



TM Forum Specification

Product Catalog Management API REST Specification

TMF620

Release 17.5.0

January 2018

Latest Update: TM Forum Release 17.5.0	Member Evaluation
Version 2.2.1	IPR Mode: RAND

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INTRODUCTION

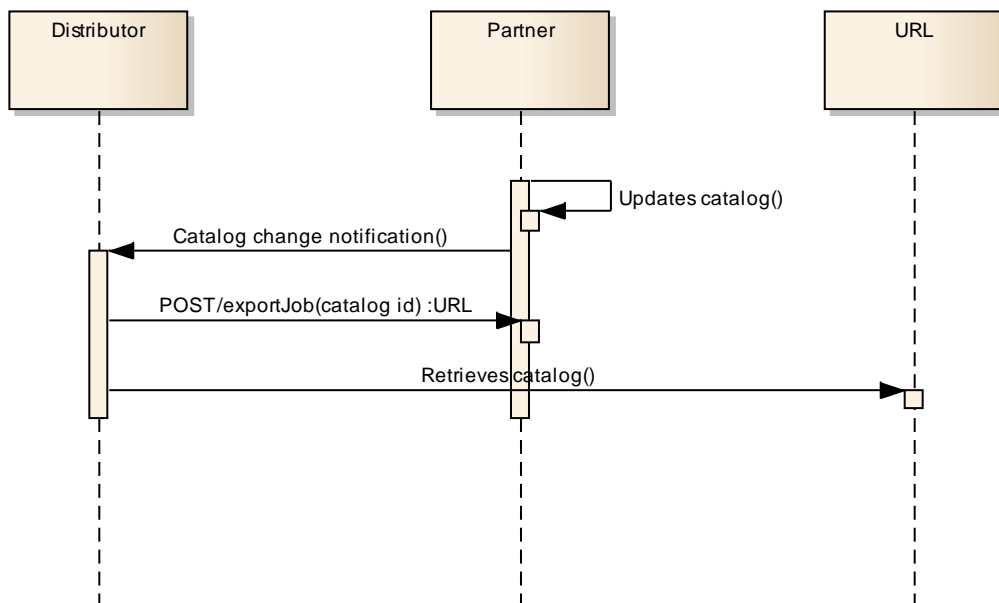
The catalog management API allows the management of the entire lifecycle of the catalog elements, the consultation of catalog elements during several processes such as ordering process, campaign management, sales management.

SAMPLE USE CASES

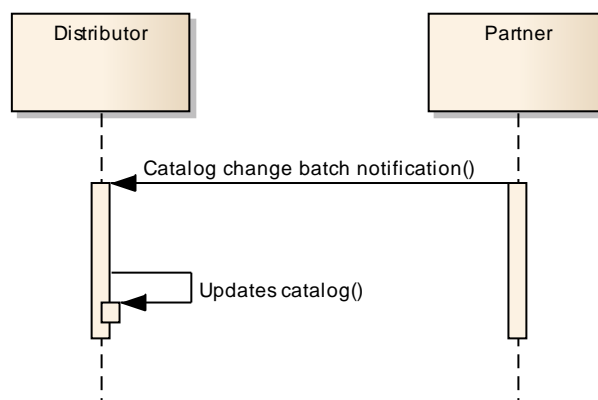
Lifecycle Management Use Case

The catalog management API allows the management of the entire lifecycle of the catalog elements.

UC1: A partner updates his catalog. He notifies his distributor the catalog change. The distributor requests a catalog export. Then, he retrieves the catalog at the provided URL.



UC2: A partner updates his catalog. He notifies all catalog changes in detail to his distributor. This one updates his catalog copy.



UC3: A catalog administrator wants to retrieve effective duration of a product offering based on product offering identifier or other search criteria (GET/productOffering).

UC4: A catalog administrator wants to retrieve all the bundled product offerings included in a product offering bundle (GET/productOffering).

UC5: A catalog administrator wants to update the lifecycle status (from Launched to retired for example) of a product offering (PUT or PATCH/productOffering).

Order Management Use Case

The catalog management API allows the lookup of the catalog elements during order capture.

