Routing Hub Configuration User Guide
Oracle Banking Electronic Data Exchange for Corporates
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Routing Hub Configuration User Guide

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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 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

2. Introduction

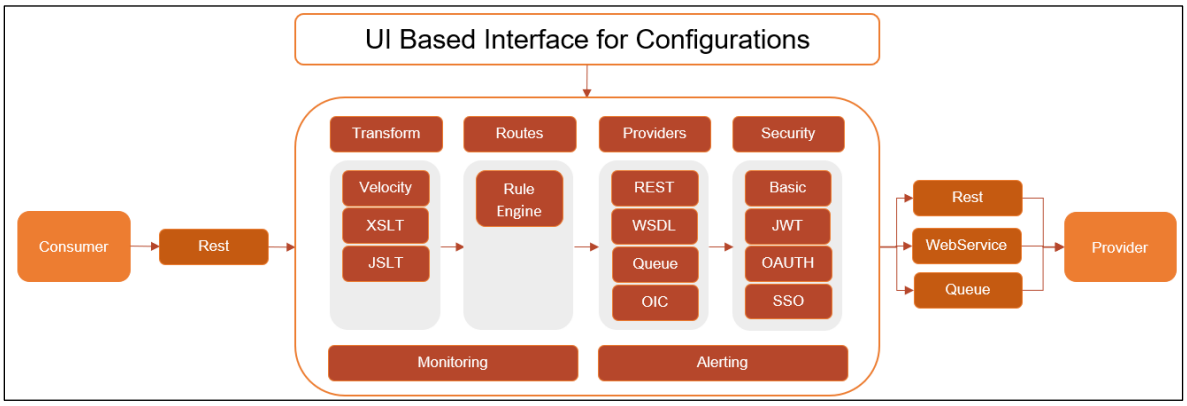
'Oracle Banking Routing Hub' enables seamless & standardized integrations between FSGBU Banking Products using configurations. This component is available as part of the product Infrastructure solution. A loose couple integration between banking products is possible with Oracle Banking Routing Hub.

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, multipart request.
- Communication Protocol – Web services, Rest API, Queue, OIC.

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

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



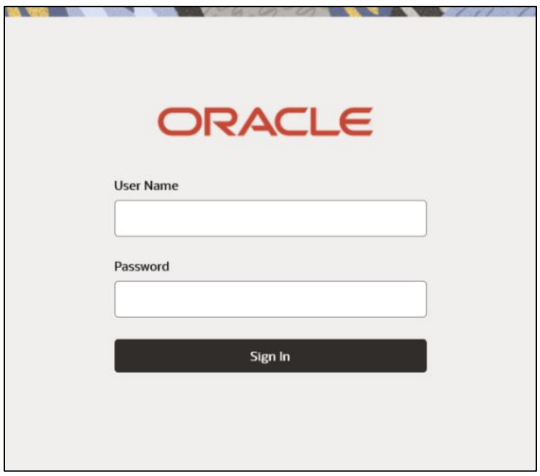
2.1 Definitions

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

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

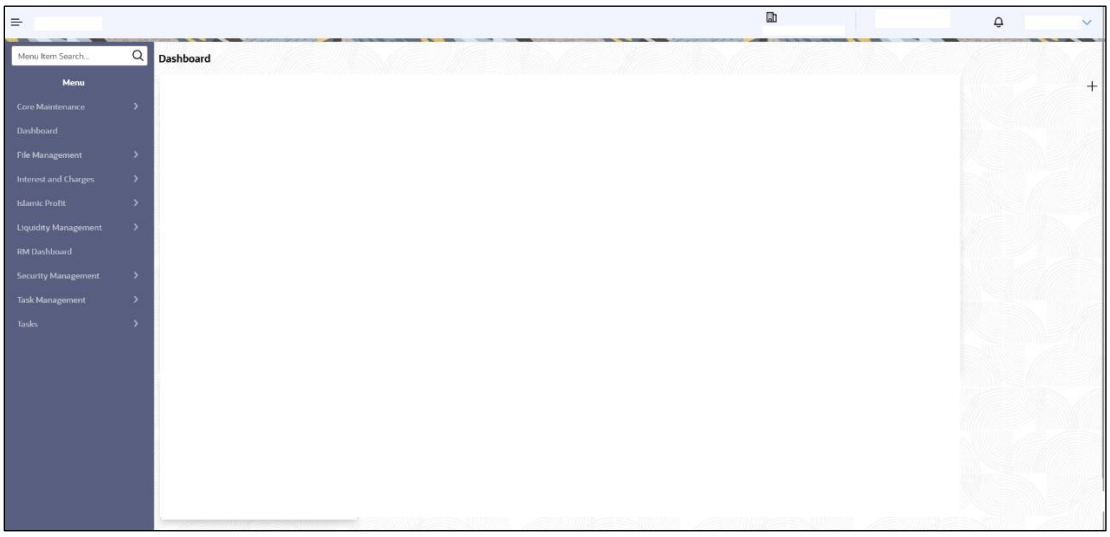
3. Start Maintenance - Login Screen

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



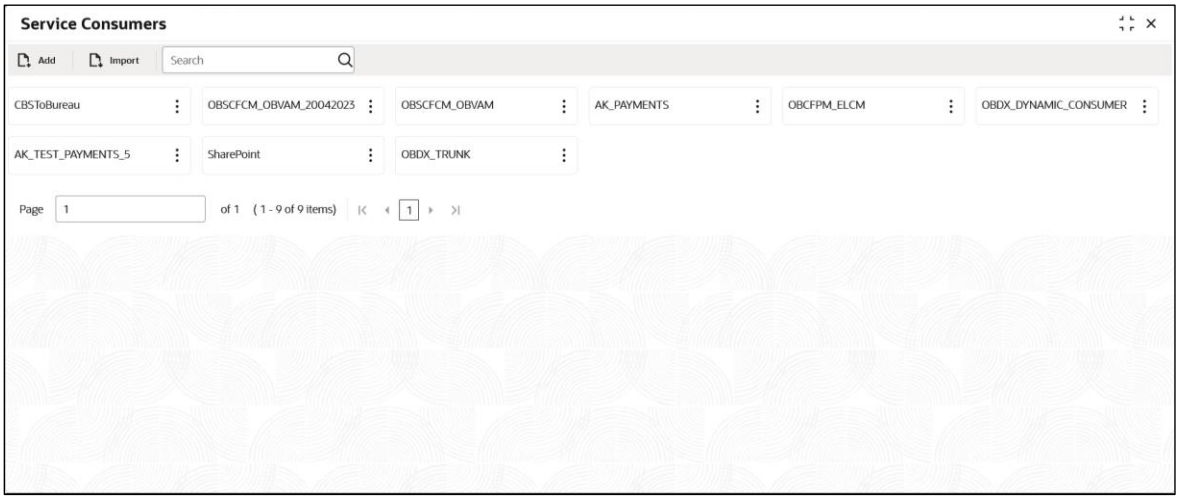
Component briefing		
Component Name	**Component Type**	**Comments**
Core Maintenance	Main menu item	
Routing Hub	Sub menu item	
Monitoring Dashboard	Sub menu option	Navigates to Monitoring Dashboard
Configuration	Sub menu option	Navigates to Configuration screen
Service Consumer	Sub menu option	Navigates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



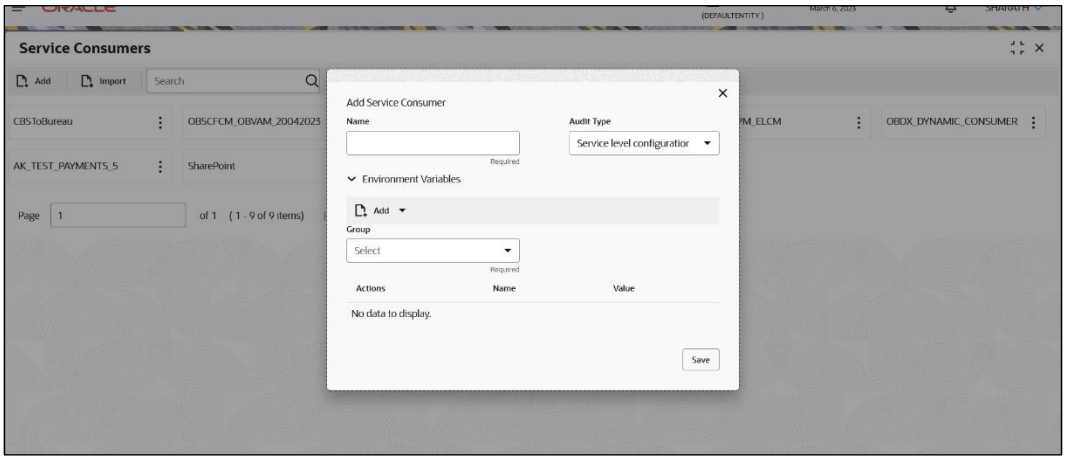
You can Import the settings shipped out of the box by a Oracle Banking product or from another environment say UAT or pre-production environment.

Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Service Consumer Name) N**ote:** Use wildcard character (*) for pattern matching

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

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



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
Audit Type	Combo Box One	Yes			Predefined Values: All Requests / Service level configuration / None Please refer Audit Type section
Environment Variables	Table Content				
Save	Button				Saves the Service Consumer

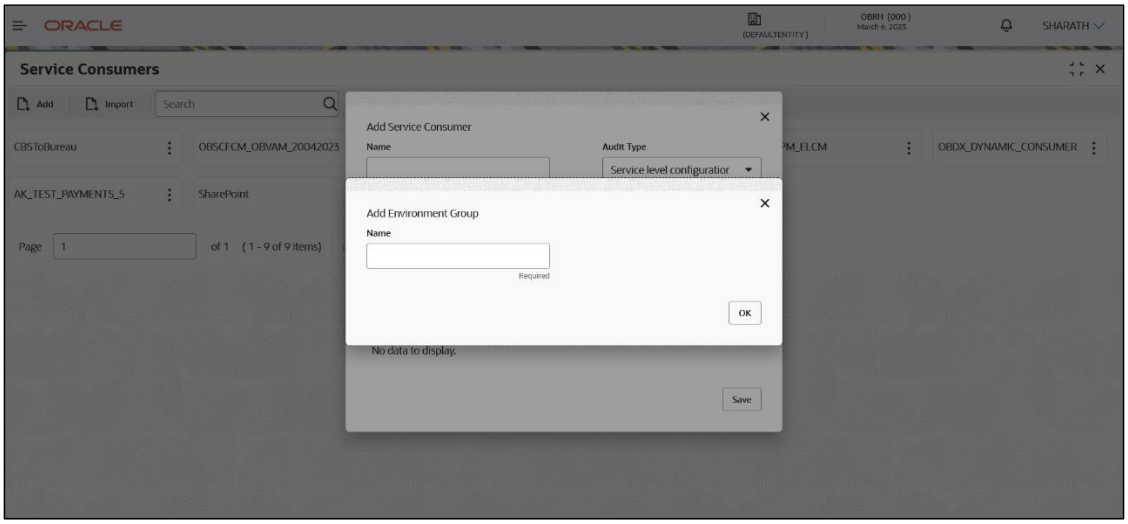
5.2 Audit Type

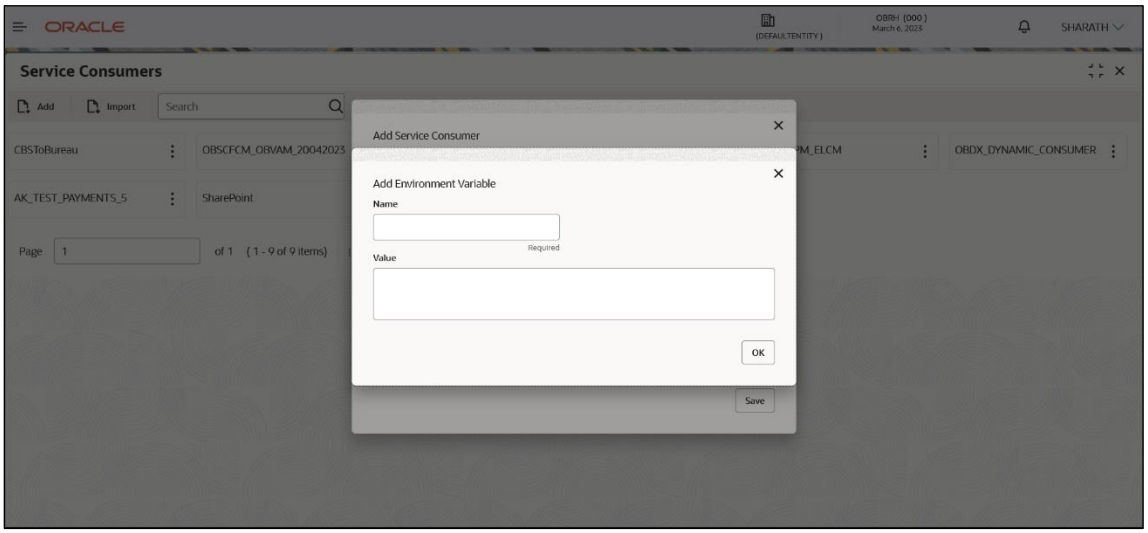
The application provides multiple options to audit a requires in OBRH. Following options are available via configurations:

- **All Requests** – All requests are logged in the OBRH and can be viewed later for debugging.
- **Specific Request**: Option has been provided at consumer services for enabling audit of requests for specific Consumer Services. Audit type should be configured as “Service level configuration” and audit option at “Consumer Services” should be selected for Consumer Services which need to be audited. Monitoring dashboard does not provide the data for requests which are not being audited.
- **None** - Disables the audit completely. Audit logs cannot be reviewed later and monitoring dashboard does not provide the data.

5.2.1 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



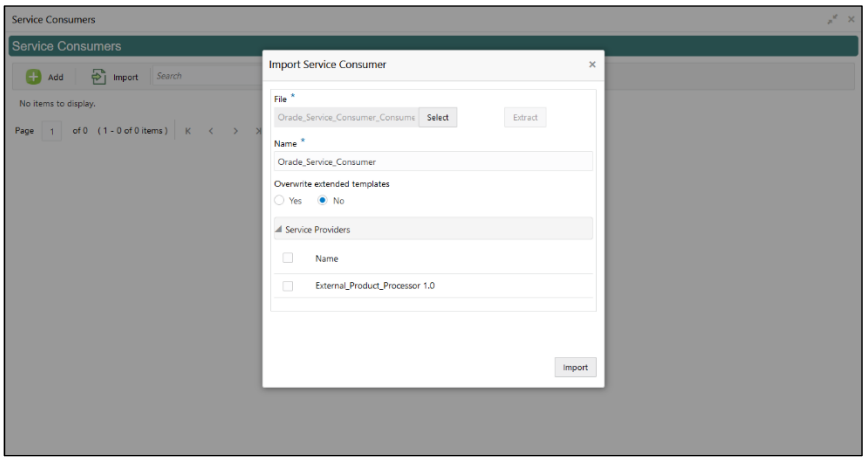


Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Add	Menu Item				

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
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

5.3 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.
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	Name is required only for JSON file
Overwrite extended templates	Radio Button	Yes				Predefined Values: Yes / No Yes: This option is for overwriting the extended templates in configuration and No: This option is for retaining the existing extended templates in configuration.
Service Provider	Collapsible Header & Content					Displays the list of service providers that are present in JSON file only

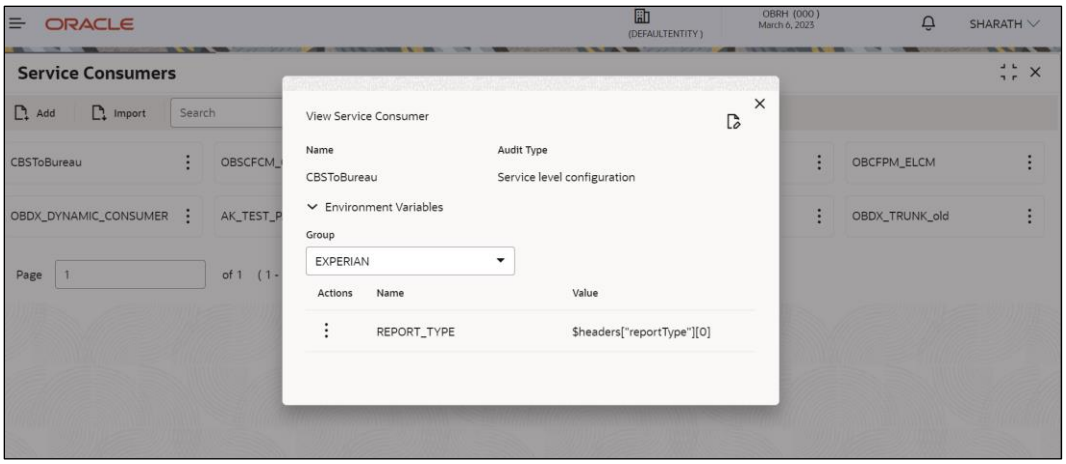
Import	Button					Imports Service Consumer

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

- Implementation Host and Port
- Implementation Authentication Password

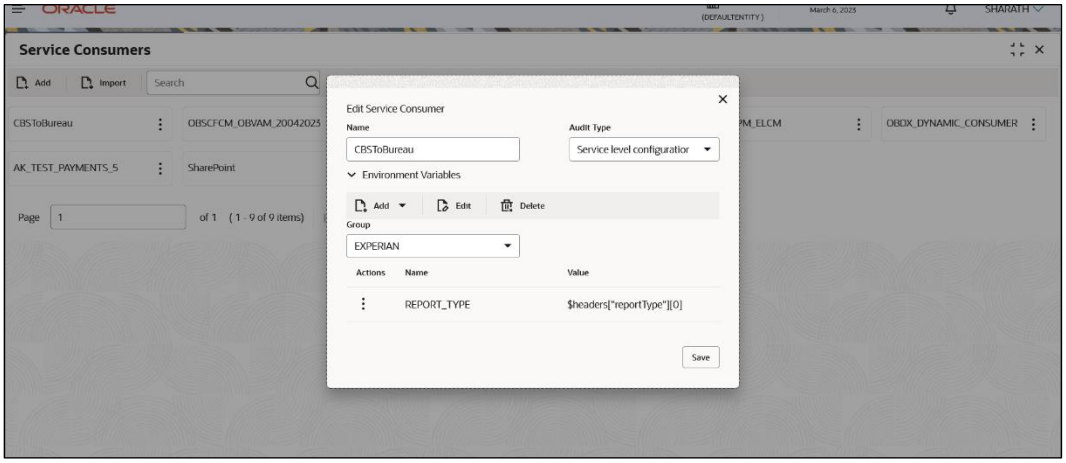
5.4 View

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**



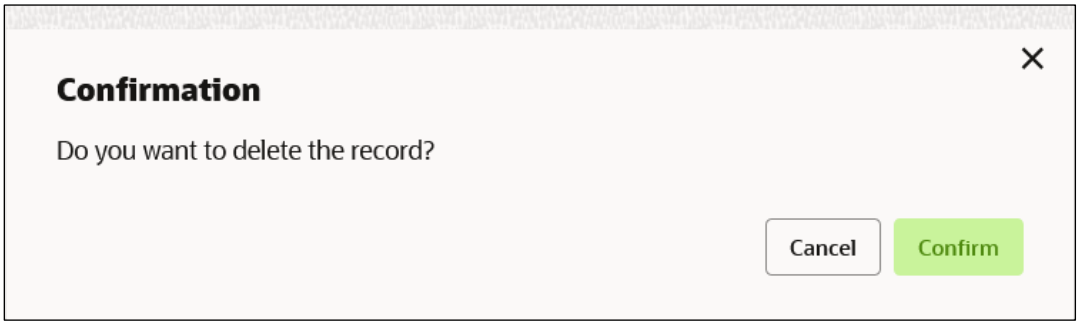
5.5 Edit

User can modify the consumer details.
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Edit**



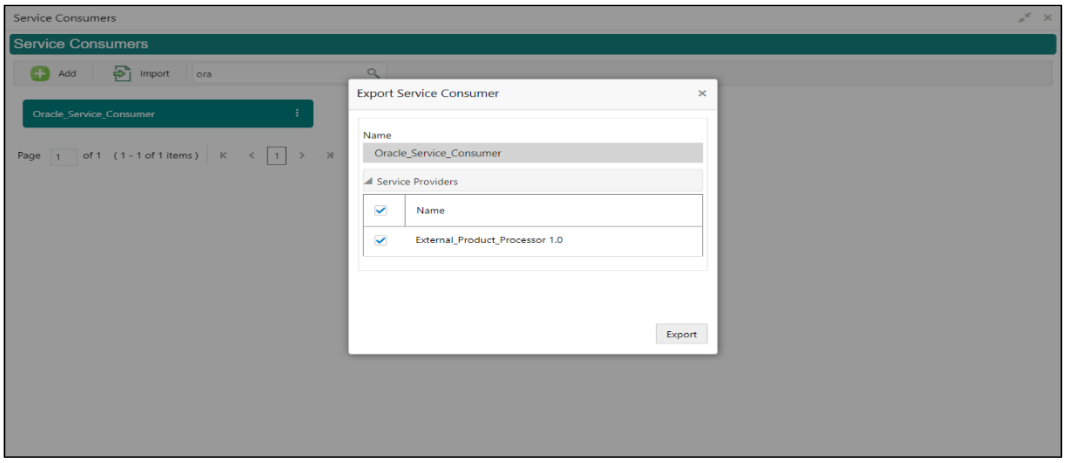
5.6 Delete

User can delete the consumer.
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Delete**



5.7 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

5.8 SQL Export

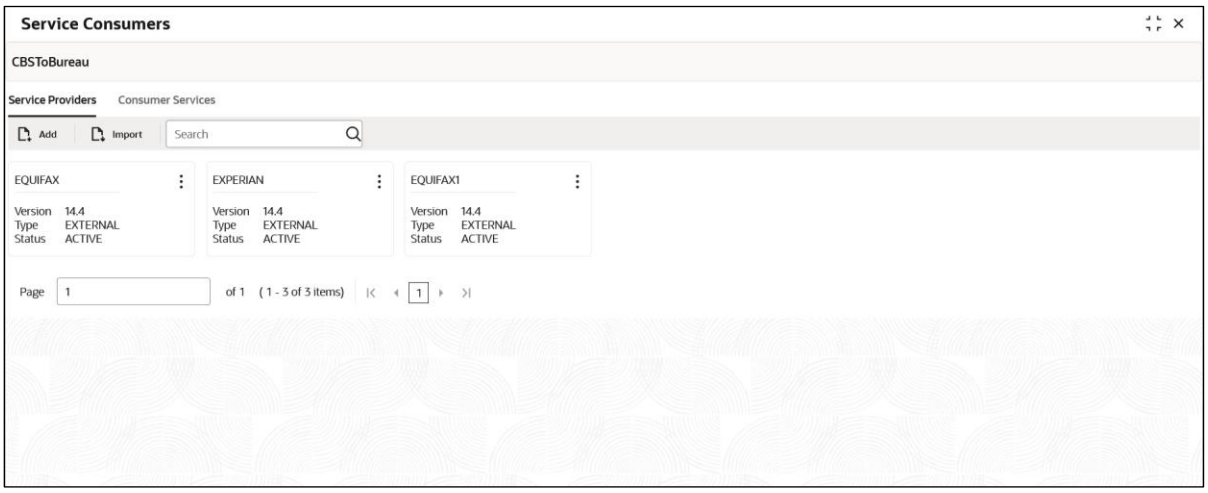
User can export the consumer configuration as SQL file.
Navigation: **Service Consumers -> Operation Menu (3 dot icon) -> Export -> SQL**

