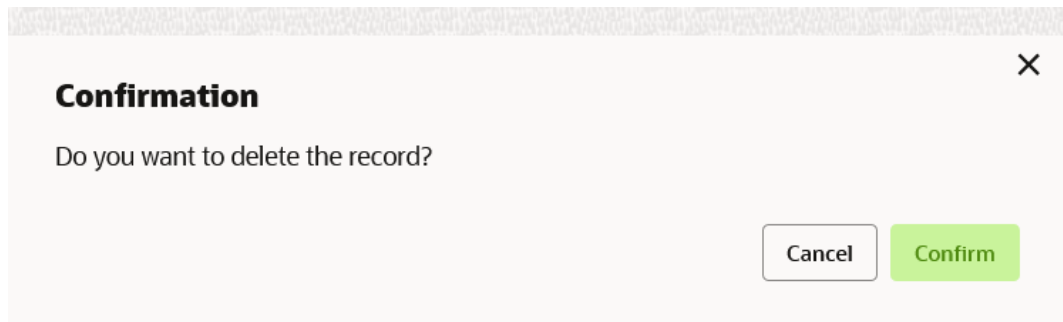
#### Delete Service Provider

The user can delete the provider.

13. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Delete**.

The **Confirmation** screen displays.

Figure 3-7 Confirmation - Delete



14. Click **Confirm** to delete the selected Service Provider.

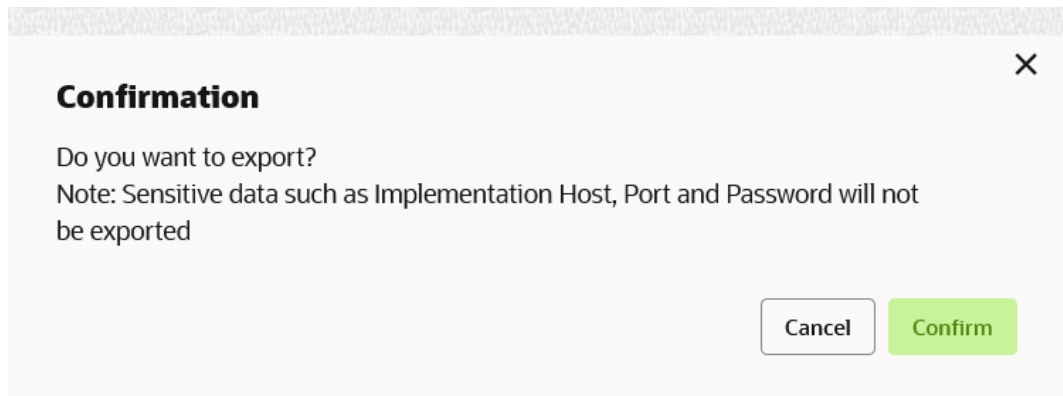
#### Export Service Provider

The user can export the provider configuration as JSON file.

15. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Export**.

The **Confirmation** screen displays.

Figure 3-8 Confirmation - Export



#### Note:

The below data cannot be exported:

- Implementation Host
- Implementation Port
- Implementation Authentication Password

The above data needs to be configured manually after importing the configuration file. Same has been mentioned in Import section.

16. Click **Confirm** to export the selected Service Provider.

#### Configuration

End-user can configure the properties for failing the routing hub requests.

17. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Configuration**.

The **Configuration** screen displays.

**Figure 3-9 Configuration**

Configuration (Service Provider: External\_Provider)

Timeout

Provider Level Timeout?

Connection Timeout  Required

Read Timeout  Required

Exception

Handle exception?

Connection Pool

Inactivity Period

Status Codes



Clear Reset Save

For more information on fields, refer to the field description table below

**Table 3-4 Configuration Service Provider - Field Description**

Field	Description
<b>Provider level timeout</b>	<p>This property is used to override the global timeout values.</p> <p> <b>Note:</b> Default value is false.</p>
<b>Connection Timeout</b>	<p>This property is used to set the timeout in making the initial connection i.e. connection handshake.</p> <p> <b>Note:</b> Value should be in milliseconds.</p>

**Table 3-4 (Cont.) Configuration Service Provider - Field Description**

Field	Description
<b>Read Timeout</b>	<p>This property is used to set the timeout on waiting to read data.</p> <p> <b>Note:</b> Value should be in milliseconds.</p>
<b>Handle exception</b>	<p>This property is used to fail the routing hub request for failed provider requests.</p> <p> <b>Note:</b> Default value is false.</p>
<b>Status Codes</b>	<p>This property is used to fail routing hub request for specific status codes of failed provider requests. If not specified, then routing hub request will fail for all 4xx and 5xx status codes of failed provider requests.</p>
<b>Inactivity Period</b>	<p>This property is used to specify connection inactivity time for re-validating connections in connection pool.</p>

**Request Audit**

18. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Request Audit**.

The **Request Audit** screen displays.

 **Note:**

Refer to **Request Audit** topic for the screen and field description.

**Clear Cache**

The user can clear the SOAP client cache for the service providers.

19. On **Service Provider** tile, click **Operation menu** (3 dots button), and click **Clear Cache**.

# 4

## Implementation

This topic provides the systematic instructions to configure the implementation.

The implementation comprises of Eureka client instance, Host, Port, authentication, and implementation specific service details. Oracle Banking Routing Hub supports web services and Rest API.



### Note:

Default implementation is created whenever a new service provider is added.

1. On **Service Provider** screen, click on the required service provider tile.  
The **Implementation** screen displays.

**Figure 4-1 Implementation**

Actions	Name	Description	Service Name	Host	Port	Queue
:	EQUIFAX_Default	Default Implementation		api.sandbox.equifax.com	0	

### Add Implementation

The user can create the implementation manually.

2. Click **Add**.

The **Add Implementation** screen displays.

**Figure 4-2 Add Implementation**

The screenshot shows a web form titled "Add Implementation" with a close button (X) in the top right corner. The form contains the following fields and controls:

- Name:** A text input field with a "Required" label below it.
- Description:** A large text area with a "Required" label at the bottom right.
- Type:** A dropdown menu currently showing "DEFAULT".
- Default:** A toggle switch, currently turned off.
- Scheme:** A dropdown menu currently showing "Select" with a "Required" label below it.
- Host:** A text input field with a "Required" label below it.
- Port:** A text input field with a "Required" label below it.
- Authentication:** A section with a dropdown menu currently showing "NONE".
- Headers:** A section with a right-pointing chevron (>).
- Service:** A section with a right-pointing chevron (>).
- Save:** A button located at the bottom right of the form.

3. Specify the fields on **Add Implementation** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 4-1 Add Implementation - Field Description**


Field	Description
<b>Name</b>	Specify the name of the implementation.   <b>Note:</b> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul>

Table 4-1 (Cont.) Add Implementation - Field Description




Field	Description
<b>Description</b>	<p>Specify the description of the implementation.</p> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Enter 0 to 1000 characters.</li> <li>• No space allowed at beginning or ending of the characters.</li> </ul>
<b>Type</b>	<p>Select the type of implementation from drop-down list The available options are:</p> <ul style="list-style-type: none"> <li>• <b>DEFAULT</b></li> <li>• <b>QUEUE</b></li> <li>• <b>OIC</b></li> </ul> <p><b>DEFAULT</b> type is for REST and SOAP API calls.</p> <p> <b>Note:</b></p> <p>The type as <b>OIC</b> is only applicable for cloud services.</p>
<b>Default</b>	<p>Toggle the button if user wants to default. Each type can have one default implementation.</p>
<b>Single Tenant</b>	<p>Select the toggle to append tenant details with eureka VIP for services which are registered on eureka as single tenant services.</p> <p> <b>Note:</b></p> <p>This field is available only for internal providers and applicable only for Cloud.</p>

Table 4-1 (Cont.) Add Implementation - Field Description




Field	Description
<b>Eureka Instance</b>	<p><b>Eureka Instance</b> is available only for internal providers and default type.</p> <p>By default, <b>Eureka Instance</b> will be toggled ON for internal providers and OFF for external providers.</p> <div style="border: 1px solid #0070c0; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <p>Api-gateway will be removed (if present) from the provider request url if Eureka Instance is toggled ON. And api-gateway will be added (if missing) in the provider request url if Eureka Instance is toggled OFF &amp; Authentication type is selected as JWT_TOKEN or OAUTH_TOKEN.</p> </div>
<b>Scheme</b>	<p>Select the scheme from drop-down list</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>http</b></li> <li>• <b>https</b></li> </ul> <p><b>Scheme</b> option is available only for default type.</p>
<b>Service Name</b>	<p>If <b>Eureka Instance</b> is toggled ON and type is default, then only service name is required.</p>
<b>Host</b>	<p>Specify the host.</p> <div style="border: 1px solid #0070c0; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Host cannot be blank.</li> <li>• Enter 0 to 255 characters.</li> <li>• Space is not allowed.</li> </ul> </div> <p>If <b>Eureka Instance</b> is toggled OFF and type is default, then only host and port is required.</p>
<b>Port</b>	<p>Specify the port number.</p> <div style="border: 1px solid #0070c0; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Enter 0 to 6 characters.</li> <li>• Enter only numeric value.</li> </ul> </div> <p>If <b>Eureka Instance</b> is toggled OFF and type is default, then only host and port is required.</p>
<b>Authentication</b>	<p>The below fields appear only if <b>Eureka Instance</b> is toggled OFF and Implementation <b>Type</b> is selected as <b>Default</b>.</p>



Table 4-1 (Cont.) Add Implementation - Field Description




Field	Description
<b>Type</b>	Select the type of authentication from drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>BASIC</b></li> <li>• <b>JWT_TOKEN</b></li> <li>• <b>OAUTH_TOKEN</b></li> <li>• <b>SSO</b></li> </ul>
<b>Encryption</b>	Select the toggle to encrypt user credentials. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px; background-color: #e6f2ff;"> <p> <b>Note:</b></p> <p>This field is applicable only for <b>JWT_TOKEN</b> and <b>OAUTH_TOKEN</b> types.</p> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px; background-color: #e6f2ff;"> <p> <b>Note:</b></p> <p>This field depends on the value of api-gateway's property "EncryptionFlag" at provider end. For more information on property value, please refer to the <b>Oracle Banking Microservices Architecture Deployments</b> section in <b>Oracle Banking Microservices Platform Foundation Installation Guide</b>.</p> </div>
<b>Username</b>	Specify the name of the user. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px; background-color: #e6f2ff;"> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul> </div>
<b>Password</b>	Specify the password.
<b>Headers</b>	The below fields appear only if the Implementation <b>Type</b> is selected as <b>Default</b> or <b>OIC</b> .
<b>Add</b>	Click this button to add header.
<b>Actions</b>	Displays the action. The user can edit or delete the header.
<b>Name</b>	Displays the name of the header.
<b>Value</b>	Displays the value of the header.
<b>Service</b>	The below fields appear only if the Implementation <b>Type</b> is selected as <b>Default</b> or <b>OIC</b> .

Table 4-1 (Cont.) Add Implementation - Field Description








Field	Description
<b>Type</b>	Select the type of service from drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>WSDL</b></li> <li>• <b>SWAGGER</b></li> <li>• <b>OTHERS</b></li> </ul>
<b>URL</b>	Specify the service URL of the file location.   <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>WSDL</b> and <b>SWAGGER</b> .
<b>Name</b>	Specify the name of the operation.   <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b> .
<b>Http Method</b>	Select the HTTP method. The available options are: <ul style="list-style-type: none"> <li>• <b>GET</b></li> <li>• <b>POST</b></li> <li>• <b>PUT</b></li> <li>• <b>PATCH</b></li> <li>• <b>DELETE</b></li> </ul>  <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b> .
<b>Endpoint</b>	Specify the endpoint URL for the operation.   <b>Note:</b> This field appears only if the <b>Type</b> is selected as <b>OTHERS</b> .
<b>Content path Prefix</b>	Context path of below formatted URL. http://host:port/context-path/endpointGateway

Table 4-1 (Cont.) Add Implementation - Field Description

Field	Description
<b>Import</b>	<p>Click <b>Import</b> to extract the service information from URL and displays it in the Service list.</p> <p> <b>Note:</b></p> <p>This field appears only if the <b>Type</b> is selected as <b>WSDL</b> and <b>SWAGGER</b>.</p>
<b>Service Headers</b>	<p>Specify the Endpoint specific headers. Value can either be hardcoded or can be Velocity mapping.</p> <p> <b>Note:</b></p> <p>This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>Service Query Params</b>	<p>Specify the Endpoint specific query parameters. Value can either be hardcoded or can be Velocity mapping.</p> <p> <b>Note:</b></p> <p>This field appears only if the <b>Type</b> is selected as <b>OTHERS</b>.</p>
<b>Add</b>	Click this button to add the endpoint details in the Service list.
<b>Service</b>	Displays the extracted service from the selected URL.
<b>Operation</b>	Displays the extracted operation from the selected URL.

**Authentication:**

If External Product processor require authentication to connect to it, Oracle Banking Routing Hub provides standard authentication mechanism schemes like BASIC, JWT, OAUTH\_TOKEN, SSO.

 **Note:**

In case of no authentication, NONE needs to be set as Authentication Type.  
In case of identity propagation, SSO needs to be set as Authentication Type.  
Token is cached for JWT, OAUTH\_TOKEN authentication type and OIC implementation type

**Services**

- **WSDL:**  
The Web Services Description Language (WSDL) is an XML-based interface description language that is used for describing the functionality offered by a web service.

Both SSL and non-SSL WSDL URL are supported.

