

Oracle® Communications Convergent Charging Controller

REST Client Technical Guide



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

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Preface

The scope of this document includes all the information required to install, configure and administer the RESTClient application.

Audience

This document is intended for system administrators and persons installing, configuring and administering the RESTClient application. However, sections of the document may be useful to anyone requiring an introduction to the application.

Prerequisites

A solid understanding of UNIX and a familiarity with IN concepts are an essential prerequisite for safely using the information contained in this technical guide. Attempting to install, remove, configure or otherwise alter the described system without the appropriate background skills, could cause damage to the system; including temporary or permanent incorrect operation, loss of service, and may render your system beyond recovery.

Although it is not a prerequisite to using this guide, familiarity with the target platform would be an advantage.

This manual describes system tasks that should only be carried out by suitably trained operators.

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1

System Overview

This chapter provides a high-level overview of the application. It explains the basic functionality of the system and lists the main components.

It is not intended to advise on any specific Oracle Communications Convergent Charging Controller network or service implications of the product.

What is RESTClient?

The RESTClient (REST) interface is used to send REST requests from Convergent Charging Controller to REST server endpoints.

Request Processing

RESTClient accepts the requests in xml format on a specific port that is configured and translates the xml request to JSON format. RESTClient then forwards the JSON request to REST server, which is accepted at the REST server endpoint.

Response Handling

RESTClient encapsulates response received from the REST server, transforms it to xml, and sends it back to the requesting process (DAP) with a response code of 200. The actual result code or error code is encoded in the response xml.

Features

- RESTClient supports requests to Balance Transfer and Apply Loan endpoints in the Oracle Communications Billing and Revenue Management (BRM) REST server.
- RESTClient also supports generic request types, which can be forwarded towards any REST server endpoints with required design time customizations.

2

Configuration

This chapter explains how to configure the Oracle Communications Convergent Charging Controller application.

RESTClient Configuration

RESTClient reads its configuration from the **config.json** file. The **config.json** file is located in the **/IN/service_packages/REST/etc** directory.

RESTClient config.json Section

To organize the configuration data within the config file, some sections are nested within other sections. Configuration details are opened and closed using { }.

- Groups of parameters are enclosed with curly brackets – { }
- Comments are prefaced with a “//” at the beginning of the line

Editing the File

Open the configuration file on your system using a standard text editor. Do not use text editors, such as Microsoft Word, that attach control characters. These can be, for example, Microsoft DOS or Windows line termination characters (for example, ^M), which are not visible to the user, at the end of each row. This causes file errors when the application tries to read the configuration file.

Always keep a backup of your file before making any changes to it. This ensures you have a working copy to which you can return.

Loading Config Changes

If you change the configuration file, you must restart the service to enable the new options to take effect.

Wallet Management for oAuth

You need to create an Oracle wallet to store and manage OAM server clientId and clientSecrets, after installing the REST client (and before triggering any Auth requests). Wallets are created using **/u01/app/oracle/product/12.2.0/bin/mkstore** tool.

Perform the following steps:

1. Create an empty Oracle wallet.
2. Store the credentials of OAM server for Auth requests.

Example

```
mkstore -wrl /IN/service_packages/REST/etc/wallet -createCredential  
REST username password
```

```
mkstore -wrl /IN/service_packages/REST/etc/wallet -createCredential  
connect_string username password
```



Note:

connect_string should be different for different credentials.

Configuration

1. Configure location of the wallet in **config.json** file. For example, **/IN/service_packages/REST/etc/wallet**.
2. Generate the base64 encoded value of the wallet password and configure it in **config.json** file. For example, to generate the base64 encoded wallet password, run the following command:

```
echo -n "wallet_password" | base64
```

3. Configure the clientId in **config.json** file.

SSL Configuration

When endpoint contains https, SSL configuration is used for certification validation. SSL configuration is taken from default java configuration. Default truststore is present in **java/bin** directory.