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**

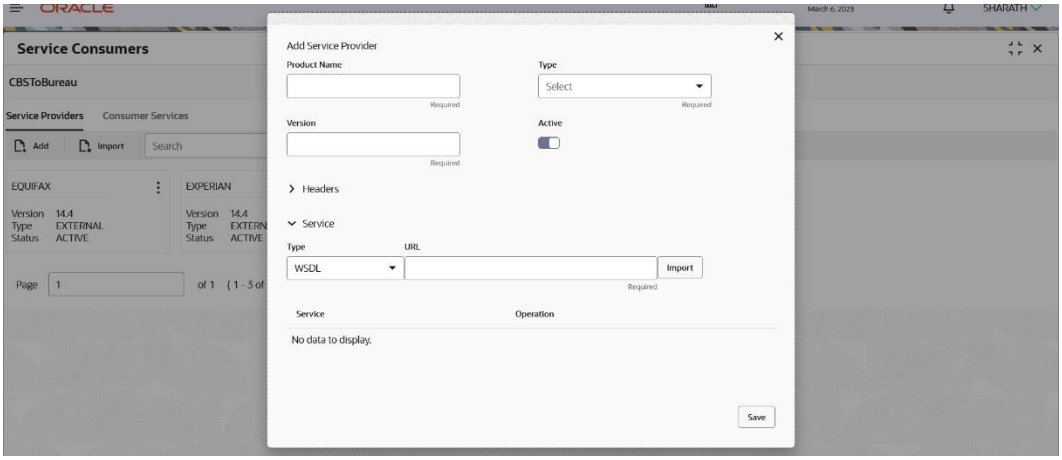


Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Service Provider Name) N**ote: Use wildcard character (*) for pattern matching**
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
Configuration	menu option		Pops up configuration dialog
Request Audit	menu option		Pops up request audit log
Clear Cache	menu option		Clears SOAP client cache

6.1 Add

User can create Service Provider manually.
Navigation: **Service Providers-> Add**



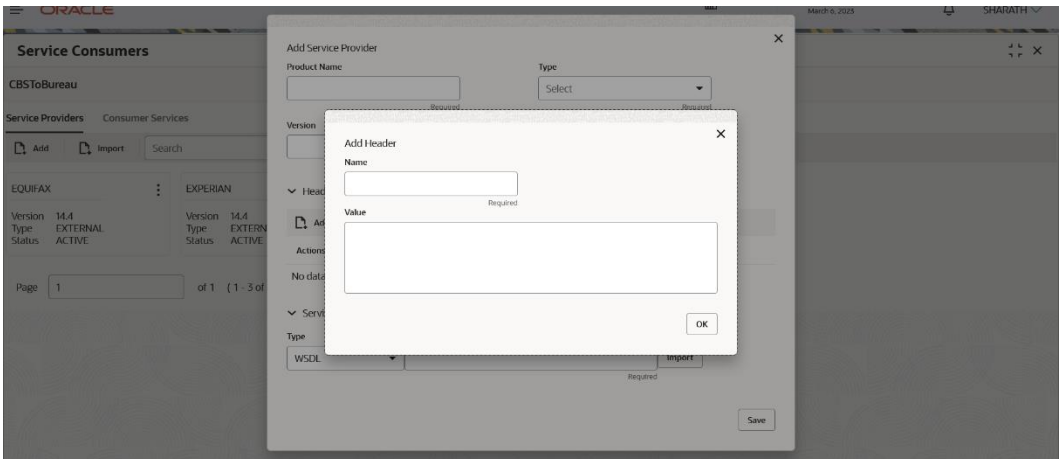
Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Product Name	Text Box	Yes	Alphanumeric with special characters	• Name cannot be blank • Enter 0 or more characters, up to a maximum of 255. • No numeric value at beginning and no space allowed.	Unique provider name
Type	Combo Box One	Yes			Predefined Values: INTERNAL / EXTERNAL INTERNAL type should be used for oracle products. 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

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

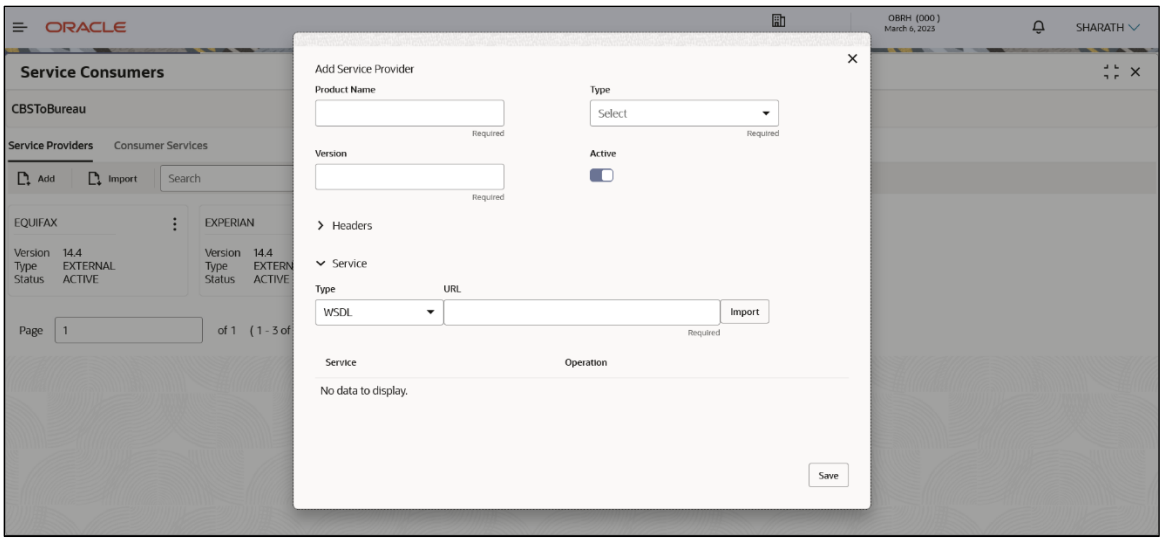
Note: Content-type header will be removed from Provider request if header value is NONE.



Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Add	Button				Pops up add dialog
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

6.1.2 **Service**



Component briefing			
Component Name	**Component Type**	**Is Mandatory**	**Comments**
Type	Combo Box One	Yes	Predefined Values: WSDL / SWAGGER / OTHERS
URL	Text Box	Yes	Service URL of the file location
Context Path	Text Box		Context path of below formatted URL http://host:port/context-path/endpoint
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.

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

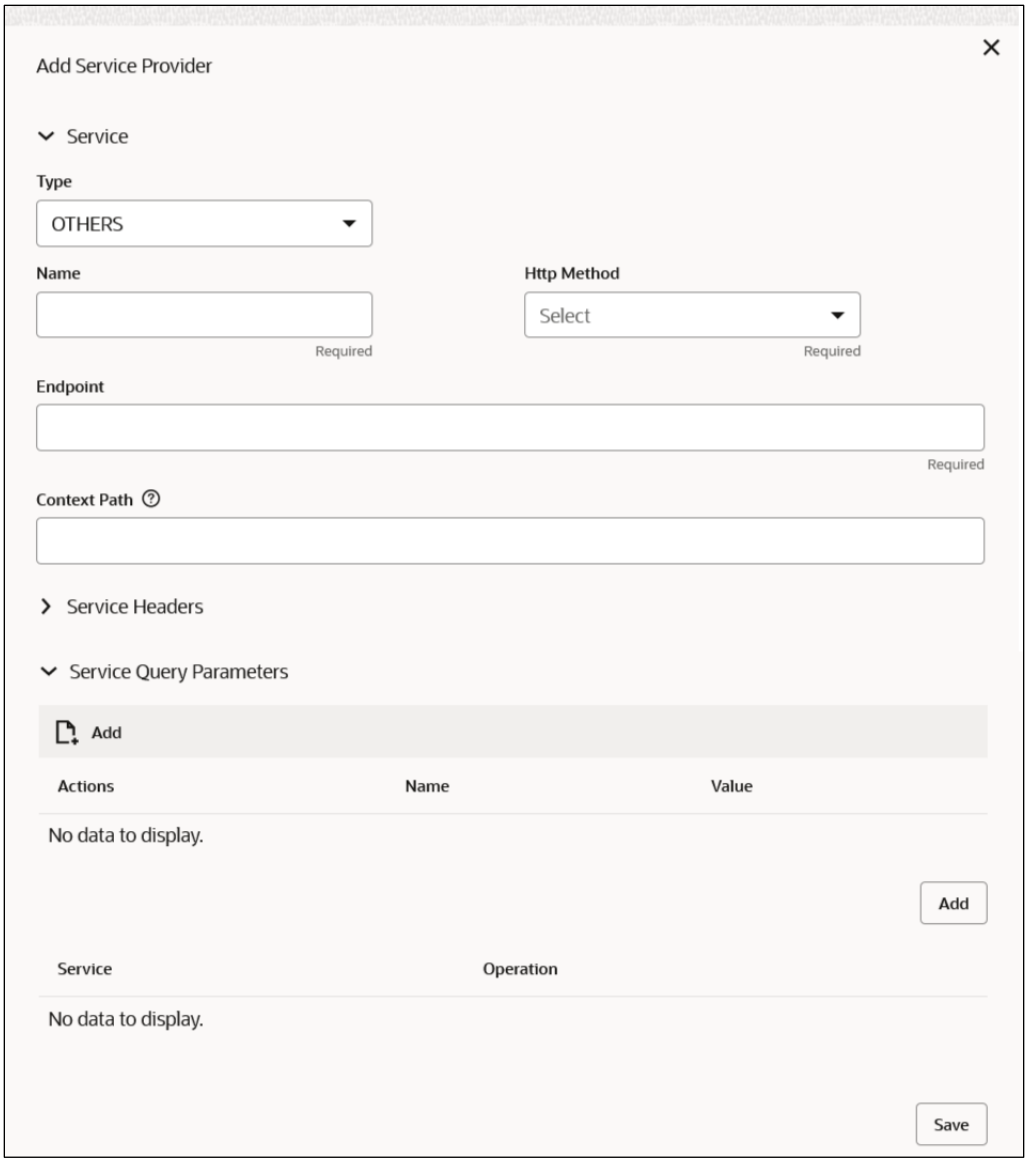
Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

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.

6.1.2.3 OTHERS

"OTHERS" option is for adding REST API details manually when provider does not have swagger file.



Component briefing				
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Comments**
Name	Text Box	Yes	• Name cannot be blank • No space allowed at beginning.	Name of operation
Http Method	Combo Box One	Yes		Predefined Values: GET / POST / PUT / PATCH / DELETE

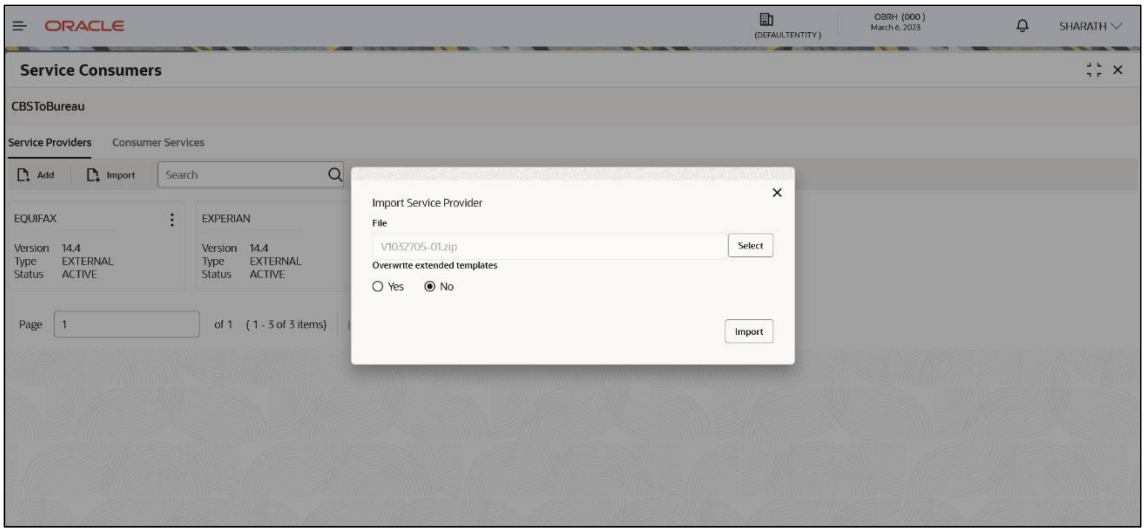
Endpoint	Text Box	Yes	• Endpoint cannot be blank • No space allowed at beginning.	Endpoint URL of operation
Context Path	Text Box			Context path of below formatted URL http://host:port/context-path/endpoint
Gateway Prefix	Text Box			Gateway Prefix is context path of below formatted URL http://host:port/gateway-prefix/endpoint
Service Headers	Collapsible Header & Content			Endpoint specific headers Value can either be hardcoded or can be Velocity mapping.
Service Query Params	Collapsible Header & Content			Endpoint specific query parameters Value can either be hardcoded or can be Velocity mapping.
Add	Button			Adds the endpoint details in the Service list

In case there is a change in existing endpoint, then same endpoint details need to be entered again with the new changes in order to update the existing 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**



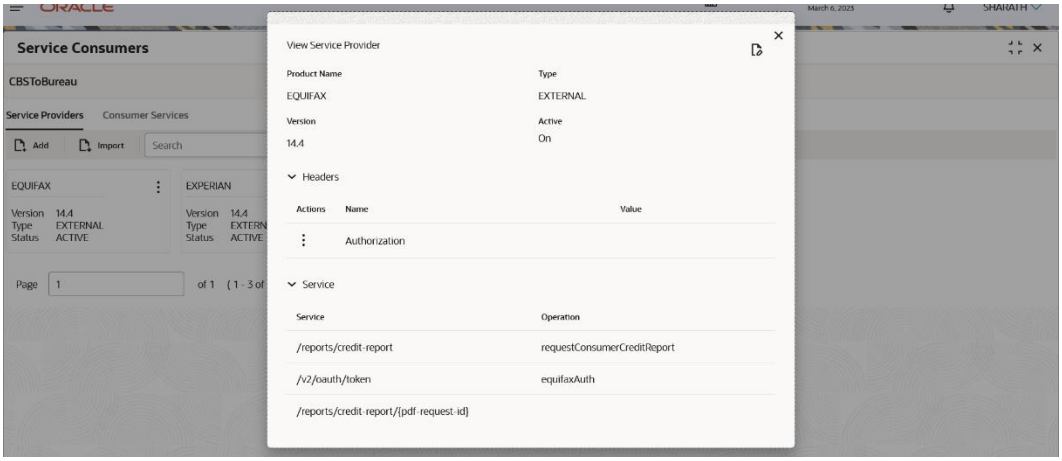
Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Condition**	**Comments**
File	File picker	Yes	Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box
Overwrite extended templates	Radio Button	No			Predefined Values: **Yes** / **No** **Yes:** This option is for overwriting the extended templates in configuration **No:** This option is for retaining the existing extended templates in configuration. Note: This option is only visible if ZIP file is selected
Import	Button				Imports Service Provider

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

- Implementation Host and Port
- Implementation Authentication Password

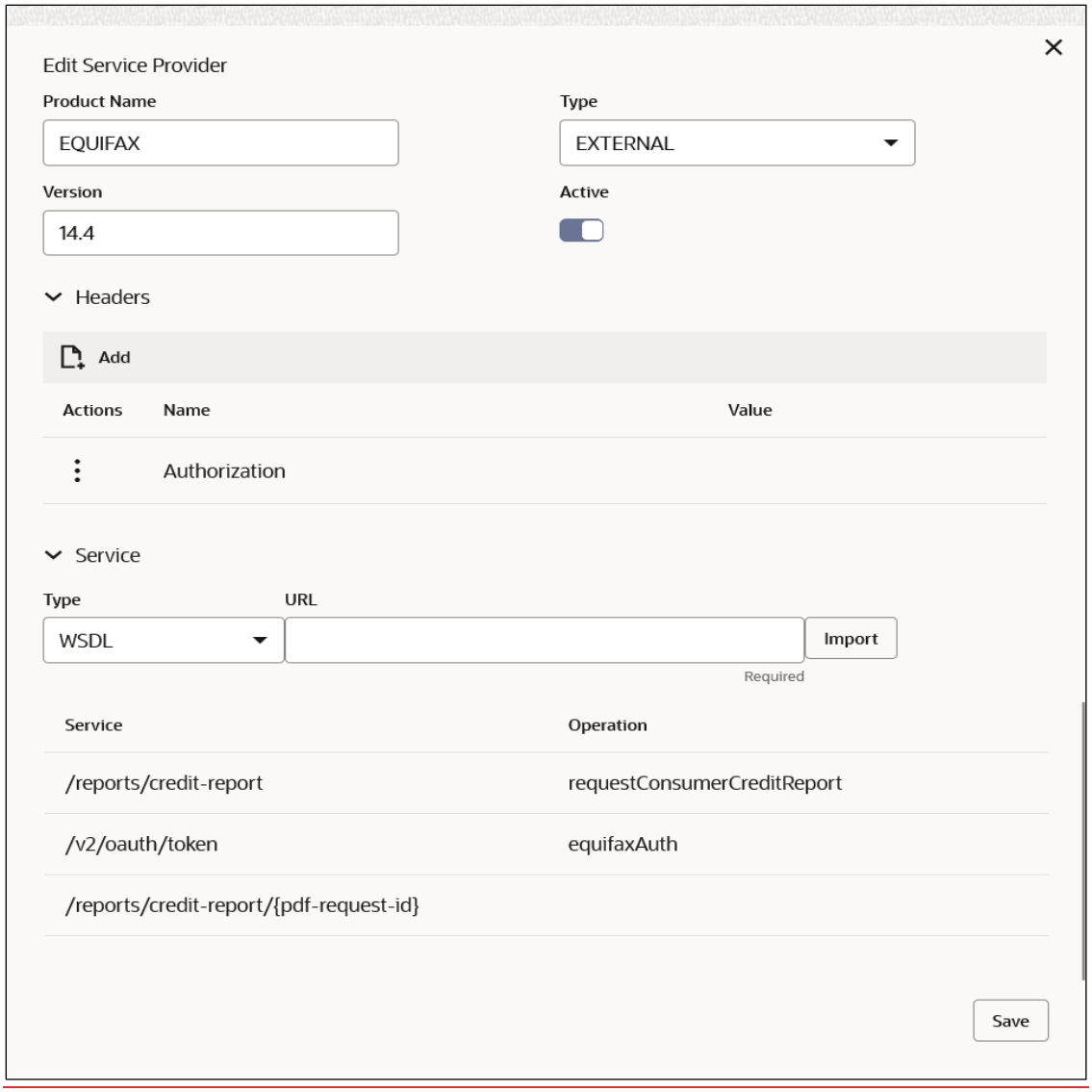
6.3 View

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**



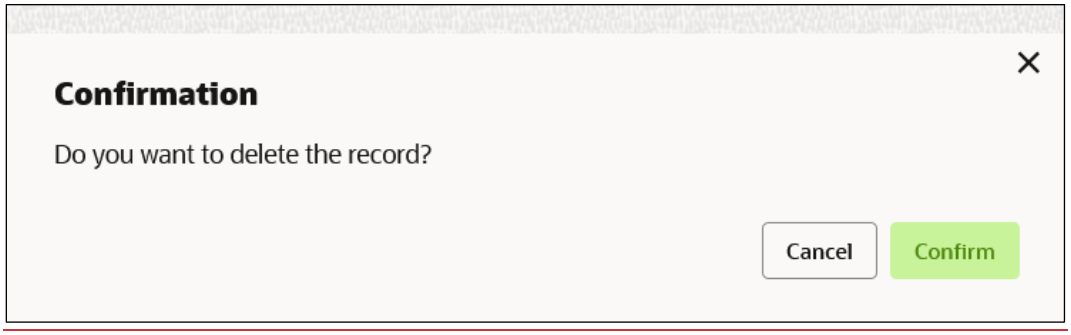
6.4 Edit

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**

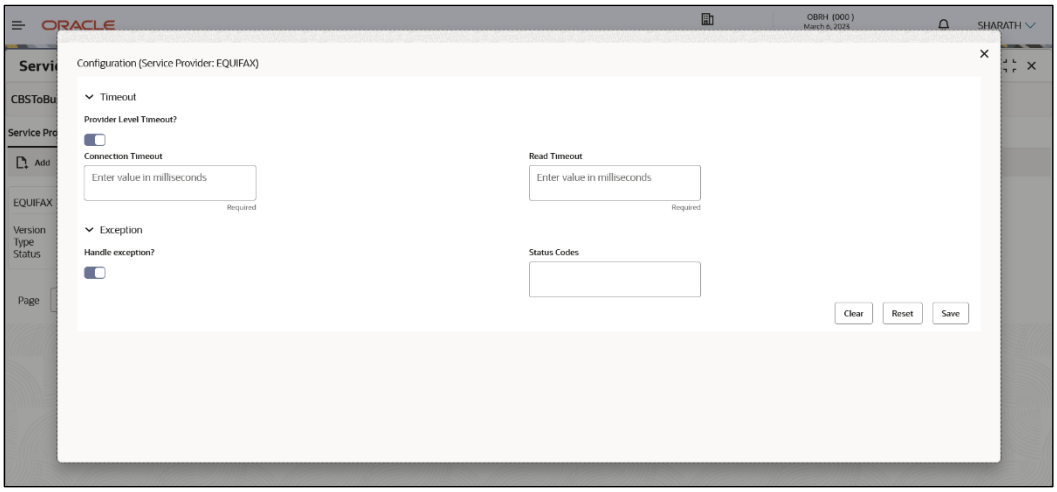
Below data will not be exported:

- 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

6.7 Configuration

End-user can configure the properties for failing the routing hub requests.
Navigation: **Service Providers -> Operation Menu (3 dot icon) -> Configuration**



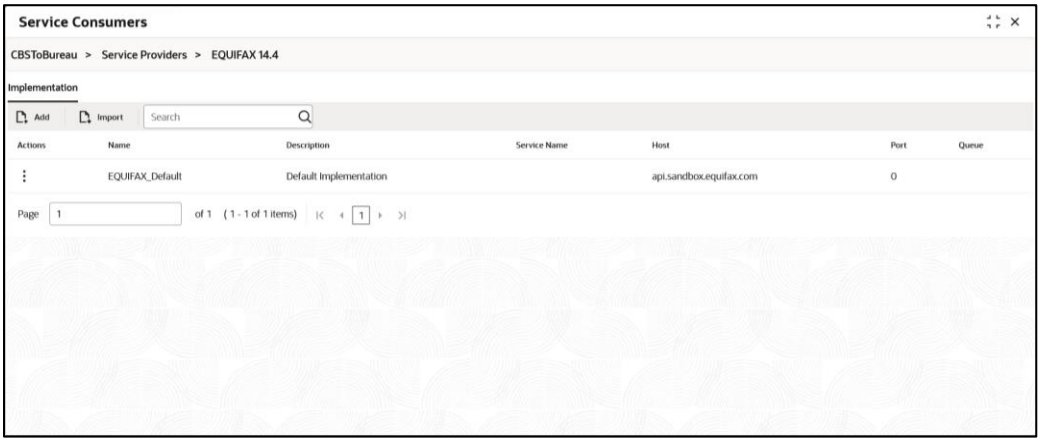
Component briefing				
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Comments**
Provider level timeout	Switch			This property is used to override the global timeout values. Default value is false.
Connection Timeout	Text Box	No	Value should be in milliseconds	This property is used to set the timeout in making the initial connection i.e. connection handshake.
Read Timeout	Text Box	No	Value should be in milliseconds	This property is used to set the timeout on waiting to read data.
Handle exception	Switch			This property is used to fail the routing hub request for failed provider requests. Default value is false.
Status Codes	Text Box	No	**Only 4xx and 5xx status codes are allowed as comma-separated values.**	This property is used to fail routing hub request for specific status codes of failed provider requests. If not specified, then routing hub request will fail for all 4xx and 5xx status codes of failed provider requests.

