

**Routing Hub Configuration User Guide**

**Oracle Banking Branch**

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**ORACLE®**

## Routing Hub Configuration User Guide

Oracle Financial Services Software Limited  
Oracle Park  
Off Western Express Highway  
Goregaon (East)  
Mumbai, Maharashtra 400 063  
India

Worldwide Inquiries:

Phone: +91 22 6718 3000

Fax: +91 22 6718 3001

<https://www.oracle.com/industries/financial-services/index.html>

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# 1 Preface

## 1.1 Purpose

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

## 1.2 Audience

This document is intended for the following audience:

- Customers
- Partners

## 1.3 Document 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>.

## 1.4 Screenshot Disclaimer

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

## 1.5 Acronyms and Abbreviations

Abbreviation	Description
OIC	Oracle Integration Cloud
OBRH	Oracle Banking Routing Hub
UAT	User Acceptance Testing

## 1.6 Basic Actions

Most of the screens contain buttons to perform all or few of the basic actions. The actions which are called here are generic, it varies based on the usage and the applicability. The table below gives a snapshot of them:

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

## 1.7 Symbols and Icons

The following are the symbols/icons you are likely to find in this guide:

Symbol/Icon	Function
	Minimize
	Maximize
	Close

Symbol/Icon	Function
	Perform search
	Add a file
	Edit a file
	Delete a row
	Import a file
	To perform the actions
	Navigate to the first page
	Navigate to the last page
	Navigate to the previous page
	Navigate to the next page

## 1.8 Related Resources

The related documents are as follows:

1. Oracle Banking Getting Started User Guide
2. Oracle Banking Common Core User Guide

## 2 Introduction

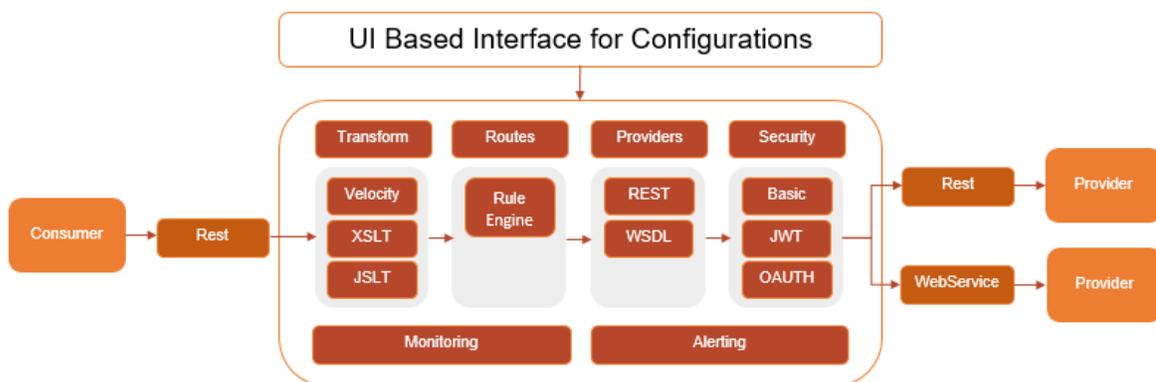
‘Oracle Banking Routing Hub’ enables seamless & standardized integrations between FSGBU Banking Products using configurations. This component is available as part of the product Infrastructure solution. A loose couple integration between banking products is possible with Oracle Banking Routing Hub.

**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 e.g. 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 e.g JSON, XML.
- Communication Protocol – Web services, Rest API.

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.

In this document we have shown the maintenance of two product i.e.,” Oracle Service Consumer” as Service Consumer and “External Product Processor” as Service Provider.



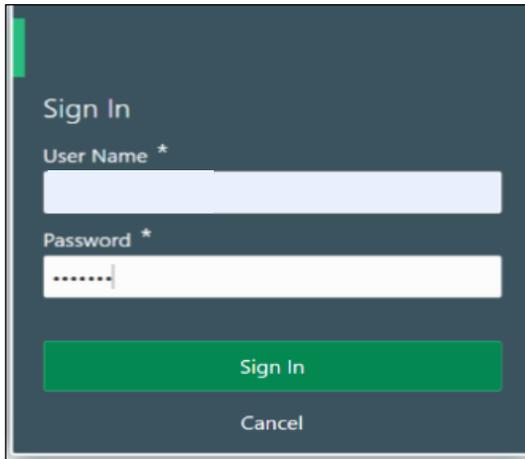
## 2.1 Acronyms & Definitions

Following are some of the acronyms and abbreviations you are likely to find in this user manual:

Abbreviation & Definitions	Description
Service Consumers	Applications that need to integrate with multiple product processors to fetch the information or post a transaction. Service Consumer integrates with Oracle Banking Routing Hub
Service Providers	The product processors available to serve the request send by Oracle Banking Routing Hub on behalf of Service Consumer
Service	Soap or Rest Web Services. Soap Services can be imported through WSDL while Rest Services can be imported through Swagger
Headers	headers require by product processor while sending request

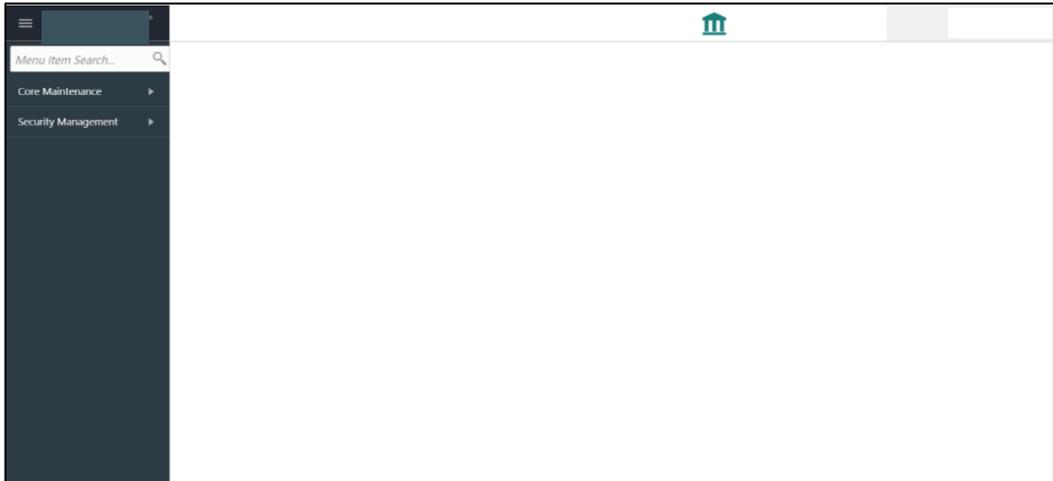
### 3 Start Maintenance - Login Screen

Open Browser, Hit URL and Launch **Oracle Banking Routing Hub**.



Component briefing				
Component Name	Component Type	Is Mandatory	Data type	Comments
User Name	Text Box	Yes	Alphanumeric	
Password	Text Box	Yes	Alphanumeric with special characters	
Sign In	Button			Navigates to Dashboard / menu screen
Cancel	Button			

## 4 Main Menu Screen



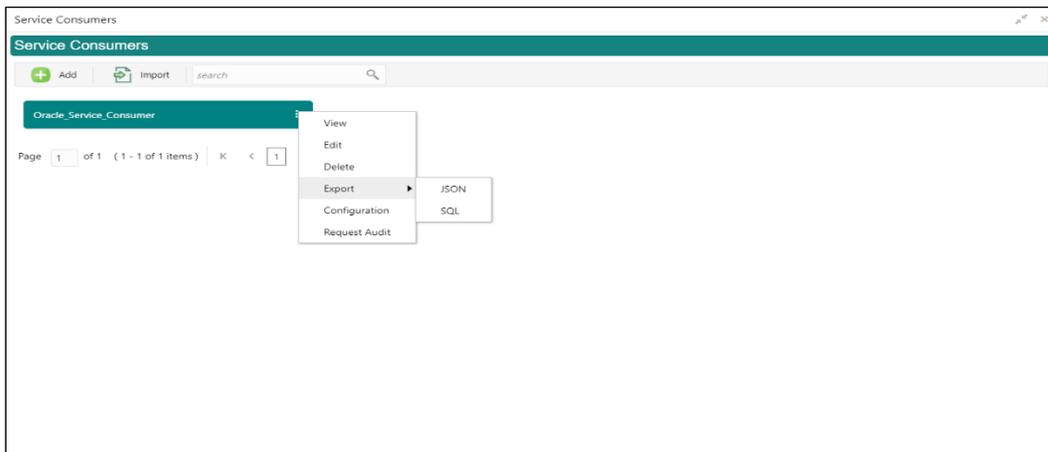
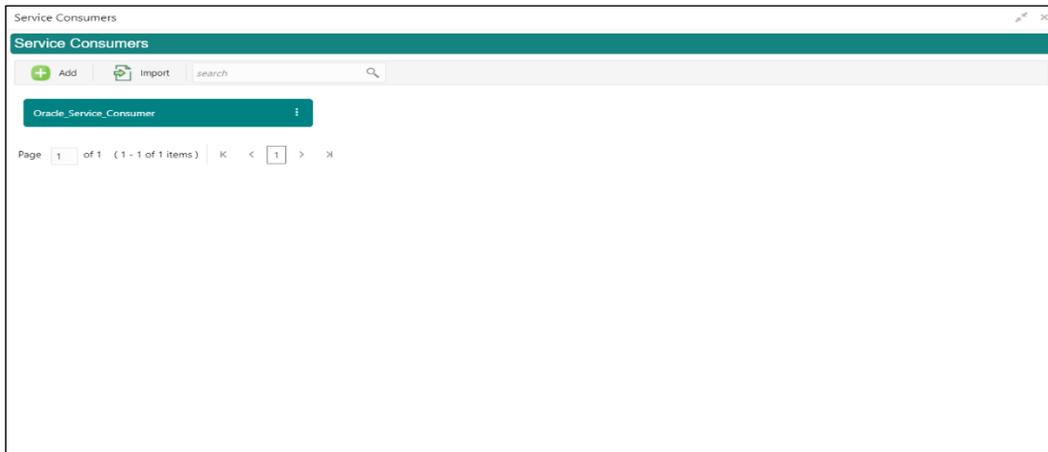
Component briefing		
Component Name	Component Type	Comments
Core Maintenance	Main menu item	
Routing Hub	Sub menu item	
Configuration	Sub menu option	Navigates to Configuration screen
Service Consumer	Sub menu option	Navigates to Service Consumer screen
Request Audit	Sub menu option	Navigates to Request Audit screen

## 5 Service Consumer

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

Service Consumer comprises of the source and destination integration details.

Navigation: **Core Maintenance -> Routing Hub -> Service Consumers**



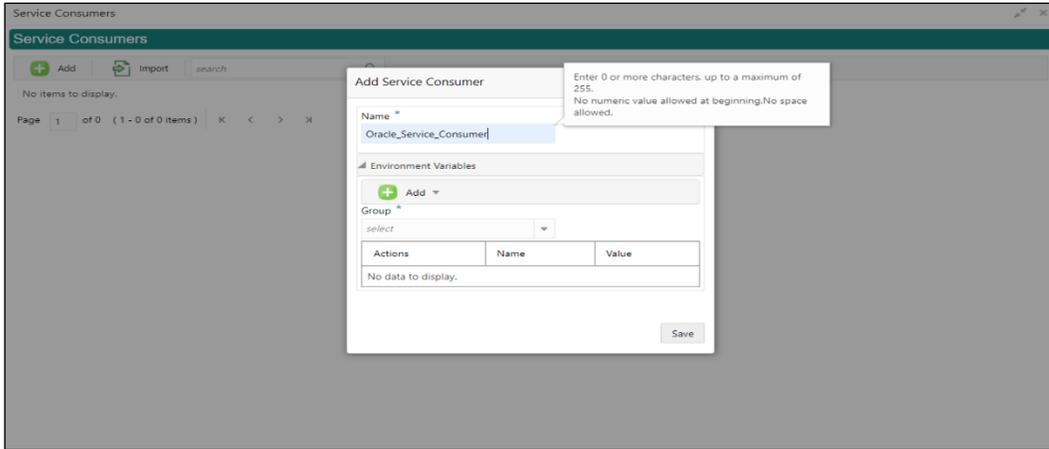
Component briefing			
Component Name	Component Type	Condition	Comments
Add	Button		Pops up add dialog

<b>Import</b>	Button		Pops up import dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Service Consumer Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Service Consumers -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Export</b>	Sub menu item		
<b>JSON</b>	menu option		Exports in JSON
<b>SQL</b>	menu option		Exports in SQL
<b>Configuration</b>	menu option		Pops up configuration dialog
<b>Request Audit</b>	menu option		Pops up request audit log

## 5.1 Add

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

Navigation: **Service Consumers -> Add**



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
<b>Name</b>	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255</li> <li>No numeric value at beginning and no space allowed</li> </ul>	Unique Service Consumer name
<b>Environment Variables</b>	Table Content				
<b>Save</b>	Button				Saves the Service Consumer

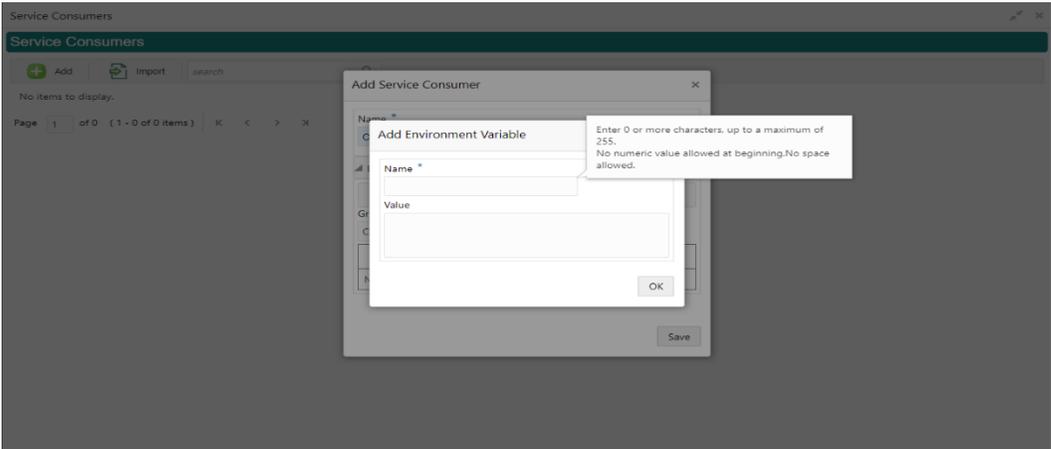
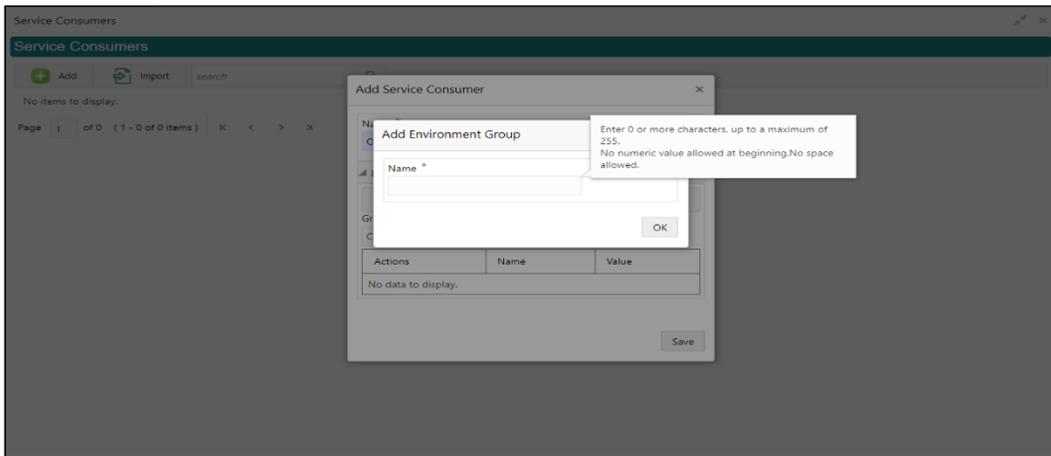
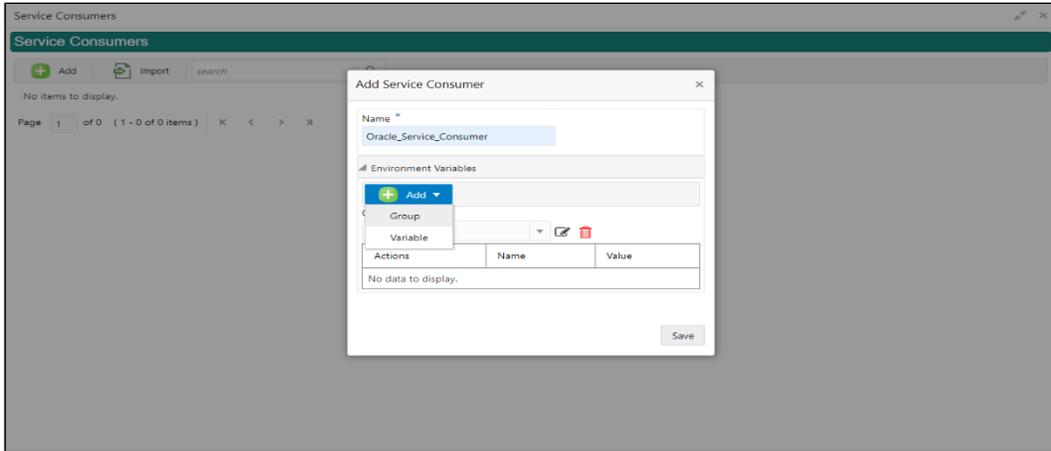
### 5.1.1 Environment Variables

User will be able to define the group of variables which can be accessed throughout the specific consumer's configuration.

Below is the syntax for accessing environment variables:

`$env.Environment_Group_Name.Environment_Variable_Name`

eg: `$env.COMMON.BRANCH_CODE`



<b>Component briefing</b>					
<b>Component Name</b>	<b>Component Type</b>	<b>Is Mandatory</b>	<b>Data type</b>	<b>Validation</b>	<b>Comments</b>
<b>Add</b>	Menu Item				
<b>Group</b>	Menu option				Pops up add group dialog
<b>Variable</b>	Menu option				Pops up add variable dialog
<b>Navigation: Service Consumer -&gt; Environment Variables -&gt; 3 dot icon (operation menu)</b>					
<b>Edit</b>	menu option / icon				Pops up edit dialog
<b>Delete</b>	menu option / icon				Deletes group / variable
<b>Environment Group / Variable</b>					
<b>Name</b>	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>• Name cannot be blank</li> <li>• Enter 0 or more characters, up to a maximum of 255</li> <li>• No numeric value at beginning and no space allowed</li> </ul>	
<b>Value</b>	Text Area				Value can either be hardcoded or Velocity mapping.
<b>OK</b>	Button				Saves the group / variable and

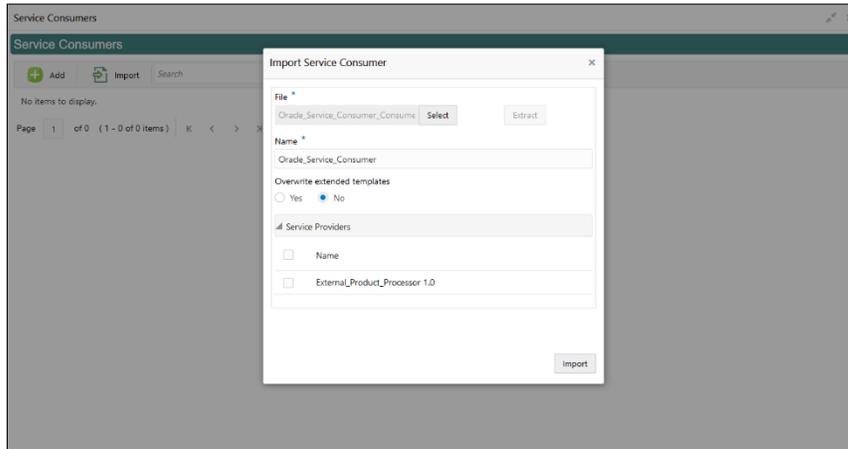
					displays it in the list
--	--	--	--	--	-------------------------

## 5.2 Import

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.

User can also import zip file in order to import all the configuration JSON files together.

Navigation: **Service Consumers -> Import**



Component briefing						
Component Name	Component Type	Is Mandatory	Data type	Validation	Condition	Comments
File	File picker	Yes		Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box
Extract	Button	Yes				Extracts Consumer Name and Service Provider list from JSON file only and displays it in the respective elements.

<b>Name</b>	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255</li> <li>No numeric value at beginning and no space allowed</li> </ul>	Editable	Name is required only for JSON file
<b>Overwrite extended templates</b>	Radio Button	Yes				<p>Predefined Values: <b>Yes / No</b></p> <p><b>Yes:</b> This option is for overwriting the extended templates in configuration and <b>No:</b> This option is for retaining the existing extended templates in configuration.</p>
<b>Service Provider</b>	Collapsible Header & Content					Displays the list of service providers that are present in JSON file only
<b>Import</b>	Button					Imports Service Consumer

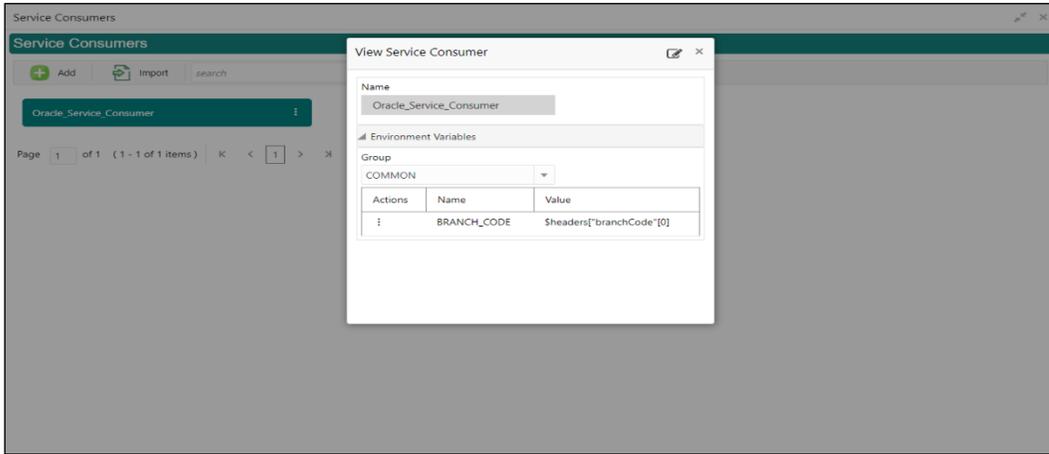
**NOTE:** Below data needs to be changed after importing consumer configuration file:

- Implementation Host and Port
- Implementation Authentication Password

### 5.3 View

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

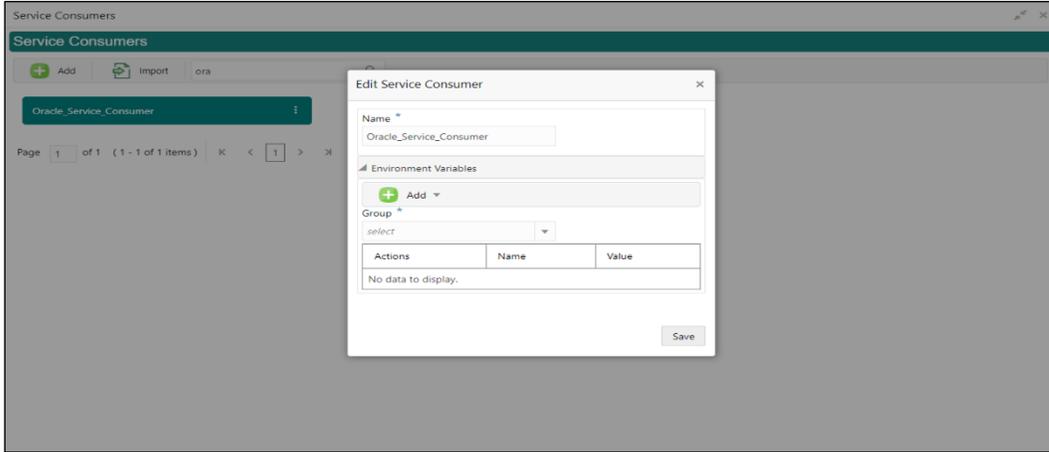
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> View**



## 5.4 Edit

User can modify the consumer details.

