

Oracle® Banking Microservices Architecture

Routing Hub Configuration User Guide



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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

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

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

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

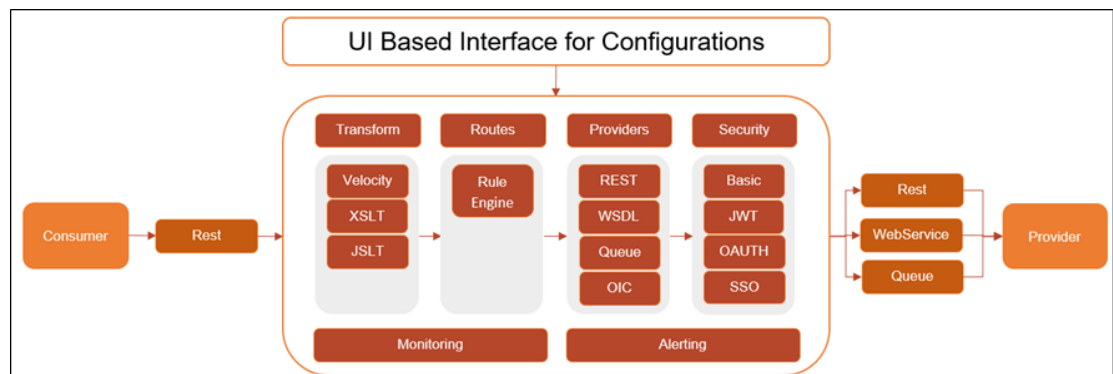
- Servicing Providers or Product Processors: Products which provides data to the Consumer Application when required or posts the transaction when initiated from a consumer application. .
- Name of the Service: Logical name of the service example: Funds Transfer, Letter of Credit Initiation to fetch the 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.

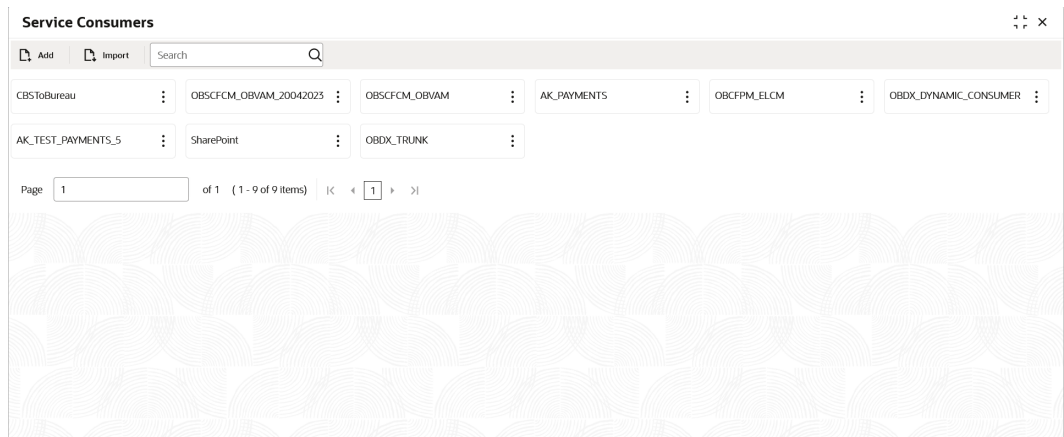
Service Consumer is an Oracle banking product which invokes Oracle Banking Routing Hub API for integration. Oracle Banking Routing Hub analysis, evaluate destination product processor and transform data into format as required by the destination product processor for service a request type

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

Add Service Consumer ✕

Name

Required

Audit Type
 Service level configurator ▾

▼ Environment Variables

Add ▾

Group

Required

Actions	Name	Value
No data to display.		

- 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
Name	Specify the unique service consumer name. Note: <ul style="list-style-type: none"> Enter 0 to maximum of 255 characters. No numeric value at beginning and no space allowed.

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

Field	Description
Audit Type	Select the Audit type from the dropdownlist. The available options are: <ul style="list-style-type: none"> • All Requests - All requests are logged in the OBRH and can be viewed later for debugging. • Service level configuration - 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. • None - Disables the audit completely. Audit logs cannot be reviewed later and monitoring dashboard does not provide the data
Add	To add, refer to step 5. Select the group from the drop-down list. The available options are: <ul style="list-style-type: none"> • Group • Variable
Group	Select the group from the drop-down list.
Action	Displays the action. The user can edit or delete the header.
Name	Displays the name of the header.
Value	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
Name	Specify the name of the environment group.  Note: <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • No numeric value at beginning and no space allowed.

- 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
Name	Specify the name of the environment variable.  Note: <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • No numeric value at beginning and no space allowed.
Value	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 are several input fields and controls:

- File:** A text input field followed by "Select" and "Extract" buttons.
- Name:** A text input field with a "Required" label below it.
- Overwrite extended templates:** Radio buttons for "Yes" and "No", with "No" selected.
- Overwrite environment variables:** Radio buttons for "Yes" and "No", with "No" selected.
- Service Providers:** A section header with a dropdown arrow, followed by a table with a checkbox in the first column and a "Name" header in the second column. Below the table, it says "No data to display."
- Import:** A button at the bottom right of the screen.



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.

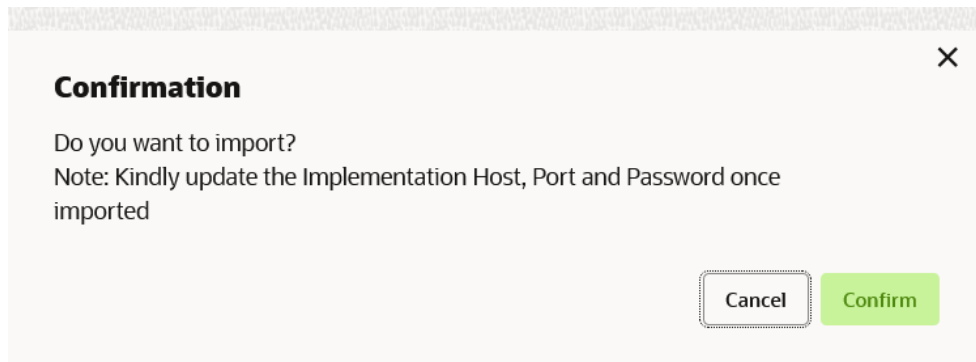
Table 2-4 Import Service Consumer - Field Description

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

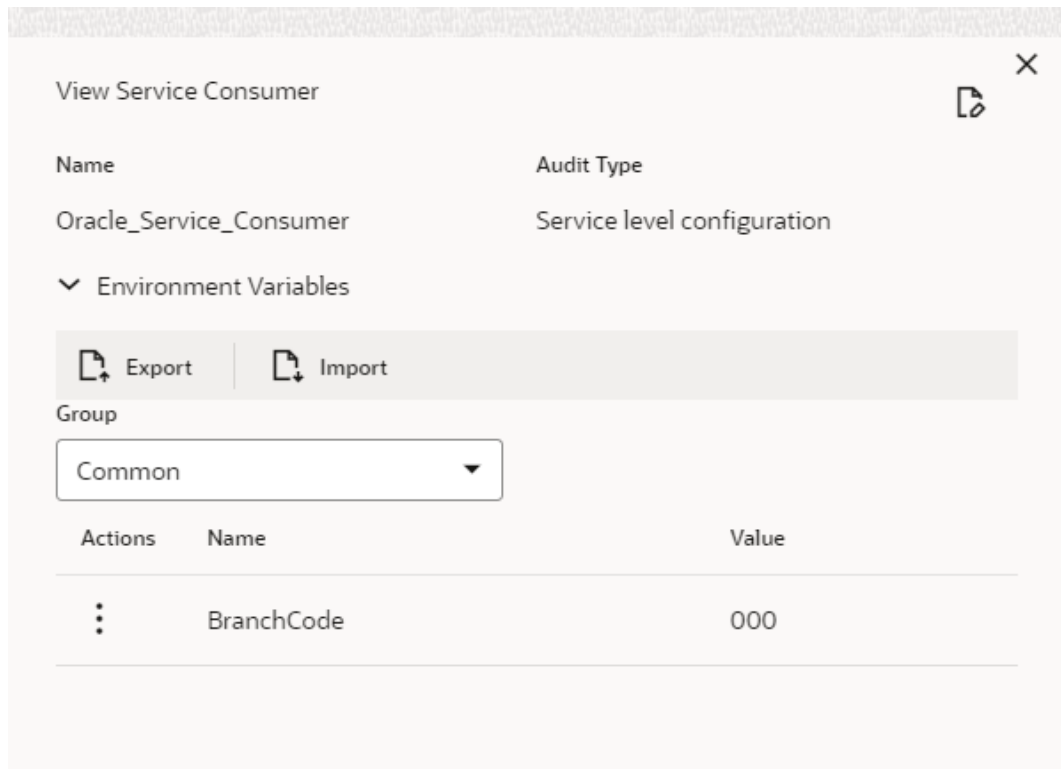
View Service Consumer

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

Group: 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

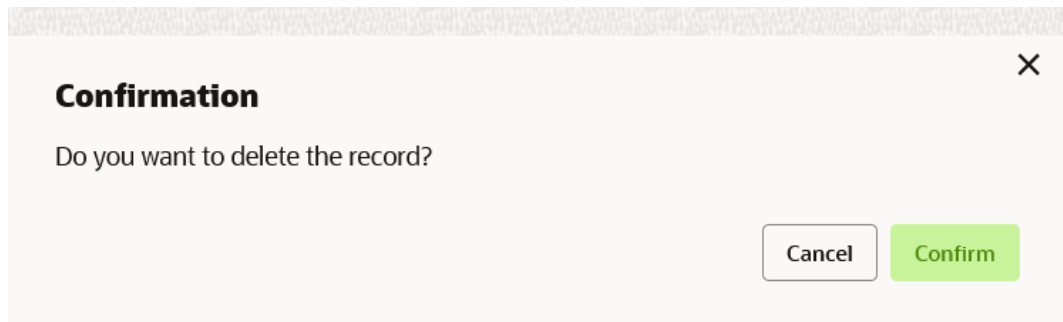
- Click **Confirm**.

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.

