Routing Hub Configuration User Guide

Oracle Banking Branch

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Routing Hub Configuration User Guide

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Contents

1 Preface 1
1.1 Purpose 1
1.2 Intended Audience 1
1.3 Document Accessibility 1
1.4 Access to Oracle Support 1
1.5 Structure 1
2 Introduction 2
2.1 Acronyms & Definitions 3
3 Start Maintenance - Login Screen 4
4 Main Menu Screen 5
5 Service Consumer 6
5.1 Add 7
5.1.1 Environment Variables 8
5.2 Import 11
5.3 View 12
5.4 Edit 13
5.5 Delete 13
5.6 JSON Export 14
5.7 SQL Export 14
6 Service Providers 16
6.1 Add 18
6.1.1 Headers 20
6.1.2 Service 22
6.2 Import 23
6.3 View 24
6.4 Edit 24
6.5 Delete 25
6.6 Export 25
7 Implementation 26
7.1 Add 28
7.1.1 Authentication 32
7.1.2 Headers 33
7.1.3 Service 35
7.1.4 Queue 36

7.2 Import 38
7.3 View 39
7.4 Edit 39
7.5 Delete 40
7.6 Export 40
8 Consumer Services 41
8.1 Add 42
8.1.1 Attributes 44
8.2 Import 46
8.3 View 47
8.4 Edit 47
8.5 Delete 48
8.6 Export 48
9 Transformation 49
9.1 Add 51
9.2 Import 53
9.3 View 54
9.4 Edit 54
9.5 Delete 55
9.6 Export 55
10 Routing 56
10.1 Add 57
10.1.1 Add Routing with Custom Rule 58
10.1.2 Add Custom Rule using Expression Editor 59
10.1.3 Transformations 60
10.2 View 62
10.3 Edit 62
10.4 Delete 63
11 Chaining 64
12 Configuration 66
13 Audit Log 69
14 Dashboard 72
14.1 Routing Health Indicator Widget 72
15 Transformation Type 73
15.1 Velocity 73
15.2 XSLT 75

15.3 JSLT 75
16 Oracle Banking Routing Hub Integration Specification 76
16.1 Token Generation 76
16.2 Synchronous Dispatch API Specification 77
16.3 Asynchronous Dispatch API Specification 79
16.4 Asynchronous Dispatch Response API Specification 81
17 Oracle Banking Routing Hub VM Arguments 84

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 Intended 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 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit

http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit

http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

1.5 Structure

This manual is organized into the following categories:

Preface gives information on the intended audience. It also describes the overall structure of the User Manual.

The subsequent chapters describe following details:

- Introduction
- Preferences & Database
- Configuration / Installation

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2 Introduction

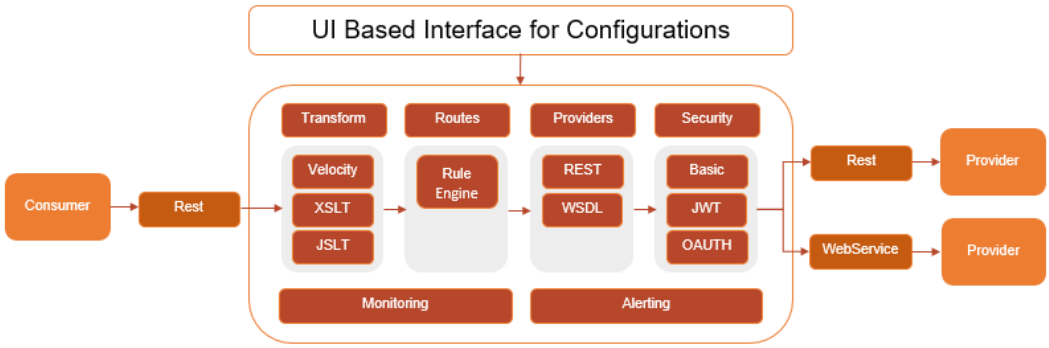
Oracle Banking Routing Hub is routing hub which enables seamless & standardized integrations between FSGBU

Banking Product using configurations provided as part of the product Infrastructure.

Consumer Application does not need to know

- Servicing Providers or Product Processors - Product processor to which the integration is required.
- Name of the Service - Logical name of the service e.g. Funds Transfer, Letter of Credit Initiation
- Messaging structure of Service - Structure of the message e.g Json, XML.
- Communication Protocol – Web services, Rest API.
- Can be integrated with different versions of a Product processors

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



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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	Are Applications need to integrate with multiple product processors with loosely couple integration layer available as Oracle Banking Routing Hub. Service Consumer integrates with Oracle Banking Routing Hub
Service Providers	This are product processors available to serve the request send by Oracle Banking Routing Hub on behalf of Service Consumer
Service	Are Soap Web Services imported through WSDL or Rest Web Services imported through Swagger
Headers	Are headers require by product processor while sending request

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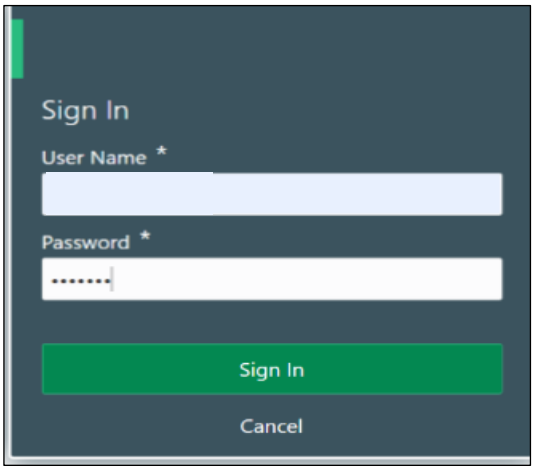
3 Start Maintenance - Login Screen

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			

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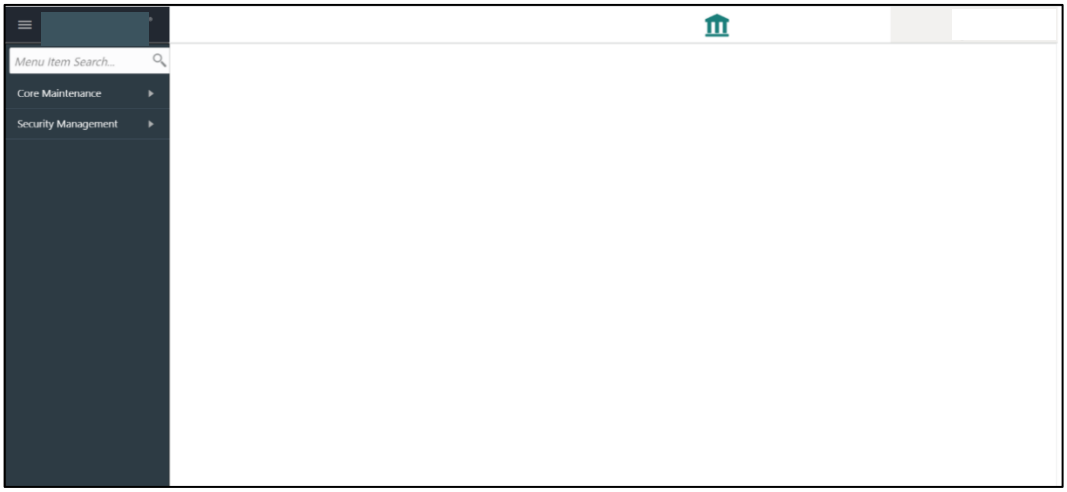
4 Main Menu Screen



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

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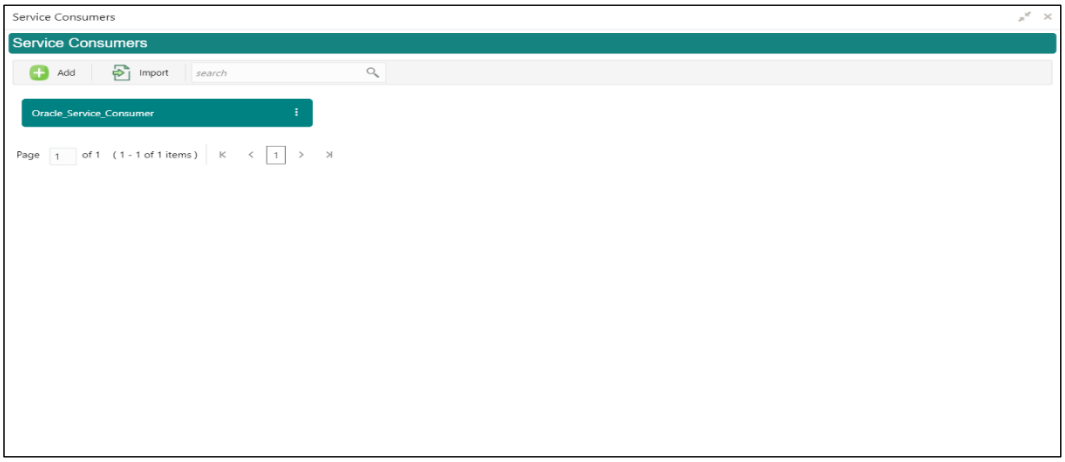
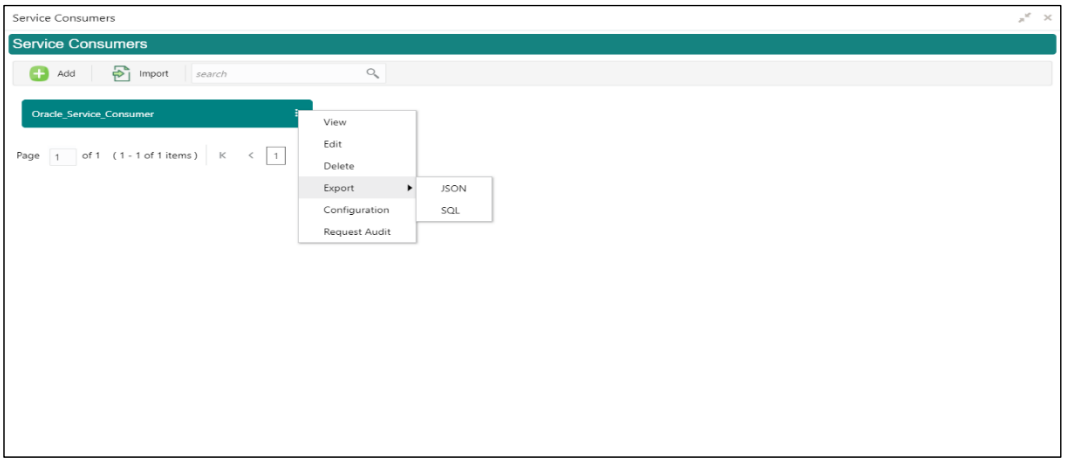
5 Service Consumer

Service Consumer is Oracle product which will invoke Oracle Banking Routing Hub API, Oracle Banking Routing Hub will analyse, evaluate destination product processor and transform data into format of the same.

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
Import	Button		Pops up import dialog

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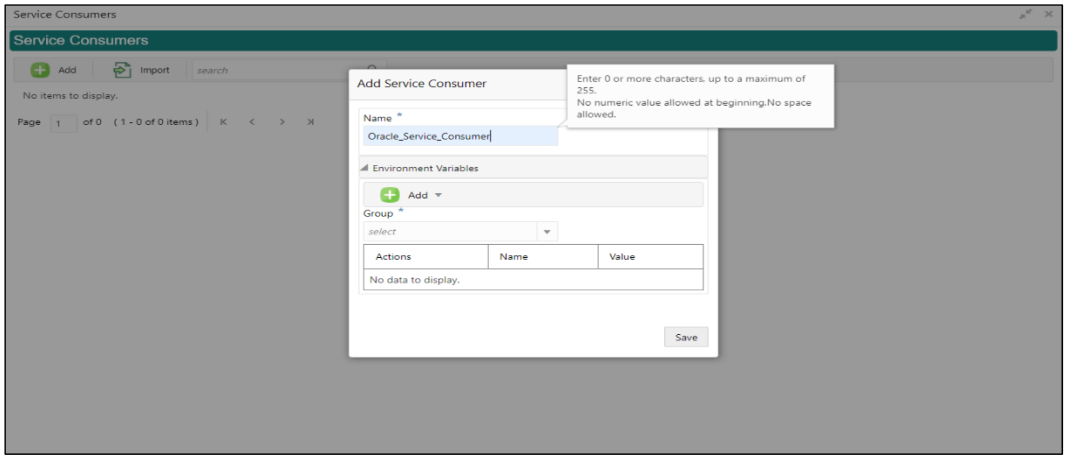
Search	Combo Box One		Provides search functionality with case insensitive (Service Consumer Name)
Navigation: Service Consumers -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Export	Sub menu item		
JSON	menu option		Exports in JSON
SQL	menu option		Exports in SQL
Configuration	menu option		Pops up configuration dialog
Request Audit	menu option		Pops up request audit log

5.1 Add

User can create Service Consumer manually.

Navigation: **Service Consumers -> Add**



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Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
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	Unique Service Consumer name
Environment Variables	Table Content				
Save	Button				Saves the Service Consumer

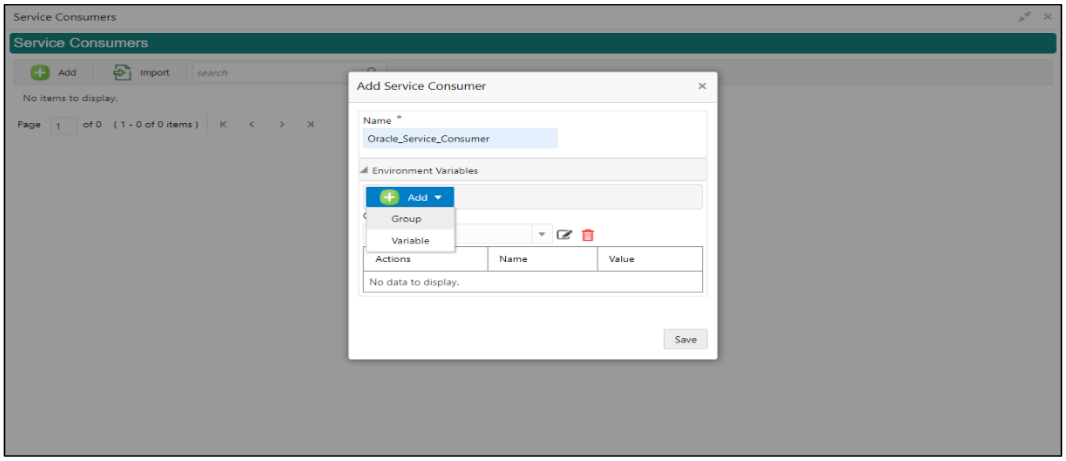
5.1.1 Environment Variables

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



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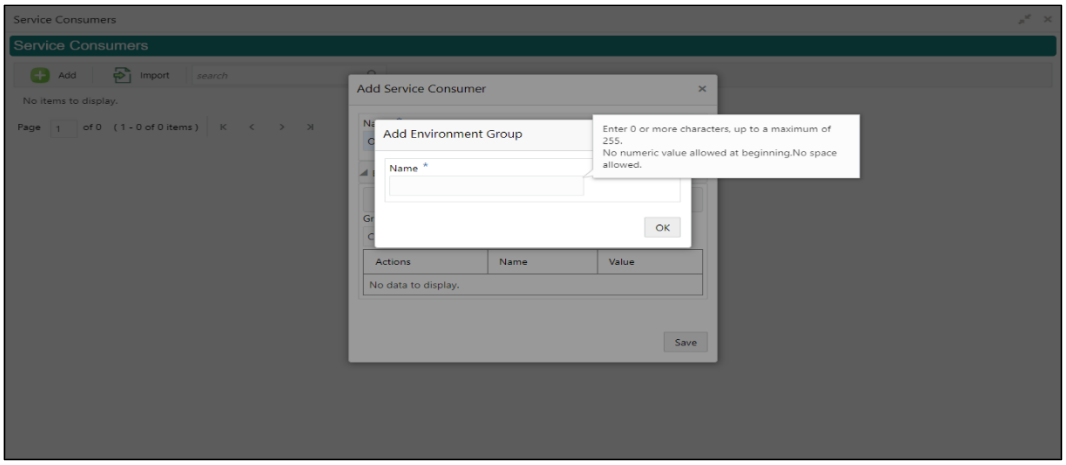

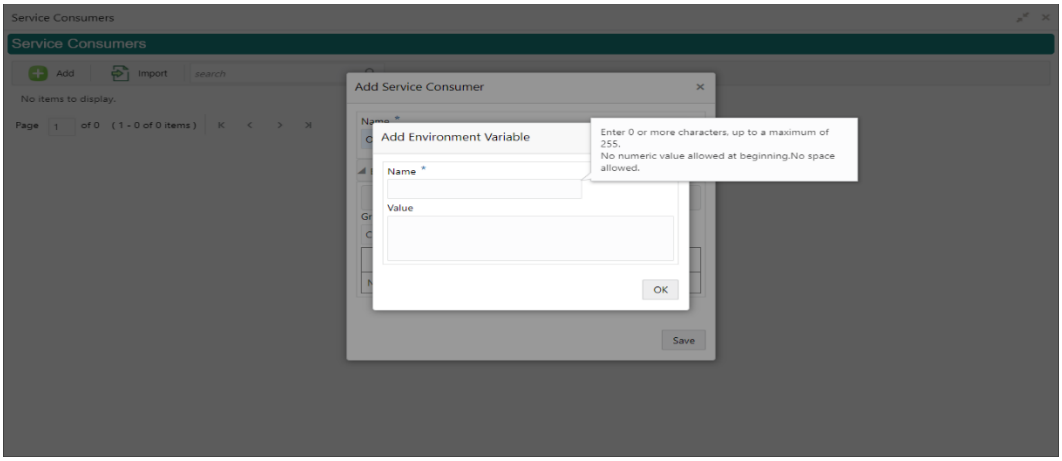

Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Add	Menu Item				
Group	Menu option				Pops up add group dialog
Variable	Menu option				Pops up add variable dialog
Navigation: Service Consumer -> Environment Variables -> 3 dot icon (operation menu)					
Edit	menu option / icon				Pops up edit dialog

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Delete	menu option / icon				Deletes group / variable
Environment Group / Variable					
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	
Value	Text Area				Value can either be hardcoded or Velocity mapping.
OK	Button				Saves the group / variable and displays it in the list

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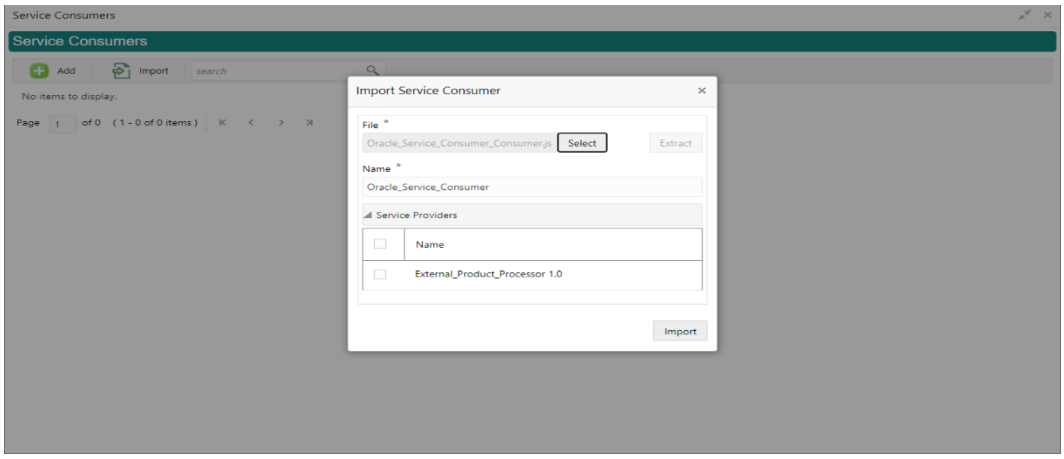
5.2 Import

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.