 **Note:**

If there is a change in wsdl file, then same wsdl file need to be imported again to update the provided service information in Routing Hub.

- **SWAGGER:**  
Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

 **Note:**

If there is a change in swagger file, then same swagger file need to be imported again in order to update the provided service information in Routing Hub.

- **OTHERS:**  
OTHERS option is selected for adding REST API details manually when provider does not have swagger file.

 **Note:**

If there is a change in existing endpoint, then the same endpoint details need to be entered again with the new changes in order to update the existing provided service information in Routing Hub.

### Queue

If the Implementation **Type** is selected as **Queue**,

Figure 4-3 Add Implementation - Queue

For **QUEUE** type, refer to the field description table below.

Table 4-2 Add Implementation - Queue - Field Description

Field	Description
<b>Type</b>	Select the type of implementation from drop-down list The available options are: <ul style="list-style-type: none"> <li>• <b>DEFAULT</b></li> <li>• <b>QUEUE</b></li> </ul> <b>DEFAULT</b> type is for REST and SOAP API calls.
<b>Default</b>	Select the toggle if the user wants to default.
<b>Queue Broker</b>	Select the queue broker from drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>WEBLOGIC_JMS</b></li> </ul>
<b>Request Reply Platform</b>	Select the queue broker from drop-down list. The available options are: <ul style="list-style-type: none"> <li>• <b>JMS_MESSAGEID</b></li> <li>• <b>JMS_CORRELATIONID</b></li> </ul> <b>JMS_MESSAGEID</b> is default request-reply pattern.
<b>Connection Factory</b>	Specify the connection factory. Connection Factory is JNDI based connection factory name which is used to create connection for JMS client.
<b>Queue</b>	Specify the queue. Queue Name is JNDI based destination name.

**Table 4-2 (Cont.) Add Implementation - Queue - Field Description**

Field	Description
<b>Connection Factory</b>	Specify the connection factory. Response Connection Factory is needed when destination is going to respond back after processing the request.
<b>Queue</b>	Specify the queue. Response Queue Name is needed when destination is going to respond back after processing the request.

**Headers:**

External product processor might require some standard headers to be passed along with the request. User can specify the headers which are required by service endpoints for its all implementations but not present in swagger file.

**Note:**

Content-type header will be removed from Provider request if header value is NONE.

4. Follow the below steps to add **Headers**.
  - a. Click **Add** under **Header** section.  
The **Add Header** screen displays.

**Figure 4-4 Add Header**

- b. Specify the fields on **Add Header** screen and click **OK**.

**Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 4-3 Add Header - Field Description**

Field	Description
<b>Name</b>	Specify the name for the header.
<b>Value</b>	Specify the value for the header.

- Click **OK** to save the details.

The **Confirmation** screen displays.

#### Import Implementation

The user can create an implementation by importing the JSON file. The user can also import zip file in order to import all the configuration JSON files together (except parent level configuration JSON files).


- On **Implementation** screen, click **Import**.

The **Import Implementation** screen displays.

**Figure 4-5 Import Implementation**

For more information on fields, refer to the field description table.

**Table 4-4 Import Implementation - Field Description**

Field	Description
<b>File</b>	Click <b>Select</b> to select the file.  <div style="background-color: #e6f2ff; padding: 10px; border: 1px solid #0070c0;"> <p> <b>Note:</b> Allows only to select one file and accepts JSON and ZIP file.</p> </div>

- Click **Import** to import the selected file.

The **Confirmation** screen displays.

The below data needs to be changed after importing provider configuration file:

- Implementation Host and Port
- Implementation Authentication Password

### View Implementation

The user can view implementation details and can also switch to edit form by clicking on edit icon.

8. On **Implementation** screen, click **Operation menu** (3 dots button) and click **View**. The **View Implementation** screen displays.

**Figure 4-6 View Implementation**

The screenshot shows a 'View Implementation' window with the following details:

- Name:** EQUIFAX\_Default
- Description:** Default Implementation
- Type:** DEFAULT
- Default:** On
- Scheme:** https
- Host:** api.sandbox.equifax.com
- Port:** 0
- Authentication:** Type: NONE
- Headers:** No data to display.
- Service:** No data to display.

### Edit Implementation

The user can modify the implementation details.

9. On **Implementation** screen, click **Operation menu** (3 dots button) and click **Edit**. The **Edit Implementation** screen displays.



**Figure 4-7 Edit Implementation**

Edit Implementation X

Name

Description

Type

Default

Scheme

Host

Port

Authentication

Type

Headers

Actions	Name	Value
No data to display.		

Service

Type

URL  
  
Required

Service	Operation
No data to display.	

10. Click **Save** once the edit is done.  
The **Confirmation** screen displays.

**Figure 4-8 Confirmation**

X

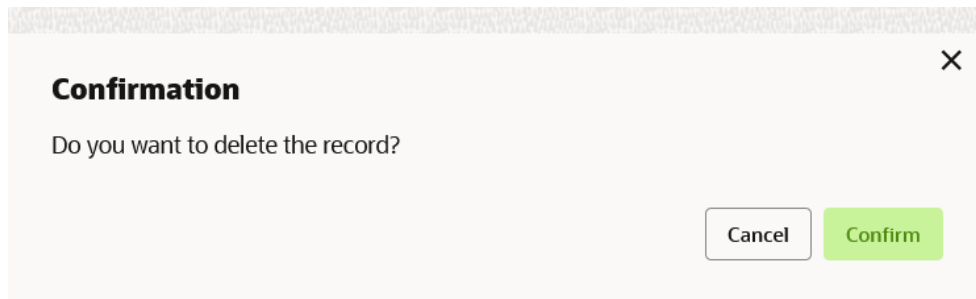
**Confirmation**

Do you want to save the record?

**Delete Implementation**

The user can delete the implementation details.

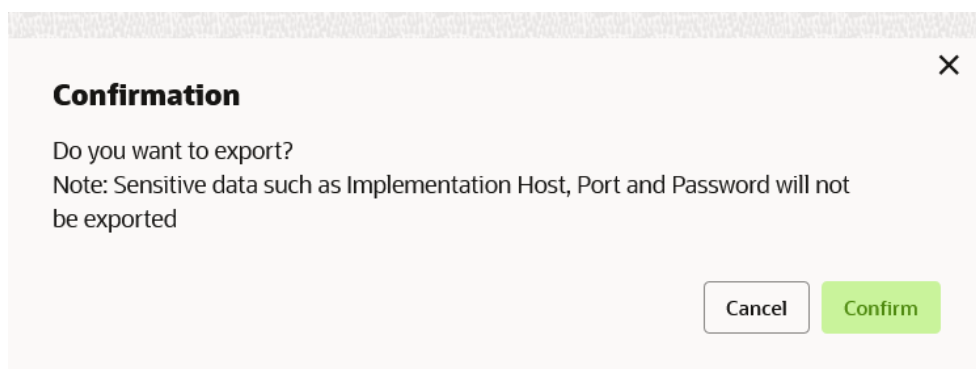
11. On **Implementation** screen, click **Operation menu** (3 dots button) and click **Delete**.  
The **Confirmation** screen displays.

**Figure 4-9 Confirmation - Delete****Export Implementation**

The user can export the implementation configuration as JSON file.

12. On **Implementation** screen, click **Operation menu** (3 dots button) and click **Export**.

The **Confirmation** screen displays.

**Figure 4-10 Confirmation - Export Implementation**

Below data cannot be exported:

- Implementation Host
- Implementation Port
- Implementation Authentication Password

The above data needs to be configured manually after importing the configuration file. Same has been mentioned in Import section.

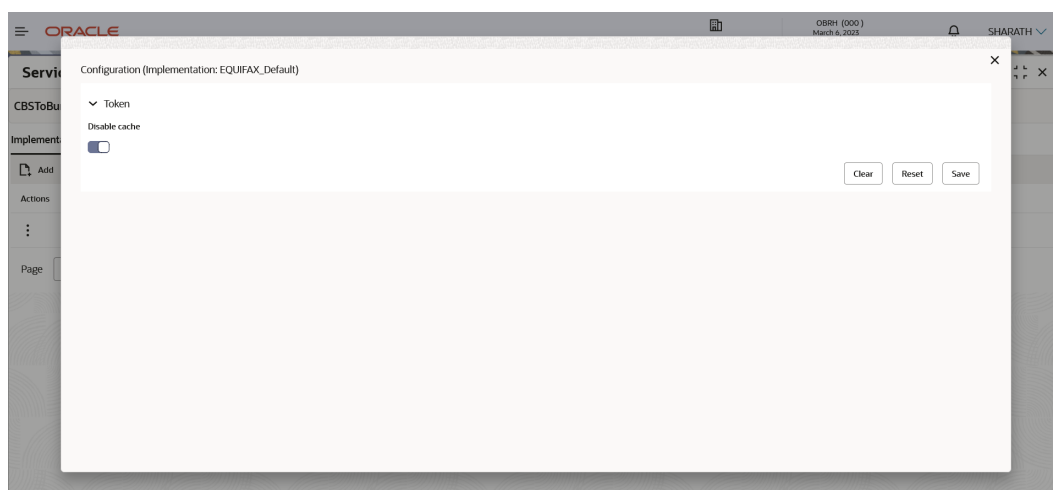
**Configuration**

End-user can configure the properties for failing the routing hub requests.

13. On **Implementation** tile, click **Operation menu** (3 dots button), and click **Configuration**.


The **Configuration** screen displays.

Figure 4-11 Configuration



For more information on fields, refer to the field description table.

Table 4-5 Configuration - Field Description

Field	Description
Disable cache	<p>This property is used to disable the token caching.</p> <p> <b>Note:</b> Default value is false.</p>

### Request Audit

- On **Implementation** screen, click **Operation menu** (3 dots button) and click **Request Audit**.

The **Request Audit** screen displays.

 **Note:**

Refer to [Request Audit](#) topic for screen and field description.

### Clear Cache

The user can clear the SOAP client cache.

- On **Implementation** screen, click **Operation menu** (3 dots button) and click **Clear Cache**.

# 5

## Consumer Services

This topic describes the systematic instructions to configure the consumer services.

The **Consumer Services** defines the service ID, which sends from the service consumer. It also caters the transition and route definition. It comprises of source integration details.

1. On **Service Consumers** screen, click **Consumer Services**.

The **Consumer Services** screen displays.

**Figure 5-1 Consumer Services**

Actions	Name	Description
:	Fetch_Credit_Report	To fetch credit report

### Add Consumer Service

The user can create Consumer Service manually.

2. On **Consumer Services** screen, click **Add**.

The **Add Service** screen displays.

**Figure 5-2 Add Service**

Add Service ✕

ID  Status   
Required

Audit  
 Yes  No  
⚠ Applicable if the Audit type at 'Service Consumer' is 'Service level configuration'

Description   
Required

Add

Actions	Attribute Name	json path
No data to display.		

- Specify the fields on **Add Service** screen.

**Note:**



The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 5-1 Add Service - Field Description**

Field	Description
<b>ID</b>	Specify the ID of the consumer service.  <b>Note:</b> <ul style="list-style-type: none"> <li>Enter 0 to maximum of 255 characters.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>
<b>Status</b>	Active / Inactive If consumer service is marked as inactive, then all related routes will be stopped.

Table 5-1 (Cont.) Add Service - Field Description

Field	Description
<b>Audit</b>	<p>Select the Audit option for the consumer service. The available options are:</p> <ul style="list-style-type: none"> <li>• <b>Yes</b> - This option is for enabling the audit for consumer service.</li> <li>• <b>No</b> - This option is for disabling the audit for consumer service.</li> </ul> <p> <b>Note:</b></p> <p>This option is only applicable if audit type at 'Service Consumer' is 'Service level configuration'</p>
<b>Description</b>	<p>Specify the description of the consumer service.</p> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>• Enter 0 to 1000 characters.</li> <li>• No space allowed at beginning or ending of the characters.</li> </ul>
<b>Add</b>	To add, refer to the below step.
<b>Actions</b>	Displays the action. The user can edit or delete the header.
<b>Attribute Name</b>	Displays the name of the attribute.
<b>json path</b>	Displays the JSON path.

4. To add **Attributes**, follow the below steps.
  - a. Click **Add**.  
The **Add Attribute** screen displays.

**Figure 5-3 Add Attribute**

- b. Specify the fields on **Add Attribute** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 5-2 Add Header - Field Description**

Field	Description
<b>Name</b>	Specify the name of the attribute.
<b>json path</b>	Specify the json path.

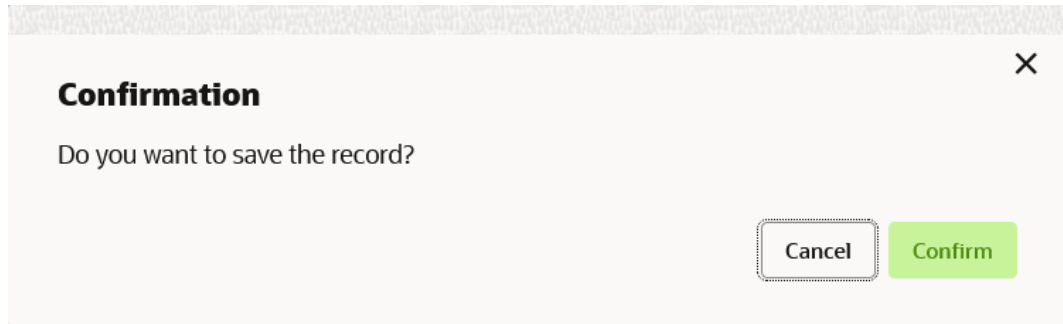
 **Note:**

- Using `$.body`, the user can access the request body.  
Syntax: `$.body.fieldName`  
Example: `$.body.branchCode`
- Using `$.headers`, the user can access the request headers.  
Syntax: `$.headers["fieldname"][0]`  
Example: `$.headers["branchCode"][0]`
- Using `$.env`, the user can access the environment variables.  
Syntax: `$.env.group.variable`

- c. Click **OK** to save the attributes.