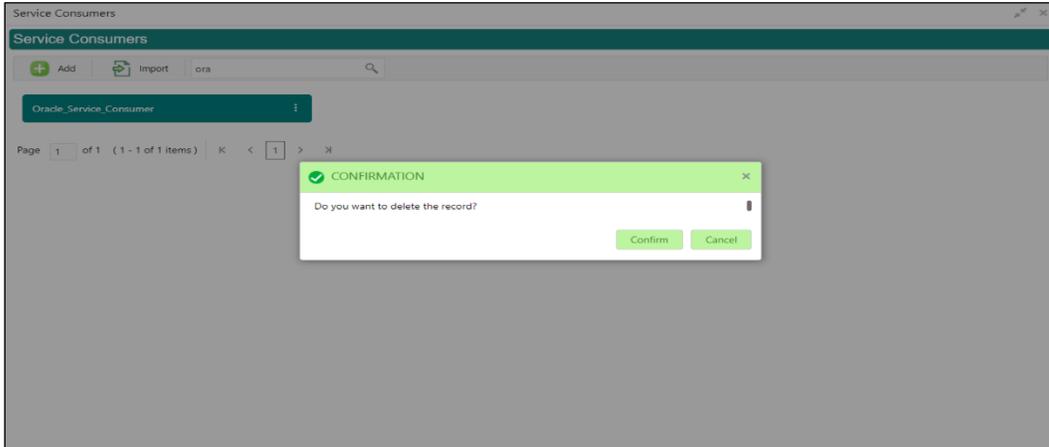
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Edit**



## 5.5 Delete

User can delete the consumer.

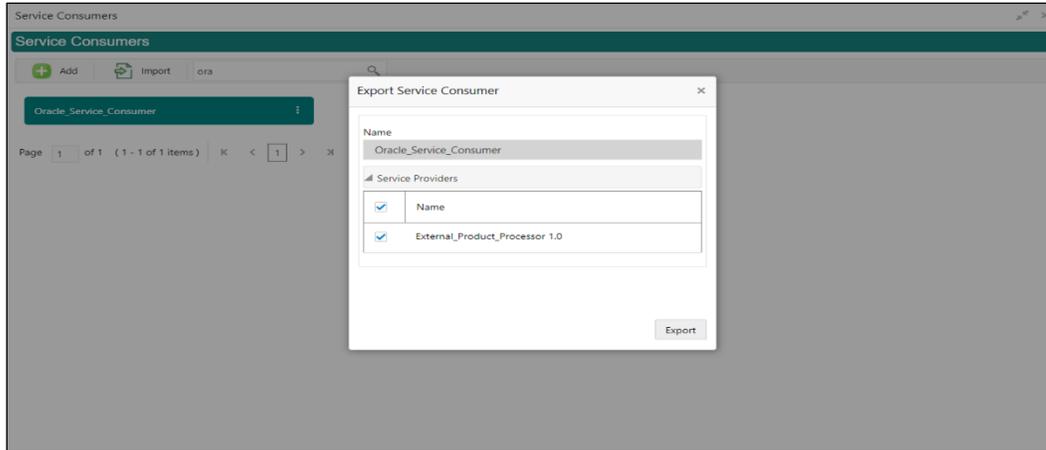
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Delete**



## 5.6 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.

Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Export -> JSON**



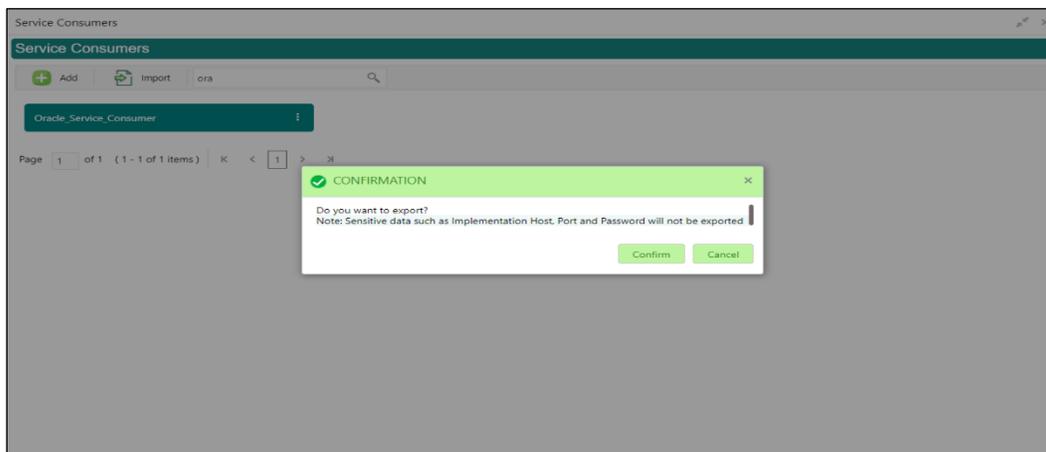
### Note:

- User has an option to select service providers from the list which needs to be exported or can click on "Select All" option for all service providers.
- JSON Export feature will export 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

## 5.7 SQL Export

User can export the consumer configuration as SQL file.

Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Export -> SQL**



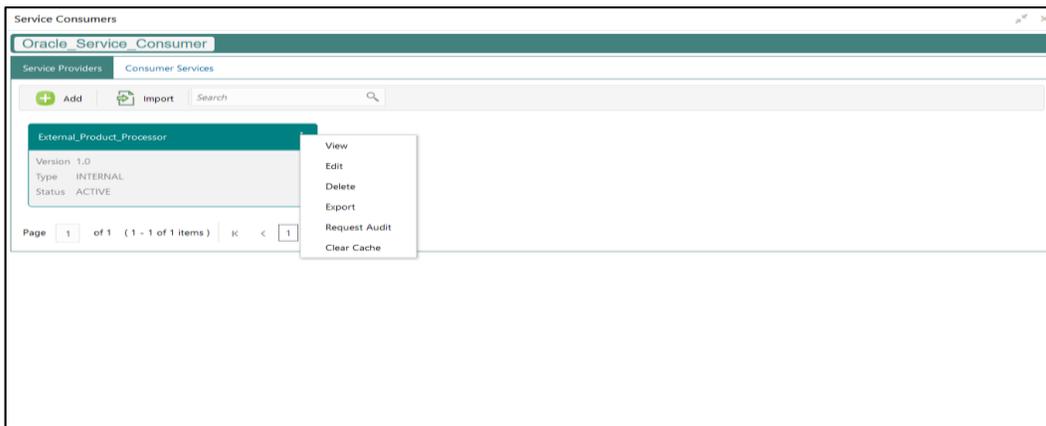
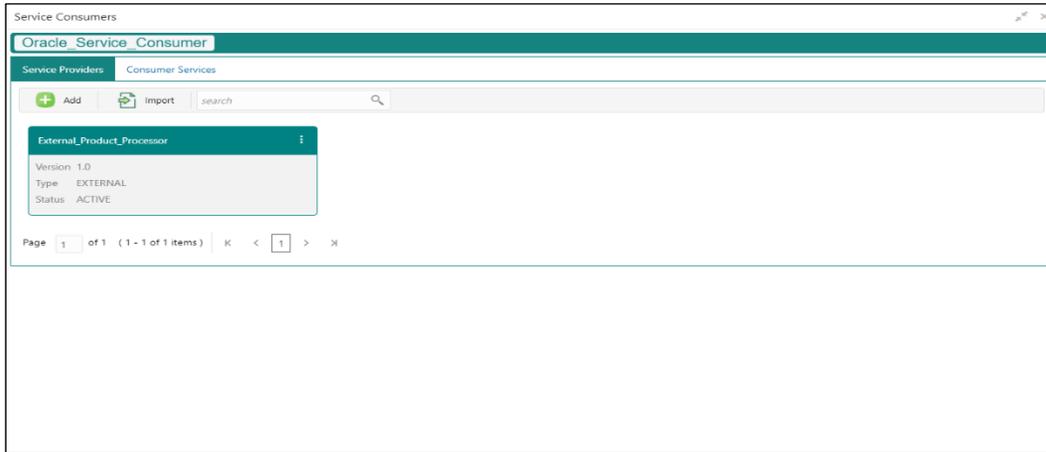
**NOTE:** SQL Export feature will export entire configuration without Host, Port and Authentication Password details.

## 6 Service Providers

Service Providers are the product processors configure to process request send by Oracle Banking Routing Hub on behalf of service consumers.

Service Provider comprises of destination integration details.

Navigation: **Core Maintenance -> Routing Hub -> Service Consumers -> <Specific Service Consumer> -> Service Providers**



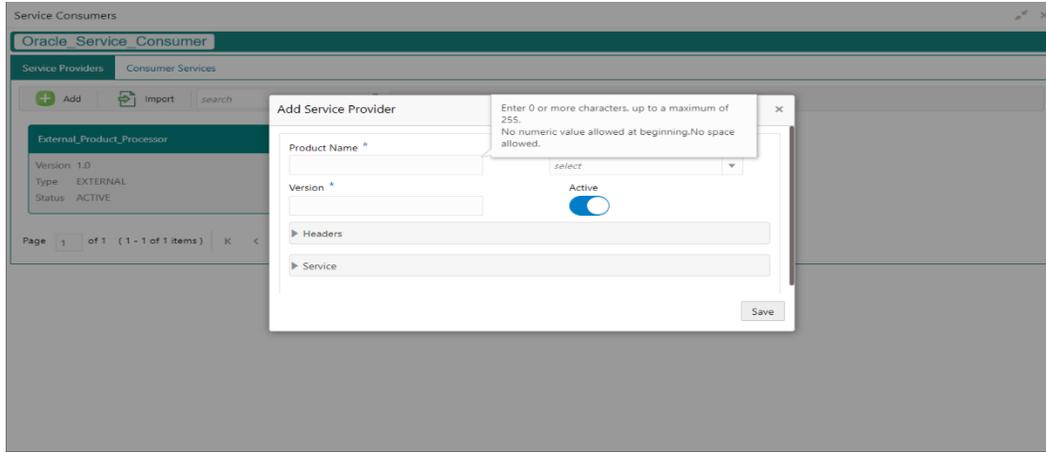
Component briefing			
Component Name	Component Type	Condition	Comments
<Service Consumer>	Button		Navigates back to Service Consumers

<b>Add</b>	Button		Pops up add dialog
<b>Import</b>	Button		Pops up import dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Service Provider Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Service Providers -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Export</b>	menu option		Exports in JSON
<b>Request Audit</b>	menu option		Pops up request audit log
<b>Clear Cache</b>	menu option		Clears SOAP client cache

## 6.1 Add

User can create Service Provider manually.

Navigation: **Service Providers-> Add**



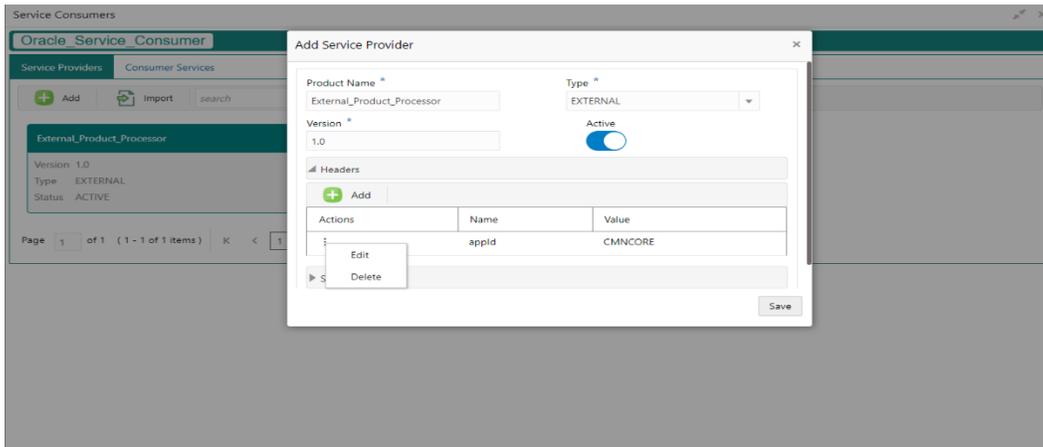
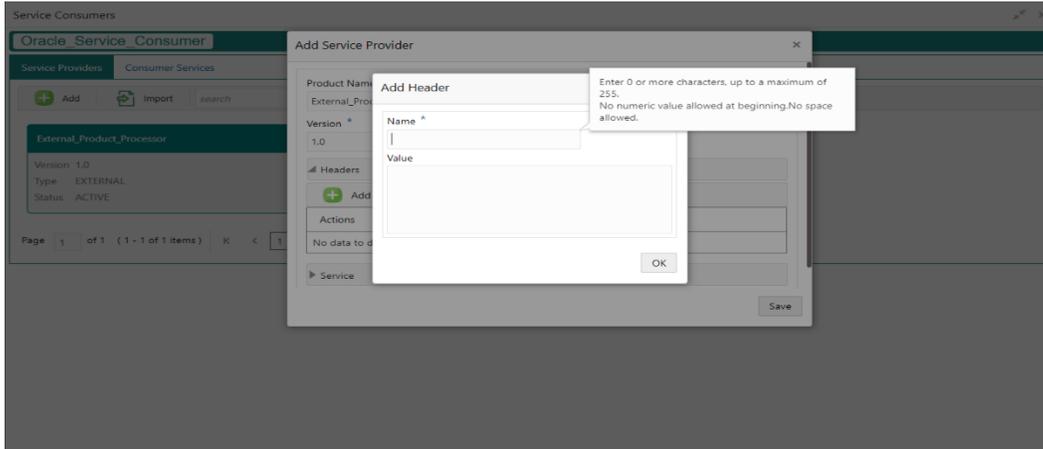
Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Product Name	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>	Unique provider name
Type	Combo Box One	Yes			Predefined Values: INTERNAL / EXTERNAL  INTERNAL type should be used for oracle products and EXTERNAL type should be

					used for non-oracle products
Version	Text Box	Yes	Number	<ul style="list-style-type: none"> <li>• Version cannot be blank</li> <li>• Enter 0 or more characters, up to a maximum of 255.</li> <li>• Enter only numeric or decimal values.</li> </ul>	Unique provider version
Active	Switch				<p>Predefined Values: ACTIVE / INACTIVE</p> <p>If provider is marked as inactive, then all related routes will be stopped.</p>
Headers	Collapsible Header & Content				Provider specific headers
Service	Collapsible Header & Content				Provider specific service details
Save	Button				Saves the Service Provider

### 6.1.1 Headers

A 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.

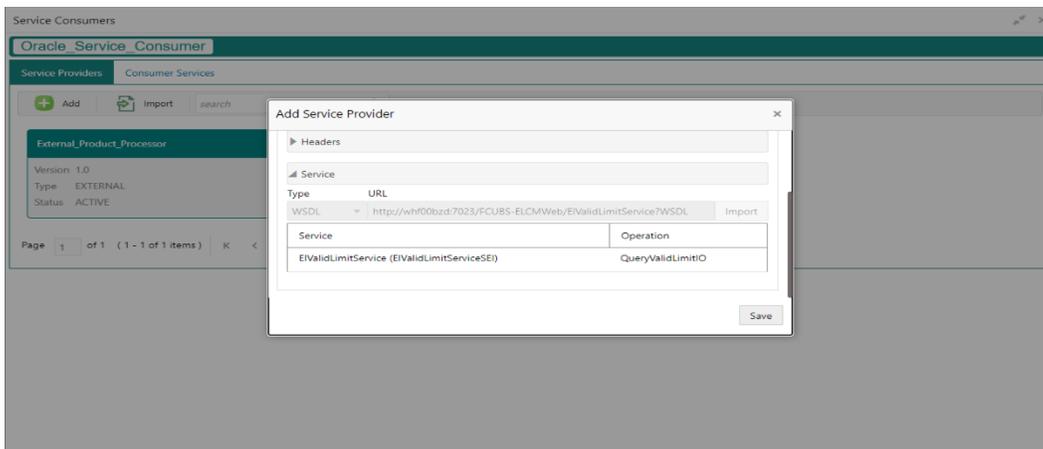
These headers can be configured in Oracle Banking Routing Hub using the steps given below



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Add	Button				Pops up add dialog
<b>Navigation: Service Providers -&gt; Headers -&gt; 3 dot icon (operation menu)</b>					

Edit	menu option				Pops up edit dialog
Delete	menu option				Deletes header
<b>Navigation: Service Providers -&gt; Headers -&gt; Add</b>					
Name	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>	
Value	Text Area	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Enter 0 or more characters, up to a maximum of 255.</li> </ul>	Value can either be hardcoded or can be Velocity mapping.
OK	Button				Saves the header details and displays it in the list

### 6.1.2 Service



Component briefing			
Component Name	Component Type	Is Mandatory	Comments
Type	Combo Box One	Yes	Predefined Values: WSDL / SWAGGER
URL	Text Box	Yes	Service URL of the file location
Gateway Prefix	Text Box		Gateway Prefix is context path of below formatted URL http://host:port/gateway-prefix/endpoint
Import	Button		Extracts the service information from URL and displays it in the Service list

### 6.1.2.1 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:** In case there is a change in wsdl file, then same wsdl file need to be imported again in order to update the provided service information in routing hub.

### 6.1.2.2 SWAGGER

Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

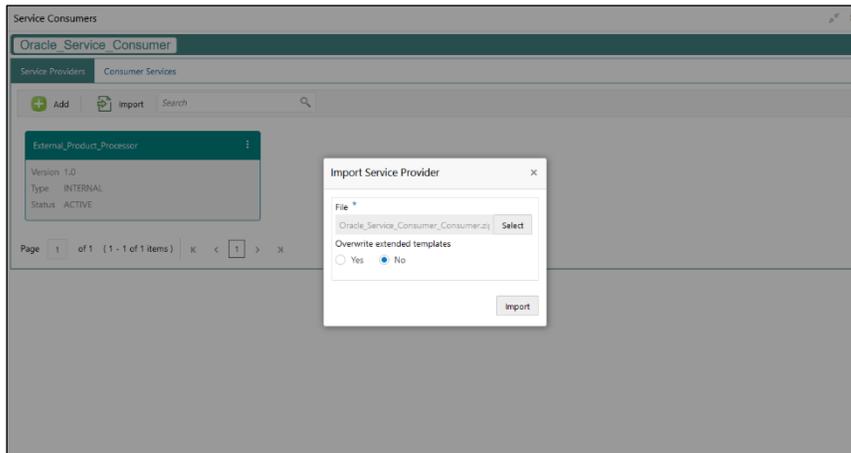
**NOTE:** In case there is a change in swagger file, then same swagger file need to be imported again in order to update the provided service information in routing hub.

## 6.2 Import

User can create a service provider by importing the JSON file.

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

Navigation: **Service Providers -> Import**



Component briefing					
Component Name	Component Type	Is Mandatory	Validation	Condition	Comments
File	File picker	Yes	Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box

<b>Overwrite extended templates</b>	Radio Button	No			<p>Predefined Values:</p> <p><b>Yes / No</b></p> <p><b>Yes:</b> This option is for overwriting the extended templates in the configuration.</p> <p><b>No:</b> This option is for retaining the existing extended templates in configuration.</p> <p><b>Note:</b> This option is only visible if a ZIP file is selected.</p>
<b>Import</b>	Button				Imports Service Provider

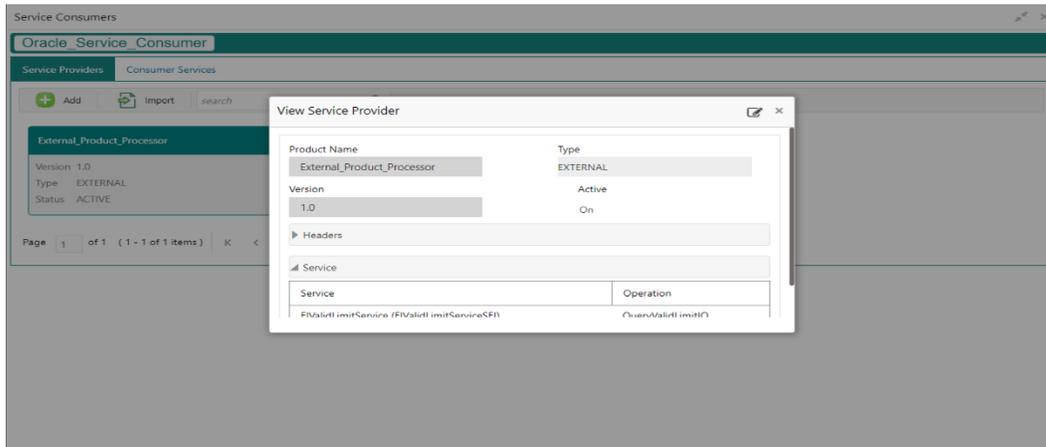
**NOTE:** Below data needs to be changed after importing provider configuration file:

- Implementation Host and Port
- Implementation Authentication Password

### 6.3 View

User can view provider details and can also switch to edit form by clicking on edit icon.

