TM Forum Specification

Prepay Balance Management API User Guide

TMF654

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Notice

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Introduction

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

Prepay users pay up front before using services. Therefore, the users must have sufficient balance to use these services. The purpose of this API is to manage and track these balances.

A bucket represents an entity that keeps track of the balance available to use services. Every bucket will measure balance in different units, it can be monetary or non-monetary (for example a number of SMS that are available or the number of GB of data that are available). Users can pass credit between different balance buckets, therefore transferring balance from one bucket to another. Operators can provide multiple recharge channels to top up these buckets to increase the balance to use for services.

When a customer acquires a product offered by a service provider, the fulfilment process creates a set of bucket entities to track the balance for the services that comprise the product. As a part of the instantiation of a mobile line product, the fulfilment process creates voice, data and SMS buckets that are associated to the product and provisioned to the Home Location Register. The process creates a prepaid account in the Prepay Billing System and an entry in the Customer Relationship Management databases.

Each bucket has its own unique id assigned to it during the fulfilment process. This id uniquely identifies the bucket when topping up the balance on the bucket or any other of the actions that a consumer or agent performs on a bucket. Additionally, the consumer or agent can use a combination of the associated account and usage type to identify the bucket. Usage type can be either of type monetary or non-monetary.

Each bucket can have an association with more than one product. This enables consumers to share services for example data bundles.

The following is the list of resources that are associated with this API

- **Bucket:** An entity that manages an amount of money or data associated with a product. The usage type of the Bucket indicates whether the Bucket is responsible for managing a monetary amount or a non-monetary amount. Typical values for usageType would be monetary or data or text or voice.

- **TopupBalance**: A task that operates on a Bucket resource. The TopupBalance task charges or recharges a Bucket with an amount. The amount can be charged/recharged one time or recurringly. The TopupBalance resource is of @type TopupBalance and extends the Action resource.

- **AdjustBalance**: A task that operates on Bucket resource. The AdjustBalance task increments or decrements the amount on a Bucket. The AdjustBalance resource is of @type AdjustBalance and extends the Action resource.

- **TransferBalance**: A task that operates on Bucket resource. The TransferBalance transfers amounts from a source Bucket to a target Bucket. The usage type of the source Bucket must match the usage type of the target Bucket. The TransferBalance resource is of @type TransferBalance and extends the Action resource.

- **ReserveBalance**: A task that operates on Bucket resource. The ReserveBalance reserves an amount on a Bucket. The ReserveBalance resource is of @type ReserveBalance and extends the Action resource.

- **BalanceAction:** A resource that allows a consumer to retrieve a history of the tasks listed above that act on a Bucket. The @type attribute specifies the type of the task.

- **AccumulatedBalance:** A resource that allows a consumer to retrieve an aggregation of amounts for many Buckets.

The Prepay Balance API exposes the following operations on the following resources

- **Bucket:**

  /GET /bucket/{id}
  Retrieve a Bucket resource using its unique identifier

  /GET /bucket
  Retrieve a list of Bucket resources.

- **TopupBalance:**

  /POST /topupBalance
  charges or recharges a Bucket with an amount.

  /PATCH /topupBalance
  cancels a topup operation.

  /GET /topupBalance/{id}
  retrieves a TopupBalance resource using its unique identifier

  /GET /topupBalance
  retrieves a list of TopupBalance resources

  /DELETE /topupBalance/{id}
  deletes a TopupBalance resource

- **AdjustBalance:**

  /POST /adjustBalance
  increments or decrements a Bucket with an amount.

  /PATCH /adjustBalance
  cancels an adjustBalance operation.

  /GET /adjustBalance/{id}
  retrieves an adjustBalance resource using its unique identifier

  /GET /adjustBalance
  retrieves a list of adjustBalance resources

  /DELETE /adjustBalance/{id}
  deletes an adjustBalance resource

- **TransferBalance:**

  /POST /transferBalance
  transfers an amount from a source Bucket to a target Bucket. The usageType of each Bucket must match.

  /PATCH /transferBalance
  cancels a transferBalance operation.

  /GET /transferBalance/{id}
  retrieves a transferBalance resource using its unique identifier

  /GET /transferBalance

retrieves a list of transferBalance resources

/DELETE /transfertBalance/{id}
deletes a transferBalance resource

- **ReserveBalance:**

/POST /reserveBalance
reserves an amount on a Bucket.

/PATCH /reserveBalance
cancels a reserved amount on a Bucket.

/GET /reserveBalance/{id}
retrieves a reserveBalance resource using its unique identifier

/GET /reserveBalance
retrieves a list of reserveBalance resources

/DELETE /reservetBalance/{id}
deletes a reserveBalance resource

- **BalanceAction:**

/GET /balanceActionHistory
Retrieves a list of BalanceActions. BalanceActions are the following tasks:

TopupBalance,AdjustBalance,TransferBalance and ReserveBalance

- **AccumulatedBalance:**

/GET /accumulatedBalance
Retrieve a list of aggregated Bucket resources.

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:

The Customer tops up a Bucket associated with his/her account with an amount referencing the party account and usage type. The topup is one time only.

Main Actors:

The customer requesting the top up

The requestor performing the top up

The bucket. Identified by the party account and usage type

Operation used:

POST /topupBalance

Pre-Conditions:

The amount attribute is mandatory in the request. At least one of the following attributes MUST be included in the request.

- logicalResourceRef
- productRef
- bucketRef
- relatedParty

The requestor is authorised to access this API.

The Bucket exists and is associated with a valid Product

The usage type is a valid type. For an overview of the different usage types refer to the Appendix.

Use Case Steps:

The consumer sends the following in the request:

- A reference to the channel being used
- A reference to the payment method to be used e.g. credit card.
- A reference to the customer's party account.
- A reference to the requestor or this information is extracted from a bearer token which allows the requestor permissions to perform this operation
- A valid usage type. This must be consistent with the type of the units defined in the Amount. Refer to the first entry in the appendix for examples.
- The isAutoTopup flag is set to false indicating this is a one-time top up.
- The operator confirms that the requestor is authorised to perform the recharge action over the specific affected subscriber. The operator may validate the requestor identifier or use a token-based authorization mechanism such as OAuth2 or OIDC.

- The top-up operation is processed, and the non-monetary buckets associated with the Product are incremented in accordance with the pricing plan associated with the Product. The new amounts will be valid for the time defined by a default value defined by the system.
- The system returns with a 201 successful response indicating the operation has executed successfully

Expected outcome:

- The non-monetary buckets associated with the product will be incremented by amounts determined by the pricing plan associated with the Product.
- The customer can consume services until the balances on the Buckets are exhausted.

Use Case 2:

The customer tops up a Bucket associated with his/her account with an amount referencing the unique id of the Bucket. The isAutoTopup flag is true and the top up is recurring.

Main Actors:

The customer requesting the top up

The requestor performing the top up

The bucket. Identified by its unique id

Operation used:

POST /topupBalance

Pre-Conditions:

The amount attribute is mandatory in the request. At least one of the following attributes MUST be included in the request.

- logicalResourceRef
- productRef
- bucketRef
- relatedParty

The requestor is authorised to access this API.

The bucket exists and is associated with a valid product

The requestor has looked up a valid Bucket id using the GET /bucket operation exposed on this API

Use Case Steps:

The requestor sends the following in the request:

- A reference to the channel being used
- A reference to the requestor or this information is extracted from a bearer token which allows the requestor permissions to perform this operation.
- A valid bucket identifier.
- The isAutoTopup flag is set to true, the numberOfPeriods is set to 3 and the recurringPeriod is set to monthly.

- The operator confirms that the requestor is authorised to perform the recharge action over the specific affected subscriber. The operator may validate the requestor identifier or use a token-based authorization mechanism such as OAuth2 or OIDC.
- The top-up operation is processed, and the non-monetary buckets associated with the Product are incremented in accordance with the pricing plan associated with the Product. The new amounts will be valid for the time defined by a default value defined by the system.
- The system returns with a 201 successful response indicating the operation has executed successfully

Expected outcome:

- The non-monetary buckets associated with the product will be incremented by amounts determined by the pricing plan associated with the Product.
- The customer can consume services until the balances on the buckets are exhausted.

Use Case 3:

An Agent cancels a top up request on behalf of a customer and the customer has a current recurring top up.

Main Actors:

The agent cancelling the top up

The bucket. Identified by the bucket id

Operation used:

PATCH /topupBalance

Pre-Conditions:

At least one of the following attributes MUST be included in the request.

- logicalResourceRef
- productRef
- bucketRef
- relatedParty

The agent is authorised to access this API.

The Bucket exists and is associated with a valid Product

Use Case Steps:

The Agent sends the following in the request:

- A reference to the channel being used
- A reference to the bucket
- A reference to the requestor(agent) or this information is extracted from a bearer token which allows the requestor permissions to perform this operation
- The status set to “cancelled”
- A reason stating why the top up is to be cancelled.
- The requested Date which corresponds to the time stamp when the Agent performs the cancellation.

- The operator confirms that the requestor is authorised to perform the recharge action over the specific affected subscriber. The operator may validate the requestor identifier or use a token-based authorization mechanism such as OAuth2 or OIDC.
- The cancel top-up operation is processed. The autoTopup flag on the top up stored by the server is set to false. The top up will then expire and the customer will not be charged further.
- The system returns with a 200 successful response indicating the operation has executed successfully.

Expected outcome:

- The customer is no longer charged and will no longer be able to consume the services offered by the Product
- The Product is cancelled for the customer. The Prepay Balance account is deleted, and the CRM is updated accordingly. The services on the HLR are de-provisioned.
- The customer can continue to use the services which are a part of the Product until the Bucket expires and there are still balances remaining on the Buckets.

Use Case 4:

The customer transfers a monetary amount from a bucket to a colleague

Main Actors:

The customer requesting the transfer

The requestor performing the transfer

The bucket of the customer identified by the bucket id

The target bucket of the colleague identified by the target bucket id

Source and target buckets exist and are associated with a valid product

The usage type of both buckets is the same. If they do not match an error will be returned. For a description of the valid usage types refer to the appendix

Operation used:

POST /transferBalance

Pre-Conditions:

The amount attribute is mandatory in the request. At least one of the following attributes MUST be included in the request.

- logicalResourceRef
- productRef
- bucketRef
- relatedParty

At least one of the following attributes MUST be included in the request from the following list

- receiverLogicalResourceRef
- receiverProductRef
- receiverBucketRef

The requestor is authorised to access this API.

The bucket exists and is associated with a valid product.

Use Case Steps:

The customer sends the following in the request:

- A reference to the channel being used
- A reference to the source bucket id
- A reference to the target bucket id
- The costOwner attribute is set to ‘originator’ indicating the owner of the source bucket will pay the transfer costs
- The transferCost indicates the amount to be charged for the transfer
- The operator confirms that the requestor is authorised to perform the action over the specific affected subscriber. The operator may validate the requestor identifier or use a token-based authorization mechanism such as OAuth2 or OIDC.
- The transfer balance operation is processed, and the monetary amount associated with the source bucket is transferred to the target bucket.
- The system returns with a 201 successful response indicating the operation has executed successfully

Expected outcome:

- The source bucket id is deducted with the amount sent in the request
- The owner’s prepaid account is deducted the amount of the transferCost
- The target bucket is incremented with the amount sent in the request
- The new amount will be valid for the time defined by the system

Use Case 5:

The customer wishes to reserve an amount on a bucket

Main Actors:

The customer requesting the reservation

The requestor performing the reservation

The bucket. Identified by its unique id

Operation used:

POST /reserveBalance

Pre-Conditions:

The amount attribute is mandatory in the request. At least one of the following attributes MUST be included in the request.

- logicalResourceRef
- productRef
- bucketRef

- relatedParty

The requestor is authorised to access this API.

The Bucket exists and is associated with a valid Product

The requestor has looked up a valid Bucket id using the GET /Bucket operation exposed on this API

Use Case Steps:

The requestor sends the following in the request:

- A reference to the channel being used
- An amount indicating how much should be reserved on the bucket. The units defined in the amount must match the usage type of the bucket. Valid usage types are defined in the appendix.
- A reference to the requestor or this information is extracted from a bearer token which allows the requestor permissions to perform this operation.
- A valid bucket identifier.
- A reason indicating why the amount is being reserved.
- The operator confirms that the requestor is authorised to perform the recharge action over the specific affected subscriber. The operator may validate the requestor identifier or use a token-based authorization mechanism such as OAuth2 or OIDC.
- The reserve operation is processed and the reservedAmount on the bucket is incremented with the amount sent in the request. The amount sent in the request is deducted from the amount for the bucket.
- The system returns with a 201 successful response indicating the operation has executed successfully

Expected outcome:

- The amount on the bucket is reduced by the amount sent in the request
- The reservedAmount on the bucket is set to the amount in the request
- The customer cannot use the reserved amount to access any of the services associated with the product.

Support of polymorphism and extension

Support of polymorphic collections and types and schema based extension is provided by means of a list of generic meta-attributes that we describe below. Polymorphism in collections occurs when entities inherit from base entities, for instance a TypeAServiceOrder or TypeBServiceOrder inheriting properties from the base ServiceOrder entity.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v3.0 Part 2 document.

The @type attribute provides a way to represent the actual class type of an entity. For example, within a list of ServiceOrder instances some may be instances of TypeAServiceOrder where other could be instances of TypeBServiceOrder . The @type gives this information. All resources and sub-resources of this API have a @type attributes that can be provided when this is useful.

The @referredType can be used within reference entities (like for instance a RelatedParty object) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the @type, when used, denotes the class type of the reference itself, such as RelatedParty, and not the class type of the referred object. However, since reference classes are rarely sub-classed, @type is generally not useful in reference objects.

The @schemaLocation property can be used in resources to allow specifying user-defined properties of an Entity or to specify the expected *characteristics* of an entity.