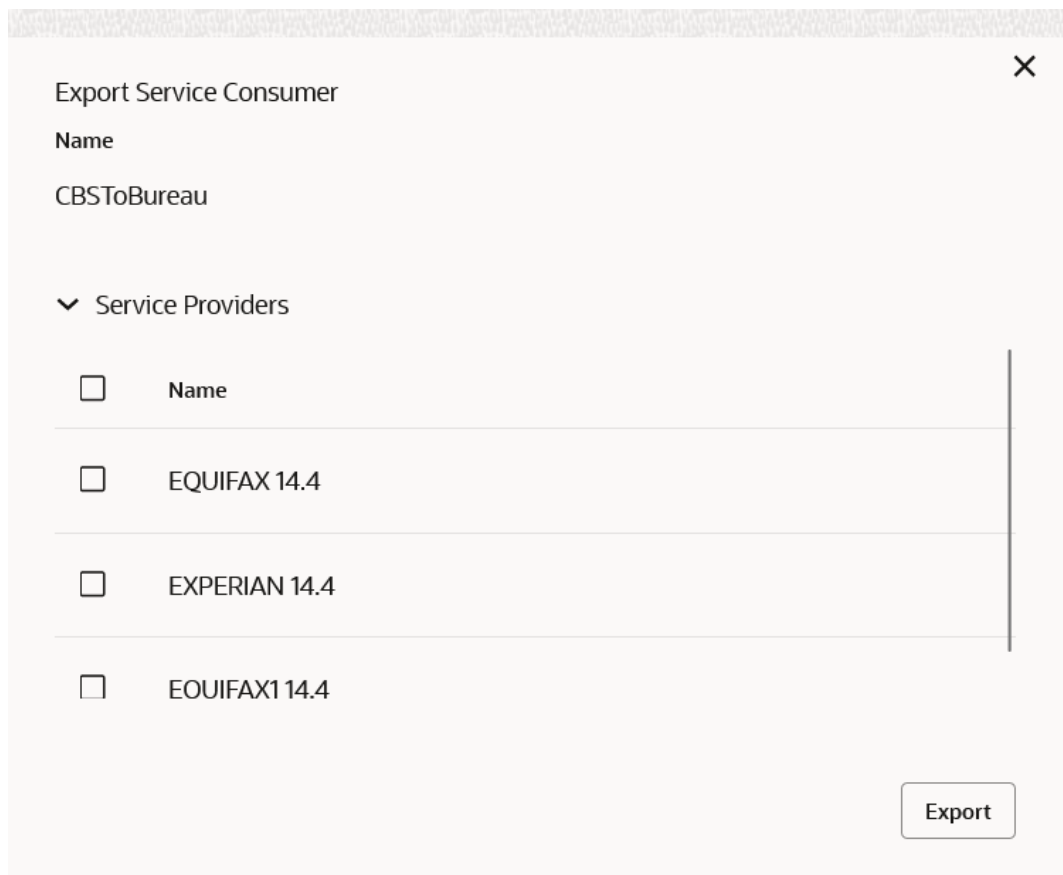
JSON Export

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



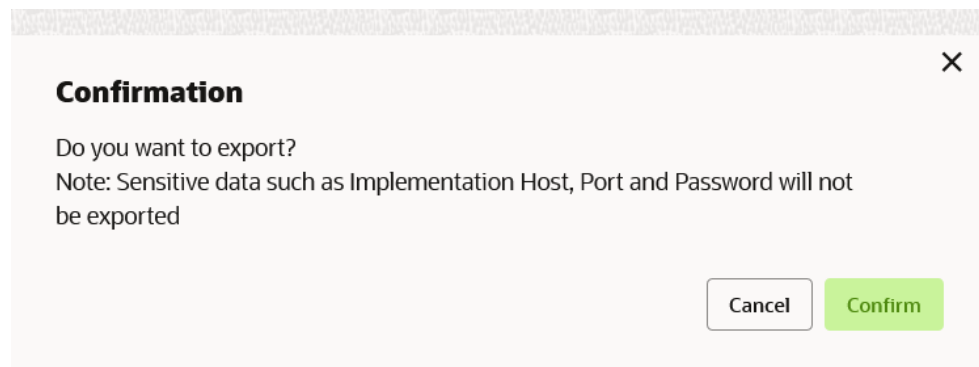
 **Note:**

- 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

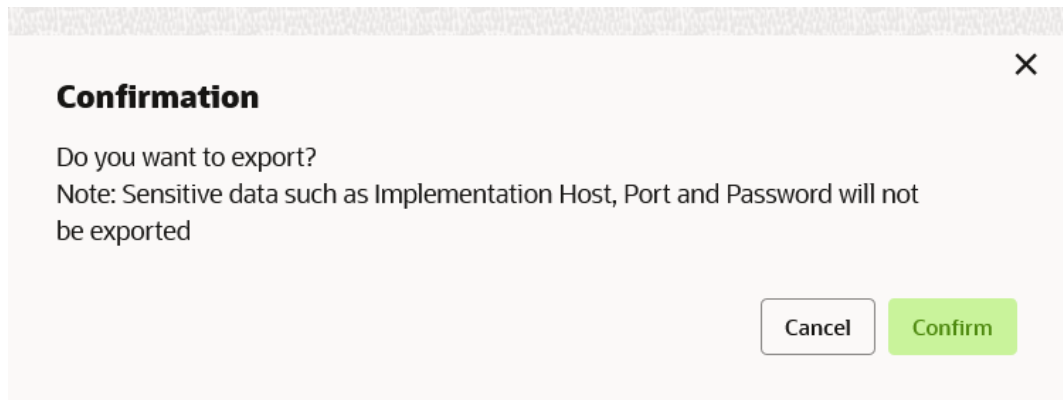
The user can export the consumer configuration as SQL file.


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

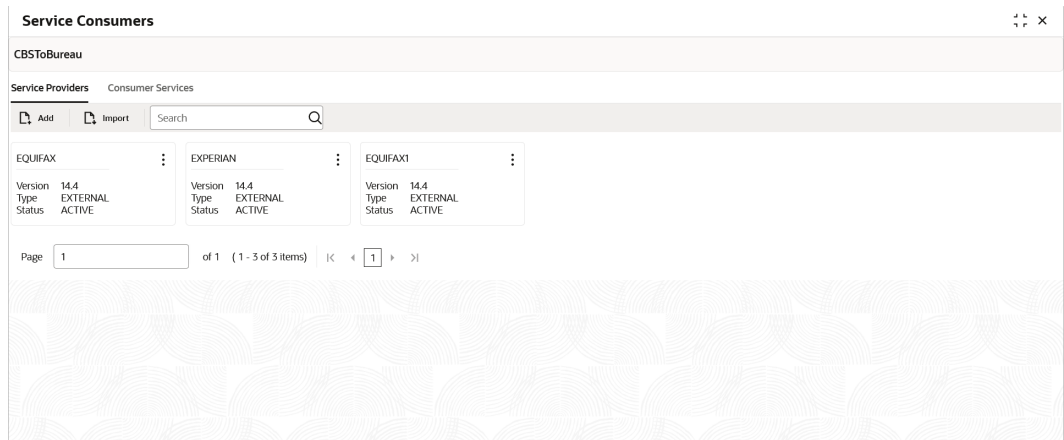
This topic describes the systematic instructions to configure the service providers.

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

> 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
Product Name	Specify the product name of the service provider. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> Note:</p> <ul style="list-style-type: none"> Enter 0 to maximum of 255 characters. No numeric value at beginning and no space allowed. </div>

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









Field	Description
Type	Select the type of service provider from drop-down list The available options are: <ul style="list-style-type: none"> • INTERNAL: Used for Oracle products • EXTERNAL: Used for non-Oracle products
Version	Specify the provider version. <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> Note:</p> <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • Only numeric or decimal values are allowed. </div>
Active	Predefined values are Active / Inactive If provider is marked as inactive, then all related routes will be stopped.
Add	To add, refer to the below steps.
Actions	Displays the action. The user can edit or delete the header.
Name	Displays the name of the header.
Value	Displays the value of the header.
Type	Select the type of service from drop-down list. The available options are: <ul style="list-style-type: none"> • WSDL • SWAGGER • OTHERS
Name	Specify the name of the operation. <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> Note:</p> <p>This field appears only if the Type is selected as OTHERS.</p> </div>
Http Method	Select the HTTP method. The available options are: <ul style="list-style-type: none"> • GET • POST • PUT • PATCH • DELETE <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p> Note:</p> <p>This field appears only if the Type is selected as OTHERS.</p> </div>

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

Field	Description
Endpoint	Specify the endpoint URL for the operation.  Note: This field appears only if the Type is selected as OTHERS .
URL	Specify the service URL of the file location.  Note: This field appears only if the Type is selected as WSDL and SWAGGER .
Import	Click Import to extract the service information from URL.  Note: This field appears only if the Type is selected as WSDL and SWAGGER .
Context Path	Context path of below formatted URL http://host:port/context-path/endpoint
Service Headers	Specify the Endpoint specific headers. Value can either be hardcoded or can be Velocity mapping.  Note: This field appears only if the Type is selected as OTHERS .
Service Query Params	Specify the Endpoint specific query parameters. Value can either be hardcoded or can be Velocity mapping.  Note: This field appears only if the Type is selected as OTHERS .
Service	Displays the extracted service from the selected URL.
Operation	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
Name	Specify the name of the header.
Value	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

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

Table 3-3 Import Service Provider - Field Description

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

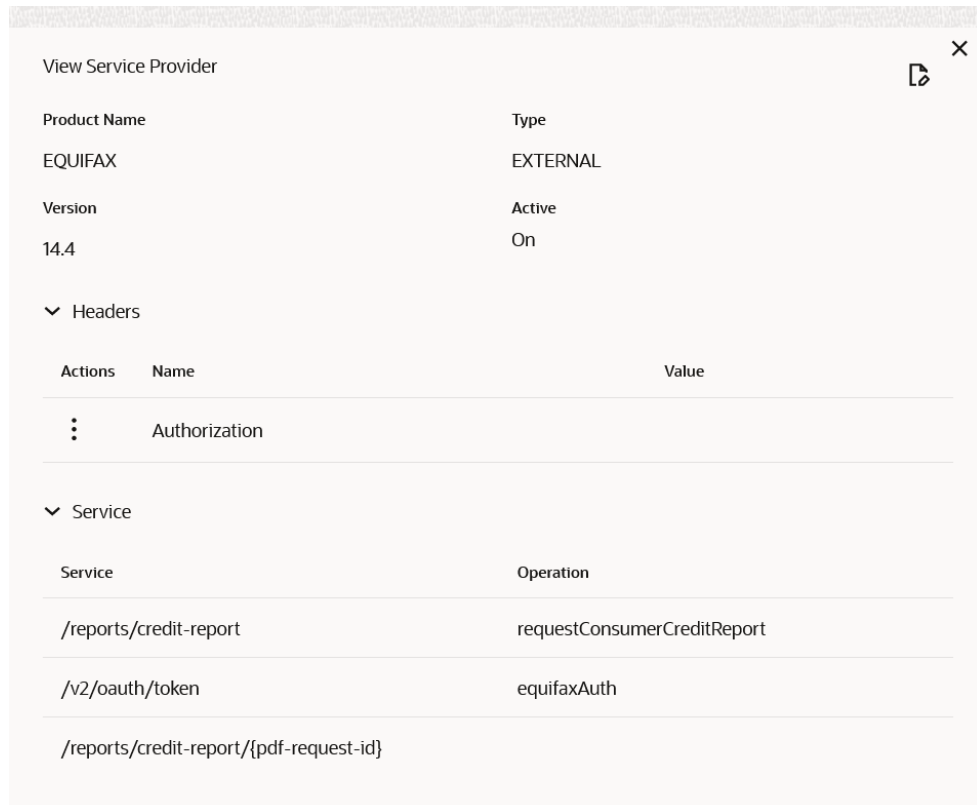
The following data needs to be changed after importing provider configuration file:

- 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



The screenshot shows the 'View Service Provider' interface. At the top, there is a title bar with 'View Service Provider' and a close button. Below the title bar, there are two columns of information: 'Product Name' (EQUIFAX) and 'Type' (EXTERNAL); 'Version' (14.4) and 'Active' (On). There are two expandable sections: 'Headers' and 'Service'. The 'Headers' section contains a table with columns 'Actions', 'Name', and 'Value', showing a single entry for 'Authorization'. The 'Service' section contains a table with columns 'Service' and 'Operation', showing three entries: '/reports/credit-report' with operation 'requestConsumerCreditReport', '/v2/oauth/token' with operation 'equifaxAuth', and '/reports/credit-report/{pdf-request-id}'.

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:

Version:

Type:

Active:

▼ Headers

Add

Actions	Name	Value
⋮	Authorization	

▼ Service

Type: URL: Required

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

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

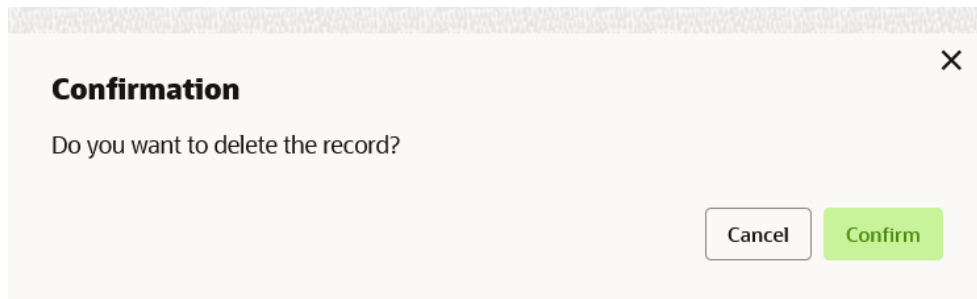
The **Confirmation** screen displays.

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.

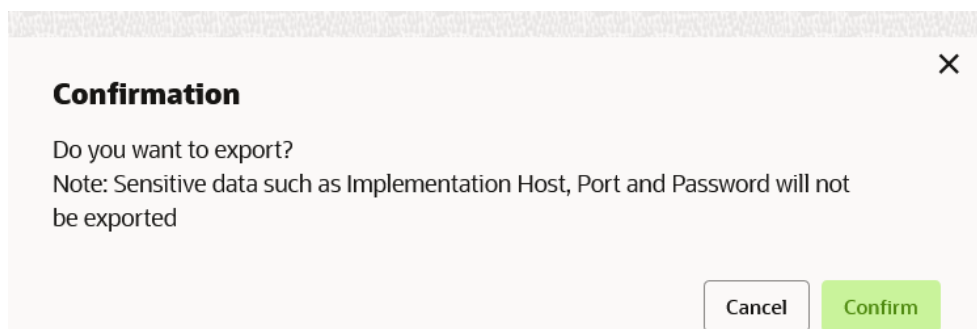
Figure 3-7 Confirmation - Delete

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

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

Table 3-4 Configuration Service Provider - Field Description





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

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

Field	Description
Handle exception	<p>This property is used to fail the routing hub request for failed provider requests.</p> <p> Note: Default value is false.</p>
Status Codes	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.
Inactivity Period	This property is used to specify connection inactivity time for re-validating connections in connection pool.

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	EQUIFAX_Default	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:** An expandable section indicated by a right-pointing chevron (>).
- Service:** An expandable section indicated by 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
Name	Specify the name of the implementation.  Note: <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • No numeric value at beginning and no space allowed.