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 only JSON file	Pops up file selection dialog box
Extract	Button	Yes				Extracts Consumer Name and Service Provider list from JSON file and displays it in the respective elements.

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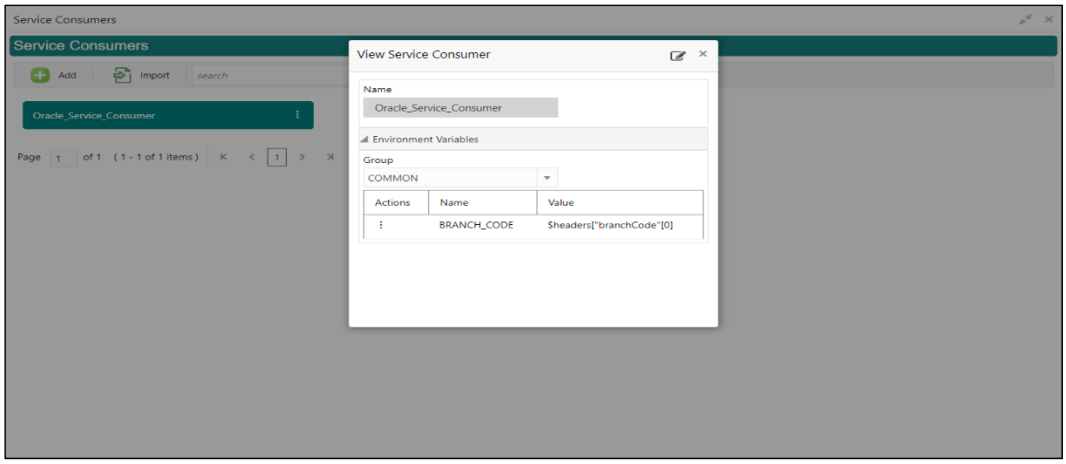
Name	Text Box	Yes	Alphanumeric with special characters	• Name cannot be blank • Enter 0 or more characters, up to a maximum of 255 • No numeric value at beginning and no space allowed	Editable	Unique
Service Provider	Collapsible Header & Content					Displays the list of service providers that are present in JSON file
Import	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**



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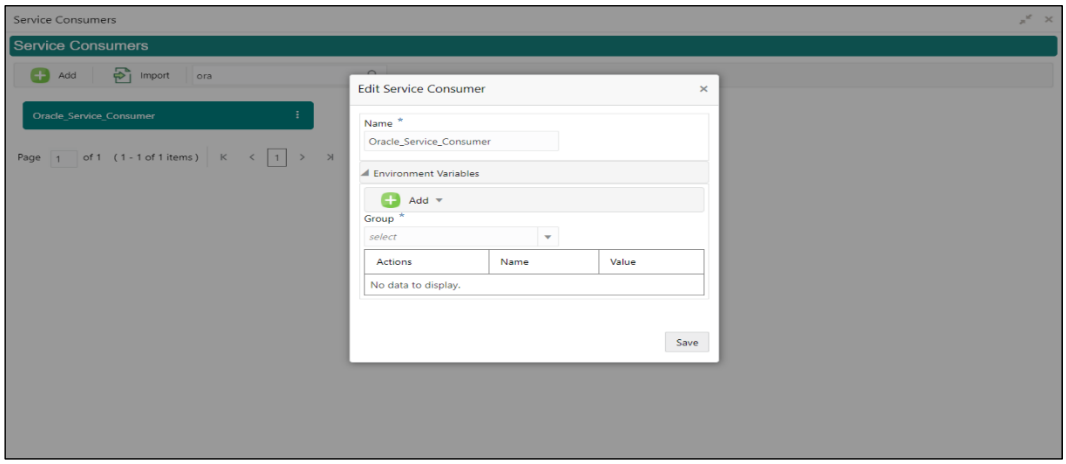
5.4 Edit

User can modify the consumer details.

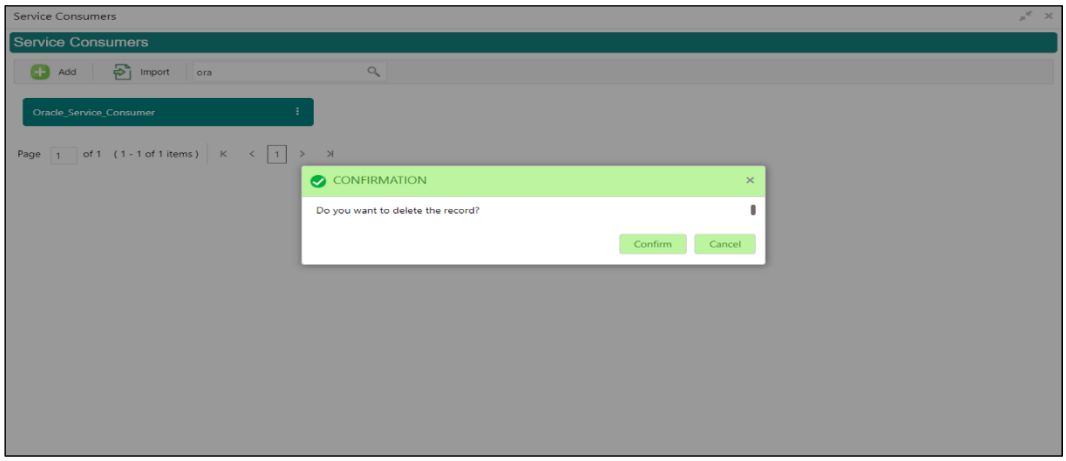
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Edit**



5.5 Delete

User can delete the consumer.

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



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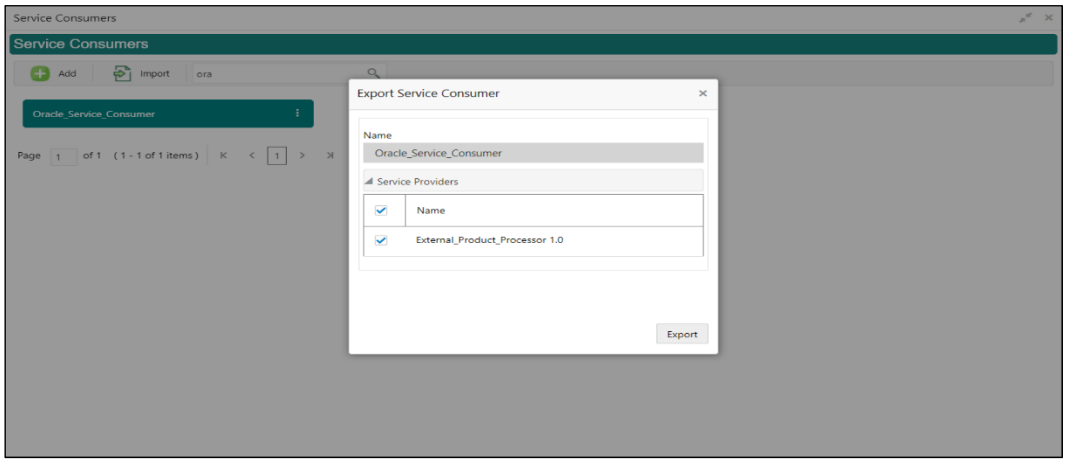
5.6 JSON Export

User can export the consumer configuration as JSON file.

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



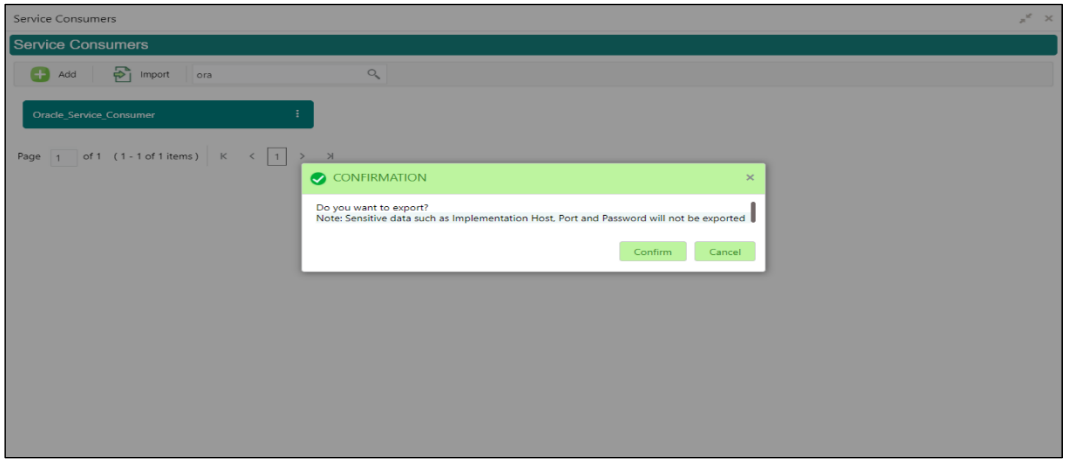
Note:

- 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
  - Default implementation of selected service providers with services (without Host, Port and Authentication Password)
  - Default transformations
  - All default implementation routes

5.7 SQL Export

User can export the consumer configuration as SQL file.

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



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

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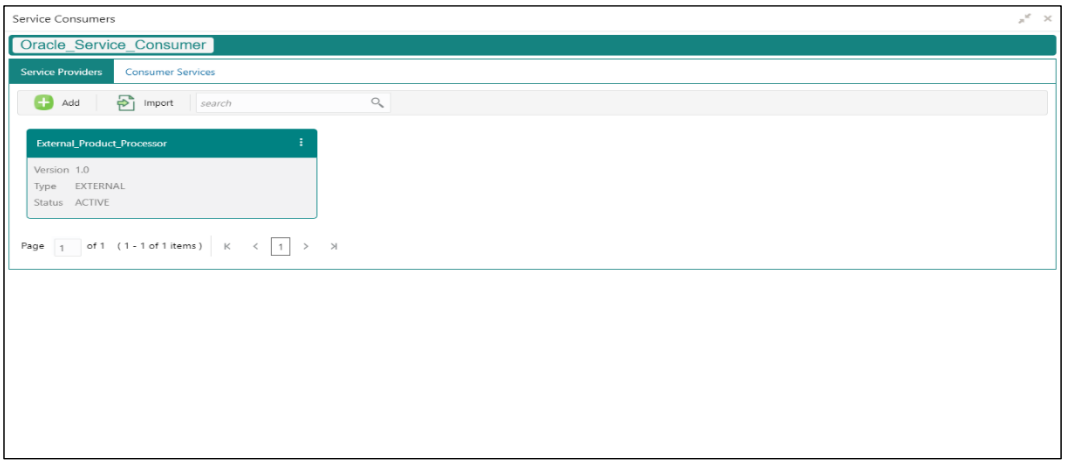
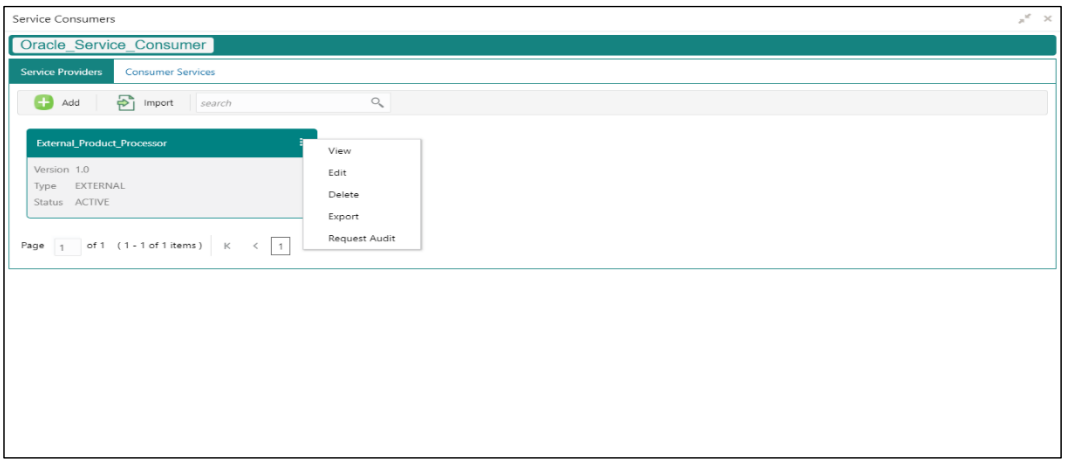
6 Service Providers

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

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Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Service Provider Name)
Navigation: Service Providers -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Export	menu option		Exports in JSON
Request Audit	menu option		Pops up request audit log

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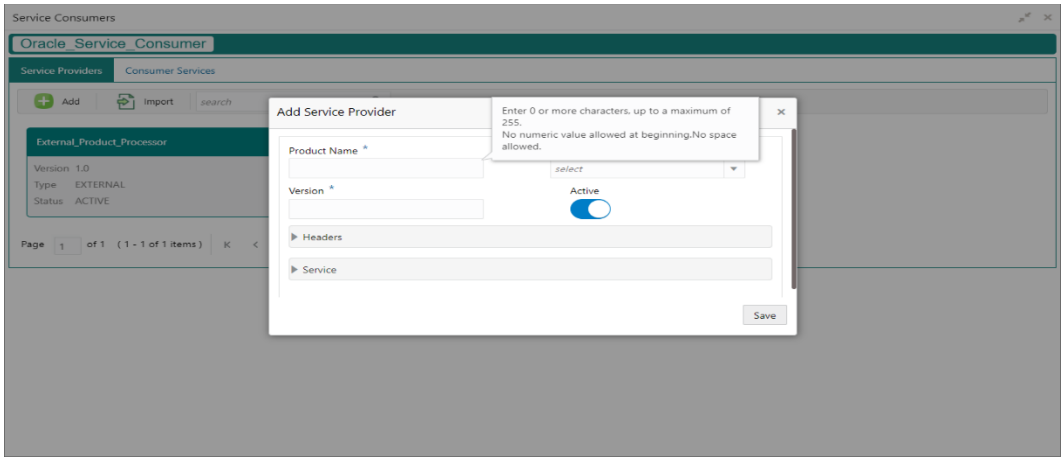
6.1 Add

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	• 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 provider name
Type	Combo Box One	Yes			Predefined Values: INTERNAL / EXTERNAL INTERNAL type should be used for oracle products.

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					EXTERNAL type should be used for non-oracle products
Version	Text Box	Yes	Number	• Version cannot be blank • Enter 0 or more characters, up to a maximum of 255. • Enter only numeric or decimal values.	Unique provider version
Active	Switch				Predefined Values: ACTIVE / INACTIVE If provider is marked as inactive, then all related routes will be stopped.
Headers	Collapsible Header & Content				Provider specific headers
Service	Collapsible Header & Content				Provider specific service details
Save	Button				Saves the Service Provider

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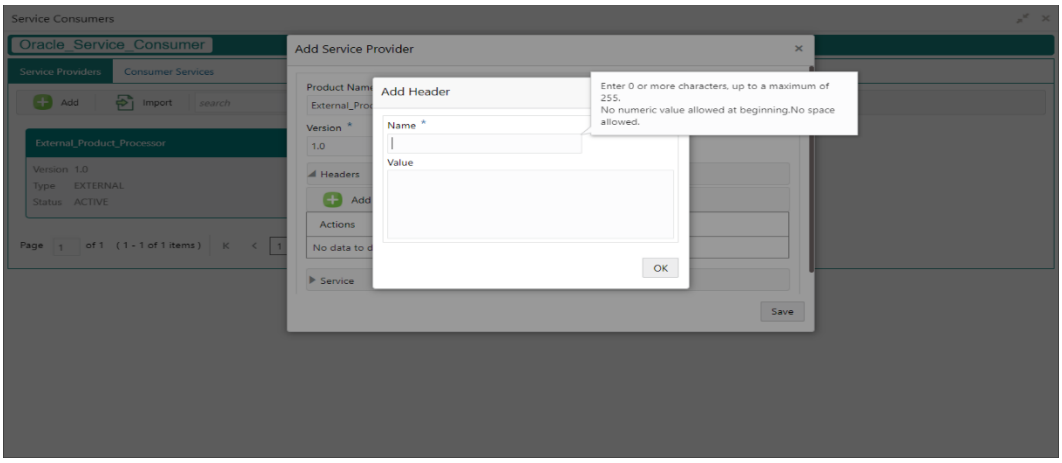
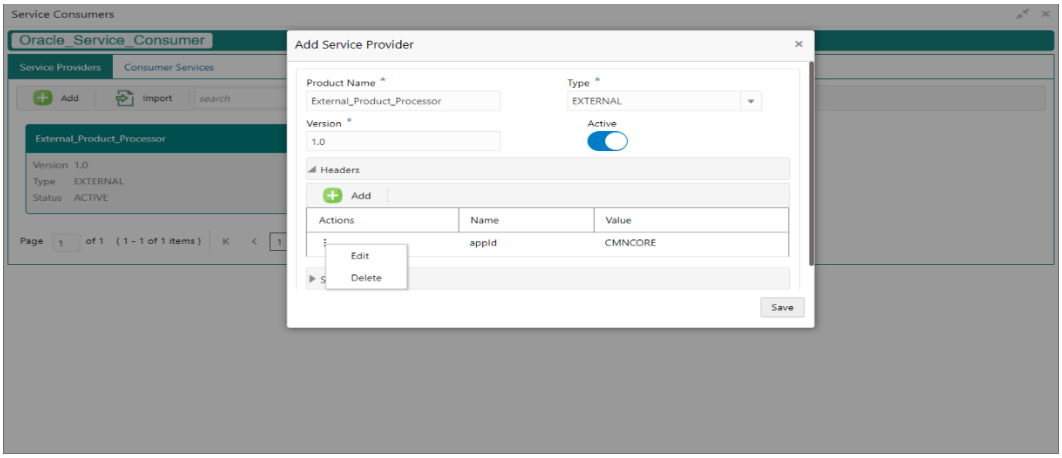
6.1.1 Headers

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.

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

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Navigation: Service Providers -> Headers -> 3 dot icon (operation menu)					
Edit	menu option				Pops up edit dialog
Delete	menu option				Deletes header
Navigation: Service Providers -> 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.	
Value	Text Area	Yes	Alphanumeric with special characters	• Enter 0 or more characters, up to a maximum of 255.	Value can either be hardcoded or can be Velocity mapping.
OK	Button				Saves the header details and displays it in the list

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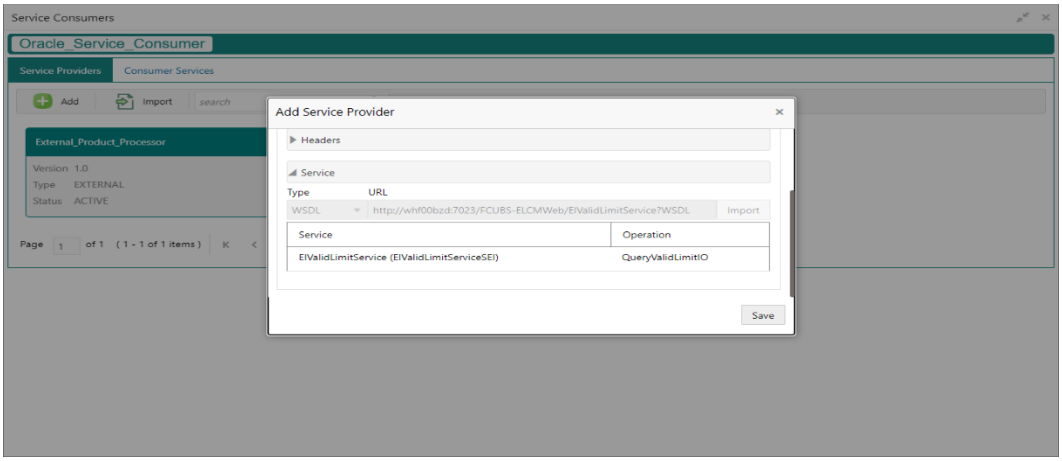
6.1.2 Service



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.