The @baseType attribute gives a way to provide explicitly the base of class of a given resource that has been extended

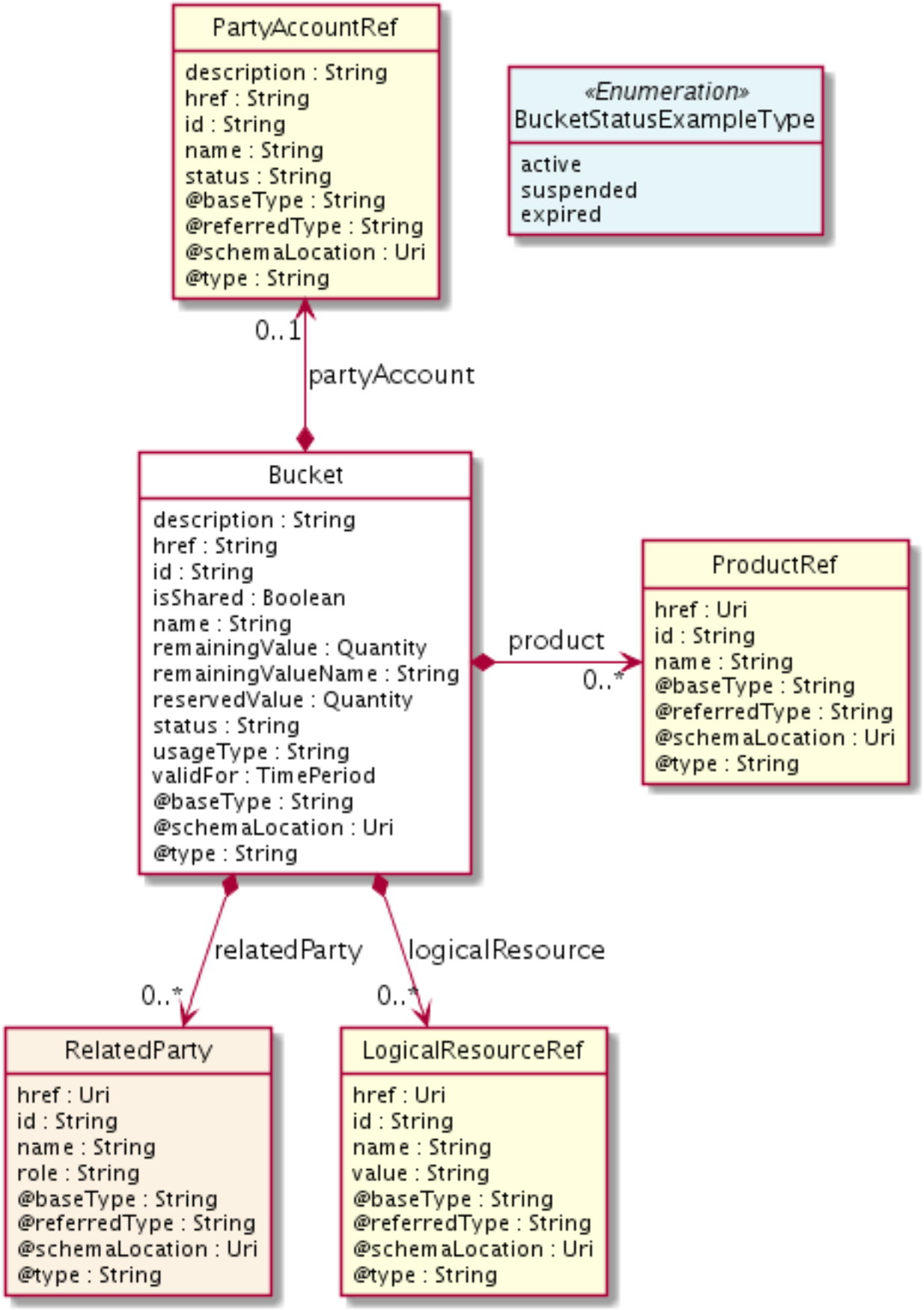
RESOURCE MODEL

Managed Entity and Task Resource Models

Bucket resource

A bucket (called UsageVolumProduct in the SID Model) represents and tracks a quantity of usage (remaining or consumed). It could be either a quantity or an amount in a currency. It can represent a fixed number of SMS,MMS, call minutes, quantity of data and so on.

Resource model



Field descriptions

Bucket fields

href	A string. A resource URI pointing to the resource in the OB that stores the detailed information for the bucket.
id	A string. Unique Identifier within the server for the bucket.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
description	A string. Text describing the contents of the balance managed by the bucket.
href	A string. A resource URI pointing to the resource in the OB that stores the detailed information for the bucket.
id	A string. Unique Identifier within the server for the bucket.
isShared	A boolean. True if the bucket is shared between several devices or users.
logicalResource	A list of logical resource references (LogicalResourceRef [*]). reference to the LogicalResource e.g. MSISDN.
name	A string. Friendly name to identify the bucket.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket.
product	A list of product references (ProductRef [*]).
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the balance, for instance to define customer hierarchy for the balance (e.g.: customerId, userId,).
remainingValue	A quantity (Quantity). Indicate the amount on the bucket.
remainingValueName	A string. Remaining amount in a formatted string for the bucket given in the balance unit (for example 1.9 Gb). This formatted string could be used for display needs for example.
reservedValue	A quantity (Quantity). Indicate the amount reserved on the bucket.
status	A string. status for the bucket. active, expired, suspended.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.
validFor	A time period. The period for which the balance in the bucket is valid.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.

@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'Bucket' resource object

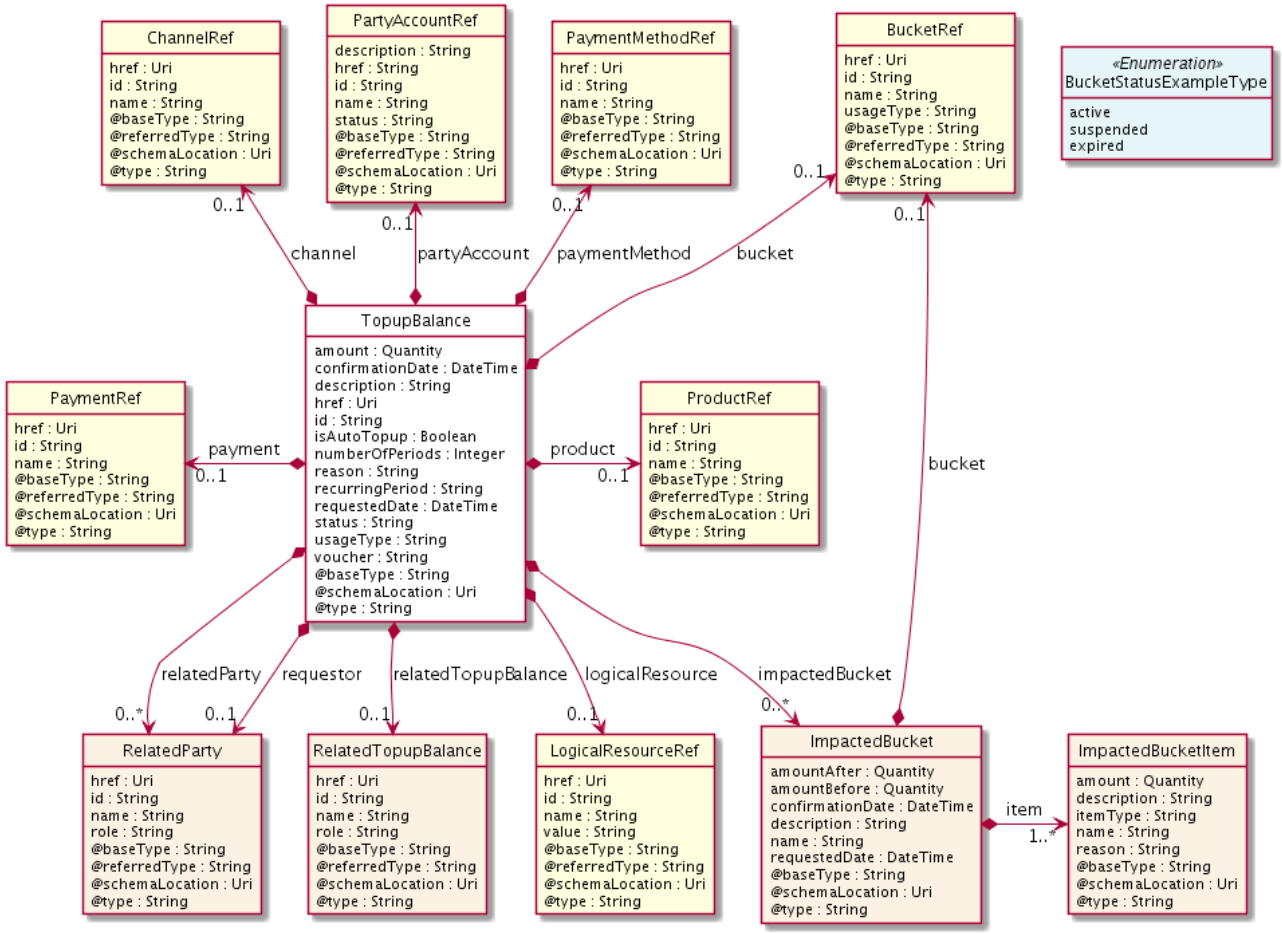

```
{
  "id": "11",
  "href": "prepayBalanceManagement/v4/bucket/11",
  "description": "this bucket holds the amount available on the bucket to the consumer. It's type is defined by the usageType and can be monetary or non-monetary",
  "name": "bucket for prd1",
  "@type": "Bucket",
  "remainingValue": {
    "amount": 50,
    "units": "EUR"
  },
  "remainingValueName": "bucket for prd1",
  "isShared": false,
  "usageType": "monetary",
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
```

```
  },
  "logicalResource": {
    "id": "4",
    "href": "/resouceInventoryManagement/logicalResource/4"
  },
  "relatedParty": [
    {
      "id": "cust1",
      "href": "/partyManagement/customer/cust1",
      "name": "jerry watts",
      "role": "customer"
    }
  ],
  "status": "active",
  "reservedValue": 0,
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "2020-01-12T23:20:50.52Z",
    "startDateTime": "2020-03-12T23:20:50.52Z"
  }
}
```


Topup Balance resource

Represents a detailed description of a recharge operation requested over a bucket (defined by a specific product or reference to a product (i.e.: a commercial id such as an msisidn) and a service type).

Resource model



Field descriptions

TopupBalance fields

confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Description of the recharge operation.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
reason	A string. Text describing the reason for the action/task.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.
status	A string. Status of the operation.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.

@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
isAutoTopup	A boolean. Indicates if the topup requested is an autotopup (to be processed periodically).
numberOfPeriods	An integer. For autotopup indicates the number of occurrences of the period the recharge operation must be executed. If not included, then no limit is set to stop the execution of the topup every period.
payment	A payment reference (PaymentRef). If an immediate payment has been done at the product order submission, the payment information is captured and stored (as a reference) in the order.
paymentMethod	A payment method reference (PaymentMethodRef). Payment method used for the recharge operation (e.g.: cash, credit card). Structure including at least attribute dname. Notice that the use of a voucher can be managed as a specific methodtype, where he voucher code can be passed as value.
recurringPeriod	A string. For autotopup indicates the periodicity for the recharge operation (monthly, weekly,).
relatedTopupBalance	A related topup balance (RelatedTopupBalance). Related Entity reference. A related balance topup defines a relationship via a role to another balance topup. Used in the PrepayBalanceManagement API to track child topups that are related to the parent (initiating balance topup resource). PrepayBalanceManagement defines the child role.
voucher	A string. Identifier for a voucher when the topup can be performed by this means.
amount	A quantity (Quantity). Indicate the amount on the bucket. This is always a positive value. If part of an AdjustBalance then the adjustType will indicate if the amount is to be credited or debited.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
channel	A channel reference (ChannelRef). Indicator for the channel used to request the transfer operation. Structure including at least attribute name.
impactedBucket	A list of impacted buckets (ImpactedBucket [*]). A reference to the bucket impacted by the request or the value itself.
logicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket impacted by the balance related operation.
product	A product reference (ProductRef). A reference to the Product associated with this bucket.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other

	entity with relation to the operation.
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.

ImpactedBucket sub-resource

A resource that references other buckets that have been impacted by the action of type TopupBalance,AdjustBalance,TransferBalance or ReserveBalance.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amountAfter	A quantity (Quantity). Indicates the amount after on the impacted bucket after the action has completed.
amountBefore	A quantity (Quantity). Indicates the amount remaining on the impacted bucket.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Text describing the contents of the balance managed by the bucket.
item	A list of impacted bucket items (ImpactedBucketItem [1..*]). a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.
name	A string. Friendly name to identify the bucket.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.

ImpactedBucketItem sub-resource

a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket.
description	A string. Description of the recharge operation.
itemType	A string. This indicates whether the action led to the bucket being incremented or decremented.e.g. credit or debit.

name	A string. This represents the transaction activity. e.g. topup, bonus, additional bonus, tax, fees, and so on.
reason	A string. Text describing the reason for the action/task.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

RelatedTopupBalance sub-resource

Related Entity reference. A related balance topup defines a relationship via a role to another balance topup. Used in the PrepayBalanceManagement API to track child topups that are related to the parent (initiating balance topup resource). PrepayBalanceManagement defines the child role.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the TopupBalance. In the PrepayBalanceManagement API this is parent or child.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and

	relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

PaymentMethodRef relationship

PaymentMethod reference. A payment method defines a specific mean of payment (e.g. direct debit).

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

PaymentRef relationship

If an immediate payment has been done at the product order submission, the payment information are captured and stored (as a reference) in the order.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. A name for the payment.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'TopupBalance' resource object

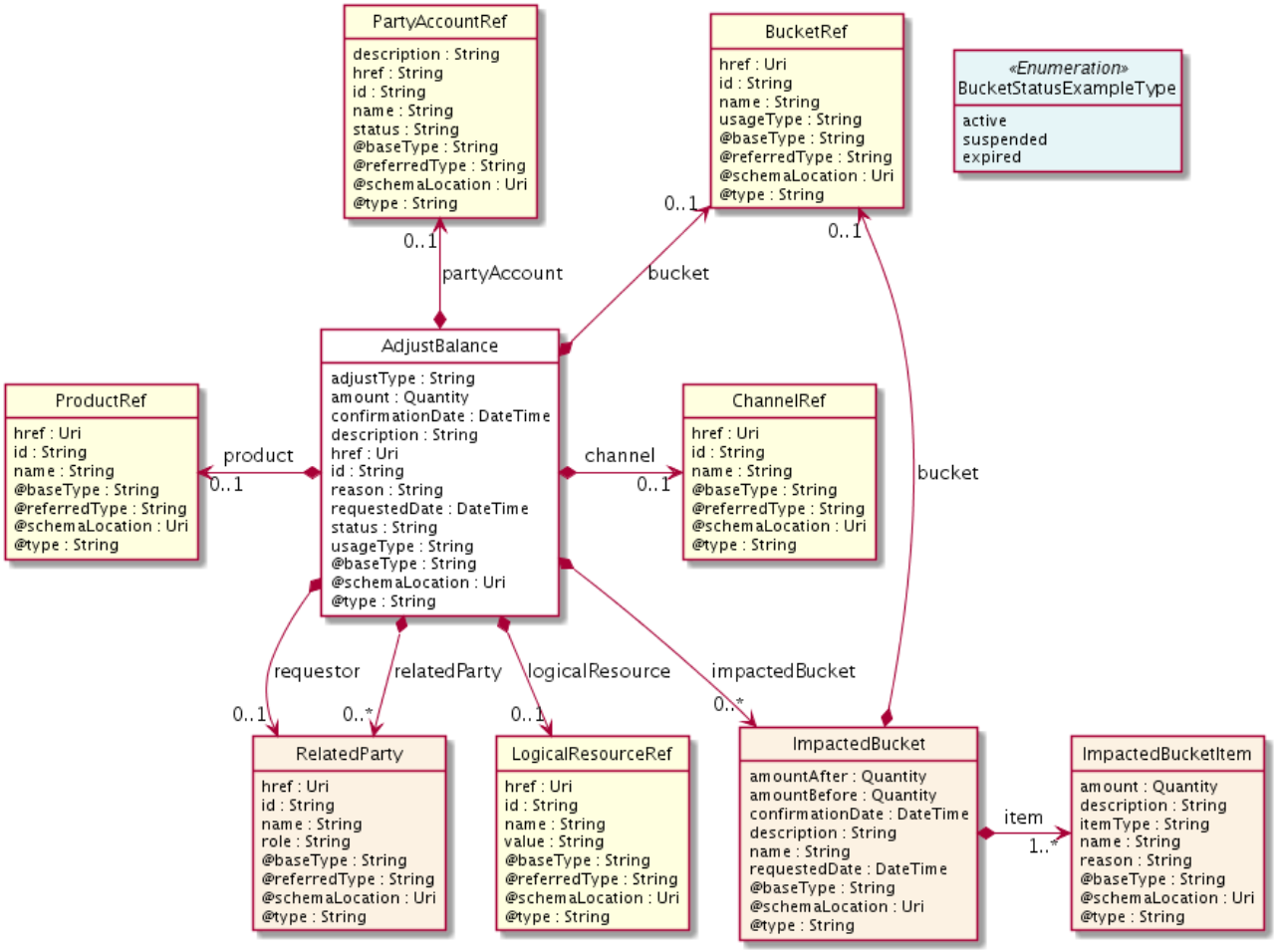

```
{
  "id": "55",
  "href": "/prepayBalanceManagement/v4/topupBalance/4",
  "description": "A topup of 50 Euros using a voucher",
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "isAutopTopup": true,
  "numberOfPeriods": 2,
  "recurringPeriod": "monthly",
  "usageType": "monetary",
  "reason": "enabling a recurring topup with a voucher payment",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "partyAccount": {
    "id": "acc1",
```

```
      "href": "/accountManagement/v4/account/acc1"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "value": "07645233482"
   },
   "relatedParty": [
      {
         "id": "5",
         "href": "/partyManagement/customer/22",
         "name": "jerry lewis",
         "role": "customer"
      }
   ],
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   },
   "voucher": "XS23DXADS",
   "status": "confirmed",
   "requestedDate": "1985-04-11T23:20:50.52Z",
   "confirmationDate": "1985-04-12T23:20:50.52Z",
   "validFor": {
      "endDateTime": "1985-04-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
   }
}
```


Adjust Balance resource

The AdjustBalance resource allows adjustments to be made to the original BalanceTopup e.g. increment the amount, alter the recharge periodicity.