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




Field	Description
Description	<p>Specify the description of the implementation.</p> <p> Note:</p> <ul style="list-style-type: none"> • Enter 0 to 1000 characters. • No space allowed at beginning or ending of the characters.
Type	<p>Select the type of implementation from drop-down list The available options are:</p> <ul style="list-style-type: none"> • DEFAULT • QUEUE • OIC <p>DEFAULT type is for REST and SOAP API calls.</p> <p> Note:</p> <p>The type as OIC is only applicable for cloud services.</p>
Default	<p>Toggle the button if user wants to default. Each type can have one default implementation.</p>
Single Tenant	<p>Select the toggle to append tenant details with eureka VIP for services which are registered on eureka as single tenant services.</p> <p> Note:</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
Eureka Instance	<p>Eureka Instance is available only for internal providers and default type.</p> <p>By default, Eureka Instance will be toggled ON for internal providers and OFF for external providers.</p> <div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</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 & Authentication type is selected as JWT_TOKEN or OAUTH_TOKEN.</p> </div>
Scheme	<p>Select the scheme from drop-down list</p> <p>The available options are:</p> <ul style="list-style-type: none"> • http • https <p>Scheme option is available only for default type.</p>
Service Name	<p>If Eureka Instance is toggled ON and type is default, then only service name is required.</p>
Host	<p>Specify the host.</p> <div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</p> <ul style="list-style-type: none"> • Host cannot be blank. • Enter 0 to 255 characters. • Space is not allowed. </div> <p>If Eureka Instance is toggled OFF and type is default, then only host and port is required.</p>
Port	<p>Specify the port number.</p> <div style="border: 1px solid #0070C0; padding: 10px; background-color: #E6F2FF;"> <p> Note:</p> <ul style="list-style-type: none"> • Enter 0 to 6 characters. • Enter only numeric value. </div> <p>If Eureka Instance is toggled OFF and type is default, then only host and port is required.</p>
Authentication	<p>The below fields appear only if Eureka Instance is toggled OFF and Implementation Type is selected as Default.</p>

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




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

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








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

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

Field	Description
Import	<p>Click Import to extract the service information from URL and displays it in the Service list.</p> <p> Note:</p> <p>This field appears only if the Type is selected as WSDL and SWAGGER.</p>
Service Headers	<p>Specify the Endpoint specific headers. Value can either be hardcoded or can be Velocity mapping.</p> <p> Note:</p> <p>This field appears only if the Type is selected as OTHERS.</p>
Service Query Params	<p>Specify the Endpoint specific query parameters. Value can either be hardcoded or can be Velocity mapping.</p> <p> Note:</p> <p>This field appears only if the Type is selected as OTHERS.</p>
Add	Click this button to add the endpoint details in the Service list.
Service	Displays the extracted service from the selected URL.
Operation	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
Type	Select the type of implementation from drop-down list The available options are: <ul style="list-style-type: none"> • DEFAULT • QUEUE DEFAULT type is for REST and SOAP API calls.
Default	Select the toggle if the user wants to default.
Queue Broker	Select the queue broker from drop-down list. The available options are: <ul style="list-style-type: none"> • WEBLOGIC_JMS
Request Reply Platform	Select the queue broker from drop-down list. The available options are: <ul style="list-style-type: none"> • JMS_MESSAGEID • JMS_CORRELATIONID JMS_MESSAGEID is default request-reply pattern.
Connection Factory	Specify the connection factory. Connection Factory is JNDI based connection factory name which is used to create connection for JMS client.
Queue	Specify the queue. Queue Name is JNDI based destination name.

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

Field	Description
Connection Factory	Specify the connection factory. Response Connection Factory is needed when destination is going to respond back after processing the request.
Queue	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
Name	Specify the name for the header.
Value	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
File	Click Select to select the file. <div style="background-color: #e6f2ff; padding: 10px; border: 1px solid #0070c0;"> <p> Note: 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

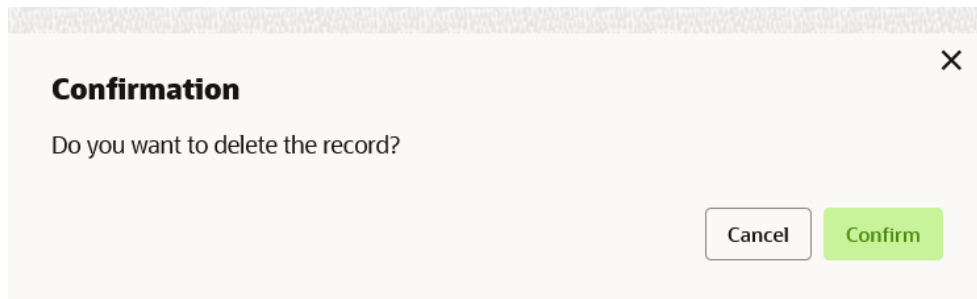
Confirmation

Do you want to save the record?

Delete Implementation

The user can delete the implementation details.

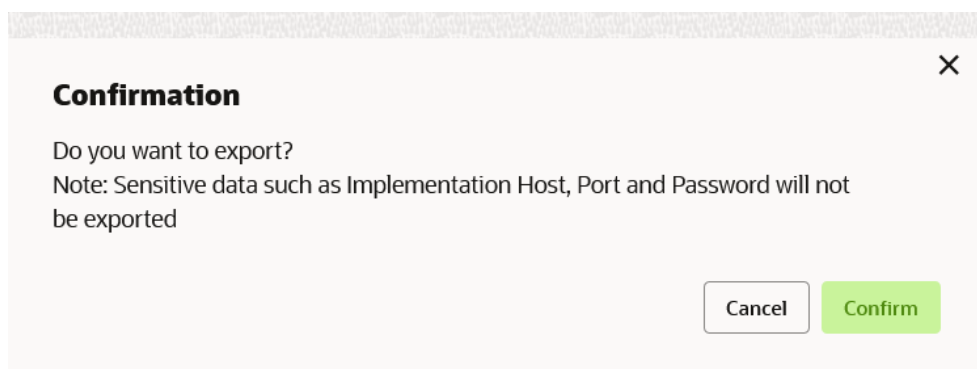
11. On **Implementation** screen, click **Operation menu** (3 dots button) and click **Delete**.
 The **Confirmation** screen displays.

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.

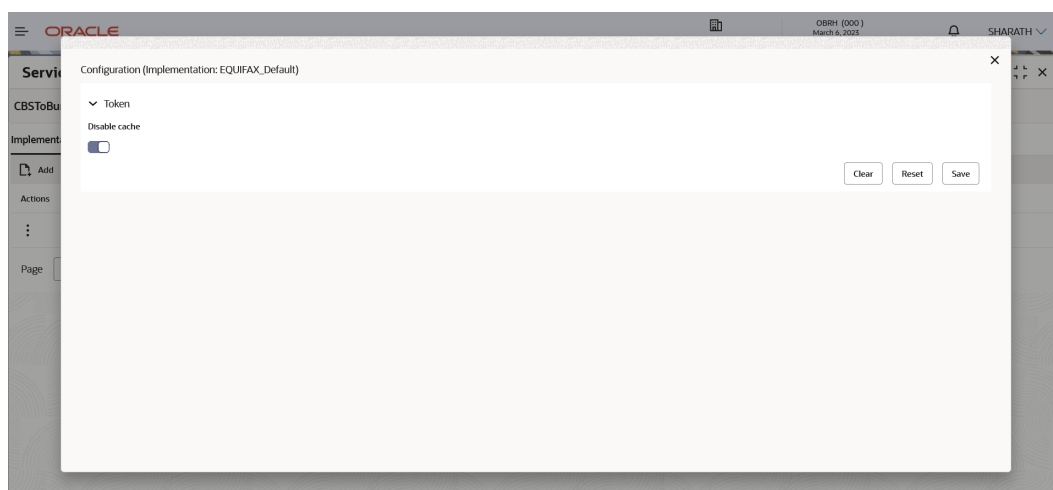
Configuration

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> Note: 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

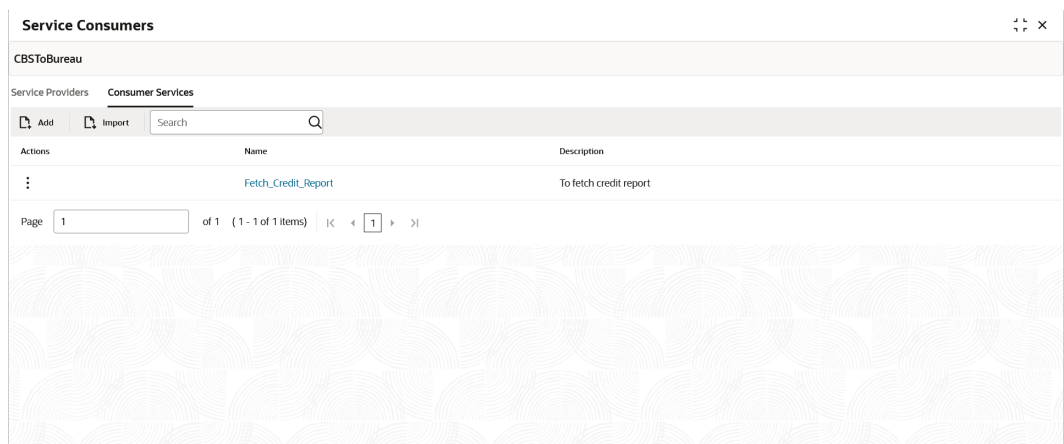
This topic describes the systematic instructions to configure the consumer services.

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



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
ID	Specify the ID of the consumer service. Note: <ul style="list-style-type: none"> Enter 0 to maximum of 255 characters. No numeric value at beginning and no space allowed.
Status	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
Audit	<p>Select the Audit option for the consumer service. The available options are:</p> <ul style="list-style-type: none"> • Yes - This option is for enabling the audit for consumer service. • No - This option is for disabling the audit for consumer service. <p> Note:</p> <p>This option is only applicable if audit type at 'Service Consumer' is 'Service level configuration'</p>
Description	<p>Specify the description of the consumer service.</p> <p> Note:</p> <ul style="list-style-type: none"> • Enter 0 to 1000 characters. • No space allowed at beginning or ending of the characters.
Add	To add, refer to the below step.
Actions	Displays the action. The user can edit or delete the header.
Attribute Name	Displays the name of the attribute.
json path	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
Name	Specify the name of the attribute.
json path	Specify the json path.

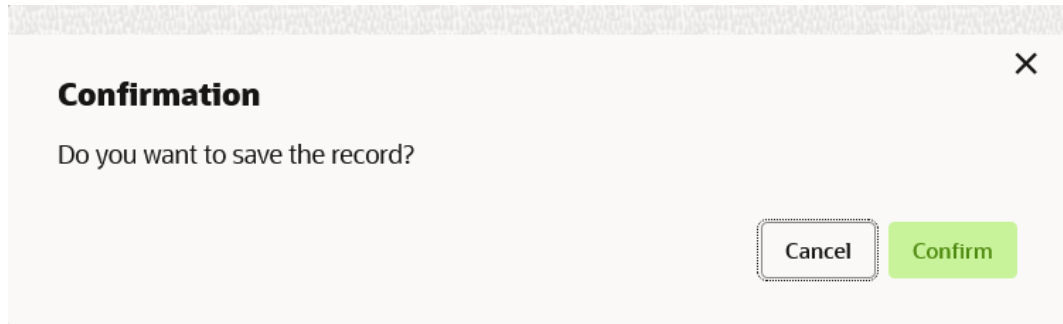
 **Note:**

- 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.

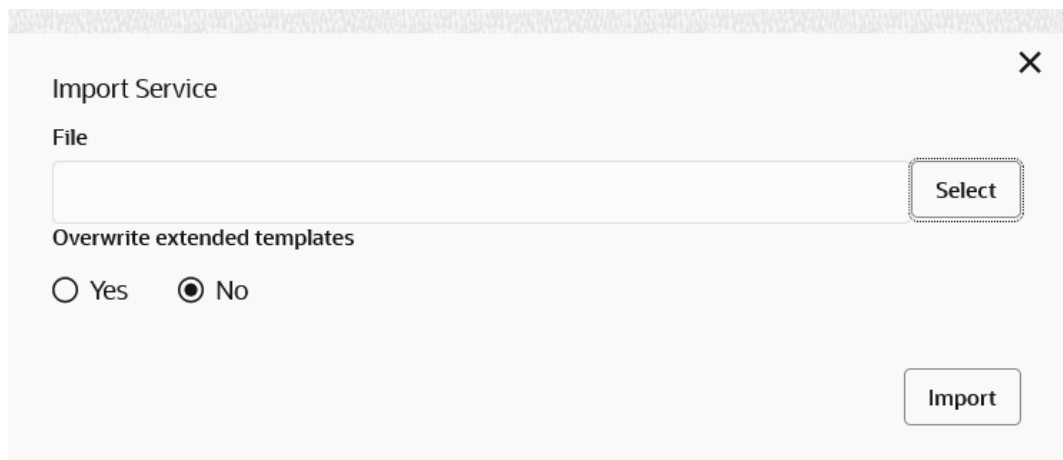
Import Consumer Service

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
File	Select the file using Select button. <div style="border: 1px solid #ccc; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <p> Note: Allows only to select one file and accepts only JSON file.</p> </div>
Overwrite extended templates	Select the respective radio button to overwrite the extended templates. The available options are: <ul style="list-style-type: none"> • Yes - This option overwrites the extended templates. • No - This option retains the existing extended templates.