To import the certificate, run the **keytool** command as an administrator or root user. For example:

```
keytool -importcert -alias cert_alias_name -file ./ssl_cert.pem -  
keystore /usr/java/jdk1.8.0_261/jre/lib/security/cacerts
```


3

Background Processes

This chapter explains the process which runs automatically as part of the Oracle Communications Convergent Charging Controller application. This process is started automatically by the system services (`//IN/bin/OUI_systemctl.sh`) in the SLC node.

RESTClient

Purpose

The RESTClient (REST) interface is used to trigger REST requests towards REST server endpoints.

Startup

This task is started by the system services, by the following line in the service files:

```
//IN/service_packages/REST/bin/RestClientStartup.sh config.json
```

Configuration

The high-level structure of the REST client is shown below:

```
{
  "maxthreadcount": 1000,
  "port": 4050,
  "webroot": "/tmp",
  "walletlocation": "Location",
  "walletkey": "key",

  "restendpoint": {
    "BalanceTransfer" : {
      "endpoint" : "BalanceTransferEndpoint",
      "servergroupid" : "BRM",
      "resourceid": 840,
      "chargesource": false,
      "chargedestination": false
    },
    "ApplyLoan" : {
      "endpoint" : "ApplyLoanEndpoint",
      "serviceType" : "/service",
      "servergroupid" : "BillingCare",
      "resourceid": 840
    },
    "GenericRequest" : {
      "endpoint" : "GenericRequestEndpoint",
      "type" : "POST",
      "servergroupid" : "BillingCare"
    }
  }
},
```

```

"serverlist": {
  "BRM": {
    "tokenendpoint": "BRMOAuthEndpoint",
    "clientid": "username"
  },
  "BillingCare": {
    "tokenendpoint": "BCOAuthEndpoint",
    "clientid": "username"
  }
}
}

```

Parameters

Parameters of the REST client are listed below.

maxthreadcount

Syntax:	maxthreadcount: "value"
Description:	Maximum number of thread the java process can have.
Type:	Integer
Optionality:	Optional
Allowed:	NA
Default:	1000
Example:	maxthreadcount: "1000"

port

Syntax:	port: "value"
Description:	Port on which REST client is listening to DAP requests.
Type:	Integer
Optionality:	Optional
Allowed:	NA
Default:	4050
Example:	port: "4050"

webroot

Syntax:	webroot: "value"
Description:	Path to which client will be listening. When "/" is specified, the client will be listening to "http://localhost:port". In API, "/" should be present at the end in the DAP configuration screen.
Type:	String
Optionality:	Optional
Allowed:	NA
Default:	"/"
Example:	webroot: "/tmp"

walletlocation

Syntax:	walletlocation: "value"
Description:	Location where the wallet is created, which stores the REST endpoint username and password.
Type:	String
Optionality:	Optional
Allowed:	NA
Default:	"/IN/service_packages/REST/etc/wallet"
Example:	walletlocation: "/IN/service_packages/REST/etc/wallet"

walletkey

Syntax:	walletkey= "value"
Description:	Base64 encrypted password for the wallet.
Type:	String
Optionality:	Mandatory
Allowed:	NA
Default:	""
Example:	walletkey: "key"

restendpoint

Syntax:	<pre>"value" : { "endpoint" : "value", "type" : "value", "servergroupid" : "value" }</pre>
Description:	Group of REST operations.
Type:	JSON
Optionality:	Optional
Allowed:	NA
Default:	NA
Example:	<pre>{ "BalanceTransfer" : { "endpoint" : "BalanceTransferEndpoint" "servergroupid" : "BillingCare" } "ApplyLoan" : { "endpoint" : "ApplyLoanEndpoint", "servergroupid" : "BRM" } }</pre>

endpoint

Syntax:	endpoint: "value"
Description:	Endpoint to which the request is triggered.
Type:	String
Optionality:	Optional
Allowed:	NA
Default:	""
Example:	endpoint: "http:localhost:restoperation/"