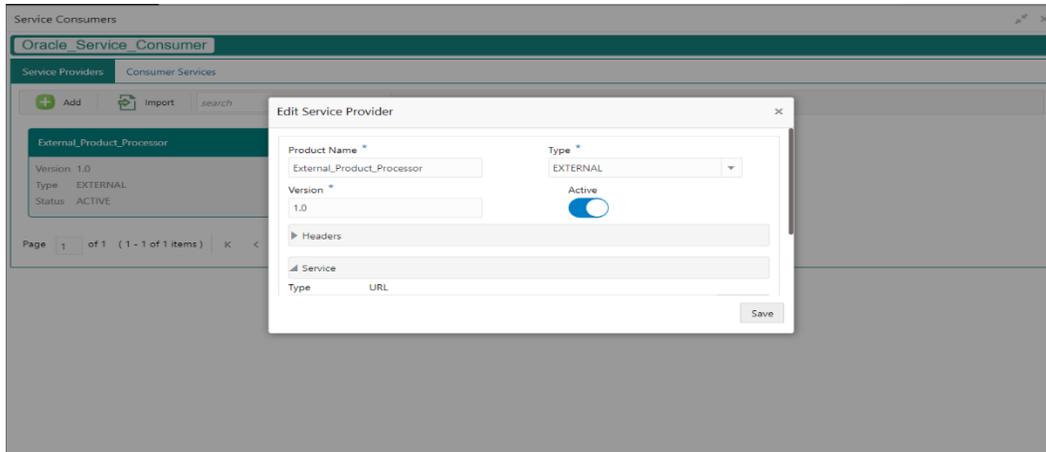
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> View**



## 6.4 Edit

User can modify the provider details.

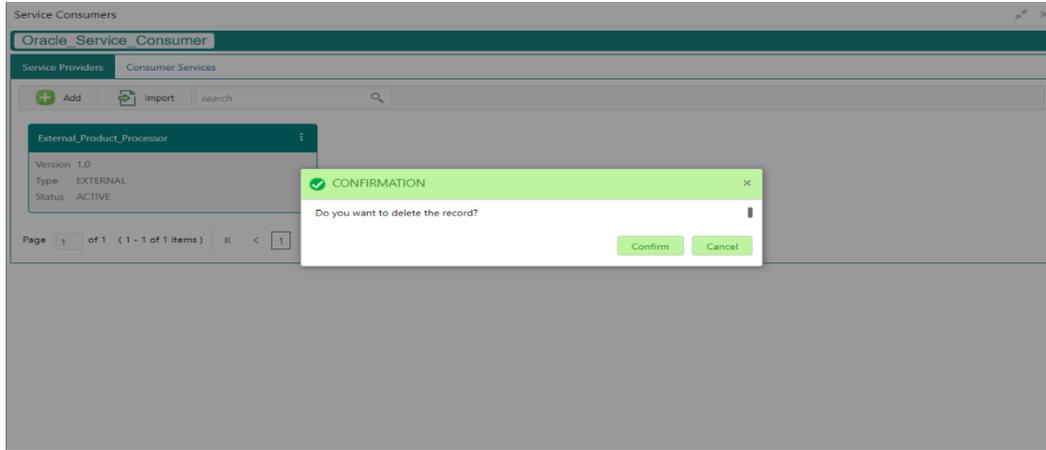
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> Edit**



## 6.5 Delete

User can delete the provider.

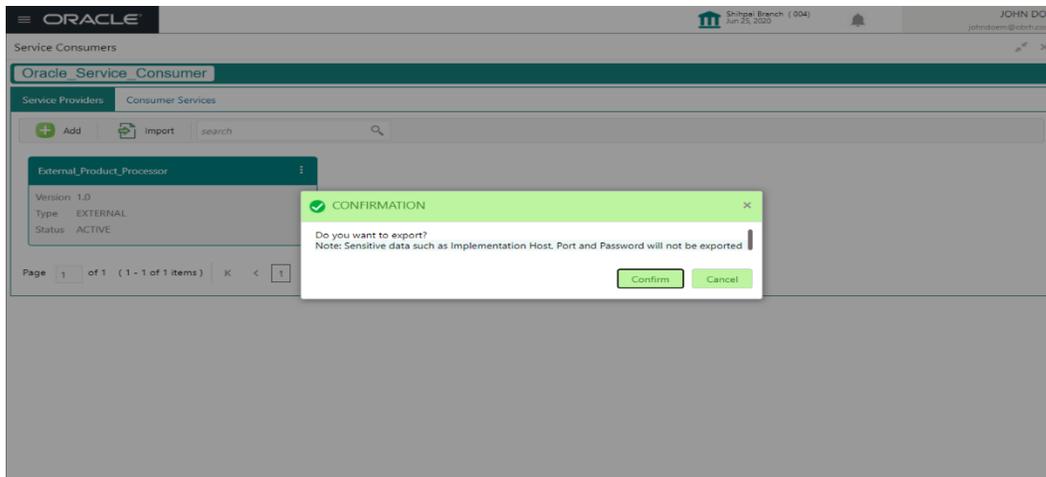
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> Delete**



## 6.6 Export

User can export the provider configuration as JSON file.

Navigation: **Service Providers -> Operation Menu (3 dot icon) -> Export**



**NOTE:** Below data will not be exported:

- Implementation Host
- Implementation Port
- Implementation Authentication Password

The above data needs to be configured manually after importing the configuration file.

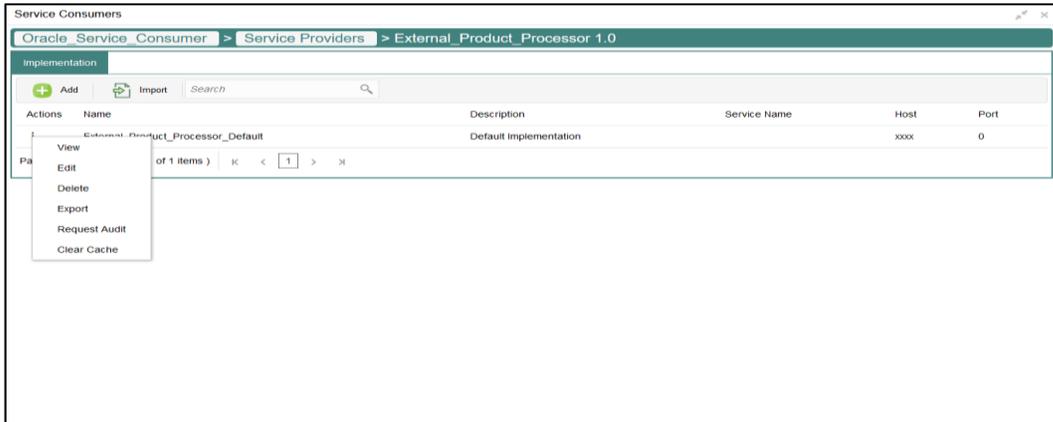
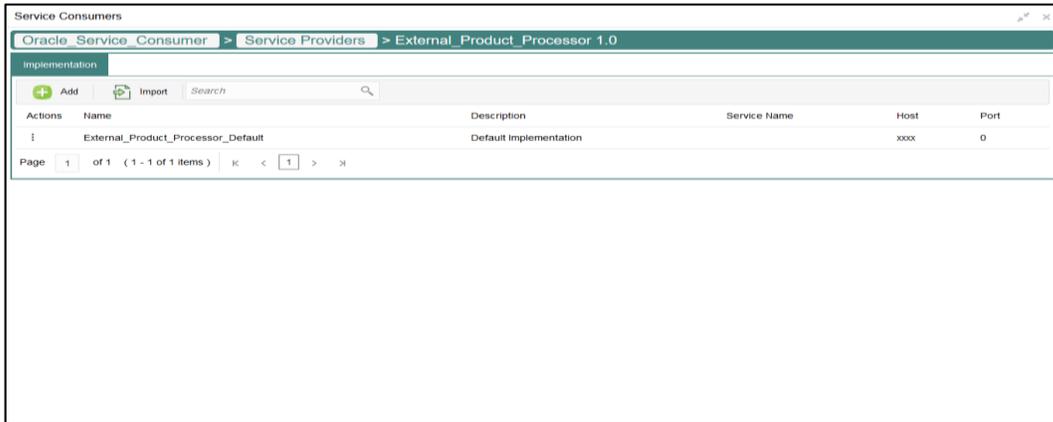
Same has been mentioned in Import section

## 7 Implementation

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

**NOTE:** Default implementation is created whenever a new service provider is added.

Navigation: **Core Maintenance -> Routing Hub -> Service Consumers -> <Specific Service Consumer> -> Service Providers -> <Specific Service Provider> -> Implementation**



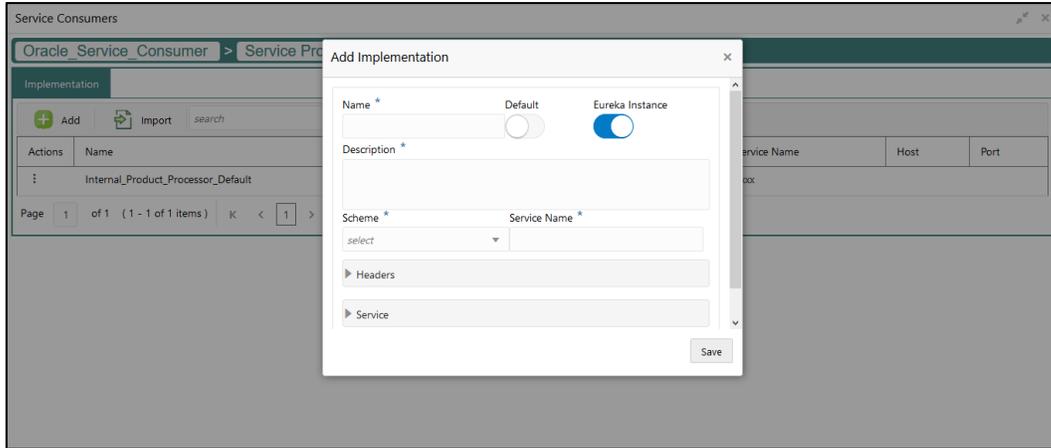
Component briefing			
Component Name	Component Type	Condition	Comments
<Service Consumer>	Button		Navigates back to Service Consumers
<Service Provider>	Button		Navigates back to Service Providers

<b>Add</b>	Button		Pops up add dialog
<b>Import</b>	Button		Pops up import dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Implementation Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Implementation -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Export</b>	menu option		Exports in JSON
<b>Request Audit</b>	menu option		Pops up request audit log
<b>Clear Cache</b>	menu option		Clears SOAP client cache

## 7.1 Add

User can create Implementation manually.

Navigation: **Implementation-> Add**



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
<b>Name</b>	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>	Unique implementation name
<b>Description</b>	Text Area	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Description cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 1000.</li> </ul>	

				<ul style="list-style-type: none"> <li>No space allowed at beginning or ending of the value.</li> </ul>	
<b>Default</b>	Switch				
<b>Eureka Instance</b>	Switch				<p><b>Eureka Instance</b> option is available only for internal providers.</p> <p>By default, <b>Eureka Instance</b> will be toggled ON for internal providers and OFF for external providers.</p>
<b>Scheme</b>	Combo Box One	Yes			Predefined Values: HTTPS / HTTP
<b>Service Name</b>	Text Box	Yes		<ul style="list-style-type: none"> <li>Service Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No space allowed.</li> </ul>	If <b>Eureka Instance</b> is toggled ON, then only service name is required.
<b>Host</b>	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Host cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No space allowed.</li> </ul>	If <b>Eureka Instance</b> is toggled OFF, then only host and port is required.

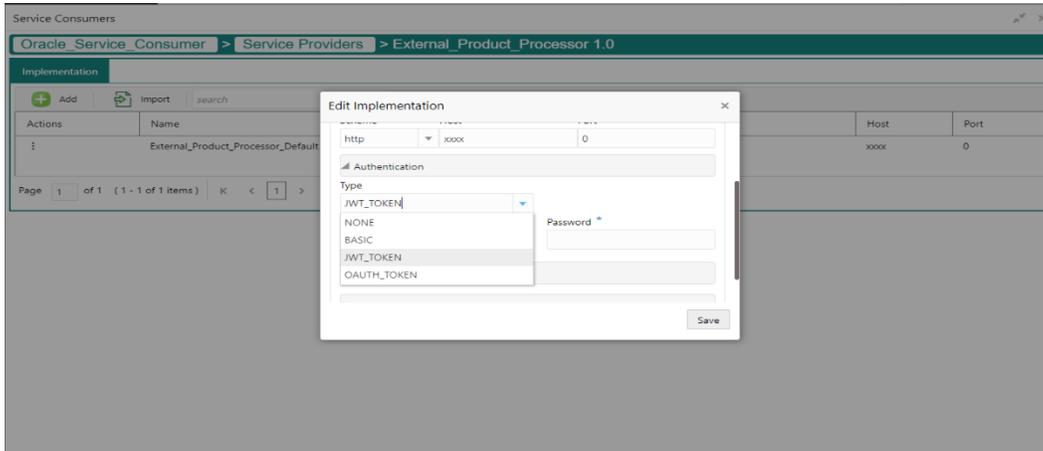
<b>Port</b>	Text Box	No	Number	<ul style="list-style-type: none"> <li>• Enter 0 or more characters, up to a maximum of 6.</li> <li>• Only numeric value allowed.</li> </ul>	If <b>Eureka Instance</b> is toggled OFF, then only host and port is required.
<b>Authenticati on</b>	Collapsible Header & Content				Authentication option is available only when <b>Eureka Instance</b> is toggled OFF.
<b>Headers</b>	Collapsible Header & Content				Implementation specific headers
<b>Service</b>	Collapsible Header & Content				Implementation specific service details
<b>Save</b>	Button				Saves the Implementation

### 7.1.1 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.

**NOTE:** In case of no authentication, NONE needs to be set as Authentication Type.

Process of configuration of these is described below.



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Type	Combo Box One	Yes			Predefined Values: NONE / BASIC / JWT_TOKEN / OAUTH_TOKEN

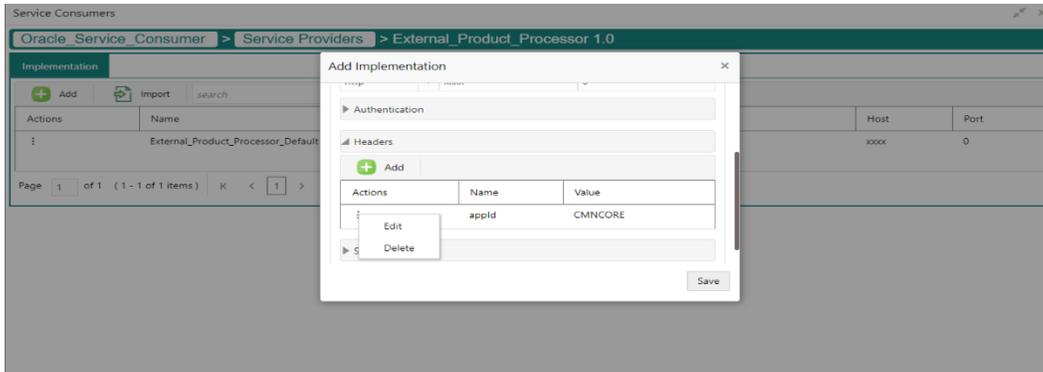
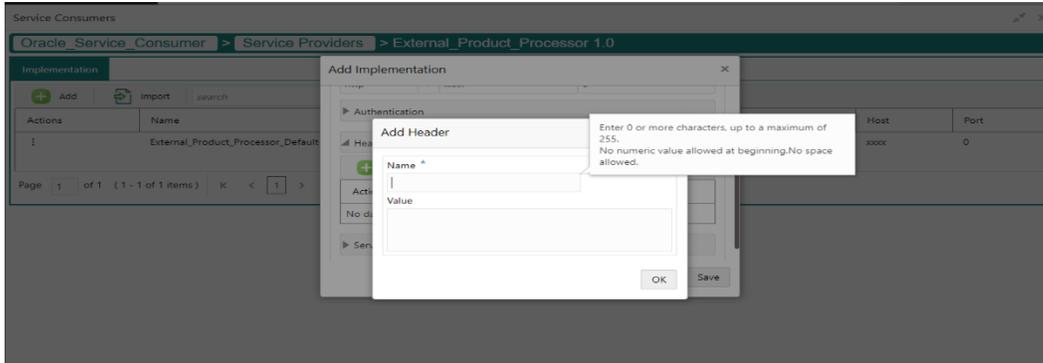
<b>Encryption</b>	Switch				<p>Select the toggle to encrypt user credentials.</p> <p>This field is applicable only for JWT_TOKEN and OAUTH_TOKEN types</p> <p>This field depends on the value of api-gateway's property "EncryptionFlag" at provider end. For more information on property value, please refer to the <b>Oracle Banking Microservices Architecture Deployments</b> section in <b>Oracle Banking Microservices Platform Foundation Installation Guide</b>.</p>
<b>Username</b>	Text Box		Alphanumeric with special characters	<ul style="list-style-type: none"> <li>• Username cannot be blank</li> <li>• Enter 0 or more characters, up to a maximum of 255.</li> <li>• No numeric value at beginning and no space allowed.</li> </ul>	Username is mandatory if authentication type is BASIC / JWT_TOKEN / OAUTH_TOKEN
<b>Password</b>	Text Box		Alphanumeric with special characters	Password cannot be blank	Password is mandatory if authentication type is BASIC / JWT_TOKEN / OAUTH_TOKEN

### 7.1.2 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 specific implementation but not present in swagger file.

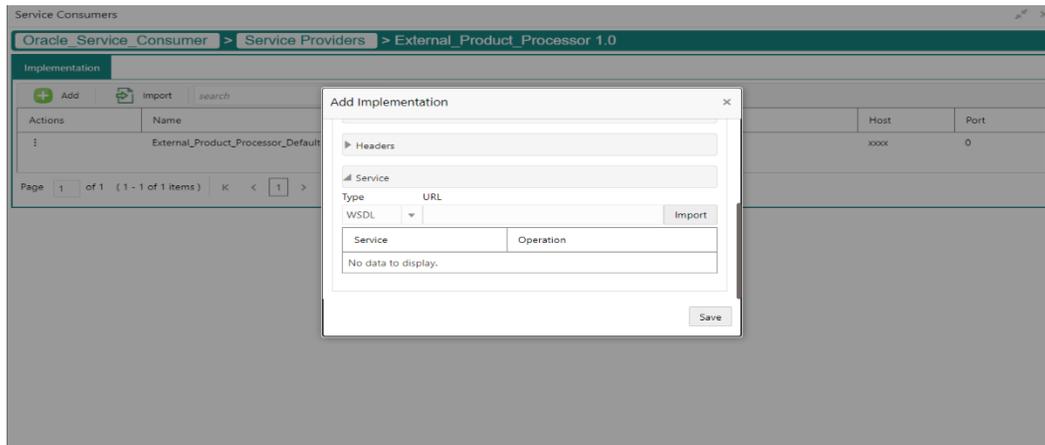
These headers can be configured in Oracle Banking Routing Hub using the steps given below



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Add	Button				Pops up add dialog
<b>Navigation: Implementation -&gt; Headers -&gt; 3 dot icon (operation menu)</b>					
Edit	menu option				Pops up edit dialog

<b>Delete</b>	menu option				Deletes header
<b>Navigation: Implementation -&gt; Headers -&gt; Add</b>					
Name	Text Box	Yes	Alphanu meric with special characte rs	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>	
Value	Text Area	Yes	Alphanu meric with special characte rs	<ul style="list-style-type: none"> <li>Enter 0 or more characters, up to a maximum of 255.</li> </ul>	Value can either be hardcoded or can be Velocity mapping.
OK	Button				Saves the header details and displays it in the list

### 7.1.3 Service



Component briefing			
Component Name	Component Type	Is Mandatory	Comments
Type	Combo Box One	Yes	Predefined Values: WSDL / SWAGGER
URL	Text Box	Yes	Service URL of the file location
Gateway Prefix	Text Box		Gateway Prefix is context path of below formatted URL  http://host:port/gateway-prefix/endpoint
Import	Button		Extracts the service information from URL and displays it in the Service list

### 7.1.3.1 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:** In case there is a change in wsdl file, then same wsdl file need to be imported again in order to update the provided service information in routing hub.

### 7.1.3.2 SWAGGER

Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

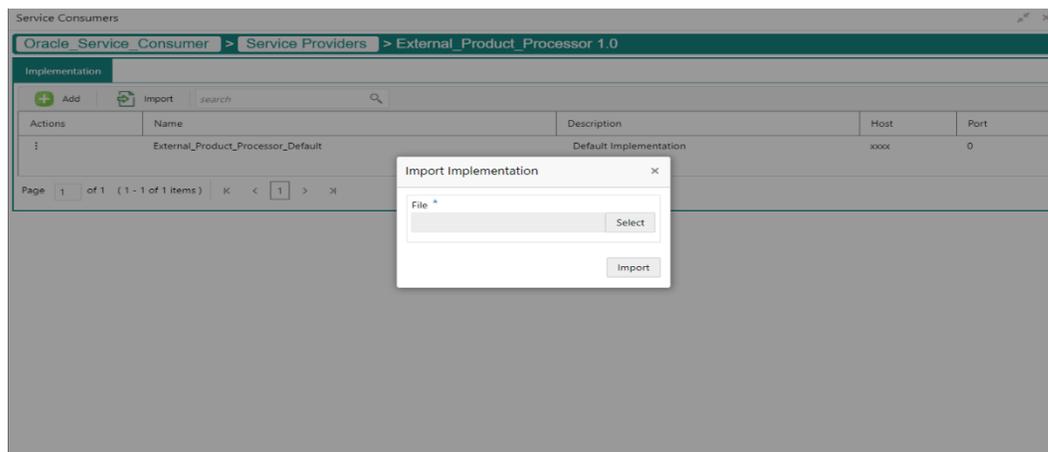
**NOTE:** In case there is a change in swagger file, then same swagger file need to be imported again in order to update the provided service information in routing hub.

## 7.2 Import

User can create an implementation by importing the JSON file.