Resource model



Field descriptions

AdjustBalance fields

confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Description of the recharge operation.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
reason	A string. Text describing the reason for the action/task.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.
status	A string. Status of the operation.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
adjustType	A string. The type of the adjustment. For example: recurringChargeDebit,oneTimeChargeCredit,oneTimeChargeDebit,goodWillCredit,generalDebit.
amount	A quantity (Quantity). Indicate the amount on the bucket. This is always a positive value. If part of an AdjustBalance then the adjustType will indicate if the amount is to be credited or debited.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
channel	A channel reference (ChannelRef). Indicator for the channel used to request the transfer operation. Structure including at least attribute name.
impactedBucket	A list of impacted buckets (ImpactedBucket [*]). A reference to the bucket impacted by the request or the value itself.
logicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket impacted by the balance related operation.
product	A product reference (ProductRef). A reference to the Product associated with this bucket.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the operation.
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.

ImpactedBucket sub-resource

A resource that references other buckets that have been impacted by the action of type TopupBalance,AdjustBalance,TransferBalance or ReserveBalance.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amountAfter	A quantity (Quantity). Indicates the amount after on the impacted bucket after the action has completed.
amountBefore	A quantity (Quantity). Indicates the amount remaining on the impacted bucket.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.

confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Text describing the contents of the balance managed by the bucket.
item	A list of impacted bucket items (ImpactedBucketItem [1..*]). a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.
name	A string. Friendly name to identify the bucket.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.

ImpactedBucketItem sub-resource

a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket.
description	A string. Description of the recharge operation.
itemType	A string. This indicates whether the action led to the bucket being incremented or decremented.eg credit or debit.
name	A string. This represents the transaction activity. e.g. topup, bonus, additional bonus, tax, fees, and so on.
reason	A string. Text describing the reason for the action/task.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and

	relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.

id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

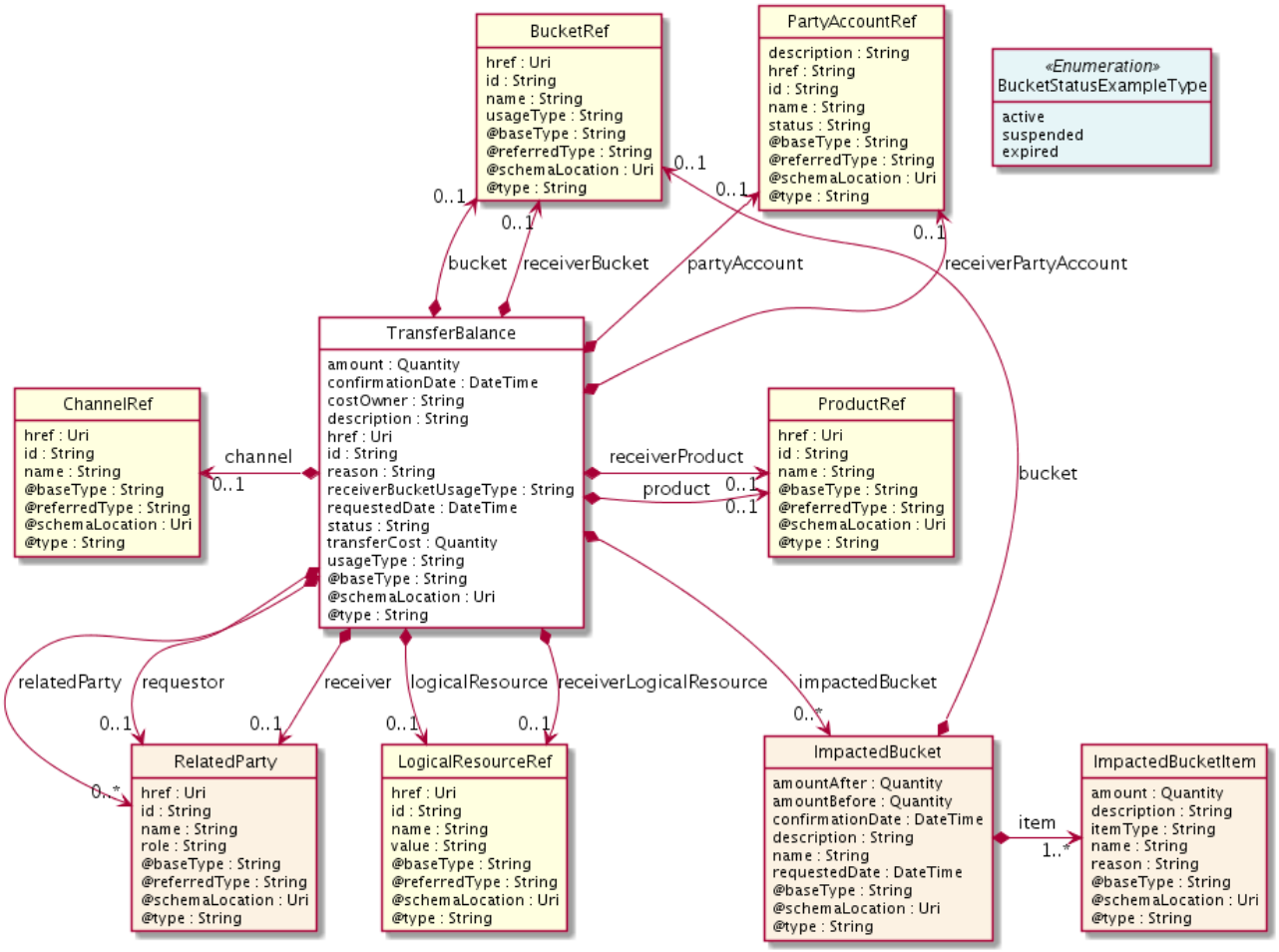
We provide below the json representation of an example of an 'AdjustBalance' resource object

```
{
  "id": "55",
  "href": "/prepayBalanceManagement/v4/topupBalance/4",
  "description": "A topup of 50 Euros using a voucher",
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "adjustType": "oneTime",
  "reason": "enabling a recurring topup with a voucher payment",
  "usageType": "monetary",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "@type": "MSISDN",
    "value": "07645233482"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "voucher": "XS23DXADS",
  "status": "confirmed",
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-04-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```

Transfer Balance resource

The TransferBalance resource is a detailed description of credit transfer operation requested between two buckets (reference to products owned by customers and consuming credit when using a service).

Resource model



Field descriptions

TransferBalance fields

confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Description of the recharge operation.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
reason	A string. Text describing the reason for the action/task.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.
status	A string. Status of the operation.

usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
costOwner	A string. Indicates which related party will bear the costs of the transfer. e.g. originator or receiver.
receiver	A related party (RelatedParty). Identifier for the user/customer/entity that receives the transfer when it is required to indicate additional customer hierarchy information regarding the entity receiving the balance transfer Structure including at least attributes “role” and “name”.
receiverBucket	A bucket reference (BucketRef). A reference to the bucket to which the balance will be transferred.
receiverBucketUsageType	A string. Type of prepay balance bucket (e.g.: roaming-data, data, roaming-voice etc.).
receiverLogicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
receiverPartyAccount	A party account reference (PartyAccountRef). A reference to the receiver account that owns the receiverlbucket impacted by the balance related operation.
receiverProduct	A product reference (ProductRef).
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.
transferCost	A quantity (Quantity). Associated cost to be charged for the transfer operation (can be monetary or non-monetary).
amount	A quantity (Quantity). Indicate the amount on the bucket. This is always a positive value. If part of an AdjustBalance then the adjustType will indicate if the amount is to be credited or debited.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
channel	A channel reference (ChannelRef). Indicator for the channel used to request the transfer operation. Structure including at least attribute name.
impactedBucket	A list of impacted buckets (ImpactedBucket [*]). A reference to the bucket impacted by

	the request or the value itself.
logicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket impacted by the balance related operation.
product	A product reference (ProductRef). A reference to the Product associated with this bucket.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the operation.
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.

ImpactedBucket sub-resource

A resource that references other buckets that have been impacted by the action of type TopupBalance,AdjustBalance,TransferBalance or ReserveBalance.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amountAfter	A quantity (Quantity). Indicates the amount after on the impacted bucket after the action has completed.
amountBefore	A quantity (Quantity). Indicates the amount remaining on the impacted bucket.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Text describing the contents of the balance managed by the bucket.
item	A list of impacted bucket items (ImpactedBucketItem [1..*]). a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.
name	A string. Friendly name to identify the bucket.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.

ImpactedBucketItem sub-resource

a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.

@baseType	A string. When sub-classing, this defines the super-class.

@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket.
description	A string. Description of the recharge operation.
itemType	A string. This indicates whether the action led to the bucket being incremented or decremented.eg credit or debit.
name	A string. This represents the transaction activity. e.g. topup, bonus, additional bonus, tax, fees, and so on.
reason	A string. Text describing the reason for the action/task.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.

id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'TransferBalance' resource object

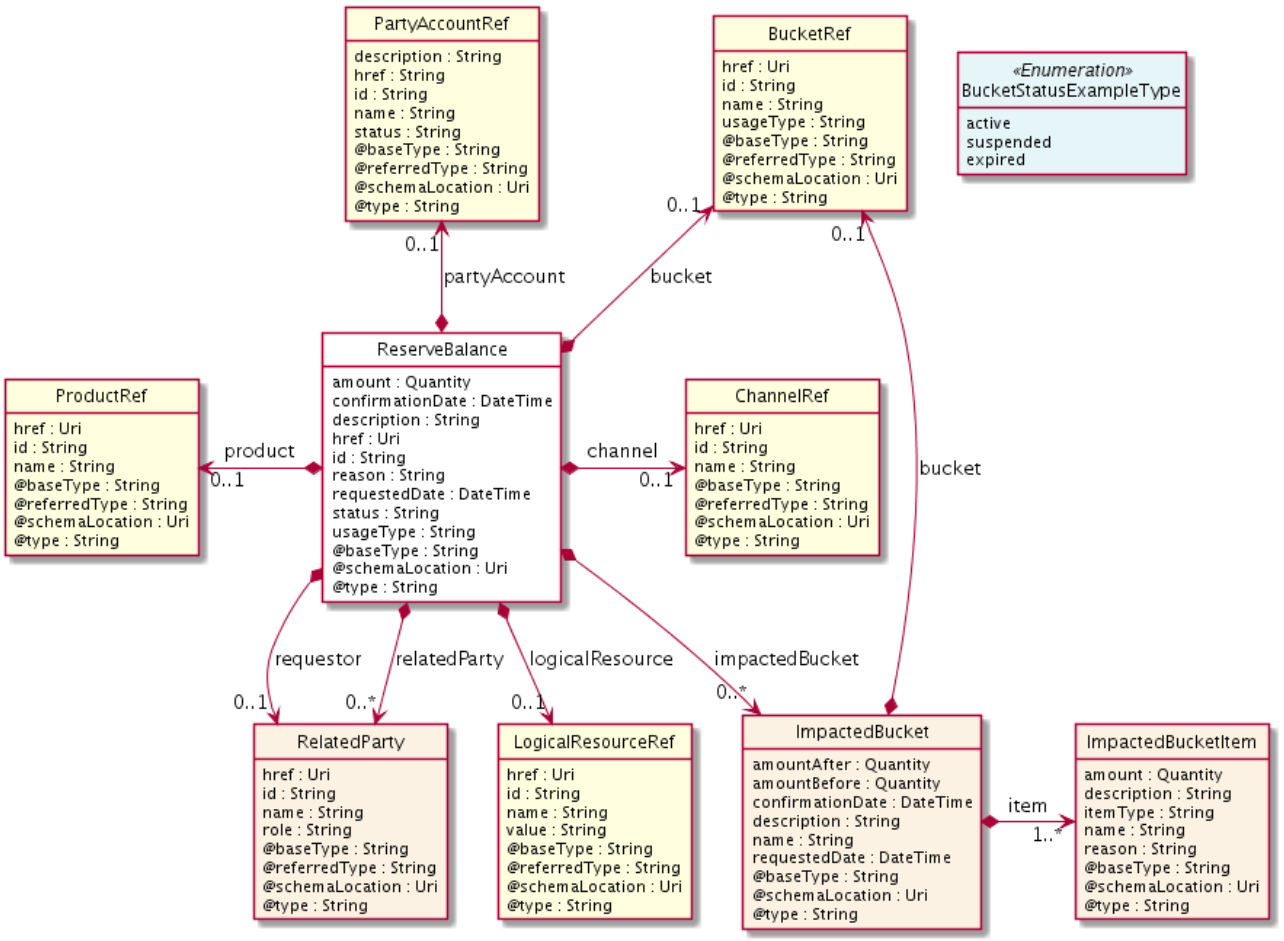

```
{
  "id": "55",
  "href": "/prepayBalanceManagement/v4/topupBalance/4",
  "description": "transfer 50 Euros from the bucket identified by id 11 to the bucket identified by id 22. The source bucket owner pays the transfer costs of 1.5 Euro",
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "reason": "enabling a recurring topup with a voucher payment",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
```

```
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "@type": "MSISDN",
    "value": "07645233482"
  },
  "costOwner": "originator",
  "transferCost": {
    "unit": "Euro",
    "value": 1.5
  },
  "usageType": "monetary",
  "receiverBucketUsageType": "monetary",
  "receiverBucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/22"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "status": "confirmed",
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-04-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```


Reserve Balance resource

The ReserveBalance resource allows adjustments to be made to the original BalanceTopup e.g., increment the amount, alter the recharge periodicity.