type

Syntax:	type: "value"
Description:	The type of request. This applies to GenericRequest handler only.
Type:	String
Optionality:	Optional
Allowed:	The allowed values are: <ul style="list-style-type: none"> • GET: Request will be triggered without body. • POST: XML Request body will be converted to JSON body and triggered.
Default:	POST
Example:	type: "POST"

servergroupid

Syntax:	servergroupid: "value"
Description:	ID of the oAuth credential present in serverlist.
Type:	String
Optionality:	Optional
Allowed:	Servergroupid should be present in the serverlist, so that corresponding oAuth endpoint and clientid is used to generate the token.
Default:	""
Example:	servergroupid: "BRM"

resourceid

Syntax:	resourceid: "value"
Description:	Resourceid used for requesting BalanceTransfer and ApplyLoan .
Type:	Integer
Optionality:	Optional
Allowed:	Only used in BalanceTransfer and ApplyLoan .
Default:	840
Example:	resourceid: "840"

chargesource

Syntax:	chargesource: "Boolean"
----------------	-------------------------

Description:	This is a boolean flag to indicate whether the source account to be charged for balance transfer. The <chargeSource> xml input field will hold this value. If xml does not carry this information, then a default value is taken from the config.json file.
Type:	Boolean
Optionality:	Optional
Allowed:	Only used in BalanceTransfer.
Default:	false
Example:	chargesource: "false"

chargedestination

Syntax:	chargedestination: " <i>Boolean</i> "
Description:	This is a boolean flag to indicate whether the target/destination account to be charged for balance transfer. The <chargeDestination> xml input field will hold this value. If xml does not carry this information, then a default value is taken from the config.json file.
Type:	Integer
Optionality:	Optional
Allowed:	Only used in BalanceTransfer.
Default:	false
Example:	chargedestination: "false"

serviceType

Syntax:	serviceType : " <i>value</i> "
Description:	This is the MSISDN Service type for which apply loan details are requested. The <serviceType> xml input field will hold this value. If xml does not carry this information, then a default value is taken from the config.json file
Type:	String
Optionality:	Optional
Allowed:	Only used in ApplyLoan.
Default:	/service
Example:	serviceType : "/service"

serverlist

Syntax:	<pre>"value": { "tokenendpoint": "value", "clientid": "value" }</pre>
Description:	Group of OAuth credentials.
Type:	JSON
Optionality:	Mandatory
Allowed:	NA

Default:	NA
Example:	<pre>"BRM": { "tokenendpoint": "OAuthendpoint", "clientid": "username" }</pre>

tokenendpoint

Syntax:	tokenendpoint: " <i>value</i> "
Description:	Endpoint to which token request will be triggered.
Type:	String
Optionality:	Mandatory
Allowed:	NA
Default:	""
Example:	tokenendpoint: "OAuthendpoint"

clientid

Syntax:	clientid: " <i>value</i> "
Description:	Username used for OAuth token request. Corresponding password should be added in the wallet.
Type:	String
Optionality:	Mandatory
Allowed:	NA
Default:	NA
Example:	clientid: "username"

4

About Installation

This chapter provides information about the installed components for the Oracle Communications Convergent Charging Controller application described in this guide. It also lists the files installed by the application that you can check for, to ensure that the application is installed successfully.

Installation Overview

For information about the following requirements and tasks, see *Installation Guide*:

- Convergent Charging Controller system requirements
- Pre-installation tasks
- Installing and removing Convergent Charging Controller packages

RESTClient Package

Installation of Oracle Communications Convergent Charging Controller RESTClient includes **restScp** package on SLC.

Checking the Installation

Refer to the following checklist to ensure that RESTClient is installed correctly.

Checklist - SLC

Follow the steps in this checklist to ensure RESTClient is installed correctly on an SLC machine.

