

TM Forum Specification

Usage Consumption Management API User Guide

TMF677
Release 20.5
August 2021

Latest Update: TM Forum Release 20.5	Member Evaluation
Version 4.0.0	IPR Mode: RAND

NOTICE

Copyright © TM Forum 2019. All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published, and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this section are included on all such copies and derivative works. However, this document itself may not be modified in any way, including by removing the copyright notice or references to TM FORUM, except as needed for the purpose of developing any document or deliverable produced by a TM FORUM Collaboration Project Team (in which case the rules applicable to copyrights, as set forth in the [TM FORUM IPR Policy](#), must be followed) or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by TM FORUM or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and TM FORUM DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY OWNERSHIP RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100
Parsippany, NJ 07054, USA
Tel No. +1 973 944 5100
Fax No. +1 973 998 7196
TM Forum Web Page: www.tmforum.org

Table of Contents

NOTICE	2
Table of Contents	3
List of Tables	4
Introduction	5
Sample Use Cases	6
Support of polymorphism and extension patterns	8
Resource Model	9
Task Resource Model	9
Query Usage Consumption resource	9
Notification Resource Models	17
Query Usage Consumption Create Event	19
Query Usage Consumption Delete Event	21
API Operations	23
Operations on Query Usage Consumption	24
List query usage consumptions	24
Retrieve query usage consumption	25
Create query usage consumption	27
Delete query usage consumption	29
API Notifications	31
Register listener	31
Unregister listener	32
Publish Event to listener	32
Acknowledgements	34
Release History	34
Contributors to Document	34

List of Tables

N/A

Introduction

The following document is the user guide of the REST API for Usage Consumption. It includes the model definition as well as all available operations.

It describes a single managed resource called QueryUsageConsumption.

QueryUsageConsumption is a Task Resource.

QueryUsageConsumption covers the consumption levels of products, services or resources related to 0 or more parties. And so, we can search for remaining, global or used bucket values, or for exceptional consumption normally mentioned as out of bucket consumption.

There are 3 main changes in this API version:

- Usage Consumption is now described as a TASK resource,
- Usage Consumption Buckets may be linked between each other (aggregated buckets, bundled buckets, etc),
- Usage Consumption can be search having in mind services or resources.

Usage Consumption API provides the following operations:

- List of existing usage consumption queries depending on filter criteria,
- Retrieval of an existing usage consumption query by identifier,
- Creation of a new query of usage consumption,
- Deletion of an existing query of usage consumption,
- Notification of events:
 - QueryUsageConsumption creation,
 - QueryUsageConsumption removal.

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.

User case	Consumer customer opens his/her mobile app to check the remaining data's amount.
Actors	Customer.
Pre-conditions	None.
Expected outcome	Remaining amount of data displayed to the customer.
Operation	POST /queryUsageConsumption
Description	<ol style="list-style-type: none"> 1. Customer opens mobile app, 2. Mobile app gets current usage snapshot for customer' products, 3. Mobile app displays remaining data value, e.g., 5.3 GB.

Use Case 1 Current data usage for products

User case	Consumer customer opens web portal to check the amount of minutes spent in international calls.
Actors	Customer.
Pre-conditions	None.
Expected outcome	Used amount of international minutes displayed to the customer.
Operation	POST /queryUsageConsumption
Description	<ol style="list-style-type: none"> 1. Customer opens web portal, 2. Web portal gets current usage snapshot for customer's products, 3. Web portal presents main tile associated to usage types, 4. Customer clicks on voice tile, 5. Web portal displays remaining and used usage for international and national voice, e.g., 1000 minutes and 5000 minutes.
Note	International and national voice are shown as one since they belong to the same customer product.

Use Case 2 Current voice usage for products

User case	Agent validates unlimited counters associated to a service.
Actors	Agent.
Pre-conditions	None.
Expected outcome	Used amount of international minutes displayed to the customer.
Operation	POST /queryUsageConsumption
Description	<ol style="list-style-type: none">1. Agent opens back-office web portal,2. Agent digits service number,3. Web portal gets current usage snapshot for this service,4. Web portal displays current counts and balances and there are 2 unlimited counts associated to national calls and messages.

Use Case 3 Current usage for service

Support of polymorphism and extension patterns

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 `BillingAccount` and `SettlementAccount` inheriting properties from the abstract `Account` 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 `Account` instances some may be instances of `BillingAccount` where other could be instances of `SettlementAccount`. 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 an `AccountRef` 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 `BillingAccountRef` or `SettlementAccountRef`, 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.