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6.1.2.2 SWAGGER

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

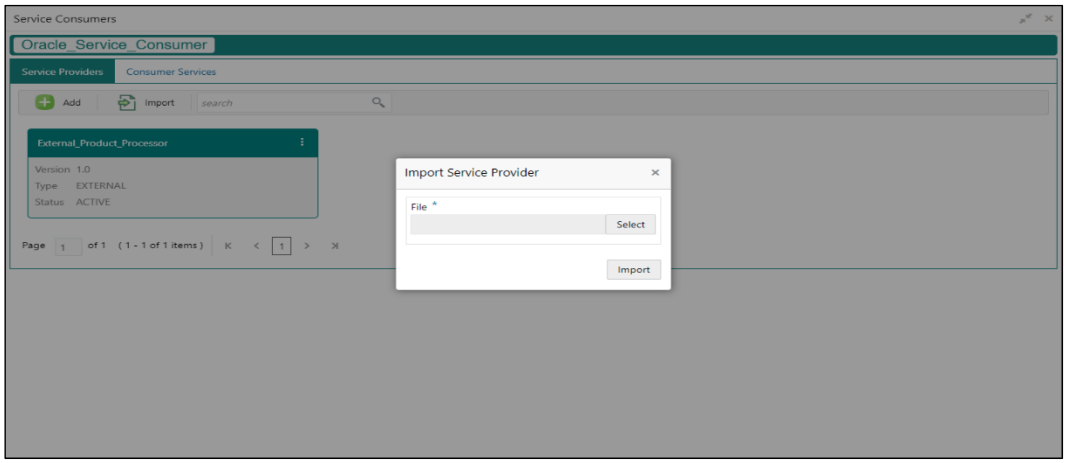
Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

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.

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 only JSON file	Pops up file selection dialog box
Import	Button				Imports Service Provider

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

- Implementation Host and Port
- Implementation Authentication Password

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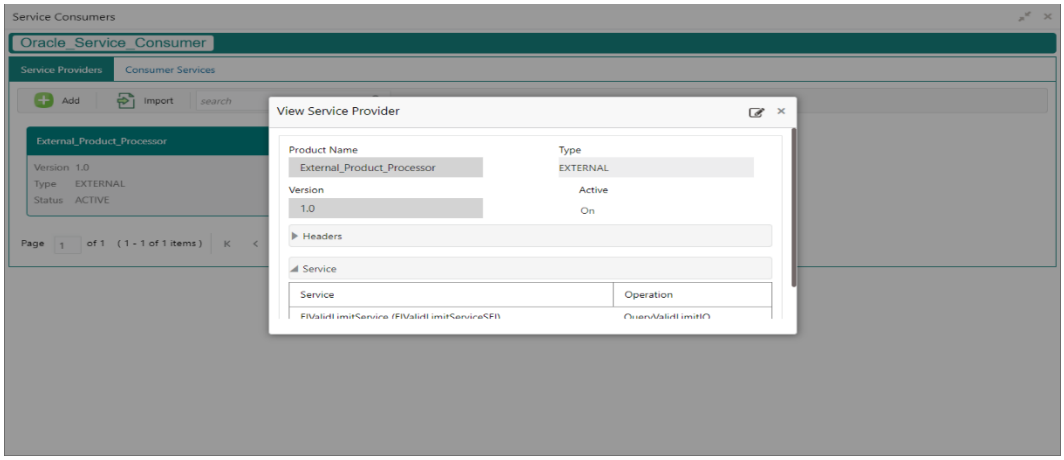
6.3 View

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

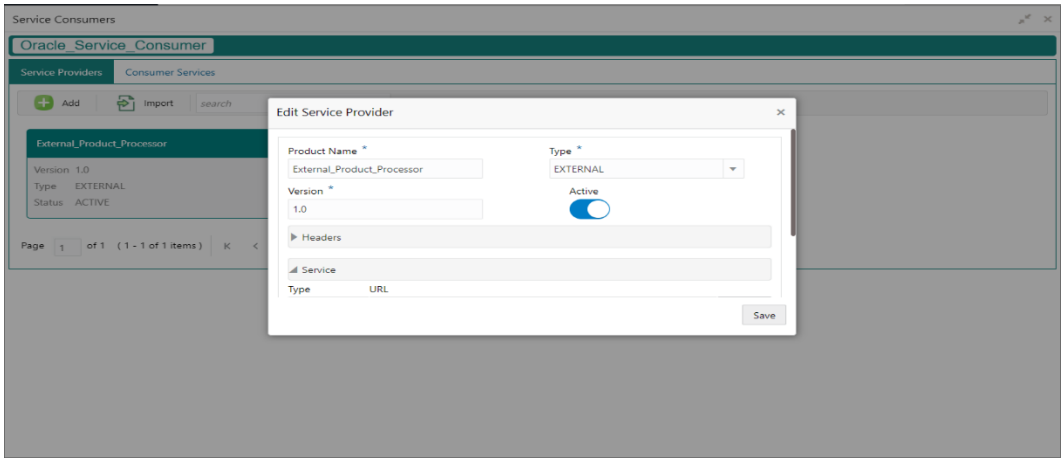
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> View**



6.4 Edit

User can modify the provider details.

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



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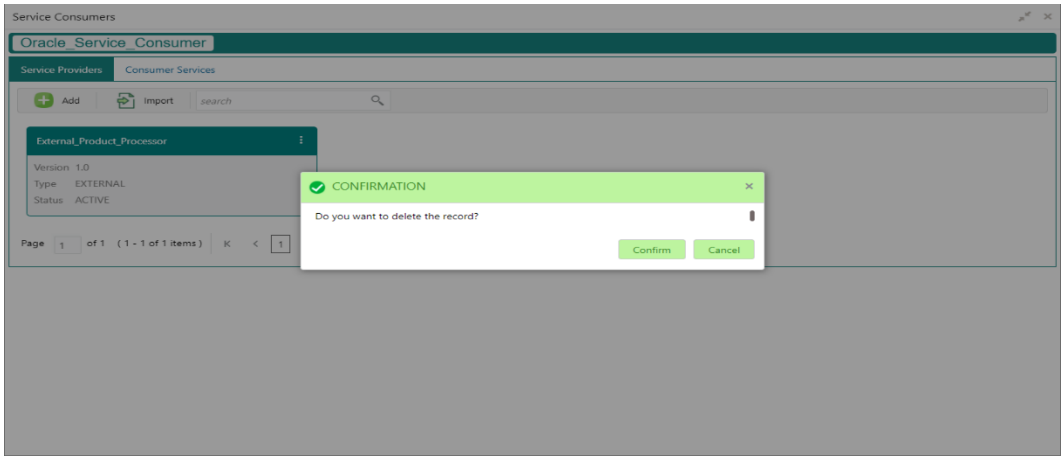
6.5 Delete

User can delete the provider.

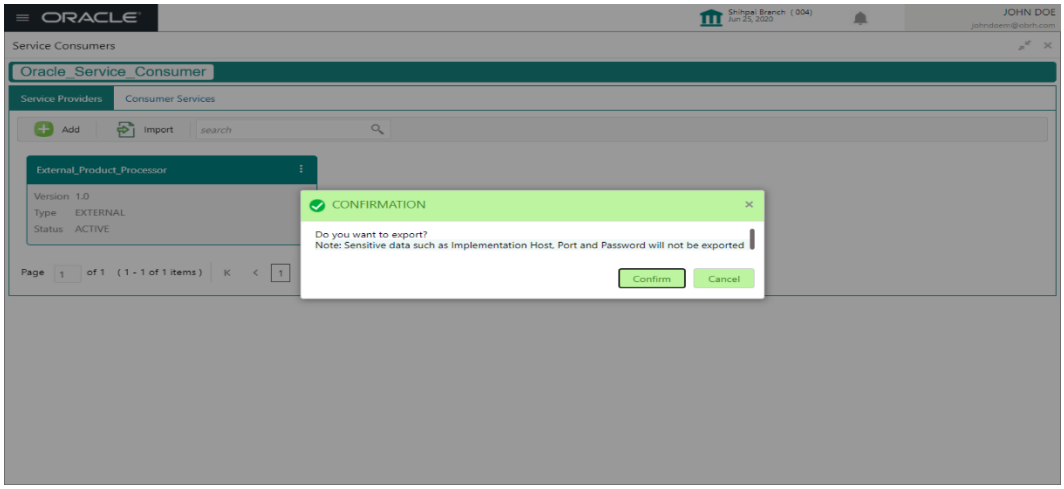
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> Delete**



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

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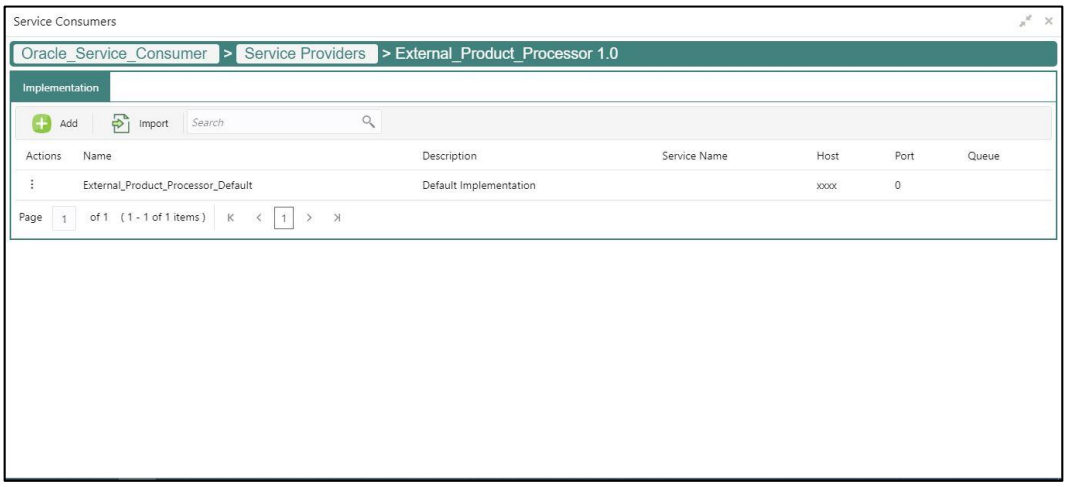
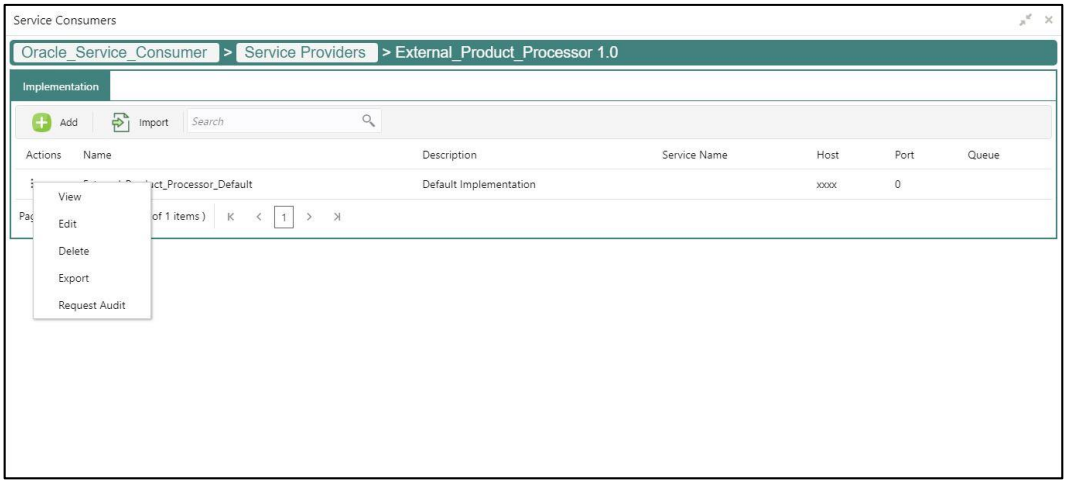
7 Implementation

Implementation comprises of Eureka client instance, Queue, 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**





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Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
<Service Provider>	Button		Navigates back to Service Providers
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Implementation Name)
Navigation: Implementation -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Export	menu option		Exports in JSON
Request Audit	menu option		Pops up request audit log

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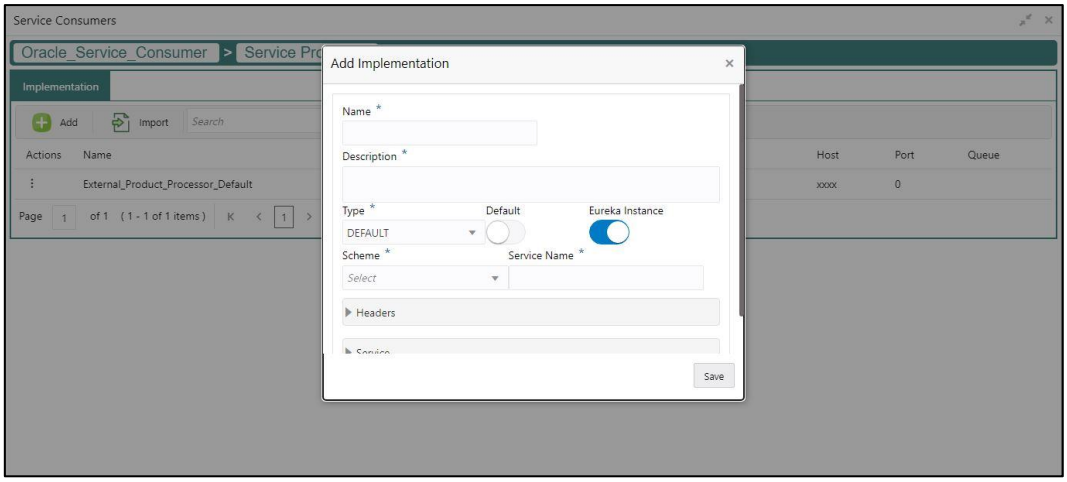
7.1 Add

User can create Implementation manually.

Navigation: **Implementation-> Add**



Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
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.	Unique implementation name

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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.	
Type	Combo Box One	Yes			Predefined Values: DEFAULT / QUEUE **Note:** DEFAULT type is for REST and SOAP API calls.
Default	Switch				Each type can have one default implementation.
Eureka Instance	Switch				**Eureka Instance** option is available only for internal providers and default type. By default, **Eureka Instance** will be toggled ON for internal providers and OFF for external providers.

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Scheme	Combo Box One	Yes			Scheme option is available only for default type. Predefined Values: HTTPS / HTTP
Service Name	Text Box	Yes		• Service Name cannot be blank • Enter 0 or more characters, up to a maximum of 255. No space allowed.	If **Eureka Instance** is toggled ON and type is default, then only service name is required.
Host	Text Box	Yes	Alphanumeric with special characters	• Host cannot be blank • Enter 0 or more characters, up to a maximum of 255. • No space allowed.	If **Eureka Instance** is toggled OFF and type is default, then only host and port is required.
Port	Text Box	Yes	Number	• Port cannot be blank • Enter 0 or more characters, up to a maximum of 6. • Only numeric value allowed.	If **Eureka Instance** is toggled off and type is default, then only host and port is required.

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Authentication	Collapsible Header & Content				Authentication option is available only when **Eureka Instance** is toggled OFF and type is default.
Headers	Collapsible Header & Content				Header option is available only when type is default.
Service	Collapsible Header & Content				Service option is available only when type is default.
Queue	Content				Queue content is available only when type is queue.
Save	Button				Saves the Implementation

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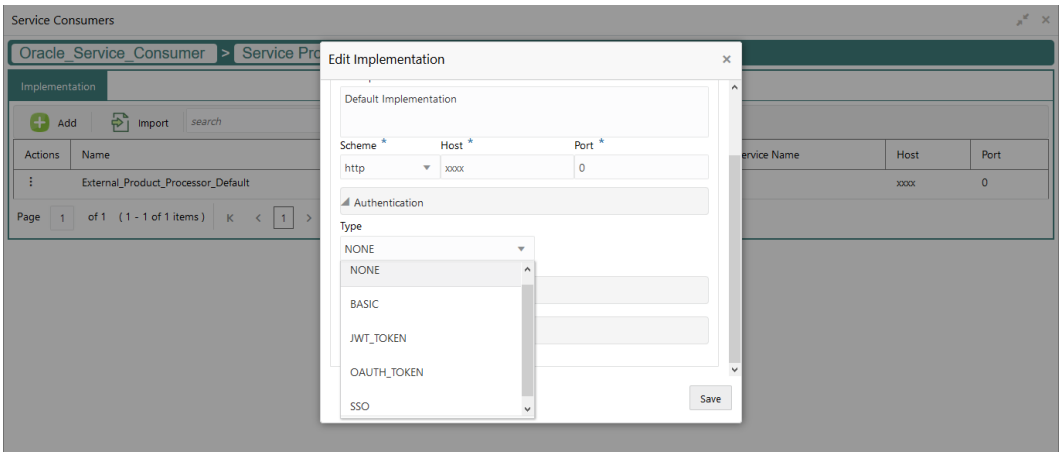
7.1.1 Authentication

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

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 / SSO
Username	Text Box		Alphanumeric with special characters	• Username cannot be blank • Enter 0 or more characters, up to a maximum of 255.	Username is mandatory if authentication type is BASIC / JWT_TOKEN / OAUTH_TOKEN

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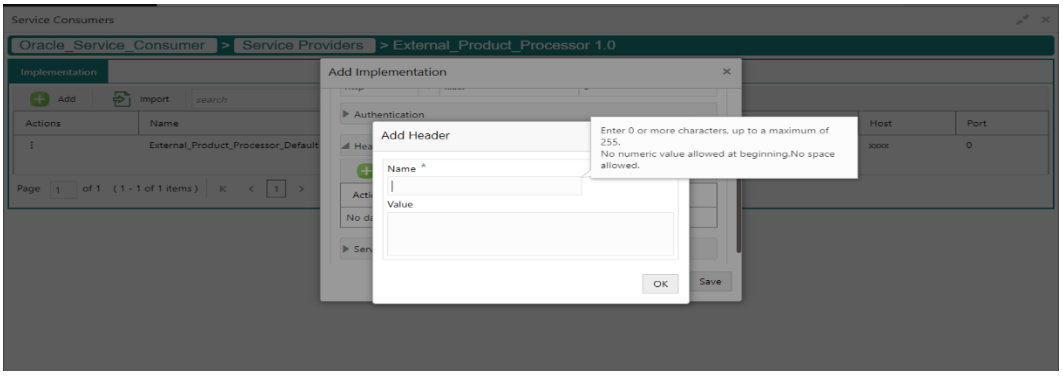
				• No numeric value at beginning and no space allowed.	
Password	Text Box		Alphanumeric with special characters	Password cannot be blank	Password is mandatory if authentication type is BASIC / JWT_TOKEN / OAUTH_TOKEN

