TM Forum Specification

Usage Management API User Guide

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NOTICE

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Table of Contents

List of Tables

N/A

Introduction

This document is the user-guide of the REST API for Usage Management. It includes the data model definition as well as all available operations for the **Usage** and **UsageSpecification** resources.

The Usage API provides a standardized mechanism for usage management such as the creation, update, retrieval, import and export of a collection of usages. A usage is an occurrence of employing a Product, Service or Resource for its intended purpose which is of interest to the business and can have charges applied to it.

The Usage API manages both rated and non-rated usages. For example, it allows a service provider:

- o To retrieve usage generated by a partner service platform in order to rate it
- o To provide rated usages to a partner for their consumption

The Usage API manages the Usage resource:

- A Usage represents an event that may be of interest to the business and can have charges applied to it. It is comprised of characteristics which define all the attributes known for that particular type of usage.
- The main attributes are its id, usageDate, usageType, it's usageType related UsageSpecification, characteristics (name/value pairs), status, related Parties and rating related information (such as date, amount, taxes).
- A Usage follows a simple lifecycle which is presented later for illustrative purposes, defining such aspects as whether it is rated, rerated or billed.

The Usage API performs the following operations on the Usage resource:

- Retrieval of a Usage or a collection of Usage, depending on filter criteria
- Partial update of a Usage or of a collection of Usage
- Creation of a usage

SAMPLE USE CASES

A few simple use-cases are presented:

- Creation of a simple UsageSpecification, defining the characteristics a voice call (caller and receipient numbers, start and stop date-and-time); listing UsageSpecification's at version 2.5; retrieving a single UsageSpecification based on it's id (91b2-43106cbc8191) and ultimately its deletion based on the same id.
- Creation of a simple Usage relating to a voicemail retrieval; listing Usage of usageType "Voice"; retrieving a specific Usage based on it's id (5130d5131a23); updating a Usage status to "billed" and ultimately deleting this Usage based on the same id.

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 TypeAUsage or TypeBUsage inheriting properties from the base Usage entity.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v4.0 Part 2 document.

The `@type` attribute provides a way to represent the actual class type of an entity. For example, within a list of Usage instances some may be instances of TypeAUsage and some of TypeBUsage. 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

Usage resource

An occurrence of employing a Product, Service, or Resource for its intended purpose, which is of interest to the business and can have charges applied to it. It is comprised of characteristics, which represent attributes of usage.

Resource model
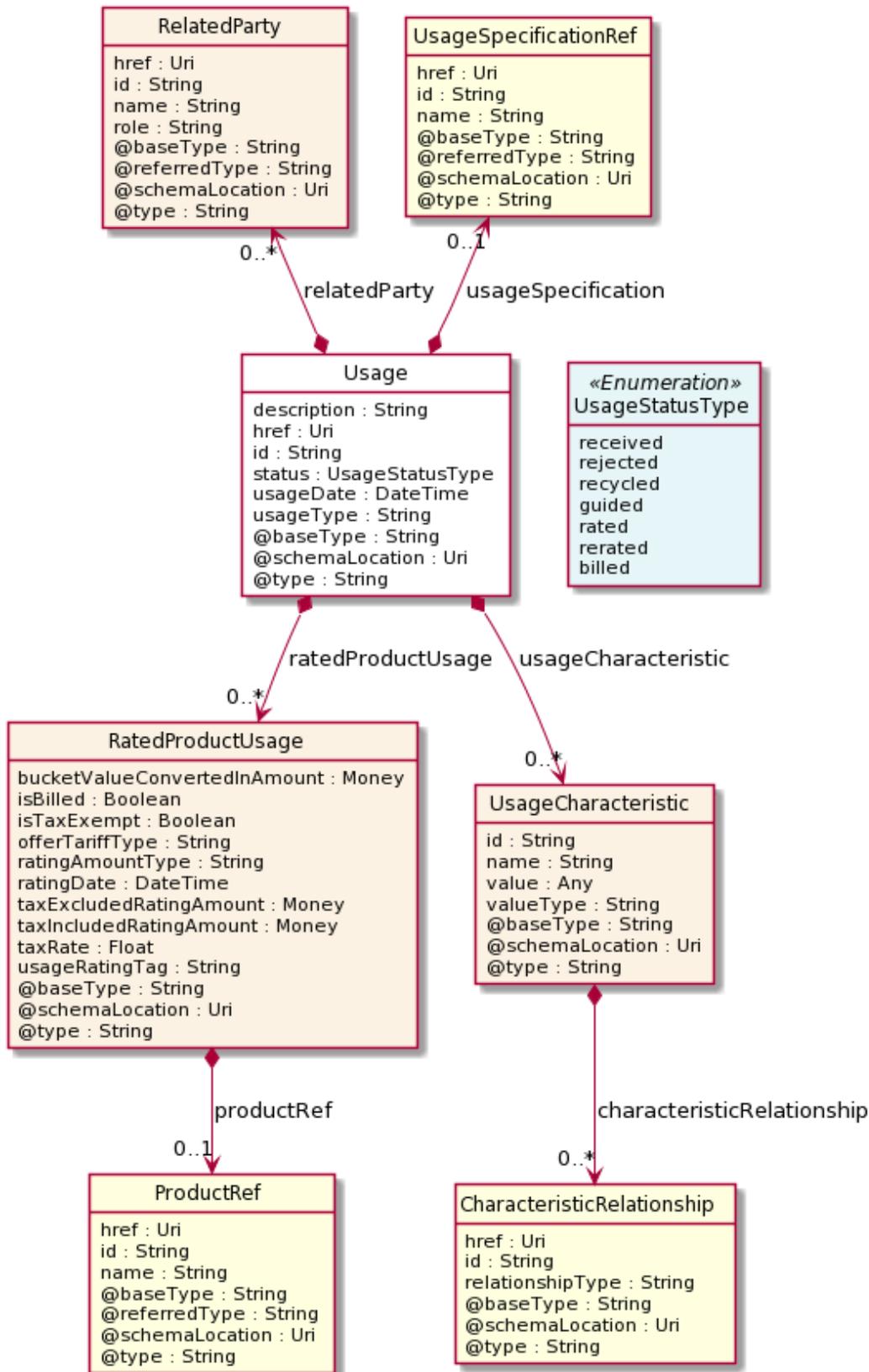
Field descriptions

Usage 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.
description	A string. Description of usage.
ratedProductUsage	A list of rated product usages (RatedProductUsage [*]). An occurrence of employing a product for its intended purpose with all rating details.
relatedParty	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.
status	A usage status type (UsageStatusType). Possible values for the status of the Usage.
usageCharacteristic	A list of usage characteristics (UsageCharacteristic [*]). Provides the value of a given characteristic.
usageDate	A date time (DateTime). Date of usage.
usageSpecification	A usage specification reference (UsageSpecificationRef). UsageSpecification is a detailed description of a usage event that are of interest to the business and can have charges applied to it. It is comprised of characteristics, which define all attributes known for a particular type of usage.
usageType	A string. Type of usage.

