*Frameworx Specification*

Prepay Balance Management REST Specification

**TMFXYZ**

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| --- | --- |
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# Introduction

The following document is the specification of the REST API for Balance Management. It includes the model definition as well as all available operations for prepay balance management.

Prepaid subscribers pay fees before using services. Therefore, the subscribers must have sufficient balances. Operators can provide multiple recharge channels for subscribers. Subscribers can pass credit between different subscriptions, therefore transferring balance from one account to another.

Credit for a specific subscription for a type of service can be monetary or non-monetary. Allowed credit information is kept in an entity called bucket defined by an unit (currency, individual usage event, time) and an associated credited quantity of that unit.

The entity that owns a prepay balance is typically a subscription that is part of an account (e.g.: an msisdn subscription in a mobile operator environment) but in some environments the concepts of subscription and account are managed together as a single entity. In this API the term subscription and the reference to subscriptionId can be considered as accountId if the operation has a 1-to-1 relationship between subscriptions and accounts.

Prepay API manages the balance, recharge (top-up) and transfer resources

Prepay API performs the following operations

* **On a balance resource**
  + Retrieve the balance information for a given subscription.
* **On a topUps collection resource**
  + Retrieve information about all the top-up operations stored in the server filtered by some criteria.
  + Perform a new top up operation (recharge)
* **On a topUp individual resource**
  + Retrieve detailed information about a top-up operation previously processed by the server.
* **On a topUp status resource**
  + Retrieve the current and historic status information about a top-up operation previously processed by the server.
  + Modify the current status information about a top-up.
* **On a transfers collection resource**
  + Perform a new transfer operation
  + Retrieve information about all the transfer operations stored in the server filtered by some criteria
* **On a transfer individual resource**
  + Retrieve detailed information about a transfer operation previously processed by the server
* **On a transfer status resource**
  + Retrieve the current and historic status information about a transfer operation previously processed by the server.
  + Modify the current status information about a transfer.
* **On a Balance adjustments collection resource**
  + Retrieve information about all the adjustments stored in the server filtered by some criteria.
  + Perform a new adjustment operation
* **On a Balance adjustment individual resource**
  + Retrieve detailed information about a balance adjustment operation previously processed by the server.

# SAMPLE USE CASES

This section includes a set of main use cases that can be performed with this API. Additional use cases can be generated using the operations and resources defined in this specification.

Use Case 1: Customer top-ups a given amount to an account

Description

The main purpose of this use case is the modification of the remaining balance for a given subscription, identified by a subscription Id such as an msisdn or by a customer account.

Main Actors

* The top-up requestor
* The affected subscription (identified by a subscription identifier such as an msisdn or customer account)

Use Case Steps

1. The requestor makes use of any of the available channels in order to initiate a new top-up operation
2. The Operator receives a top-up creation request with indication of the following minimum information
   1. Channel used
   2. Requestor identifier
   3. Recharged subscriber identifier
   4. Type of bucket to be recharged (in case there are multiple independents balance storage, buckets or wallets, per subscriber)
   5. Amount to be recharged
3. The operator confirms that the requestor is authorized to perform the recharge action over the specific affected subscriber. This could be based on just the requestor identifier or via a more sophisticated token-based authorization mechanisms
4. The top-up operation is processed and the balance resource for the bucket is augmented accordingly with the amount indicated. The new amount will be valid for the time defined in the request or by a default value defined in the system
5. The requestor is informed of the sucessful outcome

Example of API Usage in the Context of the Use Case

The following API interactions support the use case:

* The requestor, via a user interface appropriate for the corresponding channel, consumes the service offered by the server over Topup resource to perform a new top-up.

Success Outcome

After completion of these API interactions, the corresponding balance resource for the impacted bucket and the affected subscription will be added the amount indicated in the request, to be used for prepay services.

Use Case 2: Customer transfers credit to another account

Description

The main purpose of this use case is the transfer of part of the amount from one subscription, identified by a subscription Id such as an msisdn or by a customer account, to a different subscription.

Main Actors

* The transfer requestor
* The transferring subscription (identified by a subscription identifier such as an msisdn or customer account)
* The receiving subscription (identified by a subscription identifier such as an msisdn or customer account)

Use Case Steps

1. The requestor makes use of any of the available channels in order to initiate a new transfer operation
2. The Operator receives a transfer request with indication of the following minimum information
   1. Channel used
   2. Requestor identifier
   3. Transferring subscriber identifier
   4. Receiving subscriber identifier
   5. Type of bucket to be recharged (in case there are multiple independents balance storage, buckets or wallets, per subscriber)
   6. Amount to be transferred
3. The operator confirms that the requestor is authorized to perform the recharge action over the specific transferring subscriber. This could be based on just the requestor identifier or via a more sophisticated token-based authorization mechanisms
4. The transfer operation is processed, then the balance resource for the receiving bucket is augmented and the balance resource for the transferring bucket is reduced accordingly with the amount indicated. The new amount will be valid for the time defined in the request or by a default value defined in the system
5. The requestor is informed of the sucessful outcome

Example of API Usage in the Context of the Use Case

The following API interactions support the use case:

* The requestor, via a user interface appropriate for the corresponding channel, consumes the service offered by the Tranfer resource to perform a new transfer operation.

Success Outcome

After completion of these API interactions, the corresponding balance resources for the impacted buckets will be modified, adding the amount indicated in the request to the receiving bucket and removing it from the transferring bucket, to be used for prepay services.

# RESOURCE MODEL

## BALANCE RESOURCE

The Balance resource represents and tracks the amount remained or owed in certain account which is owned by certain customer. The balance is associated to an specific subscription or account owned by a customer .This resource covers the main attributes defined in class CustomerAccountBalance defined in SID (validFor, remainedAmount).