1. Log in to the SLC machine as root.
2. Check that the following directory structure exists, with subdirectories:
//IN/service_packages/REST
3. Check that directories contain subdirectories and that all are owned by:
smf_oper user (group esg)

Process list - SLC

If the application is running correctly, **RESTClient.jar** process should be running on each SLC, started during OUI_systemctl startup.

RESTClient Directories and Files

The RESTClient installation on SLC creates the following directories:

- **//IN/services_packages/REST/bin**
- **//IN/services_packages/REST/lib**
- **//IN/services_packages/REST/etc**

- **`/IN/services_packages/REST/tmp`**

Installing RESTClient installs the following interface:

`/IN/services_packages/REST/bin/RESTClient.jar`

Installing RESTClient installs the following configuration file:

`/IN/services_packages/REST/etc/config.json.example`



Note:

You need to create the **`config.json`** file with actual values required during runtime.

5

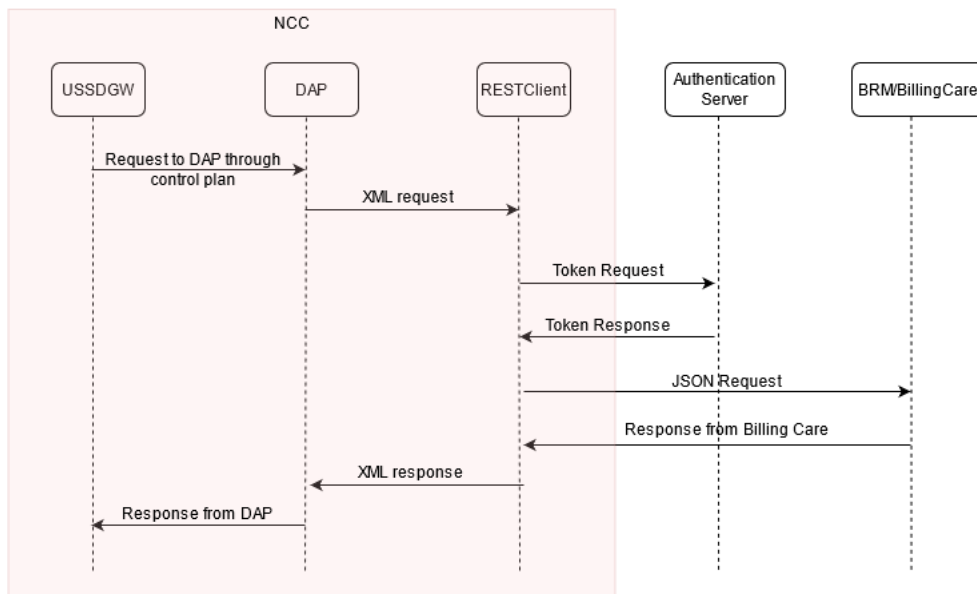
RESTClient Call Flows

This chapter provides a sample REST request flow.

Request Flow

Figure 5-1 shows the request and response exchange between USSDGW, DAP, RESTClient, and REST server. The flow depicts a simple scenario where RESTClient receives an xml request from DAP. RESTClient converts the incoming xml request from DAP to a JSON request and that JSON request is sent to the REST server (BRM). RESTClient then receives a response from the REST server. The response is sent back to DAP and a message will be sent to the subscriber based on the response from the REST server.

Figure 5-1 REST Request Flow



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Supported Request Type

RESTClient supports three types of requests:

- BalanceTransfer
- ApplyLoan
- GenericRequest



Note:

If the location fetch fails during BalanceTransfer or ApplyLoan APIs, Convergent Charging Controller does not send any location attributes to BRM. In such cases, taxes are applied based on how it is configured in the BRM system.

BalanceTransfer

BalanceTransfer request is triggered when the following parameter is present in the input xml request:

```
<operation>BalanceTransfer</operation>
```



Note:

- Configure **BalanceTransfer** under **restendpoint** in **config.json** file.
- The output request will be always POST.

Input Request

Table 6-1 describes the parameters accepted in the XML `<requestDetails>` tag.