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

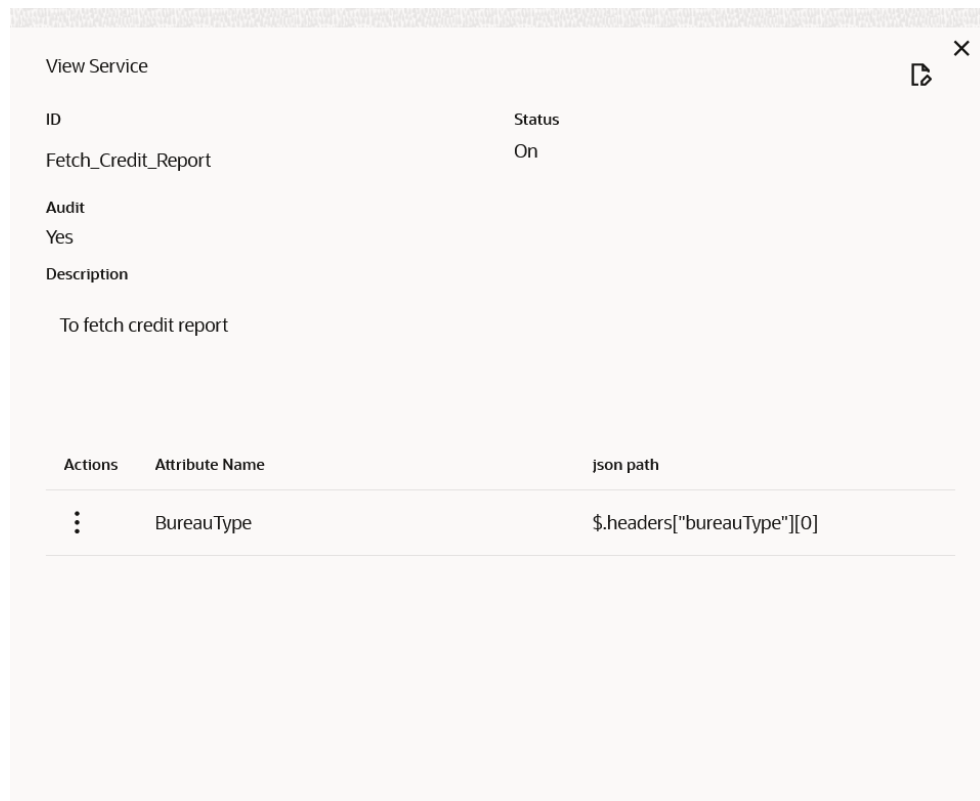
The **Confirmation** screen displays.

View Consumer Service

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

- 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?

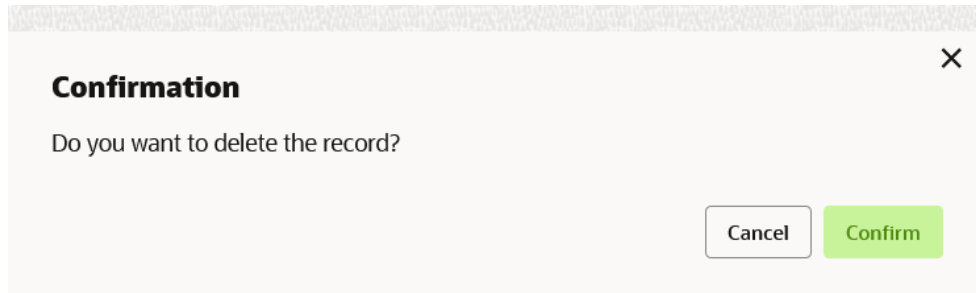
Delete Consumer Service

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



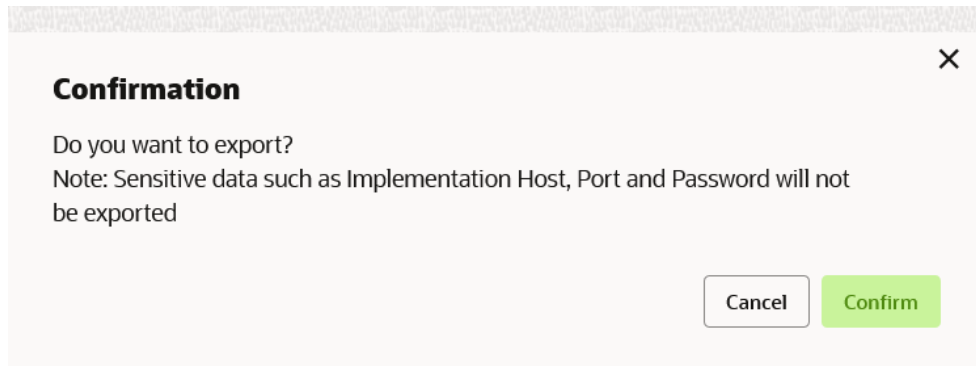
Export Consumer Service

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

Service

Required

▼ Service

Service

Operation

▼ 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

Template Type

Template

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
Name	Specify the name for the transformation.  Note: <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • No numeric value at beginning and no space allowed.
Active	Active / Inactive If transformation is marked as inactive, then the user will not be able to select transformation in routing.
Product Processor	Displays the Product Processor details.
Product Processor	Select the product processor from the drop-down list.
Implementation	Select the implementation from the drop-down list.
Service	Select the service from the drop-down list.
Service	Displays the service details of the selected service.
Headers	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.
Path Params	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.
Query Params	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.
Request Transformation	Displays the Request Transformation details.

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



Field	Description
Body Type	<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"> • RAW • FORM DATA • BINARY <div style="border-left: 2px solid #0070C0; padding-left: 10px; margin-top: 10px;"> <p> Note:</p> <p>This field appears only if the selected service is REST service and RAW option is used for URL-encoded content type.</p> </div>
Template Type	<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"> • VELOCITY • JSLT • XSLT
Template	<p>Specify the template for the Request Transformation in which provider accepts.</p> <p>Refer to Transformation Type for syntax.</p>
Extended Template	<p>Specify the custom template in order to extend the kernel template.</p> <p>Refer to Extensibility and Transformation Type for syntax.</p> <div style="border-left: 2px solid #0070C0; padding-left: 10px; margin-top: 10px;"> <p> Note:</p> <p>This field appears only if the Body Type is selected as RAW.</p> </div>
Response Header	<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>
Response Transformation	<p>Displays the response transformation details.</p>
Template Type	<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"> • VELOCITY • JSLT • XSLT
Template	<p>Specify the kernel template in which consumer accepts.</p> <p>Refer to Transformation Type for syntax.</p>
Mocking required?	<p>Select the toggle if the mocking is required for the Response Transformation or not.</p> <p>If the toggle is ON, the Routing Hub will return the mocked template output (with extended template output if mentioned) to consumer without invoking provider API.</p>

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

Field	Description
Mock Template	Specify the kernel template for the Response Transformation in which the consumer accepts. Refer Transformation Type for syntax.

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

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

Table 6-2 (Cont.) Import Transformation - Field Description

Field	Description
Overwrite extended templates	Select the respective radio button to overwrite the extended templates. The available options are: <ul style="list-style-type: none"> • Yes - This option overwrites the extended templates. • No - This option retains the existing extended templates.

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
✕

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

TRANSFORMATION1

▼ Product Processor

Product Processor

EXPERIAN 14.4 ▼

Implementation

EXPERIAN_Default ▼

▼ Service

CreditReports - /v2/credit-repc ▼

▼ Service

Service

POST /consumerservices/credit-profile/v2/credit-report

Operation

CreditReports

▼ Headers

Actions	Name	Value
⋮	Accept	application/json
⋮	Authorization	Bearer \$body.access_token
⋮	clientReferenceId	SBMYSQL

▼ Path Parameters

Actions	Name	Value
No data to display.		

▼ Query Parameters

Actions	Name	Value
No data to display.		

▼ Request Transformation

Body Type

RAW ▼

Template Type

VELOCITY ▼

Template

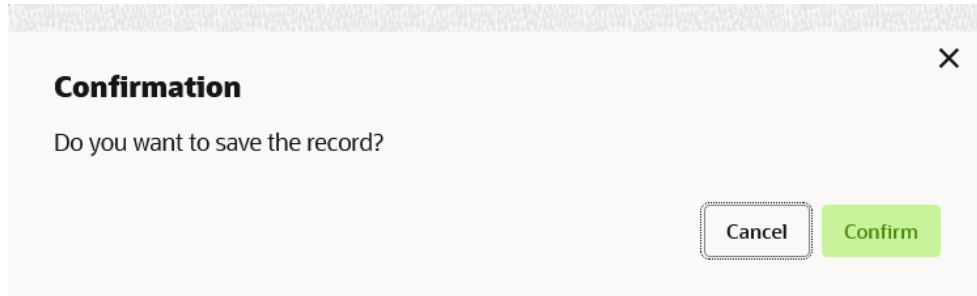
```

city : $body.primaryApplicant.address.currentAddress.city ,
"state": "$body.primaryApplicant.address.currentAddress.state",
"zipCode": "$body.primaryApplicant.address.currentAddress.zipCode"
},
"previousAddress": [
#set($i=0)

```

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

Figure 6-6 Confirmation

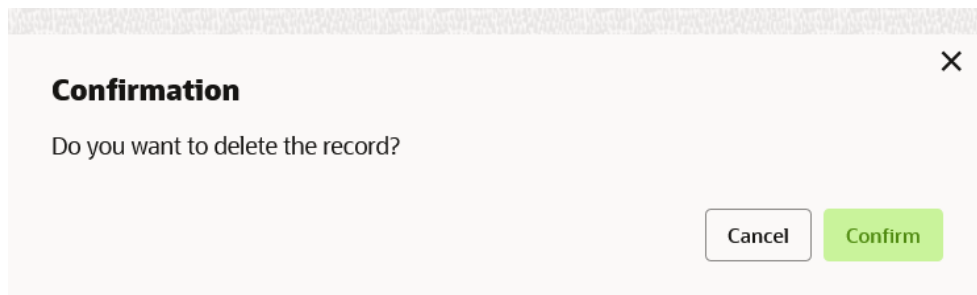


Delete Transformation

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

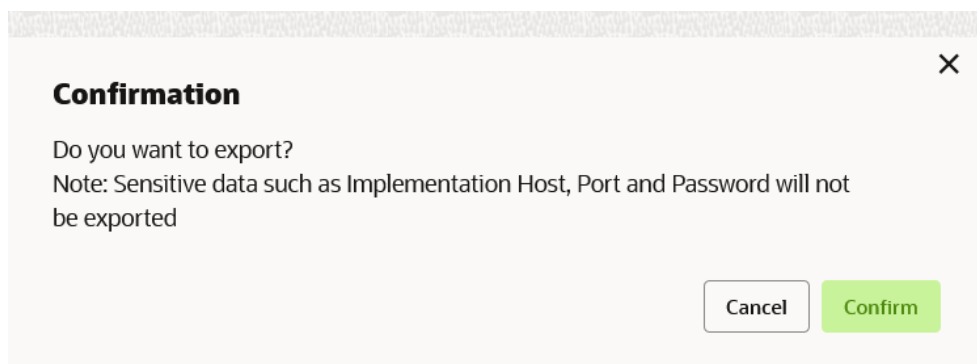


Export Transformation

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

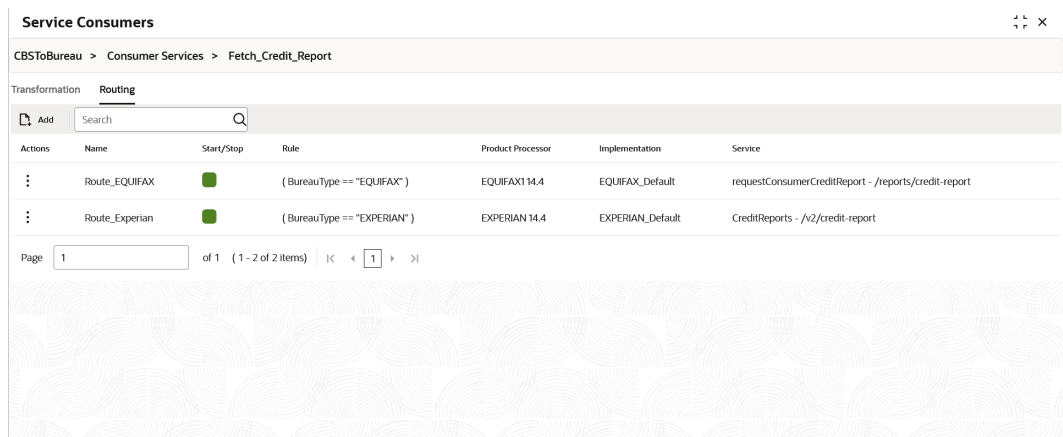
This topic describes the systematic instructions to configure the routing.