UC1: A distributor wants to browse product offerings during order capture and to retrieve product offerings belonging to a given category, for a given channel and a given place. He gets all details on product offerings, product offering prices, product specifications and its characteristics (GET/depth).

UC2: A distributor wants to retrieve the characteristics including prices of a given product offering (GET/productOffering).

UC3: A distributor wants to know if a product offering is available at customer's location (GET/productOffering).

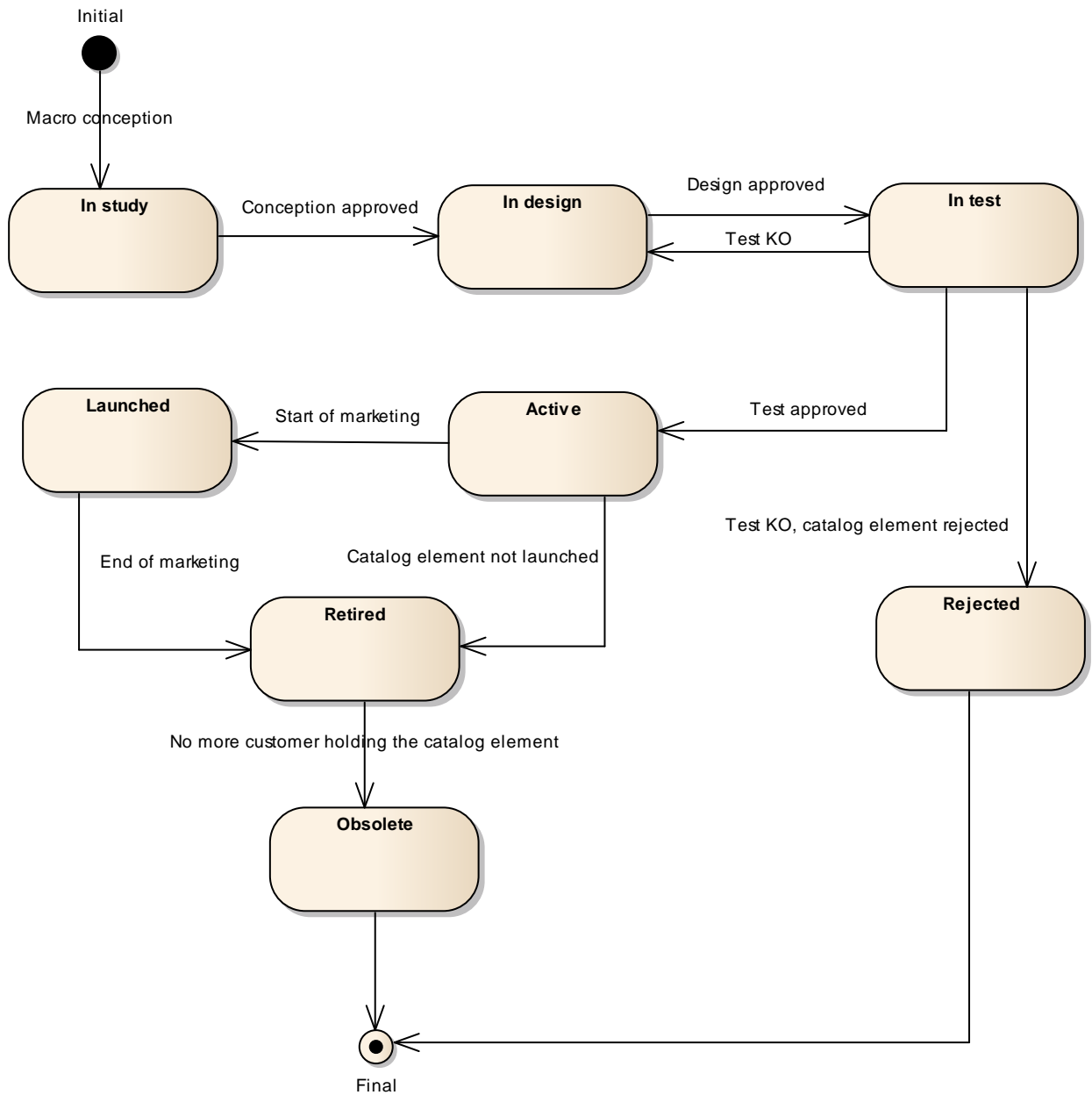
UC4: A distributor wants to know which SLA applies on a given product offering (GET/productOffering).