Resource model



Field descriptions

ReserveBalance fields

confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Description of the recharge operation.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
reason	A string. Text describing the reason for the action/task.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.
status	A string. Status of the operation.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket. This is always a positive value. If part of an AdjustBalance then the adjustType will indicate if the amount is to be credited or debited.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
channel	A channel reference (ChannelRef). Indicator for the channel used to request the transfer operation. Structure including at least attribute name.
impactedBucket	A list of impacted buckets (ImpactedBucket [*]). A reference to the bucket impacted by the request or the value itself.
logicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket impacted by the balance related operation.
product	A product reference (ProductRef). A reference to the Product associated with this bucket.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the operation.
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.

ImpactedBucket sub-resource

A resource that references other buckets that have been impacted by the action of type TopupBalance,AdjustBalance,TransferBalance or ReserveBalance.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amountAfter	A quantity (Quantity). Indicates the amount after on the impacted bucket after the action has completed.
amountBefore	A quantity (Quantity). Indicates the amount remaining on the impacted bucket.

bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Text describing the contents of the balance managed by the bucket.
item	A list of impacted bucket items (ImpactedBucketItem [1..*]). a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.
name	A string. Friendly name to identify the bucket.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.

ImpactedBucketItem sub-resource

a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket.
description	A string. Description of the recharge operation.
itemType	A string. This indicates whether the action led to the bucket being incremented or decremented.eg credit or debit.
name	A string. This represents the transaction activity. e.g. topup, bonus, additional bonus, tax, fees, and so on.
reason	A string. Text describing the reason for the action/task.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.

name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'ReserveBalance' resource object

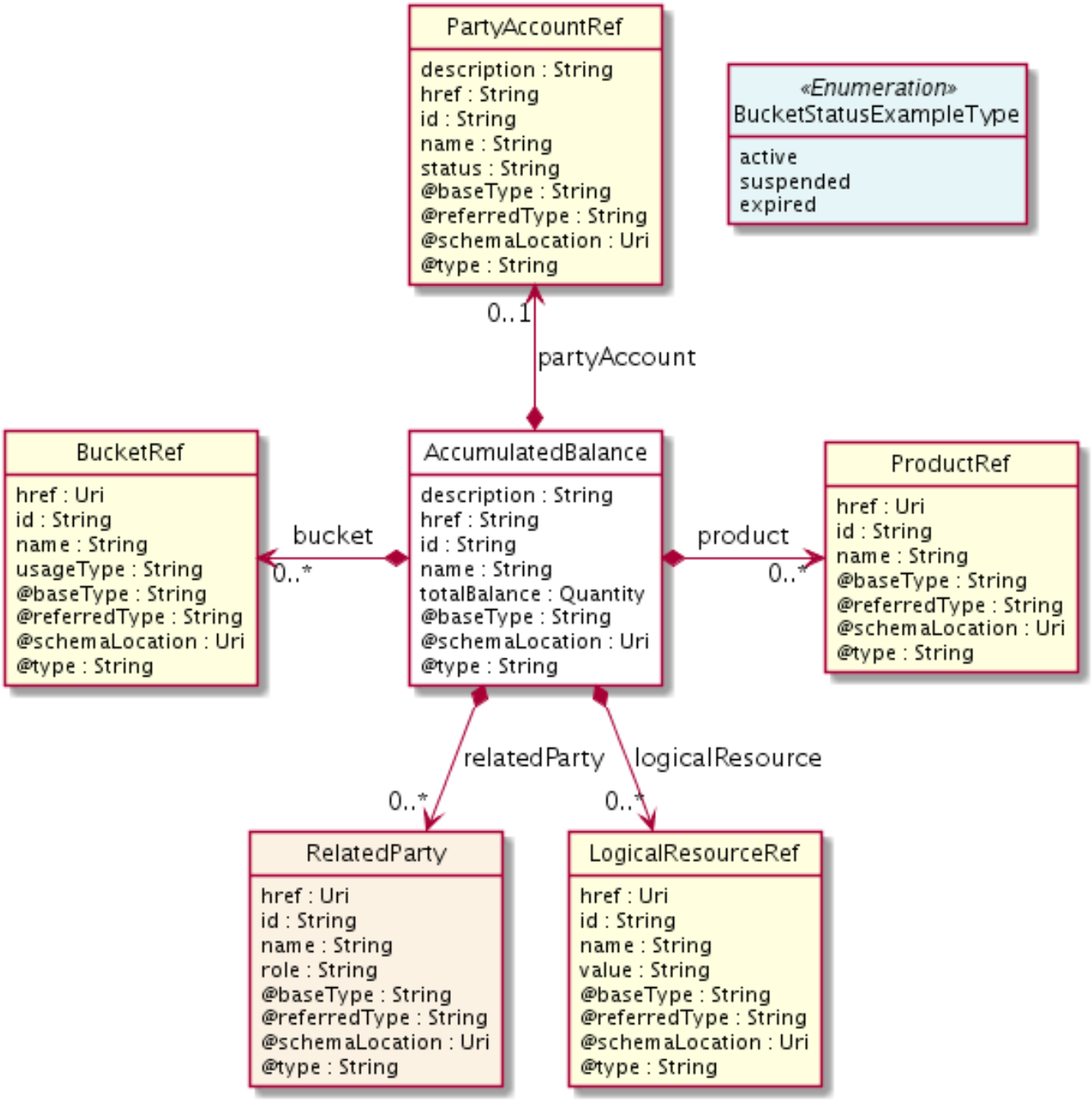

```
{
  "id": "55",
  "href": "/prepayBalanceManagement/v4/topupBalance/4",
  "description": "A reservation of 10 Euros on the bucket identified by id 11",
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "reason": "reserve 10 Euros in a bucket",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "usageType": "monetary",
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "@type": "MSISDN",
    "value": "07645233482"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "status": "confirmed",
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-04-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
```

```
  }
}
```

Accumulated Balance resource

Represents and tracks the aggregated amount remained or owed in certain account which is owned by certain customer for a set of buckets.

Resource model



Field descriptions

AccumulatedBalance fields

href	A string. A resource URI pointing to the resource in the OB that stores the detailed information.
id	A string. Unique Identifier within the server for the recharge operation request.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
bucket	A list of bucket references (BucketRef [*]). A reference to the buckets involved in the aggregation.
description	A string. Text describing the contents of the aggregated balance.
href	A string. A resource URI pointing to the resource in the OB that stores the detailed information.
id	A string. Unique Identifier within the server for the recharge operation request.
logicalResource	A list of logical resource references (LogicalResourceRef [*]). reference to the LogicalResource e.g. MSISDN.
name	A string. Friendly name to identify the aggregated balance.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the buckets aggregated.
product	A list of product references (ProductRef [*]). A reference to the product whose consumption is managed by the bucket . This is an array to allow scenarios where buckets are shared between different products.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the balance, for instance to define customer hierarchy for the balance (e.g.: customerId, userId,).
totalBalance	A quantity (Quantity). Aggregated for a set of prepay balance buckets associated to the product.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of an 'AccumulatedBalance' resource object

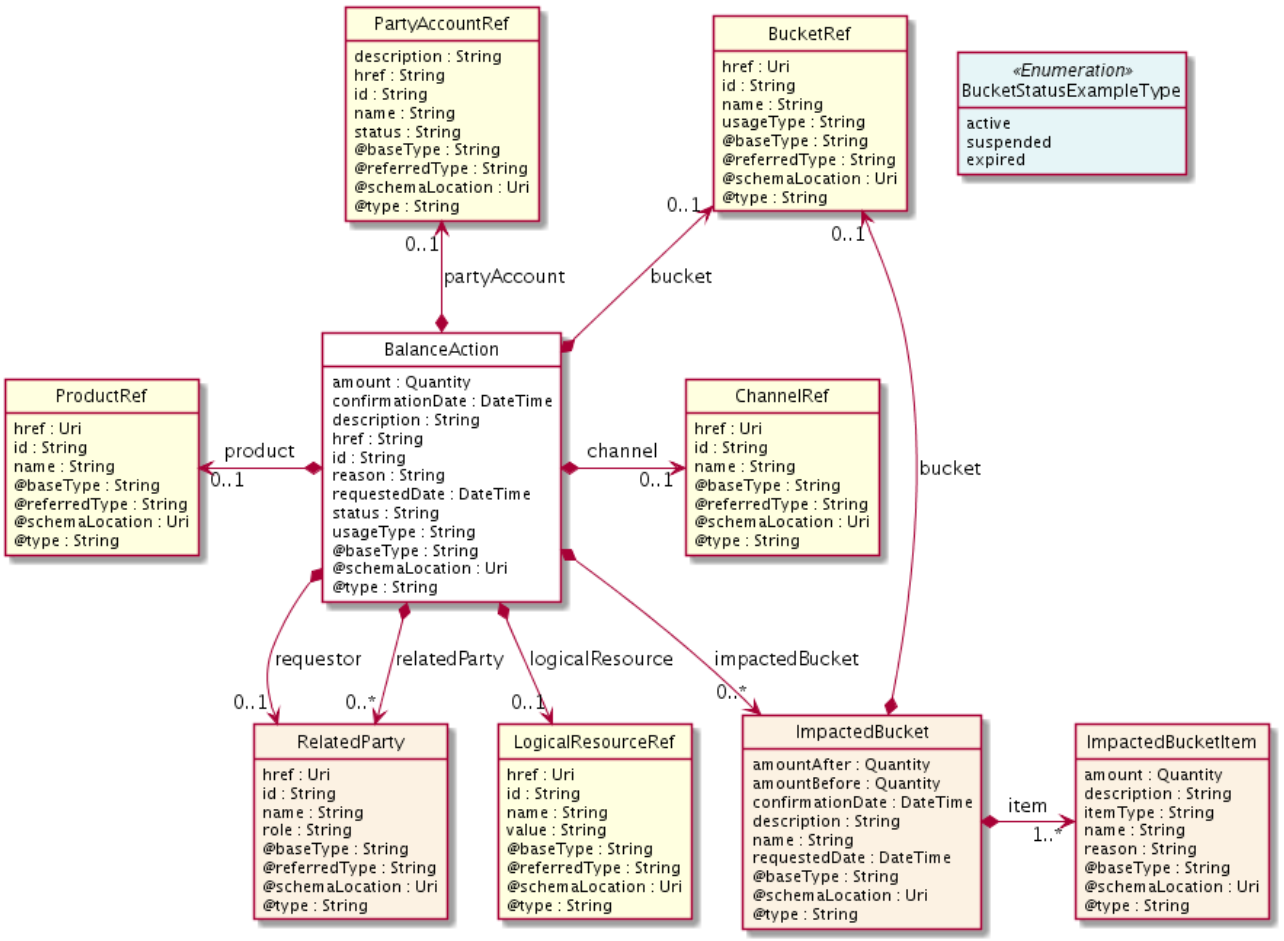

```
{
  "bucket": [
    {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    }
  ],
  "description": "an accumulation of balances",
  "href": "/prepayBalanceManagmenet/v4/accumulatedBalance/6956",
```

```
  "id": "6956",
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
    "@type": "MSISDN",
    "value": "07645233482"
  },
  "name": "accumulatedBalance",
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "product": [
    {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    }
  ],
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "totalBalance": {
    "amount": 900,
    "units": "MB"
  }
}
```


Balance Action resource

an abstract resource. example extensions are TopupBalance, AdjustBalance.

Resource model



Field descriptions

BalanceAction fields

href	A string. A reference to the resource.
id	A string. Unique Identifier for the resource.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket. This is always a positive value. If part of an AdjustBalance then the adjustType will indicate if the amount is to be credited or debited.
bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
channel	A channel reference (ChannelRef). Indicator for the channel used to request the

	transfer operation. Structure including at least attribute name.
confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Description of the recharge operation.
href	A string. A reference to the resource.
id	A string. Unique Identifier for the resource.
impactedBucket	A list of impacted buckets (ImpactedBucket [*]). A reference to the bucket impacted by the request or the value itself.
logicalResource	A logical resource reference (LogicalResourceRef). A reference to the logical resource that can be used to identify the bucket balance for example where product ids are not unique.
partyAccount	A party account reference (PartyAccountRef). A reference to the account that owns the bucket impacted by the balance related operation.
product	A product reference (ProductRef). A reference to the Product associated with this bucket.
reason	A string. Text describing the reason for the action/task.
relatedParty	A list of related parties (RelatedParty [*]). Used to provide information about any other entity with relation to the operation.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.
requestor	A related party (RelatedParty). Identifier for the user/customer/entity that performs the top-up action. 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.
status	A string. Status of the operation.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ImpactedBucket sub-resource

A resource that references other buckets that have been impacted by the action of type TopupBalance,AdjustBalance,TransferBalance or ReserveBalance.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amountAfter	A quantity (Quantity). Indicates the amount after on the impacted bucket after the action has completed.
amountBefore	A quantity (Quantity). Indicates the amount remaining on the impacted bucket.

bucket	A bucket reference (BucketRef). A reference to the bucket impacted by the request or the value itself.
confirmationDate	A date time (DateTime). Date when the deduction was confirmed in the server.
description	A string. Text describing the contents of the balance managed by the bucket.
item	A list of impacted bucket items (ImpactedBucketItem [1..*]). a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.
name	A string. Friendly name to identify the bucket.
requestedDate	A date time (DateTime). Date when the deduction request was received in the server.

ImpactedBucketItem sub-resource

a resource used by the ImpactedBucket resource to capture the impact of an ImpactedBucket.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
amount	A quantity (Quantity). Indicate the amount on the bucket.
description	A string. Description of the recharge operation.
itemType	A string. This indicates whether the action led to the bucket being incremented or decremented.eg credit or debit.
name	A string. This represents the transaction activity. e.g. topup, bonus, additional bonus, tax, fees, and so on.
reason	A string. Text describing the reason for the action/task.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

BucketRef relationship

link to the resource that holds bucket information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
usageType	A string. defines the type of the underlying Balance e.g. data,voice, any currency e.g. EUR, USD etc.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

LogicalResourceRef relationship

reference to the LogicalResource e.g. MSISDN.

@referredType	A string. The actual type of the target instance when needed for disambiguation.

name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
value	A string. The value of the logical resource.

PartyAccountRef relationship

PartyAccount reference. A party account is an arrangement that a party has with an enterprise that provides products to the party.

href	A string. Reference of the party account.
id	A string. Unique identifier of the party account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. Detailed description of the party account.
name	A string. Name of the party account.
status	A string. The condition of the account, such as due, paid, in arrears.

ProductRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

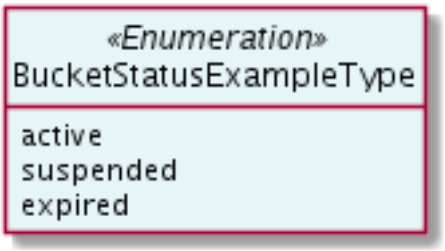
We provide below the json representation of an example of a 'BalanceAction' resource object


```
{
   "href": "https:/host:port/tmf-api/balanceAction/v1/balanceAction/a Uri ...",
   "id": "a Uri ...",
   "amount": {},
   "bucket": {},
   "channel": {},
   "confirmationDate": "2020-07-16T00:00",
   "description": "This  balance action ...",
   "impactedBucket": [
      {}
   ],
   "logicalResource": {},
   "partyAccount": {},
   "product": {},
   "reason": "a string ...",
   "relatedParty": [
      {}
   ],
   "requestedDate": "2020-07-16T00:00",
   "requestor": {},
   "status": "a string ...",
   "usageType": "a string ..."
}
```


Bucket Status Example Type resource

Possible values for the bucket status are (for example active,suspended,expired).