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.

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**

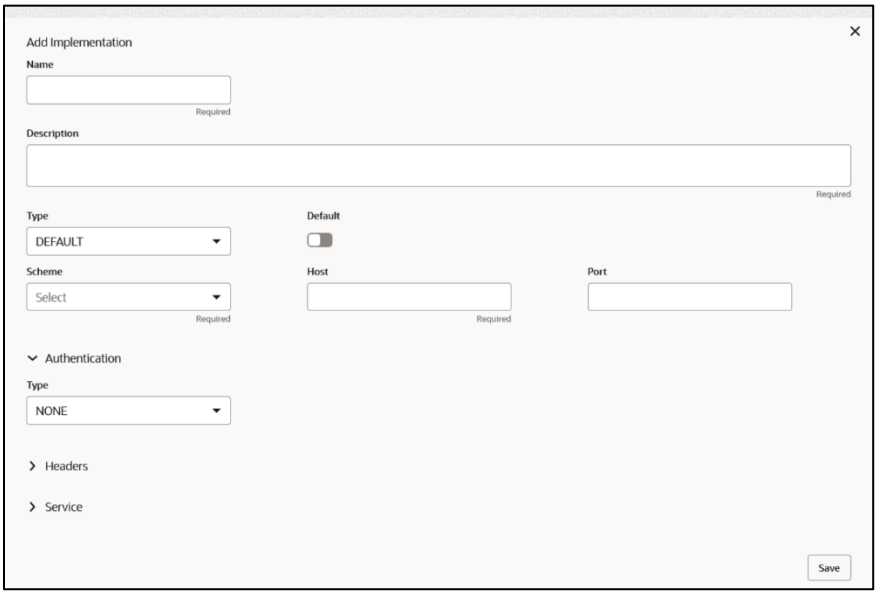


Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
<Service Provider>	Button		Navigates back to Service Providers
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Implementation Name) N**ote: Use wildcard character (*) for pattern matching**
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
Configuration	menu option		Pops up configuration dialog
Request Audit	menu option		Pops up request audit log
Clear Cache	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**

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
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 / OIC 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. Note: api-gateway will be removed (if present) from the provider request url if Eureka Instance is toggled ON. And api-gateway will be added (if missing) in the provider request url if Eureka Instance is toggled OFF & Authentication type is selected as JWT_TOKEN or OAUTH_TOKEN.
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	No	Number	• 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.
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 or OIC.
Service	Collapsible Header & Content				Service option is available only when type is default or OIC.
Queue	Content				Queue content is available only when type is queue.
Save	Button				Saves the Implementation

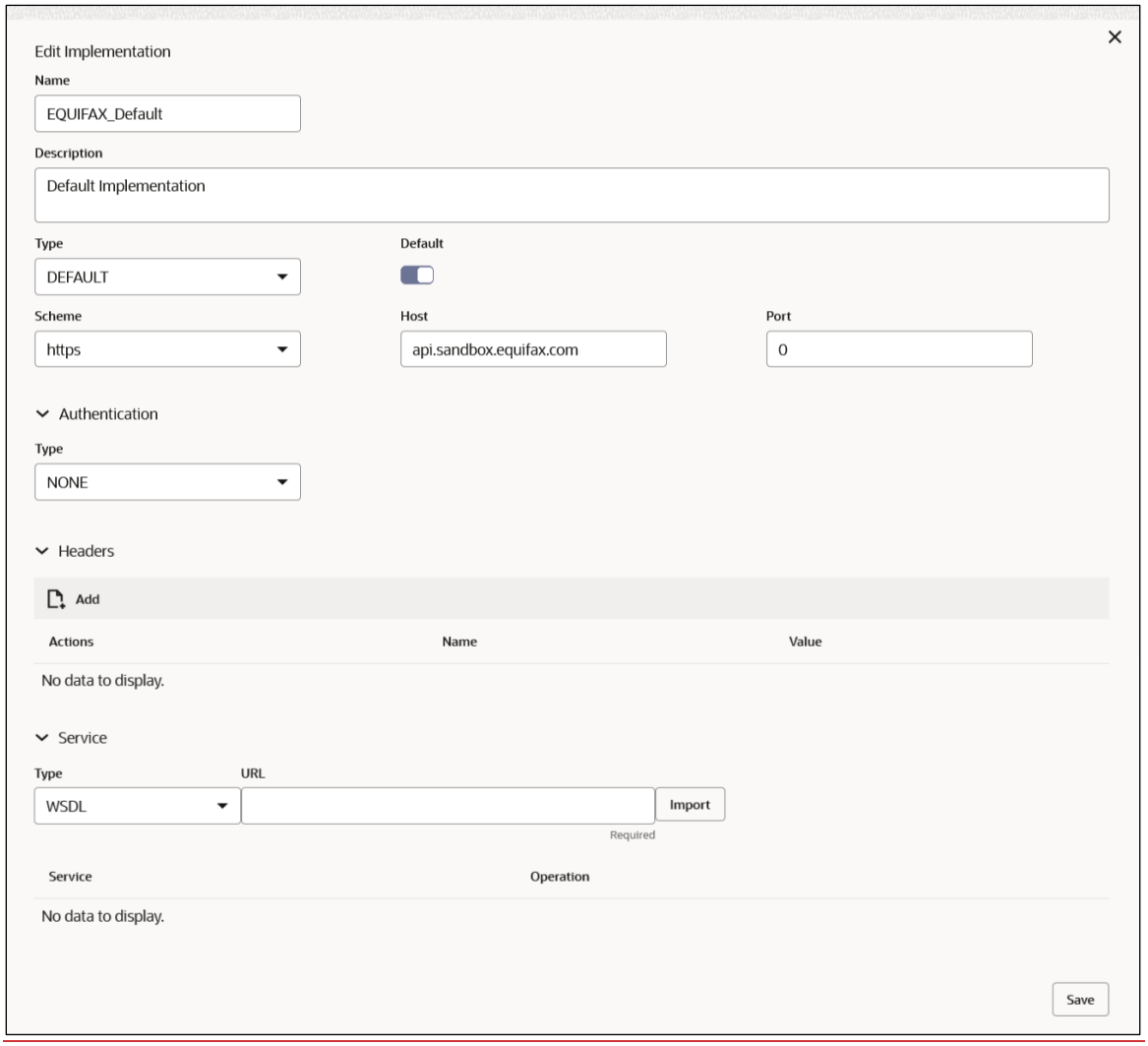
7.1.1 Authentication

If External Product processor require authentication to connect to it, Oracle Banking Routing Hub provides standard authentication mechanism schemes like BASIC, JWT, OAUTH_TOKEN, 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.
In case of OIC integration, OAUTH_TOKEN_OIC needs to be set as Authentication Type.
In case of JWT, OAUTH_TOKEN and OAUT_TOKEN_OIC, token will be cached by default.

Process of configuration of these is described below.

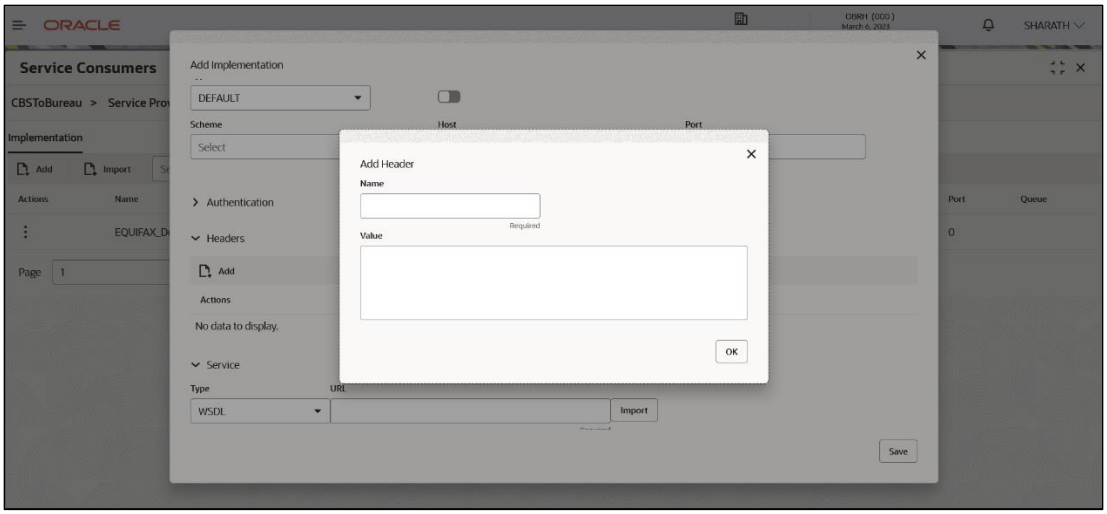


Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Comments**
Type	Combo Box One	Yes			Predefined Values: NONE / BASIC / JWT_TOKEN / OAUTH_TOKEN / SSO
Username	Text Box		Alphanumeric with special characters	• Username cannot be blank • Enter 0 or more characters, up to a maximum of 255. • No numeric value at beginning and no space allowed.	Username is mandatory if authentication type is BASIC / JWT_TOKEN / OAUTH_TOKEN
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

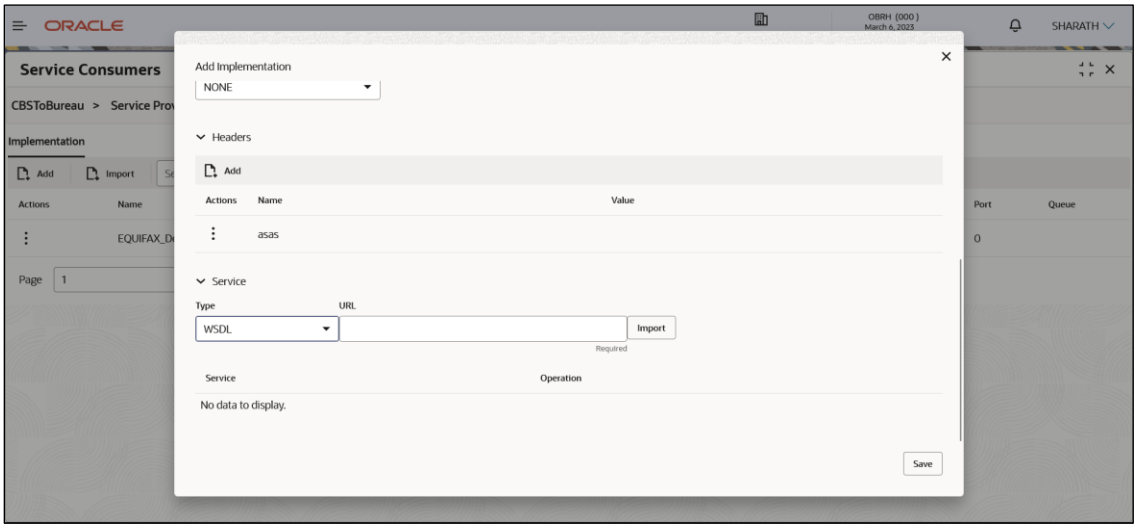
Note: Content-type header will be removed from Provider request if header value is NONE.



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

7.1.3 Service



Component briefing			
Component Name	**Component Type**	**Is Mandatory**	**Comments**
Type	Combo Box One	Yes	Predefined Values: WSDL / SWAGGER / OTHERS
URL	Text Box	Yes	Service URL of the file location
Context Path	Text Box		Context path of below formatted URL http://host:port/context-path/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.

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*

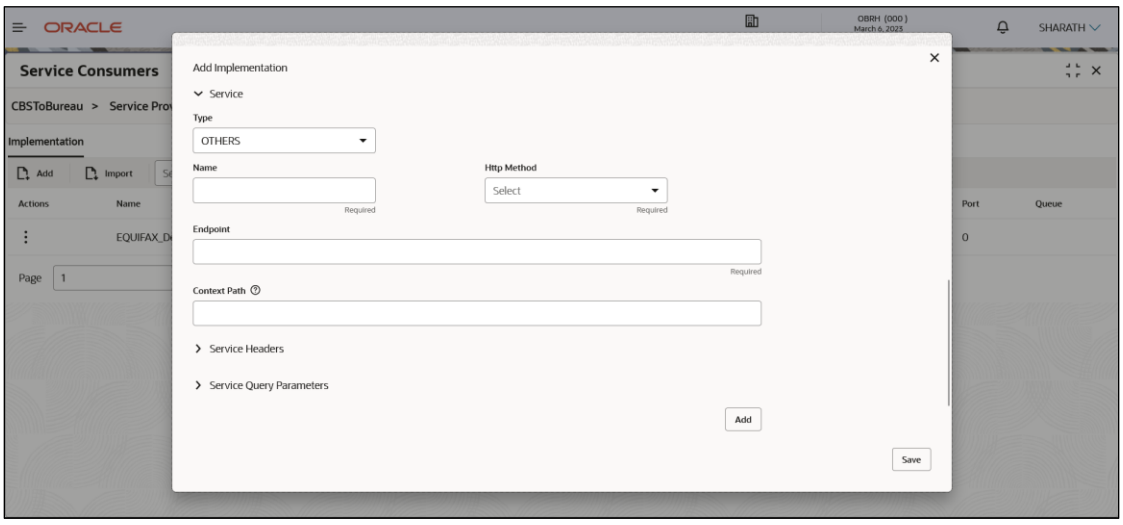
Swagger is an Interface Description Language for describing RESTful APIs expressed using JSON.

Currently, Swagger 2.0 & OpenAPI 3.0 both are supported.

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.

7.1.3.3 *OTHERS*

"OTHERS" option is for adding REST API details manually when provider does not have swagger file.

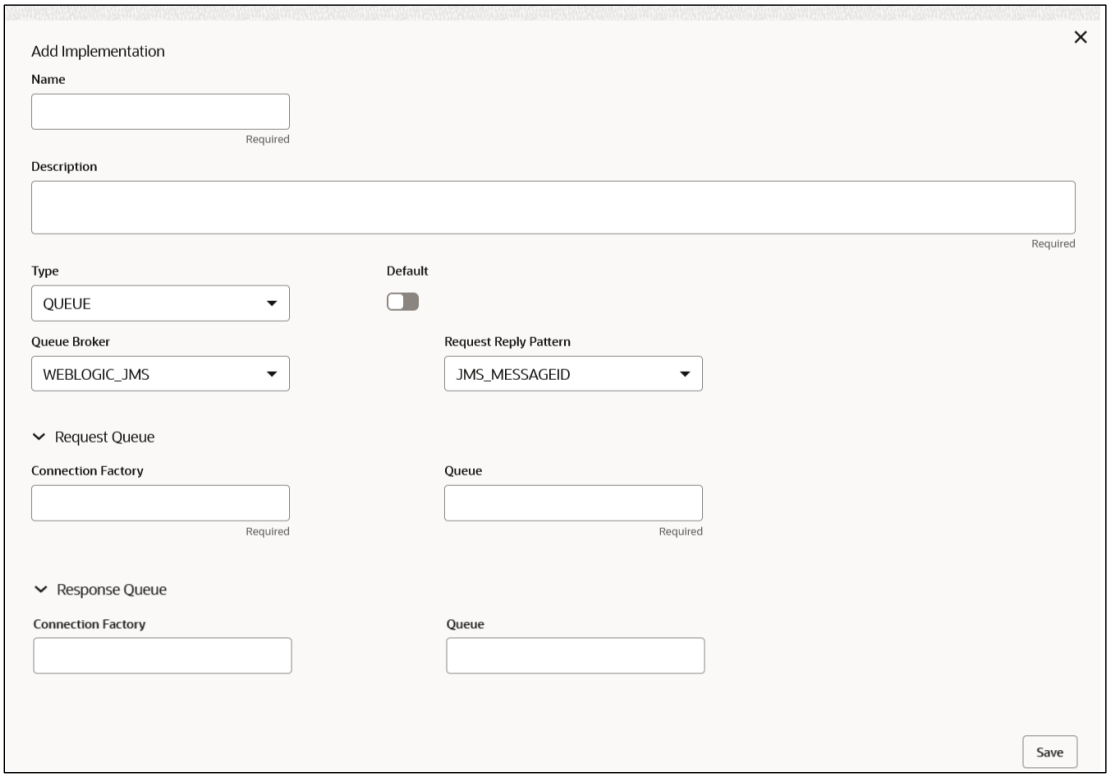


Component briefing				
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Comments**
Name	Text Box	Yes	• Name cannot be blank	Name of operation

			• No space allowed at beginning.	
Http Method	Combo Box One	Yes		Predefined Values: GET / POST / PUT / PATCH / DELETE
Endpoint	Text Box	Yes	• Endpoint cannot be blank • No space allowed at beginning.	Endpoint URL of operation
Context Path	Text Box			Context path of below formatted URL http://host:port/context-path/endpoint
Service Headers	Collapsible Header & Content			Endpoint specific headers Value can either be hardcoded or can be Velocity mapping.
Service Query Params	Collapsible Header & Content			Endpoint specific query parameters Value can either be hardcoded or can be Velocity mapping.
Add	Button			Adds the endpoint details in the Service list

In case there is a change in existing endpoint, then same endpoint details need to be entered again with the new changes in order to update the existing provided service information in routing hub.

7.1.4 Queue

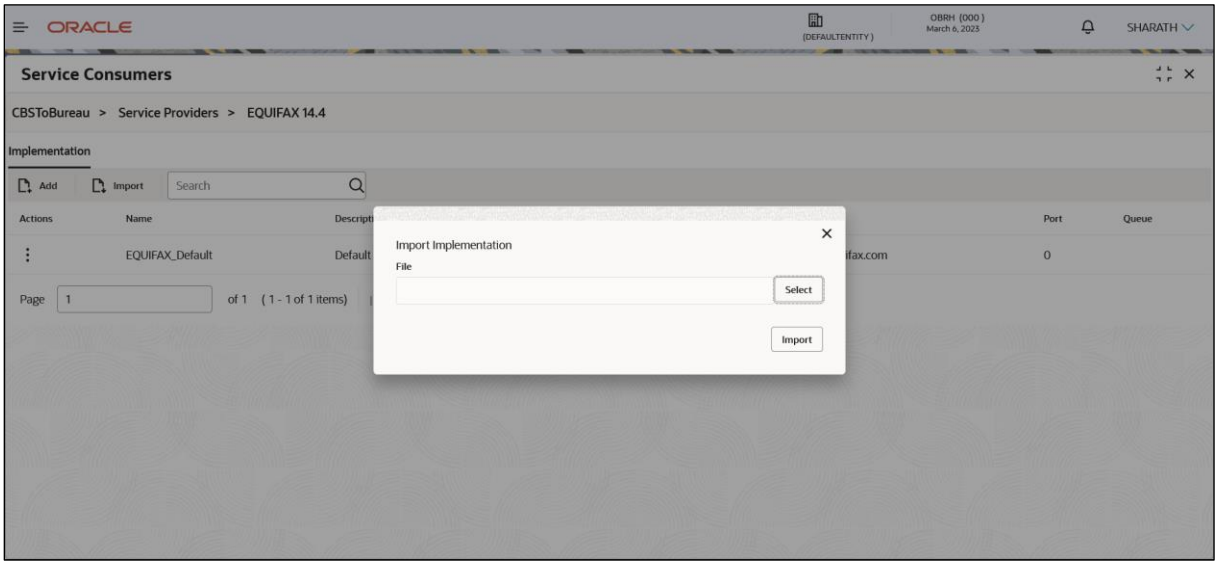


Component briefing			
Component Name	**Component Type**	**Is Mandatory**	**Comments**
Queue Broker	Combo Box One	Yes	Predefined Values: WEBLOGIC_JMS
Request Reply Pattern	Combo Box One	Yes	Predefined Values: JMS_MESSAGEID / JMS_CORRELATIONID JMS_MESSAGEID is default request-reply pattern.
Connection 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 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.