CharacteristicRelationship sub-resource

Another Characteristic that is related to the current Characteristic;.

href	An uri (Uri). Hyperlink reference.
id	A string. Unique identifier of the characteristic.
@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.
relationshipType	A string. The type of relationship.

Money sub-resource

A base / value business entity used to represent money.

unit	A string. Currency (ISO4217 norm uses 3 letters to define the currency).
value	A float. A positive floating point number.

RatedProductUsage sub-resource

An occurrence of employing a product for its intended purpose with all rating details.

@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.
bucketValueConvertedInAmount	A money (Money). A base / value business entity used to represent money.
isBilled	A boolean. Boolean indicating if usage have been billed or not.
isTaxExempt	A boolean. Indicates if the rated amount is exempt of tax.
offerTariffType	A string. Type of tariff applied.
productRef	A product reference (ProductRef).
ratingAmountType	A string. Type of amount.
ratingDate	A date time (DateTime). Date of usage rating.
taxExcludedRatingAmount	A money (Money). A base / value business entity used to represent money.
taxIncludedRatingAmount	A money (Money). A base / value business entity used to represent money.
taxRate	A float. Tax rate.
usageRatingTag	A string. Tag value: [usage]: the usage is always rated outside a usage bundle [included usage]: the usage is rated inside a usage bundle [non included usage]: the usage bundle is exhausted. The usage is rated outside the usage bundle.

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.

UsageCharacteristic sub-resource

Provides the value of a given characteristic.

id	A string. Unique identifier of the characteristic.
name	A string. Name of the characteristic.
valueType	A string. Data type of the value of the characteristic.
@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.
characteristicRelationship	A list of characteristic relationships (CharacteristicRelationship [*]). Another Characteristic that is related to the current Characteristic;.
value	An any (Any). The value of the characteristic.

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.

UsageSpecificationRef relationship

UsageSpecification reference. UsageSpecification is a detailed description of a usage event that are of interest to the business and can have charges applied to it. It is comprised of characteristics, which define all attributes known for a particular type of usage.

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

Json representation sample

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

```
{
    "id": "93c2-683ea281566c",
    "href": "https://api.csp.com/tmf-api/usagemanagement/v4/usage/93c2-683ea281566c",
    "usageDate": "2020-11-20T16:07:00Z",
    "description": "Voicemail Retrieval",
    "usageType": "Voicemail",
    "ratedProductUsage": [
        {
            "isBilled": false,
            "isTaxExempt": true,
            "offerTariffType": "Normal",
            "ratingAmountType": "Total",
            "ratingDate": "2020-06-17T21:03:37.829Z",
            "taxRate": 0,
            "usageRatingTag": "voicemail",
            "bucketValueConvertedInAmount": {
                "unit": "EUR",
                "value": 0
            },
            "productRef": {
                "id": "a22b-1c848b2a1b64",
                "href": "https://api.csp.com/tmf-api/productInventory/v4/product/a22b-1c848b2a1b64",
                "name": "Voicemail",
                "@referredType": "Product"
            },
            "taxExcludedAmount": {
                "unit": "EUR",
                "value": 0
            },
            "taxIncludedAmount": {
                "unit": "EUR",
                "value": 0
            }
```

```
          }
       ],
       "relatedParty": [
          {
             "id": "8185-b246a6746136",
             "href": "https://api.csp.com/tmf-api/partyManagement/v4/individual/8185-b246a6746136",
             "name": "Ivor Message",
             "role": "Customer",
             "@referredType": "Individual"
          }
       ],
       "status": "received",
       "usageCharacteristic": [
          {
             "id": "a0ba-ae64952b68ba",
             "name": "duration-seconds",
             "valueType": "integer",
             "value": "12"
          }
       ],
       "usageSpecification": {
          "id": "9be4-cfee80785eb5",
          "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/9be4-cfee80785eb5",
          "name": "Voicemail Retrieval Specification",
          "@referredType": "UsageSpecification"
       }
    }
```

Usage Specification resource

A detailed description of a usage event that are of interest to the business and can have charges applied to it. It is comprised of characteristics, which define all attributes known for a particular type of usage.