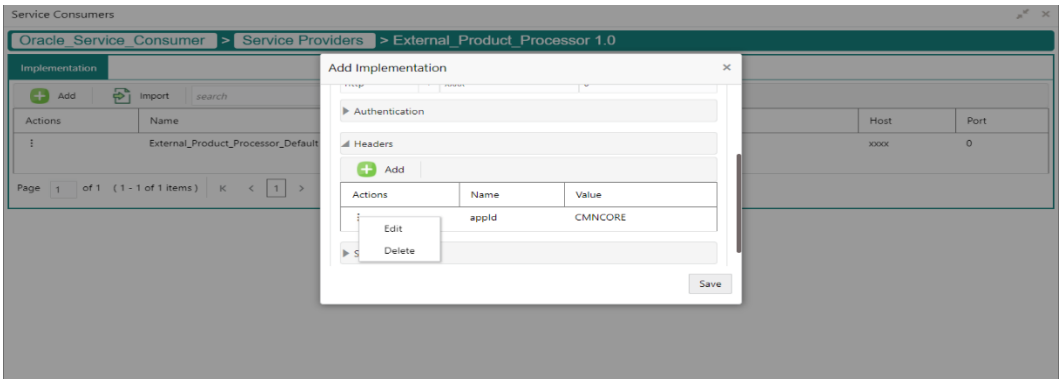
7.1.2 Headers

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





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Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Add	Button				Pops up add dialog
Navigation: Implementation -> Headers -> 3 dot icon (operation menu)					
Edit	menu option				Pops up edit dialog
Delete	menu option				Deletes header
Navigation: Implementation -> 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.	
Value	Text Area	Yes	Alphanumeric with special characters	• Enter 0 or more characters, up to a maximum of 255.	Value can either be hardcoded or can be Velocity mapping.
OK	Button				Saves the header details and displays it in the list

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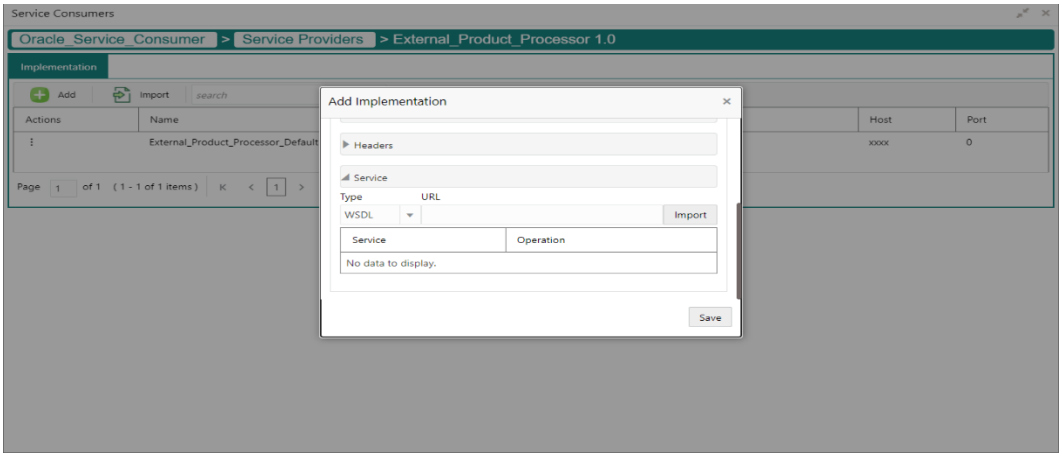
7.1.3 Service



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

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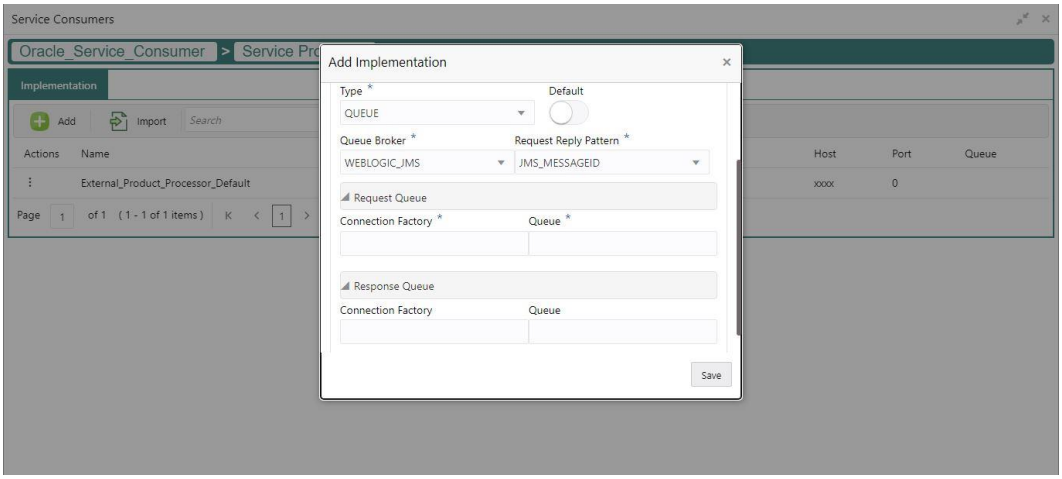
7.1.4 Queue



Component briefing			
Component Name	**Component Type**	**Is Mandatory**	**Comments**
Queue Broker	Combo Box One	Yes	Predefined Values: WEBLOGIC_JMS
Request Reply Pattern	Combo Box One	Yes	Predefined Values: JMS_MESSAGEID / JMS_CORRELATIONID JMS_MESSAGEID is default request-reply pattern.
Connection Factory	Text Box		Connection Factory is JNDI based connection factory name which is used to create connection for JMS client. Request Connection Factory is mandatory, and Response Connection Factory is optional. Response Connection Factory is needed when

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			destination is going to respond back after processing the request.
Queue	Text Box		Queue Name is JNDI based destination name. Request Queue Name is mandatory, and Response Queue Name is optional. Response Queue Name is needed when destination is going to respond back after processing the request.

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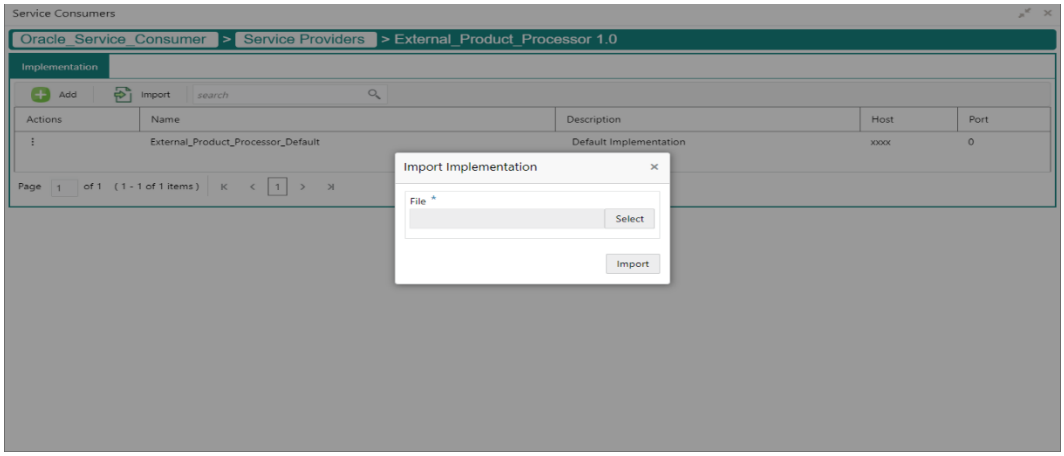
7.2 Import

User can create an implementation by importing the JSON file.

Navigation: **Implementation -> 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 only JSON file	Pops up file selection dialog box
Import	Button					Imports Implementation

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

- Implementation Host and Port
- Implementation Authentication Password

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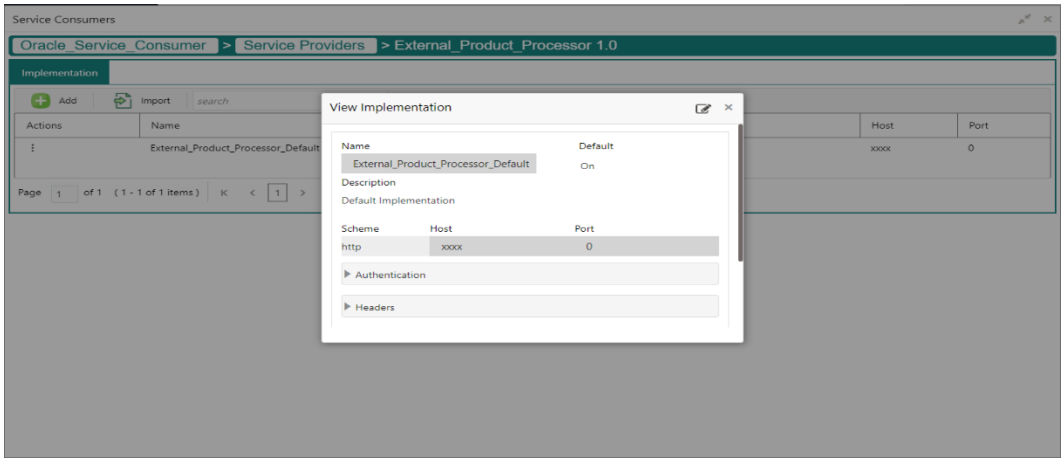
7.3 View

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

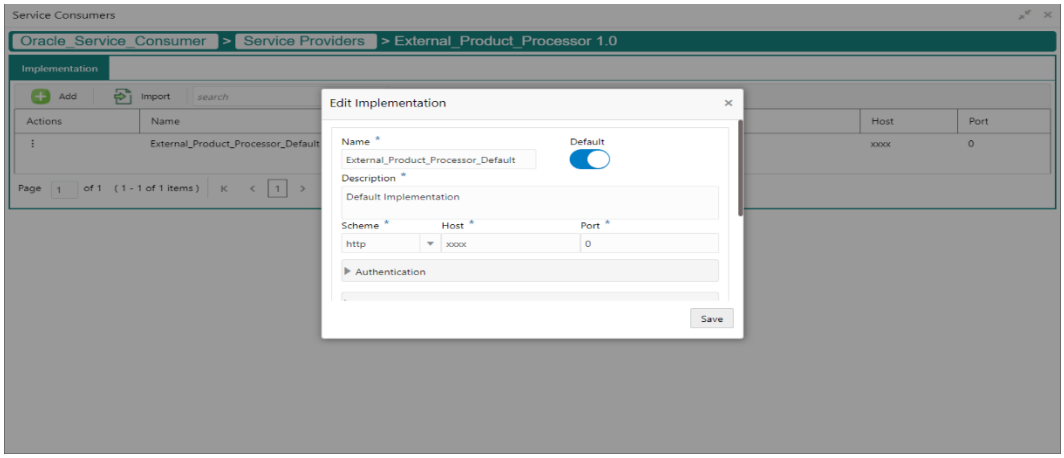
Navigation: **Implementation -> Operation Menu (3 dot icon) -> View**



7.4 Edit

User can modify the implementation details.

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



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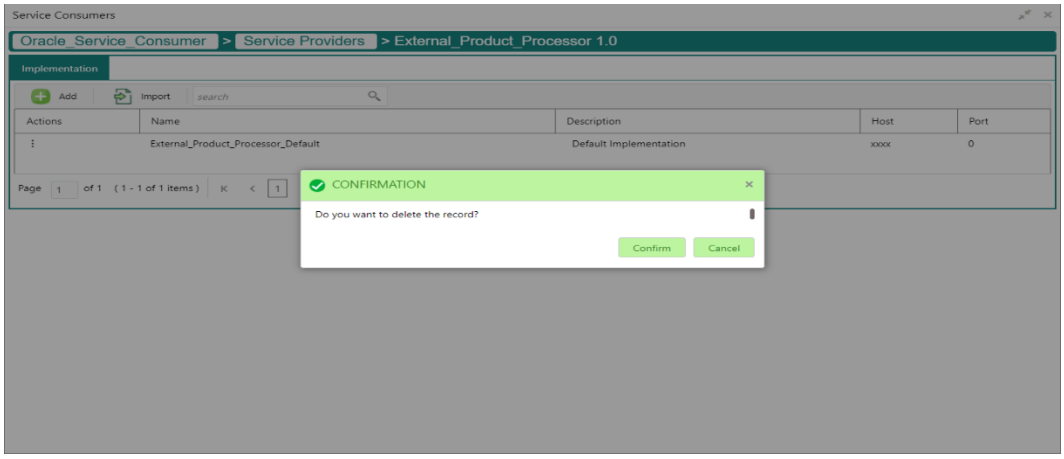
7.5 Delete

User can delete the implementation.

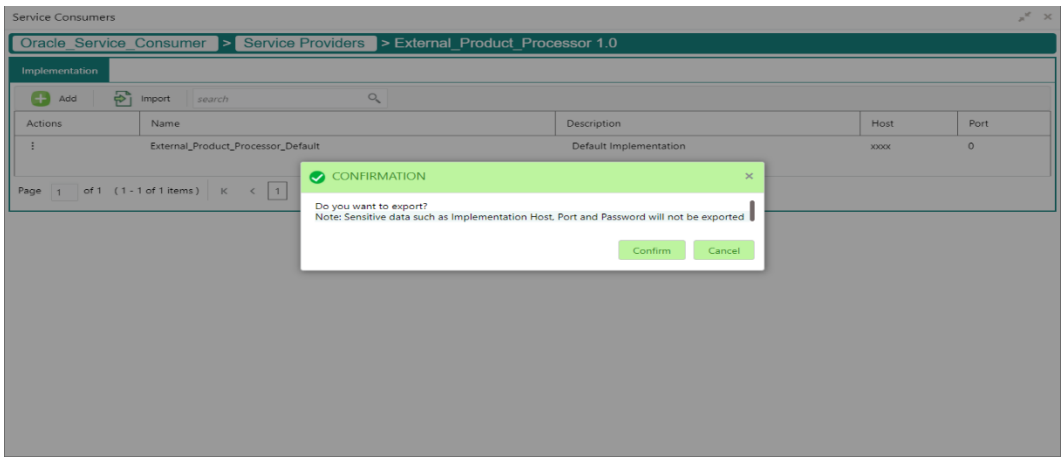
Navigation: **Implementation -> Operation Menu (3 dot icon) -> Delete**



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

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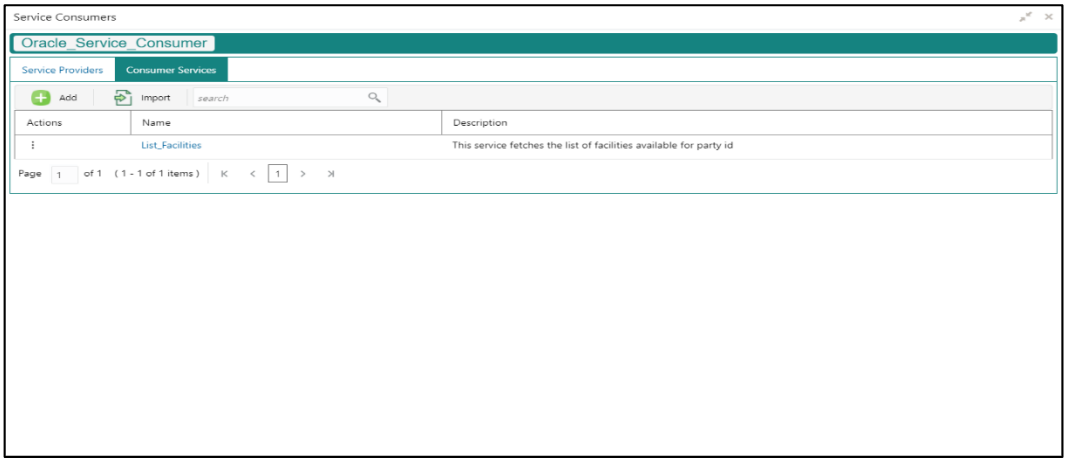
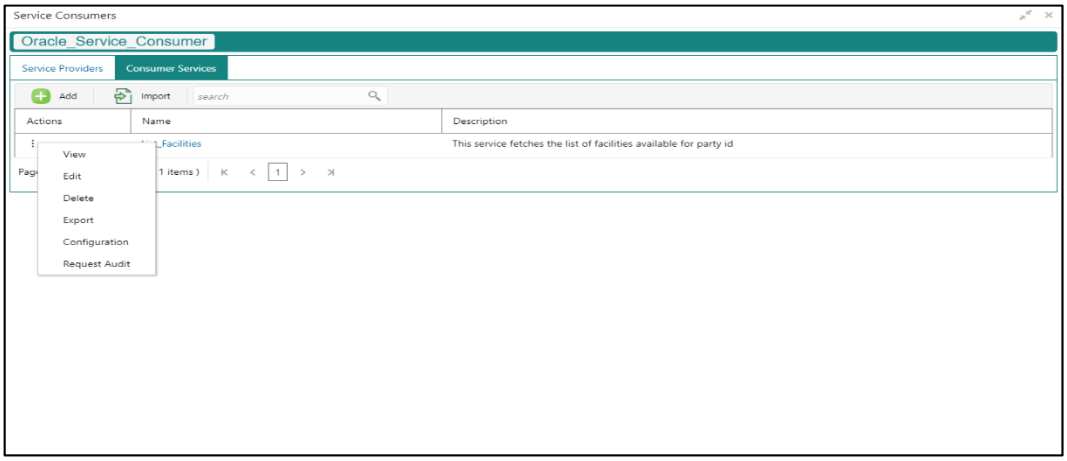
8 Consumer Services

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

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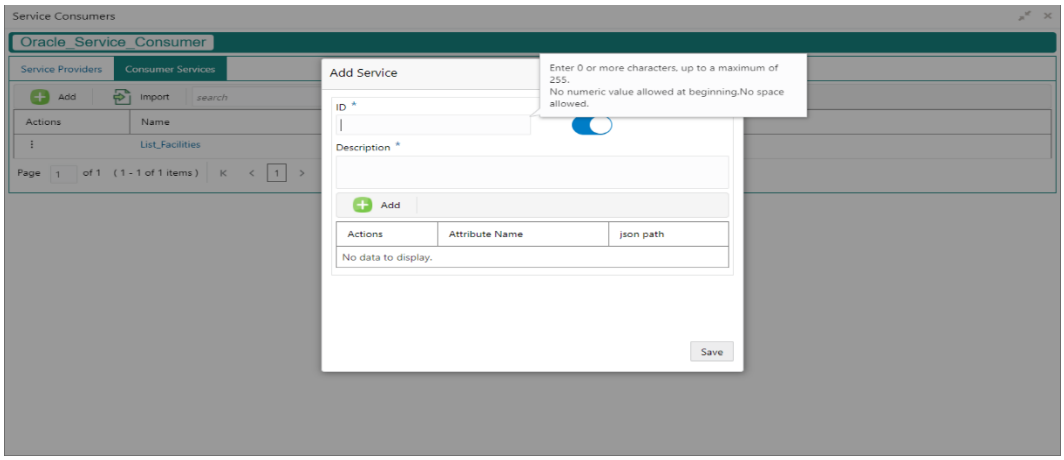
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Consumer Service Name)
Navigation: Consumer Services -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Export	menu option		Exports in JSON
Configuration	menu option		Pops up configuration dialog
Request Audit	menu option		Pops up request audit log

8.1 Add

User can create Consumer Service manually.