Resource model



Json representation sample

We provide below the json representation of an example of a 'BucketStatusExampleType' resource object


```
{
   "status": "active"
}
```

Notification Resource Models

27 notifications are defined for this API

Notifications related to Bucket:
- BucketCreateEvent
- BucketDeleteEvent
- BucketAttributeValueChangeEvent

Notifications related to TopupBalance:
- TopupBalanceCreateEvent
- TopupBalanceCancelEvent
- TopupBalanceFailureEvent
- TopupBalanceAttributeValueChangeEvent
- TopupBalanceStatusChangeEvent
- TopupBalanceDeleteEvent

Notifications related to AdjustBalance:
- AdjustBalanceCreateEvent
- AdjustBalanceCancelEvent
- AdjustBalanceFailureEvent
- AdjustBalanceAttributeValueChangeEvent
- AdjustBalanceStatusChangeEvent
- AdjustBalanceDeleteEvent

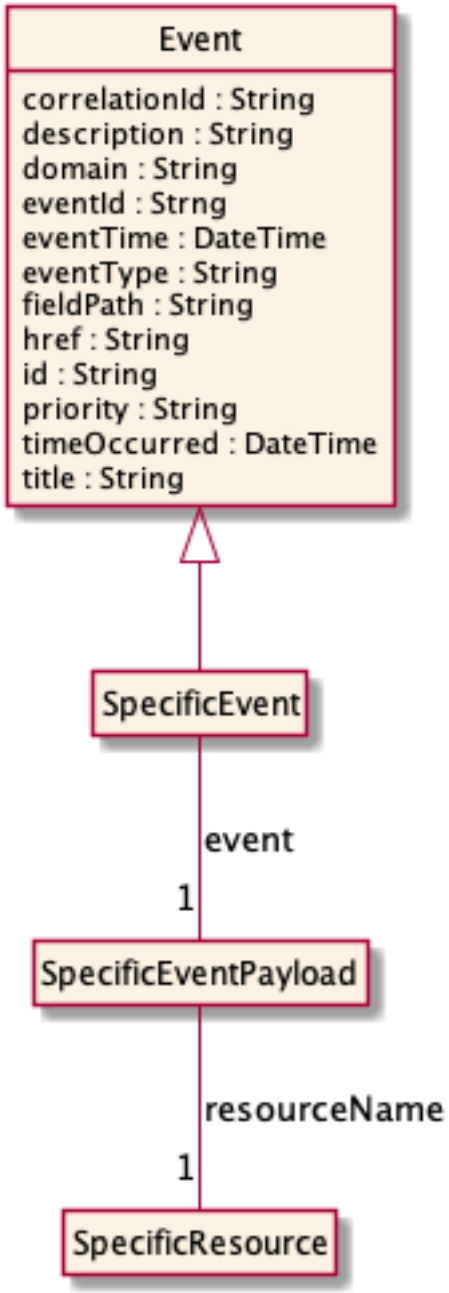
Notifications related to TransferBalance:
- TransferBalanceCreateEvent
- TransferBalanceCancelEvent
- TransferBalanceFailureEvent
- TransferBalanceAttributeValueChangeEvent
- TransferBalanceStatusChangeEvent
- TransferBalanceDeleteEvent

Notifications related to ReserveBalance:
- ReserveBalanceCreateEvent
- ReserveBalanceCancelEvent
- ReserveBalanceFailureEvent
- ReserveBalanceAttributeValueChangeEvent
- ReserveBalanceStatusChangeEvent
- ReserveBalanceDeleteEvent

The notification structure for all notifications in this API follow the pattern depicted by the figure below.

A notification event resource (depicted by "SpecificEvent" placeholder) is a sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType).

This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).



Bucket Create Event

Notification BucketCreateEvent case for resource Bucket

Json representation sample

We provide below the json representation of an example of a 'BucketCreateEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"BucketCreateEvent",
    "event": {
      "bucket" :
```

```
        {-- SEE Bucket RESOURCE SAMPLE --}
   }
}
```

Bucket Delete Event

Notification BucketDeleteEvent case for resource Bucket

Json representation sample

We provide below the json representation of an example of a 'BucketDeleteEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"BucketDeleteEvent",
    "event": {
      "bucket" :
        {-- SEE Bucket RESOURCE SAMPLE --}
   }
}
```

Bucket Attribute Value Change Event

Notification BucketAttributeValueChangeEvent case for resource Bucket

Json representation sample

We provide below the json representation of an example of a 'BucketAttributeValueChangeEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"BucketAttributeValueChangeEvent",
    "event": {
      "bucket" :
        {-- SEE Bucket RESOURCE SAMPLE --}
   }
}
```

Topup Balance Create Event

Notification TopupBalanceCreateEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceCreateEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TopupBalanceCreateEvent",
```

```
   "event": {
     "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
   }
}
```

Topup Balance Cancel Event

Notification TopupBalanceCancelEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceCancelEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TopupBalanceCancelEvent",
    "event": {
      "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
   }
}
```

Topup Balance Failure Event

Notification TopupBalanceFailureEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceFailureEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TopupBalanceFailureEvent",
    "event": {
      "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
   }
}
```

Topup Balance Attribute Value Change Event

Notification TopupBalanceAttributeValueChangeEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceAttributeValueChangeEvent' notification event object

```
{
   "eventId":"00001",
```

```
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TopupBalanceAttributeValueChangeEvent",
   "event": {
     "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
  }
}
```

Topup Balance Status Change Event

Notification TopupBalanceStatusChangeEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceStatusChangeEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TopupBalanceStatusChangeEvent",
   "event": {
     "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
  }
}
```

Topup Balance Delete Event

Notification TopupBalanceDeleteEvent case for resource TopupBalance

Json representation sample

We provide below the json representation of an example of a 'TopupBalanceDeleteEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TopupBalanceDeleteEvent",
   "event": {
     "topupBalance" :
        {-- SEE TopupBalance RESOURCE SAMPLE --}
  }
}
```

Adjust Balance Create Event

Notification AdjustBalanceCreateEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceCreateEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceCreateEvent",
   "event": {
     "adjustBalance" :
        {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```

Adjust Balance Cancel Event

Notification AdjustBalanceCancelEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceCancelEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceCancelEvent",
   "event": {
     "adjustBalance" :
        {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```

Adjust Balance Failure Event

Notification AdjustBalanceFailureEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceFailureEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceFailureEvent",
   "event": {
     "adjustBalance" :
        {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```

Adjust Balance Attribute Value Change Event

Notification AdjustBalanceAttributeValueChangeEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceAttributeValueChangeEvent' notification event object


```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceAttributeValueChangeEvent",
   "event": {
     "adjustBalance" :
       {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```


Adjust Balance Status Change Event

Notification AdjustBalanceStatusChangeEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceStatusChangeEvent' notification event object


```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceStatusChangeEvent",
   "event": {
     "adjustBalance" :
       {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```


Adjust Balance Delete Event

Notification AdjustBalanceDeleteEvent case for resource AdjustBalance

Json representation sample

We provide below the json representation of an example of an 'AdjustBalanceDeleteEvent' notification event object


```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"AdjustBalanceDeleteEvent",
   "event": {
     "adjustBalance" :
       {-- SEE AdjustBalance RESOURCE SAMPLE --}
  }
}
```


Transfer Balance Create Event

Notification TransferBalanceCreateEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceCreateEvent' notification event object


```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TransferBalanceCreateEvent",
    "event": {
      "transferBalance" :
         {-- SEE TransferBalance RESOURCE SAMPLE --}
   }
}
```


Transfer Balance Cancel Event

Notification TransferBalanceCancelEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceCancelEvent' notification event object


```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TransferBalanceCancelEvent",
    "event": {
      "transferBalance" :
         {-- SEE TransferBalance RESOURCE SAMPLE --}
   }
}
```


Transfer Balance Failure Event

Notification TransferBalanceFailureEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceFailureEvent' notification event object


```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"TransferBalanceFailureEvent",
    "event": {
      "transferBalance" :
         {-- SEE TransferBalance RESOURCE SAMPLE --}
   }
}
```

Transfer Balance Attribute Value Change Event

Notification TransferBalanceAttributeValueChangeEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceAttributeValueChangeEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TransferBalanceAttributeValueChangeEvent",
   "event": {
     "transferBalance" :
       {-- SEE TransferBalance RESOURCE SAMPLE --}
  }
}
```

Transfer Balance Status Change Event

Notification TransferBalanceStatusChangeEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceStatusChangeEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TransferBalanceStatusChangeEvent",
   "event": {
     "transferBalance" :
       {-- SEE TransferBalance RESOURCE SAMPLE --}
  }
}
```

Transfer Balance Delete Event

Notification TransferBalanceDeleteEvent case for resource TransferBalance

Json representation sample

We provide below the json representation of an example of a 'TransferBalanceDeleteEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"TransferBalanceDeleteEvent",
   "event": {
     "transferBalance" :
       {-- SEE TransferBalance RESOURCE SAMPLE --}
  }
```

```
}
```

Reserve Balance Create Event

Notification ReserveBalanceCreateEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceCreateEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ReserveBalanceCreateEvent",
    "event": {
      "reserveBalance" :
         {-- SEE ReserveBalance RESOURCE SAMPLE --}
   }
}
```

Reserve Balance Cancel Event

Notification ReserveBalanceCancelEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceCancelEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ReserveBalanceCancelEvent",
    "event": {
      "reserveBalance" :
         {-- SEE ReserveBalance RESOURCE SAMPLE --}
   }
}
```

Reserve Balance Failure Event

Notification ReserveBalanceFailureEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceFailureEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ReserveBalanceFailureEvent",
    "event": {
      "reserveBalance" :
         {-- SEE ReserveBalance RESOURCE SAMPLE --}
```

```
  }
}
```

Reserve Balance Attribute Value Change Event

Notification ReserveBalanceAttributeValueChangeEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceAttributeValueChangeEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ReserveBalanceAttributeValueChangeEvent",
   "event": {
     "reserveBalance" :
       {-- SEE ReserveBalance RESOURCE SAMPLE --}
  }
}
```

Reserve Balance Status Change Event

Notification ReserveBalanceStatusChangeEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceStatusChangeEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ReserveBalanceStatusChangeEvent",
   "event": {
     "reserveBalance" :
       {-- SEE ReserveBalance RESOURCE SAMPLE --}
  }
}
```

Reserve Balance Delete Event

Notification ReserveBalanceDeleteEvent case for resource ReserveBalance

Json representation sample

We provide below the json representation of an example of a 'ReserveBalanceDeleteEvent' notification event object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ReserveBalanceDeleteEvent",
```

```
    "event": {
      "reserveBalance" :
         {-- SEE ReserveBalance RESOURCE SAMPLE --}
    }
}
```

API OPERATIONS

Remember the following Uniform Contract:

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
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
Execute an Action on an Entity	POST on TASK Resource	POST must be used to execute Task Resources
Other Request Methods	POST on TASK Resource	GET and POST must not be used to tunnel other request methods.

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

Notifications are also described in a subsequent section.

Operations on Bucket

List buckets

GET /bucket?fields=...&{filtering}

Description

This operation list bucket entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the bucket balances for the product prd1'. The query parameters are :-
product.id='prd1')]

Request

```
GET /tmf-api/prepayBalanceManagement/v4/bucket
Accept: application/json
```

Response

```
200

[
  {
    "id": "11",
    "href": "prepayBalanceManagement/v4/bucket/11",
    "description": "this bucket holds the amount available",
    "name": "bucket for prd1",
    "@type": "Bucket",
    "remainingValue": {
      "amount": 50,
      "units": "EUR"
    },
    "remainingValueName": "bucket for prd1",
    "usageType": "monetary",
    "partyAccount": {
      "id": "acc1",
      "href": "/accountManagement/v4/account/acc1"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "logicalResource": {
      "id": "4",
      "href": "/resouceInventoryManagement/logicalResource/4"
```

```
    },
    "relatedParty": [
      {
        "id": "cust1",
        "href": "/partyManagement/customer/cust1",
        "name": "jerry watts",
        "role": "customer"
      }
    ],
    "bucketBalance": [
      {
        "remainingValue": {
          "amount": 500,
          "units": "minutes"
        },
        "remainingValueName": "500 minutes of calls left",
        "usageType": "voice"
      }
    ],
    "validFor": {
      "endDateTime": "2020-01-12T23:20:50.52Z",
      "startDateTime": "2020-03-12T23:20:50.52Z"
    }
  }
]
```


Fetch the bucket balances for all products that have a monetary usage type. The query parameters are :- usageType='monetary'

Request

```
GET /tmf-api/prepayBalanceManagement/v4/bucket
Accept: application/json
```

Response


```
200

[
  {
    "id": "11",
    "href": "prepayBalanceManagement/v4/bucket/11",
    "description": "this bucket holds the amount available",
    "name": "bucket for prd1",
    "@type": "Bucket",
    "remainingValue": {
      "amount": 50,
      "units": "EUR"
    },
    "remainingValueName": "bucket for prd1",
    "usageType": "monetary",
    "partyAccount": {
```

```
      "id": "acc1",
      "href": "/accountManagement/v4/account/acc1"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "logicalResource": {
      "id": "4",
      "href": "/resouceInventoryManagement/logicalResource/4"
    },
    "relatedParty": [
      {
        "id": "cust1",
        "href": "/partyManagement/customer/cust1",
        "name": "jerry watts",
        "role": "customer"
      }
    ],
    "bucketBalance": [
      {
        "remainingValue": {
          "amount": 50,
          "units": "MB"
        },
        "remainingValueName": "50 MB of promotional data left",
        "usageType": "data"
      },
      {
        "remainingValue": {
          "amount": 500,
          "units": "minutes"
        },
        "remainingValueName": "500 minutes of calls left",
        "usageType": "voice"
      }
    ],
    "validFor": {
      "endDateTime": "2020-01-12T23:20:50.52Z",
      "startDateTime": "2020-03-12T23:20:50.52Z"
    }
  },
  {
    "id": "12",
    "href": "prepayBalanceManagement/v4/bucket/12",
    "description": "this bucket holds the amount available",
    "name": "bucket for prd1",
    "@type": "Bucket",
    "remainingValue": {
      "amount": 100,
      "units": "EUR"
    },
    "remainingValueName": "bucket for prd2",
    "usageType": "monetary",
    "partyAccount": {
      "id": "acc1",
```

```
        "href": "/accountManagement/v4/account/acc1"
      },
      "product": {
        "id": "prd2",
        "href": "/productInventory/v4/product/prd2"
      },
      "logicalResource": {
        "id": "4",
        "href": "/resouceInventoryManagement/logicalResource/4"
      },
      "relatedParty": [
        {
          "id": "cust1",
          "href": "/partyManagement/customer/cust1",
          "name": "jerry watts",
          "role": "customer"
        }
      ],
      "bucketBalance": [
        {
          "remainingValue": {
            "amount": 50,
            "units": "MB"
          },
          "remainingValueName": "50 MB of promotional data left",
          "usageType": "data"
        }
      ],
      "validFor": {
        "endDateTime": "2020-01-12T23:20:50.52Z",
        "startDateTime": "2020-03-12T23:20:50.52Z"
      }
    }
]
```


Retrieve bucket

GET /bucket/{id}?fields=...&{filtering}

Description

This operation retrieves a bucket entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Retrieve a Bucket resource based on its id

Request
GET /tmf-api/prepayBalanceManagement/v4/bucket/43

Accept: application/json

Response

200