Resource model
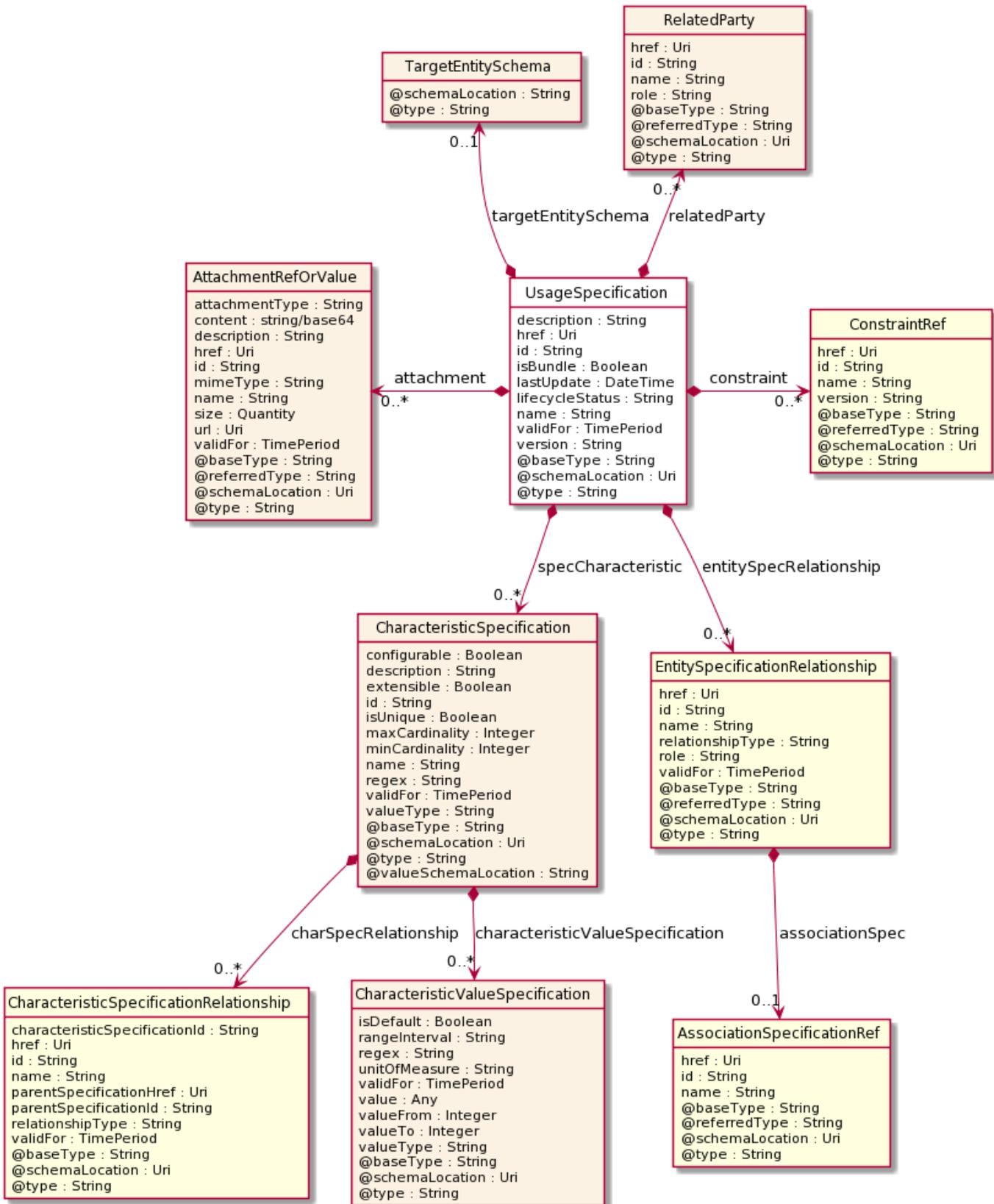
Field descriptions

UsageSpecification fields

description	A string. Description of the specification.
isBundle	A boolean. isBundle determines whether specification represents a single specification (false), or a bundle of specifications (true).
lastUpdate	A date time (DateTime). Date and time of the last update of the specification.
lifecycleStatus	A string. Used to indicate the current lifecycle status of this catalog item.
name	A string. Name given to the specification.
version	A string. specification version.
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.
attachment	A list of attachment ref or values (AttachmentRefOrValue [*]). Attachments that may be of relevance to this specification, such as picture, document, media.
constraint	A list of constraint references (ConstraintRef [*]). This is a list of constraint references applied to this specification.
entitySpecRelationship	A list of entity specification relationships (EntitySpecificationRelationship [*]). Relationship to another specification.
relatedParty	A list of related parties (RelatedParty [*]). Parties who manage or otherwise have an interest in this specification.
specCharacteristic	A list of characteristic specifications (CharacteristicSpecification [*]). List of characteristics that the entity can take.
targetEntitySchema	A target entity schema (TargetEntitySchema). Pointer to a schema that defines the target entity.
validFor	A time period. The period for which this REST resource is valid.

AttachmentRefOrValue sub-resource

An attachment by value or by reference. An attachment complements the description of an element, for example through a document, a video, a picture.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. A narrative text describing the content of the attachment.
href	An uri (Uri). URI for this Attachment.
id	A string. Unique identifier for this particular attachment.
url	An uri (Uri). Uniform Resource Locator, is a web page address (a subset of URI).
name	A string. The name of the attachment.
@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.
attachmentType	A string. Attachment type such as video, picture.
content	A base 6 4 (Base64). The actual contents of the attachment object, if embedded, encoded as base64.
mimeType	A string. Attachment mime type such as extension file for video, picture and document.
size	A quantity (Quantity). The size of the attachment.
validFor	A time period. The period of time for which the attachment is valid.

CharacteristicSpecification sub-resource

This class defines a characteristic specification.

@valueSchemaLocation	A string. This (optional) field provides a link to the schema describing the value type.
configurable	A boolean. If true, the Boolean indicates that the target Characteristic is configurable.
description	A string. A narrative that explains the CharacteristicSpecification.
extensible	A boolean. An indicator that specifies that the values for the characteristic can be extended by adding new values when instantiating a characteristic for a resource.
id	A string. Unique ID for the characteristic.
isUnique	A boolean. An indicator that specifies if a value is unique for the specification. Possible values are; "unique while value is in effect" and "unique whether value is in effect or not".

maxCardinality	An integer. The maximum number of instances a CharacteristicValue can take on. For example, zero to five phone numbers in a group calling plan, where five is the value for the maxCardinality.
minCardinality	An integer. The minimum number of instances a CharacteristicValue can take on. For example, zero to five phone numbers in a group calling plan, where zero is the value for the minCardinality.
name	A string. A word, term, or phrase by which this characteristic specification is known and distinguished from other characteristic specifications.
regex	A string. A rule or principle represented in regular expression used to derive the value of a characteristic value.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text and so forth.
@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.
charSpecRelationship	A list of characteristic specification relationships (CharacteristicSpecificationRelationship [*]). An aggregation, migration, substitution, dependency or exclusivity relationship between/among Specification Characteristics.
characteristicValueSpecification	A list of characteristic value specifications (CharacteristicValueSpecification [*]). A CharacteristicValueSpecification object is used to define a set of attributes, each of which can be assigned to a corresponding set of attributes in a CharacteristicSpecification object. The values of the attributes in the CharacteristicValueSpecification object describe the values of the attributes that a corresponding Characteristic object can take on.
validFor	A time period. The period of time for which a characteristic is applicable.

CharacteristicSpecificationRelationship sub-resource

An aggregation, migration, substitution, dependency or exclusivity relationship between/among Characteristic specifications. The specification characteristic is embedded within the specification whose ID and href are in this entity, and identified by its ID.

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.
characteristicSpecificationId	A string. Unique identifier of the characteristic within the specification.
name	A string. Name of the target characteristic within the specification.
parentSpecificationHref	An uri (Uri). Hyperlink reference to the parent specification containing the target characteristic.
parentSpecificationId	A string. Unique identifier of the parent specification containing the target characteristic.
relationshipType	A string. Type of relationship such as aggregation, migration, substitution, dependency, exclusivity.
validFor	A time period. The period for which the object is valid.

CharacteristicValueSpecification sub-resource

specification of a value (number or text or an object) that can be assigned to a Characteristic.