Navigation: **Consumer Services-> Add**



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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

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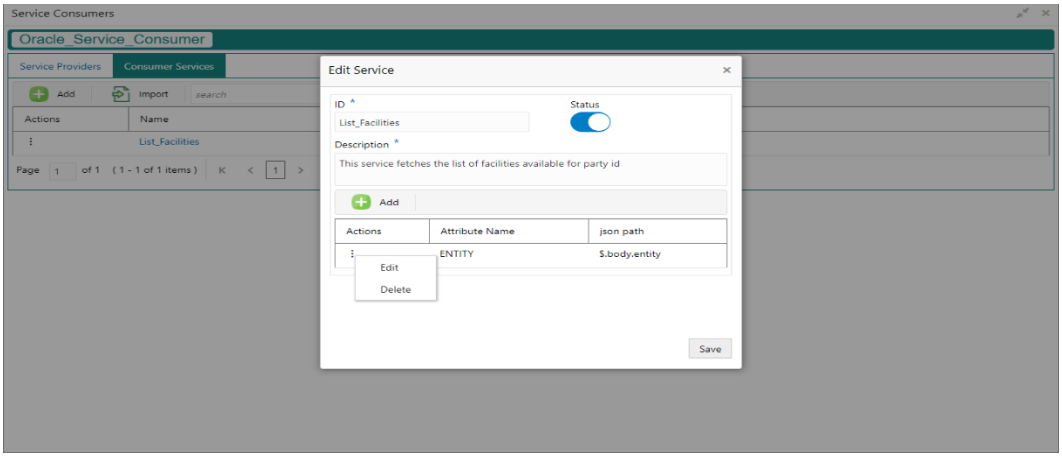
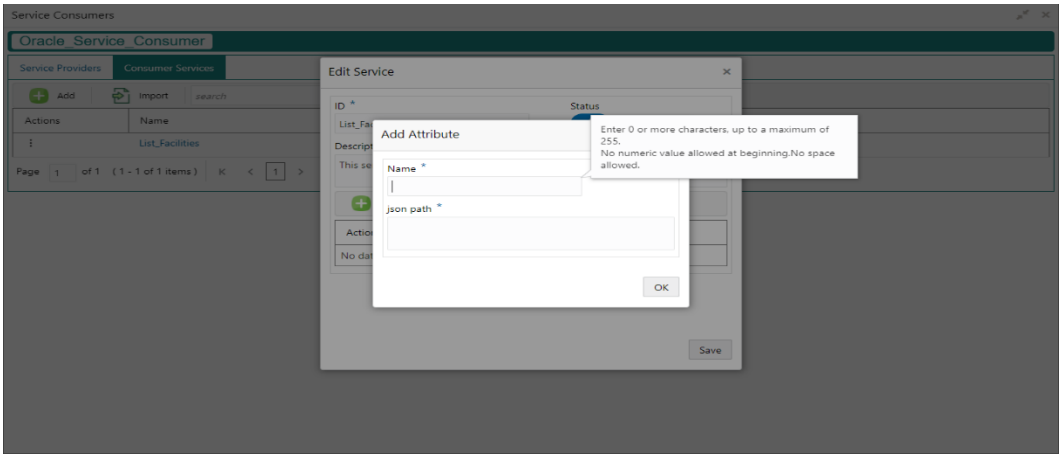
8.1.1 Attributes





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

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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]

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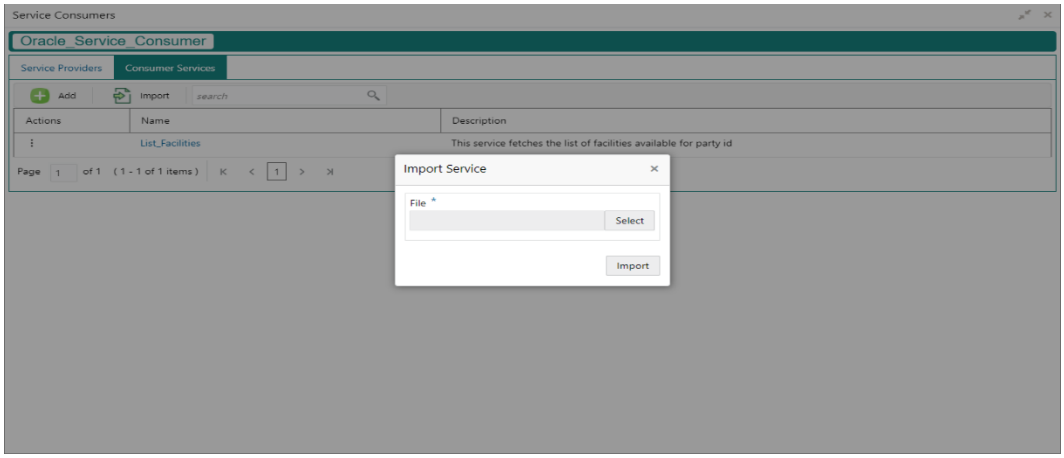
8.2 Import

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

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 only JSON file	Pops up file selection dialog box
Import	Button					Imports Consumer Service

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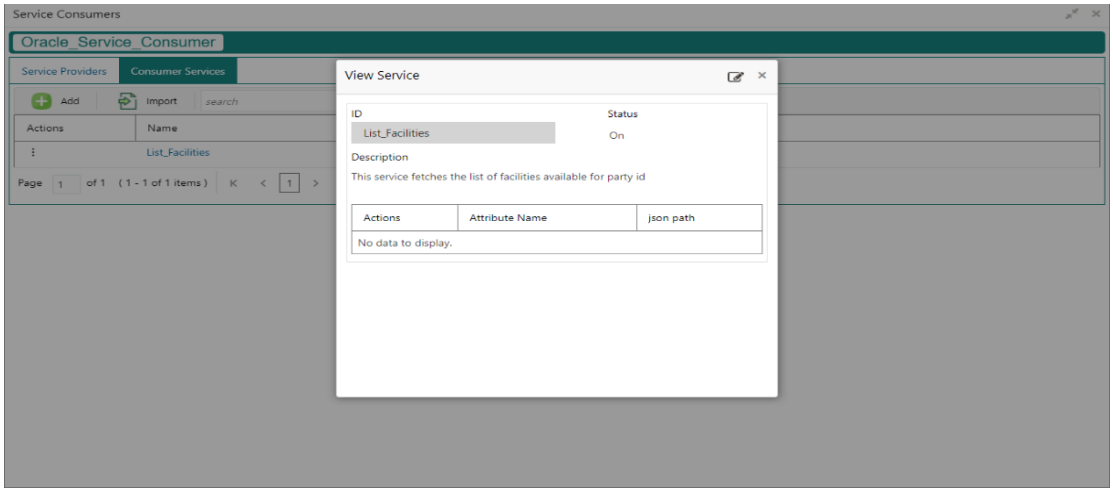
8.3 View

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

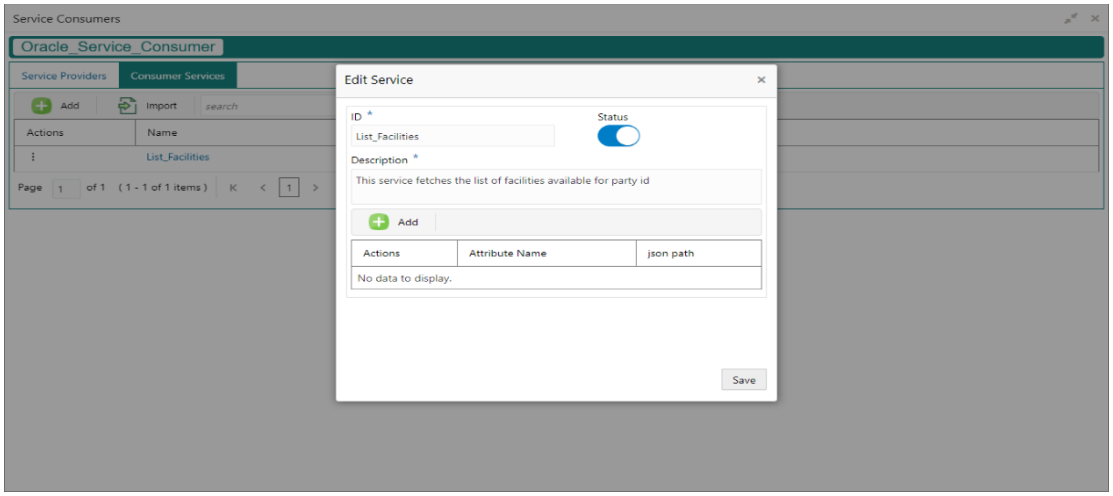
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> View**



8.4 Edit

User can modify the consumer service details.

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



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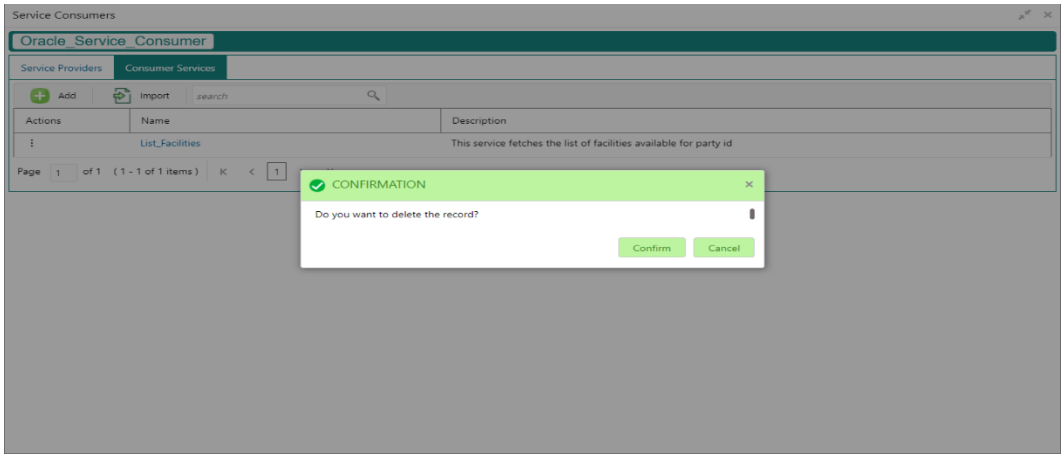
8.5 Delete

User can delete the consumer service.

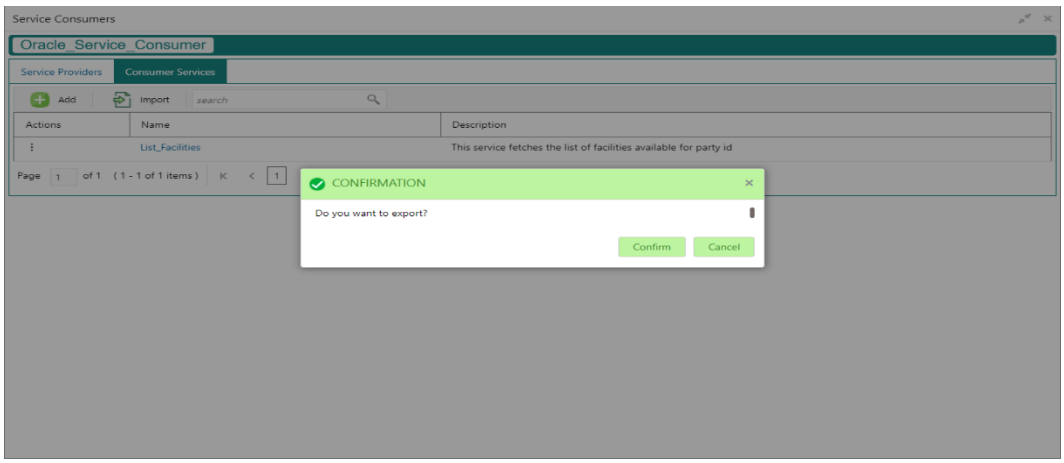
Navigation: **Consumer Services -> Operation Menu (3 dot icon) -> Delete**



8.6 Export

User can export the consumer service configuration as JSON file.

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



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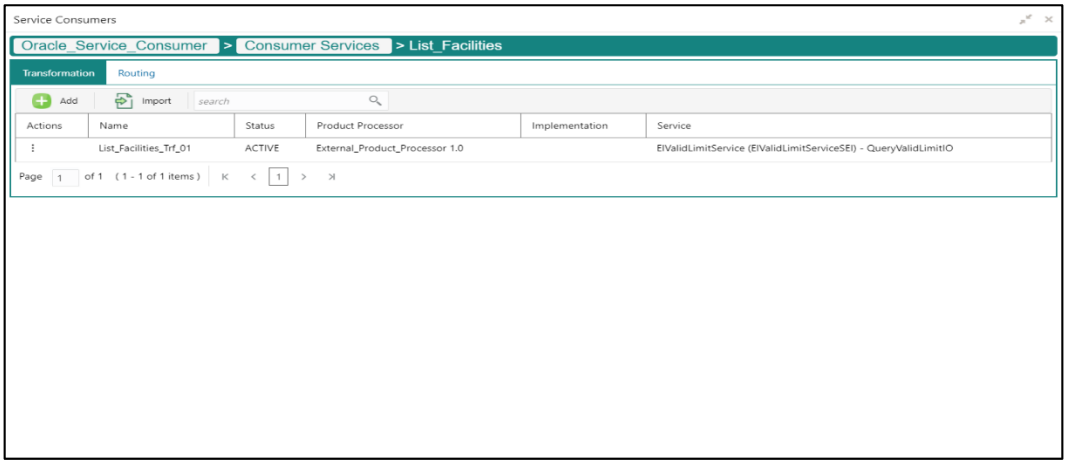
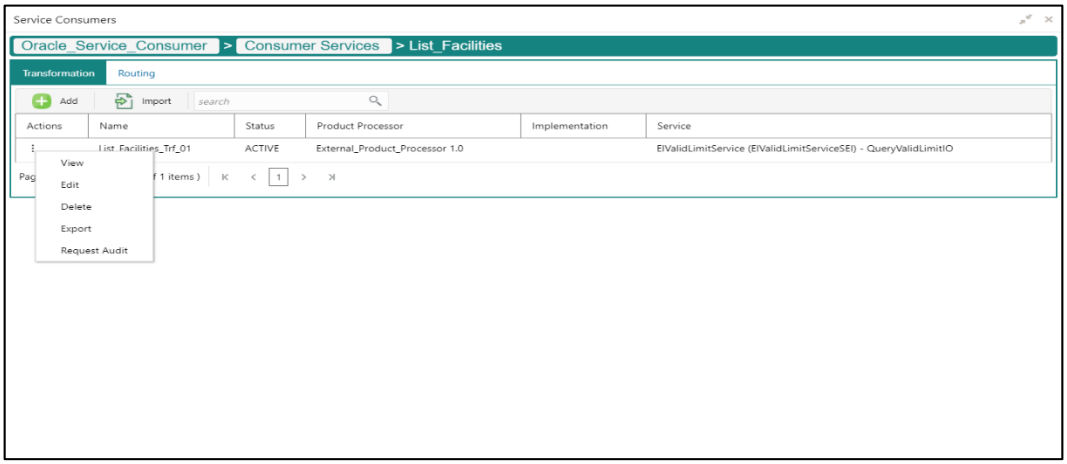
9 Transformation

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

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<Consumer Service>	Button		Navigates back to Consumer Services
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Transformation Name)
Navigation: Transformation -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Export	menu option		Exports in JSON
Request Audit	menu option		Pops up request audit log

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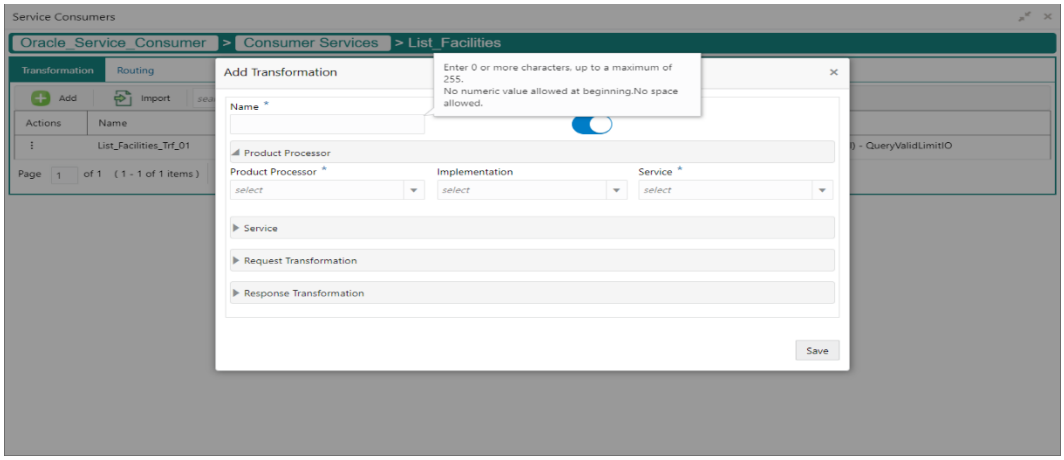
9.1 Add

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	• 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 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.

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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.

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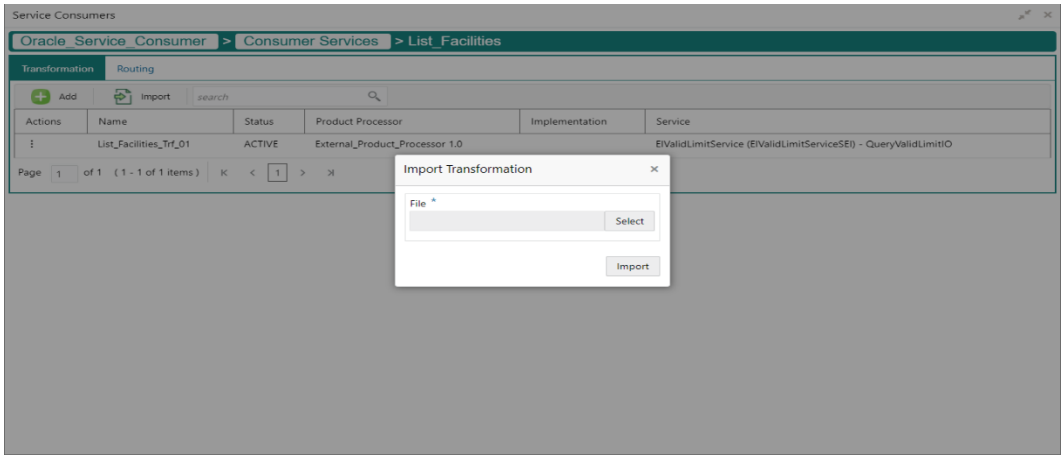
Request Transformation	Collapsible Header				
Type	Combo Box One				Predefined Values: VELOCITY / JSLT / XSLT
Template	Text Area				User has to define the template in which provider accepts. Please refer Transformation Type for syntax
Response Transformation	Collapsible Header				
Type	Combo Box One				Predefined Values: VELOCITY / JSLT / XSLT
Template	Text Area				User has to define the template in which consumer accepts. Please refer Transformation Type for syntax
Save	Button				Saves transformation details

9.2 Import

User can create a transformation by importing the JSON file.