Table 6-1 Input Request Parameters

Notification Type	Mandatory/Optional	Description
sourceMSISDN	Mandatory	Source MSISDN for BalanceTransfer.
destinationMSISDN	Mandatory	Destination MSISDN for BalanceTransfer.
transferAmount	Mandatory	Amount to be transferred from source to destination.
transferAmountType	Optional	Resourceid of the amount passed. If not present in the input request, default value of resourceid from the config file is used.

Table 6-1 (Cont.) Input Request Parameters

Notification Type	Mandatory/ Optional	Description
chargeSource	Optional	Boolean flag to indicate whether the source account will be charged. If not present in the input request, default value of chargeSource from the config file is used.
chargeDestination	Optional	Boolean flag to indicate whether the target or destination account will be charged. If not present in the input request, default value of chargedestination from the config file is used.
sourceZoneMapTarget	Optional	Cellid for source MSISDN. If not present in the input request, location will not be sent to the REST server.
targetZoneMapTarget	Optional	Cellid for destination MSISDN. If not present in the input request, location will not be sent to the REST server.

Sample XML Input Request

Following is a sample XML input request sent out from DAP module.

```
<operation>BalanceTransfer</operation>
<requestDetails>
<sourceMSISDN>90989098</sourceMSISDN>
<destinationMSISDN>89878987</destinationMSISDN>
<transferAmount>10</transferAmount>
<transferAmountType>840</transferAmountType>
<chargeSource>true</chargeSource>
<chargeDestination>>false</chargeDestination>
<sourceZoneMapTarget>52021005DC03EA</sourceZoneMapTarget>
<targetZoneMapTarget>52121005DC03EA</targetZoneMapTarget>
</requestDetails>
```

REST Request Parameters

[Table 6-2](#) lists the parameters sent to the REST server.

Table 6-2 REST Request Parameters

Notification Type	Mapping From Input Request
sourceRef.id	From sourceMSISDN .
sourceRef.type	Always set as service .
targetRef.id	From destinationMSISDN .
targetRef.type	Always set as service .
transferAmount	From transferAmount .

Table 6-2 (Cont.) REST Request Parameters

Notification Type	Mapping From Input Request
transferAmountType	From transferAmountType . If not present in the input request, restendpoint.BalanceTransfer.resourceid from the config file is used.
chargeSource	From transferAmountType . If not present in the input request, restendpoint.BalanceTransfer.chargesource from the config file is used.
chargeDestination	From transferAmountType . If not present in the input request, restendpoint.BalanceTransfer.chargedestination from the config file is used.
description	Same as operation name.
sourceLocation. zoneMapTarget	From sourceZoneMapTarget .
targetLocation. zoneMapTarget	From targetZoneMapTarget .

Sample REST API Request

Following is a sample REST API request sent out from RESTClient towards REST endpoint.

```
{
  "description" : "BalanceTransfer",
  "sourceRef" : {
    "id" : "90989098",
    "type" : "service"
  },
  "targetRef" : {
    "id" : "89878987",
    "type" : "service"
  },
  "transferAmount" : 10,
  "transferAmountType" : 840,
  "chargeSource" : true,
  "chargeDestination" : false,
  "sourceLocation" : {
    "zoneMapTarget" : "52021005DC03EA"
  },
  "targetLocation" : {
    "zoneMapTarget" : "52121005DC03EA"
  }
}
```

REST API Response

Tags present in the response will not be validated. JSON message will be directly converted to XML.