@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.
isDefault	A boolean. If true, the Boolean Indicates if the value is the default value for a characteristic.
rangeInterval	A string. An indicator that specifies the inclusion or exclusion of the valueFrom and valueTo attributes. If applicable, possible values are "open", "closed", "closedBottom" and "closedTop".
regex	A string. A regular expression constraint for given value.
unitOfMeasure	A string. A length, surface, volume, dry measure, liquid measure, money, weight, time, and the like. In general, a determinate quantity or magnitude of the kind designated, taken as a standard of comparison for others of the same kind, in assigning to them numerical values, as 1 foot, 1 yard, 1 mile, 1 square foot.
validFor	A time period. The period of time for which a value is applicable.
value	An any (Any). A discrete value that the characteristic can take on, or the actual value of the characteristic.
valueFrom	An integer. The low range value that a characteristic can take on.

valueTo	An integer. The upper range value that a characteristic can take on.
valueType	A string. A kind of value that the characteristic value can take on, such as numeric, text and so forth.

EntitySpecificationRelationship sub-resource

A migration, substitution, dependency or exclusivity relationship between/among entity specifications.

@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.
associationSpec	An association specification reference (AssociationSpecificationRef). A specification for an association used by this relationship.
relationshipType	A string. Type of relationship such as migration, substitution, dependency, exclusivity.
role	A string. The association role for this entity specification.
validFor	A time period. The period for which the entitySpecRelationship 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.

TargetEntitySchema sub-resource

The reference object to the schema and type of target entity which is described by a specification.

@schemaLocation   A string. This field provides a link to the schema describing the target entity.

@type   A string. Class type of the target entity.

AssociationSpecificationRef relationship

reference to an AssociationSpecification object.

@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.

ConstraintRef relationship

Constraint reference. The Constraint resource represents a policy/rule applied to an entity or entity spec.

@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.

version   A string. constraint version.

Json representation sample

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

```json
{
    "id": "9aa3-3e7737dd5080",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/9aa3-3e7737dd5080",
    "description": "Specification for voice calls usage",
    "name": "Voice-Call-Specification",
    "usageSpecCharacteristic": [
        {
            "name": "originatingCountryCode",
            "description": "country code of the caller",
            "configurable": "true",
            "valueType": "number",
            "minCardinality": 1,
            "maxCardinality": 1,
            "isUnique": true
        },
        {
            "name": "originatingNumber",
            "description": "phone number of the caller",
            "configurable": "true",
            "valueType": "number",
            "minCardinality": 1,
            "maxCardinality": 1,
            "isUnique": true
        },
        {
            "name": "destinationCountryCode",
            "description": "country code of the called party",
            "configurable": "true",
            "valueType": "number",
            "minCardinality": 1,
            "maxCardinality": 1,
            "isUnique": true
        },
        {
            "name": "destinationNumber",
            "description": "phone number of the called party",
            "configurable": "true",
            "valueType": "number",
            "minCardinality": 1,
            "maxCardinality": 1,
            "isUnique": true
        },
        {
            "name": "duration",
            "description": "duration of the call",
            "configurable": "true",
            "valueType": "number",
            "minCardinality": 1,
            "maxCardinality": 1
        },
        {
            "name": "unit",
            "description": "unit of the duration",
```

```json
        "configurable": "true",
        "valueType": "string",
        "minCardinality": 0,
        "maxCardinality": 1,
        "usageSpecCharacteristicValue": [
          {
            "isDefault": true,
            "value": "SEC"
          }
        ]
      },
      {
        "name": "startDateTime",
        "description": "startdate and starttime of the call",
        "configurable": "true",
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "endDateTime",
        "description": "enddate and endtime of the call",
        "configurable": "true",
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
      }
    ],
    "validFor": {
      "startDateTime": "2022-02-20T17:00:00.000Z",
      "endDateTime": "2099-01-11T00:00:00.000Z"
    }
}
```

Note that a Usage instance can reference multiple RelatedParty instances – such as the person who made a voice call or consumed a service. It must have a reference to a UsageSpecification, which will define the characteristics relevant to this usage type. These may be discrete, ranged or have relationships to each other – as defined in the UsageSpecification data model.

This is an illustrative state machine diagram for the Usage resource:
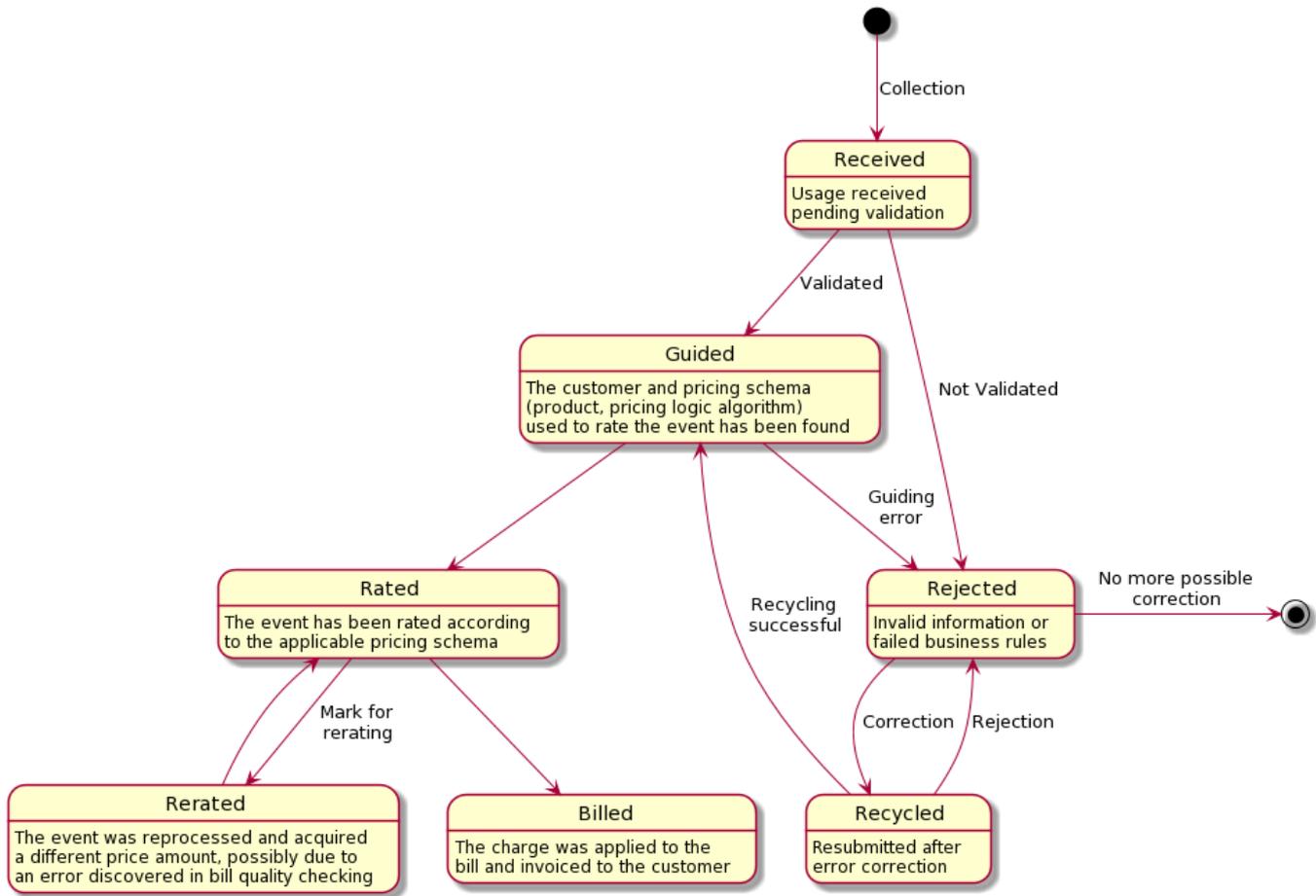
Usage State definitions:

The following table provides usage state descriptions:

State	Definition
Received	This acknowledges that the usage has been received and is pending message validation.
Rejected	The Rejected state is where invalid information is provided through the usage instance (not necessarily checked synchronously)
Guided	Identified with customer and product references
Rated	The Usage has been rated (assigned a value). From this point on, the ratedProductUsage collection will have a value
Rerated	Marked for re-rating
Billed	Billed for a customer invoice
Recycled	Resubmitted after error correction
Rejected	Invalid information or failed business rules

Notification Resource Models

7 notifications are defined for this API

Notifications related to Usage:
   - UsageCreateEvent
   - UsageAttributeValueChangeEvent
   - UsageDeleteEvent
   - UsageStateChangeEvent

Notifications related to UsageSpecification:
   - UsageSpecificationCreateEvent
   - UsageSpecificationAttributeValueChangeEvent
   - UsageSpecificationDeleteEvent

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).
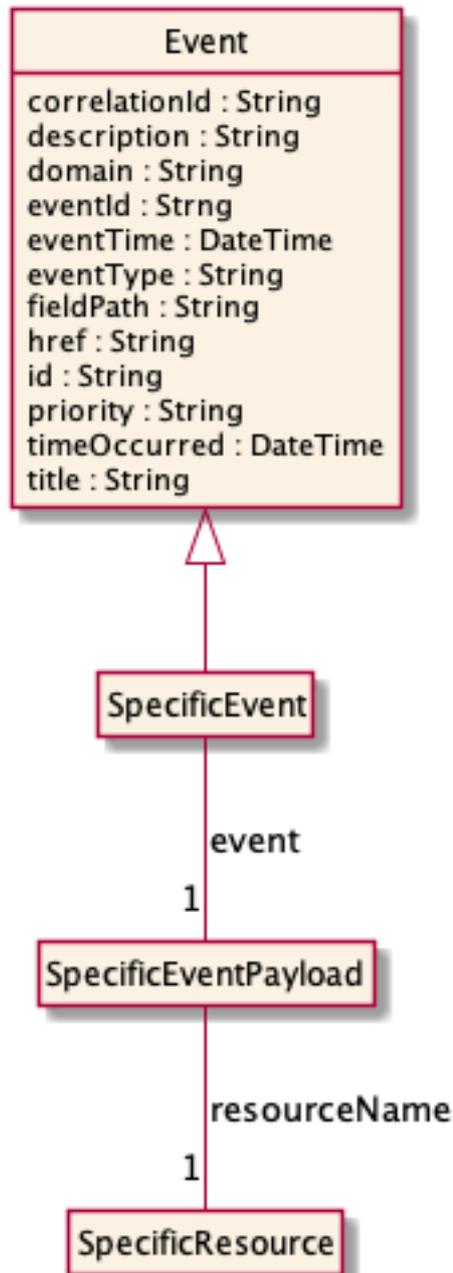
Usage Create Event

Notification UsageCreateEvent case for resource Usage

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"UsageCreateEvent",
  "event": {
    "usage" :
      {-- SEE Usage RESOURCE SAMPLE --}
  }
```

```
    }
```

Usage Attribute Value Change Event

Notification UsageAttributeValueChangeEvent case for resource Usage

Json representation sample

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

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"UsageAttributeValueChangeEvent",
    "event": {
      "usage" :
          {-- SEE Usage RESOURCE SAMPLE --}
    }
}
```

Usage Delete Event

Notification UsageDeleteEvent case for resource Usage

Json representation sample

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

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"UsageDeleteEvent",
    "event": {
      "usage" :
          {-- SEE Usage RESOURCE SAMPLE --}
    }
}
```

Usage State Change Event

Notification UsageStateChangeEvent case for resource Usage

Json representation sample

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

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

```
            {-- SEE Usage RESOURCE SAMPLE --}
     }
}
```

Usage Specification Create Event

Notification UsageSpecificationCreateEvent case for resource UsageSpecification

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"UsageSpecificationCreateEvent",
    "event": {
      "usageSpecification" :
         {-- SEE UsageSpecification RESOURCE SAMPLE --}
   }
}
```

Usage Specification Attribute Value Change Event

Notification UsageSpecificationAttributeValueChangeEvent case for resource UsageSpecification

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"UsageSpecificationAttributeValueChangeEvent",
    "event": {
      "usageSpecification" :
         {-- SEE UsageSpecification RESOURCE SAMPLE --}
   }
}
```

Usage Specification Delete Event

Notification UsageSpecificationDeleteEvent case for resource UsageSpecification

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"UsageSpecificationDeleteEvent",
    "event": {
      "usageSpecification" :
          {-- SEE UsageSpecification 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
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 Usage

List usages

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

Description

This operation list usage 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

Retrieving previous Usage details for the usageType of 'Voice'.

<table>
<tr><td>Request</td></tr>
<tr><td>GET /tmf-api/usageManagement/v4/usage?fields=id,href,status,usageType,usageDate&usageType=Voice
Accept: application/json</td></tr>
<tr><td>Response</td></tr>
<tr><td>

```
200

[
  {
    "id": "93c2-683ea281566c",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/Usage/93c2-683ea281566c",
    "status": "received",
    "usageType": "Voice",
    "usageDate": "2020-11-20T08:13:16.000Z"
  },
  {
    "id": "bbba-0c6e63171b78",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/Usage/bbba-0c6e63171b78",
    "status": "rated",
    "usageType": "Voice",
    "usageDate": "2020-09-01T08:30:01.000Z"
  }
]
```

</td></tr>
</table>

Retrieve usage

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

Description

This operation retrieves a usage 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

A request for a previous Usage event. The criteria is the Usage id 5130d5131a23

<table>
<tr><td>Request</td></tr>
<tr><td>GET /tmf-api/usageManagement/v4/usage/5130d5131a23
Accept: application/json</td></tr>
</table>

Response

200