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**

File	File picker	Yes		Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box
Import	Button					Imports Implementation

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

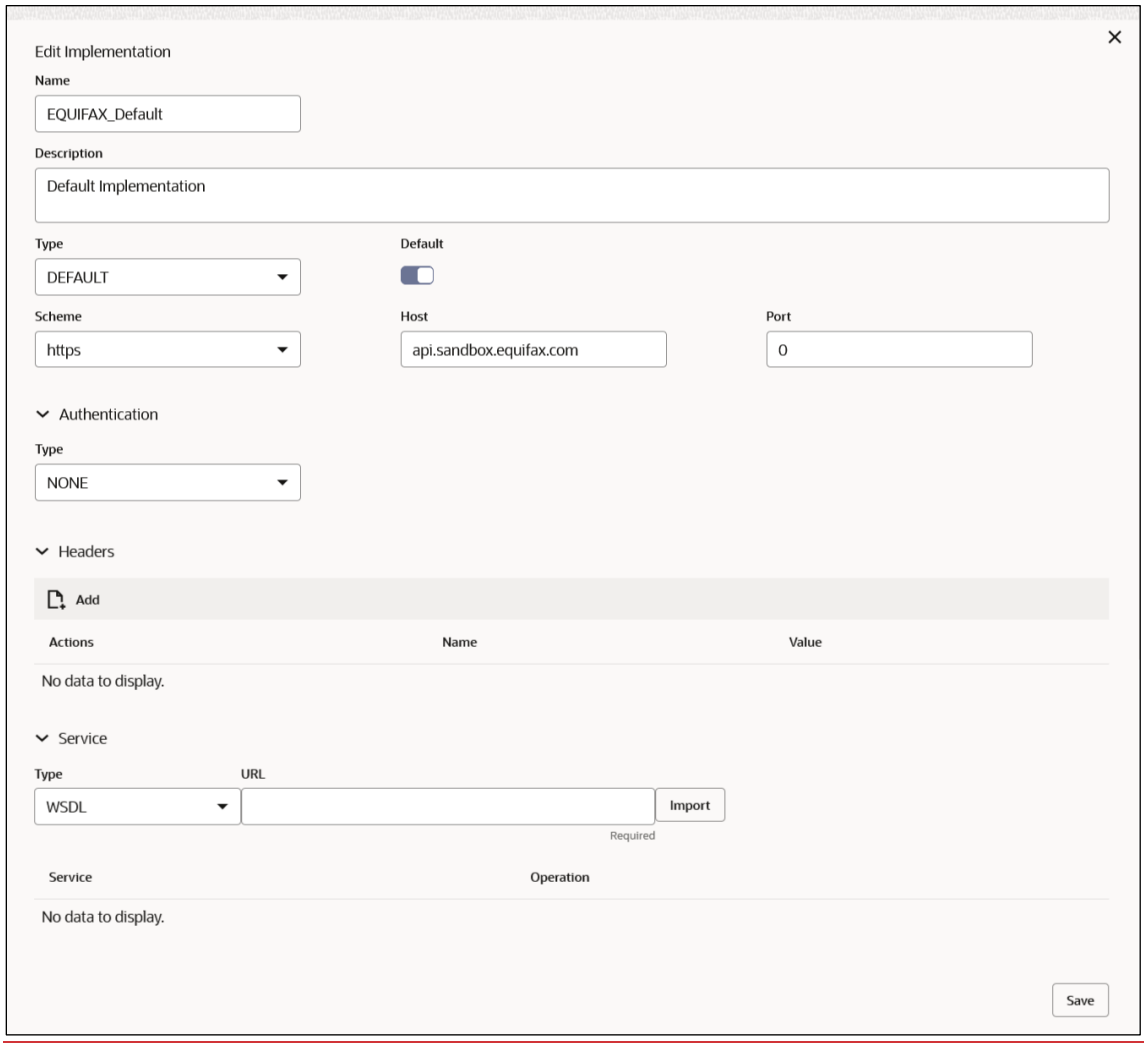
- Implementation Host and Port
- Implementation Authentication Password

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**

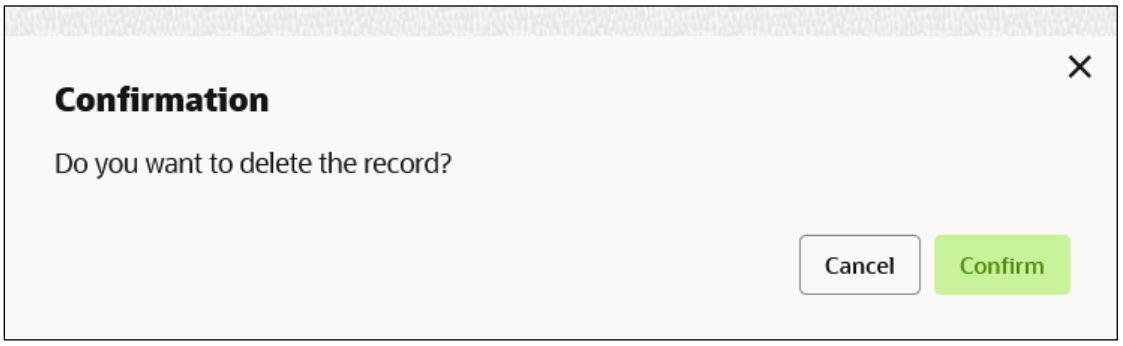
7.4 Edit

User can modify the implementation details.
Navigation: **Implementation -> Operation Menu (3 dot icon) -> Edit**



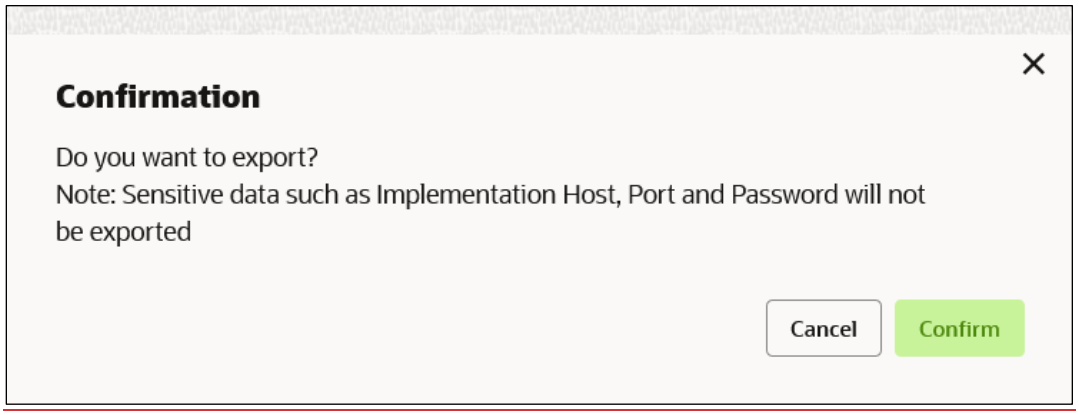
7.5 Delete

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**



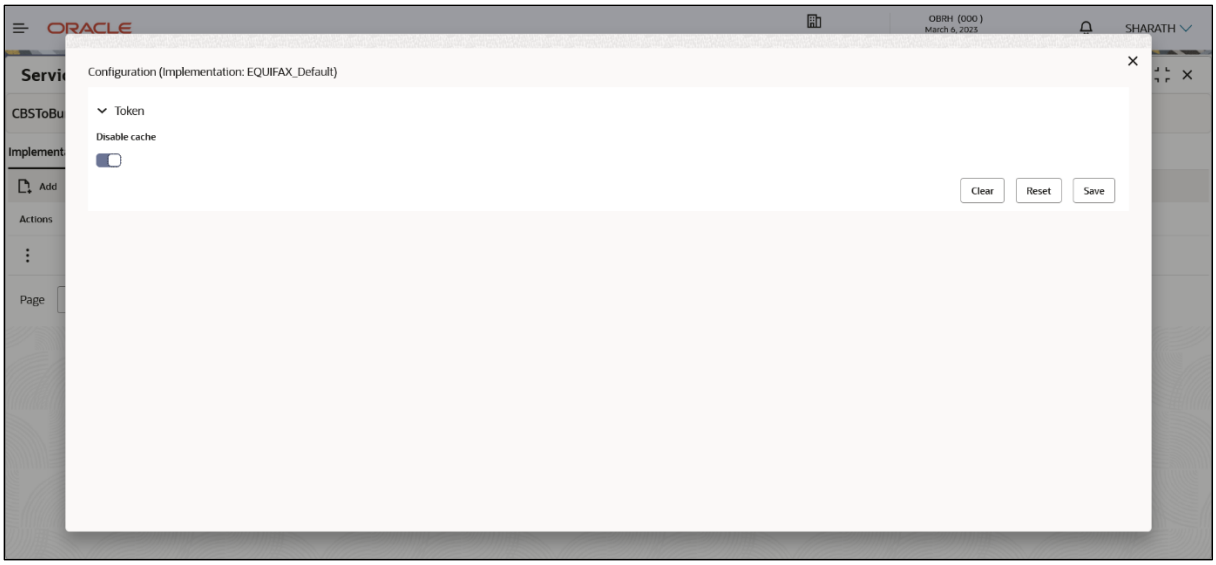
Below data will not be exported:

- 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

7.7 Configuration

End-user can configure the property to disable the token caching.
Navigation: **Implementation -> Operation Menu (3 dot icon) -> Configuration**

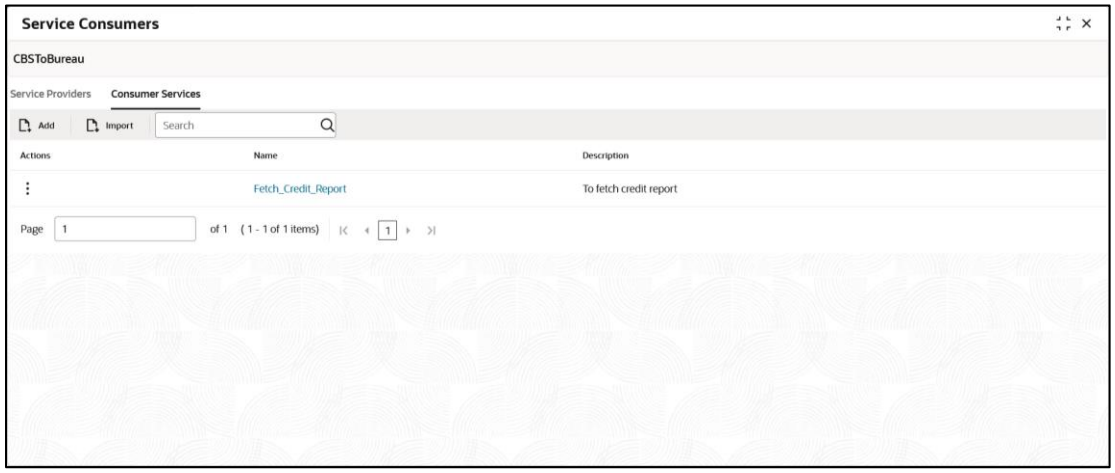


Component briefing				
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Comments**
Disable cache	Switch			This property is used to disable the token caching. Default value is false.

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**



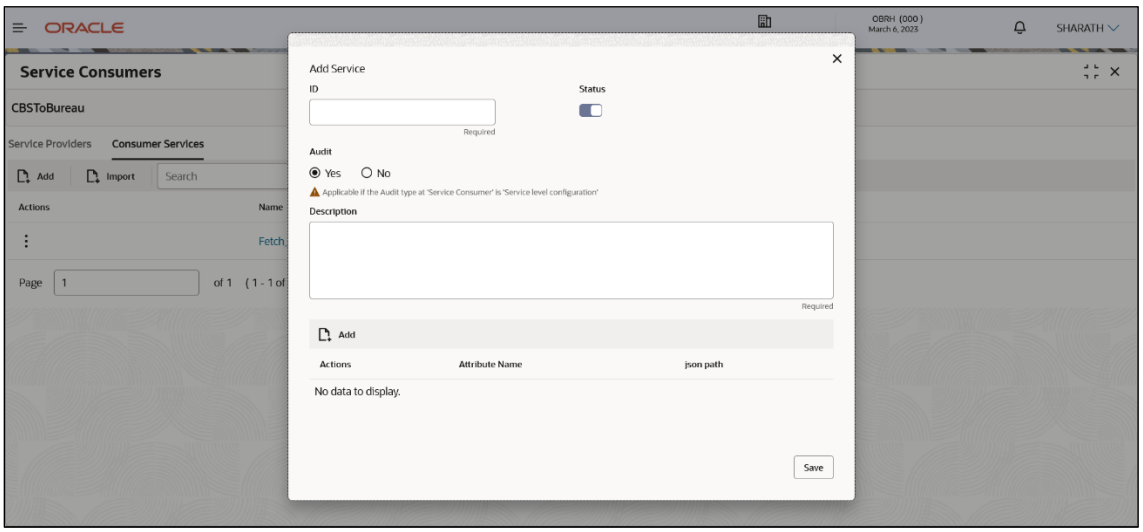
Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Consumer Service Name) N**ote: Use wildcard character (*) for pattern matching**
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.

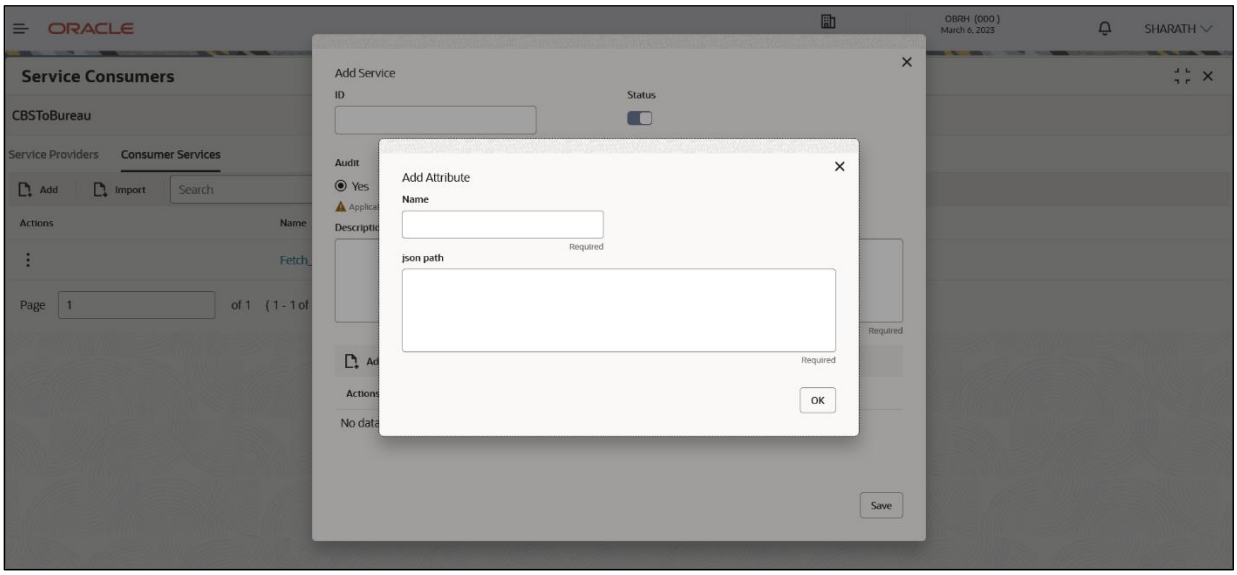
Navigation: Consumer Services-> Add



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.
Audit	Radio Button				Predefined Values: **Yes** / **No** **Yes**: This option is for enabling the audit for consumer service and

					No: This option is for disabling the audit for consumer service. Note: This option is only applicable if audit type at 'Service Consumer' is 'Service level configuration'
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**



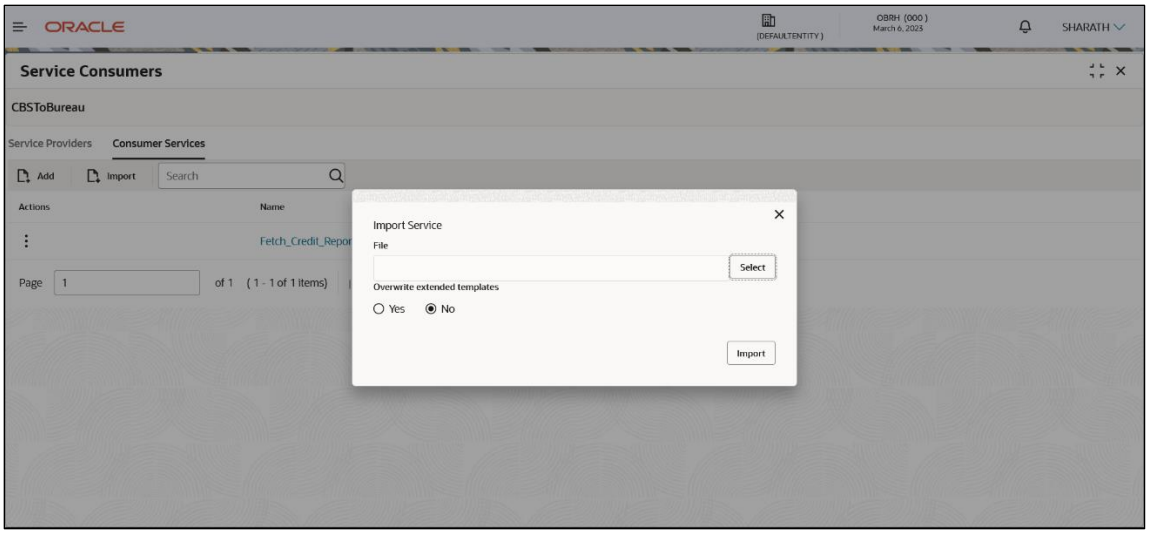
Component briefing						
Component Name	**Component Type**	**Is Mandatory**	**Data type**	**Validation**	**Condition**	**Comments**
Add	Button					Pops up add dialog
Navigation: Consumer Services -> Headers -> 3 dot icon (operation menu)						
Edit	menu option					Pops up edit dialog
Delete	menu option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

- 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]
- Using $.env, user can access environment variables.
  Syntax: $.env.group.variable

8.2 Import

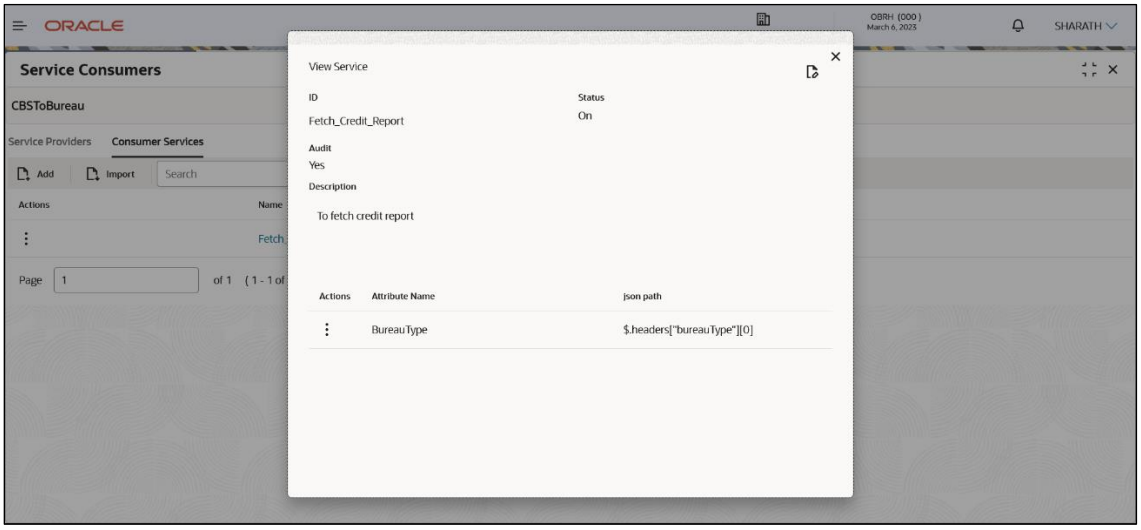
User can create a consumer service by importing the JSON file.
User can also import zip file in order to import all the configuration JSON files together (except parent level configuration JSON files).
Navigation: **Consumer Services -> Import**