- Click **Save** to save the details.  
The **Confirmation** screen displays.

**Figure 5-4 Confirmation**



- On **Confirmation** screen, click **Confirm** to add the service.

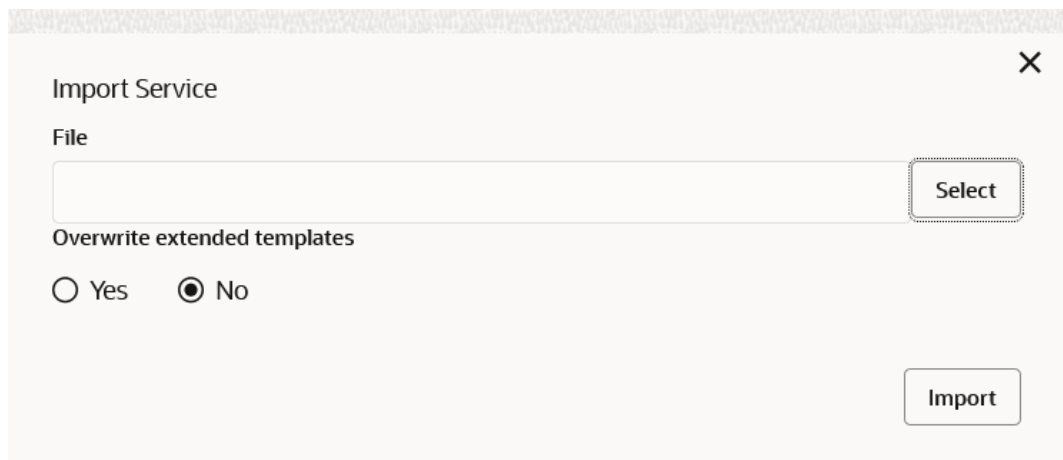
#### **Import Consumer Service**

The user can create a consumer service by importing the JSON file.

The user can also import zip file in order to import all the configuration JSON files together (except parent level configuration JSON files).

- On **Consumer Services** screen, click **Import**.  
The **Import Service** screen displays.


**Figure 5-5 Import Service**



For more information on fields, refer to the field description table.



**Table 5-3 Import Service - Field Description**

Field	Description
<b>File</b>	Select the file using <b>Select</b> button.  <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <p>Allows only to select one file and accepts only JSON file.</p> </div>
<b>Overwrite extended templates</b>	Select the respective radio button to overwrite the extended templates. The available options are: <ul style="list-style-type: none"> <li>• Yes - This option overwrites the extended templates.</li> <li>• No - This option retains the existing extended templates.</li> </ul>

8. Click **Import** to import the selected file.

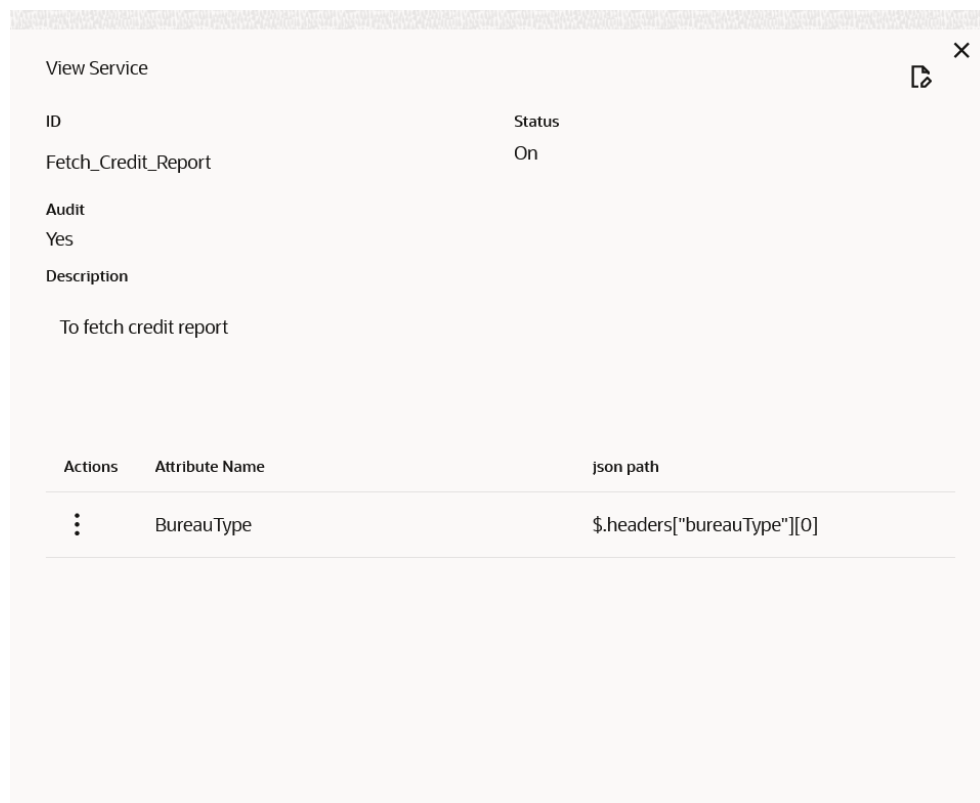
The **Confirmation** screen displays.

#### View Consumer Service

The user can view consumer service details and can also switch to edit form by clicking on edit icon.

9. On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **View**.

The **View Service** screen displays.

**Figure 5-6 View Service**

### Edit Consumer Service

The user can modify the consumer service details.

- On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **Edit**.  
The **Edit Service** screen displays.

**Figure 5-7 Edit Service**

Edit Service

ID Status

Fetch\_Credit\_Report

Audit

Yes  No

Description

To fetch credit report

Add

Actions	Attribute Name	json path
⋮	BureauType	\$.headers["bureauType"]'[0]

Save

- Click **Save** once the edit is done.  
The **Confirmation** screen displays.

**Figure 5-8 Confirmation - Edit**

**Confirmation**

Do you want to save the record?

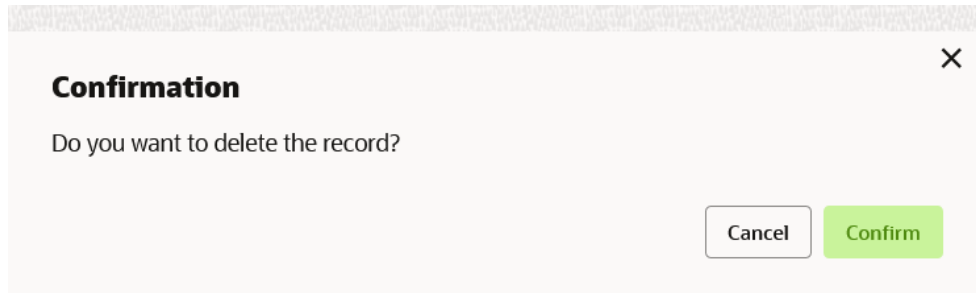
### Delete Consumer Service

The user can delete the consumer service.

12. On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **Delete**.

The **Confirmation** screen displays.

**Figure 5-9 Confirmation**



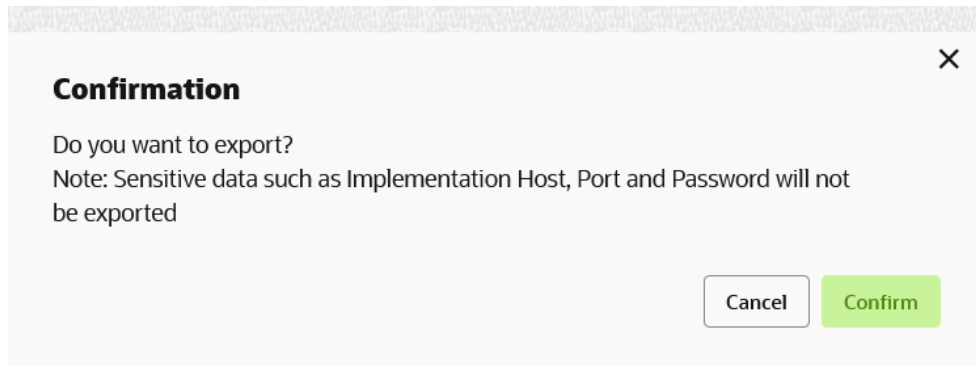
### Export Consumer Service

The user can export the consumer service configuration as JSON file.

13. On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **Export**.

The **Confirmation** screen displays.

**Figure 5-10 Confirmation - Export**



### Consumer Service - Configuration

14. On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **Configuration**.

The **Configuration** screen displays.

#### **Note:**

Refer to [Configuration](#) topic for the screen and field description.

### Consumer Service - Request Audit

15. On **Consumer Service** tile, click **Operation menu** (3 dots button), and click **Request Audit**.

---

The **Request Audit** screen displays.

 **Note:**

Refer to [Request Audit](#) topic for the screen and field description.

# 6

## Transformation

This topic describes the systematic instructions to configure the transformation.

The **Transformation** acts as assembling and transforming data from source to destination and vice-versa. This takes place under consumer service. This converts the data of service consumer into service provider.

1. On **Consumer Services** screen, click the required consumer service tile.

The **Transformation** screen displays.

**Figure 6-1 Transformation**

Actions	Name	Status	Product Processor	Implementation	Service
⋮	TRANSFORMATION1	ACTIVE	EXPERIAN 14.4	EXPERIAN_Default	CreditReports - /v2/credit-report
⋮	EQUIFAX_CR_TRANS	ACTIVE	EQUIFAX14.4	EQUIFAX_Default	requestConsumerCreditReport - /reports/credit-report
⋮	EQUIFAX_AUTH_TRANS	ACTIVE	EQUIFAX 14.4	EQUIFAX_Default	equifaxAuth - /v2/oauth/token

### Add Transformation

The user can create transformation manually.

2. On **Transformation** screen, click **Add**.

The **Add Transformation** screen displays.

Figure 6-2 Add Transformation

Add Transformation
✕

Name  Required Active

Product Processor

Product Processor  Required

Implementation  Required

Service  Required

Service

Service

Operation

Request Validation

Validation Required?

Product Processor  Required

Implementation  Required

Service  Required

Template

Headers

Actions	Name	Value
No data to display.		

Request Transformation

Template Type

Template

Extended Template

Response Headers

📄 Add

Actions	Name	Value
No data to display.		

Response Transformation

Stop route for failed request?

Template Type

Template

Mocking required?

Mock Template

ORACLE

6-2

3. Specify the fields on **Add Transformation** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 6-1 Add Transformation - Field Description**



Field	Description
<b>Name</b>	Specify the name for the transformation.   <b>Note:</b> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul>
<b>Active</b>	Active / Inactive If transformation is marked as inactive, then the user will not be able to select transformation in routing.
<b>Product Processor</b>	Displays the Product Processor details.
<b>Product Processor</b>	Select the product processor from the drop-down list.
<b>Implementation</b>	Select the implementation from the drop-down list.
<b>Service</b>	Select the service from the drop-down list.
<b>Service</b>	Displays the service details of the selected service.
<b>Operation</b>	Displays the operation details of the selected service.
<b>Request Validation</b>	Displays the Request Validation details.
<b>Validation Required?</b>	Select the toggle to enable the validation required for request.   <b>Note:</b> Validation Model of Oracle Banking Pricing & Decision Service is only supported.
<b>Product Processor</b>	Select the product processor from the drop-down list.
<b>Implementation</b>	Select the implementation from the drop-down list.
<b>Service</b>	Select the service from the drop-down list.
<b>Template</b>	Specify the template in which validation provider accepts.
<b>Headers</b>	Displays the header list relevant to the selected provider, implementation and service. User can change the header values. The value can either be hardcoded or can be Velocity mapping.

Table 6-1 (Cont.) Add Transformation - Field Description




Field	Description
<b>Path Params</b>	Displays the path param list relevant to the selected service. User can change the param values. Value can either be hardcoded or can be Velocity mapping.
<b>Query Params</b>	Displays the query param list relevant to the selected service. User can change the param values. Value can either be hardcoded or can be Velocity mapping.
<b>Request Transformation</b>	Displays the Request Transformation details.
<b>Body Type</b>	<p>Select the body type for the Request Transformation from the drop-down list.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>RAW</b></li> <li>• <b>FORM DATA</b></li> <li>• <b>BINARY</b></li> </ul> <div style="border-left: 2px solid #0070C0; border-right: 2px solid #0070C0; border-bottom: 2px solid #0070C0; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <p>This field appears only if the selected service is REST service and <b>RAW</b> option is used for URL-encoded content type.</p> </div>
<b>Template Type</b>	<p>Select the template type for the Request Transformation from the drop-down list.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>VELOCITY</b></li> <li>• <b>JSLT</b></li> <li>• <b>XSLT</b></li> </ul>
<b>Template</b>	<p>Specify the template for the Request Transformation in which provider accepts.</p> <p>Refer to <a href="#">Transformation Type</a> for syntax.</p>
<b>Extended Template</b>	<p>Specify the custom template in order to extend the kernel template. Refer to Extensibility and Transformation Type for syntax.</p> <div style="border-left: 2px solid #0070C0; border-right: 2px solid #0070C0; border-bottom: 2px solid #0070C0; padding: 10px; margin-top: 10px;"> <p> <b>Note:</b></p> <p>This field appears only if the <b>Body Type</b> is selected as <b>RAW</b>.</p> </div>
<b>Response Header</b>	<p>Specify the additional headers required to be part of Routing Hub response headers.</p> <p>Value can either be hardcoded or can be Velocity mapping.</p>
<b>Response Transformation</b>	Displays the response transformation details.