```
{
  "id": "11",
  "href": "prepayBalanceManagement/v4/bucket/11",
  "description": "this bucket holds the amount available",
  "name": "bucket for prd1",
  "@type": "Bucket",
  "remainingValue": {
    "amount": 50,
    "units": "EUR"
  },
  "remainingValueName": "bucket for prd1",
  "usageType": "monetary",
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "logicalResource": {
    "id": "4",
    "href": "/resouceInventoryManagement/logicalResource/4"
  },
  "relatedParty": [
    {
      "id": "cust1",
      "href": "/partyManagement/customer/cust1",
      "name": "jerry watts",
      "role": "customer"
    }
  ],
  "bucketBalance": [
    {
      "remainingValue": {
        "amount": 50,
        "units": "MB"
      },
      "remainingValueName": "50 MB of promotional data left",
      "usageType": "data"
    },
    {
      "remainingValue": {
        "amount": 500,
        "units": "minutes"
      },
      "remainingValueName": "500 minutes of calls left",
      "usageType": "voice"
```

```
      }
   ],
   "validFor": {
      "endDateTime": "2020-01-12T23:20:50.52Z",
      "startDateTime": "2020-03-12T23:20:50.52Z"
   }
}
```

Create bucket

POST /bucket

Description

This operation creates a bucket entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a Bucket, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
usageType	

Non Mandatory Attributes	Rule
@baseType	
@schemaLocation	
@type	
description	
isShared	
logicalResource	
name	
partyAccount	
product	
relatedParty	
remainingValue	
remainingValueName	
reservedValue	
status	
validFor	

Usage Samples

Create a Bucket. Only allowed by administrators. The usageType is mandatory and could be linked to a product by default, hence product is not required

Request

```
POST /tmf-api/prepayBalanceManagement/v4/bucket
Content-Type: application/json
```

```
{
   "amount": {
      "amount": 50,
      "units": "EUR"
   },
   "usageType": "monetary",
   "product": [
      {
         "id": "prd1",
         "href": "/productInventory/v4/product/prd1"
      }
   ],
   "relatedParty": [
      {
         "id": "5",
         "href": "/partyManagement/v4/customer/22",
         "name": "jerry wilson",
         "role": "customer"
      }
   ],
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```


Response

201


```
{
   "id": "11",
   "href": "prepayBalanceManagement/v4/bucket/11",
   "description": "this bucket holds the amount available",
   "name": "bucket for prd1",
   "@type": "Bucket",
   "remainingValue": {
      "amount": 50,
      "units": "EUR"
   },
   "remainingValueName": "bucket for prd1",
   "usageType": "monetary",
   "product": [
      {
         "id": "prd1",
         "href": "/productInventory/v4/product/prd1"
      }
   ],
   "relatedParty": [
      {
         "id": "5",
         "href": "/partyManagement/v4/customer/5",
```

```
        "name": "jerry wilson",
        "role": "customer"
      }
    ],
    "validFor": {
      "endDateTime": "2020-01-12T23:20:50.52Z",
      "startDateTime": "2020-03-12T23:20:50.52Z"
    }
}
```


Delete bucket

DELETE /bucket/{id}

Description

This operation deletes a bucket entity.

Usage Samples

This operation deletes a Bucket resource using the unique id of the bucket

Request
DELETE /tmf-api/prepayBalanceManagement/v4/bucket/11
Response
204

Operations on Topup Balance

List topup balances

GET /topupBalance?fields=...&{filtering}

Description

This operation list topup balance entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the balance topups for the product prd1. The query parameters are :-
product.id=prd1

Request

```
GET /tmf-api/prepayBalanceManagement/v4/topupBalance
Accept: application/json
```

Response

```
200

[
  {
    "id": "1",
    "href": "prepayBalanceManagement/v4/topupBalance/1",
    "reason": "added 20 MB of data",
    "description": "topup with 20 MB of data to the balance",
    "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "isAutoTopup": "false",
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "00442123142323"
    },
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
```

```
    },
    "requestedDate": "1985-04-11T23:20:50.52Z",
    "confirmationDate": "1985-04-12T23:20:50.52Z",
    "validFor": {
      "endDateTime": "1985-05-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
    }
  }
]
```


Fetch the balance topups for the product prd1 and usageType 'data'. The query parameters are :- product.id=prd1&usageType=data.

Request

```
GET /tmf-api/prepayBalanceManagement/v4/topupBalance
Accept: application/json
```

Response


```
200

[
  {
    "id": "1",
    "href": "prepayBalanceManagement/v4/topupBalance/1",
    "reason": "added 20 MB of data",
    "description": "added 20 MB of data to the balance",
    "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "usageType": "data",
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "isAutoTopup": "false",
    "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "00442123142323"
    },
    "relatedParty": [
```

```
        {
          "id": "5",
          "href": "/partyManagement/customer/22",
          "name": "jerry lewis",
          "role": "customer"
        }
      ],
      "requestor": {
        "id": "55",
        "href": "/partyManagement/v4/customer/agent1",
        "name": "jim jordan",
        "role": "agent"
      },
      "requestedDate": "1985-04-11T23:20:50.52Z",
      "confirmationDate": "1985-04-12T23:20:50.52Z",
      "validFor": {
        "endDateTime": "1985-05-12T23:20:50.52Z",
        "startDateTime": "1985-04-12T23:20:50.52Z"
      }
    }
]
```


Retrieve topup balance

GET /topupBalance/{id}?fields=...&{filtering}

Description

This operation retrieves a topup balance entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Retrieve a TopupBalance resource based on its id

Request

```
GET /tmf-api/prepayBalanceManagement/v4/topupBalance/43
Accept: application/json
```

Response


```
200

{
  "id": "1",
  "href": "prepayBalanceManagement/v4/topupBalance/1",
  "reason": "added 20 MB of data",
  "description": "added 20 MB of data to the balance",
```

```
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "isAutoTopup": "false",
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
    "@type": "MSISDN",
    "@baseType": "logicalResource",
    "lifecycleState": "active",
    "value": "00442123142323"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-05-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```


Create topup balance

POST /topupBalance

Description

This operation creates a topup balance entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a TopupBalance, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
amount	

Non Mandatory Attributes	Rule
confirmationDate	
description	
reason	
requestedDate	
status	
usageType	
@baseType	
@schemaLocation	
@type	
isAutoTopup	
numberOfPeriods	
payment	
paymentMethod	
recurringPeriod	
relatedTopupBalance	
voucher	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

Topup a balance with a monetary value specifying the Bucket by id and a voucher that has been purchased out of band. The amount is used to specify the amount to topup the balance

Request

```
POST /tmf-api/prepayBalanceManagement/v4/topupBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "reason": "customer topped up the balance with 50 Euro",
   "voucher": "2E1C8230F6EA1D5F",
   "channel": {
      "id": "99",
```

```
      "href": "/channel/99",
      "name": "WEB"
   },
   "amount": {
      "amount": 50,
      "units": "EUR"
   },
   "relatedParty": [
      {
         "id": "5",
         "href": "/partyManagement/v4/customer/22",
         "name": "jerry wilson",
         "role": "customer"
      }
   ],
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```


Response


```
201

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/topupBalance/1",
   "bucket": {
      "id": "1",
      "href": "/prepayBalanceManagement/v4/bucket/1"
   },
   "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22"
   },
   "status": "confirmed",
   "reason": "The customer topped up with 50 Euro",
   "validFor": {
      "endDateTime": "1985-05-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "partyAccount": {
      "id": "22",
      "href": "/partyManagement/v4/customer/22"
   },
   "requestedDate": "1985-04-11T23:20:50.52Z",
```

```
  "confirmationDate": "1985-04-12T23:20:50.52Z"
}
```

Topup a balance with a monetary value specifying the PartyAccount by reference, the paymentMethod by reference (in this case a credit card) and a usageType. The amount is used to specify the amount to topup the balance.

Request

```
POST /tmf-api/prepayBalanceManagement/v4/topupBalance
Content-Type: application/json

{
  "partyAccount": {
    "id": "22",
    "href": "/partyManagement/v4/customer/22"
  },
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "paymentMethod": {
    "id": "22",
    "href": "/paymentMethods/v1/paymentMethod/2",
    "type": "credit-card"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "usageType": "data",
  "amount": {
    "amount": 500,
    "units": "MB"
  }
}
```

Response

```
201

{
  "id": "1",
  "href": "/prepayBalanceManagement/v4/topupBalance/1",
  "bucket": {
    "id": "1",
    "href": "/prepayBalanceManagement/v4/bucket/1"
  },
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22"
  },
```

```
  "status": "confirmed",
  "reason": "The customer topped up with 50 Euro",
  "validFor": {
    "endDateTime": "1985-05-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "partyAccount": {
    "id": "22",
    "href": "/partyManagement/v4/customer/22"
  },
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z"
}
```


Topup a balance with a monetary value specifying the PartyAccount by reference, the paymentMethod by reference (in this case a credit card) and a usageType. The topup is an autotopup. The amount is used to specify the amount to topup the balance. Note the receiver bucket targeted by this transfer must be of the same usageType

Request

```
POST /tmf-api/prepayBalanceManagement/v4/topupBalance
Content-Type: application/json

{
  "partyAccount": {
    "id": "22",
    "href": "/partyManagement/v4/customer/22"
  },
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "isAutoTopup": true,
  "recurringPeriod": "monthly",
  "numberOfPeriods": 3,
  "paymentMethod": {
    "id": "22",
    "href": "/paymentMethods/v1/paymentMethod/2",
    "type": "credit-card"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "usageType": "data",
  "amount": {
    "amount": 500,
    "units": "MB"
```

```
    }
}
```

Response

201


```
{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/topupBalance/1",
   "bucket": {
      "id": "1",
      "href": "/prepayBalanceManagement/v4/bucket/1"
   },
   "relatedTopupBalance": {
      "id": "55",
      "href": "/prepayBalanceManagement/v4/topupBalance/55"
   },
   "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22"
   },
   "status": "confirmed",
   "reason": "The customer topped up with 50 Euro",
   "validFor": {
      "endDateTime": "1985-04-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "partyAccount": {
      "id": "22",
      "href": "/partyManagement/v4/customer/22"
   },
   "requestedDate": "1985-04-11T23:20:50.52Z",
   "confirmationDate": "1985-04-12T23:20:50.52Z"
}
```


Patch topup balance

`PATCH /topupBalance/{id}`

Description

This operation allows partial updates of a topup balance entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
status	
reason	
requestor	
relatedParty	

Non Patchable Attributes	Rule
confirmationDate	
description	
href	
id	
requestedDate	
usageType	
href	
id	
@baseType	
@schemaLocation	
@type	
isAutoTopup	
numberOfPeriods	
payment	
paymentMethod	
recurringPeriod	
relatedTopupBalance	
voucher	
amount	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	

Usage Samples

Cancel the TopupBalance.
Changing the status to cancelled (using merge-patch+json), specifying the reason and the requested date as well as the channel and the requestor

Request

```
PATCH /tmf-api/prepayBalanceManagement/v4/topupBalance/42
Content-Type: application/merge-patch+json

{
   "status": "cancelled",
```

```
  "reason": "Customer requests cancellation",
  "requestedDate": "2020-02-11T23:20:50.52Z",
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  }
}
```


Response


```
200

{
  "id": "1",
  "href": "/prepayBalanceManagement/v4/topupBalance/1",
  "status": "cancelled",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-05-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```


Delete topup balance

`DELETE /topupBalance/{id}`

Description

This operation deletes a topup balance entity.

Usage Samples

This operation deletes a TopupBalance resource using the unique id of the balance topup

Request
DELETE /tmf-api/prepayBalanceManagement/v4/topupBalance/11
Response
204

Operations on Adjust Balance

List adjust balances

`GET /adjustBalance?fields=...&{filtering}`

Description

This operation list adjust balance entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the adjust balance resources for the product prd1. The query parameters are :-
product.id=prd1

Request
GET /tmf-api/prepayBalanceManagement/v4/adjustBalance Accept: application/json
Response

200
 	
[
{
"id": "1",
"href": "prepayBalanceManagement/v4/topupBalance/1",
"reason": "added 20 MB of data",
"description": "added 20 MB of data to the balance",
"bucket": {
"id": "11",

```
        "href": "/prepayBalanceManagement/v4/bucket/11"
      },
      "product": {
        "id": "prd1",
        "href": "/productInventory/v4/product/prd1"
      },
      "channel": {
        "id": "99",
        "href": "/channel/99",
        "name": "WEB"
      },
      "adjustType": "oneTimeDeduct",
      "logicalResource": {
        "id": "22",
        "href": "/resourceInventoryManagement/v4/logicalResource/22",
        "@type": "MSISDN",
        "@baseType": "logicalResource",
        "lifecycleState": "active",
        "value": "00442123142323"
      },
      "relatedParty": [
        {
          "id": "5",
          "href": "/partyManagement/customer/22",
          "name": "jerry lewis",
          "role": "customer"
        }
      ],
      "requestor": {
        "id": "55",
        "href": "/partyManagement/v4/customer/agent1",
        "name": "jim jordan",
        "role": "agent"
      },
      "requestedDate": "1985-04-11T23:20:50.52Z",
      "confirmationDate": "1985-04-12T23:20:50.52Z",
      "validFor": {
        "endDateTime": "1985-05-12T23:20:50.52Z",
        "startDateTime": "1985-04-12T23:20:50.52Z"
      }
    }
]
```


Fetch the adjust balance resources for the product prd1. The query parameters are :-

Request
GET /tmf-api/prepayBalanceManagement/v4/adjustBalance Accept: application/json

Response

200


```
[
  {
    "id": "1",
    "href": "prepayBalanceManagement/v4/topupBalance/1",
    "reason": "added 20 MB of data",
    "description": "added 20 MB of data to the balance",
    "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "adjustType": "oneTimeDeduct",
    "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "00442123142323"
    },
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
    },
    "requestedDate": "1985-04-11T23:20:50.52Z",
    "confirmationDate": "1985-04-12T23:20:50.52Z",
    "validFor": {
      "endDateTime": "1985-05-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
    }
  }
]
```

Retrieve adjust balance

```
GET /adjustBalance/{id}?fields=...&{filtering}
```

Description

This operation retrieves an adjust balance entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Retrieve an adjust balance resource based on its id

Request

```
GET /tmf-api/prepayBalanceManagement/v4/adjustBalance/43
Accept: application/json
```

Response

```
200

{
  "id": "1",
  "href": "prepayBalanceManagement/v4/topupBalance/1",
  "reason": "added 20 MB of data",
  "description": "added 20 MB of data to the balance",
  "@type": "AdjustBalance",
  "@baseType": "Action",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "adjustType": "oneTimeDeduct",
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
    "@type": "MSISDN",
    "@baseType": "logicalResource",
    "lifecycleState": "active",
    "value": "00442123142323"
```

```
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-05-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```


Create adjust balance

POST /adjustBalance

Description

This operation creates an adjust balance entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating an AdjustBalance, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
amount	

Non Mandatory Attributes	Rule
confirmationDate	
description	
reason	
requestedDate	
status	
usageType	
@baseType	
@schemaLocation	
@type	
adjustType	
bucket	
channel	
impactedBucket	

Non Mandatory Attributes	Rule
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

Adjust a balance with a monetary value specifying the Bucket by id. The amount is used to specify the amount to adjust the balance by

Request

```
POST /tmf-api/prepayBalanceManagement/v4/adjustBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "amount": {
      "amount": 50,
      "units": "EUR"
   }
}
```

Response

```
201

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/balanceAdjust/1",
   "status": "confirmed",
   "confirmationDate": "1985-04-12T23:20:50.52Z",
   "requestedDate": "1985-04-12T23:20:50.52Z"
}
```

Adjust a balance with a monetary value specifying the Party Account id and usageType. The amount is used to specify the amount to adjust the balance by.