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

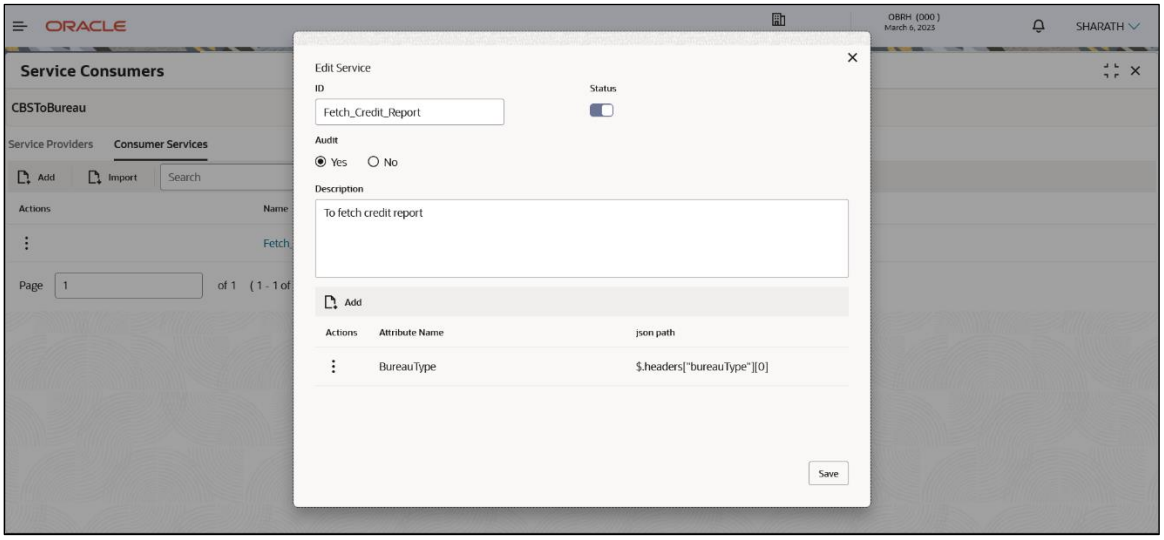
8.3 View

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**



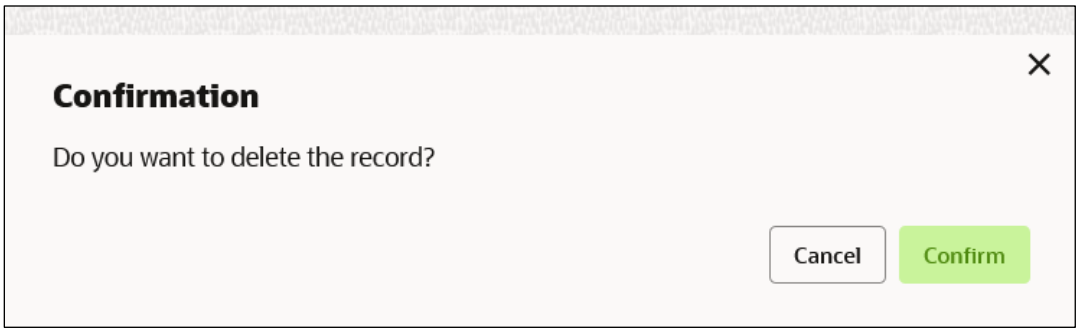
8.4 Edit

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**



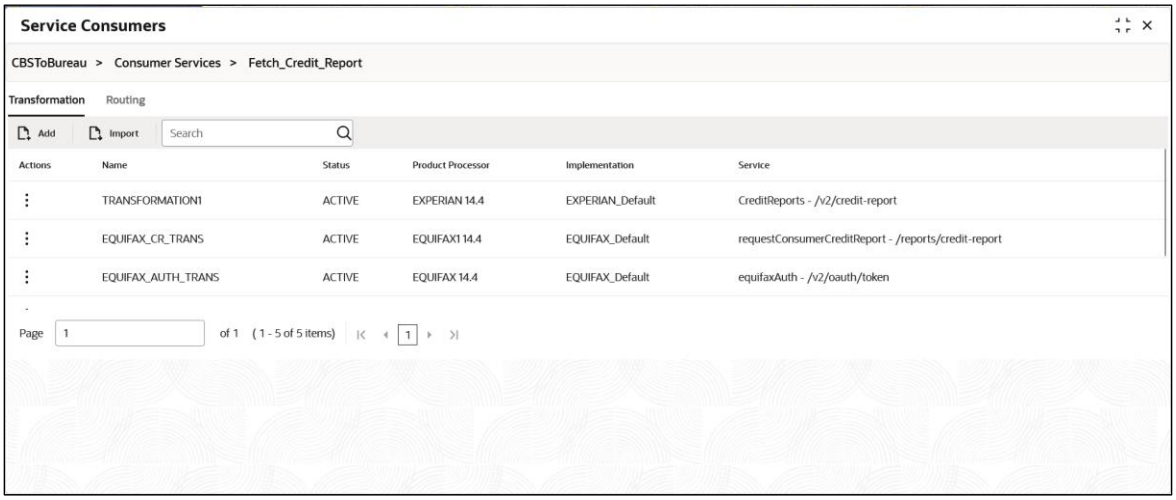
8.6 Export

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

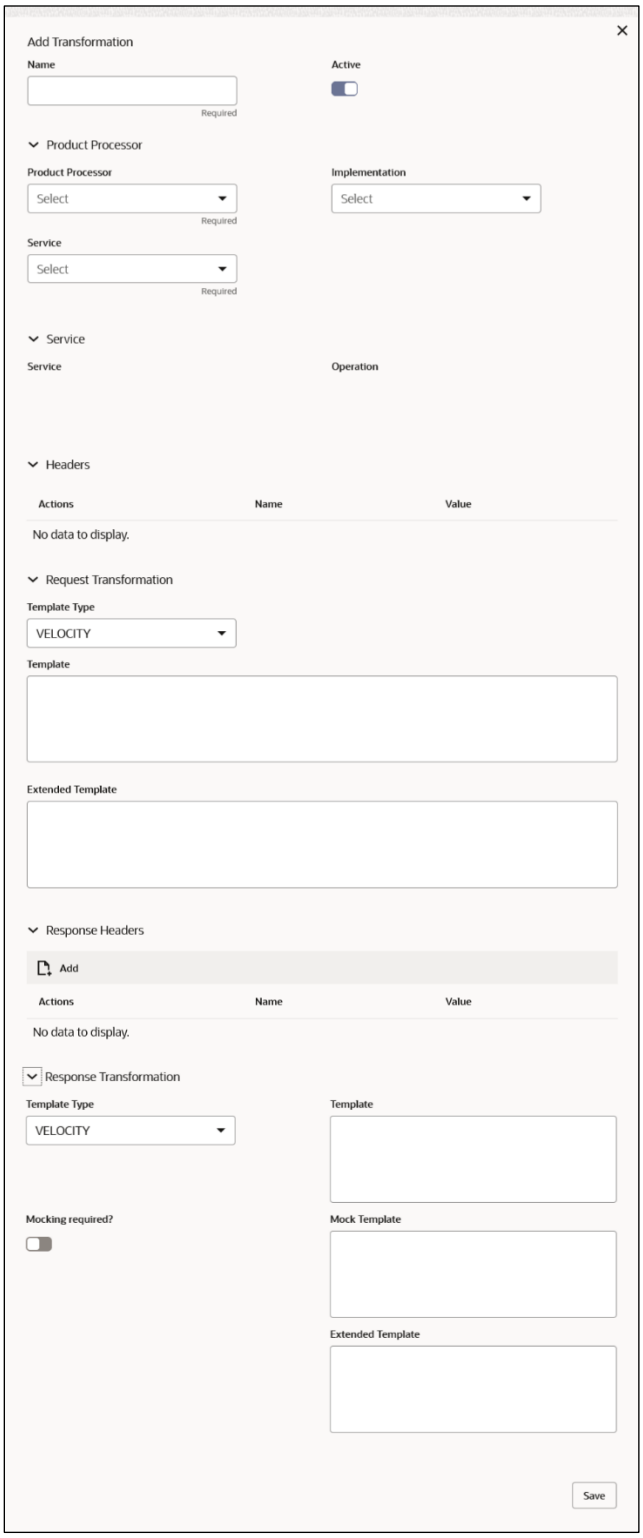


Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
<Consumer Service>	Button		Navigates back to Consumer Services
Add	Button		Pops up add dialog
Import	Button		Pops up import dialog
Search	Combo Box One		Provides search functionality with case insensitive (Transformation Name) N**ote: Use wildcard character (*) for pattern matching**
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

9.1 Add

User can create Transformation manually.
Navigation: **Transformation-> Add**


Add Transformation
Name
Required
Active
Product Processor
Product Processor
Select
Required
Implementation
Select
Service
Select
Required
Service
Service
Operation
Headers
Actions
Name
Value
No data to display.
Request Transformation
Template Type
VELOCITY
Template
Extended Template
Response Headers
Add
Actions
Name
Value
No data to display.
Response Transformation
Template Type
VELOCITY
Template
Mocking required?
Mock Template
Extended Template
Save

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.
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

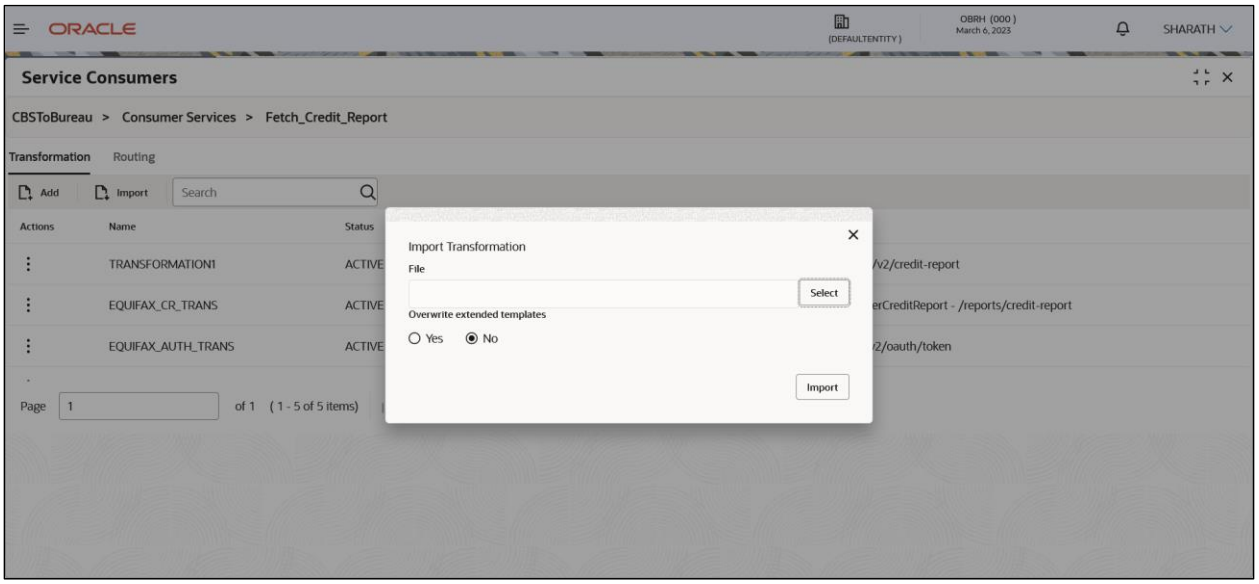
					User can change the header values. Value can either be hardcoded or can be Velocity mapping.
Path Params	Collapsible Header & Content				Displays path param list relevant to selected service User can change the param values. Value can either be hardcoded or can be Velocity mapping.
Query Params	Collapsible 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				
Body Type	Combo Box One				Predefined Values: RAW / FORM_DATA / BINARY Note: This option is only visible if selected service is REST service.
Type	Combo Box One				Predefined Values: VELOCITY / JSLT / XSLT
Template	Text Area				User has to define the kernel template in which provider accepts. Refer Transformation Type for syntax and Multipart Request for sample request if body type is FORM_DATA

Extended Template	Text Area				User has to define the custom template in order to extend the kernel template. Please refer Extensibility and Transformation Type for syntax Note: This option is not visible if body type is FORM_DATA or BINARY.
Response Headers	Collapsible Header & Content				Response Headers is used for specifying additional headers required to be part of routing hub response headers. Value can either be hardcoded or can be Velocity mapping.
Type	Combo Box One				Predefined Values: VELOCITY / JSLT / XSLT
Template	Text Area				User has to define the kernel template in which consumer accepts. Refer Transformation Type for syntax
Mocking required?	Switch				Predefined Values: YES / NO If flag is marked as yes, then routing hub will return the mocked template output (with extended template output if mentioned) to consumer without invoking provider API.
Mock Template	Text Area				User has to define the kernel mocked template in which consumer accepts. Refer Transformation Type for syntax

Extended Template	Text Area				User has to define the custom template in order to extend the kernel template. Refer Extensibility and Transformation Type for syntax
Save	Button				Saves transformation details

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**

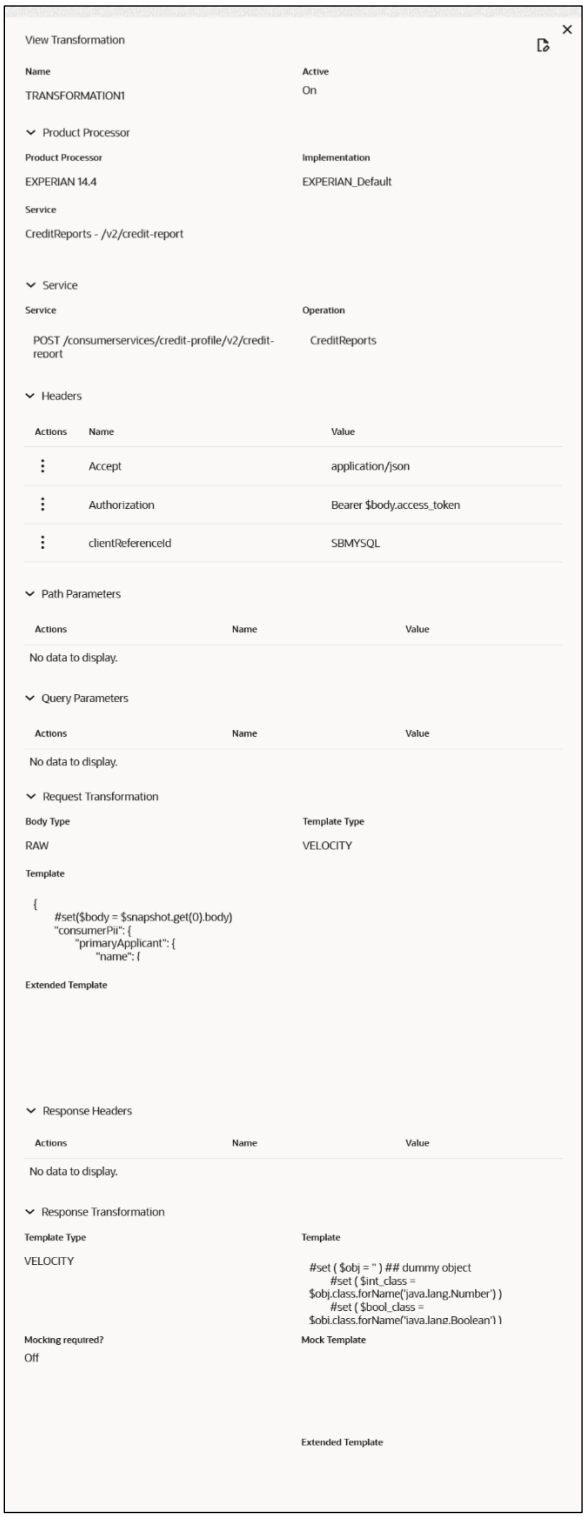


Component briefing					
Component Name	**Component Type**	**Is Mandatory**	**Validation**	**Condition**	**Comments**
File	File picker	Yes	• Allows only to select one file	Accepts JSON and ZIP file	Pops up file selection dialog box
Overwrite extended templates	Radio Button	Yes			Predefined Values: Yes / No

					Yes: This option is for overwriting the extended templates in configuration No: This option is for retaining the existing extended templates in configuration.
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**



View Transformation

Name
TRANSFORMATION1

Active
On

Product Processor

Product Processor
EXPERIAN 14.4

Implementation
EXPERIAN_Default

Service
CreditReports - /v2/credit-report

Service

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

Operation
CreditReports

Headers

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

Path Parameters

Actions	Name	Value
No data to display.		

Query Parameters

Actions	Name	Value
No data to display.		

Request Transformation

Body Type
RAW

Template Type
VELOCITY

Template

```
{
    #set($body = $snapshot.get(0).body)
    "consumerPii": {
        "primaryApplicant": {
            "name": {
```

Extended Template

Response Headers

Actions	Name	Value
No data to display.		

Response Transformation

Template Type
VELOCITY

Template

```
#set ( $obj = '' ) ## dummy object
    #set ( $int_class =
$obj.class.forName('java.lang.Number') )
    #set ( $bool_class =
$obj.class.forName("java.lang.Boolean") )
```

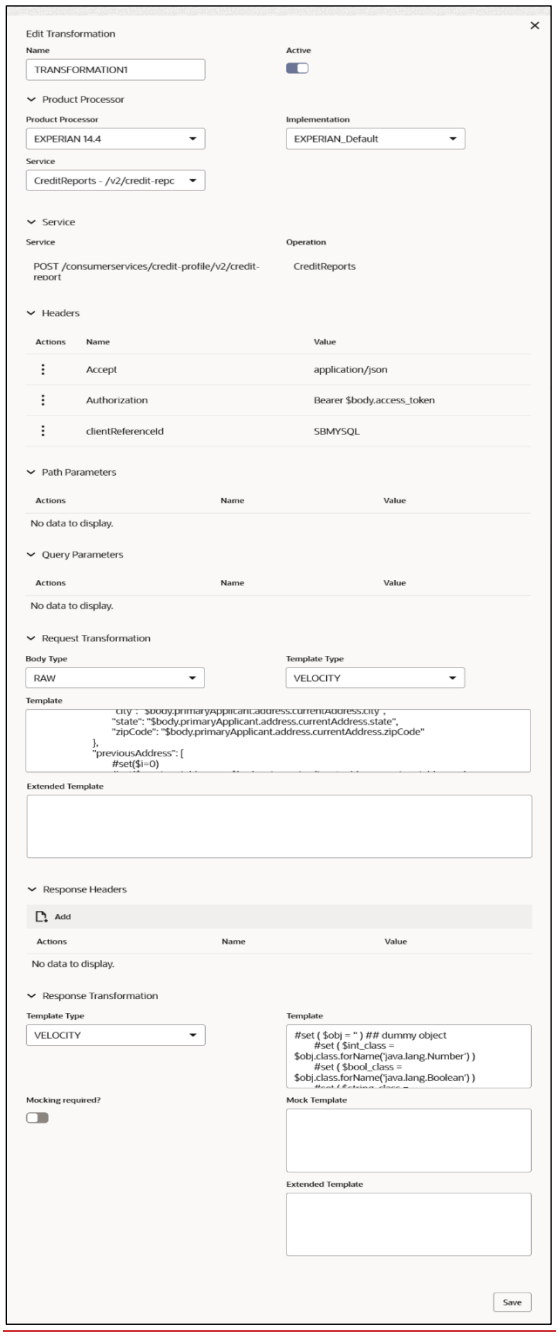
Mocking required?
Off

Mock Template

Extended Template

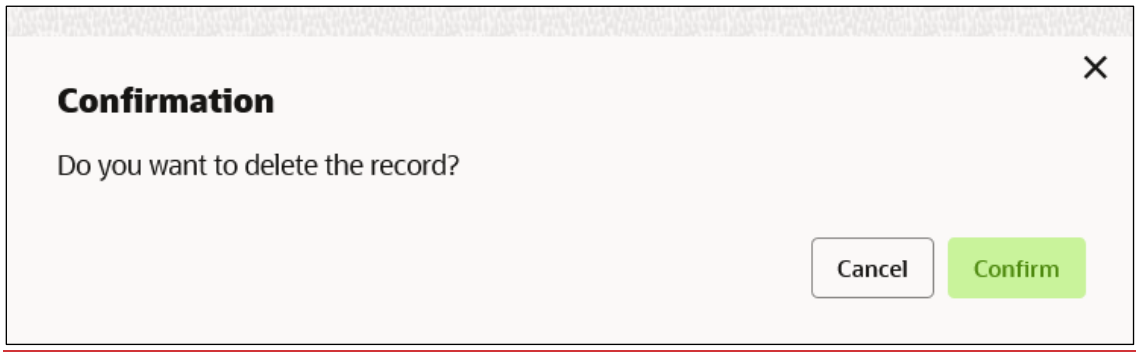
9.4 Edit

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**



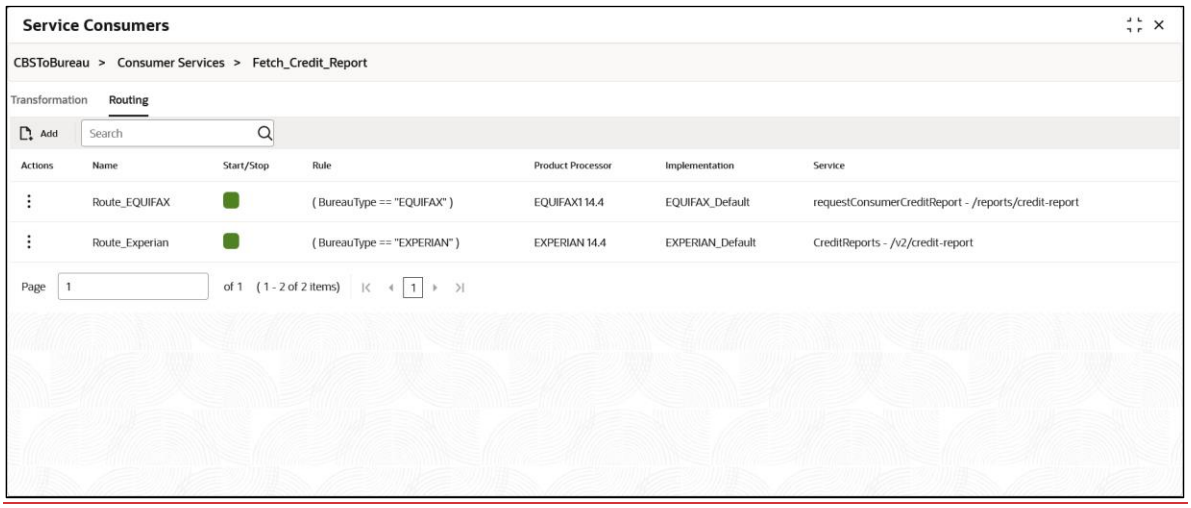
9.6 Export

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**

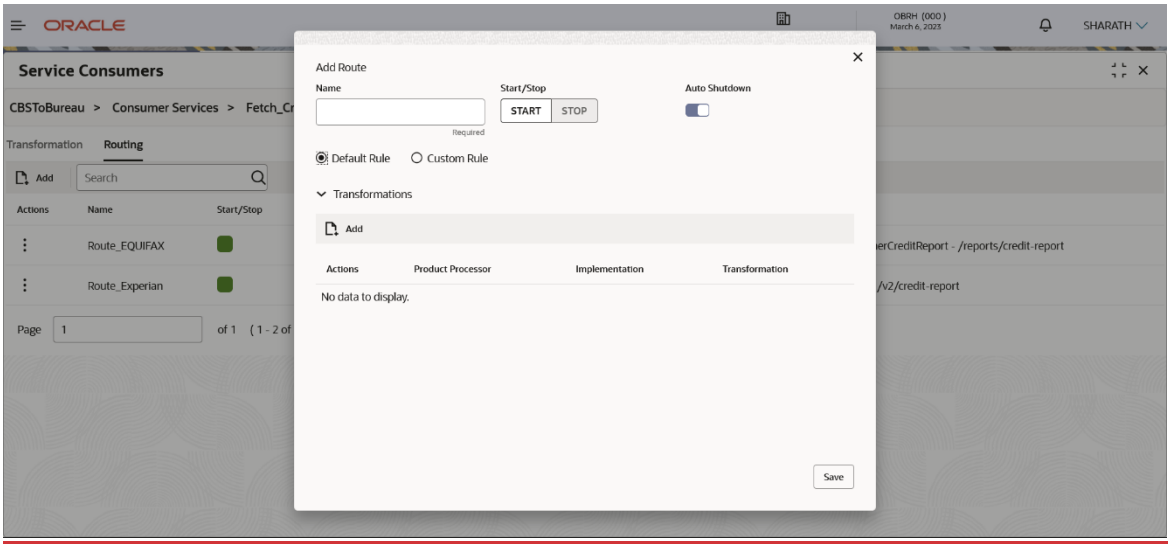


Component briefing			
Component Name	**Component Type**	**Condition**	**Comments**
<Service Consumer>	Button		Navigates back to Service Consumers
<Consumer Service>	Button		Navigates back to Consumer Services
Add	Button		Pops up add dialog
Search	Combo Box One		Provides search functionality with case insensitive (Routing Name) N**ote: Use wildcard character (*) for pattern matching**
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

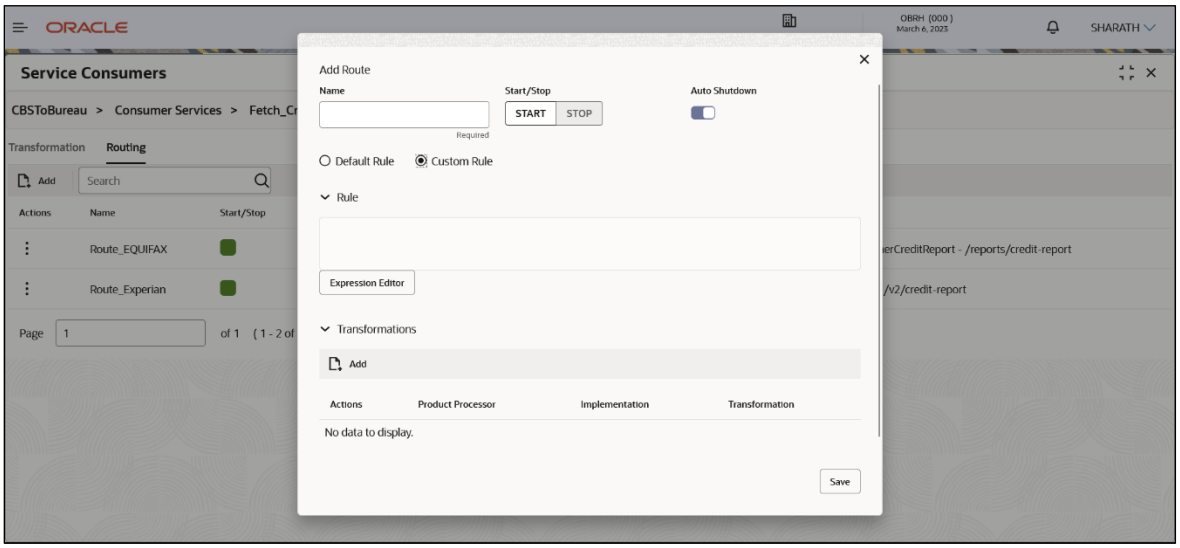
User can create Routing manually.
Navigation: **Routing -> Add**



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.