Table 6-1 (Cont.) Add Transformation - Field Description

Field	Description
<b>Stop route for failed request</b>	<p>This property is used to handle response for failed request.</p> <div style="background-color: #e6f2ff; padding: 10px; border: 1px solid #0070c0;"> <p> <b>Note:</b></p> <p>Only applicable for API chaining scenario.</p> </div>
<b>Template Type</b>	<p>Select the template type for the Response Transformation from drop-down list.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>VELOCITY</b></li> <li>• <b>JSLT</b></li> <li>• <b>XSLT</b></li> </ul>
<b>Template</b>	<p>Specify the kernel template in which consumer accepts. Refer to <a href="#">Transformation Type</a> for syntax.</p>
<b>Mocking required?</b>	<p>Select the toggle if the mocking is required for the Response Transformation or not.</p> <p>If the toggle is <b>ON</b>, the Routing Hub will return the mocked template output (with extended template output if mentioned) to consumer without invoking provider API.</p>
<b>Mock Template</b>	<p>Specify the kernel template for the Response Transformation in which the consumer accepts. Refer <a href="#">Transformation Type</a> for syntax.</p>

4. Click **Save** to save the details.

The **Confirmation** screen displays.

5. Click **Confirm** to add the transformation.

#### Import Transformation

The user can create a transformation by importing the JSON file. The user can also import zip file in order to import all the configuration JSON files together (except parent level configuration JSON files).


6. On **Transformation** screen, click **Import**.

The **Import Transformation** screen displays.

**Figure 6-3 Import Transformation**

For more information on fields, refer to the field description table.

**Table 6-2 Import Transformation - Field Description**

Field	Description
<b>File</b>	<p>Select the file using <b>Select</b> button.</p> <div style="border: 1px solid #0070c0; background-color: #e1eef6; padding: 5px;"> <p> <b>Note:</b></p> <p>Allows only to select one file and accepts JSON and ZIP file.</p> </div>
<b>Overwrite extended templates</b>	<p>Select the respective radio button to overwrite the extended templates.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• Yes - This option overwrites the extended templates.</li> <li>• No - This option retains the existing extended templates.</li> </ul>

7. Click **Import** to import the selected file.

The **Confirmation** screen displays.

#### View Transformation

The user can view transformation details and can also switch to edit form by clicking on edit icon.

8. On **Transformation** list, click **Operation menu** (3 dots button), and click **View**.

The **View Transformation** screen displays.

Figure 6-4 View Transformation

View Transformation
✕

<b>Name</b>	<b>Active</b>	
TRANSFORMATION1	On	
<div style="margin-top: 10px;"> <span>▼ Product Processor</span> </div>		
<b>Product Processor</b>	<b>Implementation</b>	
EXPERIAN 14.4	EXPERIAN_Default	
<b>Service</b>		
CreditReports - /v2/credit-report		
<div style="margin-top: 10px;"> <span>▼ Service</span> </div>		
<b>Service</b>	<b>Operation</b>	
POST /consumerservices/credit-profile/v2/credit-report	CreditReports	
<div style="margin-top: 10px;"> <span>▼ Headers</span> </div>		
Actions	Name	Value
⋮	Accept	application/json
⋮	Authorization	Bearer \$body.access_token
⋮	clientReferenceId	SBMYSQL
<div style="margin-top: 10px;"> <span>▼ Path Parameters</span> </div>		
Actions	Name	Value
No data to display.		
<div style="margin-top: 10px;"> <span>▼ Query Parameters</span> </div>		
Actions	Name	Value
No data to display.		
<div style="margin-top: 10px;"> <span>▼ Request Transformation</span> </div>		
<b>Body Type</b>	<b>Template Type</b>	
RAW	VELOCITY	
<b>Template</b>		
<pre> {   #set(\$body = \$snapshot.get(0).body)   "consumerPii": {     "primaryApplicant": {       "name": { </pre>		

Click **Edit** icon to edit the **Transformation**.

### **Edit Transformation**

The user can modify the transformation details.

9. On **Transformation** list, click **Operation menu** (3 dots button), and click **Edit**.  
The **Edit Transformation** screen displays.

Figure 6-5 Edit Transformation

Edit Transformation
✕

Name Active

BRANCH\_TRANSFORMATION

Product Processor

Product Processor: External\_Provider 1.0.0    Implementation: Select    Service: Get\_Details - /cmc-obrh-servi

Service

Service: GET /cmc-obrh-services/serviceconsumer    Operation: Get\_Details

Request Validation

Validation Required?

Product Processor: Select    Implementation: Select    Service: Select

Template

Headers

Actions	Name	Value
⋮	Content-Type	application/json
⋮	appld	CMNCORE
⋮	branchCode	000
⋮	entityId	DEFAULTENTITY

Path Parameters

Actions	Name	Value
No data to display.		

Query Parameters

Actions	Name	Value
⋮	offset	0
⋮	limit	10
⋮	filterBy	name
⋮	filterValue	Oracle_Service_Consumer

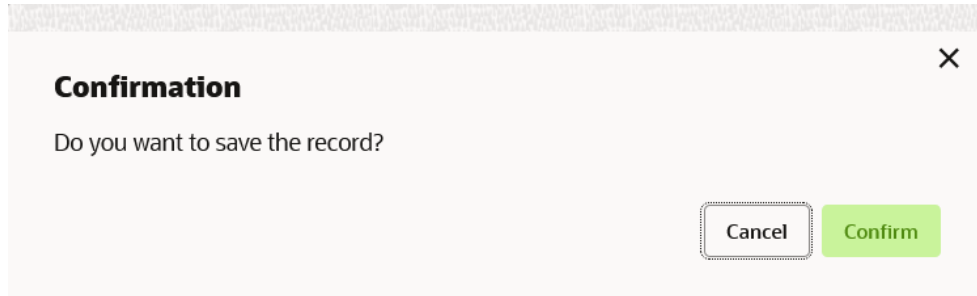
Request Transformation

Body Type: RAW    Template Type: VELOCITY

Template

10. Click **Save** once the edit is done.  
The **Confirmation** screen displays.

**Figure 6-6 Confirmation**

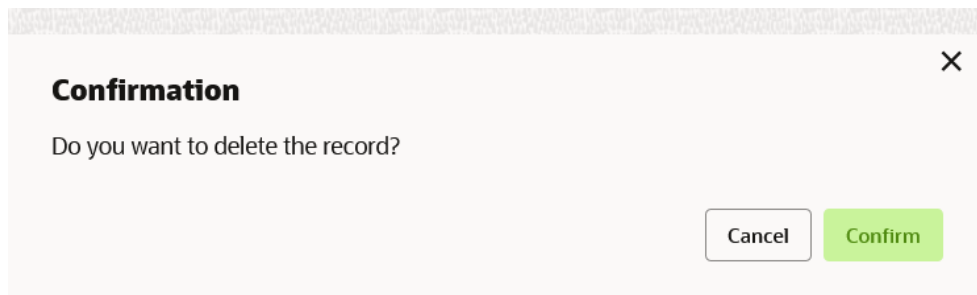


#### **Delete Transformation**

The user can delete the transformation.

11. On **Transformation** list, click **Operation menu** (3 dots button), and click **Delete**.  
The **Confirmation - Delete** screen displays.

**Figure 6-7 Confirmation - Delete**

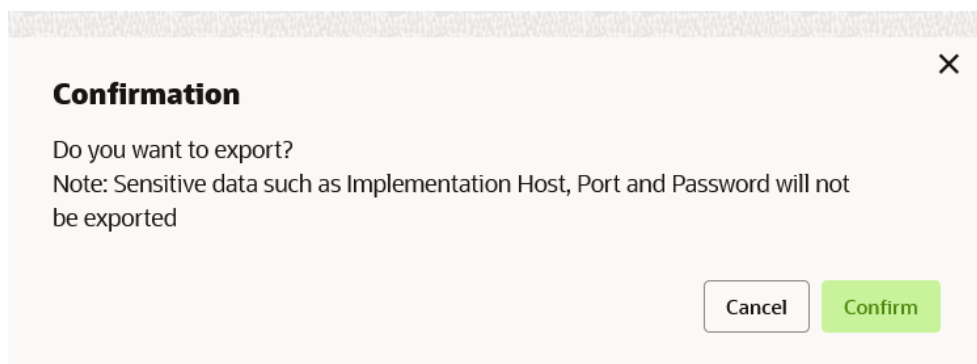


#### **Export Transformation**

The user can export the transformation configuration as JSON file.

12. On **Transformation** list, click **Operation menu** (3 dots button), and click **Export**.  
The **Confirmation** screen displays.

**Figure 6-8 Confirmation - Export**



## Request Audit

13. On **Transformation** list, click **Operation menu** (3 dots button), and click **Request Audit**.  
The **Request Audit** screen displays.

 **Note:**

Refer to [Request Audit](#) topic for screen and field description.

# 7

## Routing

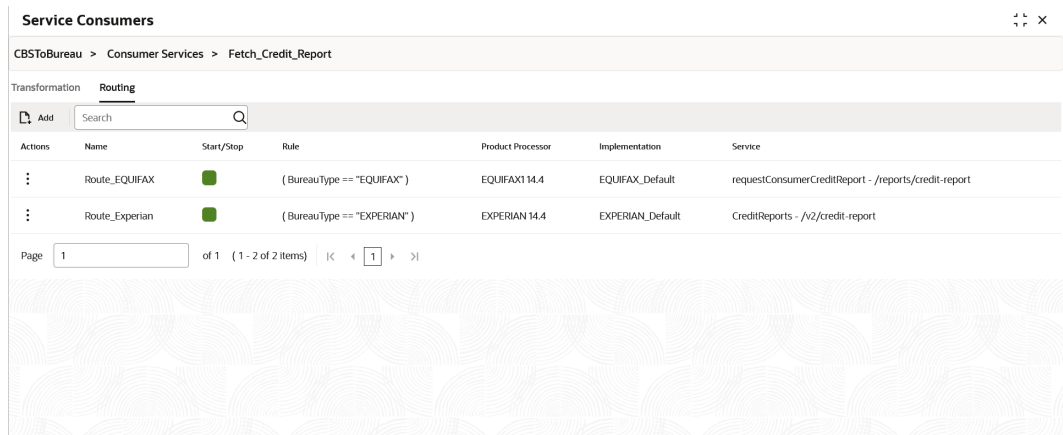
This topic describes the systematic instructions to configure the routing.

Routing defines no rule or rule-based route configuration. Route decide the actual request to be send to which service provider based on maintenance and evaluation.

1. On **Consumer Services** screen, click **Routing**.

The **Routing** screen displays.

**Figure 7-1 Routing**



Actions	Name	Start/Stop	Rule	Product Processor	Implementation	Service
⋮	Route_EQUIFAX	■	{ BureauType == "EQUIFAX" }	EQUIFAX1 14.4	EQUIFAX_Default	requestConsumerCreditReport - /reports/credit-report
⋮	Route_Experian	■	{ BureauType == "EXPERIAN" }	EXPERIAN 14.4	EXPERIAN_Default	CreditReports - /2/credit-report

### Add Route

The user can create routing manually.

2. On **Routing** screen, click **Add**.

The **Add Route** screen displays.



**Figure 7-2 Add Route**

3. Specify the fields on **Add Route** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 7-1 Add Route - Field Description**


Field	Description
<b>Name</b>	Specify the name for the route.   <b>Note:</b> <ul style="list-style-type: none"> <li>• Enter 0 to maximum of 255 characters.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul>
<b>START / STOP</b>	<b>START / STOP</b> If routing is marked as STOP, then consumer request fails at routing hub level only.

Table 7-1 (Cont.) Add Route - Field Description

Field	Description
<b>Auto Shutdown</b>	ON / OFF If AutoShutdown flag is ON, then route state will be changed to STOP if route failure goes beyond the threshold failure limit based on the monitoring and alert configuration.
<b>Rule Type</b>	Select the rule type. The available options are: <ul style="list-style-type: none"> <li>• <b>Default Rule</b></li> <li>• <b>Custom Rule</b></li> </ul>
<b>Expression Editor</b>	Displays the expression that is formed through expression editor.
<b>Add</b>	To add, refer to the below steps.
<b>Actions</b>	Displays the action. The user can edit or delete the header.
<b>Product Processor</b>	Displays the product processor.
<b>Implementation</b>	Displays the implementation.
<b>Transformation</b>	Displays the transformation.

#### Add Custom Rule using Expression Editor

4. To add **Editor**, follow the below steps.
  - a. On **Add Route** screen, click **Editor** button.  
The **Expression Editor** screen displays.

Figure 7-3 Expression Editor


- b. Specify the fields on **Expression Editor** screen.

#### Note:

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 7-2 Expression Editor - Field Description**

Field	Description
<b>Attribute</b>	Select attribute relevant to consumer service from drop-down list.
<b>Operator</b>	Select the logical operators to form an expression from drop-down list.
<b>Value</b>	Specify the value.  <div style="border-left: 2px solid #0070C0; border-right: 2px solid #0070C0; border-bottom: 2px solid #0070C0; padding: 5px; background-color: #E6F2FF;">  <b>Note:</b> Enter 0 to 255 characters. </div>
<b>Condition Type</b>	Select the condition type from drop-down list.