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
Name	Specify the name for the route. <p> Note:</p> <ul style="list-style-type: none"> • Enter 0 to maximum of 255 characters. • No numeric value at beginning and no space allowed.
START / STOP	START / STOP 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
Auto Shutdown	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.
Rule Type	Select the rule type. The available options are: <ul style="list-style-type: none"> • Default Rule • Custom Rule
Expression Editor	Displays the expression that is formed through expression editor.
Add	To add, refer to the below steps.
Actions	Displays the action. The user can edit or delete the header.
Product Processor	Displays the product processor.
Implementation	Displays the implementation.
Transformation	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
Attribute	Select attribute relevant to consumer service from drop-down list.
Operator	Select the logical operators to form an expression from drop-down list.
Value	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;">  Note: Enter 0 to 255 characters. </div>
Condition Type	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
Product Processor	Select the product processor from the drop-down list.
Implementation	Select the implementation from the drop-down list.
Transformation	Select the transformation from the drop-down list.
Action	Displays the action. The user can edit or delete the header.
Name	Displays the name of the header.
Value	Displays the value of the header.
Service	Displays the service of the product processor.
Template Type	Displays the template type for the request transformation.
Template	Displays the template for the request transformation.
Template Type	Displays the template type for the response transformation.
Template	Displays the template for the response transformation.
Mocking required?	Displays whether the mocking required for the response transformation or not.
Mock Template	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

(BureauType == "EQUIFAX")

▼ 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

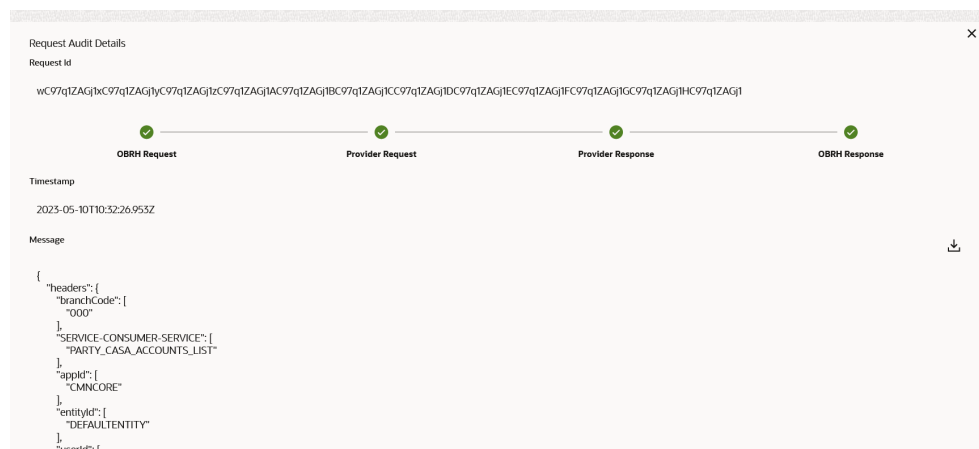
Field	Description
Request ID	Specify the request ID.
Consumer	Specify the consumer.
Consumer Service	Specify the consumer service.
Provider	Specify the provider.
Provider Implementation	Specify the provider implementation.
Provider Service	Specify the provider service.
Transformation	Specify the transformation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

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

Field	Description
Reference Number	Specify the reference number to track the requests audit. <div style="border: 1px solid #0070c0; padding: 5px; background-color: #e6f2ff;">  Note: To track by reference number, one has to pass rh-reference-no header in routing hub request </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
Request ID	Displays the selected request ID.
OBRH Request	Displays the status of Routing Hub request.
Provider Request	Displays the status of provider request.
Provider Response	Displays the status of provider response.
OBRH Response	Displays the status of Routing Hub response.
Timestamp	Displays the date and time.
Message	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

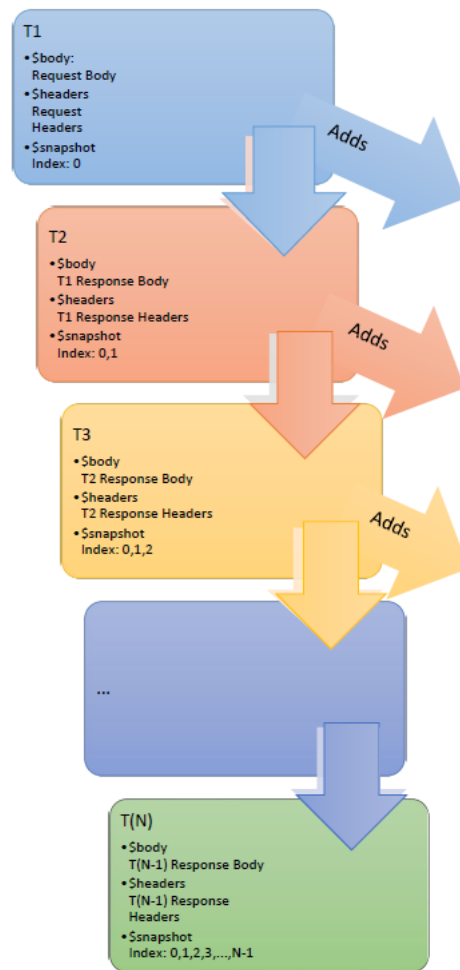


Table 9-1 Snapshot List

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

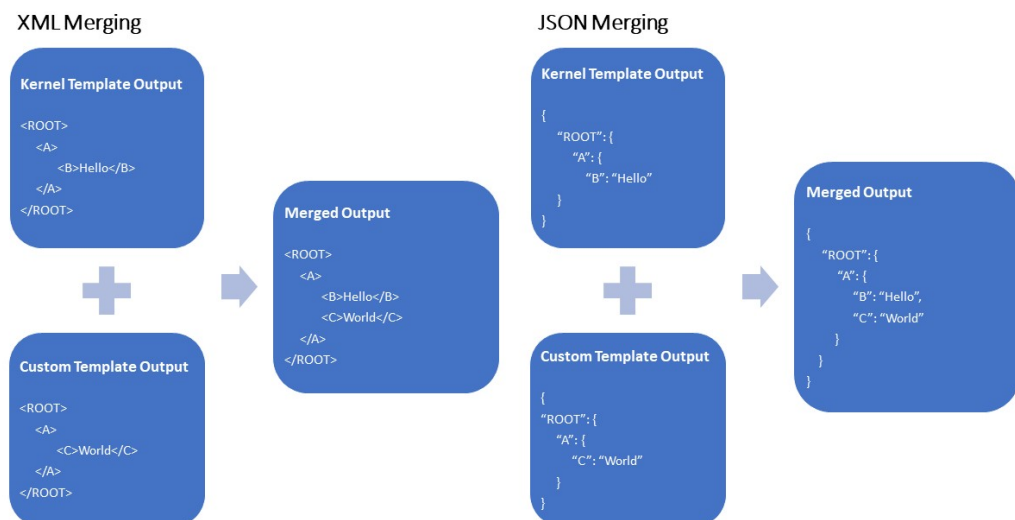
Extensibility

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](#)

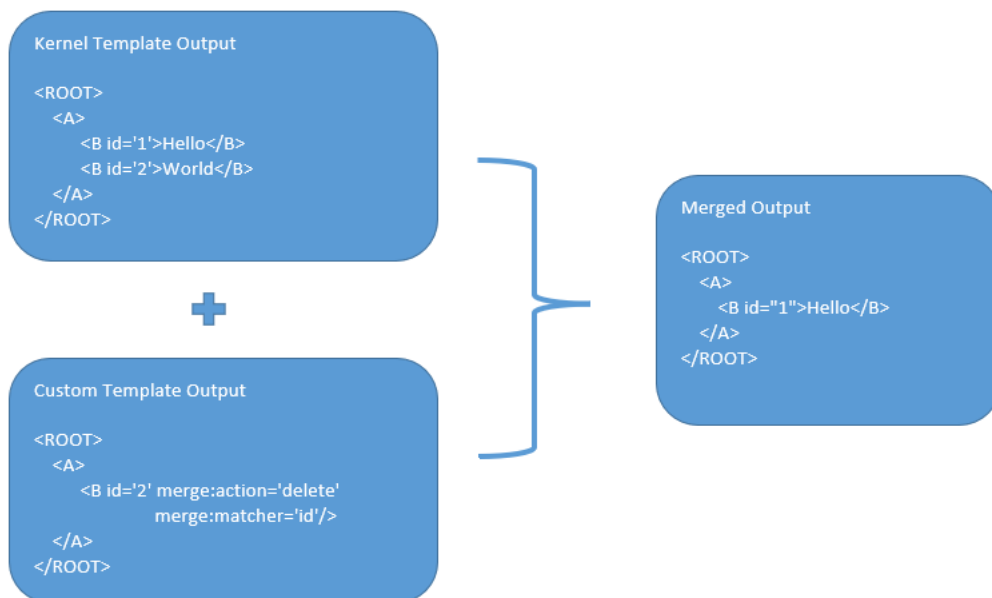
- Skip Matcher
- Override Action
- Complete Action
- Replace Action
- Preserve Action
- Delete Action