Navigation: **Transformation -> Import**



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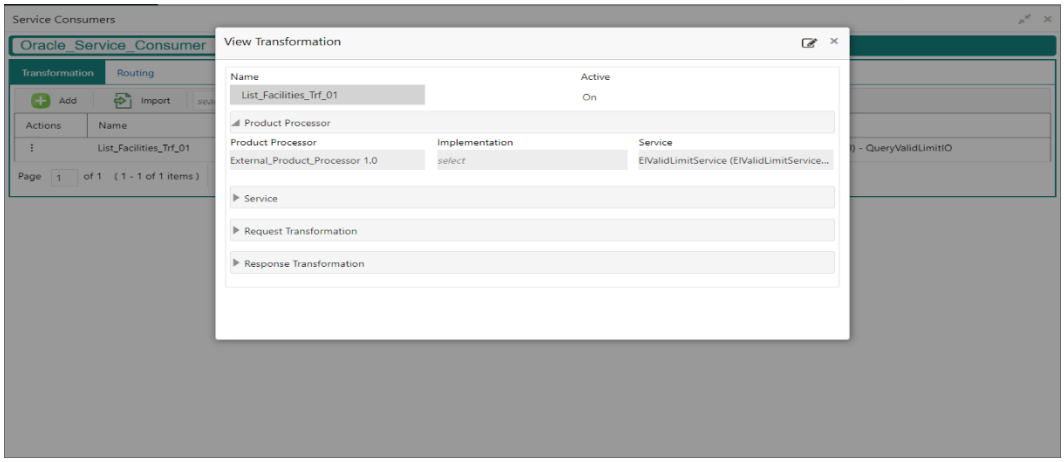
Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Condition**	**Comments**
File	File picker	Yes	• Allows only to select one file	Accepts only JSON file	Pops up file selection dialog box
Import	Button				Imports Transformation

9.3 View

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

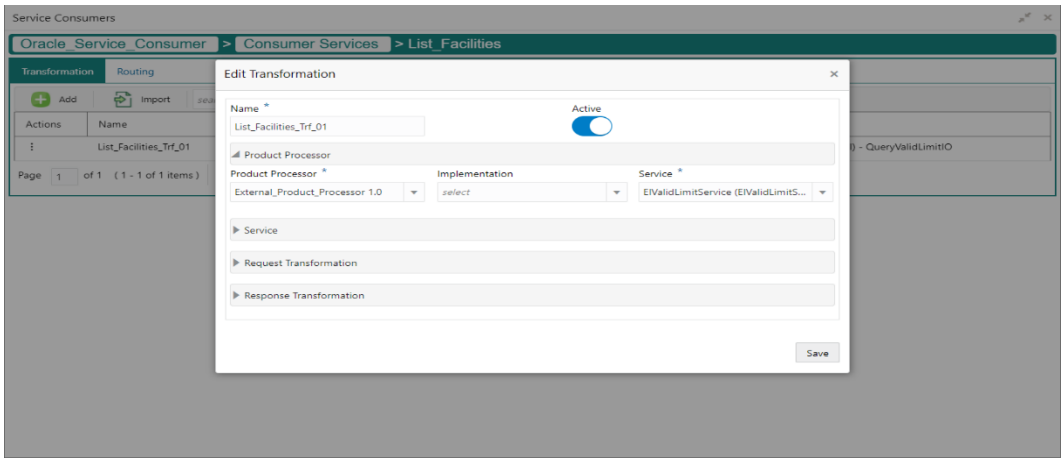
Navigation: **Transformation -> Operation Menu (3 dot icon) -> View**



9.4 Edit

User can modify the transformation details.

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



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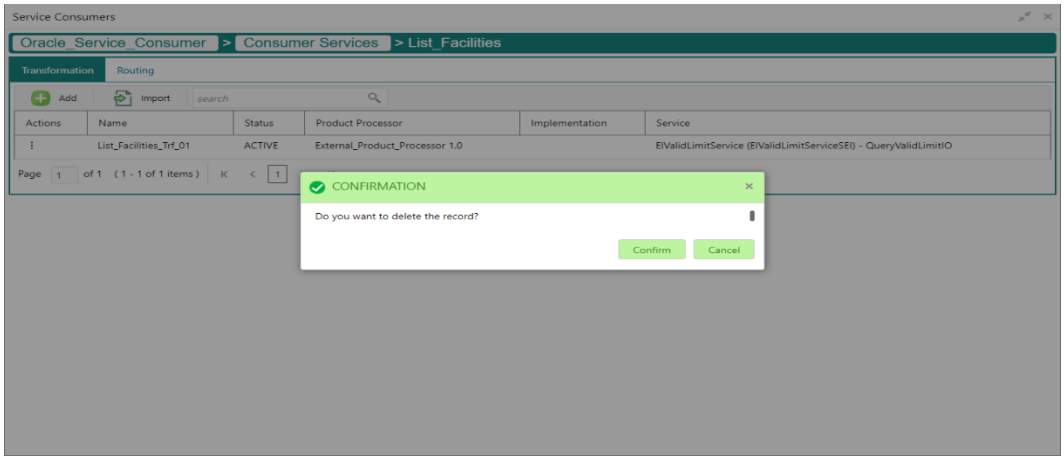
9.5 Delete

User can delete the transformation.

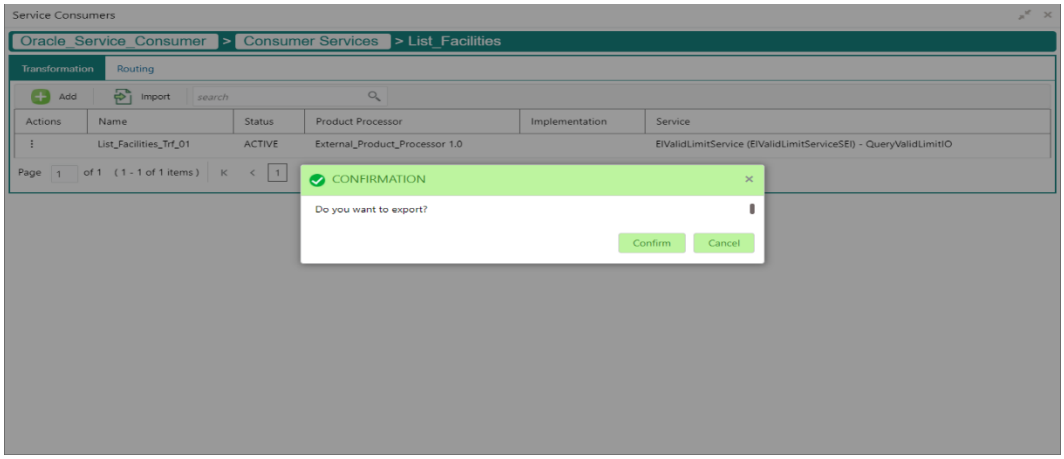
Navigation: **Transformation -> Operation Menu (3 dot icon) -> Delete**



9.6 Export

User can export the transformation configuration as JSON file.

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



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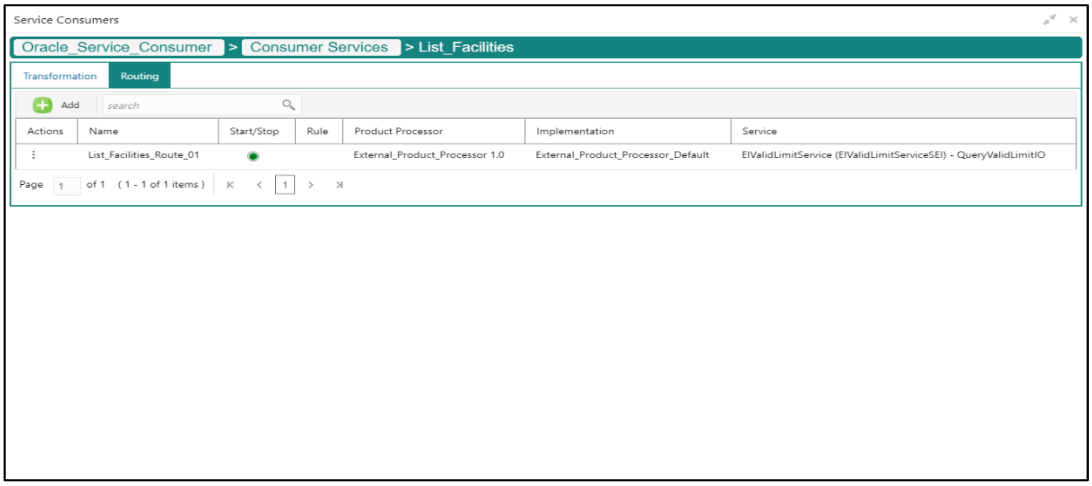
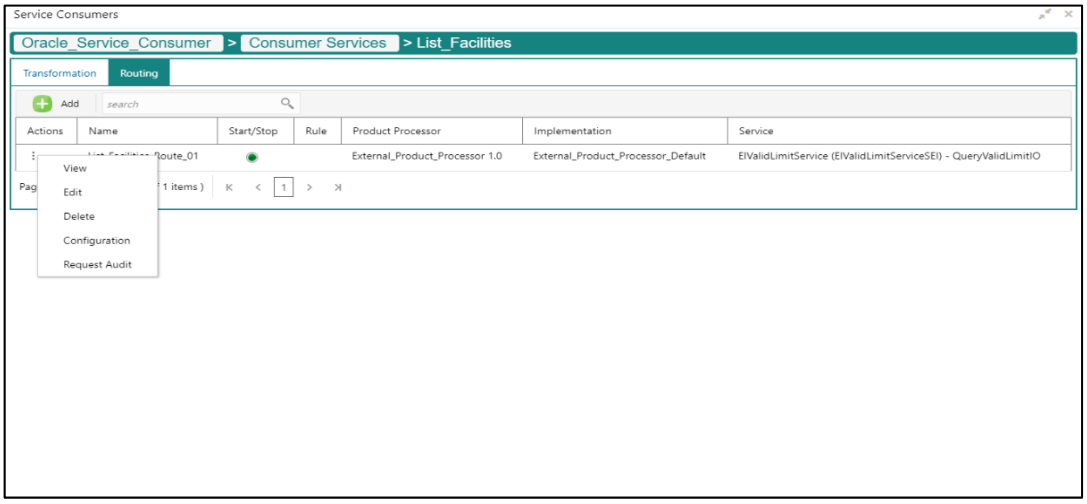
10 Routing

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

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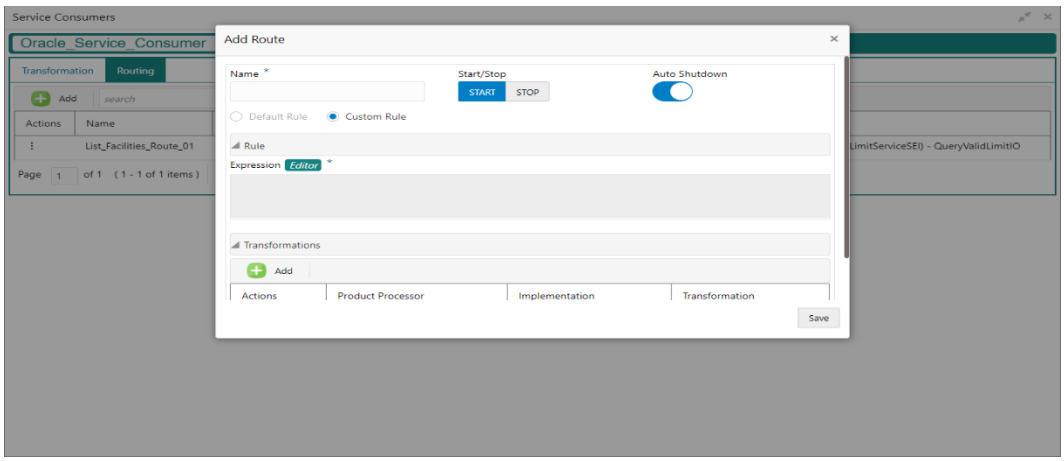
<Consumer Service>	Button		Navigates back to Consumer Services
Add	Button		Pops up add dialog
Search	Combo Box One		Provides search functionality with case insensitive (Routing Name)
Navigation: Routing -> 3 dot icon (operation menu)			
View	menu option	Non-editable	Pops up view dialog
Edit	menu option		Pops up edit dialog
Delete	menu option		
Configuration	menu option		Pops up configuration dialog
Request Audit	menu option		Pops up request audit log

10.1 Add

User can create Routing manually.

Navigation: **Routing -> Add**



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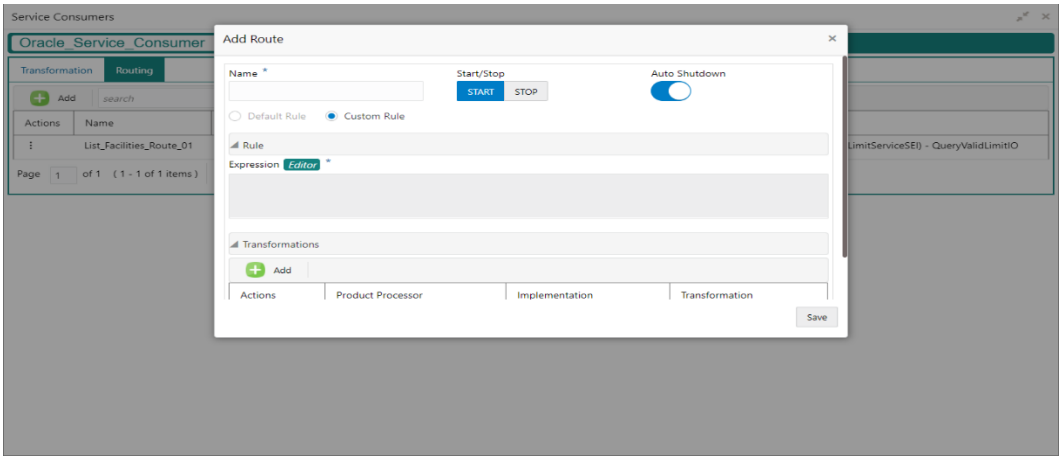
Component briefing			
Component Name	**Component Type**	**Is Mandatory**	**Comments**
Name	Text Box	Yes	Unique routing name
Start / Stop	Switch	Yes	Predefined Values: START / STOP If routing is marked as STOP, then consumer request will fail at routing hub level only.
Auto Shutdown	Switch	Yes	Predefined 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



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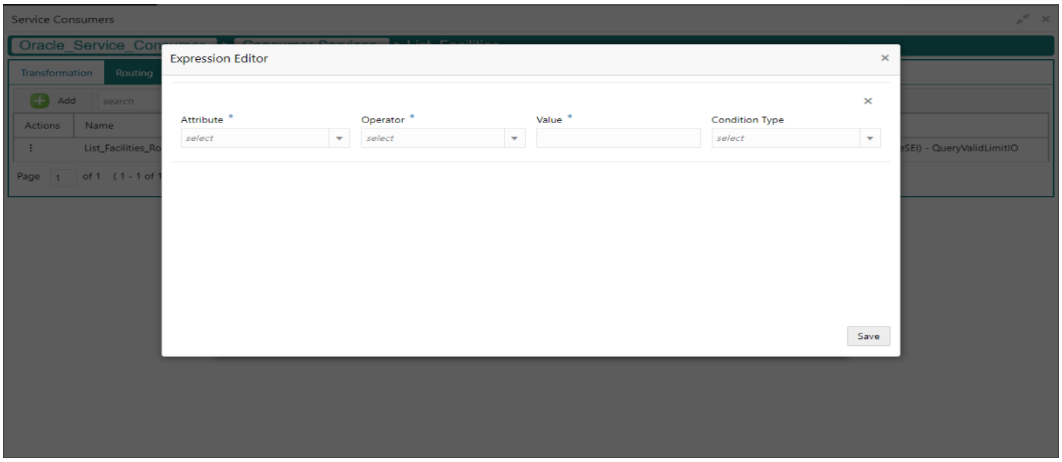
Component briefing				
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Comments**
Expression	Text Area	Yes		User can view expression that is formed through expression editor.
Editor	Button			Pops up expression editor dialog

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	

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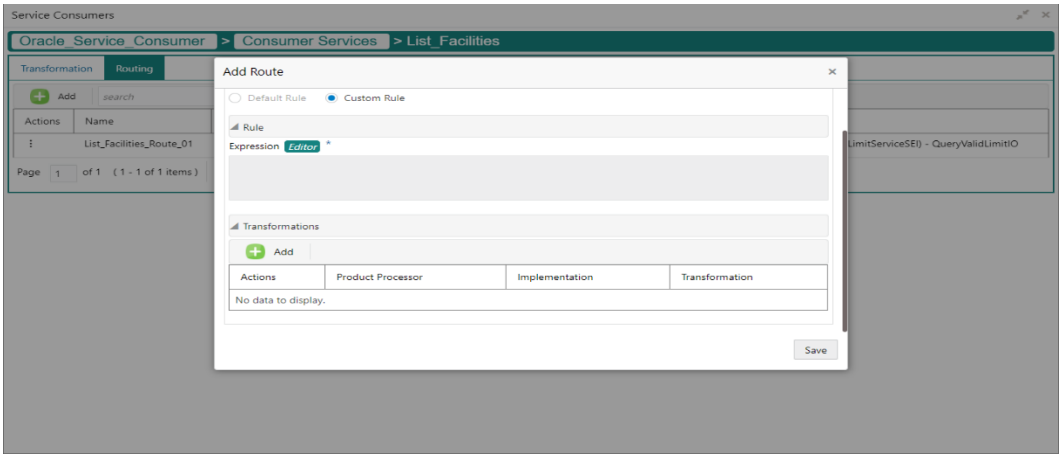
Condition type	Combo Box One		Conditional Operators
Save	Button		Saves the expression

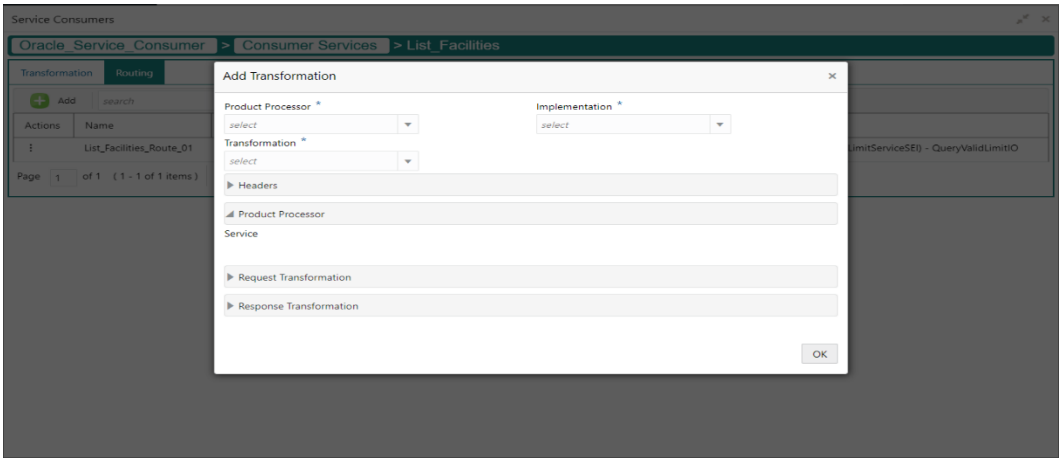
NOTE: String value should be quoted using single quotes (')
eg: 'abc'
List value should be comma separated values and quoted using single quotes (')
eg: 'abc,xyz,1.23,true'

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.