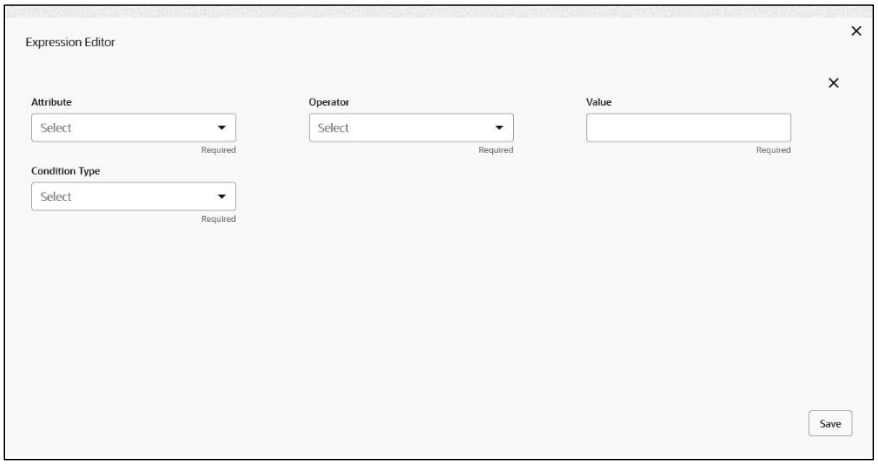
Rule Type	Radio Button	Yes	Predefined Values: Default Rule / Custom Rule
Transformations	Collapsible Header & Content		
Save	Button		Saves the routing details

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

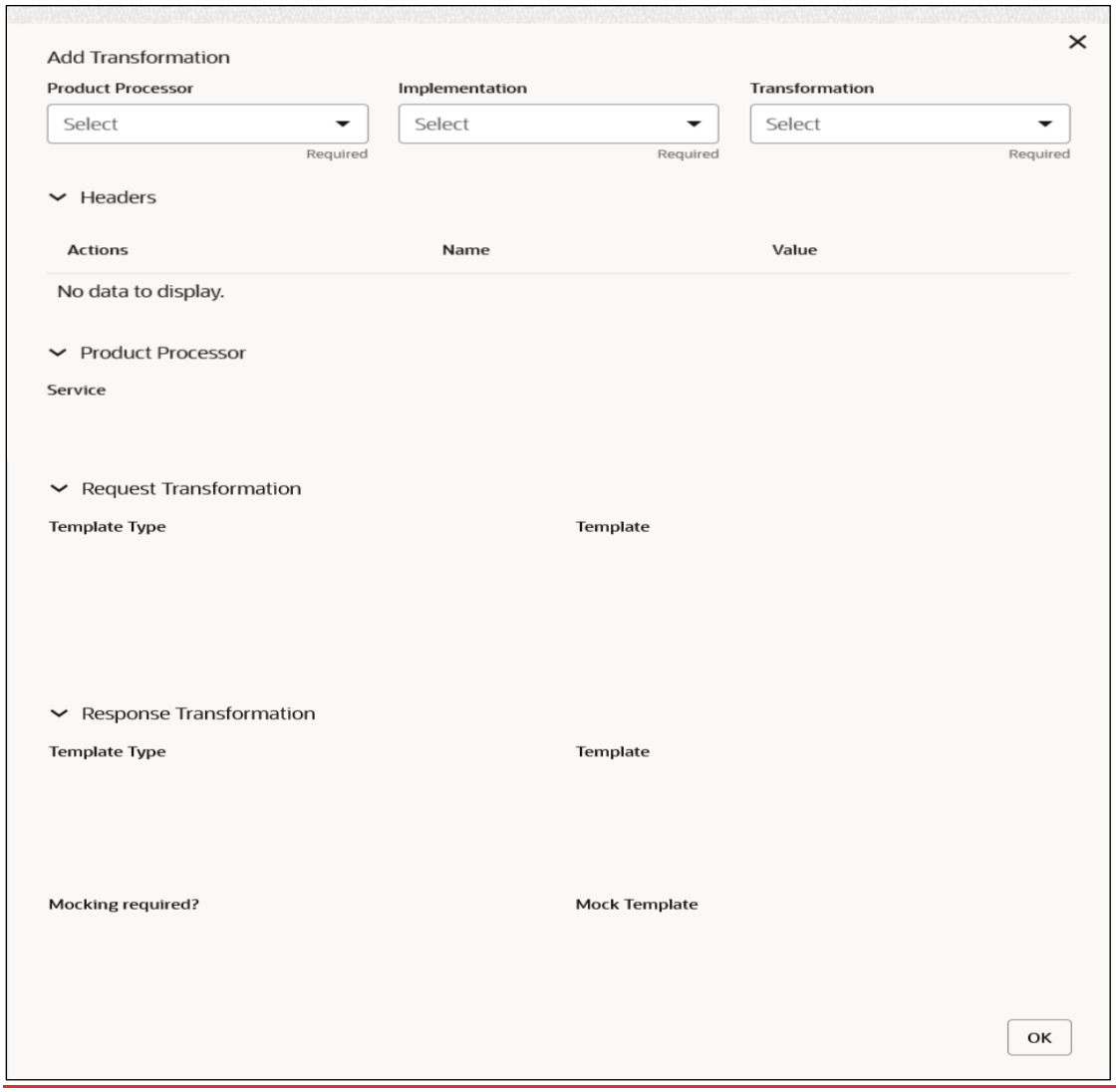
Note: String value should be quoted using single quotes (‘)
eg: ‘abc’

List value should be comma separated values and quoted using single quotes (‘)

eg: ‘abc,xyz,1.23,true’

10.1.3 Transformations

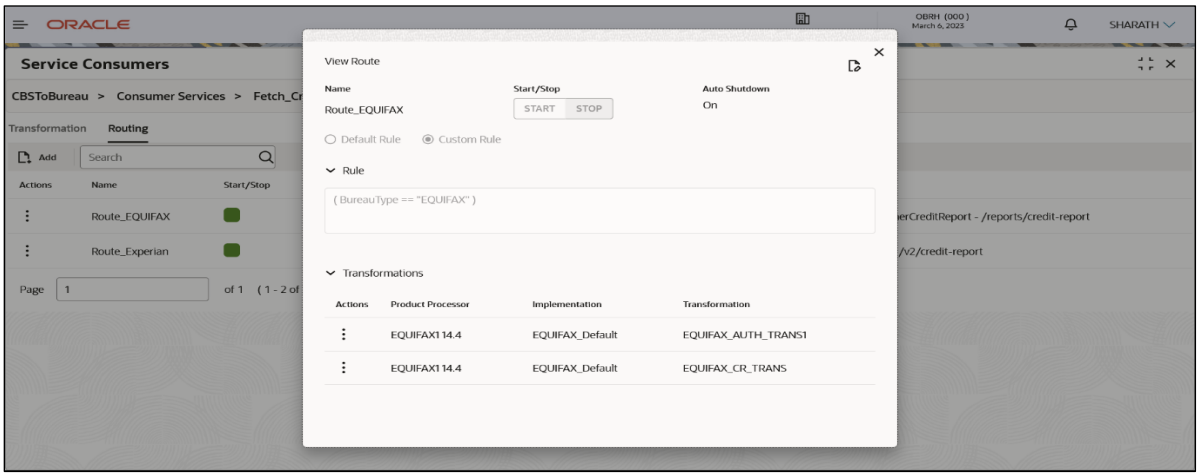
User can define the sequence of transformations for each routing in which request should be processed.
Sequence of transformations in list can be changed by using drag-n-drop feature.



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

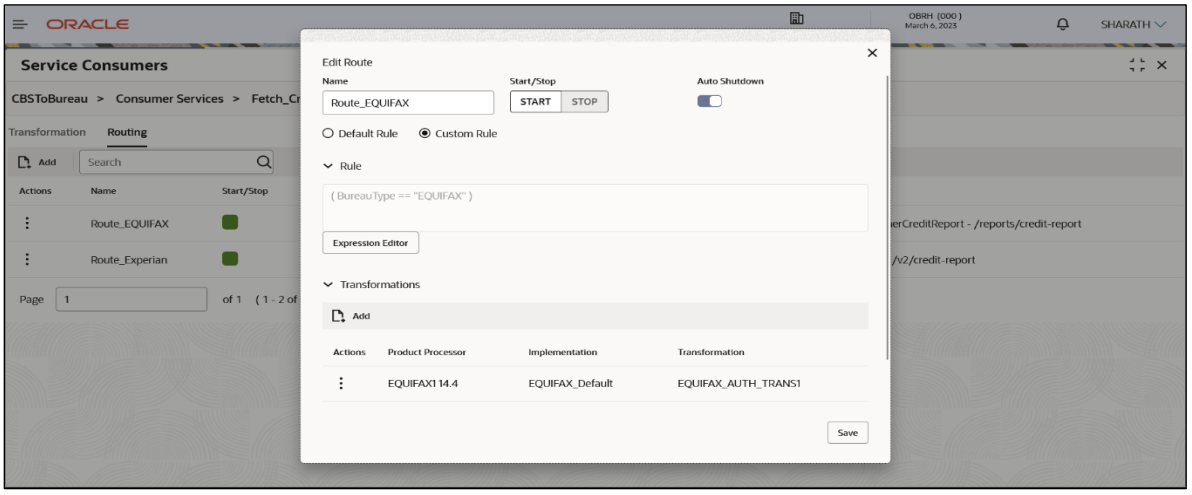
10.2 View

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**



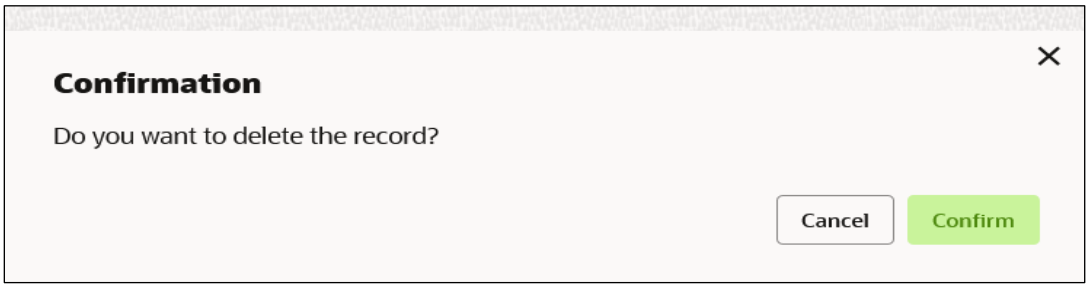
10.3 Edit

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**



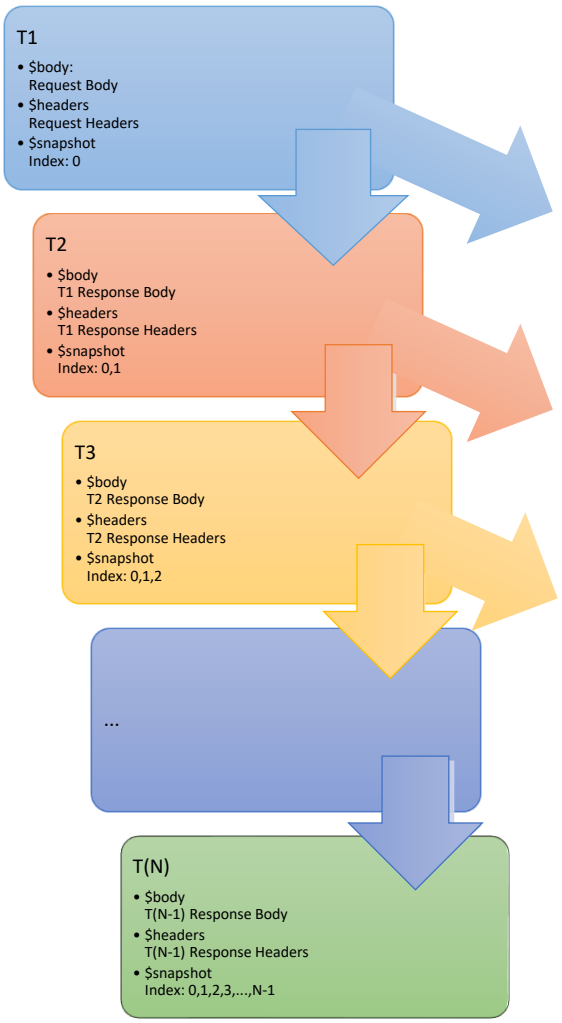
11. Chaining

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

$body and $headers will refer the response body and headers of previous step.

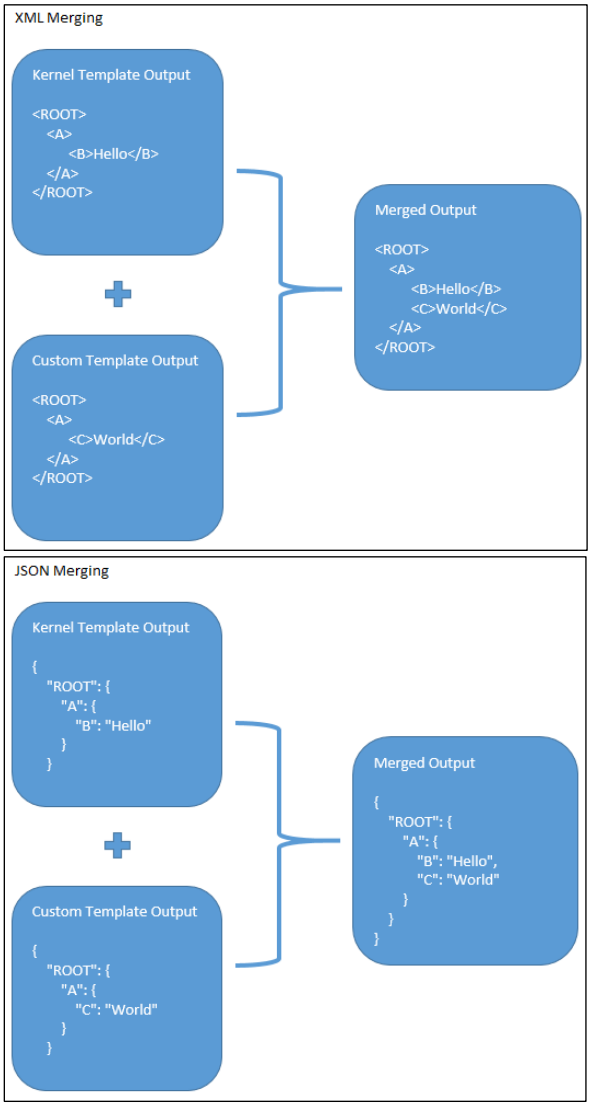


Snapshot List		
Index	**body**	**headers**
0	Request Body	Request Headers
1	T1 Response Body	T1 Response Headers
2	T2 Response Body	T2 Response Headers
3	T3 Response Body	T3 Response Headers
…		

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

Example:



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

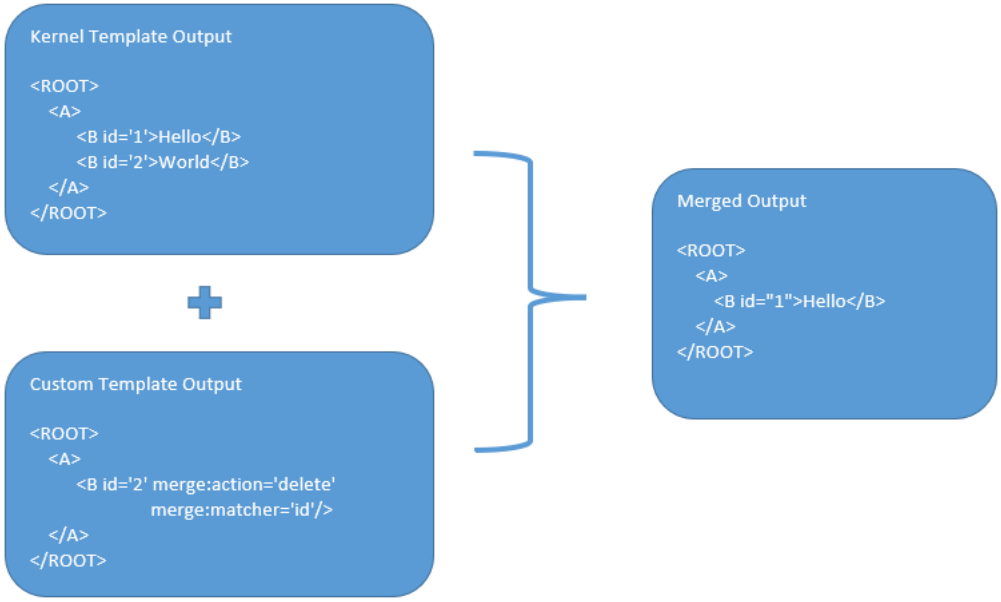
12.1 XML merging attributes

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:

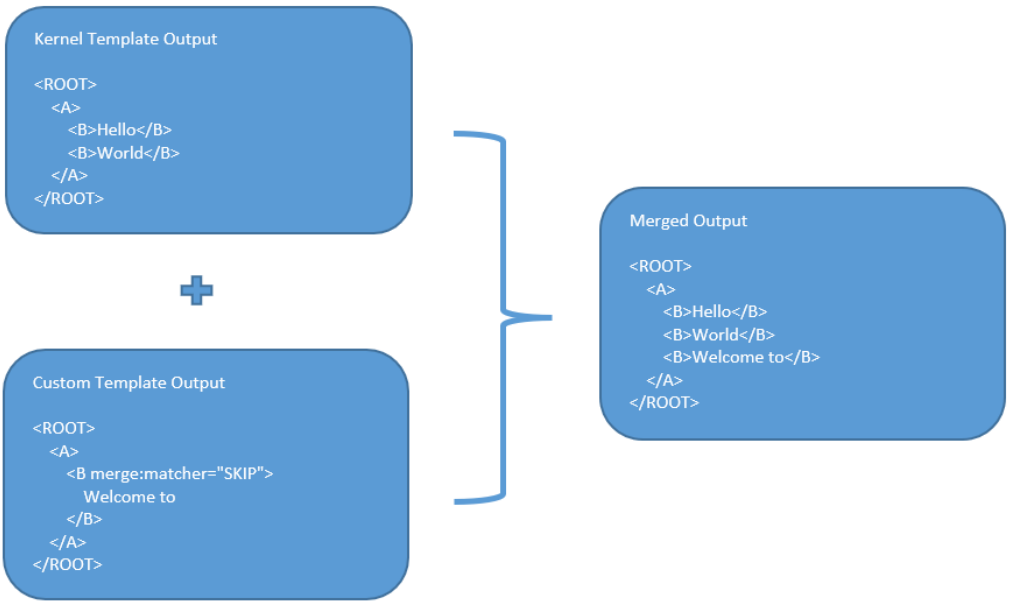


12.1.2 Skip Matcher

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

Syntax: merge:matcher='SKIP'

Example:

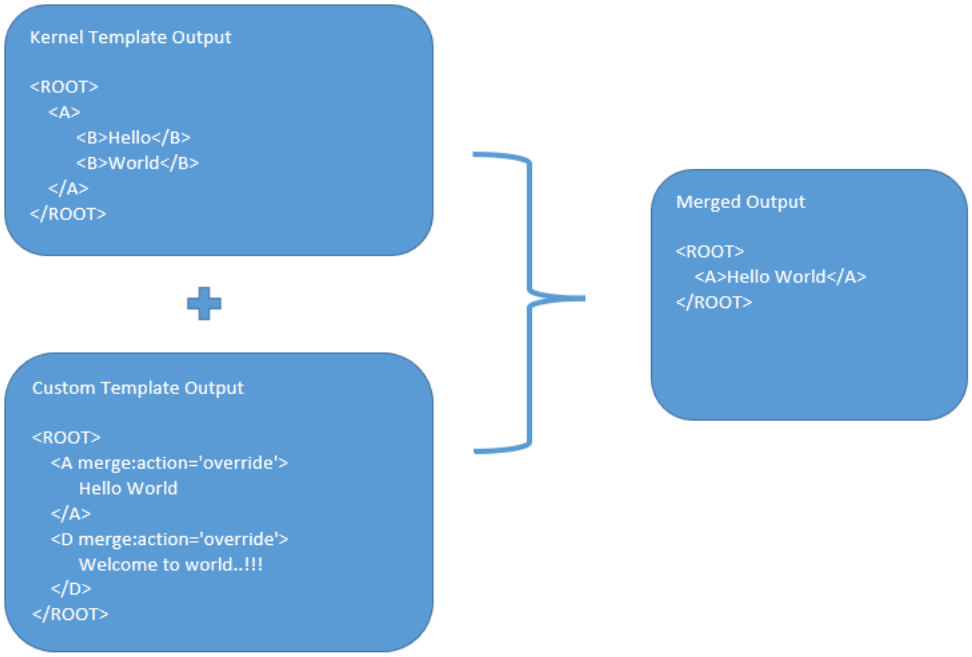


12.1.3 Override Action

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

Syntax: merge:action='override'

Example:

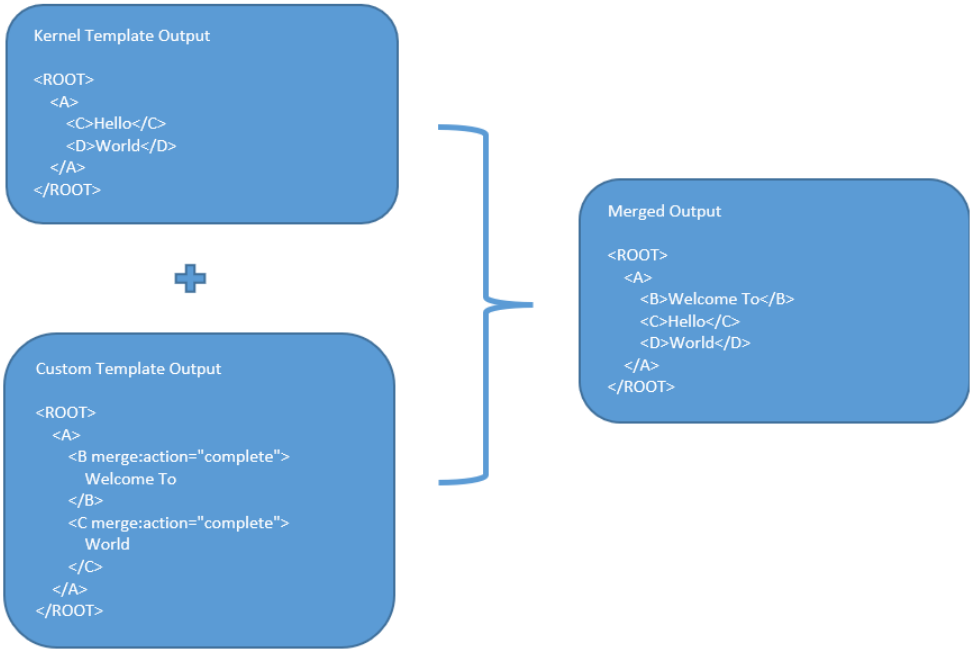


12.1.4 Complete Action

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

Syntax: merge:action='complete'