Sample REST API Response

Following is the snippet of response received from the REST endpoint.

```
{
  "extension": null,
  "id": "0.0.0.1+-event-audit-transfer_balance+335711686285720131",
  "uri": "http://hostname:port/bcws/webresources/v1.0/billunits/
balancegroups/transferbalance/0.0.0.1+-event-audit-
transfer_balance+335711686285720131",
  "transferAmount": 10,
  "transferAmountType": 840,
  "sourceRef": {
    "id": "90989098",
    "type": "service"
  },
  "targetRef": {
    "id": "89878987",
    "type": "service"
  },
  "sourceBucket": [
    {
      "validFrom": 1647993600000,
      "validTo": 0,
      "currentBalance": 2147485311.57
    }
  ],
  "targetBucket": [
    {
      "validFrom": 1647993600000,
      "validTo": 0,
      "currentBalance": -2147483808.93
    },
    {
      "validFrom": 1632230093000,
      "validTo": 1703164493000,
      "currentBalance": 0
    }
  ],
  "sourceTransferFee": {
    "amount": 3.00,
    "feeTax": 0.30,
    "resourceId": 840
  },
  "targetTransferFee": {
    "amount": 3.00,
    "feeTax": 0.60,
    "resourceId": 840
  }
}
```

where, *hostname* and *port* is the hostname and port of the machine where REST server is running.

XML Response

XML response will have extra tag `<rest_result_code>` containing the status code from REST response header. The status code from RESTClient to DAP will always will be 200. `<rest_status_code>` can be used for checking the status code from REST server.

Sample XML Response

Following is the XML response received by DAP for a particular request.

```

<targetRef>
  <id>89878987</id>
  <type>service</type>
</targetRef>
<extension>null</extension>
<targetBucket>
  <currentBalance>-2.14748380893E9</currentBalance>
  <validFrom>1647993600000</validFrom>
  <validTo>0</validTo>
</targetBucket>
<targetBucket>
  <currentBalance>0</currentBalance>
  <validFrom>1632230093000</validFrom>
  <validTo>1703164493000</validTo>
</targetBucket>
<targetTransferFee>
  <amount>3.0</amount>
  <resourceId>840</resourceId>
  <feeTax>0.6</feeTax>
</targetTransferFee>
<transferAmount>10</transferAmount>
<sourceTransferFee>
  <amount>3.0</amount>
  <resourceId>840</resourceId>
  <feeTax>0.3</feeTax>
</sourceTransferFee>
<transferAmountType>840</transferAmountType>
<id>0.0.0.1+-event-audit-transfer_balance+335711686285720131</id>
<sourceRef>
  <id>90989098</id>
  <type>service</type>
</sourceRef>
<sourceBucket>
  <currentBalance>2.14748531157E9</currentBalance>
  <validFrom>1647993600000</validFrom>
  <validTo>0</validTo>
</sourceBucket>
<uri>http://hostname:port/bcws/webresources/v1.0/billunits/balancegroups/
transferbalance/0.0.0.1+-event-audit-transfer_balance+335711686285720131</
uri>
<rest_status_code>201</rest_status_code>

```

ApplyLoan

ApplyLoan request is triggered when the following parameter is present in the input request.

```
<operation>ApplyLoan</operation>
```

Note:

- Configure **ApplyLoan** under **restendpoint** in **config.json** file.
- The output request will be always POST.

Input Request

Table 6-3 describes the parameters accepted in the XML `<requestDetails>` tag.

Table 6-3 Input Request Parameters

Notification Type	Mandatory	Description
sourceMSISDN	Mandatory	Source MSISDN for ApplyLoan.
loanAmount	Mandatory	Amount for loan.
loanResourceId	Optional	ResourceId of the amount passed. If not present in the input request, default value of resourceid from the config file is used.
sourceZoneMapTarget	Optional	Cellid for source MSISDN. If not present in the input request, location will not be sent to the REST server.

Sample XML Input Request

Following is a sample XML input request sent out from DAP module.

```
<operation>ApplyLoan</operation>
<requestDetails>
<sourceMSISDN>635495522</sourceMSISDN>
<loanAmount>5</loanAmount>
<loanResourceId>840</loanResourceId>
<serviceType>/service</serviceType>
<sourceZoneMapTarget>52021005DC03EA</sourceZoneMapTarget>
</requestDetails>
```

REST Request Parameters

Table 6-4 lists the parameters sent to the REST server.