- c. Click **Save** to save the details.

 **Note:**

String value should be quoted using single quotes ( ' ) Example: 'abc'  
List value should be comma separated values and quoted using single quotes ( ' ) Example: 'abc,xyz,1.23,true'

### Transformations

The user can define the sequence of transformations for each routing in which request should be processed. Sequence of transformations in list can be changed by using drag-n-drop feature.

5. To add **Transformations**, follow the below steps.
  - a. On **Add Route** screen, click **Add**.  
The **Add Transformation** screen displays.

Figure 7-4 Add Transformation

Add Transformation
✕

**Product Processor**

Select
▼

Required

**Implementation**

Select
▼

Required

**Transformation**

Select
▼

Required

▼ Headers

Actions	Name	Value
No data to display.		

▼ Product Processor

Service

▼ Request Transformation

Template Type	Template
---------------	----------

▼ Response Transformation

Template Type	Template
---------------	----------

Mocking required?	Mock Template
-------------------	---------------

OK

- b. Specify the fields on **Add Transformation** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 7-3 Add Transformation - Field Description**

Field	Description
<b>Product Processor</b>	Select the product processor from the drop-down list.
<b>Implementation</b>	Select the implementation from the drop-down list.
<b>Transformation</b>	Select the transformation from the drop-down list.
<b>Action</b>	Displays the action. The user can edit or delete the header.
<b>Name</b>	Displays the name of the header.
<b>Value</b>	Displays the value of the header.
<b>Service</b>	Displays the service of the product processor.
<b>Template Type</b>	Displays the template type for the request transformation.
<b>Template</b>	Displays the template for the request transformation.
<b>Template Type</b>	Displays the template type for the response transformation.
<b>Template</b>	Displays the template for the response transformation.
<b>Mocking required?</b>	Displays whether the mocking required for the response transformation or not.
<b>Mock Template</b>	Displays the mock template for the response transformation.

- c. Click **OK**.
- 6. Click **Save** to save the details.  
The **Confirmation** screen displays.
- 7. Click **Confirm** to add the routing details.

**View Route**

The user can view the routing details and can also switch to edit form by clicking on edit icon.

- 8. On **Routing** screen, click **Operation menu** (3 dots button), and click **View**.  
The **View Route** screen displays.

**Figure 7-5 View Route**

View Route ✕

Name: Route\_EQUIFAX      Start/Stop: START STOP      Auto Shutdown: On

Default Rule     Custom Rule

▼ Rule

( BureauType == "EQUIFAX" )

▼ Transformations

Actions	Product Processor	Implementation	Transformation
⋮	EQUIFAX1 14.4	EQUIFAX_Default	EQUIFAX_AUTH_TRANS1
⋮	EQUIFAX1 14.4	EQUIFAX_Default	EQUIFAX_CR_TRANS

**Edit Route**

The user can modify the routing details.

9. On **Routing** screen, click **Operation menu** (3 dots button), and click **Edit**.

The **Edit Route** screen displays.

**Figure 7-6 Edit Route**

Edit Route ✕  
 Name:  Start/Stop:   Auto Shutdown:   
 Default Rule  Custom Rule  
 Rule:   
  
 Transformations:   

Actions	Product Processor	Implementation	Transformation
⋮	EQUIFAX1 14.4	EQUIFAX_Default	EQUIFAX_AUTH_TRANS1

**Delete Route**

The user can delete the routing details.

- On **Routing** screen, click **Operation menu** (3 dots button), and click **Delete**.

The **Confirmation** screen displays.

**Figure 7-7 Confirmation - Delete**

Confirmation ✕  
 Do you want to delete the record?

- Click **Confirm** to delete the selected routing.

**Routing - Configuration**

- On **Routing** screen, click **Operation menu** (3 dots button), and click **Configuration**.

The **Configuration** screen displays.

 **Note:**

Refer to [Configuration](#) topic for screen and field description.

**Routing - Request Audit**

13. On **Routing** screen, click **Operation menu** (3 dots button), and click **Request Audit**.  
The **Request Audit** screen displays.

 **Note:**

Refer to [Request Audit](#) topic for screen and field description.



# 8

## Request Audit - Log

This topic describes the systematic instructions to check the audit log in Oracle Banking Routing Hub.

Specify **User ID** and **Password**, and login to **Home** screen.

1. On **Home** screen, click **Core Maintenance**. Under **Core Maintenance**, click **Routing Hub**.
2. Under **Routing Hub**, click **Request Audit**.

The **Request Audit - Log** screen displays.

**Figure 8-1 Request Audit - log**

3. Specify the fields on **Request Audit - log** screen.

 **Note:**


The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 8-1 Request Audit - log - Field Description**

Field	Description
<b>Request ID</b>	Specify the request ID.
<b>Consumer</b>	Specify the consumer.
<b>Consumer Service</b>	Specify the consumer service.
<b>Provider</b>	Specify the provider.
<b>Provider Implementation</b>	Specify the provider implementation.
<b>Provider Service</b>	Specify the provider service.
<b>Transformation</b>	Specify the transformation name.
<b>Route</b>	Specify the route.
<b>User ID</b>	Specify the user ID.

**Table 8-1 (Cont.) Request Audit - log - Field Description**

Field	Description
<b>Reference Number</b>	Specify the reference number to track the requests audit.  <div style="border: 1px solid #0070c0; padding: 5px; background-color: #e6f2ff;"> <p> <b>Note:</b></p> <p>To track by reference number, one has to pass rh-reference-no header in routing hub request</p> </div>

4. Click the **Search** button to fetch the request audit details.
5. Click on the **Request ID** to view the step by step execution of request audit details.

The **Request Audit Details** screen displays.

**Figure 8-2 Request Audit Details**

For more information on fields, refer to the field description table.

**Table 8-2 Request Audit Details - Field Description**

Field	Description
<b>Request ID</b>	Displays the selected request ID.
<b>OBRH Request</b>	Displays the status of Routing Hub request.
<b>Provider Request</b>	Displays the status of provider request.
<b>Provider Response</b>	Displays the status of provider response.
<b>OBRH Response</b>	Displays the status of Routing Hub response.
<b>Timestamp</b>	Displays the date and time.
<b>Message</b>	Displays the message.

# 9

## Chaining

This topic provides the information about chaining of the transformation.

The end-user can define the sequence of transformations for each routing in which the request needs to be processed.

Chaining can be achieved by using the snapshot list. The snapshot list stores the response body and response headers whenever the transformation is processed. Therefore, the end-user can access the response body or headers of all processed transformations at any stage.

**Syntax:** `$snapshot.get(index).body` or `$snapshot.get(index).headers`



### Note:

`$body` and `$headers` refers to the response body and headers of previous step.

Figure 9-1 Chaining

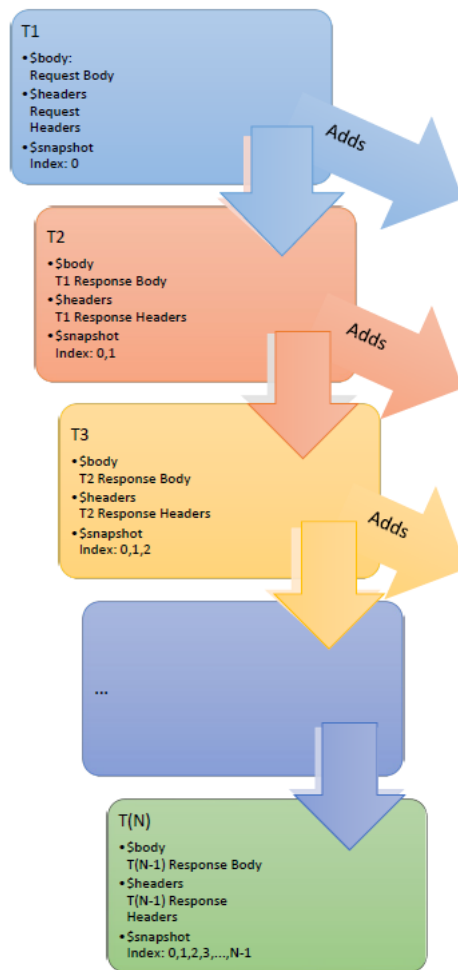


Table 9-1 Snapshot List

Index	Body	Headers
1	Request Body	Request Headers
2	T1 Response Body	T1 Response Headers
3	T2 Response Body	T2 Response Headers
4	T3 Response Body	T3 Response Headers
...	...	...
N	T(N-1) Response Body	T(N-1) Response Headers

# 10

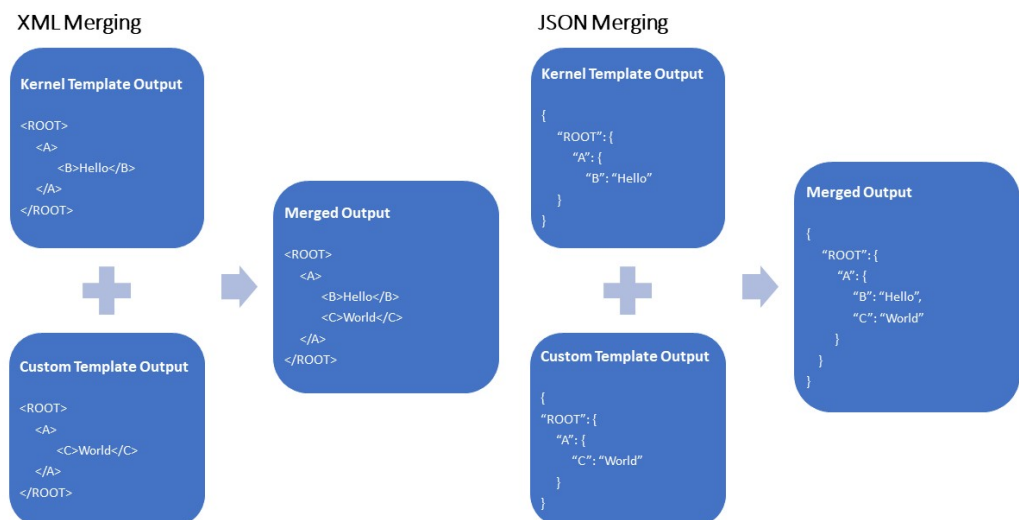
## Template Extensibility

Template Extensibility in Routing Hub refers to template extensibility and is achieved by specifying the extended templates for request and response kernel transformation templates. And as part of extensibility, Routing Hub merges the output of kernel template and custom template in terms of JSON / XML merging.

In case of request, Routing Hub will send the merged output as request payload to provider.

In case of response, Routing Hub will return the merged output as response back to consumer

**Figure 10-1 Extensibility - Example**



### Note:

Order of existing elements in custom template should be same as kernel template.

- [XML merging attributes](#)

## 10.1 XML merging attributes

This topic contains the following subtopics:

- [Identity Matcher](#)

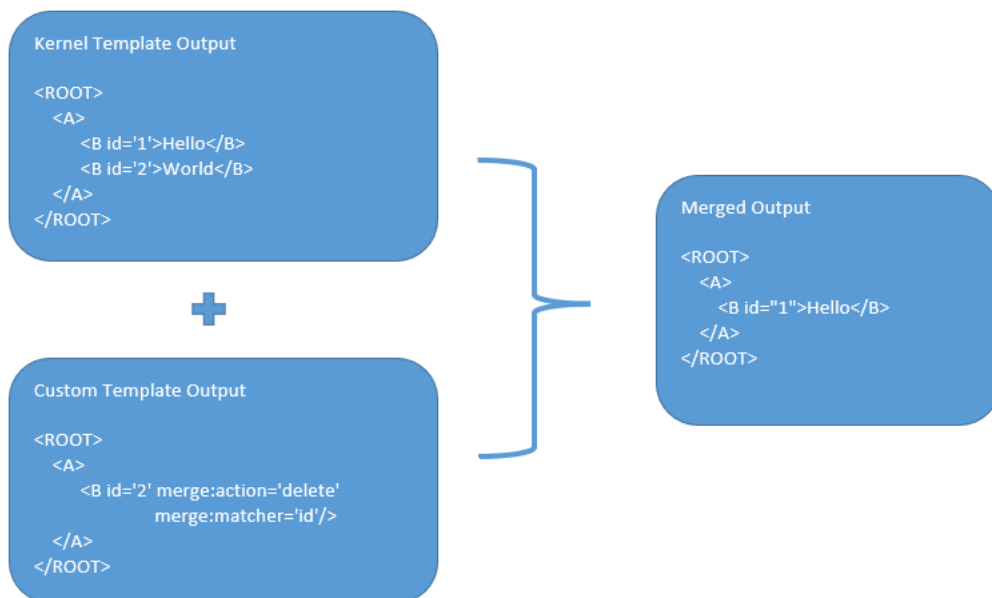
- Skip Matcher
- Override Action
- Complete Action
- Replace Action
- Preserve Action
- Delete Action

### 10.1.1 Identity Matcher

Matcher attribute must be used when merge action has to be performed for specific element.