{  
 "id": "SubscrAcc1",

"href":"[/balancemanagement/v1/{subscriptionId}/balance](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",

"totalBalance": {  
 "amount": 10,

"units": "EUR"  
},  
"bucketBalance": [{

"bucketType": "promotion sms",

"remainedAmount": {

"amount": 5,

"units": "EUR"

},

"validFor": {

"startDateTime": "10-02-2016",

"endDateTime": "10-12-2016"

},

"status": "active"

},{

"bucketType": "data",

"remainedAmount ": {

"amount": 5,

"units": "EUR"

},

"validFor": {

"startDateTime": "19-02-2016",

"endDateTime": "19-12-2016"

},

"status": "suspended"

}],

"relatedParty": [{

"id": "acc1",

"href": "<http://server:port/AccountManagement/accounts/acc1>",

"role": "customer",

"name": "John Doe"

}

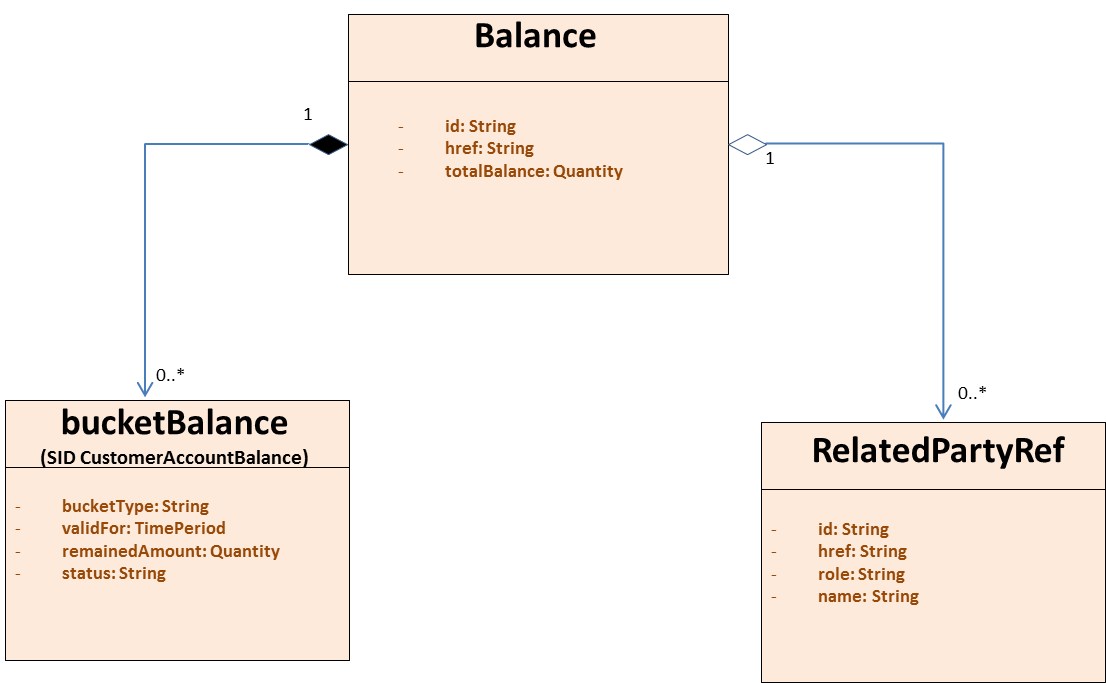
}

### Field Descriptions

| Element | Type | Mandatory in API messages | Description |
| --- | --- | --- | --- |
| id | String | Yes in response | Unique Identifier within the server for the ticket reported. |
| href | anyURI | Yes in response | A resource URI pointing to the resource in the OB that stores the detailed information. This is typically the resource url to retrieve individual balance details for the specific subscription/account |
| totalBalance | QuantityType | Yes | Current balance for a subscription (aggregated for all prepaid balance buckets associated to the subscription) |
| bucketBalance | CustomerAccountBalance [1..unbounded] | Yes | Detailed information for each prepaid balance bucket associated to the subscription |
| relatedParty | Array of RelatedParty | No | Used to provide information about customer hierarchy for the balance (e.g.: customerId, accountId) |

**CustomerAccountBalance**: Detailed information for a prepaid balancebucket

|  |  |
| --- | --- |
| Field | Description |
| bucketType | Type of prepaid balance bucket (e.g.: promotion, deposit, bonus, data, voice, …) |
| remainedAmount | Current value for the referenced prepaid balance |
| validFor | The period for which the balance is valid |
| status | Status for the balance (active, expired, suspended) |



**Figure 1 Balance resource model**

## BALANCETOPUP RESOURCE

The BalanceTopUp resource is a detailed description of a recharge operation requested over a subscription

{  
 "id": "top1",

"href":"[/balancemanagement/v1/{subscriptionId}/balanceTopups/top1](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",

"type": "voice",

"description": "description",

"channel": {

"id": "channel1",

"href": "<http://server:port/channels/channel1>",

"name": "retail"

},

"place": {

"id": "desk123\_abc",

"href": "[http://server:port/places/desk123\_abc](http://server:port/places/desk123_abc%20)",

"name": "desk X in department store A"

},

"requestor": {

"id": "osidfuosid",

"href": "[http://server:port/partyManagement/users/osidfuosid](http://server:port/partyManagement/users/osidfuosid%20)",

"role": "user",

"name": "John Recharger"