```json
{
    "id": "5130d5131a23",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/Usage/5130d5131a23",
    "ratedProductUsage": [
        {
            "ratingDate": "2020-02-20T17:00:00.000Z",
            "usageRatingTag": "Usage",
            "ratingAmountType": "Total",
            "taxIncludedRatingAmount": {
                "value": 12.0,
                "unit": "EUR"
            },
            "taxExcludedRatingAmount": {
                "value": 10.0,
                "unit": "EUR"
            },
            "taxRate": 20.0,
            "isTaxExempt": false,
            "offerTariffType": "Normal",
            "bucketValueConvertedInAmount": {
                "value": 10.0,
                "unit": "EUR"
            }
        }
    ],
    "relatedParty": [
        {
            "id": "a396-5c90a41a23ea",
            "href": "https://api.csp.com/tmf-api/partyManagement/v4/organization/a396-5c90a41a23ea",
            "role": "serviceProvider",
            "@referredType": "Organization"
        },
        {
            "id": "8a41-d6451fe98963",
            "href": "https://api.csp.com/tmf-api/partyManagement/v4/individual/8a41-d6451fe98963",
            "role": "customer",
            "@referredType": "Individual"
        }
    ],
    "status": "rated",
    "usageType": "Voice",
    "usageCharacteristic": [
        {
            "name": "originatingCountryCode",
            "value": "43"
        },
        {
            "name": "originatingNumber",
            "value": "676123456789"
        },
```

```
        {
            "name": "destinationCountryCode",
            "value": "49"
        },
        {
            "name": "destinationNumber",
            "value": "170123456789"
        },
        {
            "name": "duration",
            "value": 20
        },
        {
            "name": "unit",
            "value": "SEC"
        }
    ],
    "usageSpecification": {
        "id": "af59-b504c742900e",
        "href": "https:/api.csp.com/tmf-api/usageManagement/v4/usageSpecification/af59-b504c742900e",
        "name": "VoiceCall"
    }
}
```

Create usage

POST /usage

Description

This operation creates a usage entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a Usage, 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

Non Mandatory Attributes	Rule
@baseType	
@schemaLocation	
@type	
description	
ratedProductUsage	
relatedParty	
status	
usageCharacteristic	
usageDate	
usageSpecification	
usageType	

Usage Samples

Create a Usage event for a Voicemail retrieval - the resulting resource ID is 5130d5131a23

Request

```
POST /tmf-api/usageManagement/v4/usage
Content-Type: application/json

{
   "ratedProductUsage": [
      {
         "ratingDate": "2020-02-20T17:00:00.000Z",
         "usageRatingTag": "Usage",
         "ratingAmountType": "Total",
         "taxIncludedRatingAmount": {
            "value": 12.0,
            "unit": "EUR"
         },
         "taxExcludedRatingAmount": {
            "value": 10.0,
            "unit": "EUR"
         },
         "taxRate": 20.0,
         "isTaxExempt": false,
         "offerTariffType": "Normal",
         "bucketValueConvertedInAmount": {
            "value": 10.0,
            "unit": "EUR"
         }
      }
   ],
   "relatedParty": [
      {
         "id": "a396-5c90a41a23ea",
         "href": "http://host:port/partyManagement/organization/a396-5c90a41a23ea",
         "role": "serviceProvider",
         "@referredType": "Organization"
      },
      {
         "id": "8a41-d6451fe98963",
         "href": "http://serverlocation:port/partyManagement/individual/8a41-d6451fe98963",
         "role": "customer",
         "@referredType": "Individual"
      }
   ],
   "status": "rated",
   "usageType": "VOICE",
   "usageCharacteristic": [
      {
         "name": "originatingCountryCode",
         "value": "43"
      },
      {
         "name": "originatingNumber",
         "value": "676123456789"
```

```
      },
      {
        "name": "destinationCountryCode",
        "value": "49"
      },
      {
        "name": "destinationNumber",
        "value": "170123456789"
      },
      {
        "name": "duration",
        "value": "20"
      },
      {
        "name": "unit",
        "value": "SEC"
      }
  ],
  "usageSpecification": {
    "id": "af59-b504c742900e",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/af59-b504c742900e",
    "name": "VoiceCall"
  }
}
```

Response

```
201

{
  "id": "5130d5131a23",
  "href": "https://api.csp.com/tmf-api/usageManagement/v4/usage/5130d5131a23",
  "ratedProductUsage": [
    {
      "ratingDate": "2020-02-20T17:00:00.000Z",
      "usageRatingTag": "Usage",
      "ratingAmountType": "Total",
      "taxIncludedRatingAmount": {
        "value": 12.0,
        "unit": "EUR"
      },
      "taxExcludedRatingAmount": {
        "value": 10.0,
        "unit": "EUR"
      },
      "taxRate": 20.0,
      "isTaxExempt": false,
      "offerTariffType": "Normal",
      "bucketValueConvertedInAmount": {
        "value": 10.0,
        "unit": "EUR"
      }
    }
  ],
  "relatedParty": [
```

```
    {
        "id": "a396-5c90a41a23ea",
        "href": "http://host:port/partyManagement/organization/a396-5c90a41a23ea",
        "role": "serviceProvider",
        "@referredType": "Organization"
    },
    {
        "id": "8a41-d6451fe98963",
        "href": "http://serverlocation:port/partyManagement/individual/8a41-d6451fe98963",
        "role": "customer",
        "@referredType": "Individual"
    }
],
"status": "rated",
"usageType": "VOICE",
"usageCharacteristic": [
    {
        "name": "originatingCountryCode",
        "value": "43"
    },
    {
        "name": "originatingNumber",
        "value": "676123456789"
    },
    {
        "name": "destinationCountryCode",
        "value": "49"
    },
    {
        "name": "destinationNumber",
        "value": "170123456789"
    },
    {
        "name": "duration",
        "value": 20
    },
    {
        "name": "unit",
        "value": "SEC"
    }
],
"usageSpecification": {
    "id": "af59-b504c742900e",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/af59-b504c742900e",
    "name": "VoiceCall"
}
}
```

Patch usage

```
PATCH /usage/{id}
```

Description

This operation allows partial updates of a usage 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
@baseType	
@schemaLocation	
@type	
description	
ratedProductUsage	
relatedParty	
status	
usageCharacteristic	
usageSpecification	
usageType	

Non Patchable Attributes	Rule
id	
href	
usageDate	

Usage Samples

Changing the lifecycle state of a previous Usage event, changing the Usage with id 5130d5131a23

Request

PATCH /tmf-api/usageManagement/v4/usage/5130d5131a23
Content-Type: application/merge-patch+json