Syntax: `merge:matcher='<ATTRIBUTE_NAME>'`

**Figure 10-2 Identity Matcher**

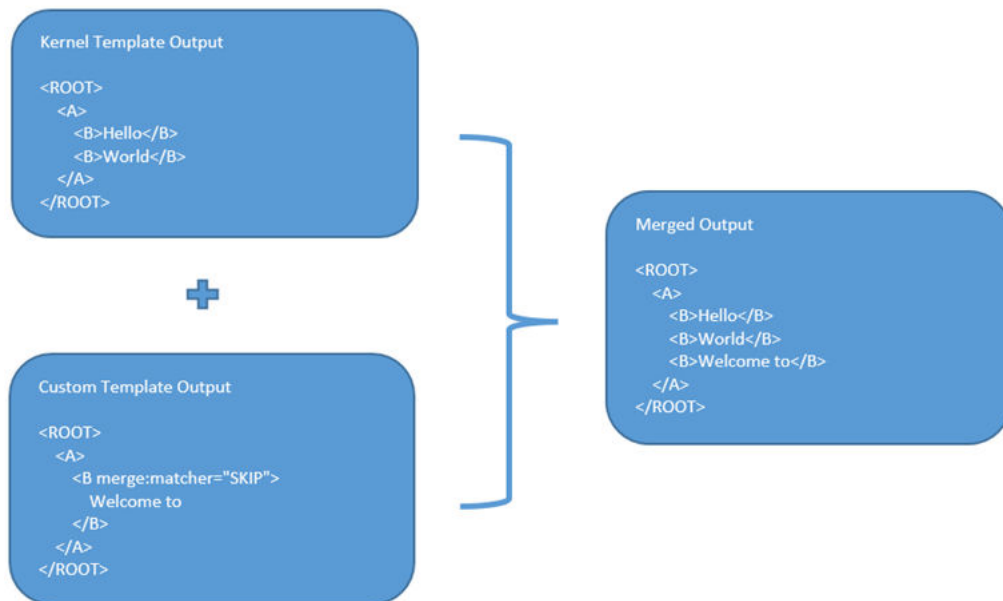


### 10.1.2 Skip Matcher

Skip matcher strategy is used to insert the elements forcefully without matching the original element and patch element.

Syntax: `merge:action='SKIP'`

**Figure 10-3 Skip Matcher**

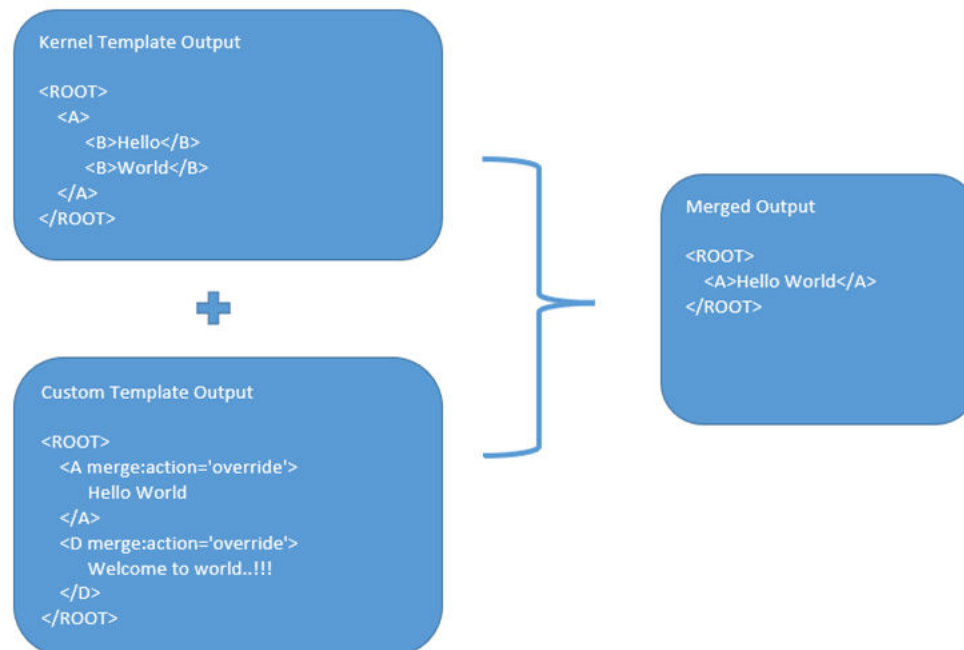


### 10.1.3 Override Action

Replaces the original element with the patch element only if it exists in kernel/mock template.

Syntax: `merge:action='override'`

**Figure 10-4 Override Action**

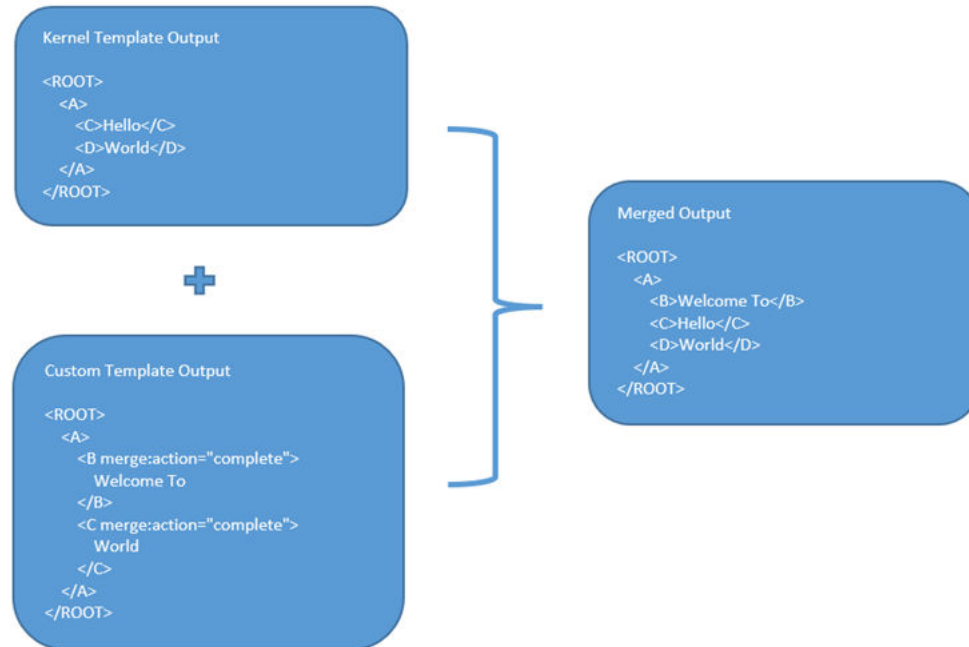


## 10.1.4 Complete Action

Copies the patch element only if it does not exist in kernel/mock template.

Syntax: `merge:action='complete'`

**Figure 10-5 Complete Action**



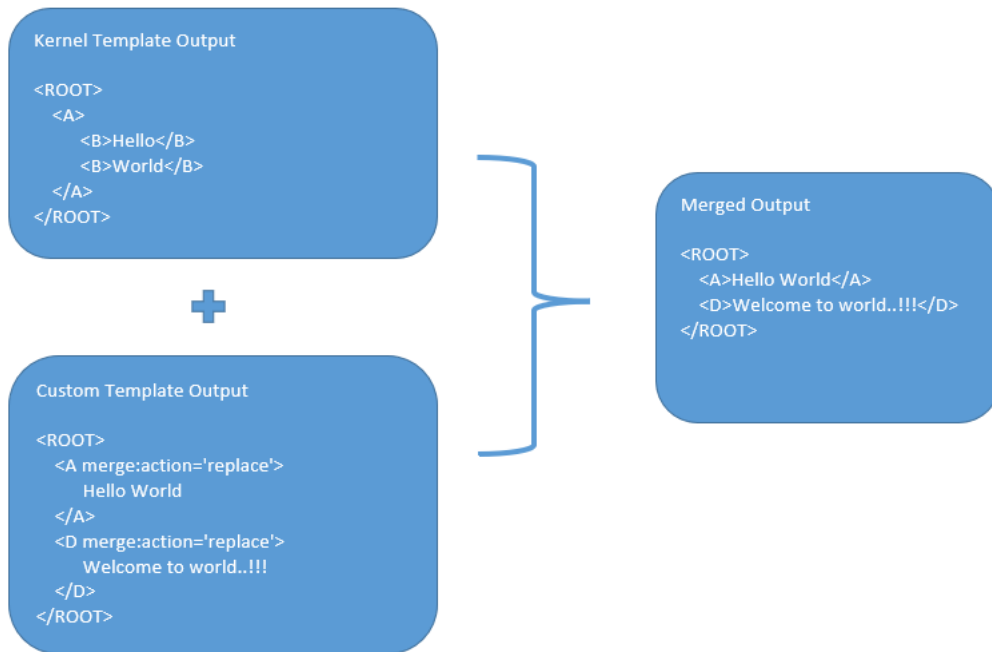
## 10.1.5 Replace Action

Replaces the original element with the patch element or creates the element if it does not exist in kernel/mock template.

Syntax: `merge:action='replace'`



**Figure 10-6 Replace Action**

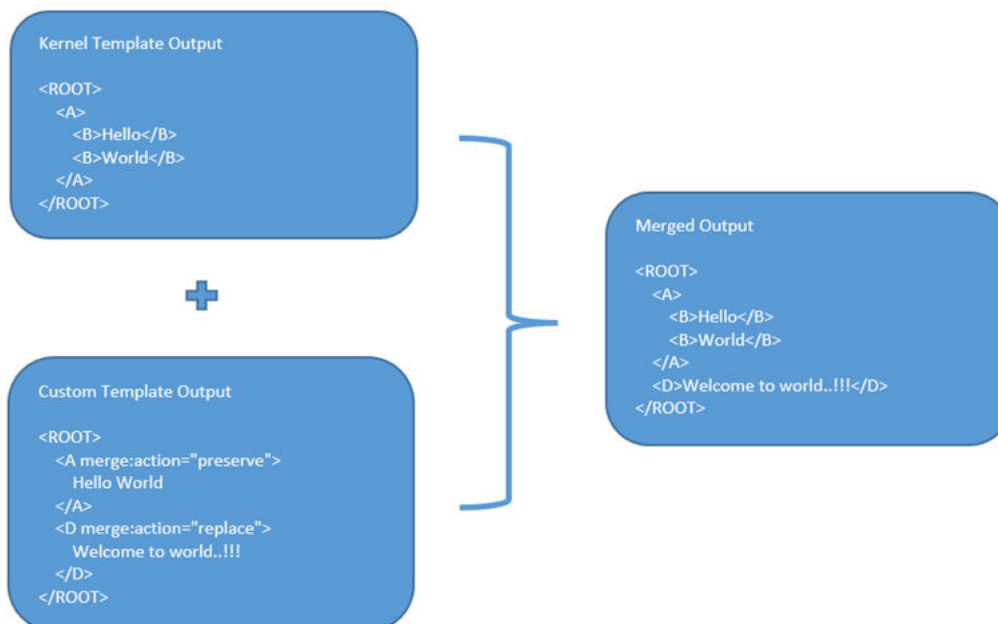


## 10.1.6 Preserve Action

No replace action is performed on the original element.

Syntax: `merge:action='preserve'`

**Figure 10-7 Preserver Action**

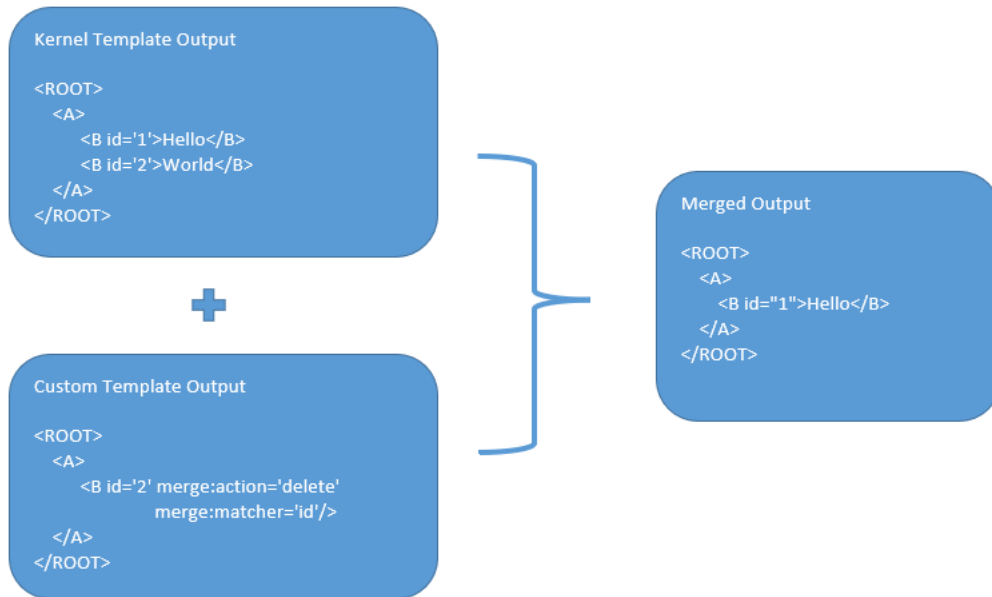


## 10.1.7 Delete Action

Deletes the original element.

Syntax: `merge:action='delete'`

**Figure 10-8 Delete Action**



# 11

## Audit Purging / Archiving

Purging/Archiving of audit data is done on the basis of retention policy.

This process uses plato-batch-server for Job execution.

The following steps are required to schedule purging/archiving job (routingHubAuditRetentionJob) once cmc-obrh-services and plato-batch-server is UP and RUNNING:

1. On **Home** screen, click **Task Management**. Under **Task Management** menu, click **Configure Tasks**.
2. Select **Schedule** option.
3. Select **Task Name** as routingHubAuditRetentionJob and **Task Trigger Name** will be generated automatically.
4. Specify the CRON expression to daily EOD.