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

Navigation: **Implementation -> Import**



Component briefing						
Component Name	Component Type	Is Mandatory	Data type	Validation	Condition	Comments
<b>File</b>	File picker	Yes		Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box
<b>Import</b>	Button					Imports Implementation

**NOTE:** Below data needs to be changed after importing implementation configuration file:

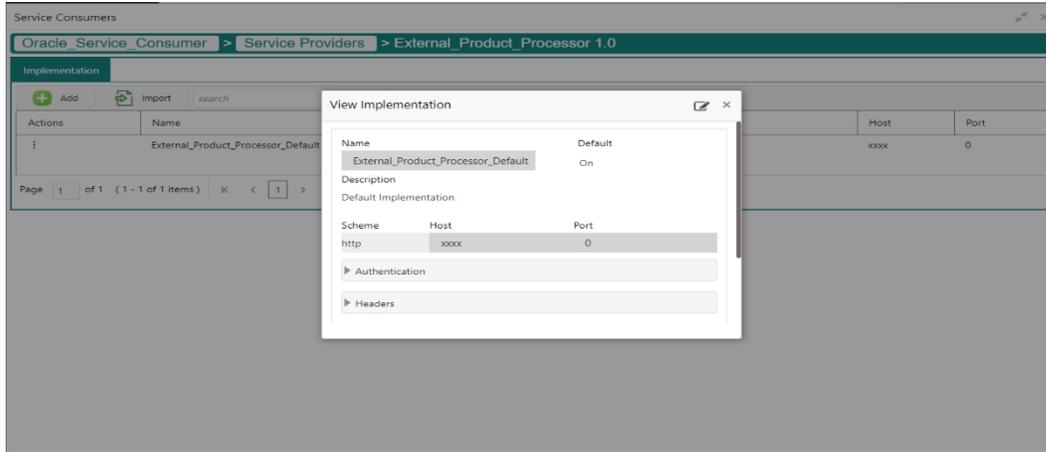
- Implementation Host and Port

- Implementation Authentication Password

### 7.3 View

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

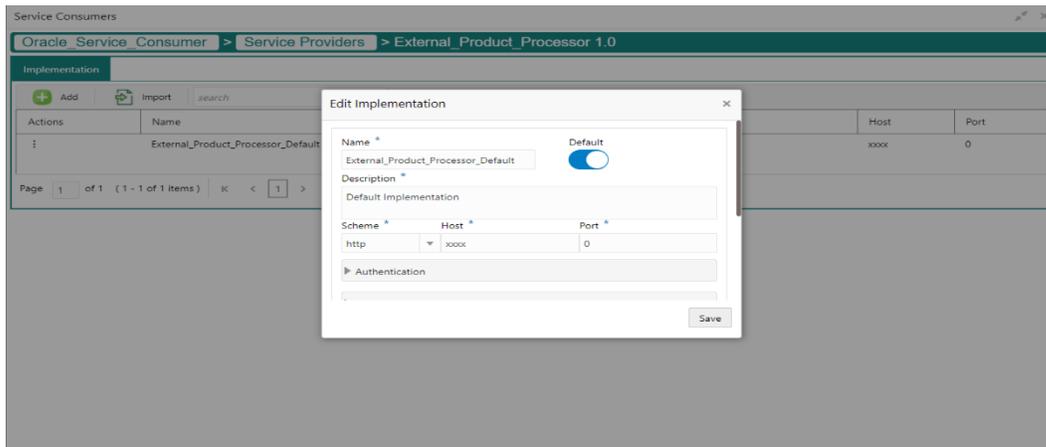
Navigation: **Implementation -> Operation Menu (3 dot icon) -> View**



### 7.4 Edit

User can modify the implementation details.

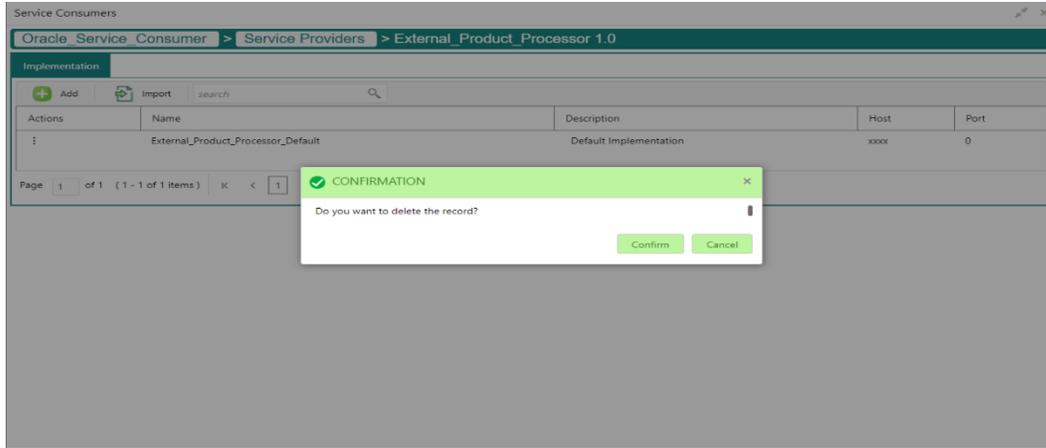
Navigation: **Implementation -> Operation Menu (3 dot icon) -> Edit**



## 7.5 Delete

User can delete the implementation.

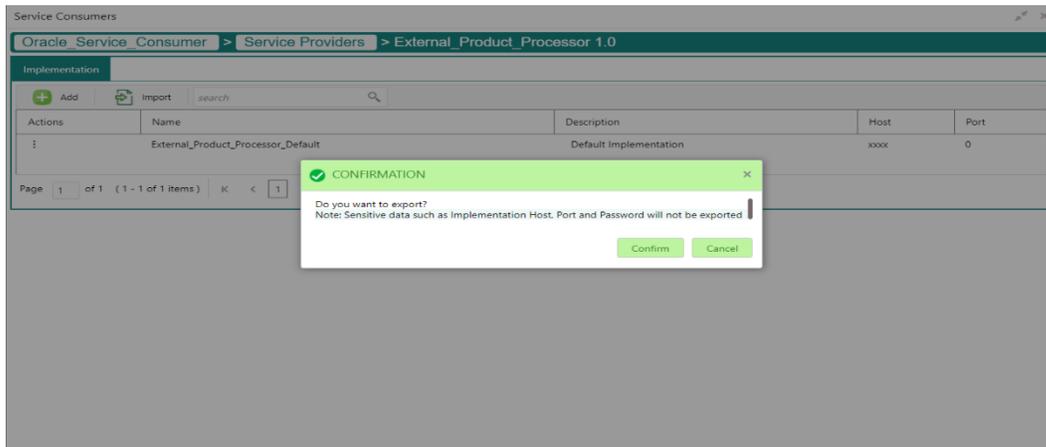
Navigation: **Implementation -> Operation Menu (3 dot icon) -> Delete**



## 7.6 Export

User can export the implementation configuration as JSON file.

Navigation: **Implementation -> Operation Menu (3 dot icon) -> Export**



**NOTE:** Below data will not be exported:

- Implementation Host
- Implementation Port
- Implementation Authentication Password

The above data needs to be configured manually after importing the configuration file.

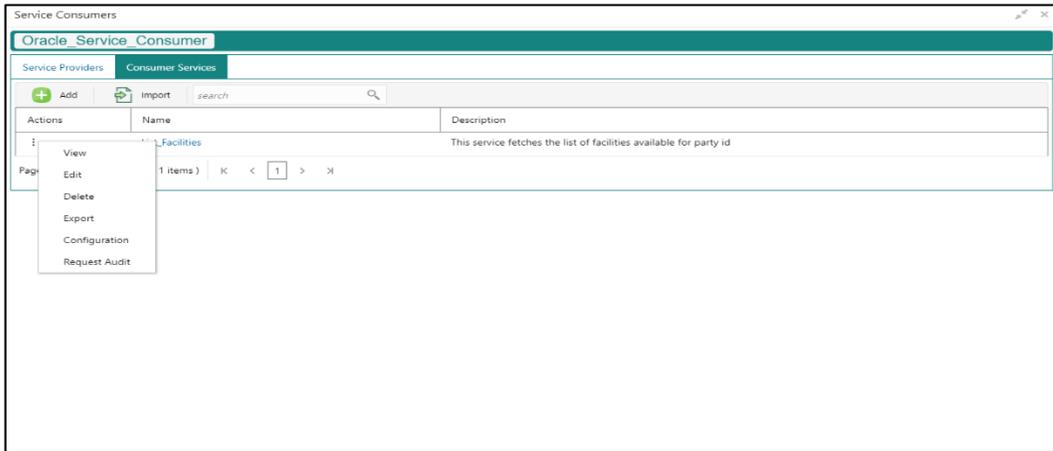
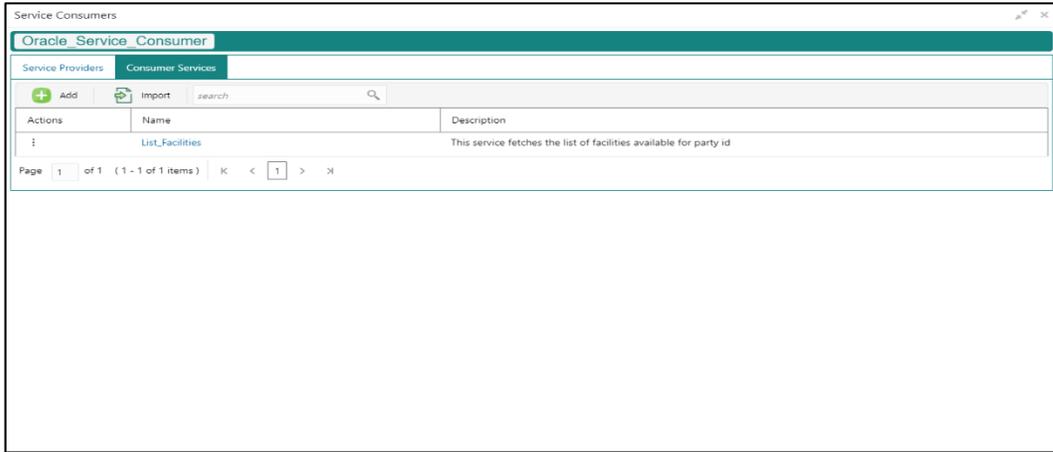
Same has been mentioned in Import section

## 8 Consumer Services

Consumer Services defines the service ID which is going to be send from service consumer. This will also cater transformation and route definition as well.

Consumer Services comprises of source integration details.

Navigation: **Core Maintenance -> Routing Hub -> Service Consumers -> <Specific Service Consumer> -> Consumer Services**



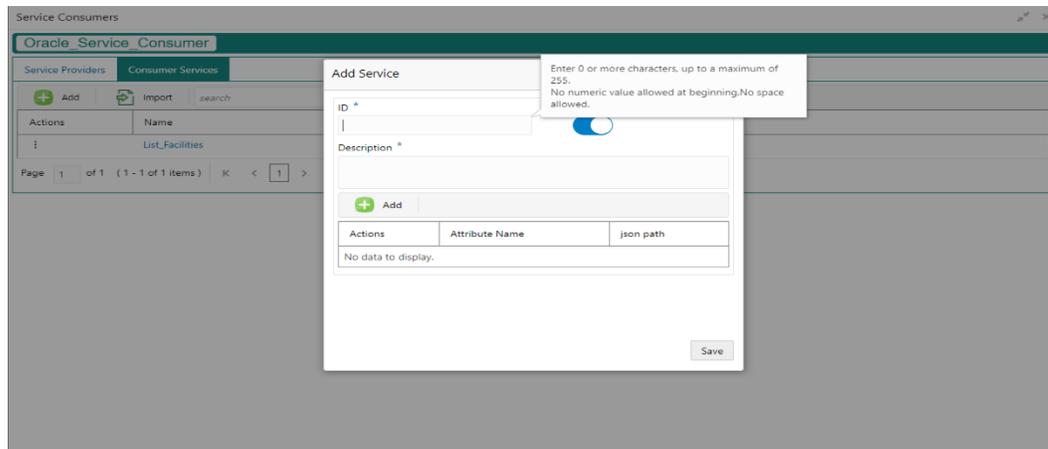
Component briefing			
Component Name	Component Type	Condition	Comments
<Service Consumer>	Button		Navigates back to Service Consumers
Add	Button		Pops up add dialog

<b>Import</b>	Button		Pops up import dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Consumer Service Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Consumer Services -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Export</b>	menu option		Exports in JSON
<b>Configuration</b>	menu option		Pops up configuration dialog
<b>Request Audit</b>	menu option		Pops up request audit log

## 8.1 Add

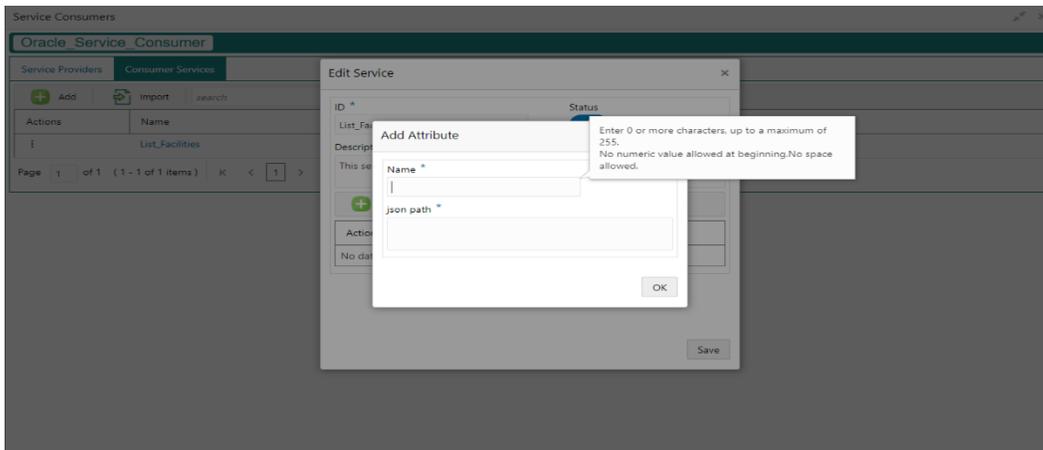
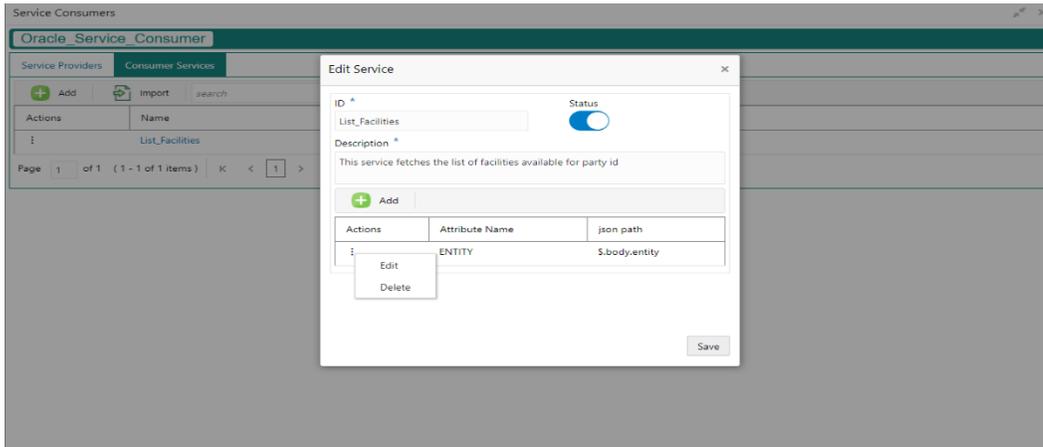
User can create Consumer Service manually.

Navigation: **Consumer Services-> Add**



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Id	Text Box	Yes	Alphanumeric with special characters	Name cannot be blank  Enter 0 or more characters, up to a maximum of 255.  No numeric value at beginning and no space allowed.	Unique Service Id
Status	Switch	Yes			Predefined Values: ACTIVE / INACTIVE  If consumer service is marked as inactive, then all related routes will be stopped.
Description	Text Area	Yes	Alphanumeric with special characters	Description cannot be blank  Enter 0 or more characters, up to a maximum of 1000.  No space allowed at beginning or ending of the value.	
Attributes	Table Content				
Save	Button				Saves the Consumer Service

### 8.1.1 Attributes



Component briefing						
Component Name	Component Type	Is Mandatory	Data type	Validation	Condition	Comments
<b>Add</b>	Button					Pops up add dialog
<b>Navigation: Consumer Services -&gt; Headers -&gt; 3 dot icon (operation menu)</b>						
<b>Edit</b>	menu option					Pops up edit dialog
<b>Delete</b>	menu option					Deletes attribute

Navigation: Consumer Services -> Headers -> Add						
Name	Text Box	Yes	Alphanumeric with special characters	Name cannot be blank Enter 0 or more characters, up to a maximum of 255. No numeric value at beginning and no space allowed.		
JSON Path	Text Area	Yes	Alphanumeric with special characters	Value cannot be blank Enter 0 or more characters, up to a maximum of 255. No space allowed.		Value will be JSON path.
OK	Button					Saves the header details and displays it in the list

**NOTE:**

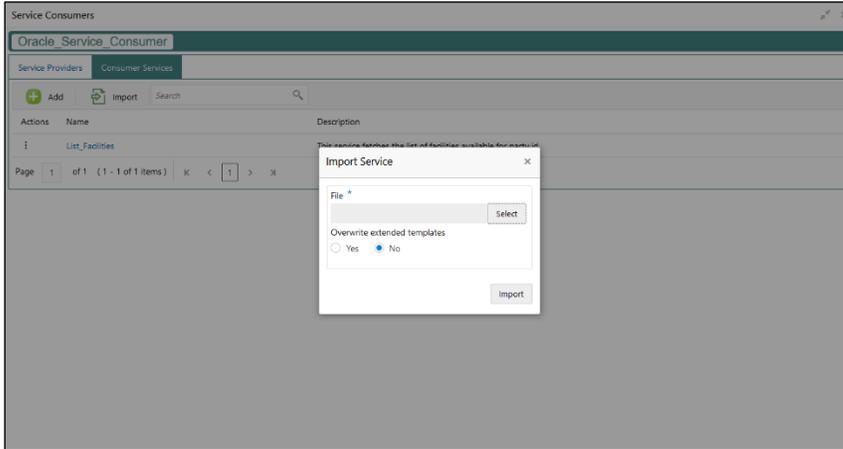
- Using \$.body, user can access request body.  
Syntax: \$.body.fieldName  
Example: \$.body.branchCode
- Using \$.headers, user can access request headers.  
Syntax: \$.headers["fieldName"][0]  
Example: \$.headers["branchCode"][0]

## 8.2 Import

User can create a consumer service by importing the JSON file.

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

Navigation: **Consumer Services -> Import**



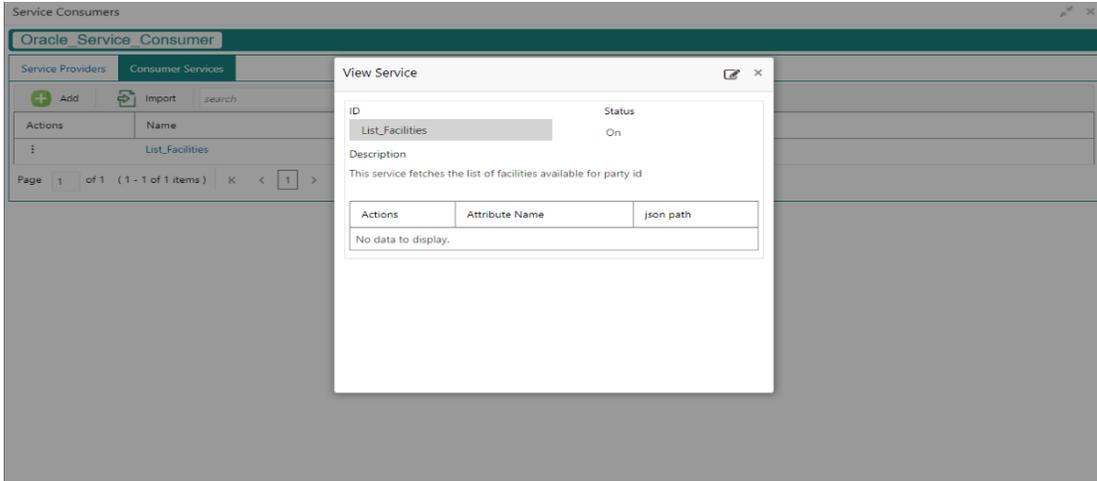
Component briefing						
Component Name	Component Type	Is Mandatory	Data type	Validation	Condition	Comments
File	File picker	Yes		Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box

<p><b>Overwrite extended templates</b></p>	<p>Radio Button</p>	<p>Yes</p>				<p>Predefined Values: <b>Yes / No</b></p> <p><b>Yes:</b> This option is for overwriting the extended templates in the configuration.</p> <p><b>No:</b> This option is for retaining the existing extended templates in configuration.</p>
<p><b>Import</b></p>	<p>Button</p>					<p>Imports Consumer Service</p>

### 8.3 View

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

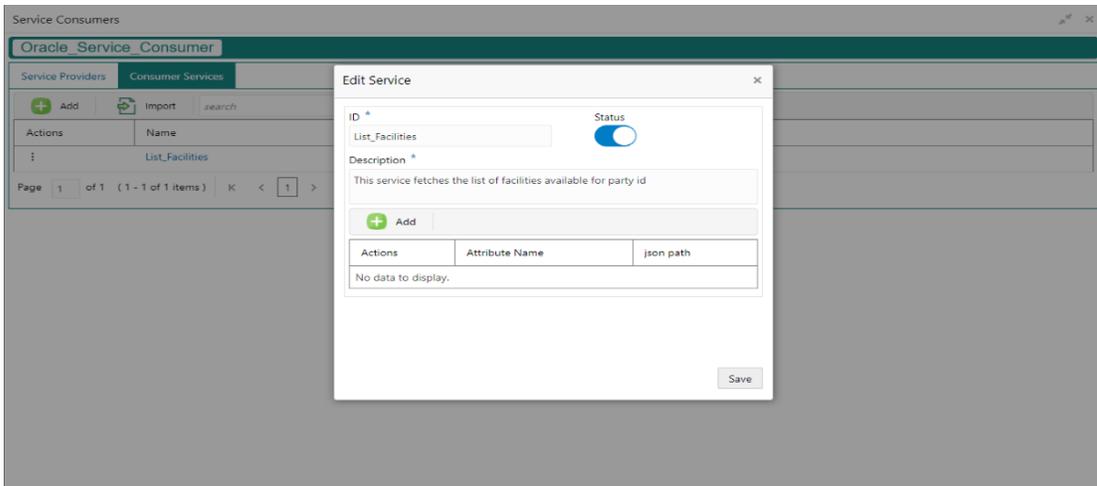
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> View**



### 8.4 Edit

User can modify the consumer service details.