```
{
   "status": "billed"
}
```

Response

```json
200

{
   "id": "5130d5131a23",
   "href": "https://api.csp.com/tmf-api/usageManagement/v4/usage/5130d5131a23",
   "ratedProductUsage": [
      {
         "ratingDate": "2020-02-20T17:00:00.000Z",
         "usageRatingTag": "Usage",
         "ratingAmountType": "Total",
         "taxIncludedRatingAmount": {
            "value": 12.0,
            "unit": "EUR"
         },
         "taxExcludedRatingAmount": {
            "value": 10.0,
            "unit": "EUR"
         },
         "taxRate": 20.0,
         "isTaxExempt": false,
         "offerTariffType": "Normal",
         "bucketValueConvertedInAmount": {
            "value": 10.0,
            "unit": "EUR"
         }
      }
   ],
   "relatedParty": [
      {
         "id": "a396-5c90a41a23ea",
         "href": "http://api.csp.com/tmf-api/partyManagement/v4/organization/a396-5c90a41a23ea",
         "role": "serviceProvider",
         "@referredType": "Organization"
      },
      {
         "id": "8a41-d6451fe98963",
         "href": "http://api.csp.com/tmf-api/partyManagement/v4/individual/8a41-d6451fe98963",
         "role": "customer",
         "@referredType": "Individual"
      }
   ],
   "status": "billed",
   "usageType": "VOICE",
   "usageCharacteristic": [
      {
         "name": "originatingCountryCode",
         "value": "43"
      },
      {
         "name": "originatingNumber",
         "value": "676123456789"
      },
      {
         "name": "destinationCountryCode",
```

```
      "value": "49"
    },
    {
      "name": "destinationNumber",
      "value": "170123456789"
    },
    {
      "name": "duration",
      "value": "20"
    },
    {
      "name": "unit",
      "value": "SEC"
    }
  ],
  "usageSpecification": {
    "id": "af59-b504c742900e",
    "href": "https:/api.csp.com/tmf-api/UsageManagement/v4/usageSpecification/af59-b504c742900e",
    "name": "VoiceCall"
  }
}
```

Delete usage

DELETE /usage/{id}

Description

This operation deletes a usage entity.

Usage Samples

A request to delete an existing Usage event

Request
DELETE /tmf-api/usageManagement/v4/usage/5130d5131a23
Response
204

Operations on Usage Specification

List usage specifications

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

Description

This operation list usage specification 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

Retrieving previous UsageSpecifications which are at version 2.5

Request
GET /tmf-api/usageManagement/v4/usageSpecification?version=2.5 Accept: application/json
Response

200
 	
[
  {
    "id": "91b2-43106cbc8191",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/91b2-43106cbc8191",
    "description": "Specification of usage for voice calls",
    "isBundle": false,
    "lastUpdate": "2020-07-07T08:34:13.831Z",
    "lifecycleStatus": "string",
    "name": "Voice-Usage-Specification",
    "version": "2.5",
    "specCharacteristic": [
      {
        "name": "Originating Country Code",
        "description": "Country Code of the caller",
        "configurable": true,
        "valueType": "string",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "Originating Number",
        "description": "Phone number of the caller",
        "configurable": true,
        "valueType": "string",
        "minCardinality": 1,
        "maxCardinality": 1
      },

```
      {
        "name": "Destination Country Code",
        "description": "Country Code of the recipient",
        "configurable": true,
        "valueType": "string",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "Destination Number",
        "description": "Phone number of the recipient",
        "configurable": true,
        "valueType": "string",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "Duration",
        "description": "Duration of the call in seconds",
        "configurable": true,
        "valueType": "number",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "startDateTime",
        "description": "Start date and start time of the call",
        "configurable": true,
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
      },
      {
        "name": "endDateTime",
        "description": "End date and end time of the call",
        "configurable": true,
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
      }
    ]
  }
]
```

Retrieve usage specification

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

Description

This operation retrieves a usage specification 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

A request for a specific UsageSpecification with an id 91b2-43106cbc8191

<table>
<tr><td>

Request

</td></tr>
<tr><td>

GET /tmf-api/usageManagement/v4/usageSpecification/91b2-43106cbc8191
Accept: application/json

</td></tr>
<tr><td>

Response

</td></tr>
<tr><td>

```
200

{
    "id": "91b2-43106cbc8191",
    "href": "https://api.csp.com/tmf-api/usageManagement/v4/usageSpecification/91b2-43106cbc8191",
    "description": "Specification of usage for voice calls",
    "isBundle": false,
    "lastUpdate": "2020-07-07T08:34:13.831Z",
    "lifecycleStatus": "string",
    "name": "Voice-Usage-Specification",
    "version": "2.5",
    "specCharacteristic": [
        {
            "name": "Originating Country Code",
            "description": "Country Code of the caller",
            "configurable": true,
            "valueType": "string",
            "minCardinality": 1,
            "maxCardinality": 1
        },
        {
            "name": "Originating Number",
            "description": "Phone number of the caller",
            "configurable": true,
            "valueType": "string",
            "minCardinality": 1,
            "maxCardinality": 1
        },
        {
            "name": "Destination Country Code",
            "description": "Country Code of the recipient",
            "configurable": true,
            "valueType": "string",
            "minCardinality": 1,
            "maxCardinality": 1
        },
        {
            "name": "Destination Number",
            "description": "Phone number of the recipient",
            "configurable": true,
            "valueType": "string",
            "minCardinality": 1,
            "maxCardinality": 1
```

</td></tr>
</table>

```
        },
        {
          "name": "Duration",
          "description": "Duration of the call in seconds",
          "configurable": true,
          "valueType": "number",
          "minCardinality": 1,
          "maxCardinality": 1
        },
        {
          "name": "startDateTime",
          "description": "Start date and start time of the call",
          "configurable": true,
          "valueType": "dateTime",
          "minCardinality": 1,
          "maxCardinality": 1
        },
        {
          "name": "endDateTime",
          "description": "End date and end time of the call",
          "configurable": true,
          "valueType": "dateTime",
          "minCardinality": 1,
          "maxCardinality": 1
        }
      ]
}
```

Create usage specification

POST /usageSpecification

Description

This operation creates a usage specification entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a UsageSpecification, 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

Non Mandatory Attributes	Rule
description	
isBundle	
lastUpdate	
lifecycleStatus	
name	
version	
@baseType	

Non Mandatory Attributes	Rule
@schemaLocation	
@type	
attachment	
constraint	
entitySpecRelationship	
relatedParty	
specCharacteristic	
targetEntitySchema	
validFor	

Usage Samples

Create a UsageSpecification for a Voice call - the resulting resource id is 8b64-0cfd1a90c9ed

Request