},

"amount": {

"units": "EUR",

"amount": 10

},

"paymentMean": {

"id": "5",

"href": "<http://server:port/accountManagement/paymentMeans/5>",

"name": "cash"

},

"validFor": {

"startDateTime": "10-02-2016",

"endDateTime": "10-12-2016"

},

"requestedDate": "10-02-2016",

"confirmationDate": "10-02-2016",

"status": "confirmed",

"relatedParty": [{

"id": "c1",

"href": "<http://server:port/partyManagement/customers/c1>",

"role": "customer",

"name": "John Doe"

},

{

"id": "s1",

"href": "<http://server:port/partyManagement/subscriptions/s1>",

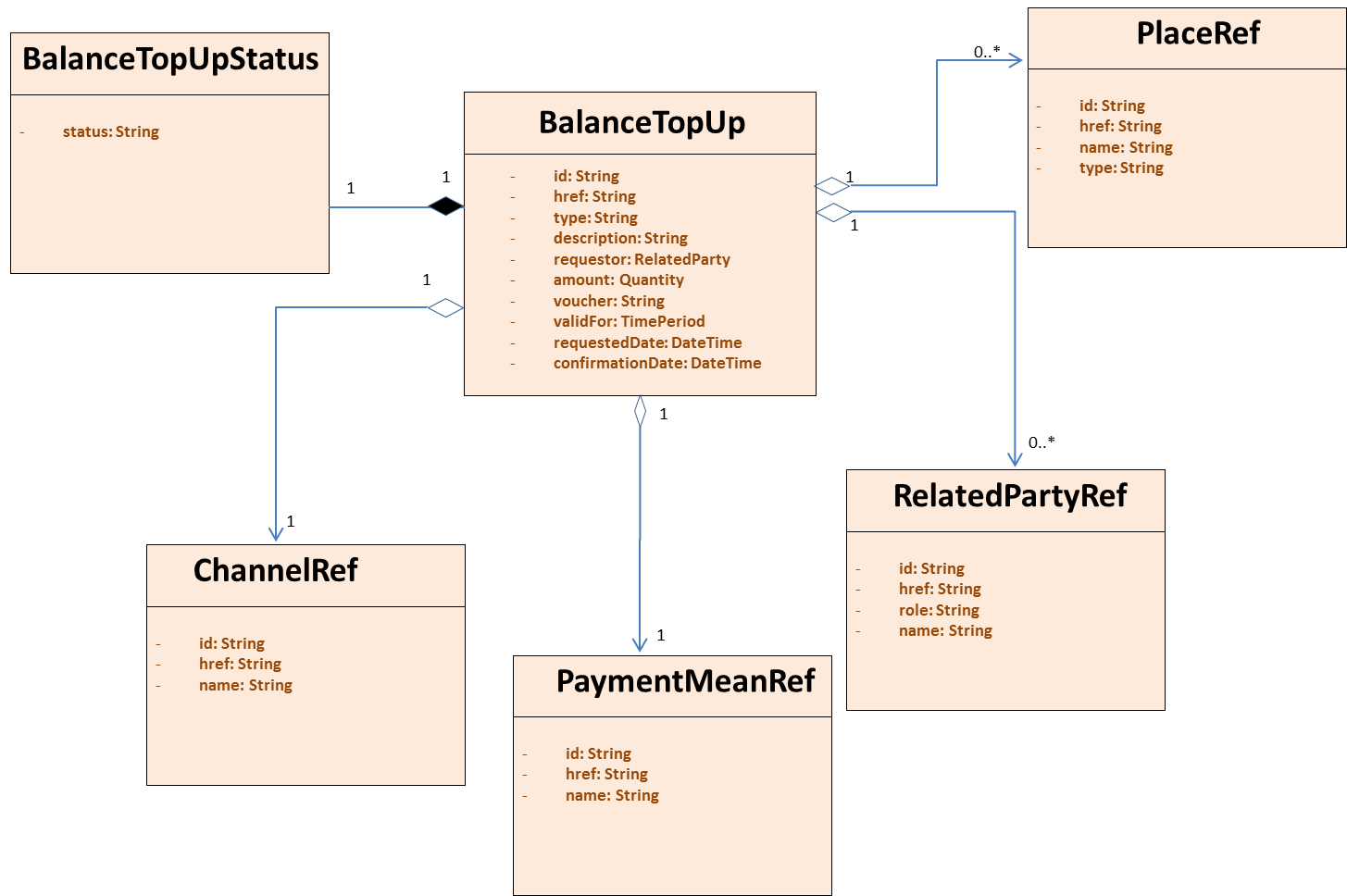
"role": "subscription"

}]