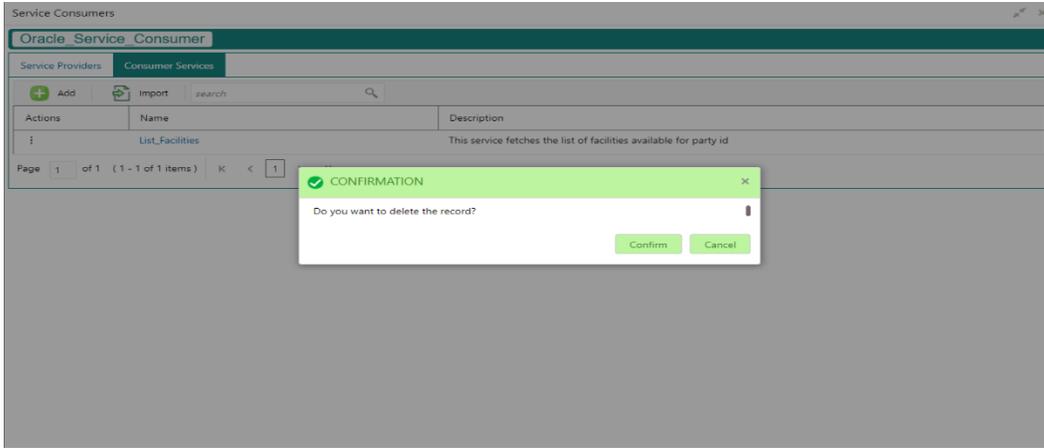
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> Edit**



## 8.5 Delete

User can delete the consumer service.

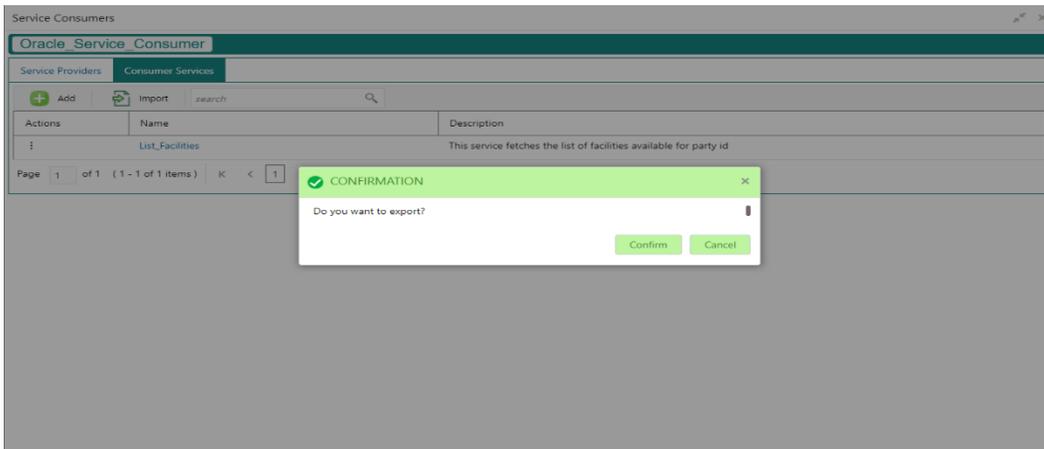
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> Delete**



## 8.6 Export

User can export the consumer service configuration as JSON file.

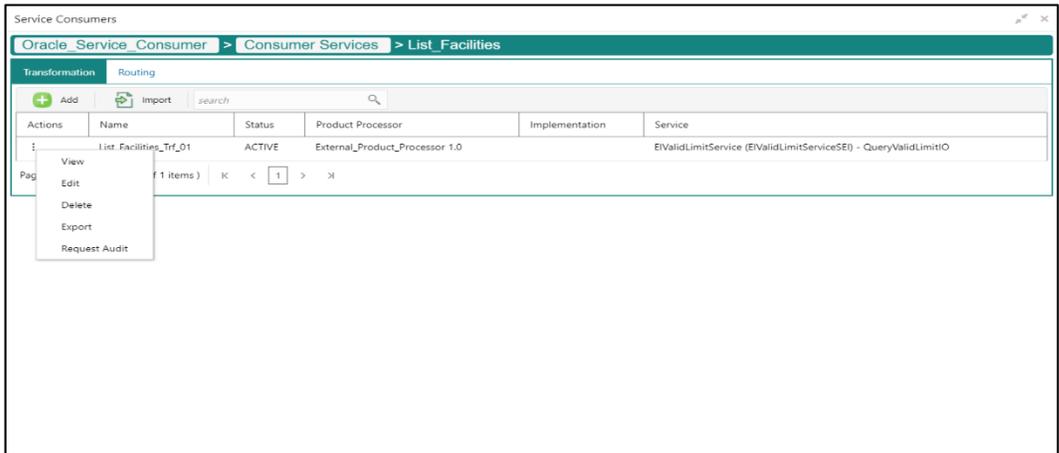
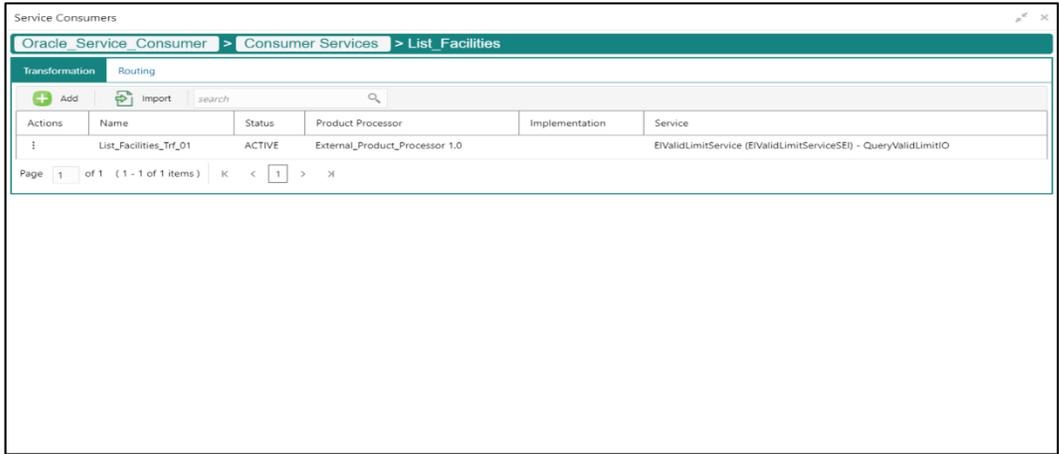
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> Export**



## 9 Transformation

Transformation acts as an assembling and transforming data from source to destination and vice-versa. This will take place under consumer service. This converts data of service consumer into service provider

**Navigation: Core Maintenance -> Routing Hub -> Service Consumers -> <Specific Service Consumer> -> Consumer Services -> <Specific Consumer Service> -> Transformation**



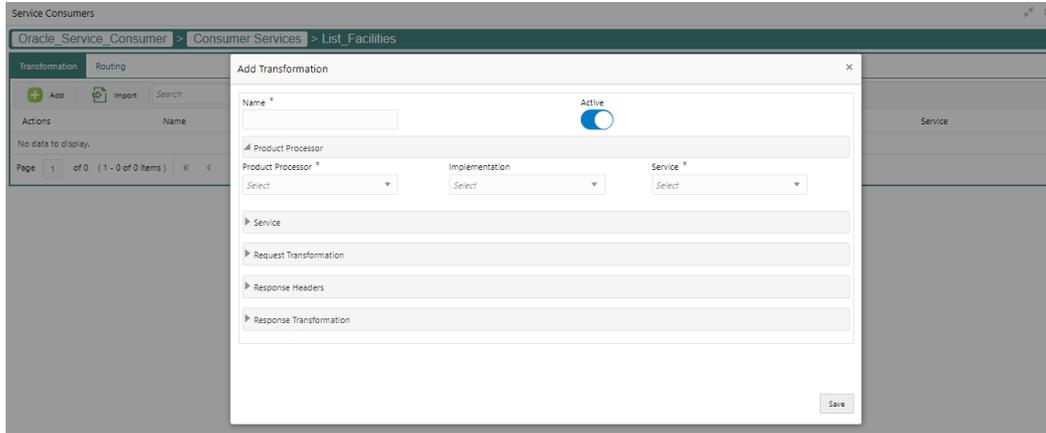
Component briefing			
Component Name	Component Type	Condition	Comments
<Service Consumer>	Button		Navigates back to Service Consumers

<b>&lt;Consumer Service&gt;</b>	Button		Navigates back to Consumer Services
<b>Add</b>	Button		Pops up add dialog
<b>Import</b>	Button		Pops up import dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Transformation Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Transformation -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Export</b>	menu option		Exports in JSON
<b>Request Audit</b>	menu option		Pops up request audit log

## 9.1 Add

User can create Transformation manually.

Navigation: **Transformation-> Add**



Component briefing					
Component Name	Component Type	Is Mandatory	Data type	Validation	Comments
Name	Text Box	Yes	Alphanumeric with special characters	<ul style="list-style-type: none"> <li>Name cannot be blank</li> <li>Enter 0 or more characters, up to a maximum of 255.</li> <li>No numeric value at beginning and no space allowed.</li> </ul>	Unique Transformation Name
Active	Switch				Predefined Values: ACTIVE/INACTIVE If transformation is marked as inactive, then user will not be able to select transformation in routing.
Product Processor	Collapsible Header				

Product Processor	Combo Box One	Yes			Displays provider list relevant to consumer
Implementation	Combo Box One				Displays implementation list relevant to selected provider
Service	Combo Box One	Yes			Displays service list relevant to selected provider and implementation
Service	Collapsible Header & Content				Displays service details of selected service
Headers	Collapsible Header & Content				Displays header list relevant to selected provider, implementation and service User can change the header values. Value can either be hardcoded or can be Velocity mapping.
Path Params	Collapsible Header & Content				Displays path param list relevant to selected service User can change the param values. Value can either be hardcoded or can be Velocity mapping.
Query Params	Collapsible Header & Content				Displays query param list relevant to selected service User can change the param values. Value can either be hardcoded or can be Velocity mapping.
Request Transformation	Collapsible Header				

Type	Combo Box One				Predefined Values: VELOCITY / JSLT
Template	Text Area				User has to define the kernel template in which provider accepts. Please refer Transformation Type for syntax
Extended Template	Text Area				User has to define the custom template in order to extend the kernel template. Please refer to Extensibility and Transformation Type for syntax
Response Headers	Collapsible Header & Content				Specify the additional headers required to be part of Routing Hub response headers. Value can either be hardcoded or can be Velocity mapping.
Response Transformation	Collapsible Header				
Type	Combo Box One				Predefined Values: VELOCITY / JSLT / XSLT
Template	Text Area				User has to define the kernel template in which consumer accepts. Please refer Transformation Type for syntax
Extended Template	Text Area				User has to define the custom template in order to extend the kernel template. Refer to Extensibility and Transformation Type for syntax

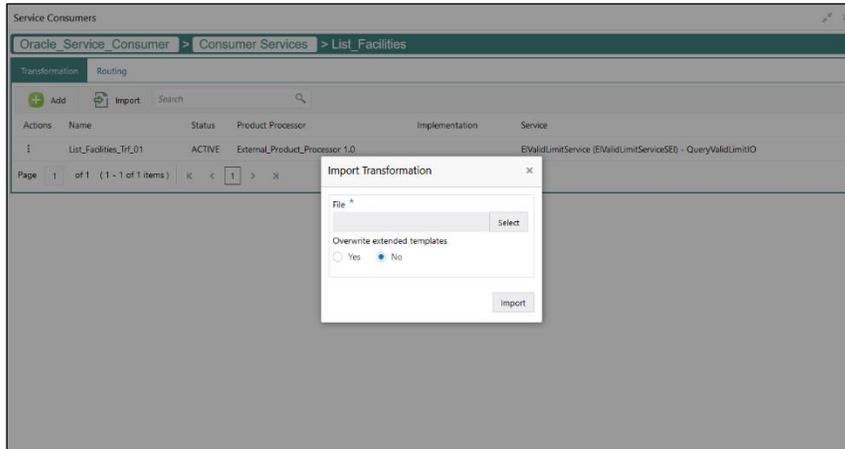
Save	Button				Saves transformation details
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## 9.2 Import

User can create a transformation by importing the JSON file.

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

Navigation: **Transformation -> Import**

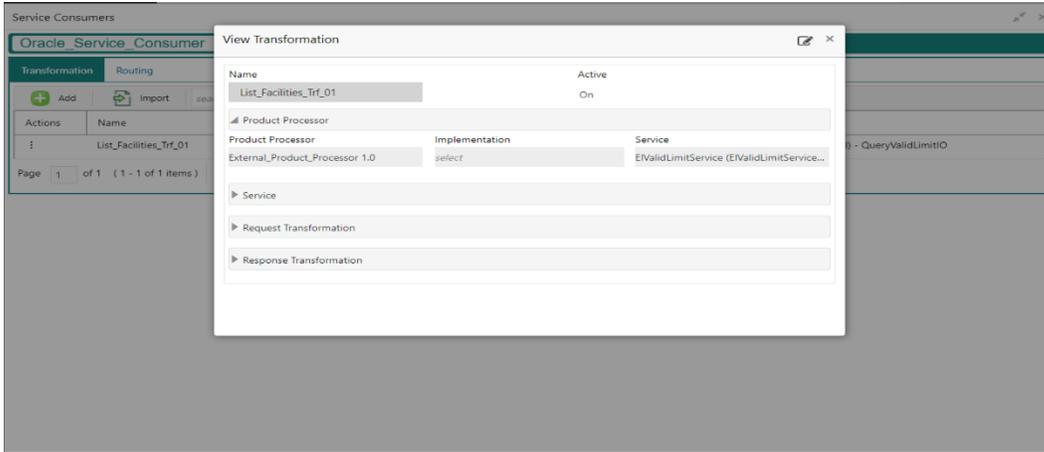


Component briefing					
Component Name	Component Type	Is Mandatory	Validation	Condition	Comments
<b>File</b>	File picker	Yes	<ul style="list-style-type: none"> <li>Allows only to select one file</li> </ul>	Accepts JSON and ZIP file	Pops up file selection dialog box
<b>Overwrite extended templates</b>	Radio Button	Yes			Predefined Values: <b>Yes / No</b>  <b>Yes:</b> This option is for overwriting the extended templates in the configuration.  <b>No:</b> This option is for retaining the existing extended templates in configuration.
<b>Import</b>	Button				Imports Transformation

### 9.3 View

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

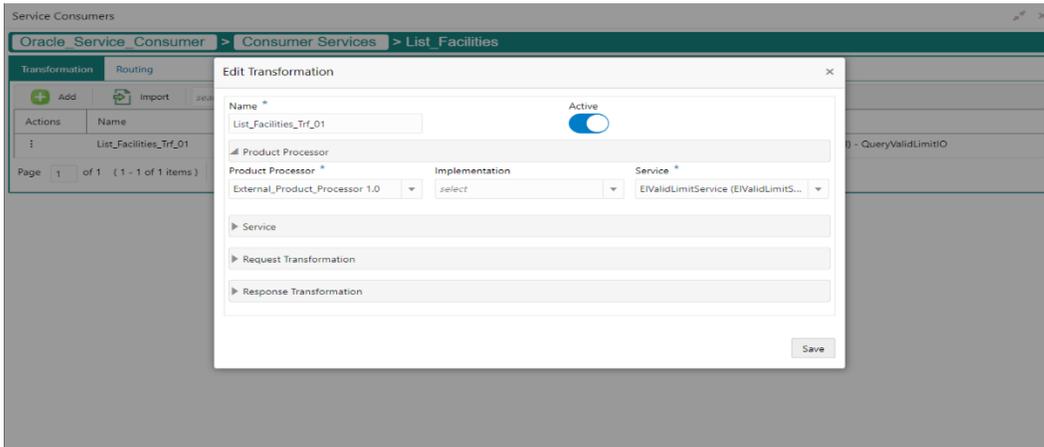
Navigation: **Transformation -> Operation Menu (3 dot icon) -> View**



### 9.4 Edit

User can modify the transformation details.

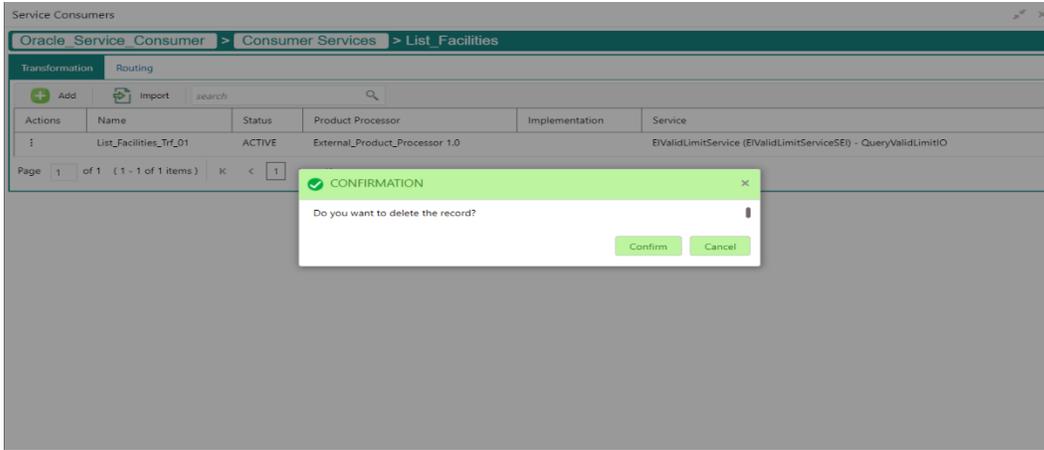
Navigation: **Transformation -> Operation Menu (3 dot icon) -> Edit**



## 9.5 Delete

User can delete the transformation.

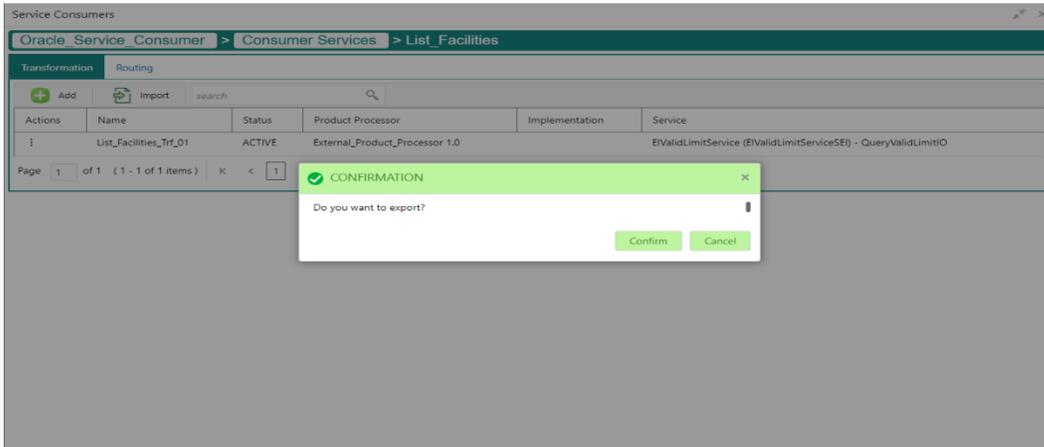
Navigation: **Transformation -> Operation Menu (3 dot icon) -> Delete**



## 9.6 Export

User can export the transformation configuration as JSON file.

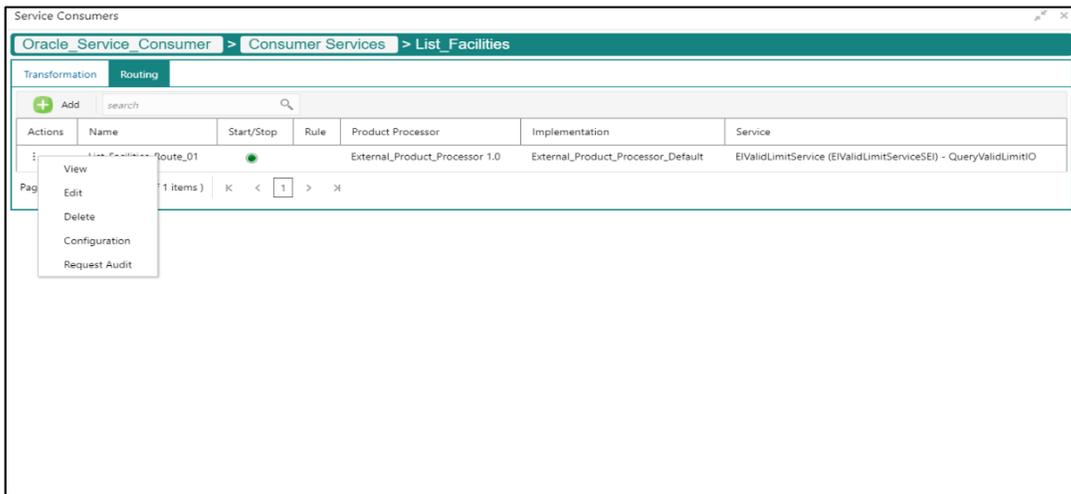
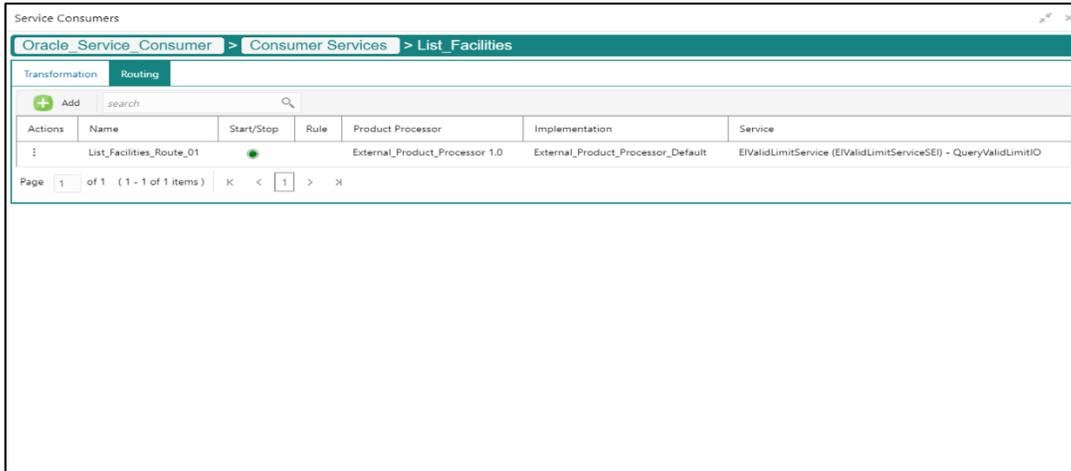
Navigation: **Transformation -> Operation Menu (3 dot icon) -> Export**