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

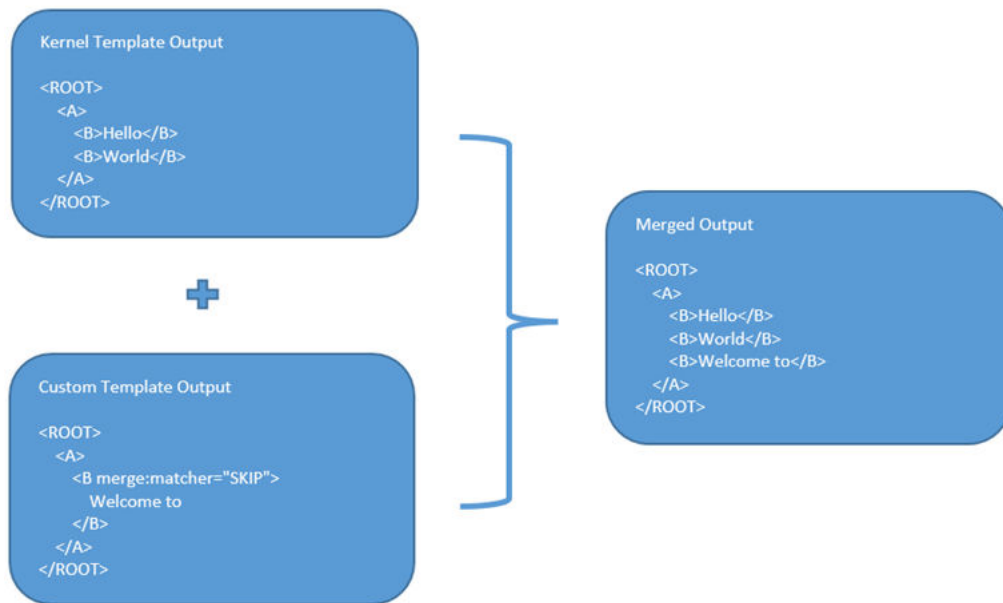


10.1.2 Skip Matcher

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

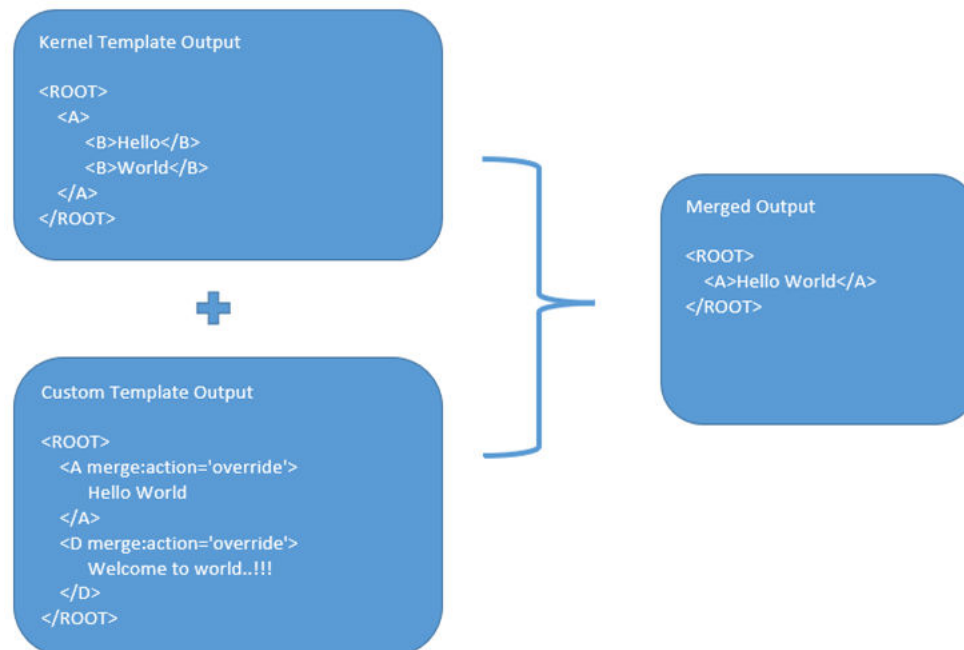


10.1.3 Override Action

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

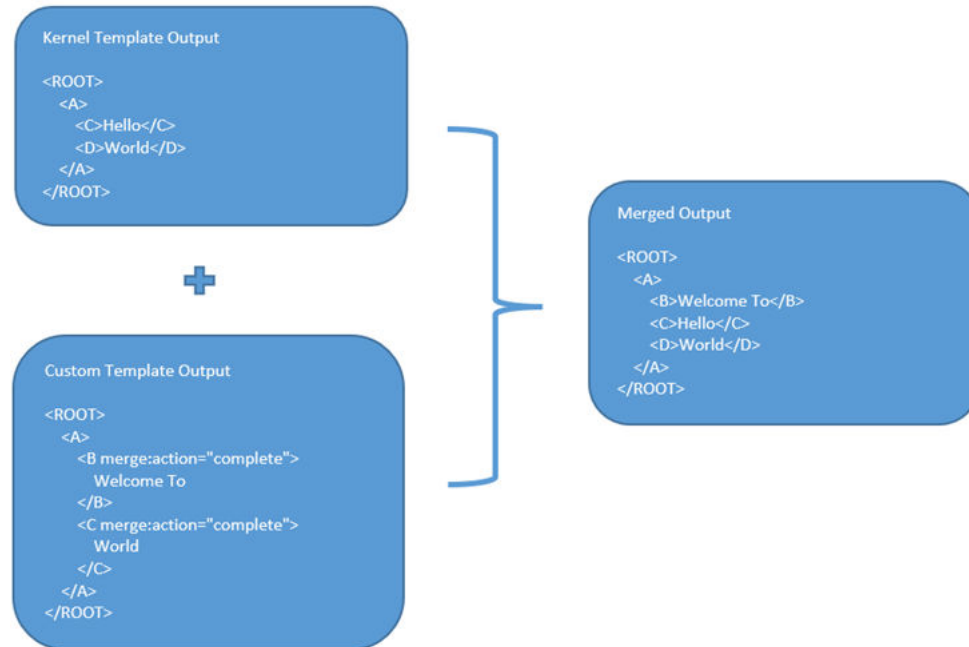


10.1.4 Complete Action

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

Syntax: `merge:action='complete'`

Figure 10-5 Complete Action

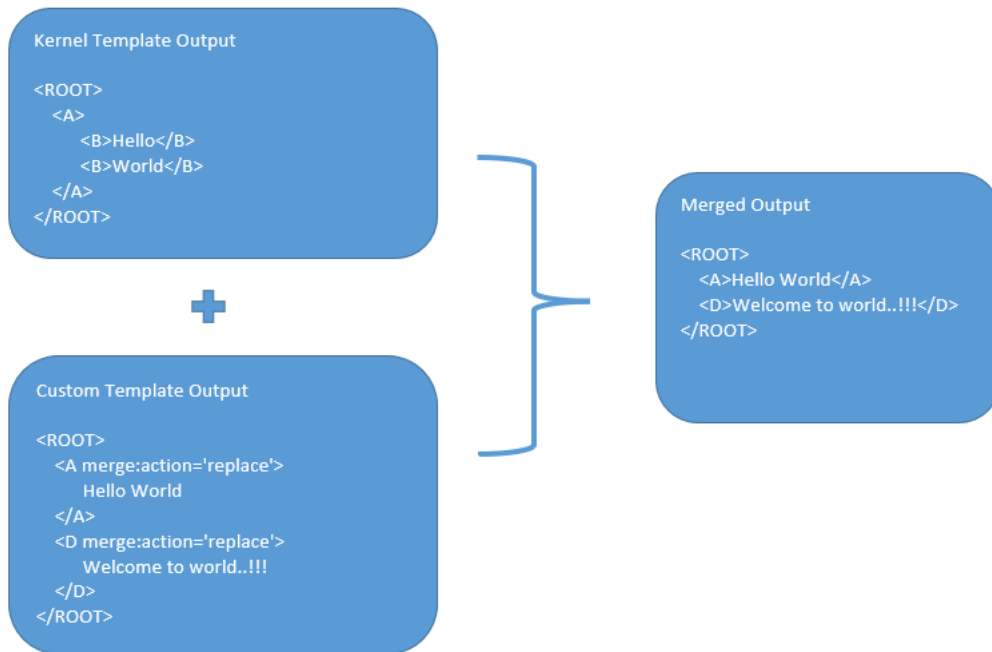


10.1.5 Replace Action

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

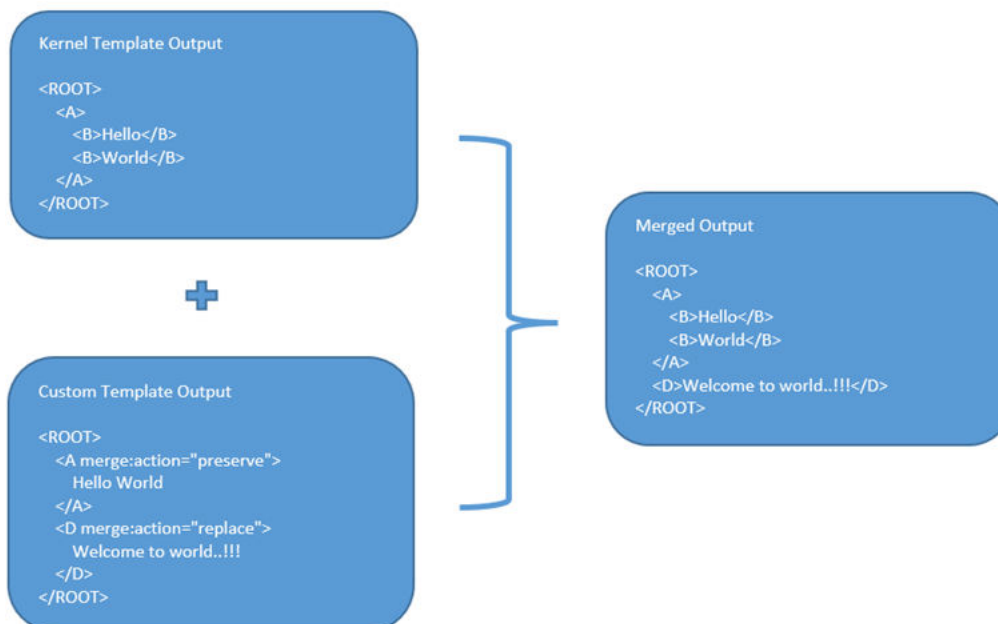


10.1.6 Preserve Action

No replace action is performed on the original element.

Syntax: `merge:action='preserve'`

Figure 10-7 Preserver Action

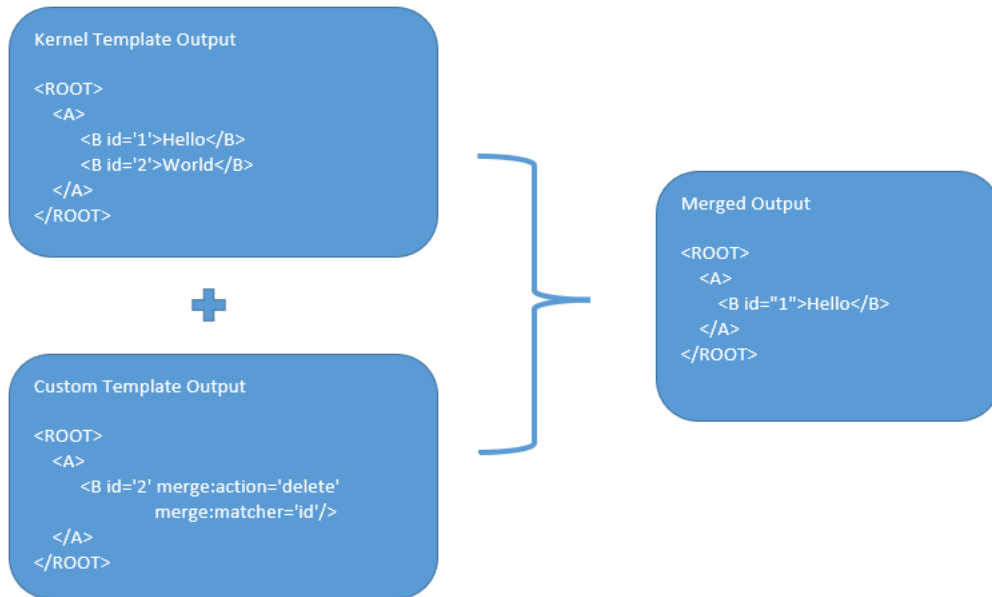


10.1.7 Delete Action

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

Multipart Request

This topic provides the sample template for the multipart request

Example 12-1 Multipart Request

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

13

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 13-1 Configuration

The screenshot shows a web-based configuration interface titled "Configuration". It features several sections with expandable/collapsible headers:

- Monitoring:** Includes "Window Type" with radio buttons for "Count" (selected) and "Time", and a "Window Size" input field containing "100".
- Alert:** Includes "Minimum number of calls" (input field with "0") and "Failure rate threshold" (dropdown menu with "50%").
- Email Alert:** Includes "Email Addresses" (input field).
- Export:** Includes "Mark data as factory shipped" (checkbox).

At the bottom right, there are three buttons: "Clear", "Reset", and "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 13-1 Configuration - Field Description

Field	Description
Window Type	Select the type of the window. The available options are: <ul style="list-style-type: none"> Count: The count-based sliding window aggregates the outcome of the last N calls (Window Size). Time: The time-based sliding window aggregates the outcome of the calls of the last N seconds (Window Size).
Window Size	Specify the window size to record the outcome of the calls when the circuit breaker is closed. <ul style="list-style-type: none"> For Count window type, The window size is N calls. For Time window type, The window size has N seconds.
Minimum number of calls	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.
Failure rate threshold	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.
Email Addresses	Specify the E-mail address. The user can use semi-colon to add more email addresses. Once the failure rate crosses the Failure rate threshold , a mail is sent to the end-user about the event.
Mark data as factory shipped	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.

Example:

Table 13-2 Configuration - Field Entry Values

Field	Entry Values
Window Type	Count
Window Size	20
Minimum number of calls	10
Failure rate Threshold	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.

- Click **Clear** to clear all the specified details.
- Click **Reset** to reset the details.

6. Click **Save** to save all the details.

14

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.

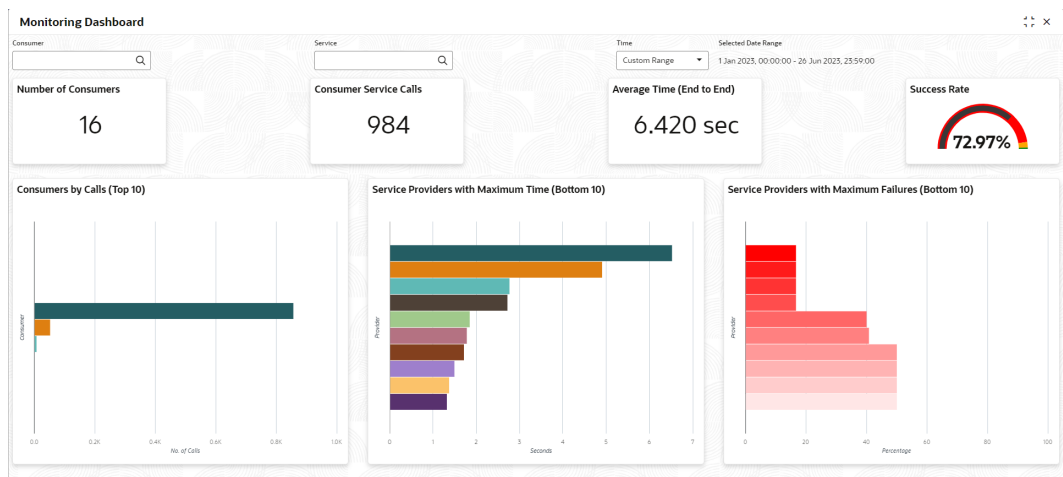


Note:

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 14-1 Monitoring Dashboard

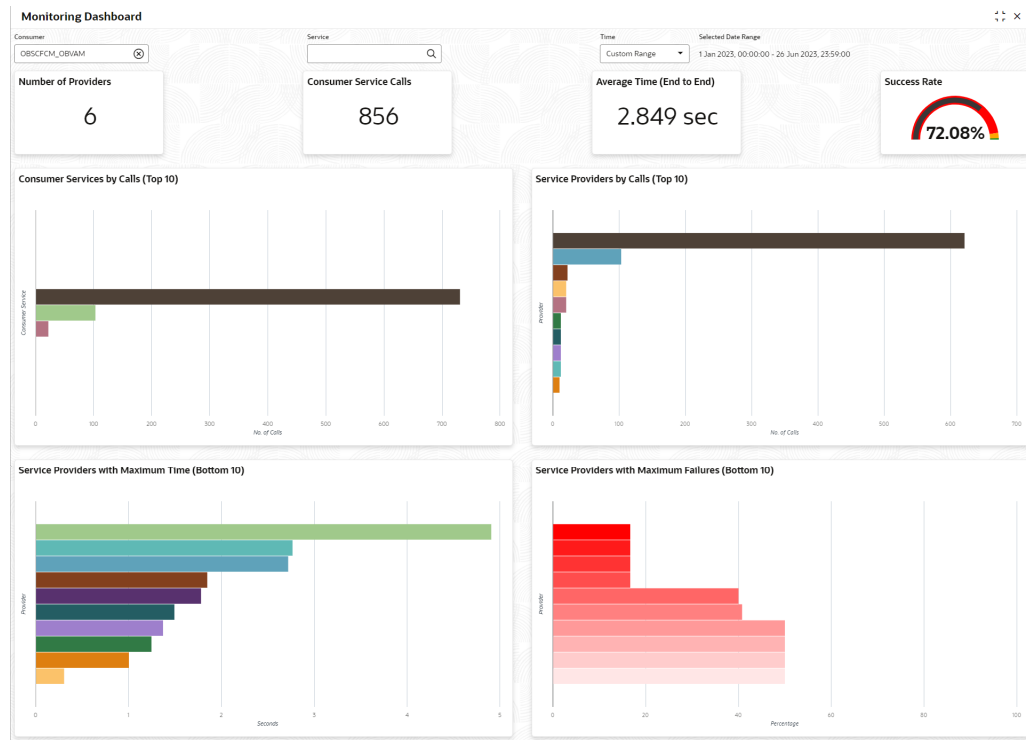


- **Number of Consumers:** This widget displays total number of consumers configured in the Oracle Banking Routing Hub.
- **Consumer Service Calls:** This widget displays total number of consumer services requested during chosen period.
- **Average Time (End to End):** This widget displays the average 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 14-2 Consumer Page