UC5: A distributor wants to retrieve all product offerings belonging to a partner (GET/productOffering).

RESOURCE MODEL

PRODUCT LIFECYCLE MANAGEMENT STATE MODEL

Product Lifecycle Management (PLM) is responsible for managing the entire lifecycle of the catalog element and its underlying components. This includes all of the processes required to design, build, deploy, maintain and ultimately retire the catalog element.



When the macro conception of a catalog element is started the first status of the later is “In Study”.

When the conception of the catalog element is accepted its status is changed to “In Design”.

If the design is approved its status is changed to “In Test”.

Then either the test is OK and then its status is changed to “Active” or the test is KO and its status is changed to “Rejected”. The Rejected status is a final status.

When a catalog element is in an “Active” status it means it has been validated and tested, but it is still not available for customers.

When the beginning of marketing is reached, its status is changed to “Launched”. At this moment customers can buy it.

If the catalog element is not launched, its status is changed to “Retired”.

The same status is achieved when a catalog element reaches the end of marketing.

The “Retired” status means it cannot be sold to any new customers, but previous customers can still have it.

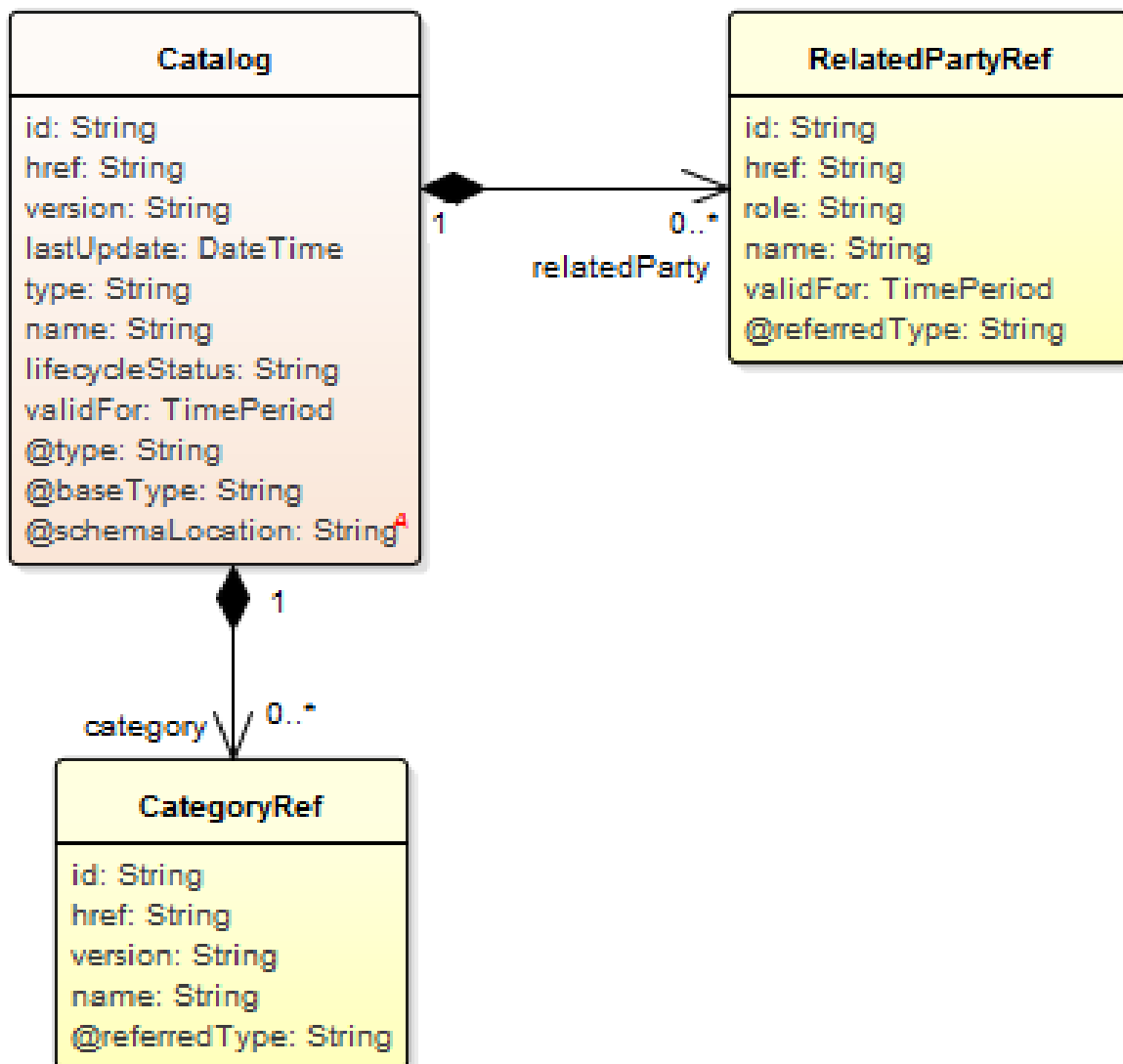
When no more customer holds the catalog element, its status is changed to “Obsolete” meaning it can be removed from the catalog.