}

### Field Descriptions

| Element | Type | Mandatory in API messages | Description |
| --- | --- | --- | --- |
| id | string | Yes in response | Unique Identifier within the server for the ticket reported |
| href | anyURI | Yes in response | A resource URI pointing to the resource in the OB that stores the detailed information. This is typically the resource url to retrieve individual top-up operation details |
| type | string | Yes in request and response | A preconfigured value that describes a TopUp type which determines the prepaid balance bucket in which the top-up is done |
| description | string | No | Description of the recharge operation |
| channel | ChannelRef  (id, href, name) | Yes in request and response | Indicator for the channel used to request the top-up operation.  Structure including at least attribute “name” |
| place | PlaceRef  (id, href, name) | No | Indicator for the specific entity within  a channel used to request the top-up operation. This can be used to define the location where the top-up was requested (e.g.: counter X in department store A)  Structure including at least attribute  “name” |
| requestor | RelatedParty  (id, href, role, name) | No | Identifier for the user/customer/entity  that performs the top-up action when it is required to indicate additional customer hierarchy information regarding the subscription triggering the request.  This can be used to indicate the  identifier of an agent that performs the operation on behalf of a user via  a customer service channel  Structure including at least attributes “role” and “name” |
| amount | QuantityType | Yes in request and response | Amount (can be monetary or non-monetary) to be recharged in the bucket |
| paymentMean | PaymentMeanRefType  (id, href, name) | No | Payment method used for the recharge operation (e.g.: cash, credit)  Structure including at least attribute  “name” |
| voucher | string | No | Identifier for the voucher when the topup can be perfomed by this means (referenced by a voucher based payment mean) |
| validFor | TimePeriodType | Yes in response | The period defined for the recharged amount to be part of the prepaid balance. This could be used to define expiration times to remove balance not consumed. |
| requestedDate | dateTime | Yes in response | Date when the top-up request was received in the server |
| confirmationDate | dateTime | Yes in response | Date when the top-up was confirmed in the server |
| status | string | Yes in response | Status of the top-up operation  Supported values are:   * confirmed * cancelled |
| relatedParty | Array of RelatedParty | No | Used to provide information about additional parties with relationship with the operation |

****

**Figure 2 BalanceTopUp resource model**

## BALANCETRANSFER RESOURCE

The BalanceTransfer resource is a detailed description of credit transfer operation requested between two subscriptions.

{

"id": "01",  
 "href": "[/balancemanagement/v1/{subscriptionId}/balanceTransfers/01](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "sdfsiudfyisud",

"description": "type",

"channel": {

"id": "channel1",

"href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",

"name": "retail"

},

"place": {

"id": "desk123\_abc",

"href": "[http://server:port/places/desk123\_abc](http://server:port/places/desk123_abc%20)",

"name": "desk X in department store A"

},

"requestor": {

"id": "osidfuosid",

"href": "[http://server:port/partyManagement/users/osidfuosid](http://server:port/partyManagement/users/osidfuosid%20)",

"role": "user",

"name": "John Recharger"

},

"targetSubscriptionId": "+1456789",

"receiver": {

"id": "sdfsd",

"href": "http://srvr:port/AccountManagement/acciunts/sdfsd",

"role": "billing account",

"name": "account sdfsd"

},

"amount": {

"units": "EUR",

"amount": 10

},

"transferCost": {

"units": "EUR",

"amount": 11

},

"costOwner": "originator",

"requestedDate": "10-02-2016",

"confirmationDate": "10-02-2016",

"status": "confirmed",

"relatedParty": [{

"id": "c1",

"href": "<http://server:port/partyManagement/customers/c1>",

"role": "customer",

"name": "John Doe"

},

{

"id": "s1",

"href": "<http://server:port/partyManagement/subscriptions/s1>",

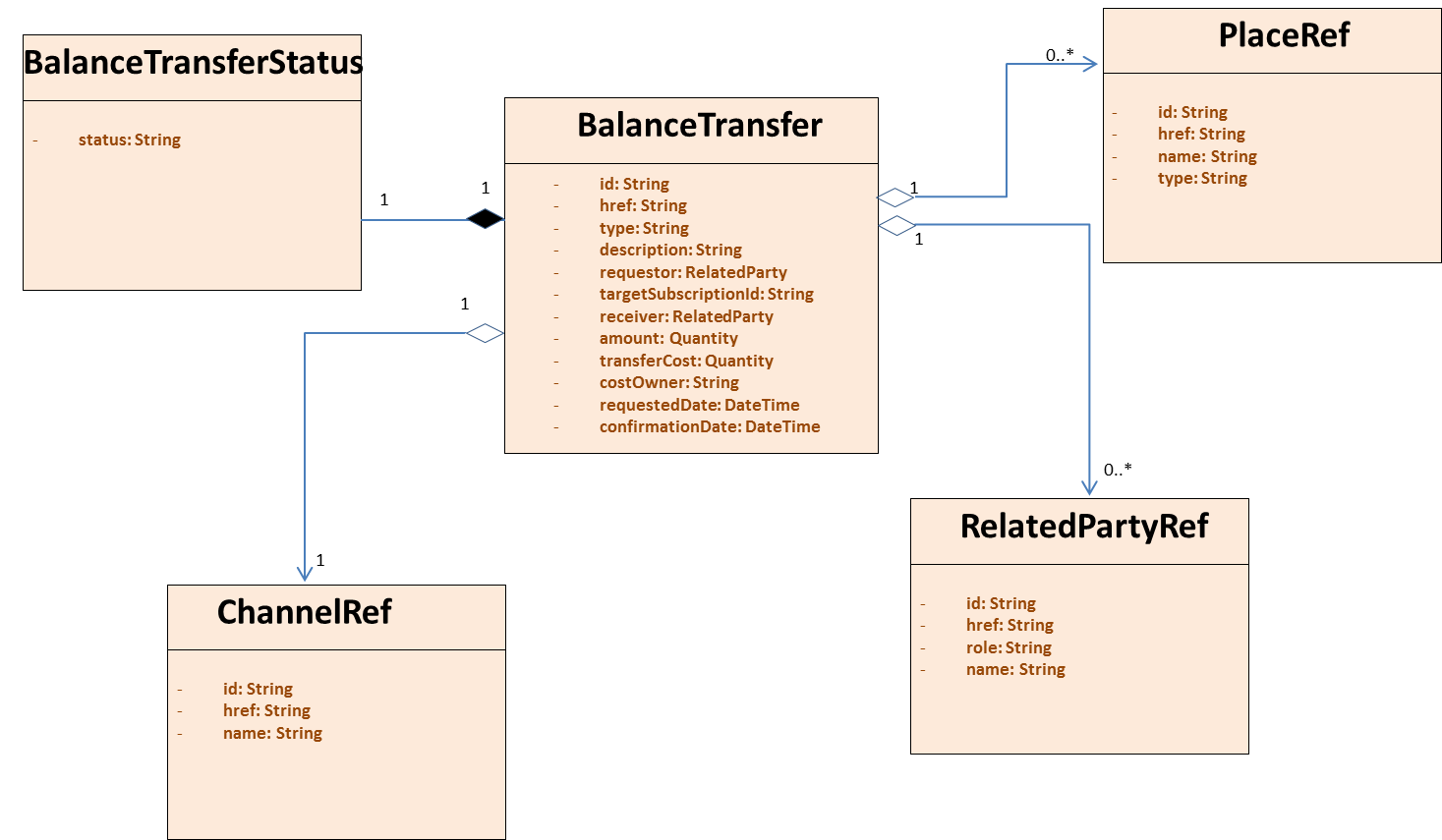
"role": "subscription"