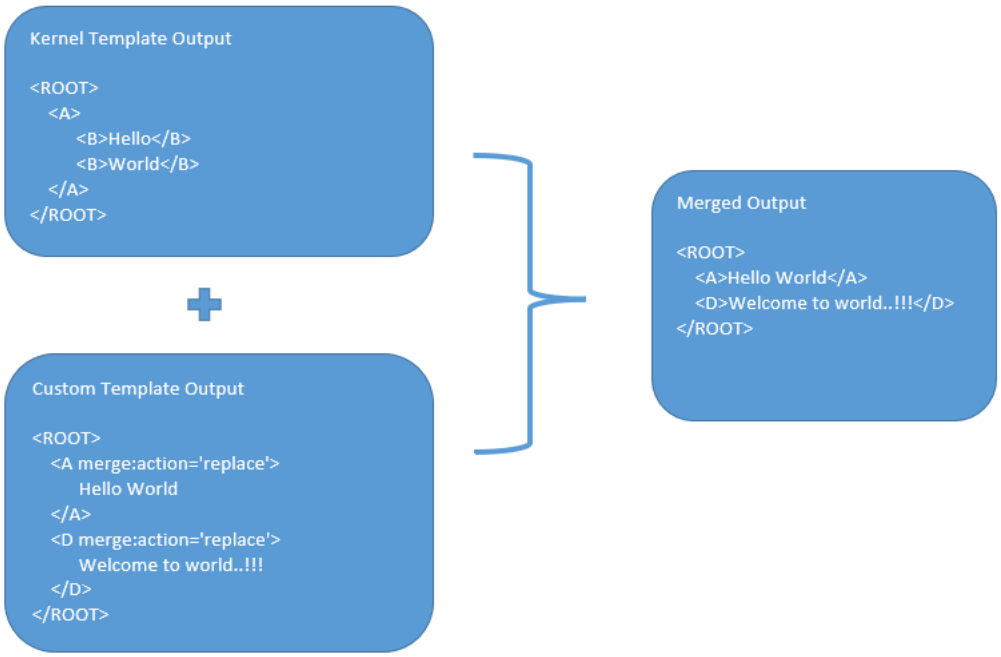
Example:



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:

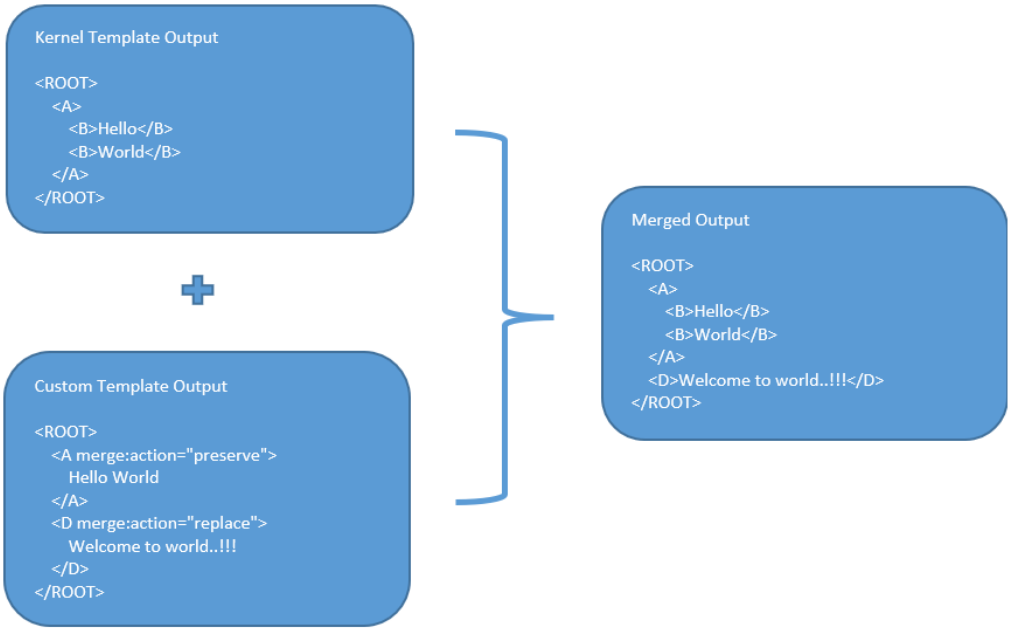

Kernel Template Output
<ROOT>
<A>
<B>Hello</B>
<B>World</B>
</A>
</ROOT>
Custom Template Output
<ROOT>
<A merge:action='replace'>
Hello World
</A>
<D merge:action='replace'>
Welcome to world..!!!
</D>
</ROOT>
Merged Output
<ROOT>
<A>Hello World</A>
<D>Welcome to world..!!!</D>
</ROOT>

12.1.6 Preserve Action

No replace action is performed on the original element.

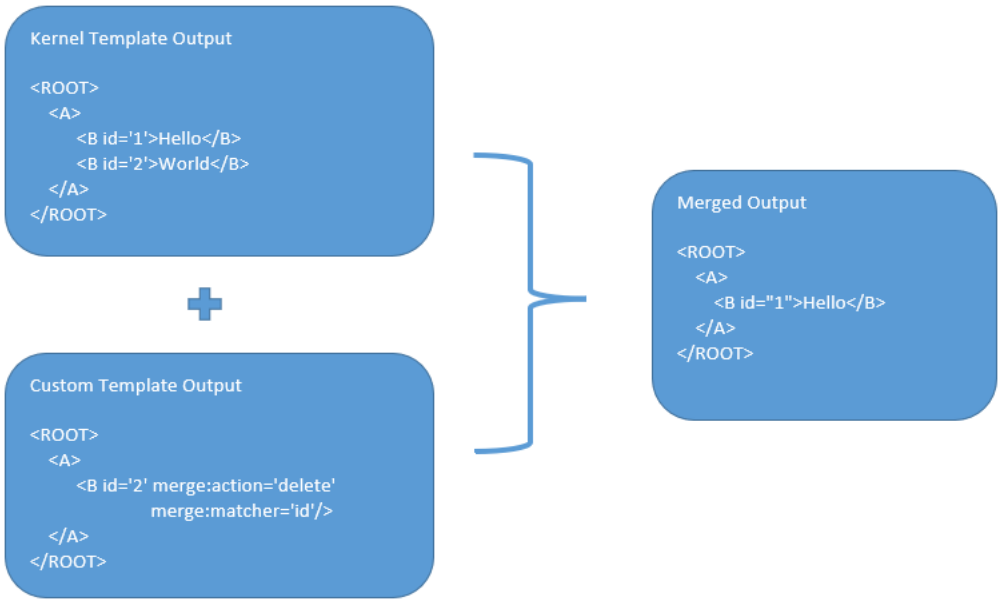
Syntax: merge:action='preserve'

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:

1. Open “Configure Tasks” screen (Task Management -> Configure Tasks)
2. Select “Schedule” option
3. Select “Task Name” as routingHubAuditRetentionJob and “Task Trigger Name” will be generated automatically
4. Specify the CRON expression to daily EOD

In order to resolve table space issue of Audit table (CMC_RH_AUDIT_EVENT_LOG), Database Management Team has to configure database job which should be triggered after routingHubAuditRetentionJob.

This database job can be redefining the table (DBMS_REDEFINITION) after purging/archiving is done or other approach.

So, 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. Multipart request

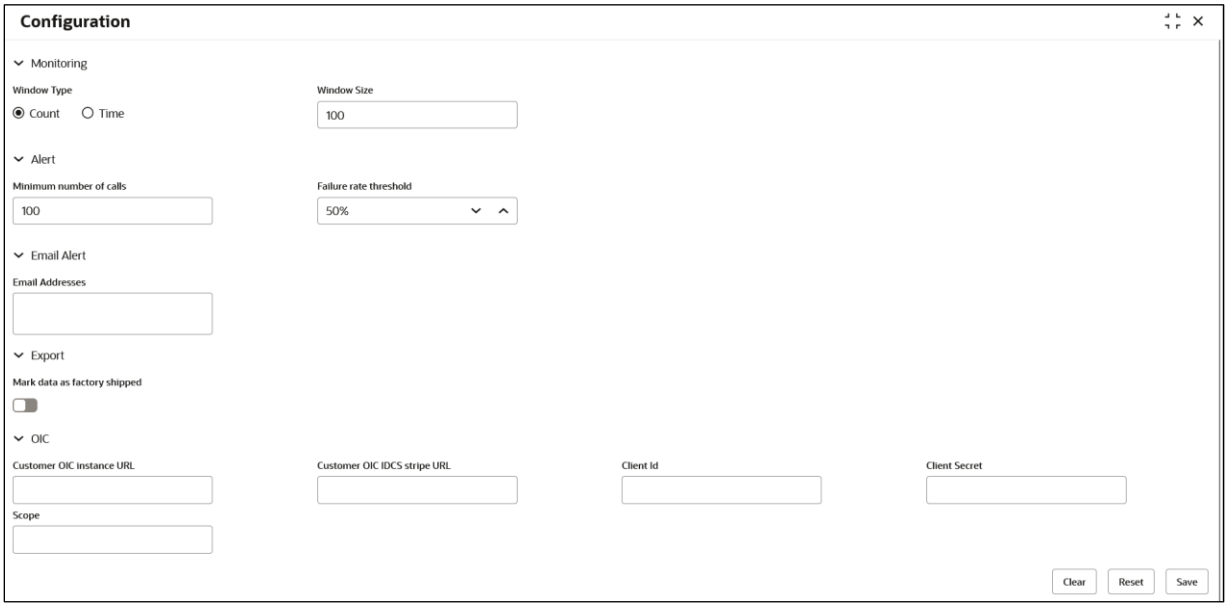
Below is the sample template for multipart request:

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


ORACLE

15. Configuration

End-user can configure the properties w.r.t. monitoring, alert and export.
End-user can configure the same at System level and granular levels such as Consumer, Consumer Service and Routing.
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 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.
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
Export	Collapsible Header & Content			This section has properties that are required for exporting configuration JSON. This section will be visible at system level only.
Mark data as factory shipped	Switch	Yes		This property is used to mark the exported configuration JSON as factory shipped JSON.

				So, end-user will not be able to modify or delete the certain data once imported. Default value is false.
OIC	Collapsible Header & Content			This section has properties that are required for OIC integration. This section will be visible at system level only.
Customer OIC instance URL	Text Box	No		This property is used to specify the url of OIC instance.
Customer OIC IDCS stripe URL	Text Box	No		This property is used to specify the striped url of IDCS.
Client Id	Text Box	No		This property is used to specify the client identifier.
Client Secret	Text Box	No		This property is used to specify the secret.
Scope	Text Box	No		This property is used to specify the intent of access.

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:

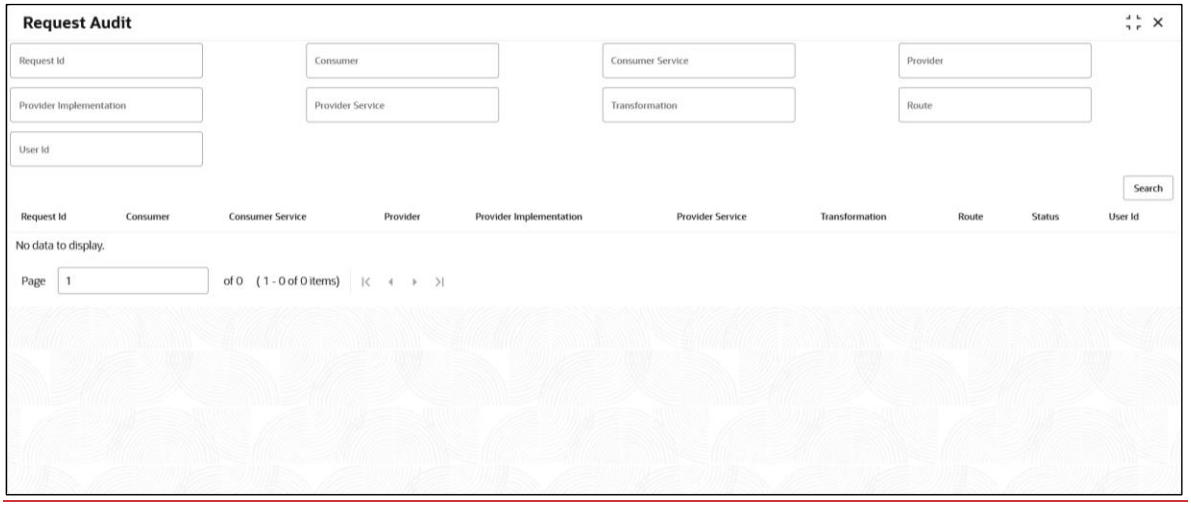
After 10 (min number of calls) calls, routing would get shutdown if 50% (failure rate) of atmost last 20 (window size) calls have failed.

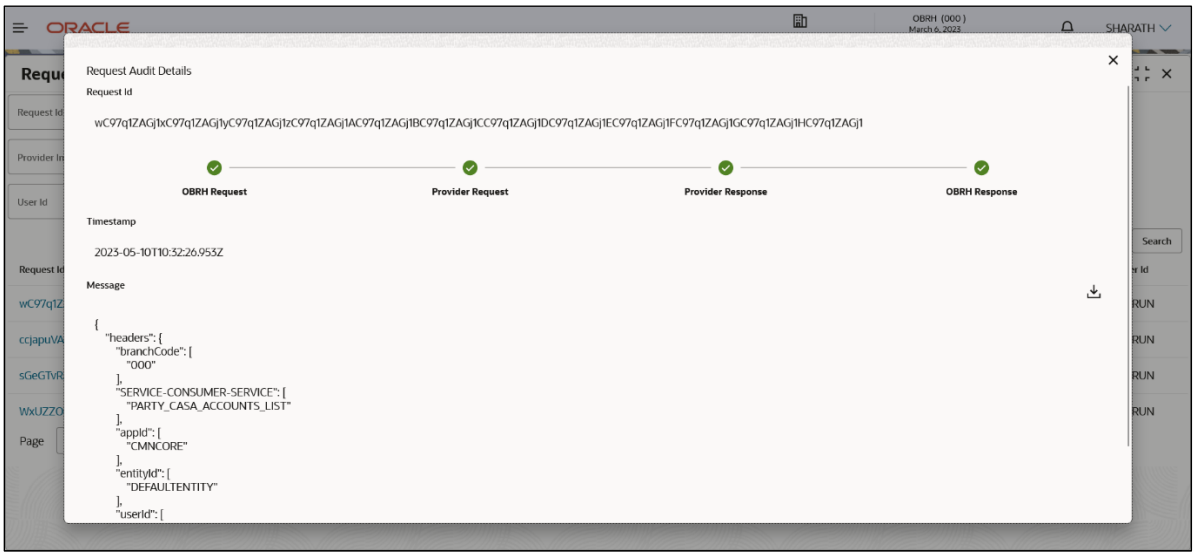
And if email address property is configured, then end-user will be notified as well.

16. Audit Log

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

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





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: • Case insensitive • Pattern matching • Single / Multi Column search	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.

17. Monitoring Dashboard

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

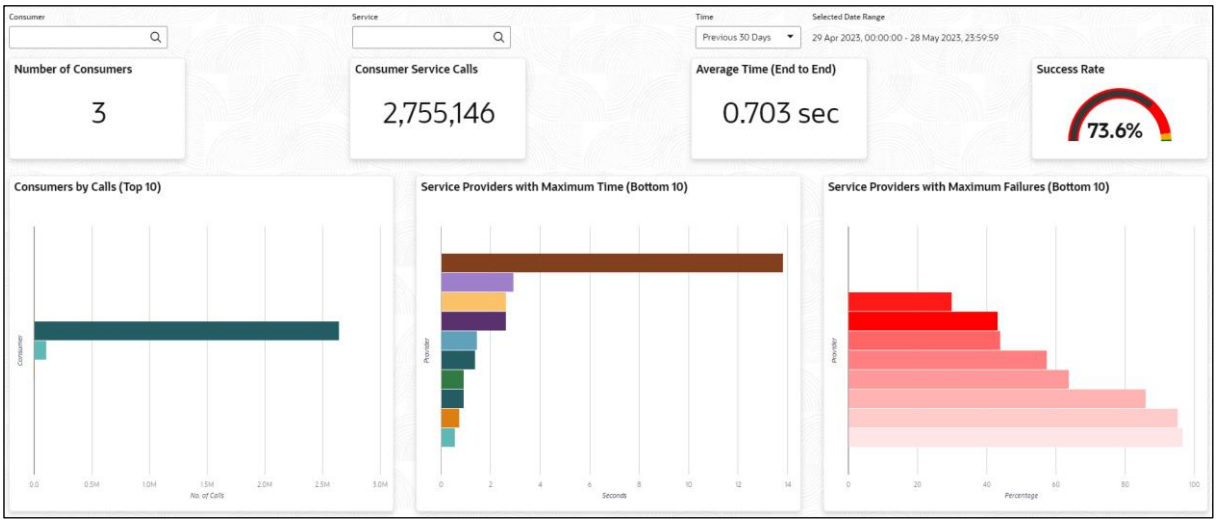
This dashboard requires ‘routingHubAuditSummaryJob' job to be executed periodically using plato-batch-server.
Below are steps to schedule the job once cmc-obrh-services and plato-batch-server is UP and RUNNING:

1. On **Home** Screen, Click **Task Management**
2. Under **Task Management**, Click **"Configure Tasks"**
3. Select "**Schedule**" option
4. Select **"Task Name"** as routingHubAuditSummaryJob and "**Task Trigger Name"** will be generated automatically.
5. Specify the CRON expression to daily EOD

To resolve table space issue of Audit summary table, (CMC_RH_AUDIT_SUMMARY), Database Management Team has to configure database job to truncate table periodically basis.

NOTE: <u>Monitoring Dashbord will also be not available if Audit logs are turned off</u>

Navigation: **Core Maintenance -> Routing Hub -> Monitoring Dashboard**



Number of Consumers: This widget displays total number of consumers configured in the Oracle Banking Routing Hub.

Consumer Service Calls: This widget displays total number of consumer services requested during chosen period.

Average Time (End to End): This widget displays the average time (in seconds) taken to process successful requests, during chosen period.

Success Rate: This widget provides an indicator of how many successful requests were made during chosen period.

Consumers by Calls (Top 10): This widget provides a graphical display of the top 10 consumers based on requests they have made during chosen period. A link on the bar graph is provided to view further details of the Consumer.

Service Providers with Maximum Time (Bottom 10): This widget provides a graphical display of bottom 10 providers based on the time taken to process requests, during s chosen period.

Service Providers with Maximum Failures (Bottom 10): This widget provides a graphical display of bottom 10 providers based on failed requests, during s chosen period.

Consumer Page

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

This page displays following information:

Number of Providers: This widget displays the total number of service providers configured in Oracle Banking Routing Hub for the selected consumer.

Consumer Service Calls: This widget displays total number of consumer services requested by the selected consumer during chosen period.

Average Time (End to End): This widget displays the average time (in seconds) taken to process successful requests made by the selected consumer, during chosen period.

Success Rate: This widget provides an indicator of how many successful requests were made by the selected consumer during chosen period.

Consumer Services by Calls (Top 10): This widget provides a graphical display of the top 10 consumers Services during chosen period. A link on the bar graph is provided to view further details of the Consumer Service.

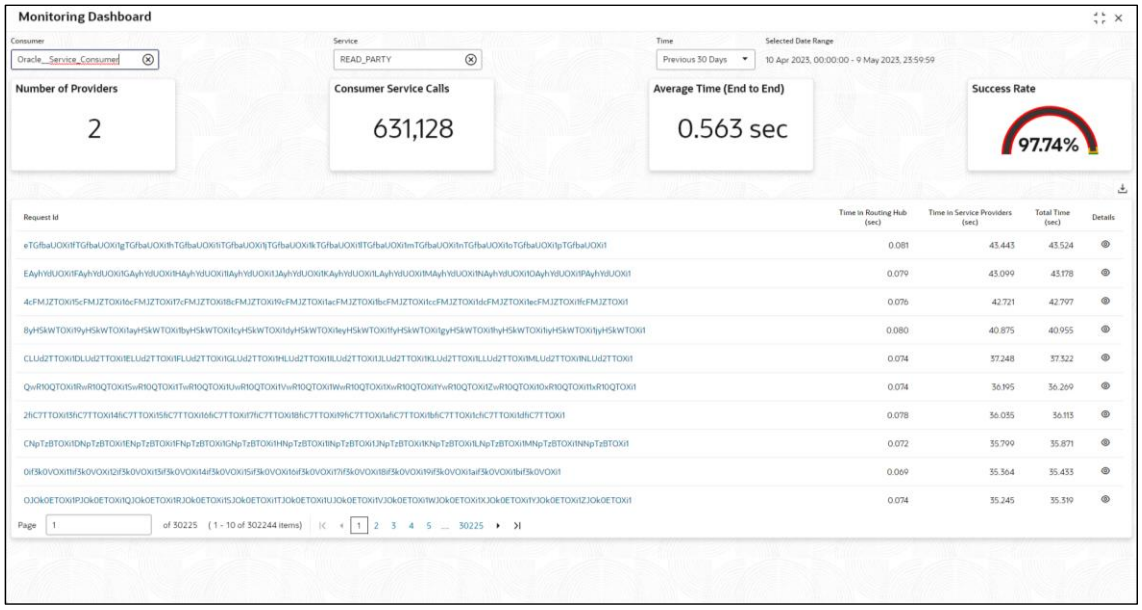
Service Providers by Calls (Top 10): Shows top 10 service providers based on the maximum requests which are requested chosen period.

Service Providers with Maximum Time (Bottom 10): Shows bottom 10 providers based on the maximum time taken to process successful requests which are requested during chosen period.

Service Providers with Maximum Failures (Bottom 10): Shows bottom 10 providers based on the maximum number of failed requests which are requested during chosen period.

Consumer Service Page

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



Number of Providers: This widget displays total number of service providers to which this request is routed to complete the integration.

Consumer Service Calls: This widget displays total number of consumer services made during chosen period.

Average Time (End to End): This widget displays the average time taken to process successful requests made during chosen period.

Success Rate: Shows the percentage of successful requests which are made during chosen period.