Table 6-4 REST Request Parameters

Notification Type	Mapping From Input Request
accountRef.id	Always set as "0.0.0.1+-account+1".
service.id	From sourceMSISDN .
service.type	From serviceType . If not present in the input request, restendpoint.ApplyLoan.serviceType from the config file is used.
amount	From loanAmount .
resourceId	From loanResourceId . If not present in the input request, restendpoint.ApplyLoan.resourceId from the config file is used.
zoneMapTarget	From userLocation . If not present in the input request, this parameter will not be sent.

Sample REST API Request

Following is a sample REST API request sent out from RESTClient towards REST endpoint.

```
{
  "accountRef": {
    "id": "0.0.0.1+-account+1"
  },
  "service": {
    "id" : "635495522",
    "type" : "/service"
  },
  "amount": 5,
  "resourceId": 840,
  "zoneMapTarget": "52021005DC03EA"
}
```

REST API Response

Tags present in the response will not be validated. JSON message will be directly converted to XML.

Sample REST API Response

Following is the snippet of response received from the REST endpoint.

```
{
  "extension": null,
  "availableLoanBalance": 172,
  "currentBalance": 800,
  "amount": 122,
  "loanFee": 10,
  "tax": 8.54,
  "balances": [],
  "availableLoanLimit": 9510.91,
  "creditLimit": 10000,
  "loanObj": {
```



```

        "id": "0.0.0.1+-event-billing-loan_debit+335782055029906029",
        "uri": null
    },
    "loanFeeObj": {
        "id": "0.0.0.1+-event-billing-loan_fee+335782055029904493",
        "uri": null
    }
}

```

XML Response

XML response will have extra tag `<rest_result_code>` containing the status code from REST response header. The status code from RESTClient to DAP will always will be 200. `<rest_status_code>` can be used for checking the status code from REST server.

Sample XML Response

Following is the XML response received by DAP for a particular request.

```

<extension>null</extension>
<amount>122</amount>
<loanFee>10</loanFee>
<loanObj>
    <id>0.0.0.1+-event-billing-loan_debit+335782055029906029</id>
    <uri>null</uri>
</loanObj>
<currentBalance>800</currentBalance>
<creditLimit>10000</creditLimit>
<loanFeeObj>
    <id>0.0.0.1+-event-billing-loan_fee+335782055029904493</id>
    <uri>null</uri>
</loanFeeObj>
<tax>8.54</tax>
<availableLoanLimit>9510.91</availableLoanLimit>
<availableLoanBalance>172</availableLoanBalance>
<rest_status_code>201</rest_status_code>

```

GenericRequest

For sending any request (other than BalanceTransfer and ApplyLoan) to a third party REST endpoint, generic request option can be used. You can configure the required operation with the corresponding endpoint in the **config.json** file and then use the same operation name in the input xml triggered from DAP to REST client.

Configure the new operation in the **config.json** file as follows:

```

"restendpoint": {
    "OperationName" : {
        "endpoint" : "restendpoint",
        "type" : "POST",
        "servergroupid" : "BRM"
    }
}

```

 **Note:**

- Generic request Handler supports POST and GET requests.
- servergroupid and endpoint can be custom configurations.

Sample Configuration

```
"restendpoint": {
  "GenericBalanceTransferDetails" : {
    "servergroupid" : "BillingCare"
  }
}
```

Input Request

Table 6-5 describes the parameters accepted in the XML input request.

Table 6-5 Input Request Parameters

Notification Type	Mandatory/Optional	Description
operation	Mandatory	Operation name for the request which is configured.
type	Optional	If present, it will override the type present in the config for the operation.
endPoint	Optional	If present, it will override the endpoint present in the config for the operation.
requestDetails	Mandatory for POST	For GET, requestDetails will not be sent to the REST server. For POST, XML request will be converted to JSON and sent as body in the OUTPUT request.