Field descriptionsQueryUsageConsumption fields

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.
partyAccount	A list of party account references (PartyAccountRef [*]). A reference to the account that owns the bucket.
queryUsageConsumptionDate	A date time (DateTime). Date when the query was submitted.
relatedParty	A list of related parties (RelatedParty [*]). Reference and role of the related parties for which the usage consumption is requested.
searchCriteria	An usage consumption (UsageConsumption). Search structure to retrieve current value of usage.
usageConsumption	A list of usage consumptions (UsageConsumption [*]). Report with current counters and balances.

BucketRefOrValue sub-resource

A bucket represents and tracks a quantity of usage. 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.

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.
bucketCounter	A list of consumption summaries (ConsumptionSummary [*]). The consumption counters (called ConsumptionSummary in the SID model) detail for example the different kind of consumption done on the bucket.
bucketRelationship	A list of bucket relationships (BucketRelationship [*]). Linked bucket to the one instantiate, such as [isAggregated] if the bucket is a part of other or [aggregator] is the bucket holds others.
description	A string. Text describing the contents of the balance managed by the bucket.
isShared	A boolean. True if the bucket is shared between several devices or users.
logicalResource	A list of usage consumption logical resource references (UsageConsumptionLogicalResourceRef [*]). reference to the LogicalResource eg 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 usage consumption product references (UsageConsumptionProductRef [*]).

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.
reserveBalance	A list of reserve balance references (ReserveBalanceRef [*]). The ReserveBalance resource allows adjustments to be made to the original BalanceTopup eg increment the amount, alter the recharge periodicity.
reservedValue	A quantity (Quantity). Indicate the amount reserved on the bucket; should be the sum of all the valid (i.e. confirmed and not consumed or expired) amounts in the reserveBalance request array.
service	A list of usage consumption service references (UsageConsumptionServiceRef [*]). Service reference, for when Service is used by other entities.
status	A string. status for the bucket. active, expired, suspended.
usageType	A string. defines the type of the underlying Balance eg data,voice, any currency eg EUR, USD etc.
validFor	A time period. The period for which the balance in the bucket is valid.

BucketRelationship sub-resource

Linked bucket to the one instantiate, such as [isAggregated] if the bucket is a part of other or [aggregator] is the bucket holds others .

@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.
bucketRefOrValue	A bucket ref or value (BucketRefOrValue). 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.
relationshipType	A string. Type of the bucket relationship, such as [isAggregated] if the bucket is a part of other or [aggregator] is the bucket holds others.

ConsumptionSummary sub-resource

The consumption counters detail for example the different kind of consumption done on the bucket.

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.
consumptionPeriod	A time period. Consumption counter period between a start date time and an end date time. For prepaid bucket, the period of counters is between the start date of the bucket and the effective date of the usage consumption report generation. For postpaid bucket, the period of counters is between the last bill date and the effective date of the usage consumption report generation.
counterType	A string. Type of the consumption counter. We can give for example a counter of the used value for a bucket (counterType=used for example) or the value of the consumption done out of the bucket(s) (counterType=outOfBucket for example).
level	A string. Counter level. The counter can be given globally for the bucket or detailed by user or by network product for example in case of shared bucket.
user	A related party (RelatedParty). Reference of the user for which the consumption counter is detailed. If the level of the counter is global (i.e. concerning all the users), the list of them is not specified. It can be found through the users listed in the network products of the bucket sub-resource.
value	A quantity (Quantity). Numeric value of the bucket counter in a given unit.
valueName	A string. Value of the counter in a formatted string used for display needs for example.

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.

UsageConsumption sub-resource

A usage consumption enables to know at a given point the balances and the consumption counters related to various buckets (SMS, Voice, Data for example). It could be calculated for a device identified by a public key (MSISDN number for a mobile device for example or PSTN or VOIP number for a fix device), for a subscribed offer or option or for a user.

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.
bucketRefOrValue	A list of bucket ref or values (BucketRefOrValue [*]). Bucket(s) included in the offer or option subscribed.
creationDate	A date time (DateTime). Date and time of the request creation.
description	A string. Free short text describing the usage consumption content.
lastUpdate	A date time (DateTime). Date when the status was last changed.
logicalResource	A list of usage consumption logical resource references (UsageConsumptionLogicalResourceRef [*]). reference to the LogicalResource eg MSISDN.
name	A string. Usage consumption name.
partyAccount	A list of party account references (PartyAccountRef [*]). A reference to the account that owns the bucket.
product	A list of usage consumption product references (UsageConsumptionProductRef [*]).
relatedParty	A list of related parties (RelatedParty [*]). Reference and role of the related parties for which the usage consumption is requested.
service	A list of usage consumption service references (UsageConsumptionServiceRef [*]). Service reference, for when Service is used by other entities.
state	A task state type (TaskStateType). State of the report report defined in the state engine.
validPeriod	A time period. Validity period.