}]

}

### Balance Transfer Field Descriptions

| Element | Type | Mandatory | Description |
| --- | --- | --- | --- |
| id | string | Yes in response | Unique Identifier within the server for the ticket reported. |
| href | anyURI | Yes in response | A resource URI pointing to the resource in the OB that stores the detailed information. This is typically the resource url to retrieve individual transfer operation details |
| type | string | Yes in request and response | A preconfigured value that describes a Transfer type which determines the prepaid balance bucket in which the transfer is done |
| description | string | No | Description of the transfer operation |
| channel | ChannelRef  (id, href, name) | Yes in request and response | Indicator for the channel used to request the transfer operation.  Structure including at least attribute “name” |
| place | PlaceRef  (id, href, name) | No | Indicator for the specific entity within a channel used to request the transfer operation  Structure including at least attribute “name” |
| requestor | RelatedParty  (id, href, role, name) | No | Identifier for the user/customer/entity that performs the transfer action when it is required to indicate additional customer hierarchy information regarding the subscription triggering the balance transfer.  This can be used to indicate the identifier of an agent that performs the operation on behalf of a user via a customer service channel  Structure including at least attributes “role” and “name” |
| targetSubscriptionId | string | Yes in request and response | Identifier for the entity that receives the transfer (i.e.: receiving subscriptionId) |
| receiver | RelatedParty  (id, href, role, name) | No | Identifier for the user/customer/entity that receives the transfer action when it is required to indicate additional customer hierarchy information regarding the subscription receiving the balance transfer.  Structure including at least attributes “role” and “name” |
| amount | QuantityType | Yes in request and response | Amount (can be monetary or non-monetary) to be transferred |
| transferCost | QuantityType | No | Associated cost to be charged for the transfer operation (can be monetary or non-monetary) |
| costOwner | string | No | Indicates the entity responsible to assume the cost of the transfer operation  Supported values are:   * originator * receiver |
| requestedDate | dateTime | Yes in response | Date when the transfer request was received in the server |
| confirmationDate | dateTime | Yes in response | Date when the transfer was confirmed in the server |
| status | string | Yes in response | Status of the top-up.  Supported values are:   * confirmed * cancelled |
| relatedParty | Array of RelatedParty | No | Used to provide information about additional parties with relationship with the operation |

****

**Figure 3 BalanceTransfer resource model**

## BALANCEADJUSTMENT RESOURCE

The BalanceAdjustment resource is a detailed description of credit adjustment operation performed on a given subscriptions.

{  
 "id": "A1",

"href":"/balancemanagement/v1/{subscriptionId}/balanceAdjustments/A1",

"type": "voice",

"description": "description text",

"reason": "text for reason of adjustment",

"requestor": {

"id": "AGENT1",

"href": "http://server:port/partyManagement/agents/AGENT1",

"role": "agent",

"name": "Agent Adjuster "

},

"amount": {

"units": "EUR",

"amount": 10

},

"validFor": {

"startDateTime": "10-02-2016",

"endDateTime": "10-12-2016"

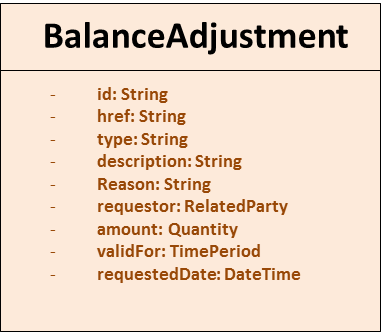
},

"requestedDate": "10-02-2016"

}

### Field Descriptions

| Element | Type | Mandatory in API messages | Description |
| --- | --- | --- | --- |
| id | string | Yes in response | Unique Identifier within the server for the ticket reported |
| href | anyURI | Yes in response | A resource URI pointing to the resource in the OB that stores the detailed information. This is typically the resource url to retrieve individual top-up operation details |
| type | string | Yes in request and response | A preconfigured value that describes a TopUp type which determines the prepaid balance bucket in which the top-up is done |
| description | string | No | Description of the recharge operation |
| reason | string | Yes in request and response | Text describing the reason for the adjustment |
| requestor | RelatedParty  (id, href, role, name) | No | Identifier for the user/customer/entity  that performs the adjustment action when it is required to indicate additional customer hierarchy information regarding the subscription triggering the adjustment.  This can be used to indicate the  identifier of an agent that performs the operation on behalf of a user via  a customer service channel  Structure including at least attributes “role” and “name” |
| amount | QuantityType | Yes in request and response | Amount (can be monetary or non-monetary) to be recharged in the bucket. It could refer to positive (increment) or negative (decrement) values |
| validFor | TimePeriodType | No | The period defined for the adjusted amount to be part of the prepaid balance. This could be used to define expiration times to remove balance not consumed. |
| requestedDate | dateTime | Yes in response | Date when the top-up request was received in the server |

****

**Figure 4 BalanceAdjustment resource model**

# API OPERATION TEMPLATES

For every single of operation on the entities use the following templates and provide sample REST requests and responses.