## 10 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.

Navigation: **Core Maintenance -> Routing Hub -> Service Consumers -> <Specific Service Consumer> -> Consumer Services -> <Specific Consumer Service> -> Routing**



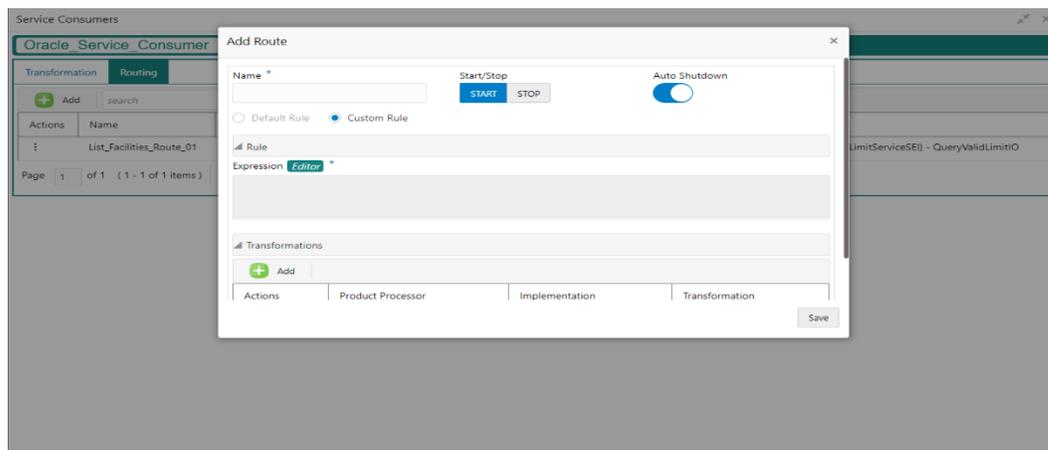
Component briefing			
Component Name	Component Type	Condition	Comments
<Service Consumer>	Button		Navigates back to Service Consumers

<b>&lt;Consumer Service&gt;</b>	Button		Navigates back to Consumer Services
<b>Add</b>	Button		Pops up add dialog
<b>Search</b>	Combo Box One		Provides search functionality with case insensitive (Routing Name)  <b>NOTE: Use wildcard character ( * ) for pattern matching</b>
<b>Navigation: Routing -&gt; 3 dot icon (operation menu)</b>			
<b>View</b>	menu option	Non-editable	Pops up view dialog
<b>Edit</b>	menu option		Pops up edit dialog
<b>Delete</b>	menu option		
<b>Configuration</b>	menu option		Pops up configuration dialog
<b>Request Audit</b>	menu option		Pops up request audit log

## 10.1 Add

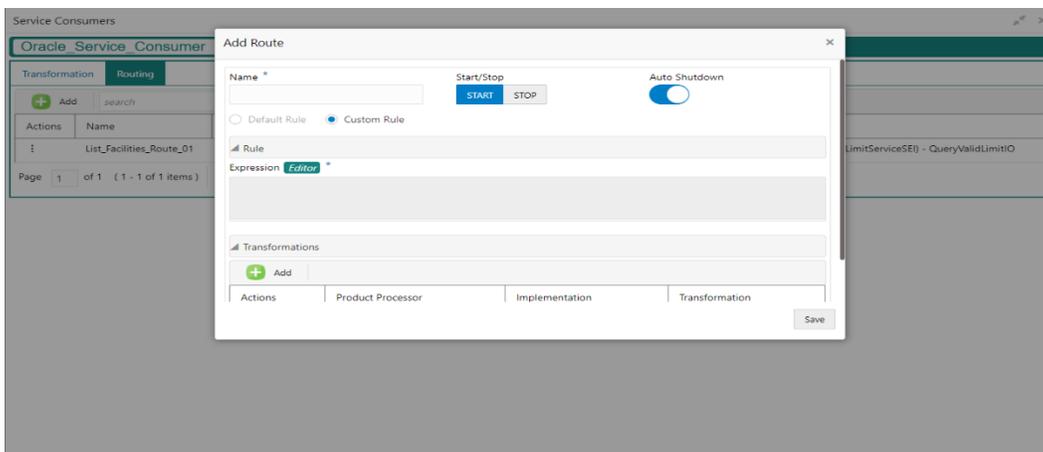
User can create Routing manually.

Navigation: **Routing -> Add**



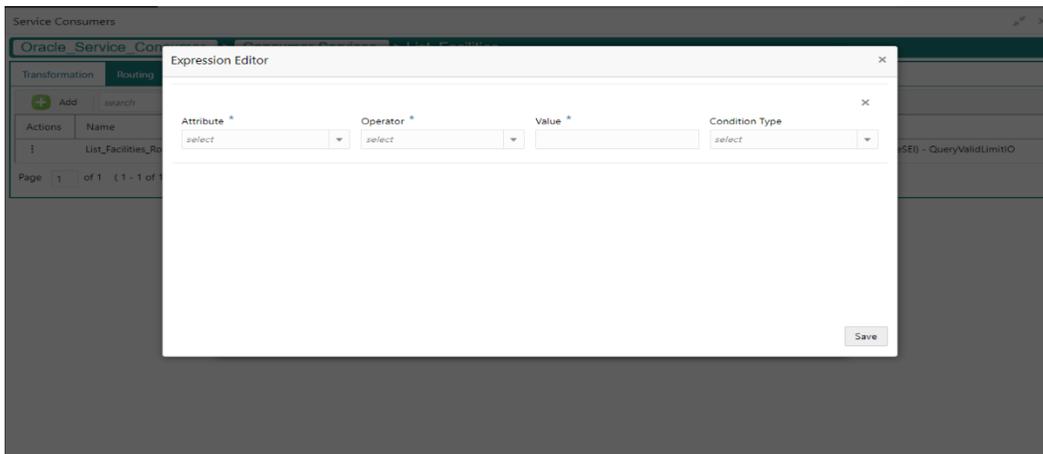
Component briefing			
Component Name	Component Type	Is Mandatory	Comments
Name	Text Box	Yes	Unique routing name
Start / Stop	Switch	Yes	Predefined Values: START / STOP If routing is marked as STOP, then consumer request will fail at routing hub level only.
Auto Shutdown	Switch	Yes	Predefined Values: 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	Radio Button	Yes	Predefined Values: Default Rule / Custom Rule
Transformations	Collapsible Header & Content		
Save	Button		Saves the routing details

### 10.1.1 Add Routing with Custom Rule



Component briefing				
Component Name	Component Type	Is Mandatory	Data type	Comments
Expression	Text Area	Yes		User can view expression that is formed through expression editor.
Editor	Button			Pops up expression editor dialog

### 10.1.2 Add Custom Rule using Expression Editor



Component briefing			
Component Name	Component Type	Is Mandatory	Comments
Attribute	Combo Box One	Yes	Displays list of attributes relevant to consumer service
Operator	Combo Box One	Yes	Logical operators to form an expression
Value	Text Box	Yes	
Condition type	Combo Box One		Conditional Operators

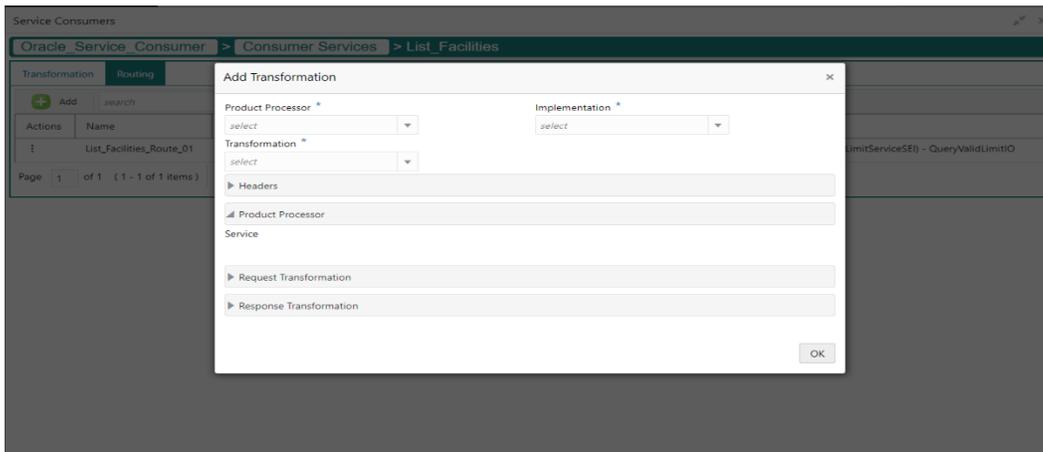
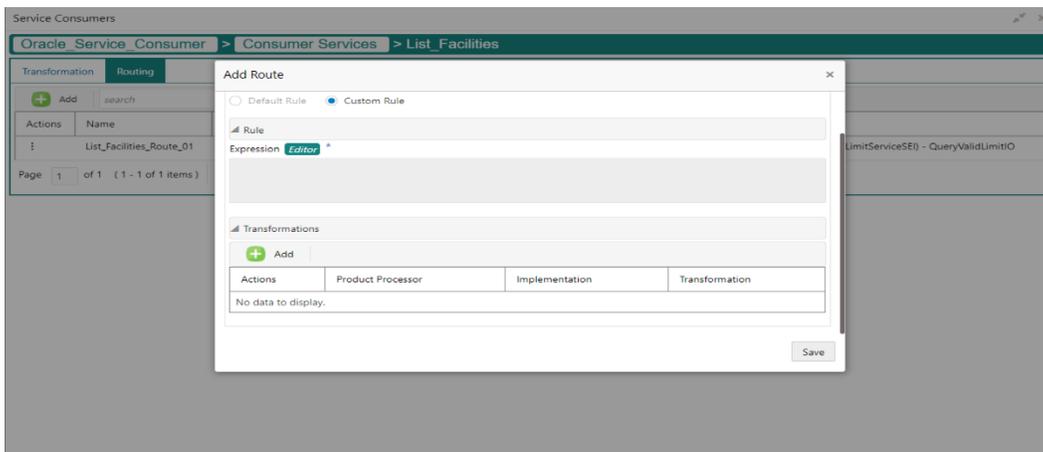
Save	Button		Saves the expression
------	--------	--	----------------------

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

### 10.1.3 Transformations

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.



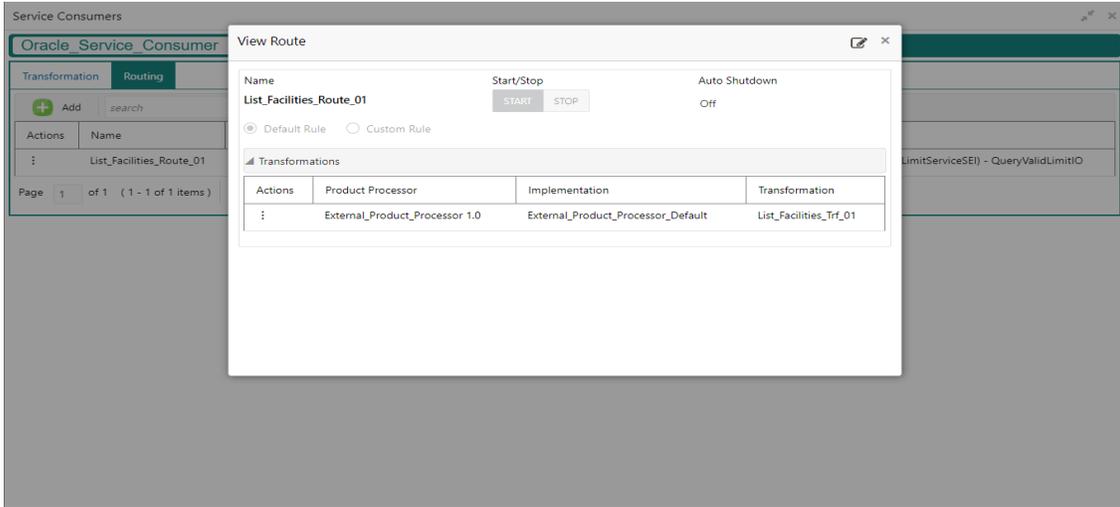
Component briefing			
Component Name	Component Type	Is Mandatory	Comments
Product Processor	Combo Box One	Yes	Displays provider list relevant to consumer

Implementation	Combo Box One	Yes	Displays implementation list relevant to selected provider
Transformation	Combo Box One	Yes	Displays transformation list relevant to select provider & implementation
Headers	Collapsible Header & Content		Displays header list relevant to selected implementation and transformation  User can change the header values.  Value can either be hardcoded or can be Velocity mapping.
Product Processor	Collapsible Header & Content		Displays service details relevant to selected transformation
Request Transformation	Collapsible Header & Content		Displays request transformation template
Response Transformation	Collapsible Header & Content		Displays response transformation template
OK	Button		Saves the transformation details in list

## 10.2 View

User can view routing details and can also switch to edit form by clicking on edit icon.

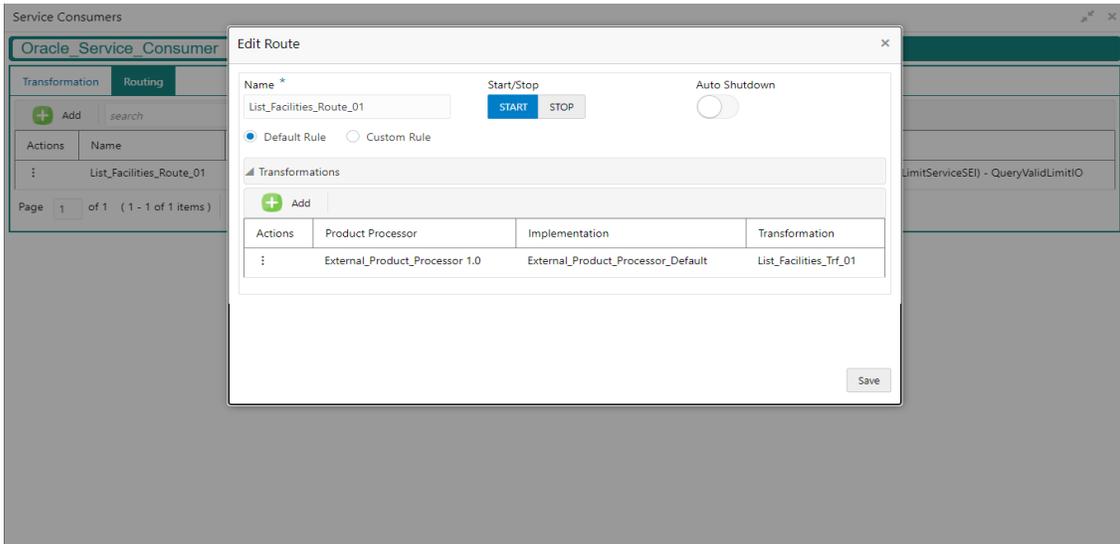
Navigation: **Routing -> Operation Menu (3 dot icon) -> View**



## 10.3 Edit

User can modify the routing details.

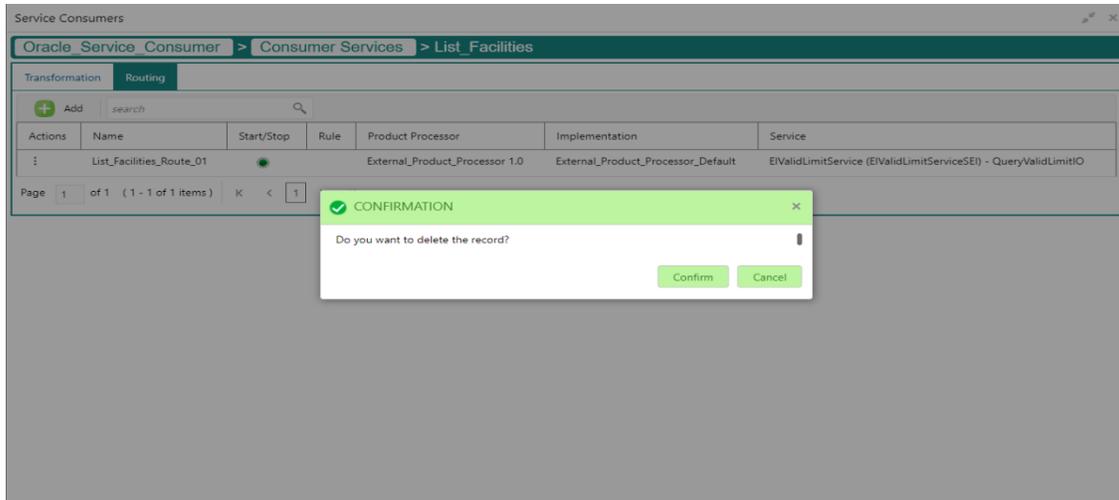
Navigation: **Routing -> Operation Menu (3 dot icon) -> Edit**



## 10.4 Delete

User can delete the routing.

Navigation: **Routing -> Operation Menu (3 dot icon) -> Delete**



## 11 Chaining

End-user will be able to define the sequence of transformations for each routing in which request should be processed.

Chaining can be achieved by using snapshot list.

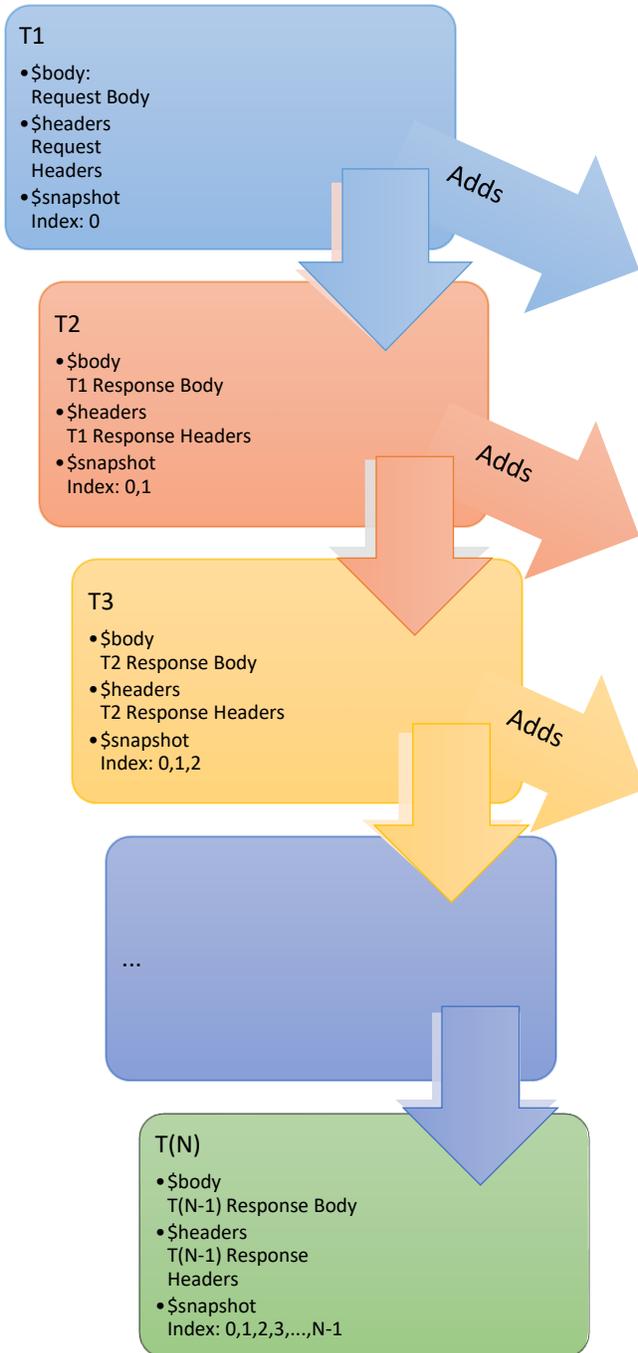
Snapshot list stores the response body and response headers whenever the transformation is processed.

So, end-user can access response body or headers of all processed transformations at any given step.

**Syntax:**

`$snapshot.get(index).body` or `$snapshot.get(index).headers`

**NOTE:** `$body` and `$headers` will refer the response body and headers of previous step.



Snapshot List		
Index	body	headers
0	Request Body	Request Headers
1	T1 Response Body	T1 Response Headers
2	T2 Response Body	T2 Response Headers
3	T3 Response Body	T3 Response Headers
...		

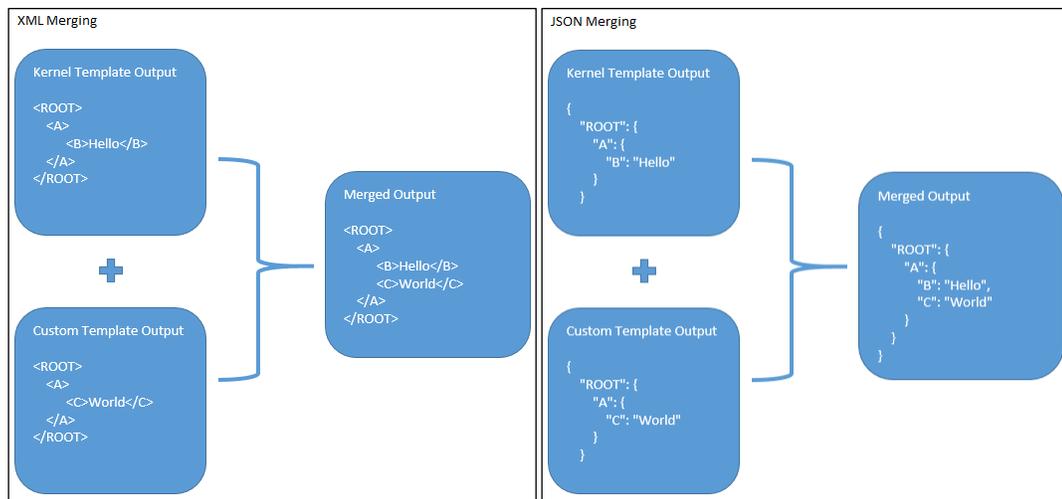
## 12 Extensibility

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 a request, Routing Hub will send the merged output as a request payload to the provider.