CATALOG RESOURCE

The root entity for catalog management.

A Product Catalog is a collection of Product Offerings, intended for a specific DistributionChannel, enhanced with additional information such as SLA parameters, invoicing and shipping details. Each Product Offering in a Product Catalog combines pricing and availability information with Product Specifications that describe the relationships between Products, the Services used to realize the Products, and the Resources they require.

Resource model:



Field Descriptions:

Catalog: Is a collection of Product Offerings, intended for a specific DistributionChannel, enhanced with additional information such as SLA parameters, invoicing and shipping details.

Field	Description
id	Unique identifier of the catalog
href	Reference of the catalog
name	Name of the catalog
description	Description of this catalog
lifecycleStatus	Used to indicate the current lifecycle status
lastUpdate	Date and time of the last update
validFor	The period for which the catalog is valid
version	Catalog version
@type	Indicates the (class) type of catalog. For entity catalogs, this will be 'ProductCatalog'.
@baseType	Indicates the base type of this catalog
@schemaLocation	This field provides a link to the schema describing this REST resource

Category: a reference to category. A product category is used to group product offerings in logical containers. Categories can contain other categories and/or product offerings.

Field	Description
id	Unique identifier of the category
href	Reference of the catalog
name	Name of the category
@referredType	The class type of the referred category
validFor	The period for which the category is valid
version	Category version

RelatedParty: Defines party or partyRole linked to a specific entity.

Field	Description
id	Unique identifier of related party
href	Reference of the relatedParty, could be a party reference or a partyRole reference
name	Name of the related party
role	Role of the related party
validFor	The period for which the related party is linked to the entity
@referredType	The class type of the referred object

Json representation sample:

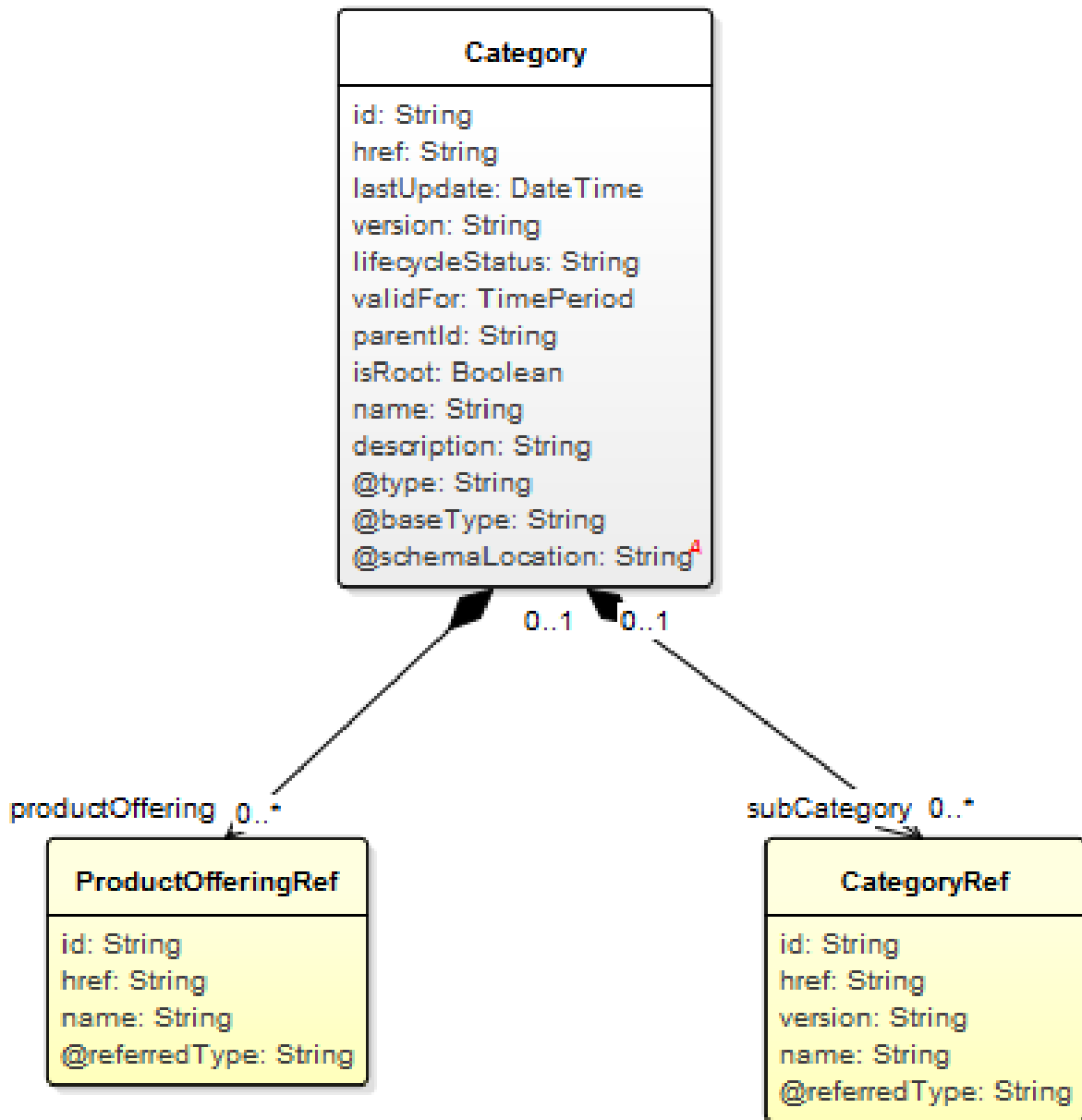
```
{
  "id": "10",
  "@type": "ProductCatalog",
  "href": "http://serverlocation:port/catalogManagement/catalog/10",
  "version": "2.0",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProductCatalog.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "type": "Product Catalog",
  "category":
  [
```

```
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "@referredType": "Category",
      "name": "Cloud offerings"
    }
  ],
  "name": "Catalog Wholesale Business",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z",
    "endDateTime": "2017-06-19T00:00:00.0Z"
  },
  "relatedParty":
  [
    {
      "id": "1234",
      "href": "http://serverLocation:port/partyManagement/partyRole/1234",
      "role": "Owner"
    },
    {
      "role": "Reviser",
      "name": "Roger Collins"
    }
  ]
}
```

CATEGORY RESOURCE

The (product) category resource is used to group product offerings in logical containers. A Product category can contain other categories.

Resource model:



Field Descriptions:

Category: is used to group product offerings, service and resource candidates in logical containers. Each category can contain other (sub-)categories and/or product offerings, resource or service candidates.

Field	Description
id	A string. Unique identifier of the category.
href	A string. Reference of the category
name	Name of the category
description	Description of the category
@type	A string. the class type of the Category.
@baseType	A string. the base class type of the category.
@schemaLocation	A string. link to the schema describing this category.
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
validFor	The period for which the category is valid
version	Category version
parentId	Unique identifier of the parent category
isRoot	If true, this Boolean indicates that the category is a root of categories
subCategory	A list of (sub-)category references (CategoryRef [*]). The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other (sub-)categories and/or product offerings.
productOffering	A list of product offering references (ProductOfferingRef [*]). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

CategoryRef relationship:

Category reference. The category resource in a product catalog is used to group product offerings in logical containers. Categories can contain other categories and/or product offerings.

id	A string. Unique reference of the category.
href	A string. Unique reference of the category.
version	A string. Category version.
name	A string. Name of the category.
@referredType	A string. the class type of the referred category.