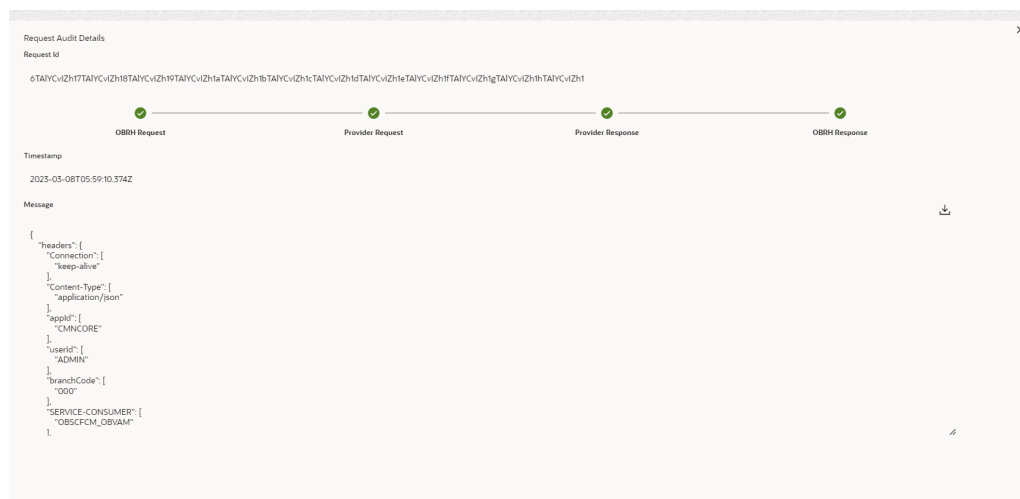
This page displays following information:

- **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
Request Id	This is system generated reference number for each request. Click on the Request Id displays audit log information of the request.
Time in Routing Hub (Sec)	This field displays the time taken by Routing Hub (in seconds) to route the request between Consumer Service and Providers.
Time in Service Providers (Sec)	This field displays the total time taken by Service provides (in seconds) to process the request.
Total Time (Sec)	This field displays the total time to process the request
Provider Service	Text box
Details	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 14-4 Request Audit Details



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

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

15

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.

16

Oracle Banking Routing Hub Integration Specification

This topic provides information about Oracle Banking Routing Hub Integration Specification.

- [Token Generation](#)
This topic provide information about the Token Generation.
- [Synchronous Dispatch API Specification](#)
This topic provide information about the Synchronous Dispatch API Specification.
- [Asynchronous Dispatch API Specification](#)
This topic provide information about the Asynchronous Dispatch API Specification.
- [Asynchronous Dispatch Response API Specification](#)
This topic provide information about the Asynchronous Dispatch Response API Specification.
- [Template evaluation API Specification](#)
This topic provide information about the Template evaluation API Specification.

16.1 Token Generation

This topic provide information about the Token Generation.

PlatoJWTAuth endpoint signature -

- **Path:** /platojwtauth
- **Headers:**
 - appld : SECSRV001
 - Content-Type : application/json
- **Request Body:**

```
{
  "username": "",
  "password": ""
}
```

- Username and password is base64 encoding of plaintext.

- **Response Body:**

```
{
  "token": "",
  "userAlreadyLoggedIn": "Y",
  "expires_in": 3180,
  "home_entity_id": "DEFAULTENTITY",
  "multi_entity_admin": "N",
}
```

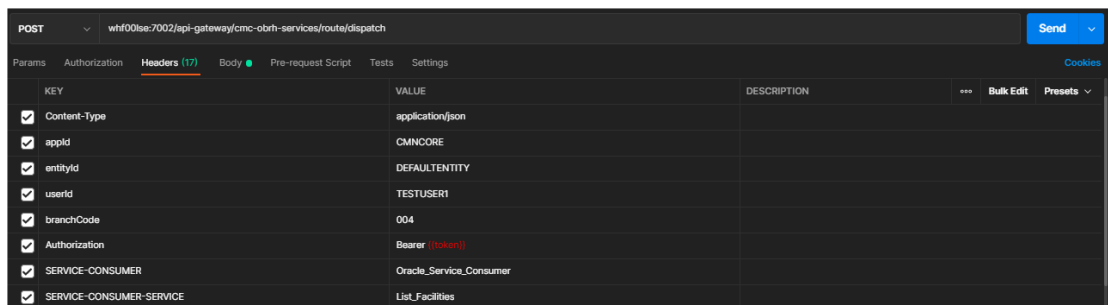

- userId : <user id>
 - branchCode : <branch code>
 - Authorization : Bearer <Token>
 - SERVICE-CONSUMER : <name of service consumer>
 - SERVICE-CONSUMER-SERVICE : <name of service consumer service>
- **Request Body:**
 - Any valid JSON/XML payload or multipart request which shall act as input to the transformation template in request transformer.
 - **Response Body:**

```
{  
  "data": {}  
  "messages": {}  
}
```

- If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it is a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.
- If the route invocation fails due to misconfigured route or connection time out to ServiceProviderImpl or some other reason, relevant error messages would be sent in messages JSON member. In that case, data JSON member would be null or empty.

Examples: Refer the below screenshots of route dispatch for Service-Consumer **Oracle_Service_Consumer** and Service-Consumer Service **List_Facilities**.

Figure 16-4 Headers



KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> Content-Type	application/json	
<input checked="" type="checkbox"/> appId	CMNCORE	
<input checked="" type="checkbox"/> entityId	DEFAULTENTITY	
<input checked="" type="checkbox"/> userId	TESTUSER1	
<input checked="" type="checkbox"/> branchCode	004	
<input checked="" type="checkbox"/> Authorization	Bearer (Token)	
<input checked="" type="checkbox"/> SERVICE-CONSUMER	Oracle_Service_Consumer	
<input checked="" type="checkbox"/> SERVICE-CONSUMER-SERVICE	List_Facilities	

Figure 16-5 Request Payload

```

POST whf0005e7002/api-gateway/cm-c-obrh-services/route/dispatch
Body
  none form-data x-www-form-urlencoded raw binary GraphQL JSON
  "partyId": "000409"
  
```

Figure 16-6 Response Payload on Successful Dispatch

```

Body Cookies Headers (18) Test Results Status: 200 OK Time: 21.20 s Size: 2.31 KB Save Response
  Pretty Raw Preview Visualize JSON
  {
    "data": {
      "facilityId": "000409"
    },
    "messages": {
      "keyId": null,
      "status": "SUCCESS",
      "codes": [],
      "requestId": null,
      "statusCode": "OK",
      "overrideAuthLevelsReq": null
    }
  }
  
```

Figure 16-7 Response Payload on Failed Dispatch

```

Body Cookies Headers (18) Test Results Status: 400 Bad Request Time: 91 ms Size: 1.18 KB Save Response
  Pretty Raw Preview Visualize JSON
  {
    "data": null,
    "messages": {
      "keyId": null,
      "status": "FAILURE",
      "codes": [
        {
          "args": null,
          "arg": null,
          "information": false,
          "override": false,
          "error": false,
          "overrideAuthLevelsReq": null,
          "desc": "unknown serviceconsumerService[List_facilities ] for ServiceConsumer[Oracle_Service_Consumer]",
          "language": null,
          "code": null,
          "type": null
        }
      ],
      "requestId": null,
      "statusCode": "BAD_REQUEST",
      "overrideAuthLevelsReq": null
    }
  }
  
```

16.3 Asynchronous Dispatch API Specification

This topic provide information about the Asynchronous Dispatch API Specification.

Dispatch endpoint is the single entry-point for invoking the routes configured in Oracle Banking Routing Hub for services of a Service Consumer.

Dispatch endpoint signature -

- **Path:** /route/dispatch
- **Query Params:**

- isAsync : true
- **Headers:**
 - applId : CMNCORE
 - entityId : DEFAULTENTITY
 - userId : <user id>
 - branchCode : <branch code>
 - Authorization : Bearer <Token>
 - SERVICE-CONSUMER : <name of service consumer>
 - SERVICE-CONSUMER-SERVICE : <name of service consumer service>
- **Request Body:**
 - Any valid JSON/XML payload or multipart request which shall act as input to the transformation template in request transformer.
- **Response Body:**

```
{
  "data": { "correlationId" : "" },
  "messages": {}
}
```

Example: Refer the below screenshots of route dispatch for Service-Consumer **Oracle_Service_Consumer** and Service-Consumer Service **List_Facilities**.

Figure 16-8 Query Params

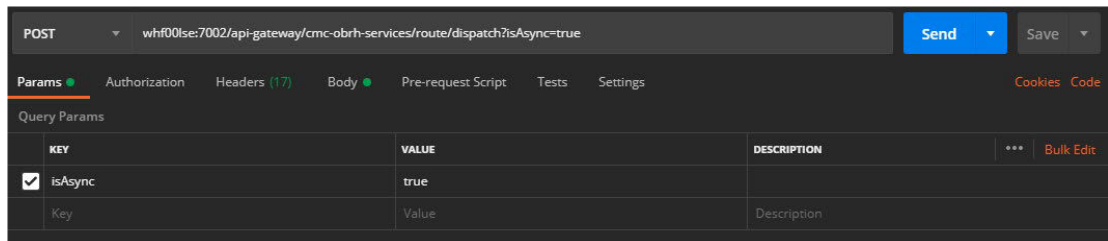


Figure 16-9 Headers

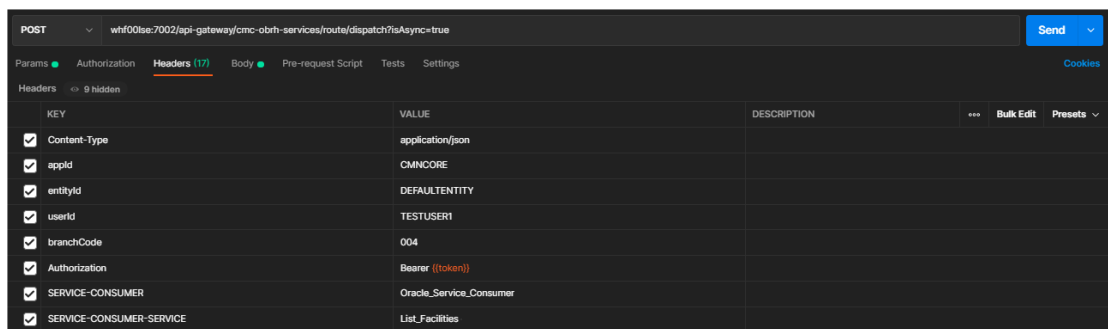


Figure 16-10 Request Payload

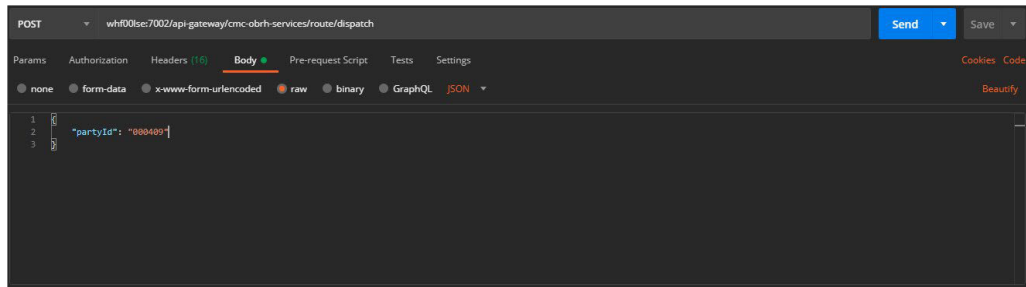
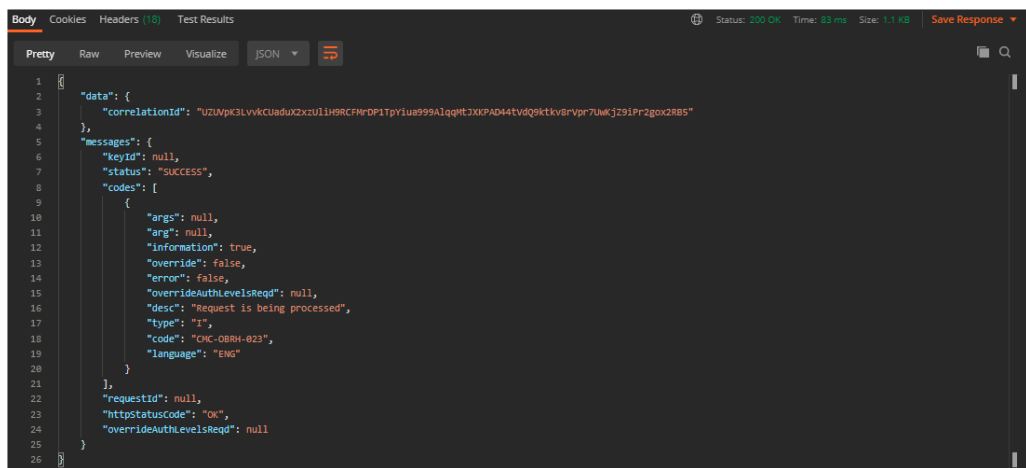


Figure 16-11 Response Payload



16.4 Asynchronous Dispatch Response API Specification

This topic provide information about the Asynchronous Dispatch Response API Specification.