Remember that the following Uniform Contract rules must be used:

|  |  |  |
| --- | --- | --- |
| Operation on Entities | Uniform API Operation | Description |
| Query Entities | GET Resource | GET must be used to retrieve a representation of a resource. |
| Create Entity | POST Resource | POST must be used to create a new resource |
| Partial Update of an Entity | PATCH Resource | PATCH must be used to partially update a resource  For reconciliation processes |
| Complete Update of an Entity | PUT Resource | PUT must be used to completely update a resource identified by its resource URI |
| Remove an Entity | DELETE Resource | DELETE must be used to remove a resource |

Filtering and attribute selection rules are described in the TMF REST Design Guidelines.

## **BALANCE RESOURCE**

GET /balancemanagement/v1/{subscriptionId}/balance

Description:

The Application invokes this operation to retrieve balance information (total and split per prepaid balance type) stored in the server for an specific subscription.

The subscription refers to the actual customer asset where the top-up operation applies, this could be a mobile number (i.e.: msisdn), or a subscription identifier to refer to an individual asset (e.g.: license id for a TV service).

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Balance information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Balance resource model that are mandatory to be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/balance  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "SubscrAcc123456",  "href":"[/balancemanagement/v1/123456/balance](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "totalBalance": {  "units": "EUR",  "amount": 10  },  "bucketBalance": [{  "bucketType": "promotion voice",  "remainedAmount": {  "units": "EUR",  "amount": 5  },  "validFor": {  "startDateTime": "10-02-2016",  "endDateTime": "10-12-2016"  },  "status": "active"  },{  "bucketType": "voice",  "remainedAmount": {  "units": "EUR",  "amount": 5  },  "validFor": {  "startDateTime": "19-02-2016",  "endDateTime": "19-12-2016"  },  "status": "suspended"  }]  } |

The example below shows the case where the balance for an specific credit record (bucket or wallet) is requested

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/balance?bucketType=voice  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "SubscrAcc123456",  "href":"[/balancemanagement/v1/123456/balance](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "totalBalance": {  "units": "EUR",  "amount": 10  },  "bucketBalance": [{  "bucketType": "voice",  "remainedAmount": {  "units": "EUR",  "amount": 5  },  "validFor": {  "startDateTime": "19-02-2016",  "endDateTime": "19-12-2016"  },  "status": "active"  }]  } |

The example below shows the case where only the total balance for an account is requested

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/balance?fields=totalBalance  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "SubscrAcc123456",  "href":"[/balancemanagement/v1/123456/balance](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "totalBalance": {  "units": "EUR",  "amount": 10  }  } |

## **BALANCETOPUP RESOURCE**

POST /balancemanagement/v1/{subscriptionId}/balanceTopups

Description:

The Application invokes this operation to request a new top-up operation for a given subscription.

The subscription refers to the actual customer asset where the top-up operation applies, this could be a mobile number (i.e.: msisdn), or a subscription identifier to refer to an individual asset (e.g.: license id for a TV service).

Behavior:

| Status Code | Description |
| --- | --- |
| 201 | Successful top-up operation (resource created) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that are mandatory to be included in the request when creating a new resource in the server

|  |
| --- |
| **REQUEST** |
| POST https://{serverRoot}/balanceManagement/v1/123456/balanceTopups  Content-type: application/json  {  "type": "buckettype",  "channel": {  "name": "retail"  },  "amount": {  "units": "EUR",  "amount": 10  }  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/balanceManagement/v1/123456/topUps/TUPxxx01  Response is not required to include a BODY with the contents of the Balance resource created, but if included it must be filled with at least the mandatory parameters. |

GET /balancemanagement/v1/{subscriptionId}/balanceTopUps

Description:

The Application invokes this operation to retrieve the list of top-up operations processed for a given subscription, filtered by given criteria. The response includes the details of all top-ups and/or cancellations, as well as status changes associated to the operations reported.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | TopUp information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balanceManagement/v1/123456/balanceTopups  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "TUPxxx01",  "href": "[/balancemanagement/v1/123456/balanceTopups/TUPxxx01](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "voice",  "description": "description",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "retail"  },  "place": {  "id": "desk123\_abc",  "href": "[http://server:port/places/desk123\_abc](http://server:port/places/desk123_abc%20)",  "name": "desk X in department store A"  },  "requestor": {  "id": "osidfuod",  "href": "<http://server:port/partyManagement/users/osidfuod>",  "role": "user",  "name": "John Recharger"  },  "amount": {  "units": "EUR",  "amount": 10  },  "paymentMean": {  "id": "5",  "href": "<http://srvr:port/accountManagement/paymentMeans/5>",  "name": "cash"  },  "validFor": {  "startDateTime": "10-02-2016",  "endDateTime": "10-12-2016"  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed"  },  {  "id": "2ab",  "href": "[srv:port/balancemanagement/v1/123456/balanceTopups/2ab](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "voice",  "description": "description",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "bank teller"  },  "place": {  "id": "bankteller123\_abc",  "href": "[http://server:port/places/desk123\_abc](http://server:port/places/desk123_abc%20)",  "name": "desk X in department store A"  },  "amount": {  "units": "EUR",  "amount": 10  },  "paymentMean": {  "id": "5",  "href": "<http://srvr:port/accountManagement/paymentMeans/5>",  "name": "cash"  },  "validFor": {  "startDateTime": "10-03-2016",  "endDateTime": "10-12-2016"  },  "requestedDate": "10-03-2016",  "confirmationDate": "10-03-2016",  "status": "confirmed"  }] |