ProductOfferingRef relationship:

ProductOffering reference. A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

id	A string. Unique identifier of the product offering.
href	A string. Reference of the product offering.
name	A string. Name of the product offering.

@referredType	A string. the class type of the referred product offering.
---------------	--

Json representation sample:

```
{
  "id": "15",
  "@type": "Category",
  "href": "http://serverlocation:port/catalogManagement/category/15",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "version": "1.0",
  "@schemaLocation":
  "http://serverlocation:port/catalogManagement/schema/Category.yml",
  "@baseType": "",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z"
  },
  "parentId": "41",
  "isRoot": false,
  "name": "L3VPN Products",
  "description": "A category to hold all available L3VPN product offers",
  "subCategory": [],
  "productOffering":
  [
    {
      "id": "25",
      "href":
      "http://serverlocation:port/catalogManagement/productOffering/25",
      "@referredType": "ProductOffering"
    },
    {
      "id": "26",
      "href":
      "http://serverlocation:port/catalogManagement/productOffering/26",
      "@referredType": "ProductOffering"
    }
  ]
}
```

Or for a root category (e.g. no parent)

```
{
  "id": "41",
  "@type": "Category",
  "href": "http://serverlocation:port/catalogManagement/category/41",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "version": "1.0",
  "@schemaLocation":
  "http://serverlocation:port/catalogManagement/schema/Category.yml",
  "@baseType": "",
  "lifecycleStatus": "Active",
  "validFor":
  {
```



```
        "startDateTime": "2017-04-19T16:42:23.0Z"
    },
    "parentId": "",
    "isRoot": true,
    "name": "VPN Products",
    "description": "A category to hold all available cloud service offers",
    "subCategory":
    [
        {
            "id": "15",
            "href": "http://serverlocation:port/catalogManagement/category/15",
            "@referredType": "Category",
            "name": "L3VPN Products"
        },
        {
            "id": "16",
            "href": "http://serverlocation:port/catalogManagement/category/16",
            "@referredType": "Category",
            "name": "L2VPN Products"
        }
    ],
    "productOffering": []
}
```