```
POST /tmf-api/usageManagement/v4/usageSpecification
Content-Type: application/json

{
   "description": "Specification of usage for voice calls",
   "isBundle": false,
   "lastUpdate": "2020-07-07T08:34:13.831Z",
   "name": "Voice-Usage-Specification",
   "version": "2.5",
   "specCharacteristic": [
      {
         "name": "Originating Country Code",
         "description": "Country Code of the caller",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Originating Number",
         "description": "Phone number of the caller",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Destination Country Code",
         "description": "Country Code of the recipient",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Destination Number",
         "description": "Phone number of the recipient",
```

```
                "configurable": true,
                "valueType": "string",
                "minCardinality": 1,
                "maxCardinality": 1
        },
        {
                "name": "Duration",
                "description": "Duration of the call in seconds",
                "configurable": true,
                "valueType": "number",
                "minCardinality": 1,
                "maxCardinality": 1
        },
        {
                "name": "startDateTime",
                "description": "Start date and start time of the call",
                "configurable": true,
                "valueType": "dateTime",
                "minCardinality": 1,
                "maxCardinality": 1
        },
        {
                "name": "endDateTime",
                "description": "End date and end time of the call",
                "configurable": true,
                "valueType": "dateTime",
                "minCardinality": 1,
                "maxCardinality": 1
        }
    ]
}
```

Response

```
201

{
    "id": "8b64-0cfd1a90c9ed",
    "href": "https://api.csp.com/tmf-api/usagemanagement/v4/usageSpecification/8b64-0cfd1a90c9ed",
    "description": "Specification of usage for voice calls",
    "isBundle": false,
    "lastUpdate": "2020-07-07T08:34:13.831Z",
    "name": "Voice-Usage-Specification",
    "version": "2.5",
    "specCharacteristic": [
        {
            "name": "Originating Country Code",
            "description": "Country Code of the caller",
            "configurable": true,
            "valueType": "string",
            "minCardinality": 1,
            "maxCardinality": 1
        },
        {
            "name": "Originating Number",
```

```
      "description": "Phone number of the caller",
      "configurable": true,
      "valueType": "string",
      "minCardinality": 1,
      "maxCardinality": 1
    },
    {
      "name": "Destination Country Code",
      "description": "Country Code of the recipient",
      "configurable": true,
      "valueType": "string",
      "minCardinality": 1,
      "maxCardinality": 1
    },
    {
      "name": "Destination Number",
      "description": "Phone number of the recipient",
      "configurable": true,
      "valueType": "string",
      "minCardinality": 1,
      "maxCardinality": 1
    },
    {
      "name": "Duration",
      "description": "Duration of the call in seconds",
      "configurable": true,
      "valueType": "number",
      "minCardinality": 1,
      "maxCardinality": 1
    },
    {
      "name": "startDateTime",
      "description": "Start date and start time of the call",
      "configurable": true,
      "valueType": "dateTime",
      "minCardinality": 1,
      "maxCardinality": 1
    },
    {
      "name": "endDateTime",
      "description": "End date and end time of the call",
      "configurable": true,
      "valueType": "dateTime",
      "minCardinality": 1,
      "maxCardinality": 1
    }
  ]
}
```

Patch usage specification

```
PATCH /usageSpecification/{id}
```

Description

This operation allows partial updates of a usage specification 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
description	
isBundle	
lastUpdate	
lifecycleStatus	
name	
version	
@baseType	
@schemaLocation	
@type	
attachment	
constraint	
entitySpecRelationship	
relatedParty	
specCharacteristic	
targetEntitySchema	
validFor	

Non Patchable Attributes	Rule
id	
href	

Usage Samples

Changing the version of an existing UsageSpecification with an id of 903a-79a12c91b92a

Request

```
PATCH /tmf-api/usageManagement/v4/usageSpecification/903a-79a12c91b92a
Content-Type: application/merge-patch+json

{
   "version": "3.0"
}
```

Response

```
200

{
   "id": "903a-79a12c91b92a",
   "href": "https://api.csp.com/tmf-api/usagemanagement/v4/usageSpecification/903a-79a12c91b92a",
   "description": "Specification of usage for voice calls",
   "isBundle": false,
   "lastUpdate": "2020-07-07T08:34:13.831Z",
   "name": "Voice-Usage-Specification",
   "version": "3.0",
   "specCharacteristic": [
      {
         "name": "Originating Country Code",
         "description": "Country Code of the caller",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Originating Number",
         "description": "Phone number of the caller",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Destination Country Code",
         "description": "Country Code of the recipient",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Destination Number",
         "description": "Phone number of the recipient",
         "configurable": true,
         "valueType": "string",
         "minCardinality": 1,
         "maxCardinality": 1
      },
      {
         "name": "Duration",
         "description": "Duration of the call in seconds",
```

```json
        "configurable": true,
        "valueType": "number",
        "minCardinality": 1,
        "maxCardinality": 1
     },
     {
        "name": "startDateTime",
        "description": "Start date and start time of the call",
        "configurable": true,
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
     },
     {

        "name": "endDateTime",
        "description": "End date and end time of the call",
        "configurable": true,
        "valueType": "dateTime",
        "minCardinality": 1,
        "maxCardinality": 1
     }
   ]
}
```

Delete usage specification

DELETE /usageSpecification/{id}

Description

This operation deletes a usage specification entity.

Usage Samples

A request to delete an existing UsageSpecification with an id of 8b64-0cfd1a90c9ed

Request
DELETE /tmf-api/usageManagement/v4/usageSpecification/8b64-0cfd1a90c9ed
Response
204

API NOTIFICATIONS

It is assumed that the Publish/Subscribe model uses the Register and UnRegister mechanisms described in the REST Guidelines.

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.

Acknowledgements

Version History

Version Number	Date Modified	Modified by:	Description of changes
4.0.0	31-Jul-2020	Alan Pope	Final edits prior to publication

Release History

Release Status	Date	Release led by:	Description
14.5.1 Production	6-Mar-2016	Andreas Polz (Infonova)	Mature draft of user-guide developed during the SpecJam sessions in Vienna, March 4-6TH 2014
Pre-production	31-Jul-2020	Stephen Harrop (Vodafone Group)	Major update to accommodate patterns from TMF-API Design Guidelines v4.0 and schema library based generation.

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