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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

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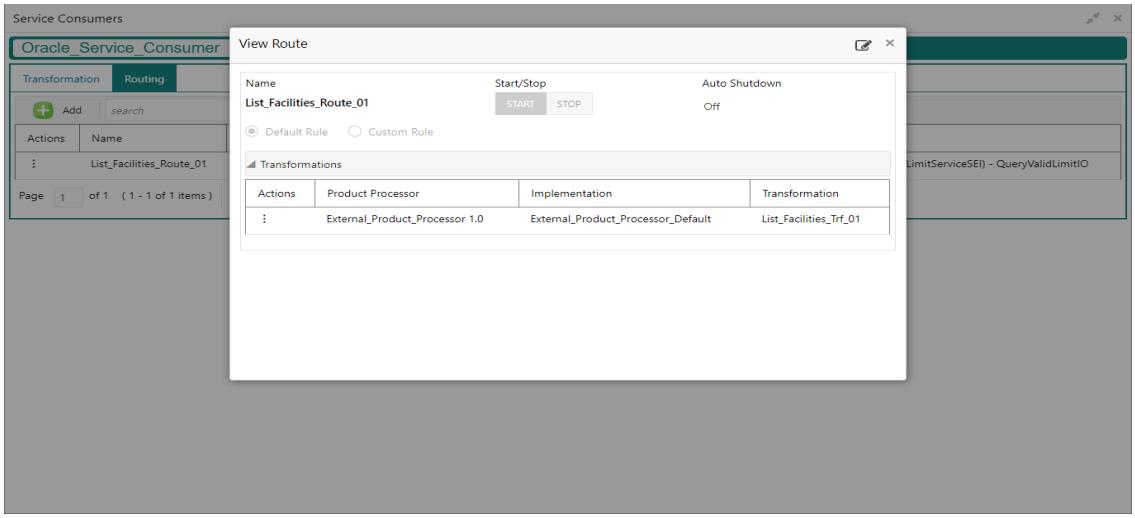
10.2 View

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

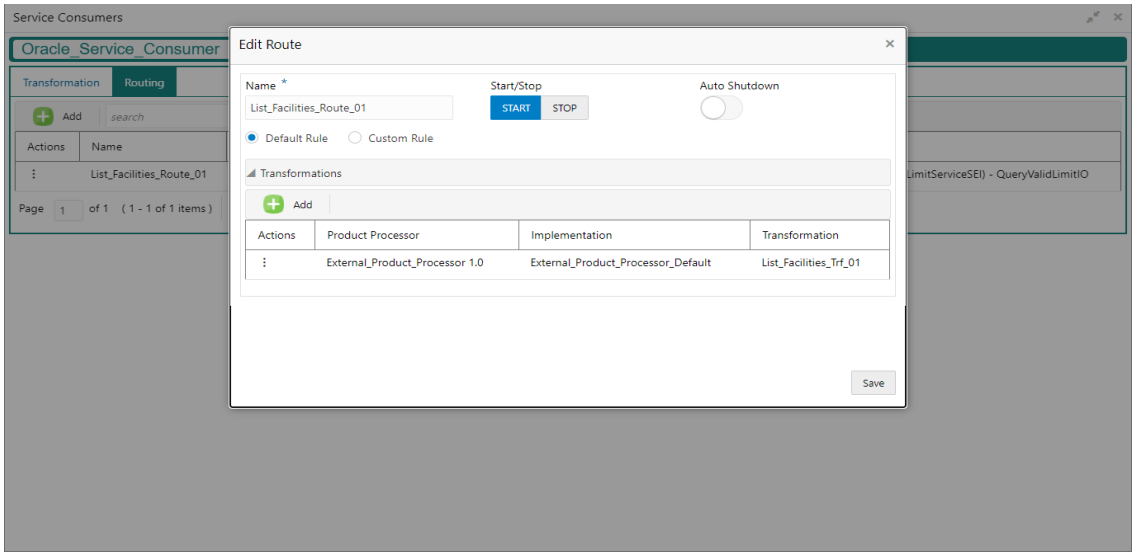
Navigation: **Routing -> Operation Menu (3 dot icon) -> View**



10.3 Edit

User can modify the routing details.

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



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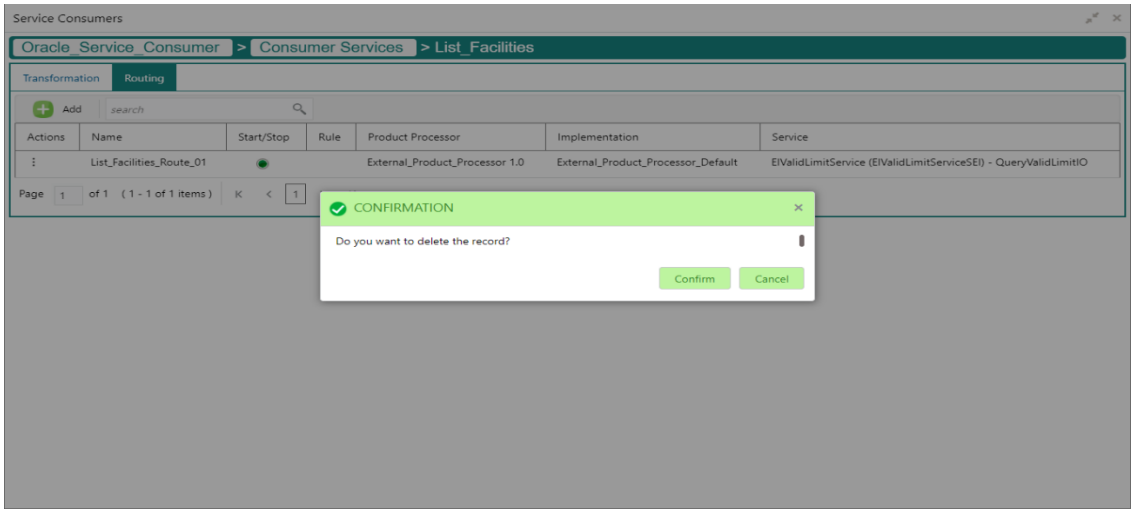
10.4 Delete

User can delete the routing.

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



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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.

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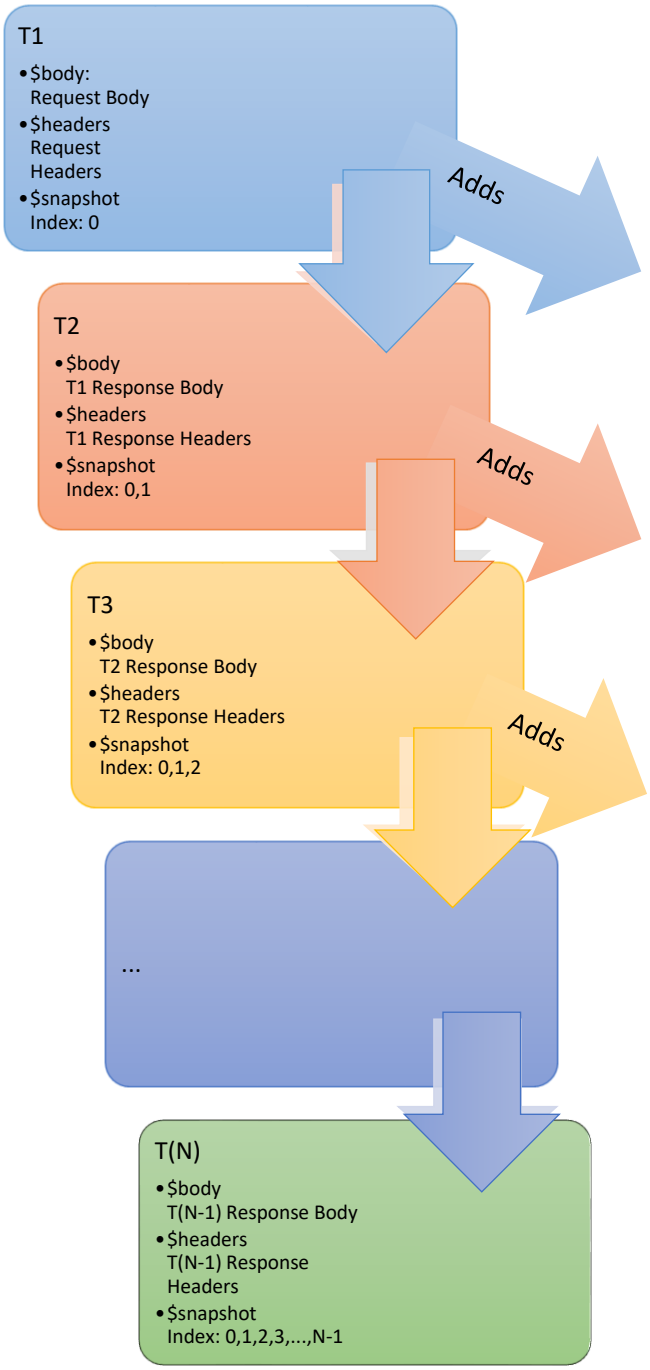

Snapshot List		
Index	**body**	**headers**
0	Request Body	Request Headers
1	T1 Response Body	T1 Response Headers
2	T2 Response Body	T2 Response Headers
3	T3 Response Body	T3 Response Headers
...		

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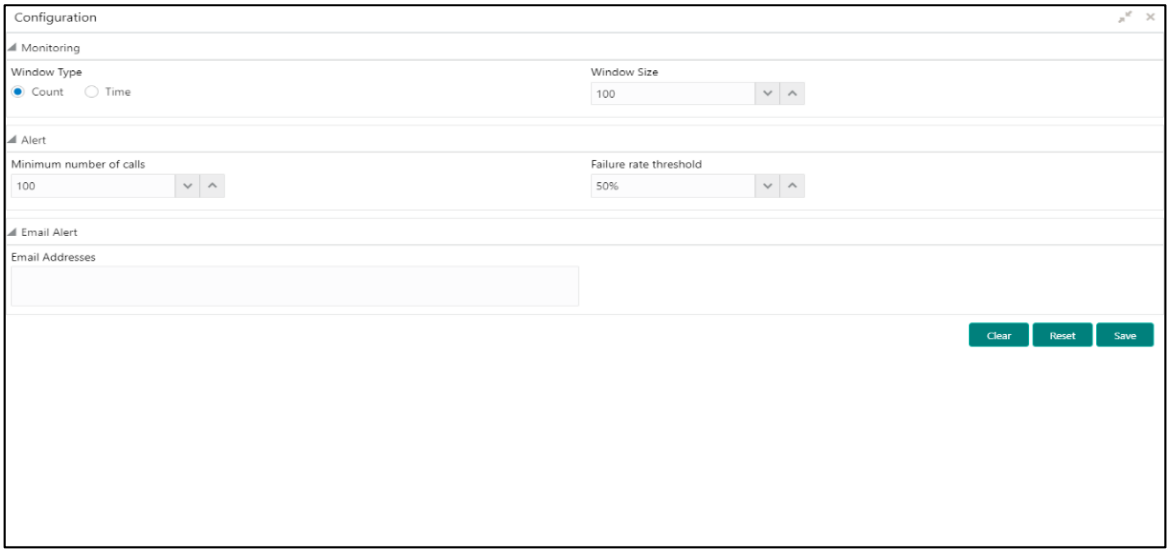
12 Configuration

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**



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

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

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

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.

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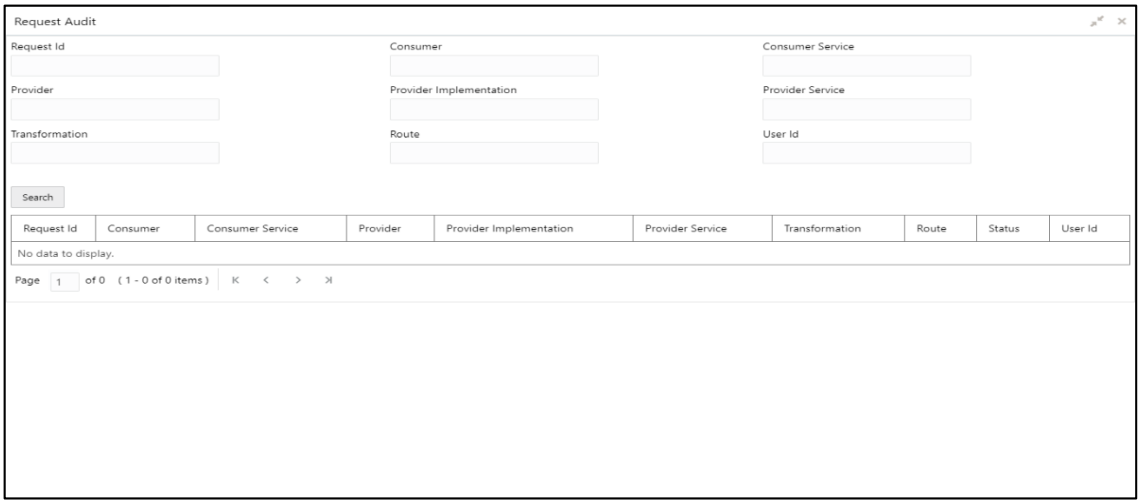
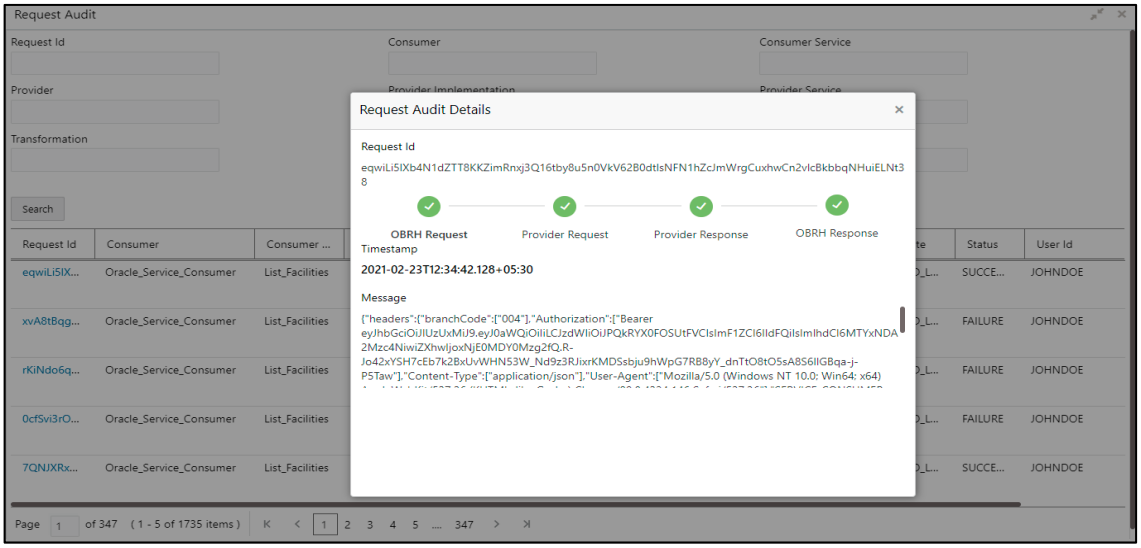
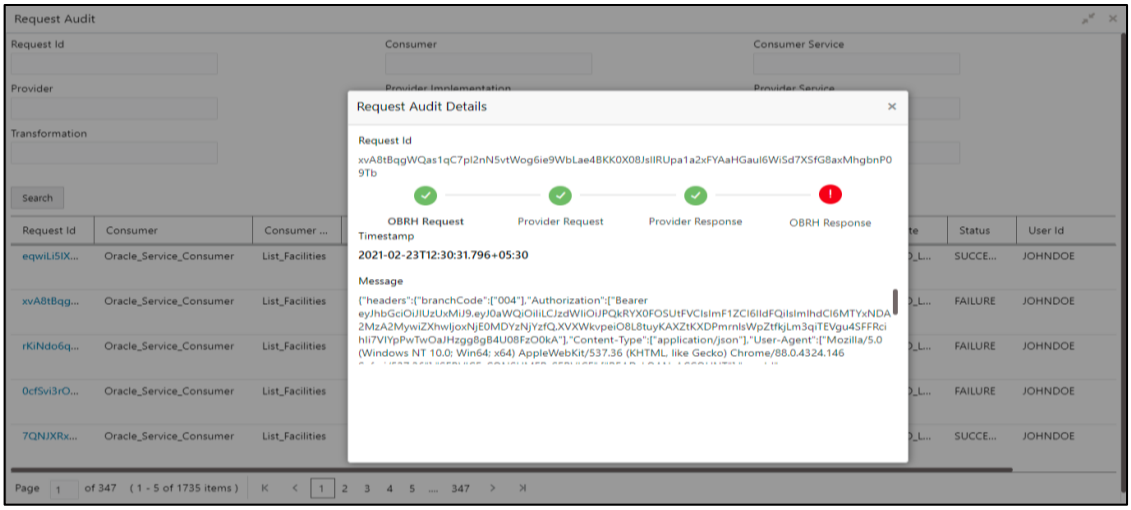
13 Audit Log

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

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Search	Button	Search is done based on below things: • Case insensitive • Pattern matching • Single / Multi Column search	Performs search operation with specified values

NOTE: 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.

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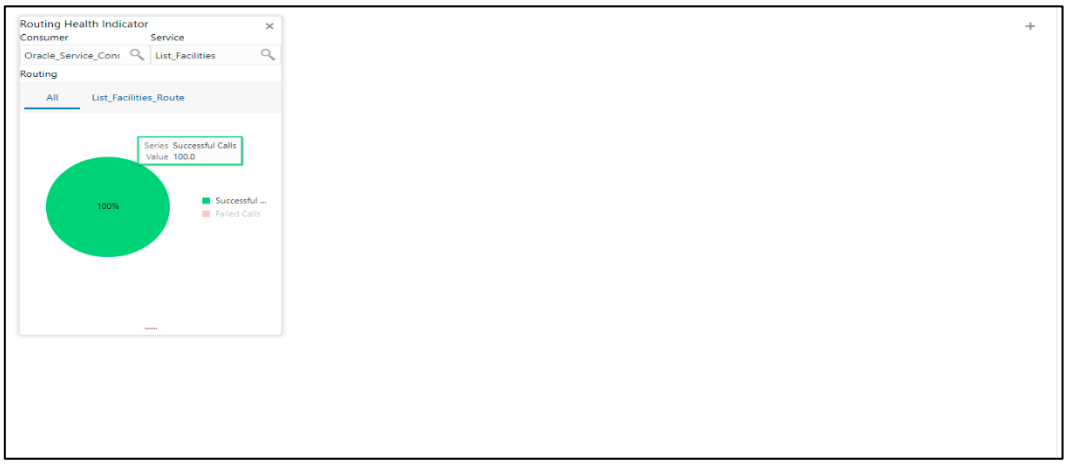
14 Dashboard

14.1 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.



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15 Transformation Type

15.1 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

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- 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/3.0/apidocs/org/apache/velocity/tools/generic/XmlTool.html

- Date Tool

  Syntax: $date.methodName()

  Please refer

  https://velocity.apache.org/tools/3.0/apidocs/org/apache/velocity/tools/generic/DateTool.html

- Json Tool

  Syntax: $json.methodName()

  Please refer

  https://velocity.apache.org/tools/3.0/apidocs/org/apache/velocity/tools/generic/JsonTool.html

- Math Tool

  Syntax: $math.methodName()

  Please refer

  https://velocity.apache.org/tools/3.0/apidocs/org/apache/velocity/tools/generic/MathTool.html

- Number Tool

  Syntax: $number.methodName()

  Please refer

  https://velocity.apache.org/tools/3.0/apidocs/org/apache/velocity/tools/generic/NumberTool.html

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- Escape Tool

  Syntax: $esc.methodName()

  Please refer https://velocity.apache.org/tools/3.0/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

- 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.

15.2 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.

15.3 JSLT

JSLT is a complete query and transformation language for JSON.

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16 Oracle Banking Routing Hub Integration Specification

16.1 Token Generation

PlatoJWTAuth endpoint Signature -

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

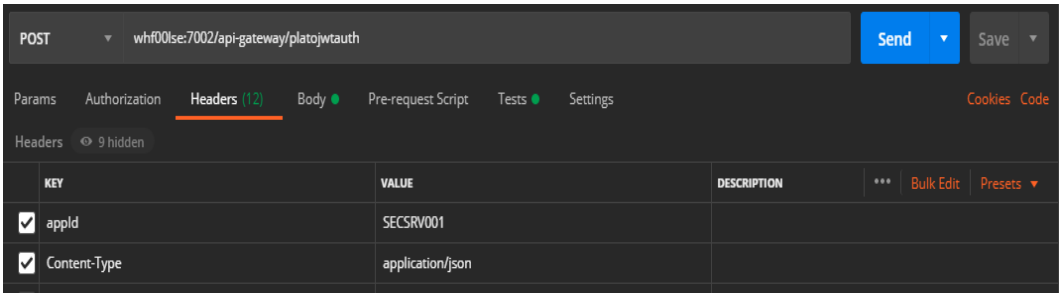
```
{
    "username": "",
    "password": ""
}
```

  - 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



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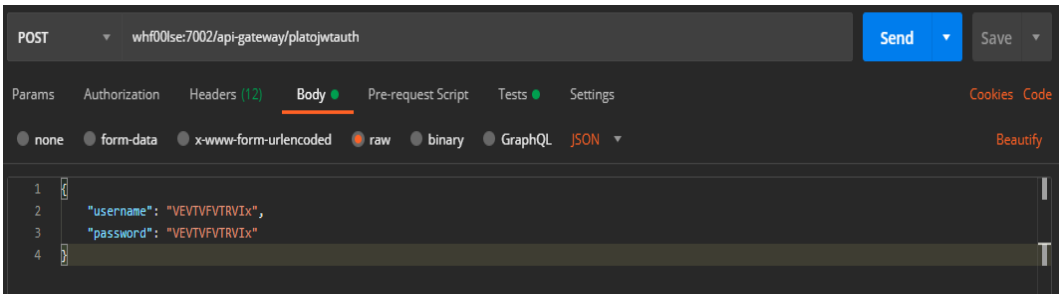
Request Payload



Response Payload

16.2 Synchronous 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
- 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.