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.

ReserveBalanceRef relationship

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

@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.

UsageConsumptionLogicalResourceRef relationship

Reference to the LogicalResource eg 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.
consumptionSummary	A list of consumption summaries (ConsumptionSummary [*]). The consumption counters (called ConsumptionSummary in the SID model) detail for example the different kind of consumption done on the bucket.

UsageConsumptionProductRef relationship

Reference to the product, e.g., 5GB Shared Data Package.

@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.
consumptionSummary	A list of consumption summaries (ConsumptionSummary [*]). The consumption counters (called ConsumptionSummary in the SID model) detail for example the different kind of consumption done on the bucket.

UsageConsumptionServiceRef relationship

Service reference, for when Service is used by other entities.

@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.
consumptionSummary	A list of consumption summaries (ConsumptionSummary [*]). The consumption counters (called ConsumptionSummary in the SID model) detail for example the different kind of consumption done on the bucket.

Json representation sample

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

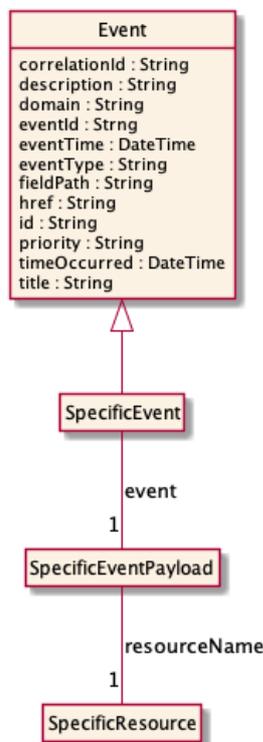
```
{
  "id": "Q1USER11333",
  "searchCriteria": {
    "logicalResource": [{
      "id": "963161043",
      "name": "Lara's phone number"
    }]
  },
  "relatedParty": [{
    "id": "USER11333",
    "role": "agent",
    "@referredType": "Individual"
  }],
  "usageConsumption": [{
    "id": "UC1",
    "creationDate": "2021-06-18T16:04:09.084Z",
    "lastUpdate": "2021-06-18T16:04:09.084Z",
    "logicalResource": [{
      "id": "963161043",
      "name": "Lara's phone number",
      "consumptionSummary": [{
        "id": "CT1",
        "counterType": "voice",
        "level": "global",
        "valueName": "Unlimited",
        "consumptionPeriod": {
          "endDateTime": "2021-06-01T16:04:09.084Z",
          "startDateTime": "2021-06-30T16:04:09.084Z"
        }
      }],
      "consumptionPeriod": {
        "endDateTime": "2021-06-01T16:04:09.084Z",
        "startDateTime": "2021-06-30T16:04:09.084Z"
      }
    }],
    "value": {
      "amount": 0,

```


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).



Query Usage Consumption Create Event

Notification QueryUsageConsumptionCreateEvent case for resource QueryUsageConsumption

Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2021-11-16T16:42:25-04:00",
  "eventType": "QueryUsageConsumptionCreateEvent",
  "event": {
    "queryUsageConsumption": {
      "id": "Q1USER11333",
      "searchCriteria": {
        "logicalResource": [{
          "id": "963161043",
          "name": "Lara's phone number"
        }]
      },
      "relatedParty": {
        "id": "USER11333",
        "role": "agent",
        "@referredType": "Individual"
      },
      "usageConsumption": [{
        "id": "UC1",
        "creationDate": "2021-06-18T16:04:09.084Z",
        "lastUpdate": "2021-06-18T16:04:09.084Z",
        "logicalResource": {
          "id": "963161043",
          "name": "Lara's phone number",
          "consumptionSummary": [{
            "id": "CT1",
            "counterType": "voice",
            "level": "global",
            "valueName": "Unlimited",
            "consumptionPeriod": {
              "endDateTime": "2021-06-01T16:04:09.084Z",
              "startDateTime": "2021-06-30T16:04:09.084Z"
            }
          }], {
            "id": "CT2",
            "counterType": "sms",
            "level": "global",
            "valueName": "Unlimited",
            "consumptionPeriod": {
              "endDateTime": "2021-06-01T16:04:09.084Z",
              "startDateTime": "2021-06-30T16:04:09.084Z"
            }
          }
        ]
      }],
      "bucketRefOrValue": {
        "id": "BK1",
        "description": "Bucket related to MMS",
        "isShared": false,
        "name": "RED MMS Plus Bucket - MMS",
        "usageType": "mms",
        "bucketCounter": {
```


Query Usage Consumption Delete Event

Notification QueryUsageConsumptionDeleteEvent case for resource QueryUsageConsumption

Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2021-11-16T16:42:25-04:00",
  "eventType": "QueryUsageConsumptionDeleteEvent",
  "event": {
    "queryUsageConsumption": {
      "id": "Q1USER11333",
      "searchCriteria": {
        "logicalResource": [{
          "id": "963161043",
          "name": "Lara's phone number"
        }]
      },
      "relatedParty": [{
        "id": "USER11333",
        "role": "agent",
        "@referredType": "Individual"
      }],
      "usageConsumption": [{
        "id": "UC1",
        "creationDate": "2021-06-18T16:04:09.084Z",
        "lastUpdate": "2021-06-18T16:04:09.084Z",
        "logicalResource": [{
          "id": "963161043",
          "name": "Lara's phone number",
          "consumptionSummary": [{
            "id": "CT1",
            "counterType": "voice",
            "level": "global",
            "valueName": "Unlimited",
            "consumptionPeriod": {
              "endDateTime": "2021-06-01T16:04:09.084Z",
              "startDateTime": "2021-06-30T16:04:09.084Z"
            }
          }], {
            "id": "CT2",
            "counterType": "sms",
            "level": "global",
            "valueName": "Unlimited",
            "consumptionPeriod": {
              "endDateTime": "2021-06-01T16:04:09.084Z",
              "startDateTime": "2021-06-30T16:04:09.084Z"
            }
          }
        ]
      }],
        "bucketRefOrValue": [{
          "id": "BK1",
          "description": "Bucket related to MMS",
          "isShared": false,
          "name": "RED MMS Plus Bucket - MMS",
          "usageType": "mms",
          "bucketCounter": [{
            "id": "CT3",
            "counterType": "used",

```


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 Query Usage Consumption

List query usage consumptions

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

Description

This operation list query usage consumption 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

Here's an example of a request for retrieving QueryUsageConsumption resources.

Request
<pre>GET /tmf-api/usageConsumption/v4/queryUsageConsumption?relatedParty[?(@referredType==Individual)].id=USER11333 Accept: application/json</pre>
Response
<pre>200 OK [[{ "id": "Q1USER11222", "relatedParty": [{ "id": "USER11222", "role": "agent", "@referredType": "Individual" }], "searchCriteria": { "bucketRefOrValue": [{ "usageType": "voice national" }, { "usageType": "voice international" }, { "usageType": "data" }] }, { "id": "Q2USER11222", "relatedParty": [{ "id": "USER11222", "role": "agent", "@referredType": "Individual" }], "searchCriteria": { "logicalResource": [{ "id": "963161043", "name": "Lara's phone number" }] }, { "id": "Q3USER11222", "relatedParty": [{</pre>

```

        "id": "USER11222",
        "role": "agent",
        "@referredType": "Individual"
    }],
    "searchCriteria": {
        "partyAccount": [{
            "id": "BI12234",
            "@referredType": "Billing Account"
        }]
    }
}
}]

```

Retrieve query usage consumption

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

Description

This operation retrieves a query usage consumption 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 QueryUsageConsumption resource.