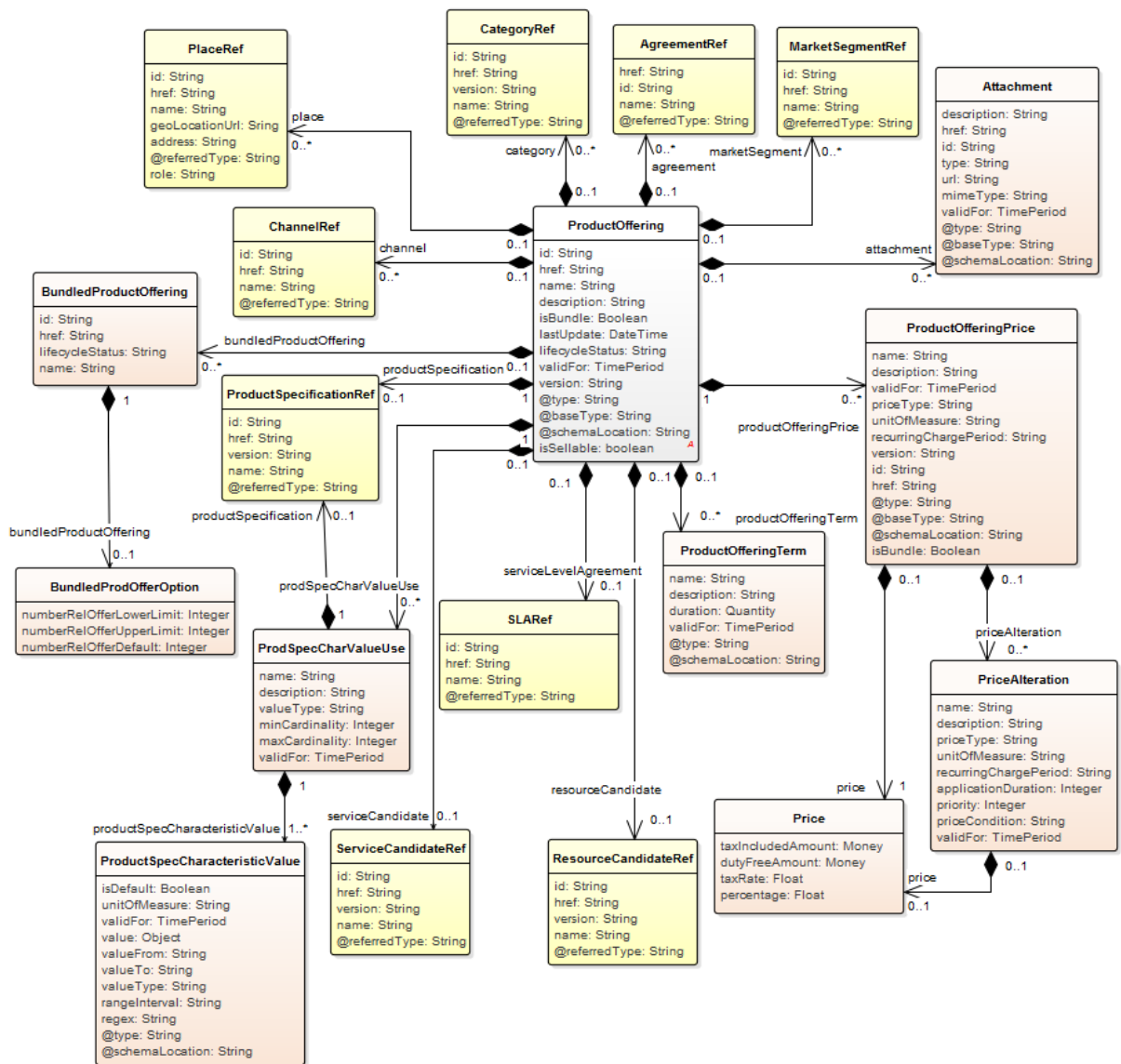
PRODUCT OFFERING RESOURCE

The Product Offering resource represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

Note: isBundle determines whether a productOffering represents a single productOffering (false), or a bundle of productOfferings (true). If false, then a productSpecification will be returned, but the bundledProductOfferings will be absent or empty and vice-versa if isBundle is true.

The product offering REST resource model does not include any information that might be used by a UI consumer regarding how to display retrieved offering information like element visibility, and edit methods at ordering time.

Resource model:



Field Descriptions:

ProductOffering: Represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

id	A string. Unique identifier of the productOffering.
href	A string. Reference of the ProductOffering.
name	A string. Name of the productOffering.
description	A string. Description of the productOffering.
isBundle	A boolean. isBundle determines whether a productOffering represents a single productOffering (false), or a bundle of productOfferings (true).
lastUpdate	A date time (DateTime). Date and time of the last update.
lifecycleStatus	A string. Used to indicate the current lifecycle status.
validFor	A time period. The period for which the productOffering is valid.
version	A string. ProductOffering version.
@type	A string. Class type of the product offering.
@baseType	A string. Immediate base (class) type of the product offering.
@schemaLocation	A string. A link to the schema describing this product offering.
isSellable	A boolean. A flag indicating if this product offer can be sold stand-alone for sale or not. If this flag is false it indicates that the offer can only be sold within a bundle.
place	A list of place references (PlaceRef [*]). Place defines the places where the products are sold or delivered.
serviceLevelAgreement	A SLA reference (SLARef). ServiceLevelAgreement reference: A service level agreement (SLA) is a type of agreement that represents a formal negotiated agreement between two parties designed to create a common understanding about products, services, priorities, responsibilities, and so forth. The SLA is a set of appropriate procedures and targets formally or informally agreed between parties in order to achieve and maintain specified Quality of Service.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a