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

### Example:



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

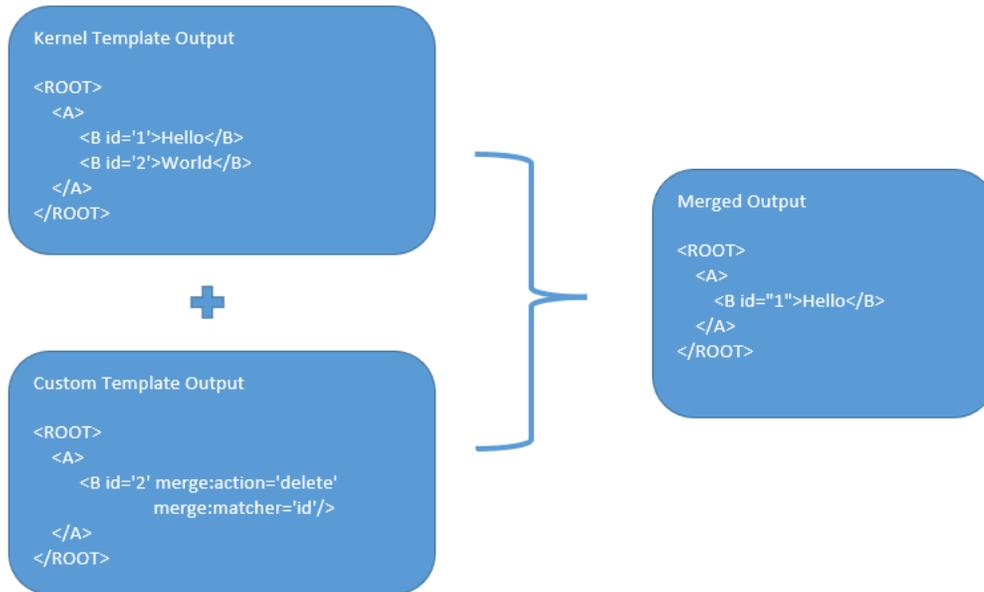
## 12.1 XML merging attributes

### 12.1.1 Identity Matcher

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

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

Example:

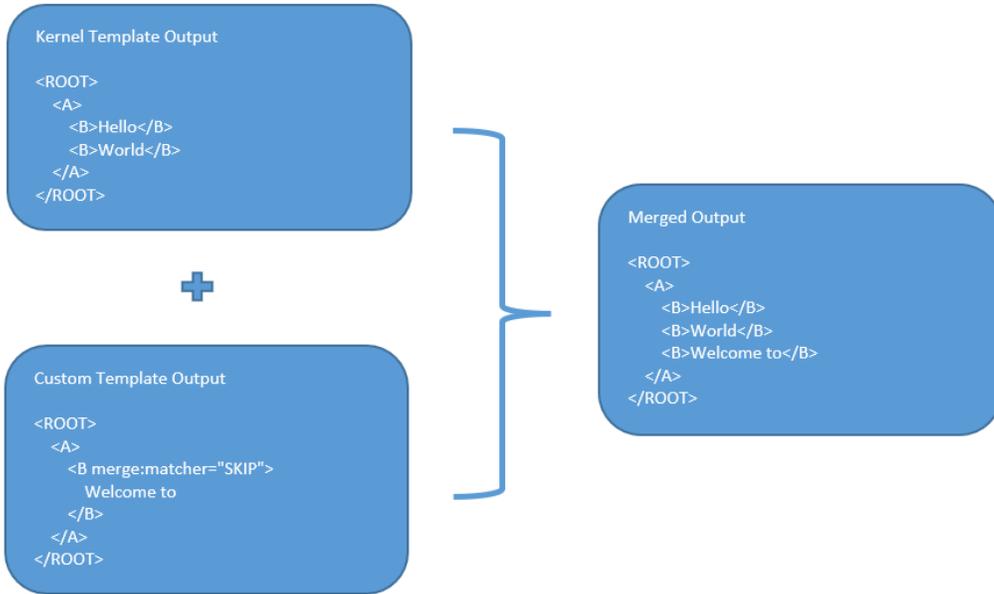


### 12.1.2 Skip Matcher

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

Syntax: `merge:matcher='SKIP'`

Example:

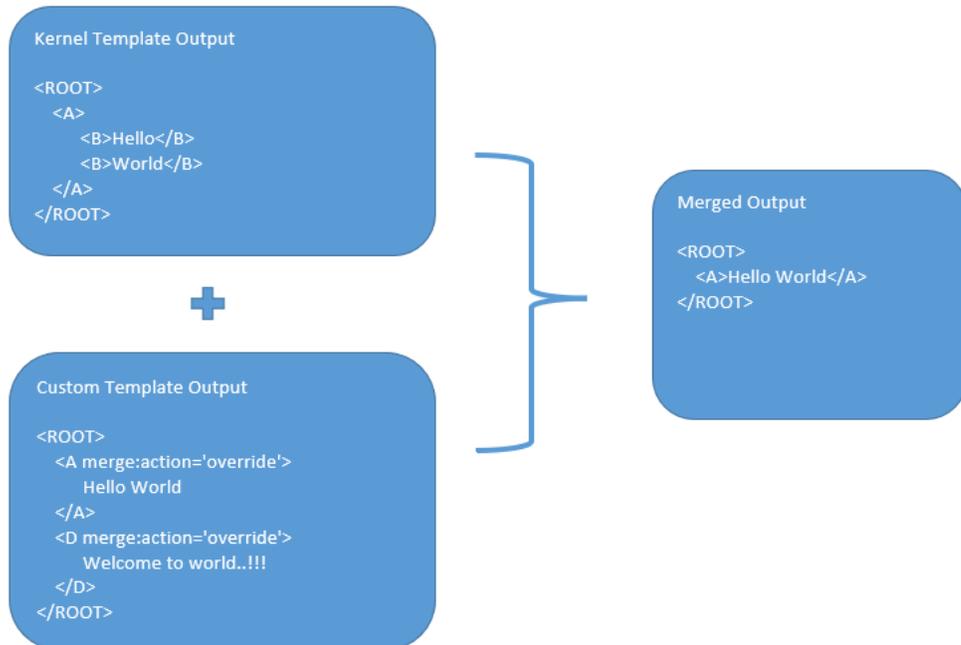


### 12.1.3 Override Action

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

Syntax: `merge:action='override'`

Example:

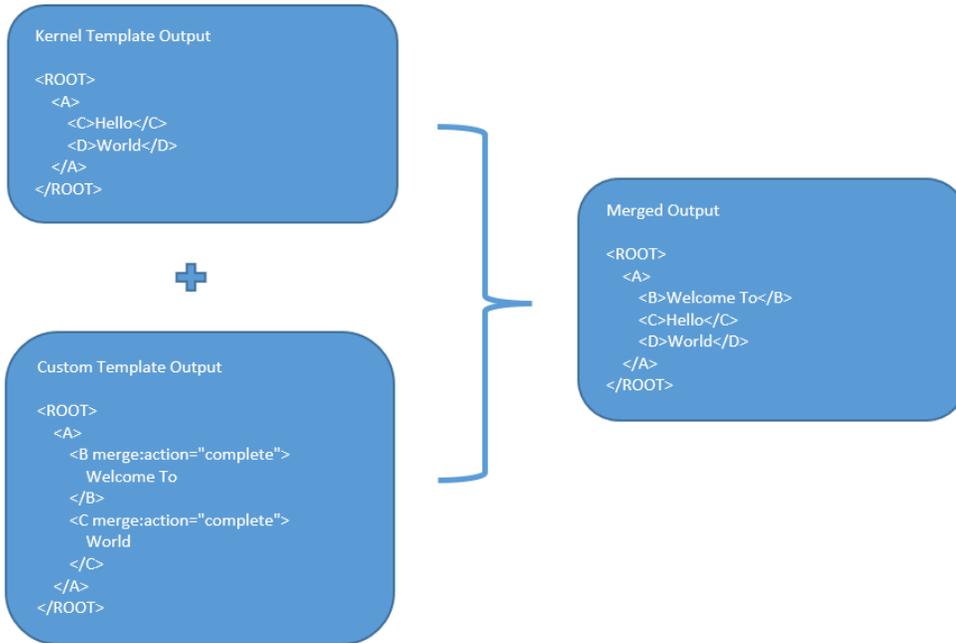


### 12.1.4 Complete Action

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

Syntax: `merge:action='complete'`

Example:

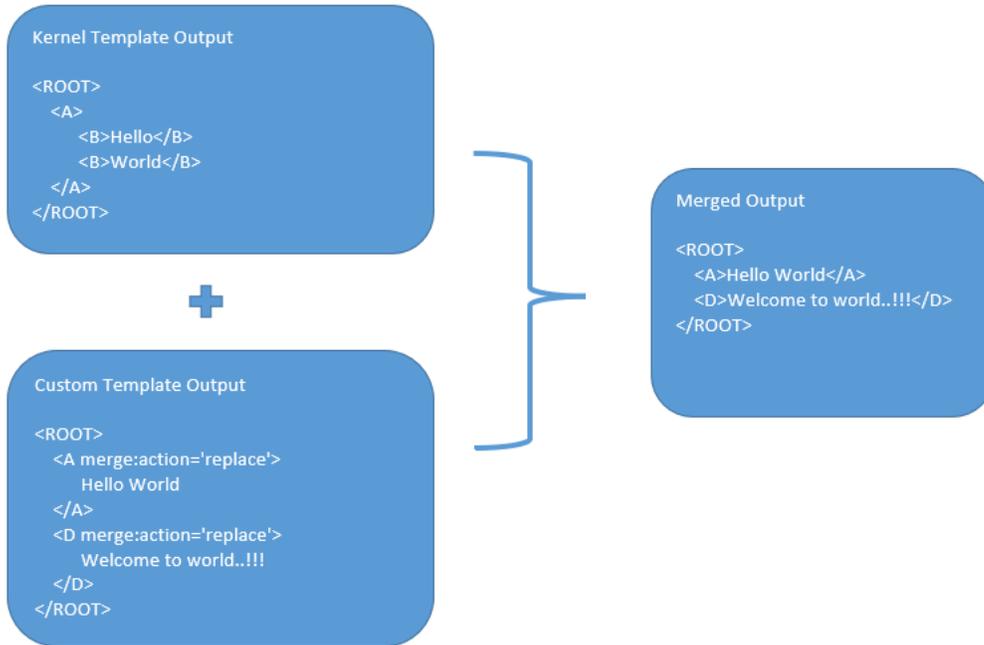


### 12.1.5 Replace Action

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'`

Example:

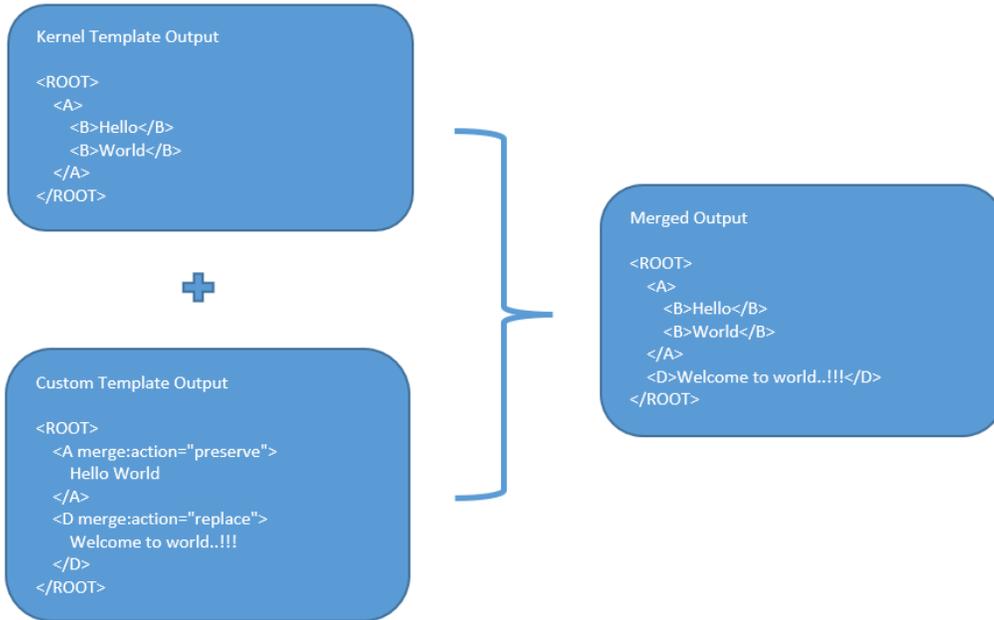


### 12.1.6 Preserve Action

No replace action is performed on the original element.

Syntax: `merge:action='preserve'`

Example:

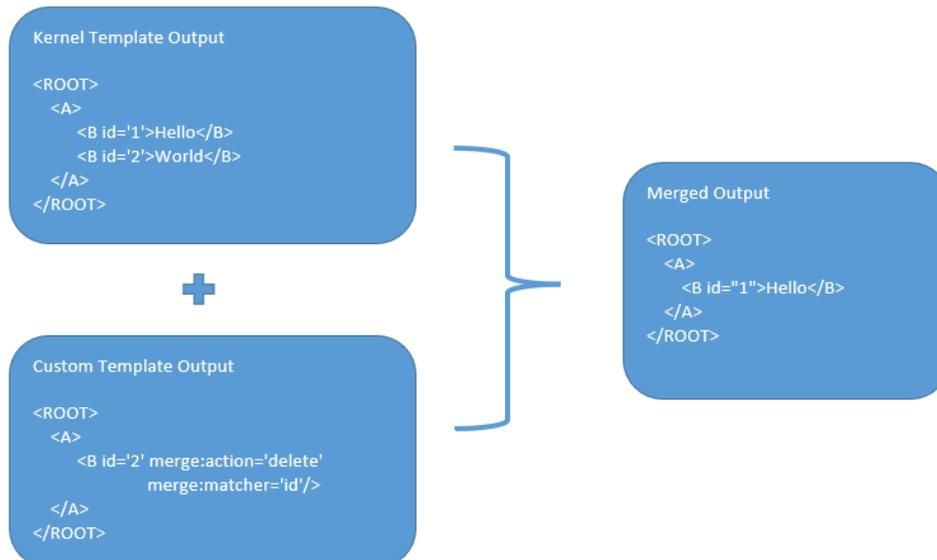


### 12.1.7 Delete Action

Deletes the original element.

Syntax: `merge:action='delete'`

Example:



## 13 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.

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

3. Open "**Configure Tasks**" screen (**Task Management -> Configure Tasks**)
4. Select "**Schedule**" option
5. Select "**Task Name**" as routingHubAuditRetentionJob and "Task Trigger Name" will be generated automatically
6. 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, 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.

## 14 Configuration

End-user can configure the properties w.r.t. monitoring and alerting.

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

Navigation: **Core Maintenance -> Routing Hub -> Configuration**

The screenshot shows a 'Configuration' window with three main sections:

- Monitoring:** Includes 'Window Type' with radio buttons for 'Count' (selected) and 'Time', and a 'Window Size' spinner set to 100.
- Alert:** Includes 'Minimum number of calls' spinner set to 100 and 'Failure rate threshold' spinner set to 50%.
- Email Alert:** Includes an 'Email Addresses' text input field.

Buttons for 'Clear', 'Reset', and 'Save' are located at the bottom right of the window.

Component briefing				
Component Name	Component Type	Is Mandatory	Validation	Comments
Monitoring	Collapsible Header & Content		Monitoring properties are mandatory if alert properties have been configured.	This section has properties that are required by Breaker for storing and aggregating the outcome of calls using WindowType and WindowSize.
Window Type	Radio Button	No		Predefined Values: COUNT / TIME The count-based sliding window aggregates the outcome of the last N calls (Window Size). The time-based sliding window aggregates the outcome of the calls

				of the last N seconds (Window Size).
Window Size	Number Box	No		<p>This property is used to record the outcome of calls when the CircuitBreaker is closed.</p> <p>In case of count-based sliding window, window size will be N calls.</p> <p>In case of time-based sliding window, window size will be N seconds.</p>
Alert	Collapsible Header & Content		Alert properties are mandatory if monitoring properties have been configured.	This section has properties that are required for transitioning CircuitBreaker.
Minimum number of calls	Number Box	No		<p>If minimumNumberOfCalls is 10, then at least 10 calls must be recorded, before the failure rate can be calculated.</p> <p>If only 9 calls have been recorded the CircuitBreaker will not transition to open even if all 9 calls have failed.</p>
Failure rate threshold	Number Box	No		<p>Configures the failure rate threshold in percentage.</p> <p>When the failure rate is equal or greater than the threshold the CircuitBreaker transitions to open and starts short-circuiting calls.</p>
Email Alert	Collapsible Header & Content			This section has properties that are required for mail notification.

Email Addresses	Text Box	No		<p>Once the failure rate crosses the failureRateThreshold, then end-user will be notified about the event via mail.</p> <p>This property will be semi-colon separated email addresses</p>
-----------------	----------	----	--	---

**Example**

Let say

WindowType is Count

WindowSize is 20

Minimum number of calls is 10

Failure rate threshold is 50%

Configured properties will behave as below:

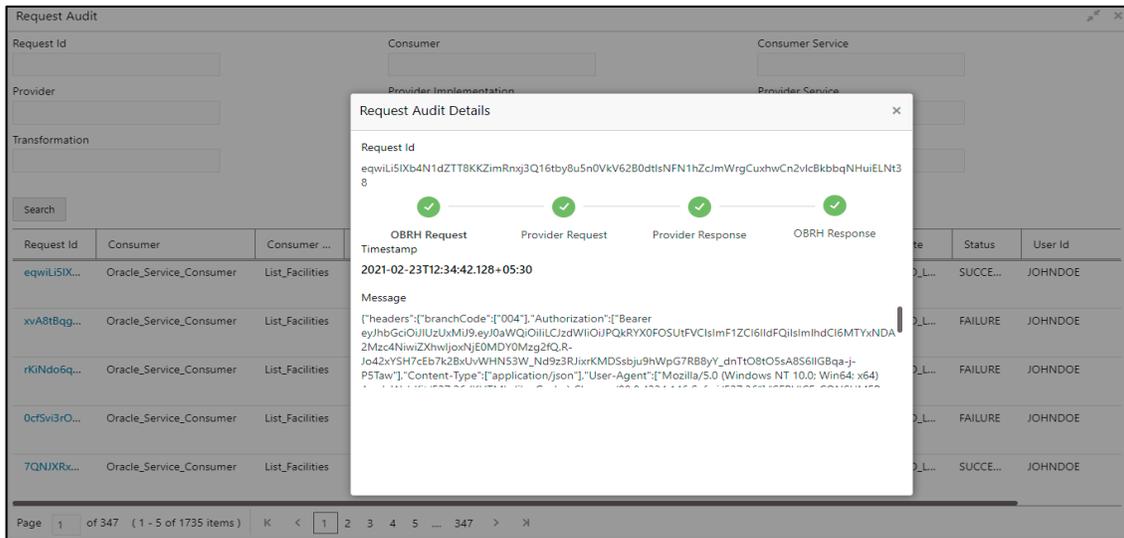
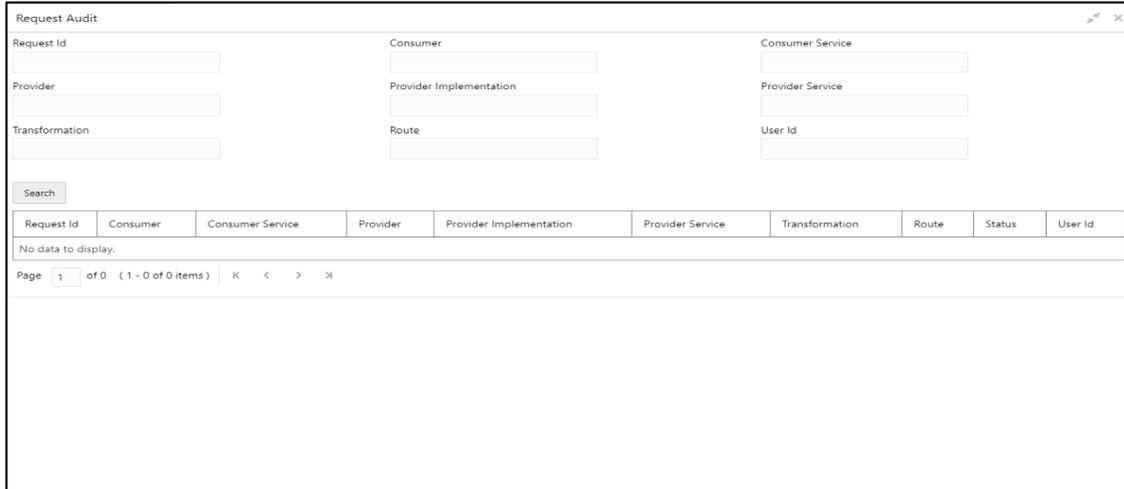
After 10 (min number of calls) calls, routing would get shutdown if 50% (failure rate) of atmost last 20 (window size) calls have failed.

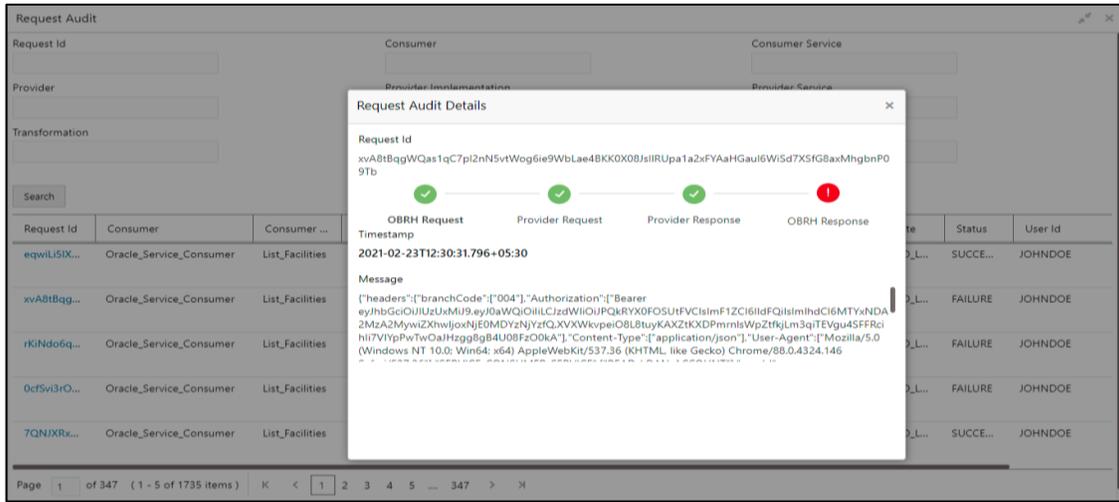
And if email address property is configured, then end-user will be notified as well.

## 15 Audit Log

Check Audit log on the below navigation path for Oracle Banking Routing Hub

Navigation: **Core Maintenance -> Routing Hub -> Request Audit**





Component briefing			
Component Name	Component Type	Condition	Comments
Consumer	Text Box		Consume Name
Consumer Service	Text Box		Service Consumer Name
Provider	Text Box		Provider Name
Provider Implementation	Text Box		Provider Implementation Name
Provider Service	Text Box		Provider Service Name
Transformation	Text Box		Transformation Name
Route	Text Box		Route Name
Request Id	Text Box		Correlation Id
User Id	Text Box		User Id

Search	Button	Search is done based on below things: <ul style="list-style-type: none"> <li>• Case insensitive</li> <li>• Pattern matching</li> <li>• Single / Multi Column search</li> </ul>	Performs search operation with specified values
--------	--------	--	---

**NOTE:** End-user has to use wildcard character ( \* ) to match an arbitrary number of characters as search pattern for all fields except Request Id.