Request

```
POST /tmf-api/prepayBalanceManagement/v4/adjustBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "partyAccount": {
      "id": "22",
      "href": "/partyManagement/customer/22"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "usageType": "monetary",
   "amount": {
      "amount": 50,
      "units": "EUR"
   }
}
```

Response

```
201

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/balanceAdjust/1",
   "status": "confirmed",
   "confirmationDate": "1985-04-12T23:20:50.52Z",
   "requestedDate": "1985-04-12T23:20:50.52Z"
}
```

Adjust a balance with a monetary value specifying the Party Account id and usageType. The amount is used to specify the amount to adjust the balance by. The amount is deducted by the service provider as a fee. This information is captured in the adjustType and reason attributes

Request

```
POST /tmf-api/prepayBalanceManagement/v4/adjustBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "partyAccount": {
      "id": "22",
```

```
      "href": "/partyManagement/customer/22"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "adjustType": "subscriber_fee",
   "reason": "deduction as a subscriber fee for mp3 download",
   "usageType": "monetary",
   "amount": {
      "amount": 50,
      "units": "EUR"
   }
}
```


Response


```
201

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/balanceAdjust/1",
   "status": "confirmed",
   "confirmationDate": "1985-04-12T23:20:50.52Z",
   "requestedDate": "1985-04-12T23:20:50.52Z"
}
```


Adjust a balance with a monetary value specifying the Party Account id and usageType. The amount is used to specify the amount to adjust the balance by. The amount is credited by the service provider to the customer for a charging error. This information is captured in the adjustType and reason attributes

Request


```
POST /tmf-api/prepayBalanceManagement/v4/adjustBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "partyAccount": {
      "id": "22",
      "href": "/partyManagement/customer/22"
   },
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "adjustType": "subscriber_refund",
```

```
  "reason": "increment balance as a subscriber has been overcharged",
  "usageType": "monetary",
  "amount": {
    "amount": 50,
    "units": "EUR"
  }
}
```

Response

```
201

{
  "id": "1",
  "href": "/prepayBalanceManagement/v4/balanceAdjust/1",
  "status": "confirmed",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "requestedDate": "1985-04-12T23:20:50.52Z"
}
```

Patch adjust balance

`PATCH /adjustBalance/{id}`

Description

This operation allows partial updates of an adjust balance entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
status	

Non Patchable Attributes	Rule
confirmationDate	
description	
href	
id	
reason	
requestedDate	
usageType	
href	
id	
@baseType	
@schemaLocation	

Non Patchable Attributes	Rule
@type	
adjustType	
amount	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

Cancel the AdjustBalance.
Changing the status to cancelled (using merge-patch+json).

Request

```
PATCH /tmf-api/prepayBalanceManagement/v4/adjustBalance/42
Content-Type: application/merge-patch+json

{
   "status": "cancelled",
   "reason": "Customer requests cancellation",
   "requestedDate": "2020-02-11T23:20:50.52Z",
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```

Response

```
200

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/balanceAdjust/1",
   "status": "cancelled"
}
```

Delete adjust balance

DELETE /adjustBalance/{id}

Description

This operation deletes an adjust balance entity.

Usage Samples

This operation deletes an adjust balance resource using the unique id of the balance adjust

Request
DELETE /tmf-api/prepayBalanceManagement/v4/adjustBalance/11
Response
204

Operations on Transfer Balance

List transfer balances

GET /transferBalance?fields=...&{filtering}

Description

This operation list transfer balance entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the transfer balance resources for the product prd1. The query parameters are :-
product.id=prd1

Request
GET /tmf-api/prepayBalanceManagement/v4/transferBalance?product.id=prd1 Accept: application/json
Response

200


```
[
  {
    "id": "1",
    "href": "prepayBalanceManagement/v4/transferBalance/1",
    "reason": "transferring 20 Euros as a gift to a relative",
    "description": "balance transfer",
    "bucket": {
      "@type": "Bucket",
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11",
      "remainingValue": {
        "@type": "Quantity",
        "amount": 20,
        "unit": "EUR"
      },
      "usageType": "monetary"
    },
    "receiverBucket": {
      "id": "15",
      "href": "/prepayBalanceManagement/v4/bucket/15"
    },
    "receiverBucketType": "data",
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "receiverProduct": {
      "id": "prd2",
      "href": "/productInventory/v4/product/prd2"
    },
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "00442123142323"
    },
    "receiverLogicalResource": {
      "id": "29",
      "href": "/resourceInventoryManagement/v4/logicalResource/29",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "0044212315555"
    },
    "relatedParty": [
      {
        "id": "5",
```

```
            "href": "/partyManagement/customer/22",
            "name": "jerry lewis",
            "role": "customer"
          }
      ],
      "receiver": {
        "id": "99",
        "href": "/partyManagement/v4/customer/22",
        "name": "jack hat",
        "role": "customer"
      },
      "costOwner": "originator",
      "transferCost": {
        "unit": "EUR",
        "value": "0.5"
      },
      "requestor": {
        "id": "55",
        "href": "/partyManagement/v4/customer/agent1",
        "name": "jim jordan",
        "role": "agent"
      },
      "requestedDate": "1985-04-11T23:20:50.52Z",
      "confirmationDate": "1985-04-12T23:20:50.52Z",
      "validFor": {
        "endDateTime": "1985-05-12T23:20:50.52Z",
        "startDateTime": "1985-04-12T23:20:50.52Z"
      }
    }
]
```


Fetch the adjust balance resources for the product prd1. The query parameters are :- product.id=prd1 & logicalResource.value=004433232323

Request

```
GET /tmf-api/prepayBalanceManagement/v4/transferBalance?product.id=prd1&logicalResource.value=004433232323
Accept: application/json
```

Response


```
200

[
  {
    "id": "1",
    "href": "prepayBalanceManagement/v4/transferBalance/1",
    "reason": "transferring 20 Euros as a gift to a relative",
    "description": "balance transfer",
    "bucket": {
      "@type": "Bucket",
      "id": "11",
```

```
      "href": "/prepayBalanceManagement/v4/bucket/11",
      "remainingValue": {
        "@type": "Quantity",
        "amount": 20,
        "unit": "EUR"
      },
      "usageType": "monetary"
    },
    "receiverBucket": {
      "id": "15",
      "href": "/prepayBalanceManagement/v4/bucket/15"
    },
    "receiverBucketType": "data",
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "receiverProduct": {
      "id": "prd2",
      "href": "/productInventory/v4/product/prd2"
    },
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "logicalResource": {
      "id": "22",
      "href": "/resourceInventoryManagement/v4/logicalResource/22",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "00442123142323"
    },
    "receiverLogicalResource": {
      "id": "29",
      "href": "/resourceInventoryManagement/v4/logicalResource/29",
      "@type": "MSISDN",
      "@baseType": "logicalResource",
      "lifecycleState": "active",
      "value": "0044212315555"
    },
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "receiver": {
      "id": "99",
      "href": "/partyManagement/v4/customer/22",
      "name": "jack hat",
      "role": "customer"
    },
```

```
    "costOwner": "originator",
    "transferCost": {
      "unit": "EUR",
      "value": "0.5"
    },
    "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
    },
    "requestedDate": "1985-04-11T23:20:50.52Z",
    "confirmationDate": "1985-04-12T23:20:50.52Z",
    "validFor": {
      "endDateTime": "1985-05-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
    }
  }
]
```


Retrieve transfer balance

GET /transferBalance/{id}?fields=...&{filtering}

Description

This operation retrieves a transfer balance entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Retrieve a TransferBalance resource based on its id

Request

```
GET /tmf-api/prepayBalanceManagement/v4/transferBalance/43
Accept: application/json
```

Response

200


```
{
  "id": "1",
  "href": "prepayBalanceManagement/v4/transferBalance/1",
  "reason": "transferring 20 Euros as a gift to a relative",
  "description": "balance transfer",
  "bucket": {
    "@type": "Bucket",
```

```
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11",
    "remainingValue": {
      "@type": "Quantity",
      "amount": 20,
      "unit": "EUR"
    },
    "usageType": "monetary"
  },
  "receiverBucket": {
    "id": "15",
    "href": "/prepayBalanceManagement/v4/bucket/15"
  },
  "receiverBucketType": "data",
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "receiverProduct": {
    "id": "prd2",
    "href": "/productInventory/v4/product/prd2"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
    "@type": "MSISDN",
    "@baseType": "logicalResource",
    "lifecycleState": "active",
    "value": "00442123142323"
  },
  "receiverLogicalResource": {
    "id": "29",
    "href": "/resourceInventoryManagement/v4/logicalResource/29",
    "@type": "MSISDN",
    "@baseType": "logicalResource",
    "lifecycleState": "active",
    "value": "0044212315555"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "receiver": {
    "id": "99",
    "href": "/partyManagement/v4/customer/22",
    "name": "jack hat",
    "role": "customer"
```

```
  },
  "costOwner": "originator",
  "transferCost": {
    "unit": "EUR",
    "value": "0.5"
  },
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  },
  "requestedDate": "1985-04-11T23:20:50.52Z",
  "confirmationDate": "1985-04-12T23:20:50.52Z",
  "validFor": {
    "endDateTime": "1985-05-12T23:20:50.52Z",
    "startDateTime": "1985-04-12T23:20:50.52Z"
  }
}
```


Create transfer balance

POST /transferBalance

Description

This operation creates a transfer balance entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a TransferBalance, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
amount	

Non Mandatory Attributes	Rule
confirmationDate	
description	
reason	
requestedDate	
status	
usageType	
@baseType	
@schemaLocation	
@type	
costOwner	
receiver	
receiverBucket	
receiverBucketUsageType	
receiverLogicalResource	
receiverPartyAccount	
receiverProduct	

Non Mandatory Attributes	Rule
requestor	
transferCost	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

Transfer a balance with a monetary value of 50 Euros specifying the receiver bucket by id and the source bucket by id . The amount is used to specify the amount to topup the balance. The transfer cost is 1 Euro and the transfer cost is paid against the Party Account owned by the owner of the source bucket

Request

```
POST /tmf-api/prepayBalanceManagement/v4/transferBalance
Content-Type: application/json

{
  "transferCost": {
    "amount": 1,
    "units": "EUR"
  },
  "reason": "transferring 50 Euros as a gift to a relative",
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "usageType": "monetary",
  "bucket": {
    "id": "22",
    "href": "/prepayBalanceManagement/v4/bucket/22"
  },
  "receiverBucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "costOwner": "originator",
  "receiver": {
    "id": "10",
    "href": "/partyManagement/customer/32",
    "name": "tom lewis",
    "role": "customer"
  },
```

```
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  }
}
```

Response

```
201

{
  "id": "1",
  "href": "/prepayBalanceManagement/v4/transferBalance/1",
  "status": "pending"
}
```

Transfer a balance with a monetary value specifying the PartyAccount by reference, the paymentMethod by reference (in this case a credit card) and a usageType. The amount is used to specify the amount to topup the balance. Note the receiver bucket targeted by this transfer must be of the same usageType

Request

```
POST /tmf-api/prepayBalanceManagement/v4/transferBalance
Content-Type: application/json

{
  "amount": {
    "amount": 50,
    "units": "EUR"
  },
  "transferCost": {
    "amount": 1,
    "units": "EUR"
  },
  "reason": "transferring 20 Euros as a gift to a relative",
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "partyAccount": {
    "id": "22",
```

```
    "href": "/partyManagement/customer/22"
  },
  "paymentMethod": {
    "id": "22",
    "href": "/paymentMethods/v1/paymentMethod/2",
    "type": "credit-card"
  },
  "usageType": "monetary",
  "receiverBucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/22"
  },
  "costOwner": "originator",
  "receiverProduct": {
    "id": "prd2",
    "href": "/productInventory/v4/product/prd2"
  },
  "logicalResource": {
    "@type": "MSISDN",
    "value": "07645233482"
  },
  "receiver": {
    "id": "10",
    "href": "/partyManagement/customer/32",
    "name": "tom lewis",
    "role": "customer"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
    "name": "jim jordan",
    "role": "agent"
  }
}
```


Response

201


```
{
  "id": "1",
  "href": "/prepayBalanceManagement/v4/transferBalance/1",
  "status": "pending"
}
```

Patch transfer balance

PATCH /transferBalance/{id}

Description

This operation allows partial updates of a transfer balance entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
status	

Non Patchable Attributes	Rule
confirmationDate	
description	
href	
id	
reason	
requestedDate	
usageType	
href	
id	
@baseType	
@schemaLocation	
@type	
costOwner	
receiver	
receiverBucket	
receiverBucketUsageType	
receiverLogicalResource	
receiverPartyAccount	
receiverProduct	
requestor	
transferCost	
amount	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

cancel a topup balance with the id 44.

Request

```
PATCH /tmf-api/prepayBalanceManagement/v4/transferBalance/42
Content-Type: application/json

{
   "status": "cancelled",
   "reason": "Customer requests cancellation",
   "requestedDate": "2020-02-11T23:20:50.52Z",
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```

Response

```
200

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/transferBalance/44",
   "status": "cancelled"
}
```

Delete transfer balance

`DELETE /transferBalance/{id}`

Description

This operation deletes a transfer balance entity.