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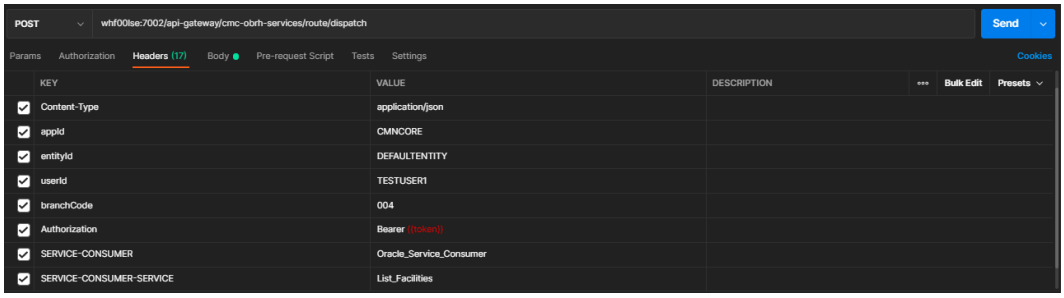
- Response Body:

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

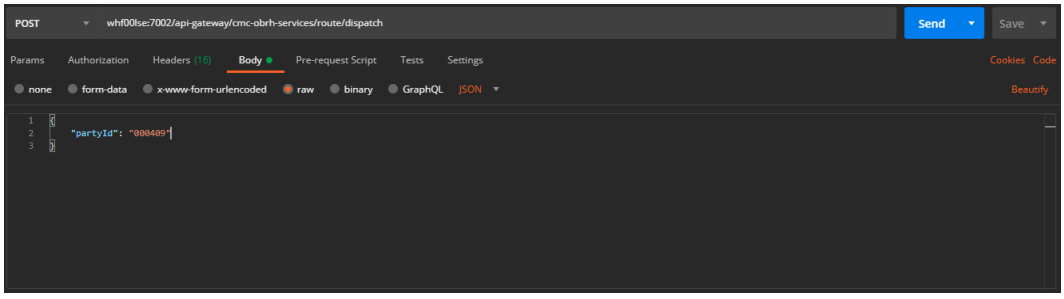
  - If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it's a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.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



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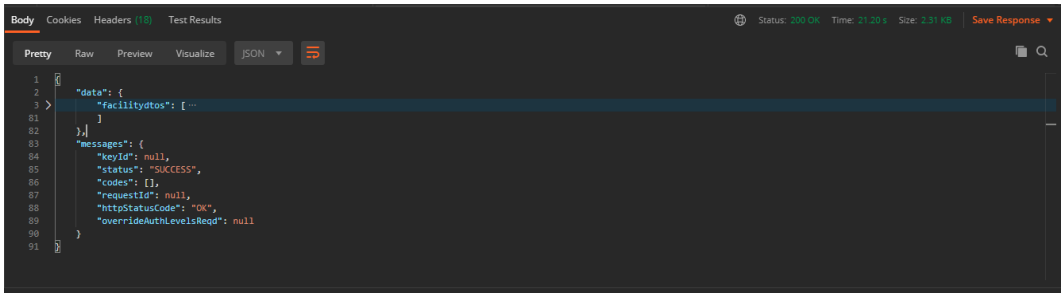
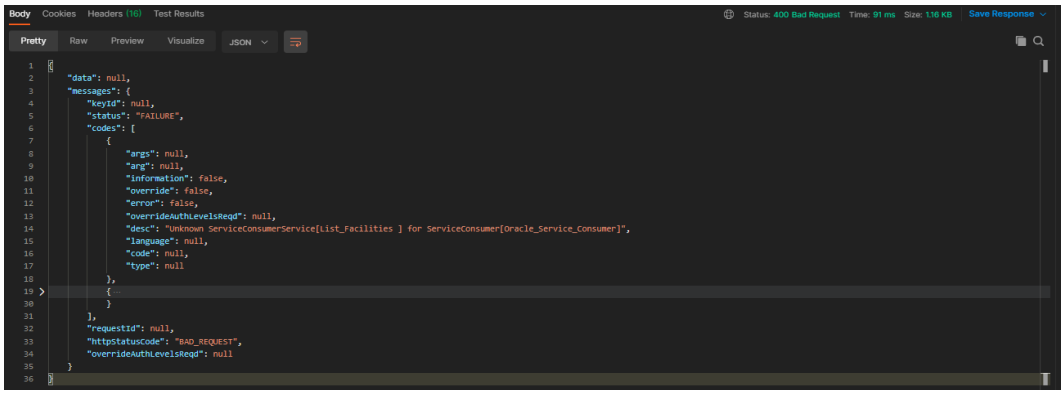
Response Payload on Successful Dispatch



Response Payload on Failed Dispatch



16.3 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>

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- SERVICE-CONSUMER-SERVICE : <name of service consumer service>

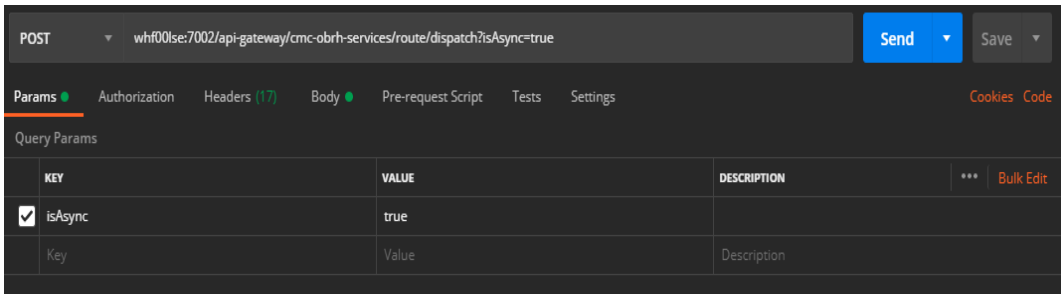
- Request Body:
  - Any valid JSON payload which shall act as input to the transformation template in request transformer.

- Response Body:

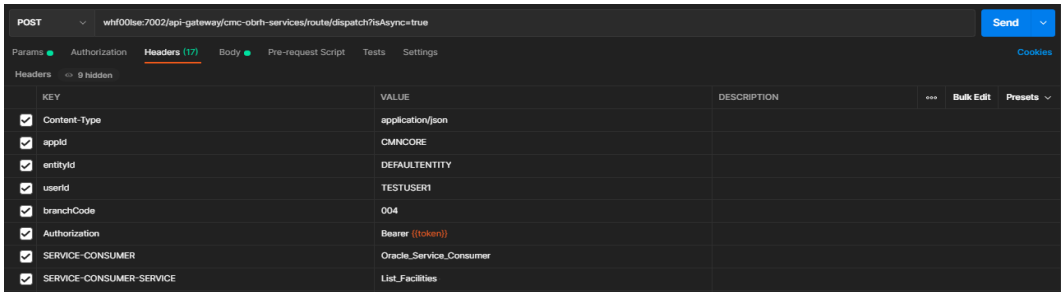
```
{
 "data": { “correlationId” : “” },
 "messages": {}
}
```

Example - Below are the screenshots of route dispatch for ServiceConsumer **Oracle_Service_Consumer** and ServiceConsumerService **List_Facilities**

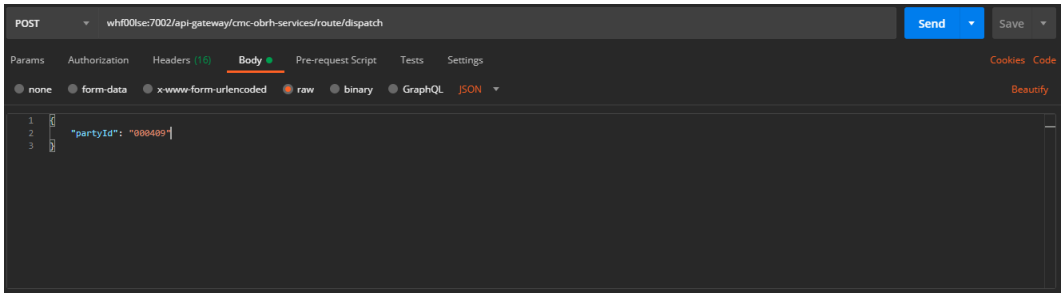
Query Params



Headers



Request Payload



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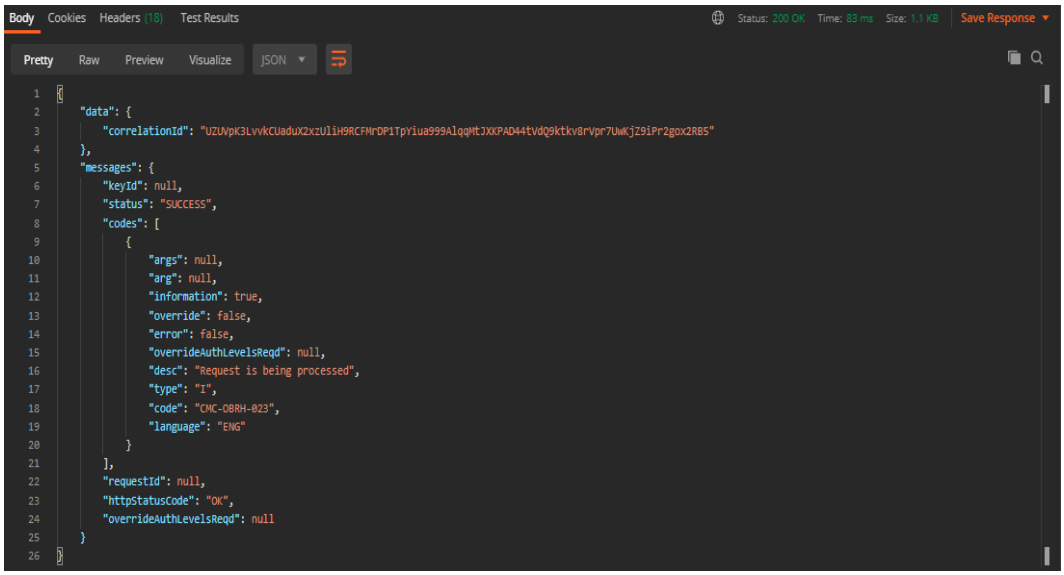
Response Payload



16.4 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.

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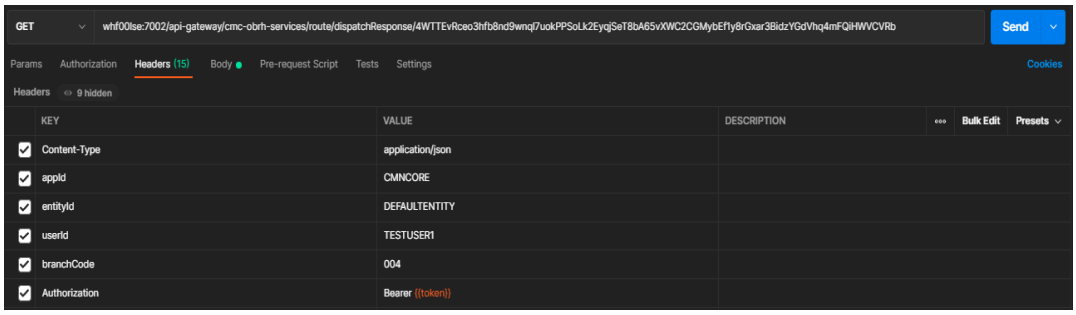
- If the route invocation fails due to misconfigured route or connection time out to ServiceProviderImpl or some other reason, relevant error messages would be sent in messages JSON member. In that case, data JSON member would be null or empty.

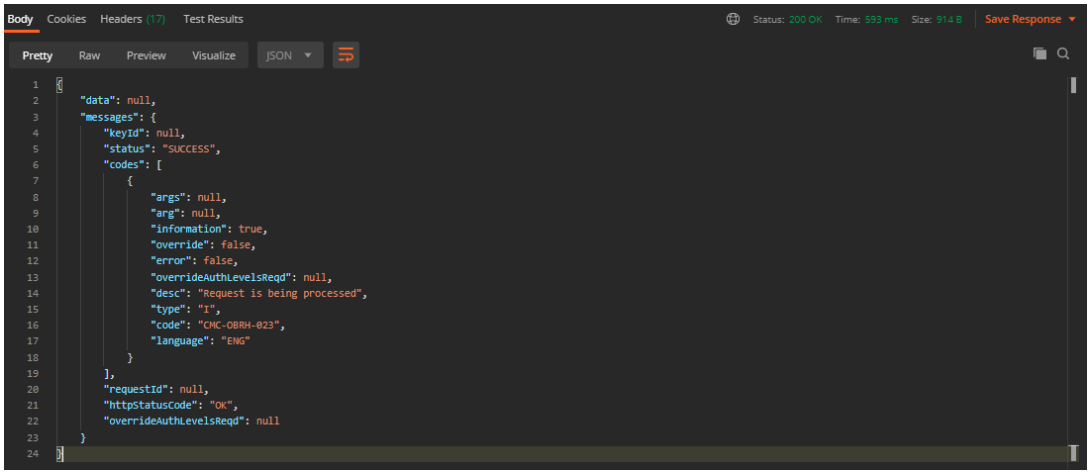
Example - Below are the screenshots of route dispatch for

ServiceConsumer **Oracle_Service_Consumer** and ServiceConsumerService **List_Facilities**

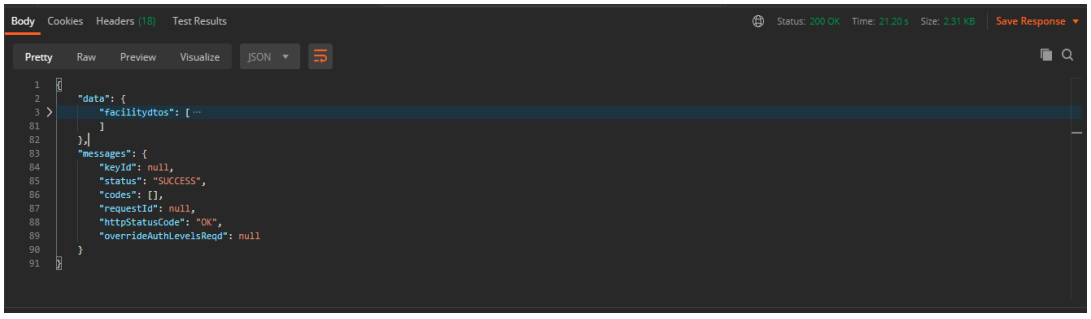
Headers



Response Payload when request is still processing



Response Payload when request is processed (on Successful Dispatch)



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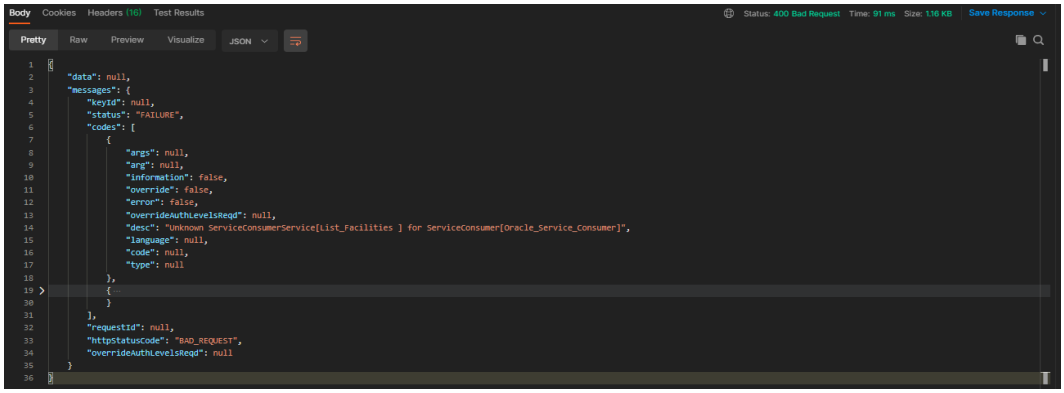
Response Payload when request is processed (on Failed Dispatch)



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17 Oracle Banking Routing Hub VM Arguments

Common Core Managed Server

-Dcmc-obrh-services.server.port=<SERVER_PORT>

-Dobrh.db.jndi=<CMNCORE_JNDI>

-Dcmc-obrh-services.kafka.server.path=<KAFKA_SERVER_PATH>

-Dcmc-obrh-services.zookeeper.server.path=<ZOOKEEPER_SERVER_PATH>

In order to receive routing failure mail notification via plato-alerts-management-service, then set the below property to true,

Otherwise set it to false

-Dcmc-obrh-services.kafka.enabled=<KAFKA_ENABLED>

In order to disable the modification of imported data (i.e. Factory Shipped data), then set the below argument to true (otherwise false).

-Dobrh.factory-shipped-data.readonly=true

In order to use Custom Truststore for HTTPS scheme,

-Dobrh.truststore.path=<TRUSTSTORE_PATH>

-Dobrh.truststore.password=<TRUSTSTORE_PASSWORD>

In order to do tomcat deployment,

-Dobrh.server.isJavaEE=false (mandatory)

-Dobrh.taskexecutor.corepoolsize=<CORE_POOLSIZE> (default is 50) (optional)

-Dobrh.taskexecutor.maxpoolsize=<MAX_POOLSIZE> (default is 50) (optional)

-Dobrh.taskexecutor.queuecapacity=<QUEUE_CAPACITY> (default is 100) (optional)

In order to set Proxy settings for HTTPS,

-Dhttps.proxyHost=<PROXY_HOST_NAME>

-Dhttps.proxyPort=<PROXY_PORT>

-Dhttps.nonProxyHosts=<NON_PROXY_HOST_LIST>

-Dhttp.nonProxyHosts=<NON_PROXY_HOST_LIST>

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NOTE: 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).

In order to configure for SSL/Authentication enabled Kafka broker,

-Dspring.cloud.stream.kafka.binder.jaas.options.username=<Zookeeper user created for clients>

-Dspring.cloud.stream.kafka.binder.jaas.options.password=<Zookeeper user encrypted password for clients>

-Dspring.cloud.stream.kafka.binder.configuration.ssl.truststore.location=<location of client trust store certificate>

-Dspring.cloud.stream.kafka.binder.configuration.ssl.truststore.password=<Pass code of client truststore certificate>

NOTE: Please refer **Oracle Banking Microservices Platform Foundation Installation Guide.**

In order to set logger level,

- Dplato.service.logging.level=<LOG_LEVEL>

In order to do SSL based SOAP provider calls and if RoutingHub is deployed on weblogic environment,

-DUseSunHttpHandler=true

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

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)

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NOTE: -1 for no size constraint

Example:

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

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

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