The example below shows the case where the top-up operation involves an specific channel subscription

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balanceManagement/v1/123456/balanceTopups?channel=CHNL01  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "xxx001",  "href": "[srv:port/balancemanagement/v1/123456/balanceTopups/xxx001](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "sms",  "description": "description",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "CHNL01"  },  "amount": {  "units": "EUR",  "amount": 10  },  "paymentMean": {  "id": "5",  "href": "<http://srvr:port/accountManagement/paymentMeans/5>",  "name": "cash"  },  "validFor": {  "startDateTime": "10-02-2016",  "endDateTime": "10-12-2016"  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed",  },  {  ...  }] |

GET /balancemanagement/v1/{subscriptionId}/balanceTopups/{topUpId}

Description:

The Application invokes this operation to retrieve detailed information about a single top-up operation previously processed by the server.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Successful top-up update operation (resource modified) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balanceManagement/v1/123456/balanceTopups/TOPxxx001  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "TOPxxx001",  "href": "[/balancemanagement/v1/123456/balanceTopups/TOPxxx001](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "voice",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "CHNL01"  },  "amount": {  "units": "EUR",  "amount": 10  },  "validFor": {  "startDateTime": "10-02-2016",  "endDateTime": "10-12-2016"  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed"  } |

PATCH /balancemanagement/v1/{subscriptionId}/balanceTopups/{topUpId}

This operation is optional to be supported in this API

Description:

The Application invokes this operation to partially update the information about a single top-up operation previously processed by the server.

The only element that are expected to be modified in the TopUp Operation resource are the status in order to allow cancellation of a previously processed top-up operation or the validity to modify the expiration type of the credit given to a subscription.

Behavior:

To Be Defined.

PUT /balancemanagement/v1/{subscriptionId}/balanceTopups/{topUpId}

This operation is optional to be supported in this API

Description:

The Application invokes this operation to completely update the information about a single top-up operation previously processed by the server.

Notice that the PUT method is intended to modify completely the resource impacted, meaning that optional values that are not included in the request may be erased in the server after updating, and will not keep the previous value stored. Behaviour of teh server on optional values not included is undefined.

Behavior:

To Be Defined.

## **BALANCETOPUP/STATUS RESOURCE**

PUT /balancemanagement/v1/{subscriptionId}/balanceTopups/{topUpId}/status

This operation is optional to be supported in this API

Description:

The Application invokes this operation to modify the status a top-up operation previously processed by the server. This could be used to cancel an existing top up operation.

Behavior:

| Status Code | Description |
| --- | --- |
| 204 | Successful status modification |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that are required to perfomr a status modification

|  |
| --- |
| **REQUEST** |
| PUT https://{serverRoot}/balanceManagement/v1/123456/balanceTopups/TUPxxx01/status  Content-type: application/json  {  "status": "cancelled"  } |
| **RESPONSE** |
| 204  Content-Type: application/json |

## **BALANCETRANSFER RESOURCE**

POST /balancemanagement/v1/{subscriptionId}/balanceTransfers

Description:

The Application invokes this operation to request a new transfer operation for a given subscription.

The subscription refers to the actual customer asset where the transfer operation applies, this could be a mobile number (i.e.: msisdn), or a subscription identifier to refer to an individual asset (e.g.: license id for a TV service).

Behavior:

| Status Code | Description |
| --- | --- |
| 201 | Transfer operation successful (resource created) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Transfer Operation entity resource model that are mandatory to be included in the request when creating a new resource in the server

|  |
| --- |
| **REQUEST** |
| POST https://{serverRoot}/balancemanagement/v1/123456/balanceTransfers  Content-type: application/json  {  "type": "data",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "retail"  },  "targetSubscriptionId": "+1456789",  "amount": {  "units": "EUR",  "amount": 10  }  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/balancemanagement/v1/123456/balanceTransfers/TRNSF01  Response is not required to include a BODY with the contents of the Balance resource created, but if included it must be filled with at least the mandatory parameters. |

GET /balancemanagement/v1/{subscriptionId}/balanceTransfers

Description:

The Application invokes this operation to retrieve the list of transfer operations processed for a given subscription, filtered by given criteria. The response includes the details of all top-ups and/or cancellations, as well as status changes associated to the operations reported.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Transfer information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Transfer Operation entity resource model that may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/balanceTransfers  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "TRNSF1",  "href": "[balancemanagement/v1/123456/balanceTransfers/TRNSF1](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "type": "voice",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "retail"  },  "targetSubscriptionId": "+1456789",  "amount": {  "units": "EUR",  "amount": 10  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed"  },  {  ...  }] |

The example below shows the case where the transfer operation involves an specific receiving subscription

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/balanceTransfers?receiver=RCVR01  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "TRNSF1",  "href": "/[balancemanagement/v1/123456/balanceTransfers/TRNSF1](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "type": "data",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "retail"  },  "targetSubscriptionId": "+1456789",  "amount": {  "units": "EUR",  "amount": 10  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed"  },  {  ...  }] |

GET /balancemanagement/v1/{subscriptionId}/balanceTransfers/{transferId}

Description:

The Application invokes this operation to retrieve detailed information about a single transfer operation previously processed by the server..