Usage Samples

This operation deletes a transfer balance resource using the unique id of the transfer balance resource

Request
DELETE /tmf-api/prepayBalanceManagement/v4/transferBalance/11
Response
204

Operations on Reserve Balance

List reserve balances

`GET /reserveBalance?fields=...&{filtering}`

Description

This operation list reserve balance entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the reserve balances by usageType and Party Account. The query parameters are :-
partyAccount.id=11,usageType=monetary

Request
GET /tmf-api/prepayBalanceManagement/v4/reserveBalance Accept: application/json
Response

200
 	
[
{
"id": "1",
"href": "prepayBalanceManagement/v4/reserveBalance/1",
"reason": "reserved 20 MB of data",
"description": "reserved 20 MB of data to the balance",
"reservedValue": {
"amount": 20,
"units": "MB"
},
"bucket": {
"id": "11",

```
        "href": "/prepayBalanceManagement/v4/bucket/11"
      },
      "product": {
        "id": "prd1",
        "href": "/productInventory/v4/product/prd1"
      },
      "channel": {
        "id": "99",
        "href": "/channel/99",
        "name": "WEB"
      },
      "logicalResource": {
        "id": "22",
        "href": "/resourceInventoryManagement/v4/logicalResource/22",
        "@type": "MSISDN",
        "@baseType": "logicalResource",
        "value": "00442123142323"
      },
      "relatedParty": [
        {
          "id": "5",
          "href": "/partyManagement/customer/22",
          "name": "jerry lewis",
          "role": "customer"
        }
      ],
      "requestor": {
        "id": "55",
        "href": "/partyManagement/v4/customer/agent1",
        "name": "jim jordan",
        "role": "agent"
      },
      "requestedDate": "1985-04-11T23:20:50.52Z",
      "confirmationDate": "1985-04-12T23:20:50.52Z",
      "validFor": {
        "endDateTime": "1985-05-12T23:20:50.52Z",
        "startDateTime": "1985-04-12T23:20:50.52Z"
      }
    }
]
```


Retrieve reserve balance

GET /reserveBalance/{id}?fields=...&{filtering}

Description

This operation retrieves a reserve balance entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Retrieve a ReserveBalance resource based on its id

Request

```
GET /tmf-api/prepayBalanceManagement/v4/reserveBalance/43
Accept: application/json
```

Response

```
200

{
  "id": "1",
  "href": "prepayBalanceManagement/v4/reserveBalance/1",
  "reason": "reserved 20 MB of data",
  "description": "reserved 20 MB of data to the balance",
  "bucket": {
    "id": "11",
    "href": "/prepayBalanceManagement/v4/bucket/11"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
  "reservedValue": {
    "amount": 20,
    "units": "MB"
  },
  "channel": {
    "id": "99",
    "href": "/channel/99",
    "name": "WEB"
  },
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
    "@type": "MSISDN",
    "@baseType": "logicalResource",
    "value": "00442123142323"
  },
  "relatedParty": [
    {
      "id": "5",
      "href": "/partyManagement/customer/22",
      "name": "jerry lewis",
      "role": "customer"
    }
  ],
  "requestor": {
    "id": "55",
    "href": "/partyManagement/v4/customer/agent1",
```

```
      "name": "jim jordan",
      "role": "agent"
   },
   "requestedDate": "1985-04-11T23:20:50.52Z",
   "confirmationDate": "1985-04-12T23:20:50.52Z",
   "validFor": {
      "endDateTime": "1985-05-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
   }
}
```


Create reserve balance

POST /reserveBalance

Description

This operation creates a reserve balance entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a ReserveBalance, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
amount	

Non Mandatory Attributes	Rule
confirmationDate	
description	
reason	
requestedDate	
status	
usageType	
@baseType	
@schemaLocation	
@type	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	
relatedParty	
requestor	

Usage Samples

Reserve an amount on the bucket identified by the id 11. The reserved amount on the bucket is 50 Euros as indicated by the reservedValue.

Request

```
POST /tmf-api/prepayBalanceManagement/v4/reserveBalance
Content-Type: application/json

{
   "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
   },
   "reason": "customer reserves a balance of 50 Euro",
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "reservedValue": {
      "amount": 50,
      "units": "EUR"
   },
   "relatedParty": [
      {
         "id": "5",
         "href": "/partyManagement/customer/22",
         "name": "jerry wilson",
         "role": "customer"
      }
   ],
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```

Response

```
201

{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/reserveBalance/1",
   "status": "confirmed"
}
```

Patch reserve balance

PATCH /reserveBalance/{id}

Description

This operation allows partial updates of a reserve balance entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
status	
reason	
requestor	
relatedParty	
requestedDate	

Non Patchable Attributes	Rule
confirmationDate	
description	
href	
id	
usageType	
href	
id	
@baseType	
@schemaLocation	
@type	
amount	
bucket	
channel	
impactedBucket	
logicalResource	
partyAccount	
product	

Usage Samples

Unreserve an amount on the bucket identified by the id 44. The reserved amount on the bucket is 50 Euros as indicated by the amount.

Request
PATCH /tmf-api/prepayBalanceManagement/v4/reserveBalance/42 Content-Type: application/json

```
{
   "status": "cancelled",
   "reason": "Customer requests cancellation",
   "requestedDate": "2020-02-11T23:20:50.52Z",
   "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
   },
   "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
   }
}
```


Response

200


```
{
   "id": "1",
   "href": "/prepayBalanceManagement/v4/reserveBalance/44",
   "status": "confirmed"
}
```


Delete reserve balance

`DELETE /reserveBalance/{id}`

Description

This operation deletes a reserve balance entity.

Usage Samples

This operation deletes a ReserveBalance resource using the unique id of the reserve balance resource

Request

DELETE /tmf-api/prepayBalanceManagement/v4/reserveBalance/11

Response

204

Operations on Accumulated Balance

List accumulated balances

`GET /accumulatedBalance?fields=...&{filtering}`

Description

This operation list accumulated balance entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the Accumulated Balance resource for the product whose unique id is prd1. The query parameters are :- product.id=prd1

Request

```
GET /tmf-api/prepayBalanceManagement/v4/accumulatedBalance
Accept: application/json
```

Response

```
200

{
  "id": "55",
  "href": "/prepayBalanceManagement/v4/bucket?product.id=12345&bucketBalance[usageType==\"data\"]",
  "description": "The query used to fetch the accumulated balance",
  "@type": "AccumulatedBalance",
  "@baseType": "Entity",
  "bucket": [
    {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    {
      "id": "12",
      "href": "/prepayBalanceManagement/v4/bucket/12"
    }
  ],
  "partyAccount": {
    "id": "acc1",
    "href": "/accountManagement/v4/account/acc1"
  },
  "product": {
    "id": "prd1",
    "href": "/productInventory/v4/product/prd1"
  },
```

```
  "relatedParty": [
    {
      "id": "cust1",
      "href": "/partyManagement/customer/cust1",
      "name": "jerry watts",
      "role": "customer"
    }
  ],
  "totalBalance": {
    "amount": 200,
    "units": "MB"
  }
}
```


Retrieve accumulated balance

`GET /accumulatedBalance/{id}?fields=...&{filtering}`

Description

This operation retrieves an accumulated balance entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving an AccumulatedBalance resource.

Request

```
GET /tmf-api/prepayBalanceManagement/v4/accumulatedBalance/6956
Accept: application/json
```

Response


```
200

{
  "bucket": [
    {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    }
  ],
  "description": "an accumulation of balances",
  "href": "/prepayBalanceManagmenet/v4/accumulatedBalance/6956",
  "id": "6956",
  "logicalResource": {
    "id": "22",
    "href": "/resourceInventoryManagement/v4/logicalResource/22",
```

```
      "@type": "MSISDN",
      "value": "07645233482"
    },
    "name": "accumulatedBalance",
    "partyAccount": {
      "id": "acc1",
      "href": "/accountManagement/v4/account/acc1"
    },
    "product": [
      {
        "id": "prd1",
        "href": "/productInventory/v4/product/prd1"
      }
    ],
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "totalBalance": {
      "amount": 900,
      "units": "MB"
    }
}
```


Operations on Balance Action

List balance actions

`GET /balanceAction?fields=...&{filtering}`

Description

This operation list balance action entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Fetch the Balance Action resource for all topup balances. The query parameters are :- @type=TopupBalance

Request

```
GET /tmf-api/prepayBalanceManagement/v4/balanceAction?@type=TopupBalance
Accept: application/json
```

Response

200


```
[
  {
    "id": "55",
    "href": "/prepayBalanceManagement/v4/balanceAction?@type=TopupBalance",
    "description": "The query used to fetch the balance history",
    "@type": "TopupBalance",
    "@baseType": "Action",
    "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "logicalResource": {
      "@type": "MSISDN",
      "value": "07645233482"
    },
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
    },
    "adjustType": "oneTimeIncrement",
    "validFor": {
      "endDateTime": "1985-04-12T23:20:50.52Z",
      "startDateTime": "1985-04-12T23:20:50.52Z"
    }
  }
]
```


Fetch the Balance Action resource for all transfer balances with a specific receiver bucket. The query parameters are :-
@type=TransferBalance&receiverBucket.id=22

Request

GET /tmf-api/prepayBalanceManagement/v4/balanceAction?@type=TransferBalance&receiverBucket.id='22'
Accept: application/json

Response

200


```
[
  {
    "id": "55",
    "href": "/prepayBalanceManagement/v4/balanceAction?@type=TransferBalance&receiverBucket=22",
    "description": "The query used to fetch the balance history",
    "@type": "TopupBalance",
    "@baseType": "Action",
    "bucket": {
      "id": "11",
      "href": "/prepayBalanceManagement/v4/bucket/11"
    },
    "receiverBucket": {
      "id": "22",
      "href": "/prepayBalanceManagement/v4/bucket/22"
    },
    "product": {
      "id": "prd1",
      "href": "/productInventory/v4/product/prd1"
    },
    "channel": {
      "id": "99",
      "href": "/channel/99",
      "name": "WEB"
    },
    "logicalResource": {
      "@type": "MSISDN",
      "value": "07645233499"
    },
    "relatedParty": [
      {
        "id": "5",
        "href": "/partyManagement/customer/22",
        "name": "jerry lewis",
        "role": "customer"
      }
    ],
    "requestor": {
      "id": "55",
      "href": "/partyManagement/v4/customer/agent1",
      "name": "jim jordan",
      "role": "agent"
    },
    "adjustType": "oneTimeIncrement",
    "validFor": {
```

```
        "endDateTime": "1985-04-12T23:20:50.52Z",
        "startDateTime": "1985-04-12T23:20:50.52Z"
      }
   }
]
```


Retrieve balance action

GET /balanceAction/{id}?fields=...&{filtering}

Description

This operation retrieves a balance action entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving a BalanceAction resource.

Request

```
GET /tmf-api/prepayBalanceManagement/v4/balanceAction/a Uri ...
Accept: application/json
```

Response

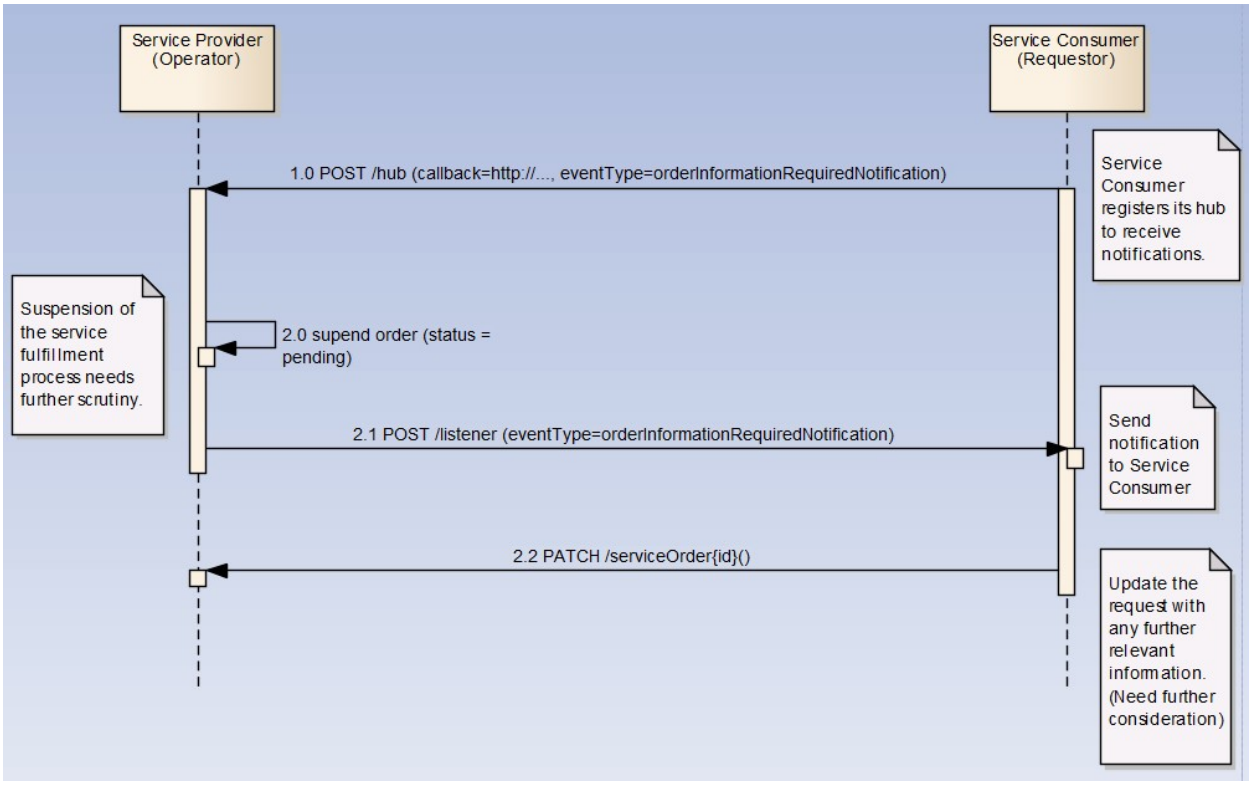

```
200

{
   "href": "https:/host:port/tmf-api/balanceAction/v1/balanceAction/a Uri ...",
   "id": "a Uri ...",
   "amount": {},
   "bucket": {},
   "channel": {},
   "confirmationDate": "2020-07-16T00:00",
   "description": "This  balance action ...",
   "impactedBucket": [
      {}
   ],
   "logicalResource": {},
   "partyAccount": {},
   "product": {},
   "reason": "a string ...",
   "relatedParty": [
      {}
   ],
   "requestedDate": "2020-07-16T00:00",
   "requestor": {},
   "status": "a string ...",
   "usageType": "a string ..."
}
```

Operations on Bucket Status Example Type

API NOTIFICATIONS

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.



Register listener

`POST /hub`

Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 409 if request is not successful.

Usage Samples

Here's an example of a request for registering a listener.

Request
POST /api/hub Accept: application/json {"callback": "http://in.listener.com"}
Response
201 Content-Type: application/json Location: /api/hub/42 {"id":"42","callback":"http://in.listener.com","query":null}

Unregister listener

DELETE /hub/{id}

Description

Clears the communication endpoint address that was set by creating the Hub.

Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 404 if the resource is not found.

Usage Samples

Here's an example of a request for un-registering a listener.

Request
DELETE /api/hub/42 Accept: application/json
Response
204

Publish Event to listener

POST /client/listener

Description

Clears the communication endpoint address that was set by creating the Hub.

Provides to a registered listener the description of the event that was raised. The /client/listener url is the callback url passed when registering the listener.

Behavior

Returns HTTP/1.1 status code 201 if the service is able to set the configuration.

Usage Samples

Here's an example of a notification received by the listener. In this example “EVENT TYPE” should be replaced by one of the notification types supported by this API (see Notification resources Models section) and EVENT BODY refers to the data structure of the given notification type.

Request
POST /client/listener Accept: application/json

```
{
   "event": {
            EVENT BODY
         },
   "eventType": "EVENT_TYPE"
}
```

Response

201

For detailed examples on the general TM Forum notification mechanism, see the TMF REST Design Guidelines.

Appendix

Usage Type	Valid units in Quantity	Description
monetary	EUR, GBP etc.	Any valid currency
data	GB	GB indicates gigabyte
promotional-data	MB	MB indicates megabyte
voice	minutes	minutes indicates the amount is the number of minutes available to be consumed
promotional-voice	seconds	seconds indicates the amount is the number of seconds available to be consumed
text	number	Number indicates the amount is the number of texts available to be consumed

Acknowledgements

Version History

Version Number	Date Modified	Modified by:	Description of changes
4.0.0	29-Jul-2020	Alan Pope	Final edits prior to publication

Release History

Release Status	Date	Release led by:	Description
Pre-production	29-Jul-2020	Kevin King - Vodafone	Updated based on schema-library and Design Guideline v4 patterns