In order to resolve table space issue of Audit table (CMC\_RH\_AUDIT\_EVENT\_LOG), Database Management Team has to configure database job which should be triggered after routingHubAuditRetentionJob. This database job can be redefining the table (DBMS\_REDEFINITION) after purging/archiving is done or other approach. So, the unused LOB segment space can be released. And in order to resolve table space issue of Audit history table (CMC\_RH\_AUDIT\_EVENT\_LOG\_HISTORY), Database Management Team has to configure database job to truncate table periodically basis.

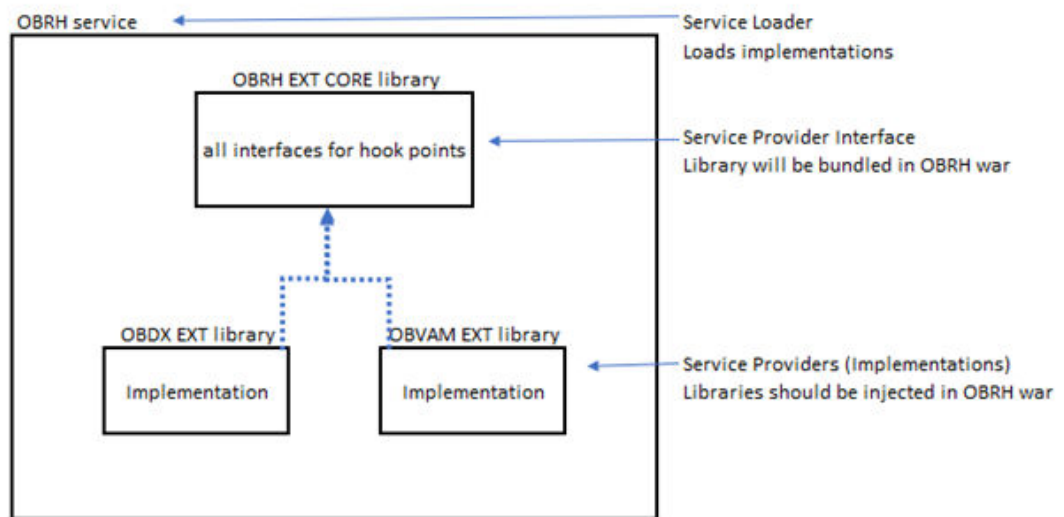
# 12

## Hookpoints

Service Provider Interface (SPI) mechanism is used to make Routing Hub more extensible. SPI provides an option to extend interfaces without modifying the core application. All we need to do is provide a new implementation of the service that follows certain rules and plug it into the application.

Using the SPI mechanism, the application will load the new implementation and work with it.

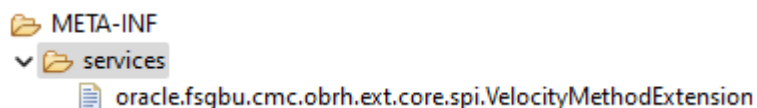
**Figure 12-1 Hookpoints**



Below steps to follow for specifying implementation:

- Extract the "cmc-obrh-ext-core-x.y.z.jar" (Extension Core) library from "cmc-obrh-service-x.y.z.war" artifact.
- Create library by consuming extension core library of Routing Hub.
- Specify the required implementations.
- In order to get it discovered, provider configuration file has to be created under "META-INF" as below:

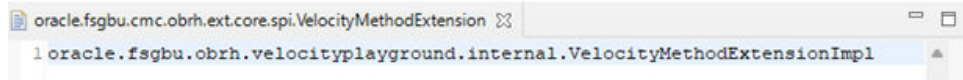
**Figure 12-2 META-INF**



Here, file name will be "PackageName.InterfaceName".

- Specify the implementation in above file as below:

**Figure 12-3 Implementation**



```
oracle.fsgbu.cmc.obrh.ext.core.spi.VelocityMethodExtension
| oracle.fsgbu.obrh.velocityplayground.internal.VelocityMethodExtensionImpl
```

Here, file name will be "PackageName.InterfaceName".

- Inject the implementation library in "cmc-obrh-service-x.y.z.war" artifact.
- [Available Interfaces](#)

## 12.1 Available Interfaces

### **VelocityMethodExtension**

In order to use it in velocity templates, processInput method needs to be called.

Syntax: \$custom.processInput(String implementationName, Object... args)

Here, implementationName is mandatory if multiple implementations are present.

# 13

## Multipart Request

This topic provides the sample template for the multipart request

### Example 13-1 Multipart Request

```
[
  {
    "key": "file",
    "type": "FILE",
    "value": "$body.files.get(0).file"
  },
  {
    "key": "name",
    "type": "TEXT",
    "value": "$body.name"
  }
]
```

# 14

## Configuration

This topic describes the systematic instructions to perform the configuration.

End-user can configure the properties w.r.t. monitoring, alert and export.

End-user can configure the same at System level and granular levels such as Consumer, Consumer Service and Routing.

The **Configuration** screen contains the following sections.

- **Monitoring** - It has the features required by the breaker to store and aggregate the result of calls.
- **Alert** - It has the features required for transitioning circuit breaker.
- **Email Alert** - It has the feature required for mail notification.
- **Export** - It has the properties that are required for exporting the configuration JSON and will be visible at system level only.

Specify **User ID** and **Password**, and login to **Home** screen.

1. On **Home** screen, click **Core Maintenance**. Under **Core Maintenance**, click **Routing Hub**.
2. Under **Routing Hub**, click **Configuration**.

The **Configuration** screen displays.

**Figure 14-1 Configuration**

The screenshot shows the 'Configuration' screen with the following sections and fields:

- Monitoring**:
  - Window Type:  Count  Time
  - Window Size:
- Alert**:
  - Minimum number of calls:
  - Failure rate threshold:
- Email Alert**:
  - Email Addresses:
- Export**:
  - Mark data as factory shipped:
- OIC**:
  - Customer OIC instance URL:
  - Customer OIC IDCS stripe URL:
  - Client Id:
  - Client Secret:
  - Scope:

Buttons: Clear, Reset, Save

3. Specify the fields on **Configuration** screen.

 **Note:**

The fields marked as **Required** are mandatory.

For more information on fields, refer to the field description table.

**Table 14-1 Configuration - Field Description**

Field	Description
<b>Window Type</b>	Select the type of the window. The available options are: <ul style="list-style-type: none"> <li><b>Count:</b> The count-based sliding window aggregates the outcome of the last N calls (<b>Window Size</b>).</li> <li><b>Time:</b> The time-based sliding window aggregates the outcome of the calls of the last N seconds (<b>Window Size</b>).</li> </ul>
<b>Window Size</b>	Specify the window size to record the outcome of the calls when the circuit breaker is closed. <ul style="list-style-type: none"> <li>For <b>Count</b> window type, The window size is N calls.</li> <li>For <b>Time</b> window type, The window size has N seconds.</li> </ul>
<b>Minimum number of calls</b>	Specify the minimum number of calls. For example: If the minimum number of calls are 10, then at least 10 calls must be recorded before calculating the failure rate.  If only nine calls are recorded, the circuit breaker is not transitioned to open even if all nine calls are failed.
<b>Failure rate threshold</b>	Specify the failure rate threshold in percentage. When the failure rate is equal or greater than the threshold, the circuit breaker transitions to open and starts short-circuiting calls.
<b>Email Addresses</b>	Specify the E-mail address. The user can use semi-colon to add more email addresses. Once the failure rate crosses the <b>Failure rate threshold</b> , a mail is sent to the end-user about the event.
<b>Mark data as factory shipped</b>	Select the toggle to mark the exported configuration JSON as factory shipped JSON. The end-user will not be able to modify or delete the certain data once imported. By default, the toggle is OFF.
<b>Customer OIC instance URL</b>	Specify the url of OIC instance.
<b>Customer OIC IDCS stripe URL</b>	Specify the striped url of IDCS.
<b>Client Id</b>	Specify the client identifier.
<b>Client Secret</b>	Specify the client secret.
<b>Scope</b>	Specify the intent of access.

**Example:**



**Table 14-2 Configuration - Field Entry Values**

Field	Entry Values
<b>Window Type</b>	Count
<b>Window Size</b>	20
<b>Minimum number of calls</b>	10
<b>Failure rate Threshold</b>	50%

Configured properties will result as below:

After 10 (minimum number of calls) calls, routing would get shutdown if 50% (failure rate) of almost last 20 (window size) calls have failed. If the email address property is configured, then the end-user is notified as well.

4. Click **Clear** to clear all the specified details.
5. Click **Reset** to reset the details.
6. Click **Save** to save all the details.

# 15

## Monitoring Dashboard

Monitoring dashboard has been provided to System integrators and IT administrators to review the health of the integrations. It displays data using different type of widgets to help users to assess the performance of integrations and identify the areas that requires attention.

This dashboard requires 'routingHubAuditSummaryJob' job to be executed periodically using plato-batch-server.

Below are steps to schedule the job once cmc-obrh-services and plato-batch-server is UP and RUNNING:

1. On **Home** screen, click **Task Management**. Under **Task Management** menu, click **Configure Tasks**.
2. Select **Schedule** option.
3. Select **Task Name** as routingHubAuditRetentionJob and **Task Trigger Name** will be generated automatically.
4. Specify the CRON expression to daily EOD.

To resolve table space issue of Audit summary table, (CMC\_RH\_AUDIT\_SUMMARY), Database Management Team has to configure database job to truncate table periodically basis.

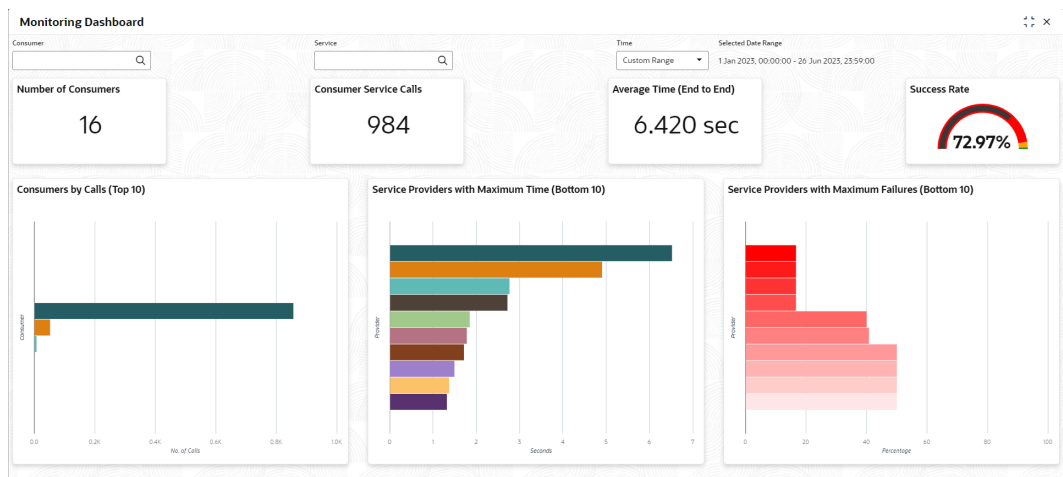


### Note:

**Monitoring Dashboard** will also be not available if Audit logs are turned off.

1. On **Home** screen, click **Core Maintenance**. Under **Core Maintenance** menu, click **Routinh Hub**. Under **Routing Hub**, click **Monitoring Dashboard**

**Figure 15-1 Monitoring Dashboard**

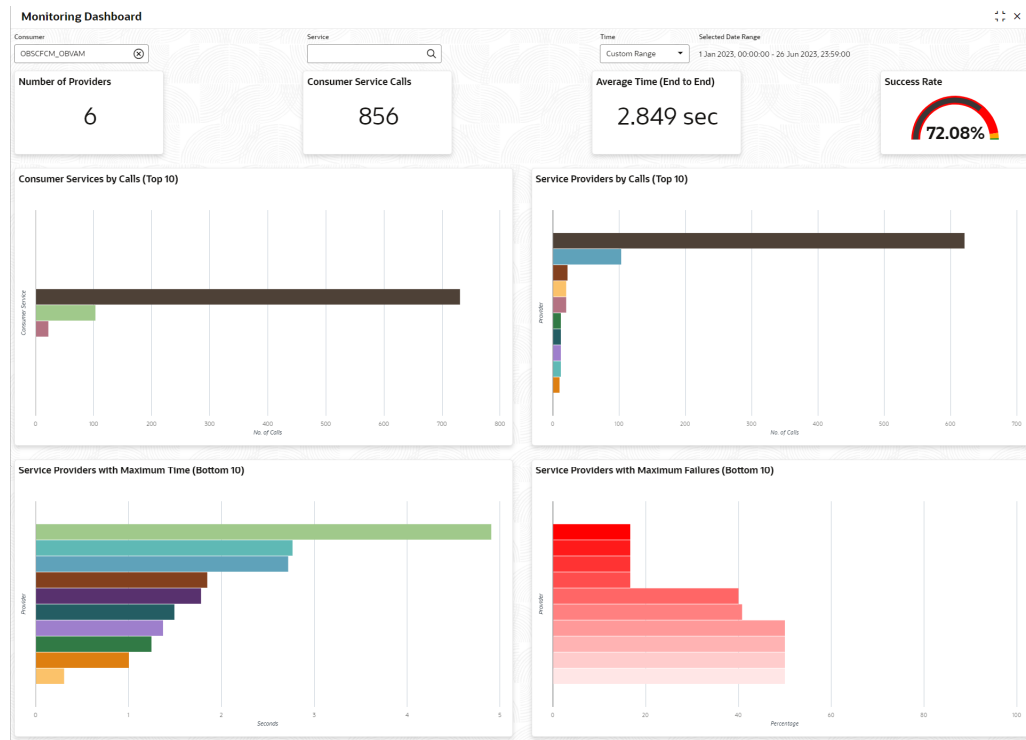


- **Number of Consumers:** This widget displays total number of consumers configured in the Oracle Banking Routing Hub.
- **Consumer Service Calls:** This widget displays total number of consumer services requested during chosen period.
- **Average Time (End to End):** This widget displays the average time (in seconds) taken to process successful requests, during chosen period.
- **Success Rate:** This widget provides an indicator of how many successful requests were made during chosen period.
- **Consumers by Calls (Top 10):** This widget provides a graphical display of the top 10 consumers based on requests they have made during chosen period. A link on the bar graph is provided to view further details of the Consumer.
- **Service Providers with Maximum Time (Bottom 10):** This widget provides a graphical display of bottom 10 providers based on the time taken to process requests, during s chosen period.
- **Service Providers with Maximum Failures (Bottom 10):** This widget provides a graphical display of bottom 10 providers based on failed requests, during s chosen period.