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Transfer information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Transfer Operation entity resource model that may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balancemanagement/v1/123456/transfers/TRNSF01  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "TRNSFxxx01",  "href": "[balancemanagement/v1/123456/balanceTransfers/TRNSF01](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)",  "type": "sms",  "channel": {  "id": "channel1",  "href": "[http://server:port/channels/channel1](http://server:port/channels/channel1%20)",  "name": "retail"  },  "targetSubscriptionId": "+1456789",  "amount": {  "units": "EUR",  "amount": 10  },  "requestedDate": "10-02-2016",  "confirmationDate": "10-02-2016",  "status": "confirmed"  } |

PATCH /balancemanagement/v1/{subscriptionId}/balanceTransfers/{transferId}

This operation is optional to be supported in this API

Description:

The Application invokes this operation to partially update the information about a single transfer operation previously processed by the server.

The only element that is expected to be modified in the Transfer resource is the status in order to allow cancellatiopn of a previously processed transfer operation

Behavior:

To Be Defined.

PUT /balancemanagement/v1/{subscriptionId}/balanceTransfers/{transferId}

This operation is optional to be supported in this API

Description:

The Application invokes this operation to completely update the information about a single balance transfer operation previously processed by the server.

Notice that the PUT method is intended to modify completely the resource impacted, meaning that optional values that are not included in the request may be erased in the server after updating, and will not keep the previous value stored. Behaviour of teh server on optional values not included is undefined.

Behavior:

To Be Defined.

## **BALANCETRANSFER/STATUS RESOURCE**

PUT /balancemanagement/v1/{subscriptionId}/balanceTransfers/{transferId}/status

This operation is optional to be supported in this API

Description:

The Application invokes this operation to modify the status of a balance transfer operation previously processed by the server. This could be used to cancel an existing transfer operation.

Behavior:

| Status Code | Description |
| --- | --- |
| 204 | Successful status modification |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Transfer Operation entity resource model that are mandatory to perform a status modifcation

|  |
| --- |
| **REQUEST** |
| PUT https://{serverRoot}/balanceManagement/v1/123456/balanceTransfers/TRNSF01/status  Content-type: application/json  {  "status": "cancelled"  } |
| **RESPONSE** |
| 204  Content-Type: application/json |

## **BALANCEADJUSTMENT RESOURCE**

POST /balancemanagement/v1/{subscriptionId}/balanceAdjustments

Description:

The Application invokes this operation to perform a balance adjustment for a given subscription.

The subscription refers to the actual customer asset where the adjustment operation applies, this could be a mobile number (i.e.: msisdn), or a subscription identifier to refer to an individual asset (e.g.: license id for a TV service).

Behavior:

| Status Code | Description |
| --- | --- |
| 201 | Successful adjustment operation (resource created) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the Adjustment Operation entity resource model that are mandatory to be included in the request when the adjustment is to add an amount to any of the buckets of the subscription

|  |
| --- |
| **REQUEST** |
| POST https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments  Content-type: application/json  {  "type": "buckettype",  "reason": "this is why the adjustment was performed",  "amount": {  "units": "EUR",  "amount": 10.5  }  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments/ADJ01  Response is not required to include a BODY with the contents of the Balance resource created, but if included it must be filled with at least the mandatory parameters. |

The example below includes the attributes within the Adjustment Operation entity resource model that are mandatory to be included in the request when the adjustment is to remove some amount to any of the buckets of the subscription

|  |
| --- |
| **REQUEST** |
| POST https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments  Content-type: application/json  {  "type": "buckettype",  "reason": "this is why the adjustment was performed",  "amount": {  "units": "EUR",  "amount": -3.5  }  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments/TUP01  Response is not required to include a BODY with the contents of the Balance resource created, but if included it must be filled with at least the mandatory parameters. |

GET /balancemanagement/v1/{subscriptionId}/balanceAdjustments

Description:

The Application invokes this operation to retrieve the list of adjustment operations processed for a given subscription, filtered by given criteria.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | TopUp information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "ADJ01",  "href": "[/balancemanagement/v1/123456/balanceAdjustmentss/ADJ01](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "voice",  "reason": "this is why the adjustment was performed",  "description": "description",  "amount": {  "units": "EUR",  "amount": 10  },  "requestedDate": "10-02-2016"  },  …  }] |

GET /balancemanagement/v1/{subscriptionId}/balanceAdjustments/{adjustmentId}

Description:

The Application invokes this operation to retrieve detailed information about a single top-up operation previously processed by the server.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Successful top-up update operation (resource modified) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

The example below includes the attributes within the TopUp Operation entity resource model that are may be included in the query response

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/balanceManagement/v1/123456/balanceAdjustments/ADJ001  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "ADJ001",  "href": "[/balancemanagement/v1/123456/balanceAdjustments/ADJ001](http://alancemanagement/v1/%7bsubscriptionId%7d/topups/sdfsiu)", "type": "voice",  "reason": "this is why the adjustment was performed",  "description": "description",  "amount": {  "units": "EUR",  "amount": 10  },  "requestedDate": "10-02-2016"  } |

## Release History

|  |  |  |  |
| --- | --- | --- | --- |
| **Release Number** | **Date** | **Release led by:** | **Description** |
| Release 0.1 | 16/09/2016 |  | First Release of Draft Version of the Document. |
| Release 0.2 | 10/11/2016 |  | Updated after comments from TMForum team review. |
| Release 0.3 | 11/11/2016 |  | Updated to include “Balance Adjustment” operation. |
| Release 0.4 | 16/11/2016 |  | Updated after comments from TMForum team review (URL names changed in operation example templates) and additional attributes added to balance resource (status in bucket and relatedParty to link subscription to account). |