Request Details: The table displays the list of requests which are requested during chosen period. Following are the details which are provided for each request

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

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

Component Name	Comments
Number of Providers	Shows total number of service providers
Consumer Service Calls	Shows total number of consumer services requested during selected time
Average Time (End to End)	Shows the average time taken to process successful requests which are requested during selected time
Success Rate	Shows the percentage of successful requests which are requested during selected time
Request Audit	Shows list of requests which are requested during selected time

18. Transformation Type

18.1 Velocity

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

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: $headers["branchCode"][0]
- Using **$bodyAsString**, user can access response body as string.
  Syntax: $bodyAsString
- Below are some available extension methods:
  - Date Conversion

    Syntax: $dateUtil.convert(inputDate, fromPattern, toPattern)

    Parameters:

    - inputDate - String
    - fromPattern - String
    - toPattern - String

    Returns: String

    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

ORACLE

- 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

- 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.

18.2 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.

18.3 JSLT

JSLT is a complete query and transformation language for JSON.

19. Oracle Banking Routing Hub Integration Specification

19.1 Token Generation

PlatoJWTAuth endpoint signature -

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

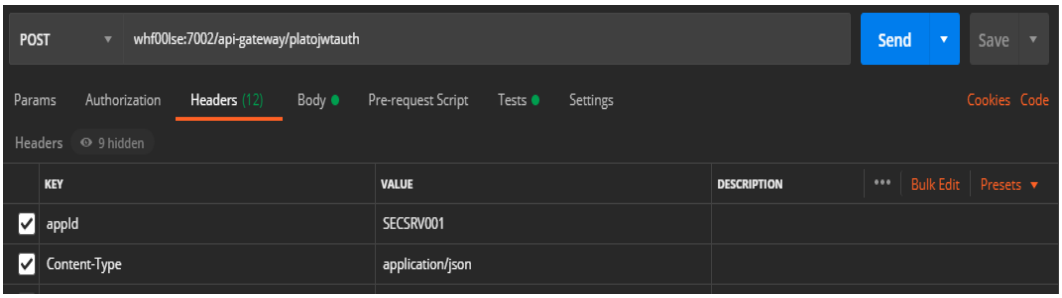
```
{
    "username": "",
    "password": ""
}
```

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

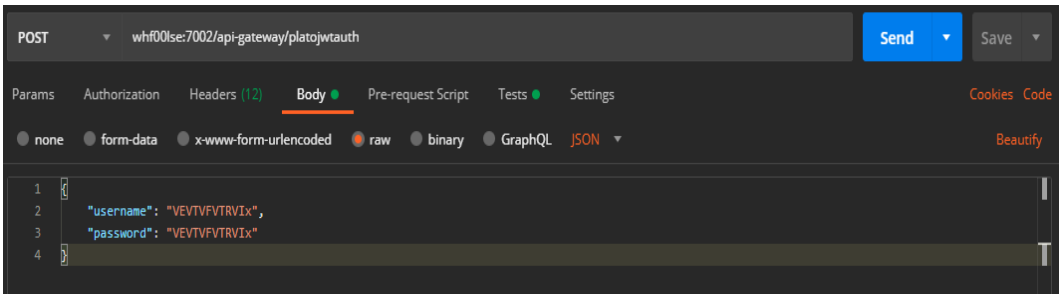
```
{
 "token": “”,
 "userAlreadyLoggedIn": “Y”,
 "expires_in": 3180,
 "home_entity_id": "DEFAULTENTITY",
 "multi_entity_admin": "N",
 "multi_entity_admin_locale": “”
}
```

Example - Below are the screenshots

Headers



Request Payload



Response Payload

19.2 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.

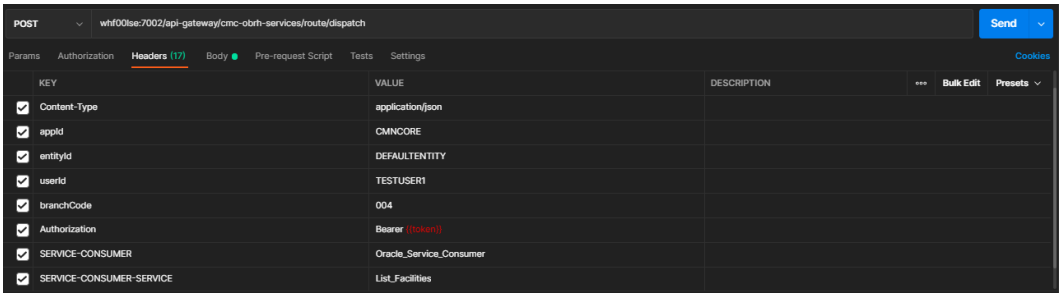
Dispatch endpoint signature -

- Method: POST / GET
- 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/XML payload which shall act as input to the transformation template in request transformer.
- Response Body:
  {
  "data": {}
  "messages": {}
  }

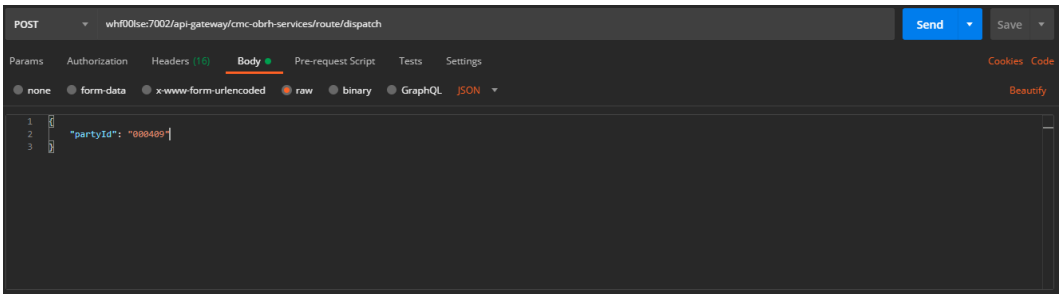
- If the route invocation succeeds, data JSON member would contain the transformed (optional) response of the provided service. If it's a provided web service and no response transformation template is supplied, XML Soap Body of response would be converted into JSON object and sent in data JSON member.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

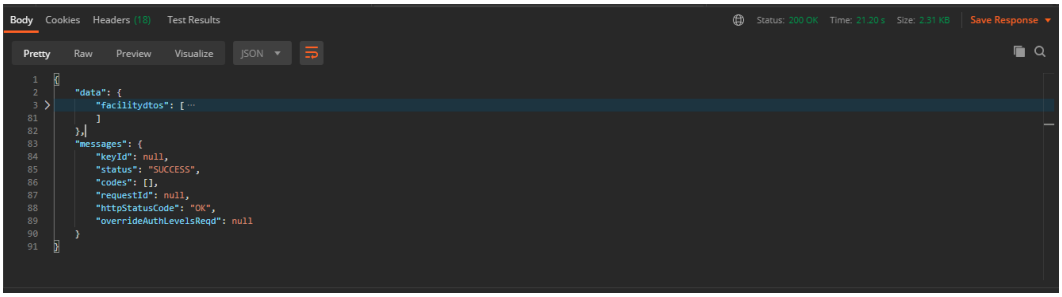
Headers



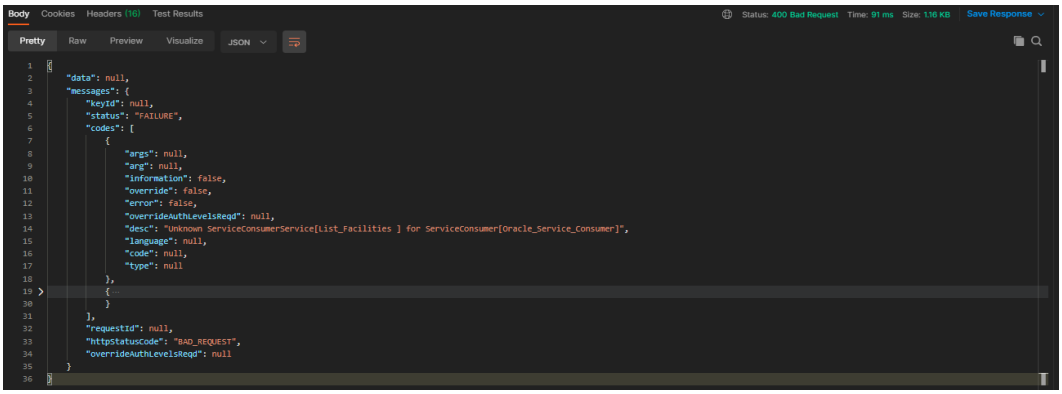
Request Payload



Response Payload on Successful Dispatch



Response Payload on Failed Dispatch



19.3 Asynchronous Dispatch API Specification

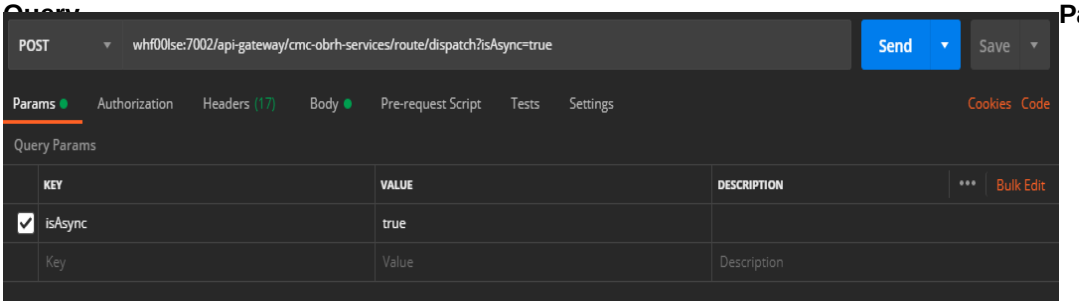
Dispatch endpoint is the **single** entry-point for invoking the routes configured in Oracle Banking Routing Hub for services of a Service Consumer.

Dispatch endpoint signature -

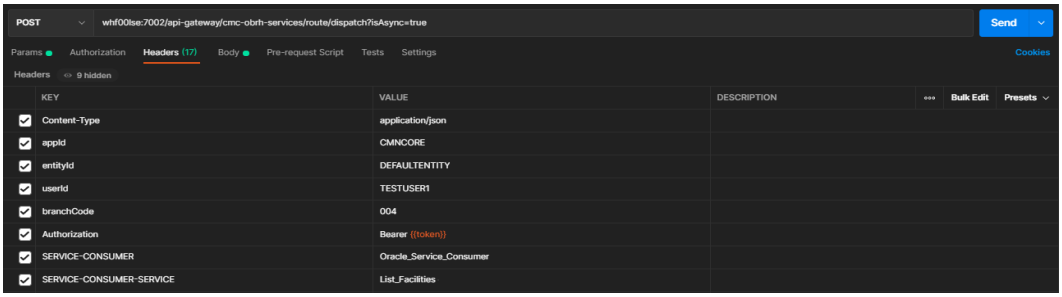
- Path : /route/dispatch
- Query Params:
  - isAsync : true
- Headers:
  - appId : CMNCORE
  - entityId : DEFAULTENTITY
  - userId : <user id>
  - branchCode : <branch code>
  - Authorization : Bearer <Token>
  - SERVICE-CONSUMER : <name of service consumer>
  - SERVICE-CONSUMER-SERVICE : <name of service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

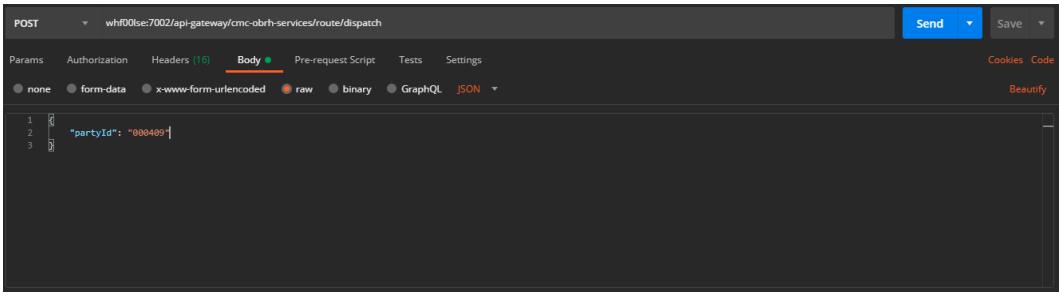
Query Params



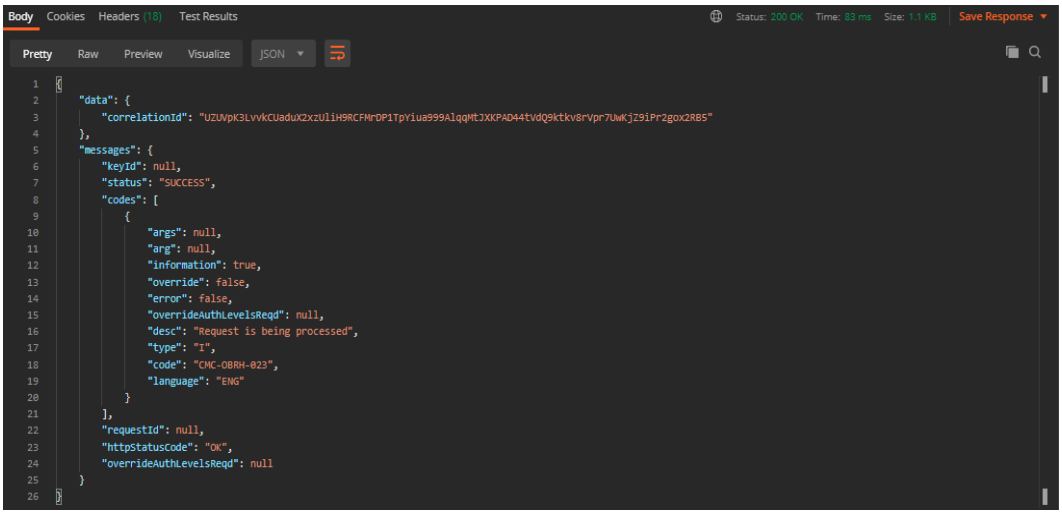
Headers



Request Payload



Response Payload



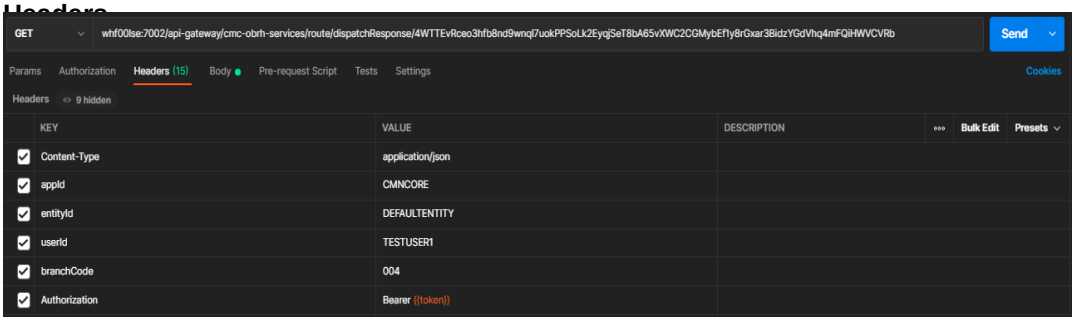
19.4 Asynchronous Dispatch Response API Specification

Response endpoint signature -

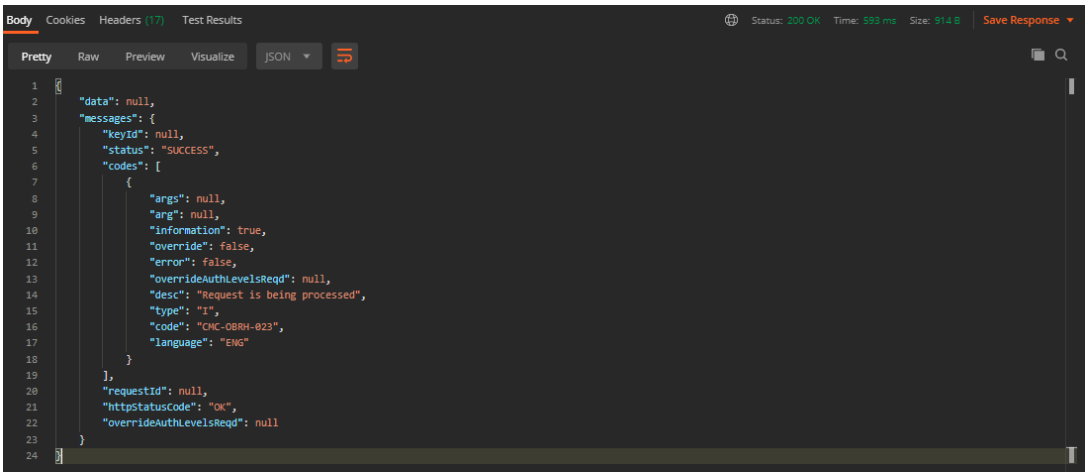
- Path : /route/dispatchResponse/{Correlation-Id}
  - Correlation-Id will be coming from the response of dispatch endpoint.
- Headers:
  - appId : CMNCORE
  - entityId : DEFAULTENTITY
  - userId : <user id>
  - branchCode : <branch code>
  - Authorization : Bearer <Token>
- Response Body:
  {
  "data":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

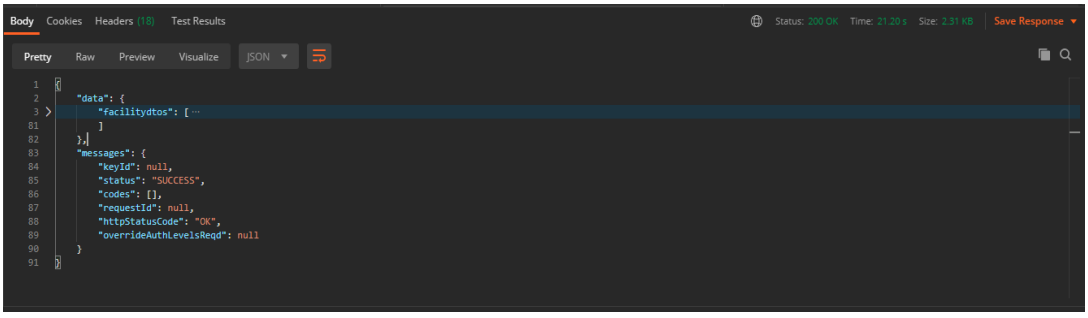
Headers



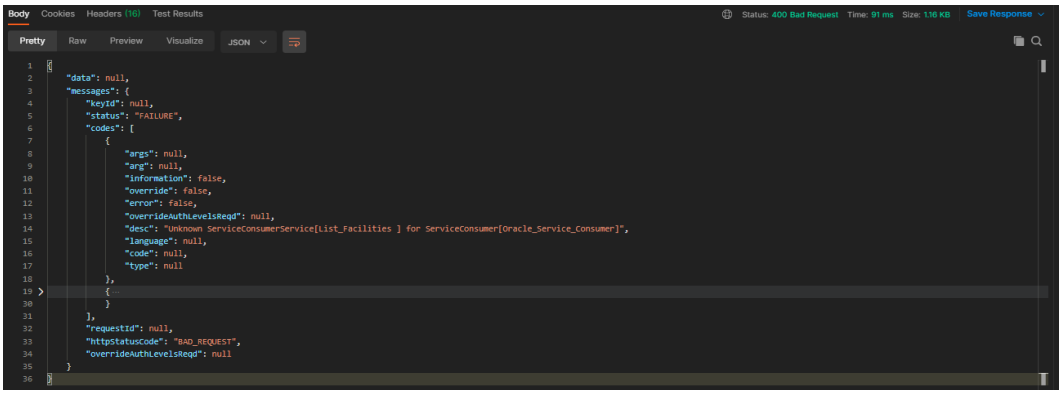
Response Payload when request is still processing



Response Payload when request is processed (on Successful Dispatch)



Response Payload when request is processed (on Failed Dispatch)



19.5 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:
  - 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>
  - SERVICE-TRANSFORMATION : <name of service transformation>
- Query Parameters:
  - transformationType : REQUEST / RESPONSE / MOCK_RESPONSE

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

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

20. Oracle Banking Routing Hub VM Arguments

Common Core Managed Server

Parameter	Default	Values
CMC-OBRH-SERVICE		
cmc-obrh-services.server.port		<SERVER_PORT>
obrh.db.jndi		<CMNCORE_JNDI>
cmc-obrh-services.oic.secretStore.url		<OIC_SECRET_STORE_URL>
cmc-obrh-services.audit.retention.days		<AUDIT_RETENTION_POLICY_DAYS>
cmc-obrh-services.audit.retention.archival		Y / N (Y for archiving and N for purging)
Enable and configure connection pooling for REST calls		
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>
Receive routing failure mail notification via plato-alerts-management-service		
obrh.alerts.enabled	false	true / false
Change approach for auditing		
obrh.audit.type	DEFAULT	DEFAULT / KAFKA / JMS / LOG / OFF For KAFKA option, cmc-obrh-kafka-consumer service needs to be deployed. For JMS option, cmc-obrh-jms-consumer service needs to be deployed.
Overwrite the customization that is not part of configuration json		

obrh.import.overwrite	false	true / false
Use Custom Keystore and Truststore for HTTPS scheme		
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
For tomcat deployment		
obrh.server.isJavaEE	true	true / false (false for tomcat)
obrh.taskexecutor.corepoolsize	50	<CORE_POOLSIZE>
obrh.taskexecutor.maxpoolsize	50	<MAX_POOLSIZE>
obrh.taskexecutor.queuecapacity	100	<QUEUE_CAPACITY>
Set Proxy settings for HTTPS As per the Java Networking documentation, HTTPS protocol handler will use the same as the http handler (i.e. http.nonProxyHosts). But in case of Weblogic, http.nonProxyHosts will not work for some reason. So, use https non proxy host argument (i.e. https.nonProxyHosts).		
https.proxyHost		<PROXY_HOST_NAME>
https.proxyPort		<PROXY_PORT>
https.nonProxyHosts		<NON_PROXY_HOST_LIST>
http.nonProxyHosts		<NON_PROXY_HOST_LIST>

Set logger level		
plato.service.logging.level		<LOG_LEVEL>
Support SSL based SOAP provider calls in weblogic environment This property will enforce WebLogic Server to use SUN SSL implementation (javax package) rather than the WebLogic one.		
UseSunHttpHandler		true
CMC-OBRH-KAFKA-CONSUMER		
cmc-obrh-kafka-consumer.server.port		<SERVER_PORT>
Change ID generator		
obrh.audit.id-generator	UUID	UUID / SNOWFLAKE
CMC-OBRH-JMS-CONSUMER		
cmc-obrh-jms-consumer.server.port		<SERVER_PORT>
cmc-obrh-jms-consumer.connectionFactory		<JMS_CONN_FACTORY_JNDI>
cmc-obrh-jms-consumer.queue		<JMS_CONN_QUEUE_JNDI>
Change ID generator		
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 200MB)
plato-api-gateway.multipart.max-request-size=<MAX_REQUEST_SIZE> (default is 200MB)

Note: -1 for no size constraint

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

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

RT>