Sample XML Input Request

This example shows a GET request for balance transfer audit object using Generic request Handler.

```
<operation>GenericBalanceTransferDetails</operation>
<endPoint>http://hostname:port/bcws/webresources/v1.0/billunits/
balancegroups/transferbalance/0.0.0.1+-event-audit-
transfer_balance+335887608146194890</endPoint>
<type>GET</type>
```

where, *hostname* and *port* is the hostname and port of the machine where REST server is running.

REST Request Parameters

```
{
  "endPoint": "http://hostname:port/bcws/webresources/v1.0/billunits/
balancegroups/transferbalance/0.0.0.1+-event-audit-
```

```
transfer_balance+335887608146194890",
  "type": "GET",
  "operation": "GenericBalanceTransferDetails"
}
```

REST API Response

Tags present in the response will not be validated. JSON message will be directly converted to XML.

Sample REST API Response

```
{
  "extension":null,
  "id":"0.0.0.1+-event-audit-transfer_balance+335887608146194890",
  "sourceAccountRef":{
    "id":"0.0.0.1+-account+37201",
    "uri":"http://hostname:port/bcws/webresources/v1.0/accounts/0.0.0.1+-account+37201"
  },
  "targetAccountRef":{
    "id":"0.0.0.1+-account+34057",
    "uri":"http://hostname:port/bcws/webresources/v1.0/accounts/0.0.0.1+-account+34057"
  },
  "transferDate":1649681472000,
  "sourceRef":{
    "id":"0.0.0.1+-balance_group+40785",
    "type":"balanceGroup"
  },
  "targetRef":{
    "id":"0.0.0.1+-balance_group+34953",
    "type":"balanceGroup"
  },
  "transferAmount":11,
  "transferAmountType":840,
  "chargeSource":false,
  "chargeDestination":true,
  "sourceImpactedBucket":
  [{"validFrom":1647993600000,"validTo":0,"amount":11}],
  "targetImpactedBucket":
  [{"validFrom":1647993600000,"validTo":0,"amount":-11}],
  "sourceTransferFee":null,
  "targetTransferFee":{
    "amount":3,
    "feeTax":0.6,
    "resourceId":840
  }
}
```

XML Response

XML response will have extra tag `<rest_result_code>` containing the status code from REST response header. The status code from RESTClient to DAP will always will

be 200. <rest_status_code> can be used for checking the status code from REST server.

Sample XML Response

```
<targetRef>
<id>0.0.0.1+-balance_group+34953</id>
<type>balanceGroup</type>
</targetRef>
<extension>null</extension>
<targetImpactedBucket>
<amount>-11</amount>
<validFrom>1647993600000</validFrom>
<validTo>0</validTo>
</targetImpactedBucket>
<chargeSource>>false</chargeSource>
<targetTransferFee>
<amount>3</amount>
<resourceId>840</resourceId>
<feeTax>0.6</feeTax>
</targetTransferFee>
<transferAmount>11</transferAmount>
<sourceTransferFee>null</sourceTransferFee>
<targetAccountRef>
<id>0.0.0.1+-account+34057</id>
<uri>http://hostname:port/bcws/webresources/v1.0/accounts/0.0.0.1+-
account+34057</uri>
</targetAccountRef>
<transferAmountType>840</transferAmountType>
<transferDate>1649681472000</transferDate>
<chargeDestination>true</chargeDestination>
<id>0.0.0.1+-event-audit-transfer_balance+335887608146194890</id>
<sourceAccountRef>
<id>0.0.0.1+-account+37201</id>
<uri>http://hostname:port/bcws/webresources/v1.0/accounts/0.0.0.1+-
account+37201</uri>
</sourceAccountRef>
<sourceRef>
<id>0.0.0.1+-balance_group+40785</id>
<type>balanceGroup</type>
</sourceRef>
<sourceImpactedBucket>
<amount>11</amount>
<validFrom>1647993600000</validFrom>
<validTo>0</validTo>
</sourceImpactedBucket>
<rest_status_code>200</rest_status_code>
```