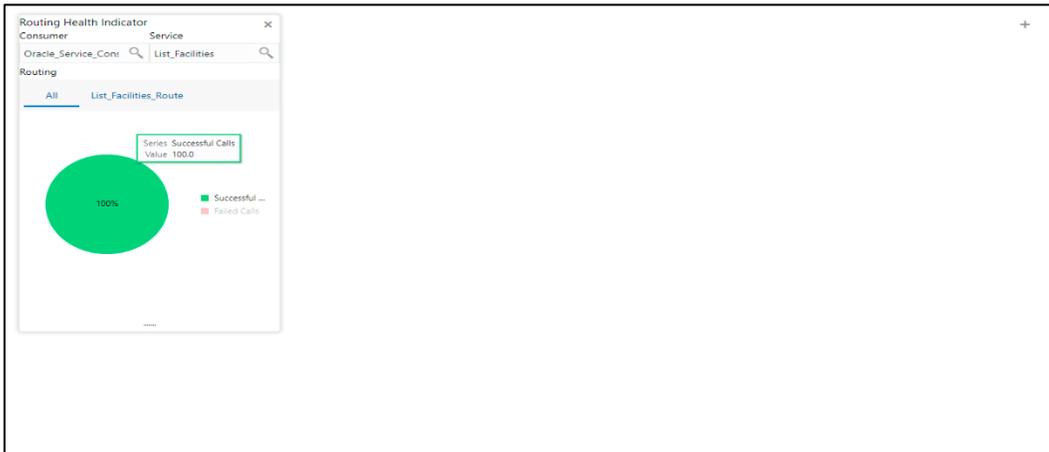
Clicking on “RequestId” value will display step by step execution of request with data such as Routing Hub Request & Timestamp, Provider Request & Timestamp, Provider Response & Timestamp, Routing Hub Response & Timestamp.

## 16 Dashboard

### 16.1 Routing Health Indicator Widget

User can view the metric information Successful calls vs Failed calls ratio of each routing.

**NOTE:** Failed calls here refer to the calls that are failed due to timeout issue.



## 17 Transformation Type

### 17.1 Velocity

Velocity is a Java-based template engine.

Velocity can be used to generate XML files, SQL, PostScript and most other text-based formats.

**NOTE:** In routing hub, Velocity will be used to generate JSON and XML.

- 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]`
- Below are some available extension methods:
  - Date Conversion  
**Syntax:** `$dateUtil.convert(inputDate, fromPattern, toPattern)`  
**Parameters:**
    - `inputDate` - String
    - `fromPattern` - String
    - `toPattern` - String**Returns:** String  
Please refer <https://docs.oracle.com/javase/8/docs/api/java/text/SimpleDateFormat.html> for different patterns
  - Default Value  
**Syntax:** `$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()
  - Please refer**  
<https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/XmlTool.html>
- Date Tool
  - Syntax:** \$date.methodName()
  - Please refer**  
<https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/DateTool.html>
- Json Tool
  - Syntax:** \$json.methodName()
  - Please refer**  
<https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/JsonTool.html>
- Math Tool
  - Syntax:** \$math.methodName()
  - Please refer**  
<https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/MathTool.html>
- Number Tool
  - Syntax:** \$number.methodName()
  - Please refer**  
<https://velocity.apache.org/tools/3.1/apidocs/org/apache/velocity/tools/generic/NumberTool.html>

## ➤ Escape Tool

**Syntax:** \$esc.methodName()**Please refer**<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:** List

## ➤ 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.

## 17.2 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 will be used to transform arbitrary XML to JSON.

## 17.3 JSLT

JSLT is a complete query and transformation language for JSON.

## 18 Oracle Banking Routing Hub Integration Specification

### 18.1 Token Generation

PlatoJWTAuth endpoint signature -

- Path : /platojwtauth
- Headers:
  - appld : SECSR001
  - Content-Type : application/json
- Request Body:
 

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

  - Username and password will be base64 encoding of plaintext.
- Response Body:
 

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

Example - Below are the screenshots

#### Headers

KEY	VALUE	DESCRIPTION	***	Bulk Edit	Presets
<input checked="" type="checkbox"/> appld	SECSR001				
<input checked="" type="checkbox"/> Content-Type	application/json				



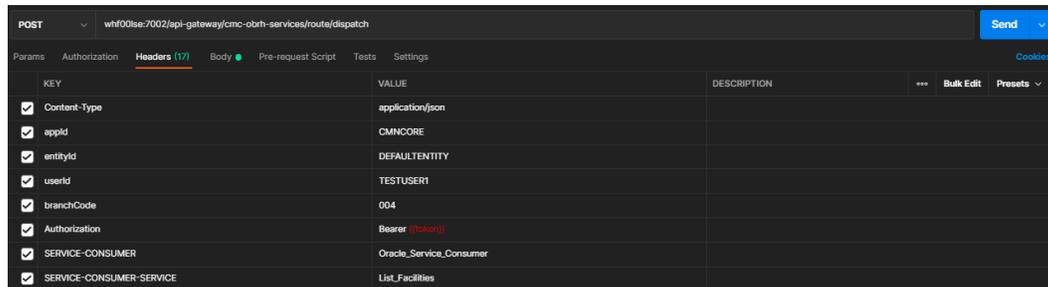
- Any valid JSON payload which shall act as input to the transformation template in request transformer.
- Response Body:
 

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

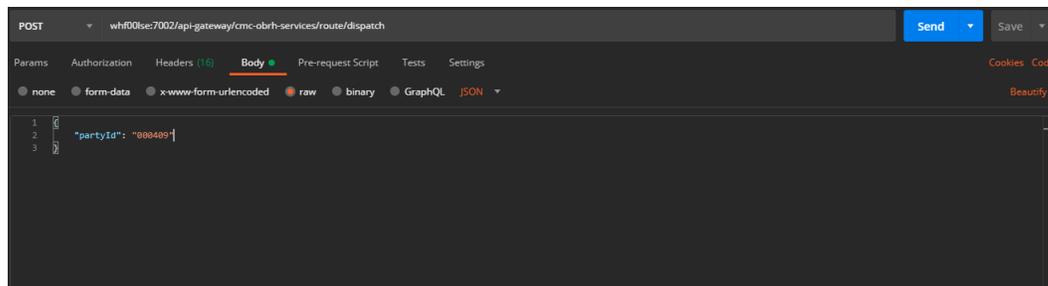
  - If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it's a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.
  - 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 - Below are the screenshots of route dispatch for ServiceConsumer **Oracle\_Service\_Consumer** and ServiceConsumerService **List\_Facilities**

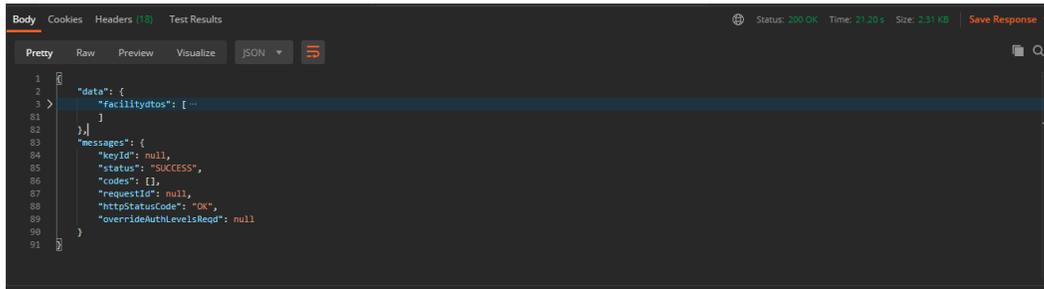
### Headers



### Request Payload



## Response Payload on Successful Dispatch

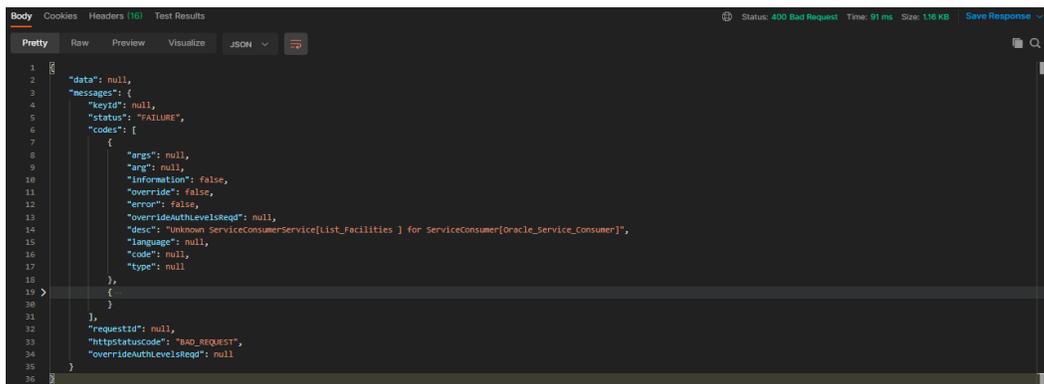


```

1  {
2    "data": {
3      "FacilityId": [
4        ...
5      ]
6    }
7  },
8  "messages": {
9    "keyId": null,
10   "status": "SUCCESS",
11   "codes": [],
12   "requestId": null,
13   "httpStatusCode": "OK",
14   "overrideAuthLevelsReqd": null
15 }

```

## Response Payload 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         "overrideAuthLevelsReqd": 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   "overrideAuthLevelsReqd": null
24 }

```

## 18.3 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 -

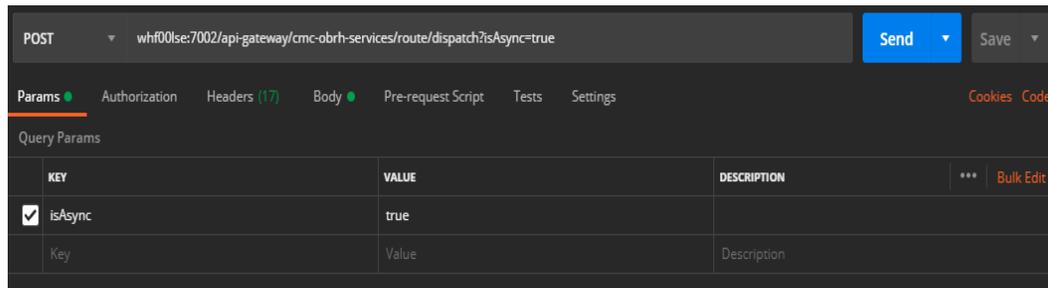
- Path: /route/dispatch
- Query Params:
  - isAsync : true
- Headers:
  - appId : CMNCORE
  - entityId : DEFAULTENTITY
  - userId : <user id>
  - branchCode : <branch code>
  - Authorization : Bearer <Token>
  - SERVICE-CONSUMER : <name of service consumer>

- SERVICE-CONSUMER-SERVICE : <name of service consumer service>
- Request Body:
  - Any valid JSON payload which shall act as input to the transformation template in request transformer.
- Response Body:
 

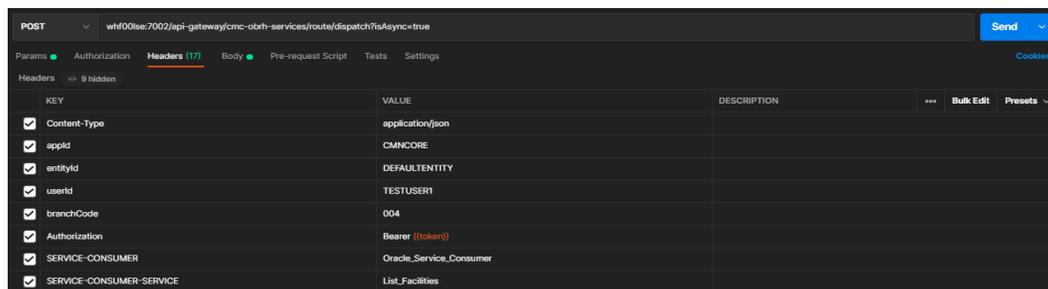
```
{
  "data": { "correlationId" : "" },
  "messages": {}
}
```

Example - Below are the screenshots of route dispatch for ServiceConsumer **Oracle\_Service\_Consumer** and ServiceConsumerService **List\_Facilities**

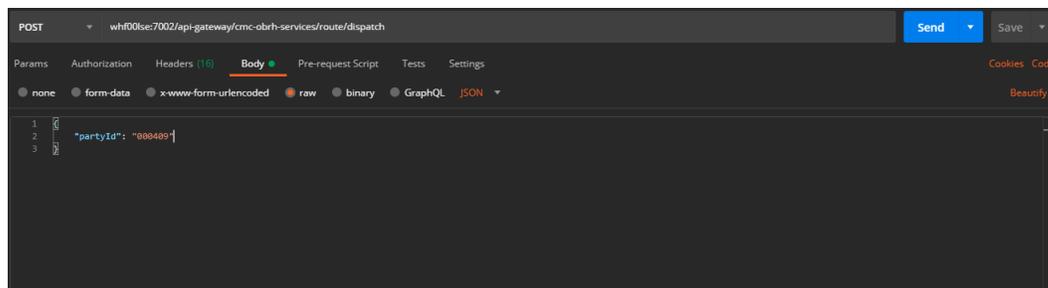
### Query Params



### Headers



### Request Payload



## Response Payload

```

1  {
2    "data": {
3      "correlationId": "UZUVPK3LvkkCUaduX2xzU1iH9RCFMFDPLTPY1ua999A1qqHTJXXPAD44tvQ9ktkv8rVpr7UmKj7S1Pr2gov2R85"
4    },
5    "messages": {
6      "keyId": null,
7      "status": "SUCCESS",
8      "codes": [
9        {
10         "args": null,
11         "arg": null,
12         "information": true,
13         "override": false,
14         "error": false,
15         "overrideAuthLevelsReqd": null,
16         "desc": "Request is being processed",
17         "type": "I",
18         "code": "CMC-088H-023",
19         "language": "ENG"
20       }
21     ],
22     "requestId": null,
23     "httpStatusCode": "OK",
24     "overrideAuthLevelsReqd": null
25   }
26 }

```

## 18.4 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": {}
}

```

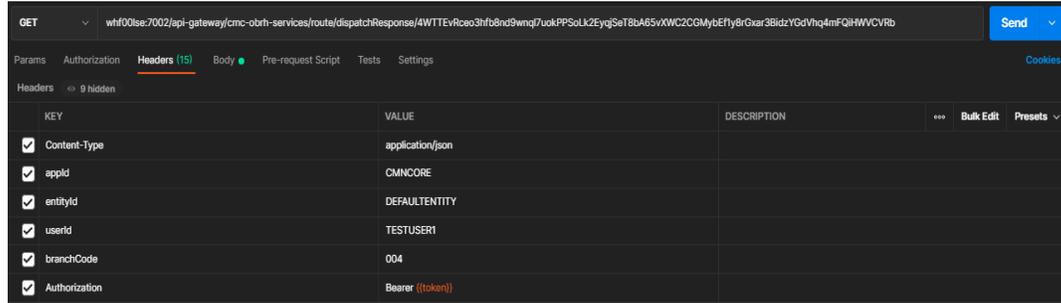
  - If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it's a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.

- 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 - Below are the screenshots of route dispatch for

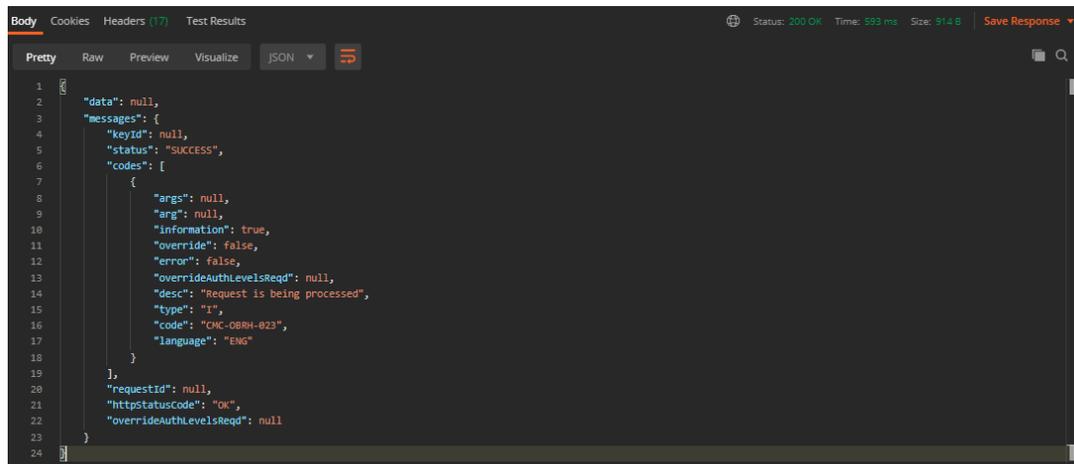
ServiceConsumer **Oracle\_Service\_Consumer** and ServiceConsumerService **List\_Facilities**

### Headers



KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> Content-Type	application/json	
<input checked="" type="checkbox"/> appld	CMNCORE	
<input checked="" type="checkbox"/> entityid	DEFAULTITY	
<input checked="" type="checkbox"/> userid	TESTUSER1	
<input checked="" type="checkbox"/> branchCode	004	
<input checked="" type="checkbox"/> Authorization	Bearer (token)	

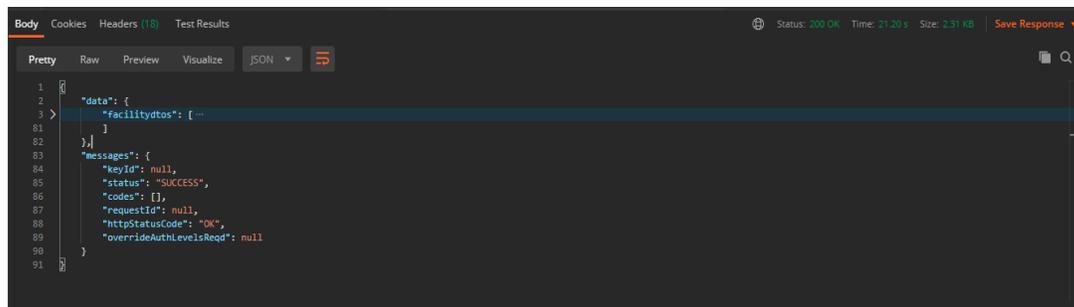
### Response Payload when request is still processing



```

1  {
2    "data": null,
3    "messages": {
4      "keyId": null,
5      "status": "SUCCESS",
6      "codes": [
7        {
8          "args": null,
9          "arg": null,
10         "information": true,
11         "override": false,
12         "error": false,
13         "overrideAuthLevelReqd": null,
14         "desc": "Request is being processed",
15         "type": "I",
16         "code": "CMC-OBRM-023",
17         "language": "ENG"
18       }
19     ],
20     "requestId": null,
21     "httpStatusCode": "OK",
22     "overrideAuthLevelReqd": null
23   }
24 }
    
```

### Response Payload when request is processed (on Successful Dispatch)



```

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

## Response Payload when request is processed (on Failed Dispatch)

```

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
{"data": null,
 "messages": {
  "keyid": null,
  "status": "FAILURE",
  "codes": [
    {
      "args": null,
      "arg": null,
      "information": false,
      "override": false,
      "error": false,
      "overrideAuthLevelReqd": null,
      "desc": "Unknown ServiceConsumerService[list_facilities ] for ServiceConsumer[Oracle_Service_Consumer]",
      "language": null,
      "code": null,
      "type": null
    }
  ]
},
 "requestid": null,
 "httpStatusCode": "BAD_REQUEST",
 "overrideAuthLevelReqd": null
}

```

## 18.5 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:
  - appld : CMNCORE
  - entityld : 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

Note: Default value is REQUEST if not specified
- Request Body:
  - Any valid JSON payload which shall act as input to the transformation template in request transformer.

- Response Body:

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

## 19 Oracle Banking Routing Hub VM Arguments

### Common Core Managed Server

Parameter	Default	Values
<b>CMC-OB RH-SERVICE</b>		
cmc-obrh-services.server.port		<SERVER_PORT>
obrh.db.jndi		<CMNCORE_JNDI>
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)
<b>Enable and configure connection pooling for REST calls</b>		
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>
<b>Receive routing failure mail notification via plato-alerts-management-service</b>		
obrh.alerts.enabled	false	true / false
<b>Disable the modification of imported data (i.e. factory shipped data)</b>		
obrh.factory-shipped-data.readonly	false	true / false

<b>Change approach for auditing</b>		
obrh.audit.type	KAFKA	DEFAULT / KAFKA / LOG / OFF  For KAFKA option, cmc-obrh-kafka-consumer service needs to be deployed.
<b>Use Custom Keystore and Truststore for HTTPS scheme</b>		
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>
obrh.keystore.aliaspassword		<KEYSTORE_ALIAS_PASSWORD_LIST>
obrh.ssl.protocol	TLS	TLS / TLSv1 / TLSv1.1 / TLSv1.2
<b>For tomcat deployment</b>		
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>
<p><b>Set Proxy settings for HTTPS</b></p> <p>As per the Java Networking documentation, HTTPS protocol handler will use the same as the http handler (i.e. http.nonProxyHosts).</p> <p>But in case of Weblogic, http.nonProxyHosts will not work for some reason.</p> <p>So, use https non proxy host argument (i.e. https.nonProxyHosts).</p>		
https.proxyHost		<PROXY_HOST_NAME>
https.proxyPort		<PROXY_PORT>
https.nonProxyHosts		<NON_PROXY_HOST_LIST>
http.nonProxyHosts		<NON_PROXY_HOST_LIST>
<p><b>Set logger level</b></p>		
plato.service.logging.level		<LOG_LEVEL>
<p><b>Support SSL based SOAP provider calls in weblogic environment</b></p> <p>This property will enforce WebLogic Server to use SUN SSL implementation (javax package) rather than the WebLogic one.</p>		
UseSunHttpHandler		true
<p><b>CMC-OB RH-KAFKA-CONSUMER</b></p>		
cmc-obrh-kafka-consumer.server.port		<SERVER_PORT>
<p><b>Change ID generator</b></p>		
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.

In order to import bigger files,

plato-api-gateway.multipart.max-file-size=<MAX\_FILE\_SIZE> (default is 1MB)

plato-api-gateway.multipart.max-request-size=<MAX\_REQUEST\_SIZE> (default is 10MB)

**NOTE:** -1 for no size constraint

Example:

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

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