Request
GET /tmf-api/usageConsumption/v4/queryUsageConsumption/Q1USER11333 Accept: application/json
Response
200 OK <pre> { "id": "Q1USER11333", "searchCriteria": { "logicalResource": [{ "id": "963161043", "name": "Lara's phone number" }] }, "relatedParty": [{ "id": "USER11333", "role": "agent", "@referredType": "Individual" }], "usageConsumption": [{ "id": "UC1", "creationDate": "2021-06-18T16:04:09.084Z", "lastUpdate": "2021-06-18T16:04:09.084Z", "logicalResource": [{ "id": "963161043", "name": "Lara's phone number", "consumptionSummary": [{ </pre>

```

      "id": "CT1",
      "counterType": "voice",
      "level": "global",
      "valueName": "Unlimited",
      "consumptionPeriod": {
        "endDateTime": "2021-06-01T16:04:09.084Z",
        "startDateTime": "2021-06-30T16:04:09.084Z"
      }
    },{
      "id": "CT2",
      "counterType": "sms",
      "level": "global",
      "valueName": "Unlimited",
      "consumptionPeriod": {
        "endDateTime": "2021-06-01T16:04:09.084Z",
        "startDateTime": "2021-06-30T16:04:09.084Z"
      }
    }
  ]},
  "bucketRefOrValue": [{
    "id": "BK1",
    "description": "Bucket related to MMS",
    "isShared": false,
    "name": "RED MMS Plus Bucket - MMS",
    "usageType": "mms",
    "bucketCounter": [{
      "id": "CT3",
      "counterType": "used",
      "level": "global",
      "consumptionPeriod": {
        "endDateTime": "2021-06-01T16:04:09.084Z",
        "startDateTime": "2021-06-18T16:04:09.084Z"
      }
    },
    "value": {
      "amount": 0,
      "units": "mms"
    }
  ]},
  "product": [{
    "id": "PR1",
    "name": "RED MMS Plus"
  }],
  "relatedParty": [{
    "id": "CUST34",
    "role": "Customer",
    "@referredType": "Individual"
  }
  ]},
  "id": "BK2",
  "description": "Bucket related to data",
  "isShared": false,
  "name": "RED Data Plus Bucket - Data",
  "remainingValue": {
    "amount": 3,
    "units": "GB"
  },
  "remainingValueName": "3 GB",
  "usageType": "data",
  "bucketCounter": [{
    "id": "CT4",
    "counterType": "used",

```

```

    "level": "global",
    "consumptionPeriod": {
      "endTime": "2021-06-01T16:04:09.084Z",
      "startTime": "2021-06-18T16:04:09.084Z"
    },
    "value": {
      "amount": 2,
      "units": "GB"
    }
  },
  "product": [{
    "id": "PR2",
    "name": "RED Data Plus"
  }],
  "relatedParty": [{
    "id": "CUST34",
    "role": "Customer",
    "@referredType": "Individual"
  }]
}
}
}

```

Create query usage consumption

POST /queryUsageConsumption

Description

This operation creates a query usage consumption entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a QueryUsageConsumption, 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
searchCriteria	Must have at least one of these.
partyAccount	
relatedParty	

Non Mandatory Attributes	Rule
@baseType	Only required if the resource is extended.
@schemaLocation	
@type	
queryUsageConsumptionDate	N/A
usageConsumption	

Usage Samples

Here's an example of a request for creating a QueryUsageConsumption resource. In this example the request only passes mandatory attributes.

Request
<pre> POST /tmf-api/usageConsumption/v4/queryUsageConsumption Content-Type: application/json { "searchCriteria": { "logicalResource": [{ "id": "963161043", "name": "Lara's phone number" }] } </pre>
Response
<pre> 201 Created { "id": "Q1USER11333", "searchCriteria": { "logicalResource": [{ "id": "963161043", "name": "Lara's phone number" }]}, "usageConsumption": [{ "id": "UC1", "creationDate": "2021-06-18T16:04:09.084Z", "lastUpdate": "2021-06-18T16:04:09.084Z", "logicalResource": [{ "id": "963161043", "name": "Lara's phone number", "consumptionSummary": [{ "id": "CT1", "counterType": "voice", "level": "global", "valueName": "Unlimited", "consumptionPeriod": { "endDateTime": "2021-06-01T16:04:09.084Z", "startDateTime": "2021-06-30T16:04:09.084Z" } }], "id": "CT2", "counterType": "sms", "level": "global", "valueName": "Unlimited", "consumptionPeriod": { "endDateTime": "2021-06-01T16:04:09.084Z", "startDateTime": "2021-06-30T16:04:09.084Z" } }] }], "bucketRefOrValue": [{ "id": "BK1", "description": "Bucket related to MMS", "isShared": false, "name": "RED MMS Plus Bucket - MMS", "usageType": "mms", "bucketCounter": [{ </pre>

Usage Samples

Here's an example of a request for deleting a QueryUsageConsumption resource.

Request
DELETE /tmf-api/usageConsumption/v4/queryUsageConsumption/42
Response
204 Deleted

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 Created 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 Deleted

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 Created

For detailed examples on the general TM Forum notification mechanism, see the [TMF REST Design Guidelines](#).

Acknowledgements

Release History

Release Number	Date	Release led by:	Description
Release 1.0	04/15/2017	Pierre Gauthier TM Forum pgauthier@tmforum.org Mariano Belaunde Orange Labs	First Release of the Document.
Release 2.0	11/06/2018	Mariano Belaunde Orange Labs	Alignment with Guidelines 3.0
Release 3.0	04/08/2021	Lara Silva Vodafone lara.silva3@vodafone.com	Alignment with guidelines 4.0.2

Contributors to Document

--	--