Response endpoint signature -

- **Path:** /route/dispatchResponse/{Correlation-Id}
 - Correlation-Id will be coming from the response of dispatch endpoint.
- **Headers:**
 - appId : CMNCORE
 - entityId : DEFAULTENTITY
 - userId : <user id>
 - branchCode : <branch code>
 - Authorization : Bearer <Token>
- **Response Body:**

```
{
  "data": {}
}
```

```
"messages": {}
}
```

- If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it's a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.
- If the route invocation fails due to misconfigured route or connection time out to ServiceProviderImpl or some other reason, relevant error messages would be sent in messages JSON member. In that case, data JSON member would be null or empty.

Example: Refer the below screenshots of route dispatch for Service-Consumer **Oracle_Service_Consumer** and Service-Consumer Service **List_Facilities**.

Figure 16-12 Header

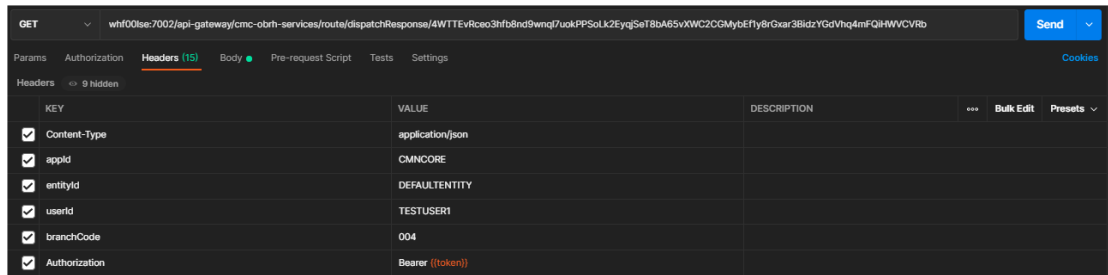


Figure 16-13 Response Payload when request is still processing

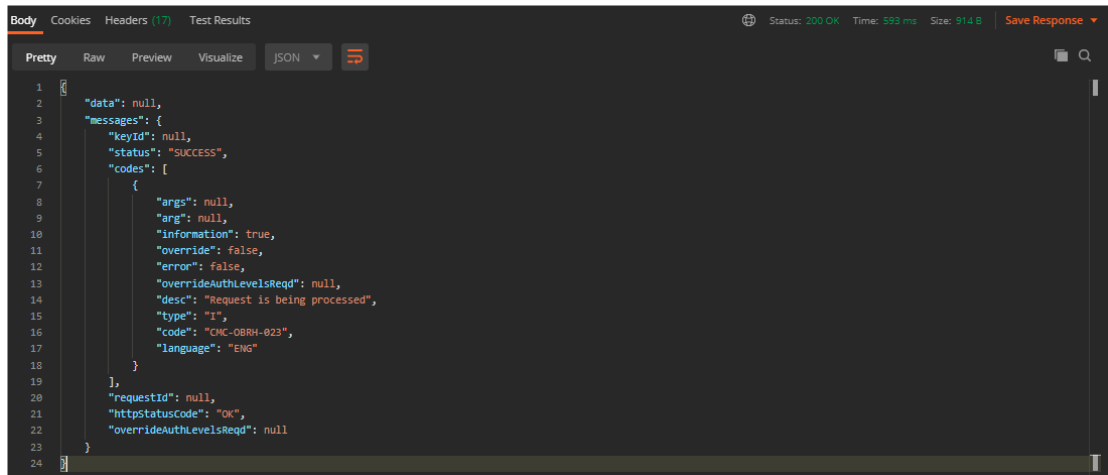


Figure 16-14 Response Payload when request is processed (on Successful Dispatch)

```

1  {
2    "data": {
3      "facilityId": "1"
4    }
5  },
6  "messages": {
7    "keyId": null,
8    "status": "SUCCESS",
9    "codes": [],
10   "requestId": null,
11   "httpStatusCode": "OK",
12   "overrideAuthLevelsRead": null
13 }

```

Figure 16-15 Response Payload when request is processed (on Failed Dispatch)

```

1  {
2    "data": null,
3    "messages": {
4      "keyId": null,
5      "status": "FAILURE",
6      "codes": [
7        {
8          "args": null,
9          "arg": null,
10         "information": false,
11         "override": false,
12         "error": false,
13         "overrideAuthLevelsRead": null,
14         "desc": "Unknown ServiceConsumerService[list_facilities ] for ServiceConsumer[Oracle_Service_consumer]",
15         "language": null,
16         "code": null,
17         "type": null
18       }
19     ]
20   },
21   "requestId": null,
22   "httpStatusCode": "BAD_REQUEST",
23   "overrideAuthLevelsRead": null
24 }

```

16.5 Template evaluation API Specification


This topic provide information about the Template evaluation API Specification.

Template evaluation endpoint will return the evaluated output of transformation template.

End-user can validate the template based on the returned output.

Template evaluation endpoint signature -

- **Method:** POST
- **Path :** /template/evaluate
- **Headers:**
 - applId : CMNCORE
 - entityId : DEFAULTENTITY
 - userId : <user id>
 - branchCode : <branch code>
 - Authorization : Bearer <Token>
 - SERVICE-CONSUMER : <name of service consumer>

- SERVICE-CONSUMER-SERVICE : <name of service consumer service>
- SERVICE-TRANSFORMATION : <name of service transformation>
- **Query Parameters:**
 - transformationType : REQUEST / RESPONSE / MOCK_RESPONSE
 -  **Note:**
Default value is REQUEST if not specified.
- **Request Body:**
 - Any valid JSON / XML payload which shall act as input to the transformation template in request transformer.
- **Response Body:**

```
{  
  "data": {}  
  "messages": {}  
}
```

17

Oracle Banking Routing Hub VM Arguments

This topic provides information about Oracle Banking Routing Hub VM arguments.

Common Core Managed Server

Table 17-1 CMC-OBRH-SERVICE

Parameters	Default	Values
cmc-obrh-services.server.port	-	<SERVER_PORT>
cmc-obrh-services.server.port	-	<SERVER_PORT>
obrh.db.jndi	-	<CMNCORE_JNDI>
cmc-obrh-services.oic.secretStore.url	-	<OIC_SECRET_STORE_URL>
cmc-obrh-services.audit.retention.days	-	<AUDIT_RETENTION_POLICY_DAYS >
cmc-obrh-services.audit.retention.archival	-	Y / N (Y for archiving and N for purging)

Table 17-2 Enable and configure connection pooling for REST calls

Parameters	Default	Values
obrh.rest.connectionpool.enabled	false	true / false
obrh.rest.connectionpool.totalConnectionCount	20	<POOL_TOTAL_CONN_COUNT>
obrh.rest.connectionpool.maxConnectionCountPerRoute	2	<POOL_MAX_CONN_PER_ROUTE>
obrh.rest.connectionpool.timeToLive.ms	-1	<POOL_TTL>

Table 17-3 Receive routing failure mail notification via plato-alerts-management-service

Parameter	Default	Values
obrh.alerts.enabled	false	true / false

Table 17-4 Change approach for auditing

Parameters	Default	Values
obrh.audit.type	KAFKA	DEFAULT / KAFKA / JMS / LOG / OFF For KAFKA option, cmc-obrh-kafka-consumer service needs to be deployed. For JMS option, cmc-obrh-jms-consumer service needs to be deployed.
obrh.audit.type.log.event	NONE	DISPATCH_REQUEST / DISPATCH_RESPONSE / ROUTE_INVOKE_START / ROUTE_INVOKE_FAILURE / TRANSFORMATION_TEMPLATE_EVALUATION_START / TRANSFORMATION_TEMPLATE_EVALUATION_END / TRANSFORMATION_EXTENDED_TEMPLATE_EVALUATION_START / TRANSFORMATION_EXTENDED_TEMPLATE_EVALUATION_END / PROVIDED_SERVICE_REQUEST / PROVIDED_SERVICE_RESPONSE This property is used to specify the events (comma-separated values) for which CLOB data needs to be logged and only considered if obrh.audit.type is LOG

Table 17-5 Overwrite the customization that is not part of configuration json

Parameters	Default	Values
obrh.import.overwrite	false	true / false

Table 17-6 Use Custom Keystore and Truststore for HTTPS scheme

Parameters	Default	Values
obrh.keystore.password.encoded	-	true / false (true, if password is base 64 encoded)
obrh.truststore.path	-	<TRUSTSTORE_PATH>
obrh.truststore.password	-	<TRUSTSTORE_PASSWORD>
obrh.usekeystore	-	true / false (true, if keystore is required along with truststore)
obrh.keystore.path	-	<KEYSTORE_PATH>
obrh.keystore.password	-	<KEYSTORE_PASSWORD>
obrh.keystore.alias	-	<KEYSTORE_ALIAS_LIST>

Table 17-6 (Cont.) Use Custom Keystore and Truststore for HTTPS scheme

Parameters	Default	Values
obrh.keystore.aliaspassword	-	<KEYSTORE_ALIAS_PASSWORD_LIST>
obrh.ssl.protocol	TLS	TLS / TLSv1 / TLSv1.1 / TLSv1.2

Table 17-7 For tomcat deployment

Parameters	Default	Values
obrh.server.isJavaEE	true	true / false (false for tomcat)
obrh.taskexecutor.corepoolsize	50	<CORE_POOLSIZE>
obrh.taskexecutor.maxpoolsize	50	<MAX_POOLSIZE>
obrh.taskexecutor.queuecapacity	100	<QUEUE_CAPACITY>

Set Proxy settings for HTTPS: As per the Java Networking documentation, HTTPS protocol handler will use the same as the http handler (i.e. http.nonProxyHosts). But in case of Weblogic, http.nonProxyHosts will not work for some reason. So, use https non proxy host argument (i.e. https.nonProxyHosts).

Table 17-8 Set Proxy settings for HTTPS

Parameters	Default	Values
https.proxyHost	-	<PROXY_HOST_NAME>
https.proxyPort	-	<PROXY_PORT>
https.nonProxyHosts	-	<NON_PROXY_HOST_LIST>
http.nonProxyHosts	-	<NON_PROXY_HOST_LIST>

Table 17-9 Set logger level

Parameters	Default	Values
plato.service.logging.level	-	<LOG_LEVEL>

This property will enforce WebLogic Server to use SUN SSL implementation (javax package) rather than the WebLogic one.

Table 17-10 Support SSL based SOAP provider calls in weblogic environment

Parameters	Default	Values
UseSunHttpHandler	-	true

Table 17-11 CMC-OBRH-KAFKA-CONSUMER

Parameters	Default	Values
cmc-obrh-kafka-consumer.server.port	-	<SERVER_PORT>

Table 17-11 (Cont.) CMC-OBHR-KAFKA-CONSUMER

Parameters	Default	Values
obrh.audit.id-generator	UUID	UUID / SNOWFLAKE

Table 17-12 CMC-OBHR-JMS-CONSUMER

Parameters	Default	Values
cmc-obrh-jms-consumer.server.port	-	<SERVER_PORT>
cmc-obrh-jms-consumer.connectionFactory	-	<JMS_CONN_FACTORY_JNDI>
cmc-obrh-jms-consumer.queue	-	<JMS_CONN_QUEUE_JNDI>

Table 17-13 Change ID generator

Parameters	Default	Values
obrh.audit.id-generator	UUID	UUID / SNOWFLAKE

Plato Core Managed Server

Oracle Banking Routing Hub is using Multipart for Import feature. By default, spring supports max 1MB file size and 10MB request size for Multipart.

To import bigger files,

```
plato-api-gateway.multipart.max-file-size=<MAX_FILE_SIZE> (default is 200MB)
plato-api-gateway.multipart.max-request-size=<MAX_REQUEST_SIZE> (default is 200MB)
```

Note:

-1 for no size constraint

Example,

```
plato-api-gateway.multipart.max-file-size=-1
plato-api-gateway.multipart.max-request-size=-1
```

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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