## Consumer Page

The End-user can navigate to this page by either using the filter option provided on the landing page or by clicking on specific consumer service in “**Consumer Service by Calls (Top 10)**” chart.

**Figure 15-2 Consumer Page**



This page displays following information:

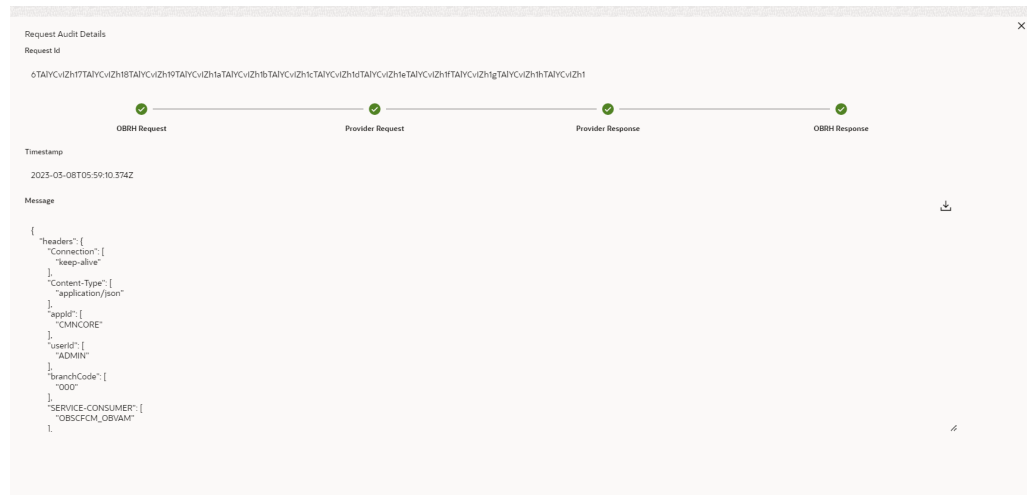


- **Average Time (End to End):** This widget displays the average time taken to process successful requests made during chosen period.
- **Success Rate:** Shows the percentage of successful requests which are made during chosen period.
- **Request Details:** The table displays the list of requests which are requested during chosen period. Following are the details which are provided for each request.

Component Name	Component Type
<b>Request Id</b>	This is system generated reference number for each request. Click on the Request Id displays audit log information of the request.
<b>Time in Routing Hub (Sec)</b>	This field displays the time taken by Routing Hub (in seconds) to route the request between Consumer Service and Providers.
<b>Time in Service Providers (Sec)</b>	This field displays the total time taken by Service provides (in seconds) to process the request.
<b>Total Time (Sec)</b>	This field displays the total time to process the request
<b>Provider Service</b>	Text box
<b>Details</b>	Displays the tabular view of the time taken by individual providers (in case of chaining of the request)

End-user can view request details by clicking on Request Id.

**Figure 15-4 Request Audit Details**



Component Name	Comments
<b>Number of Providers</b>	Shows total number of service providers.
<b>Consumer Service Calls</b>	Shows total number of consumer services requested during selected time.

---

<b>Component Name</b>	<b>Comments</b>
<b>Average Time (End to End)</b>	Shows the average time taken to process successful requests which are requested during selected time.
<b>Success Rate</b>	Shows the percentage of successful requests which are requested during selected time.
<b>Request Audit</b>	Shows list of requests which are requested during selected time.

# 16

## Transformation Type

This topic provides the information about the transformation types.

### Velocity

Velocity is a Java-based template engine. It is used to generate XML files, SQL, PostScript, and most other text-based formats.



#### Note:

In Routing Hub, velocity is used to generate JSON and XML files.

- Using **\$body**, user can access request/response body.  
**Syntax:** \$body.fieldName  
**Example:** \$body.branchCode
- Using **\$headers**, user can access request/response headers.  
**Syntax:** \$headers["fieldName"][0]  
**Example:** \$headers["branchCode"][0]
- Using **\$bodyAsString**, user can access response body as string.  
**Syntax:** \$bodyAsString
- Below are some available extension methods:
  - Date Conversion  
**Syntax:** \$dateUtil.convert(inputDate, fromPattern, toPattern)  
**Parameters:**
    - \* inputDate - String
    - \* fromPattern - String
    - \* toPattern - String**Returns:** String  
Refer to <https://docs.oracle.com/javase/8/docs/api/java/text/SimpleDateFormat.html> for different patterns
  - Default Value  
**Syntax:** \$custom.defaultValue(inputValue, defaultValue)  
**Parameters:**
    - \* inputValue - Object
    - \* defaultValue - String**Returns:** Object
  - Null Check

**Syntax:** \$custom.isNull(inputValue)

**Parameters:**

\* inputValue - Object

**Returns:** Boolean

- Random Number

**Syntax:** \$mathUtil.getRandom()

**Returns:** Object of Random class (java.util.Random)

- Xml Tool

**Syntax:** \$xml.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/XmlTool.html>

- Date Tool

**Syntax:** \$date.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/DateTool.html>

- Json Tool

**Syntax:** \$json.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/JsonTool.html>

- Math Tool

**Syntax:** \$math.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/MathTool.html>

- Number Tool

**Syntax:** \$number.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/NumberTool.html>

- Escape Tool

**Syntax:** \$esc.methodName()

Refer to <https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/EscapeTool.html>

- Serialization of object into its equivalent Json representation

**Syntax:** \$custom.toJson(src)

**Parameters:**

\* src - Object

**Returns:** String

- Get additional field's value based on fieldname

**Syntax:** \$custom.getFieldValueById(jsonString, fieldname)

**Parameters:**

\* jsonString – String

\* fieldname - String

**Returns:** String



- Get list of additional fields based on fieldname prefix  
**Syntax:** `$custom.getAdditionalFieldSetByType(jsonString,prefixval)`

**Parameters:**

- \* jsonString - String
- \* prefixval - String

**Returns:** String

- This method is for parsing XML string  
**Syntax:** `$custom.parseXml(xmlString)`

**Parameters:**

- \* xmlString - String

**Returns:** Object

- If issue occurred with hyphen in velocity template of Request or Response Transformation, then use get method.

**Example:**

```
<FCUBS_BODY>
  <Customer-IO>
    <CUSTNO>003942</CUSTNO>
  </Customer-IO>
</FCUBS_BODY>
```

If `$in.FCUBS_BODY.Customer-IO.CUSTNO` does not work ,  
use `$in.FCUBS_BODY.get("Customer-IO").CUSTNO` to get customer number.

**XSLT**

XSLT is a language for transforming XML documents into other XML documents, or other formats such as HTML for web pages, plain text or XSL formatting objects, which may subsequently be converted to other formats, such as PDF, PostScript and PNG.

**Note:**

In Routing Hub, XSLT is used to transform arbitrary XML to JSON.

**JSLT**

JSLT is a complete query and transformation language for JSON.

# A

## Functional Activity Codes

**Table A-1 List of Functional Activity Codes**

Screen Name	Functional Activity Codes	Action	Description
Routing Hub	CMC_FA_RH_APPLICATION	VIEW	Service Consumers UI in Routing Hub
Routing Hub	CMC_FA_RH_AUDIT_LOG	CREATE	Log audit information in Routing Hub
Routing Hub	CMC_FA_RH_AUDIT_SUMMARY	GET	Audit Summary
Routing Hub	CMC_FA_RH_AUDIT_SUMMARY_DATA	GET	Audit Summary Data
Routing Hub	CMC_FA_RH_CLEAR_SOAP_CLIENT_CACHE	CLEAR	Clears Soap Client Cache in Routing Hub
Routing Hub	CMC_FA_RH_CONFIG	VIEW	Configuration UI in Routing Hub
Routing Hub	CMC_FA_RH_CONFIG_CREATE	CREATE	Create Configuration in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_CONFIG_DELETE	DELETE	Delete Configuration in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_CONFIG_GET	GET	Fetch Configuration in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_CONFIG_MODIFY	MODIFY	Update Configuration in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_CONSUMER_QUEUE_CREATE	CREATE	Saves New Consumer Queue Mapping
Routing Hub	CMC_FA_RH_CONSUMER_QUEUE_DELETE	DELETE	Deletes Specific Consumer Queue Mapping
Routing Hub	CMC_FA_RH_CONSUMER_QUEUE_GETALL	GET	Fetches All Consumer Queue Mappings
Routing Hub	CMC_FA_RH_CONSUMER_QUEUE_GETBYID	GET	Fetches Specific Consumer Queue Mapping
Routing Hub	CMC_FA_RH_CONSUMER_QUEUE_MODIFY	MODIFY	Modifies Specific Consumer Queue Mapping
Routing Hub	CMC_FA_RH_DASHBOARD	VIEW	Monitoring Dashboard UI
Routing Hub	CMC_FA_RH_DASHBOARD_HEALTH_INDICATOR	VIEW	Health Indicator UI in Routing Hub
Routing Hub	CMC_FA_RH_DISPATCH_AUDIT_GETALL	GET	Fetch Audit Log in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_DISPATCH_AUDIT_LOG	VIEW	Request Audit UI in Routing Hub
Routing Hub	CMC_FA_RH_METRICS_GET	GET	Fetch Metrics in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_PROVIDEDSERVICE_IMPORT	GET	Extract Provider Service Information in Routing Hub
Routing Hub	CMC_FA_RH_ROUTE_DISPATCH	INTEGRATION CALL	Call Provider API in Routing Hub

Table A-1 (Cont.) List of Functional Activity Codes

Screen Name	Functional Activity Codes	Action	Description
Routing Hub	CMC_FA_RH_ROUTE_DISPATCH_RESPONSE	INTEGRATION CALL	Fetch Response of Asynchronous Provider Request in Routing Hub
Routing Hub	CMC_FA_RH_SERVICECONSUMER_CREATE	CREATE	Create Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_DELETE	DELETE	Delete Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_ENV_VARIABLE_EXPORT	EXPORT	Exports Environment Variables
Routing Hub	CMC_FA_RH_SERVICECONSUMER_ENV_VARIABLE_IMPORT	IMPORT	Imports Environment Variables
Routing Hub	CMC_FA_RH_SERVICECONSUMER_EXPORT	EXPORT	Export Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_GETALL	GET	Fetch All Consumers in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_GETBYID	GET	Fetch Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_IMPORT	IMPORT	Import Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_MODIFY	MODIFY	Update Consumer in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_PROCESSJSON	GET	Process Consumer json file in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICEROUTING_CREATE	CREATE	Create Route in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICEROUTING_DELETE	DELETE	Delete Route in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICEROUTING_GETALL	GET	Fetch All Routes in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICEROUTING_GETBYID	GET	Fetch Route in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICEROUTING_MODIFY	MODIFY	Update Route in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_CREATE	CREATE	Create Transformation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_DELETE	DELETE	Delete Transformation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_EXPORT	EXPORT	Export Transformation in Routing Hub Maintenance

Table A-1 (Cont.) List of Functional Activity Codes

Screen Name	Functional Activity Codes	Action	Description
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_GETALL	GET	Fetch All Transformations in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_GETBYID	GET	Fetch Transformation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_IMPORT	IMPORT	Import Transformation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICETRANSFORMATION_MODIFY	MODIFY	Update Transformation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_CREATE	CREATE	Create Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_DELETE	DELETE	Delete Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_EXPORT	EXPORT	Export Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_GETALL	GET	Fetch All Services in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_GETBYID	GET	Fetch Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_IMPORT	IMPORT	Import Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICECONSUMER_SERVICE_MODIFY	MODIFY	Update Service in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_CREATE	CREATE	Create Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_DELETE	DELETE	Delete Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_EXPORT	EXPORT	Export Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_GENERATEREQUEST	GET	Extract Provider Service Request Definition in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_GETALL	GET	Fetch All Providers in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_GETBYID	GET	Fetch Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_CREATE	CREATE	Create Implementation in Routing Hub Maintenance

**Table A-1 (Cont.) List of Functional Activity Codes**

Screen Name	Functional Activity Codes	Action	Description
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_DELETE	DELETE	Delete Implementation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_EXPORT	EXPORT	Export Implementation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_GENERATEREQUEST	GET	Extract Implementation Service Request Definition in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_GETALL	GET	Fetch All Implementations in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_GETBYID	GET	Fetch Implementation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_IMPORT	IMPORT	Import Implementation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPL_MODIFY	MODIFY	Update Implementation in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_IMPORT	IMPORT	Import Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_SERVICEPROVIDER_MODIFY	MODIFY	Update Provider in Routing Hub Maintenance
Routing Hub	CMC_FA_RH_TEMPLATE_EVALUATION	EVALUATE	Evaluate Transformation Template in Routing Hub

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