	ProductOffering to customers or other parties playing a party role.
channel	A list of channel references (ChannelRef [*]). The channel defines the channel for selling product offerings.
serviceCandidate	A service candidate reference (ServiceCandidateRef). ServiceCandidate is an entity that makes a ServiceSpecification available to a catalog.
attachment	A list of attachments (Attachment [*]). Complements the description of an element (for instance a product) through video, pictures...
category	A list of category references (CategoryRef [*]). The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other categories and/or product offerings, resource or service candidates.
resourceCandidate	A resource candidate reference (ResourceCandidateRef). A resource candidate is an entity that makes a ResourceSpecification available to a catalog.
productOfferingTerm	A list of product offering terms (ProductOfferingTerm [*]). A condition under which a ProductOffering is made available to Customers. For instance, a productOffering can be offered with multiple commitment periods.
marketSegment	A list of market segment references (MarketSegmentRef [*]). provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.
productOfferingPrice	A list of product offering prices (ProductOfferingPrice [*]). An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased. The price is valid for a defined period of time and may not represent the actual price paid by a customer. It should be noted that a product offering price can be created directly via Product Offering Price resource as well. However, some product offering price sub-resources may not be exposed thru Product Offering resource.
agreement	A list of agreement references (AgreementRef [*]). An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

bundledProductOffering	A list of bundled product offerings (BundledProductOffering [*]). A type of ProductOffering that belongs to a grouping of ProductOfferings made available to the market. It inherits of all attributes of ProductOffering.
prodSpecCharValueUse	A list of prod spec char value uses (ProdSpecCharValueUse [*]). A use of the ProdSpecCharacteristicValue by a ProductOffering to which additional properties (attributes) apply or override the properties of similar properties contained in ProdSpecCharacteristicValue. It should be noted that characteristics which their value(s) addressed by this object must exist in corresponding product specification. The available characteristic values for a ProductSpecCharacteristic in a Product specification can be modified at the ProductOffering level. For example, a characteristic 'Color' might have values White, Blue, Green, and Red. But, the list of values can be restricted to e.g. White and Blue in an associated product offering. It should be noted that the list of values in 'ProdSpecCharValueUse' is a strict subset of the list of values as defined in the corresponding product specification characteristics.

Attachment sub-resource

Complements the description of an element (for instance a product) through video, pictures, ...

description	A string. A narrative text describing the content of the attachment.
href	A string. Reference of the attachment.
id	A string. Unique identifier of the attachment.
type	A string. Attachment type such as video, picture.
url	A string. Uniform Resource Locator, is a web page address (a subset of URI).
contentType	A string. Attachment mime type such as extension file for video, picture and document.
validFor	A time period. A base / value business entity used to represent a period of time between two timepoints.
@type	A string. the class type of the Attachment.
@baseType	A string. The immediate base class type of the attachment.
@schemaLocation	A string. A link to the schema describing this attachment entity.

BundledProdOfferOption sub-resource

A set of numbers that specifies the lower and upper limits for a ProductOffering that can be procured as part of the related BundledProductOffering. Values can range from 0 to unbounded.

numberRelOfferLowerLimit	An integer. lower limit for a product offering that can be procured as part of the related BundledProductOffering.
numberRelOfferUpperLimit	An integer. upper limit for a product offering that can be procured as part of the related BundledProductOffering.
numberRelOfferDefault	An integer. Default number of product offerings that should be procured as part of the related BundledProductOffering.

BundledProductOffering sub-resource

A type of ProductOffering that belongs to a grouping of ProductOfferings made available to the market. It inherits of all attributes of ProductOffering. If the product offering is a bundled product offering, its "isBundled" field must be set as 'true'. In this case, 'bundledProductOffering' field is an array of references to its children.

id	A string. Unique identifier of the BundledProductOffering.
href	A string. Unique reference of the BundledProductOffering.
lifecycleStatus	A string. Used to indicate the current lifecycle status.
name	A string. Name of the BundledProductOffering.
bundledProductOfferingOption	A bundled product offer option (BundledProdOfferOption). A set of numbers that specifies the lower and upper limits for a ProductOffering that can be procured as part of the related BundledProductOffering. Values can range from 0 to unbounded.

Money sub-resource

A base / value business entity used to represent money.

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

Price sub-resource

Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

dutyFreeAmount	A money (Money). All taxes excluded amount (expressed in the given currency).
percentage	A float. Percentage to apply for ProdOfferPriceAlteration.
taxIncludedAmount	A money (Money). All taxes included amount (expressed in the given currency).
taxRate	A float. Tax rate.

PriceAlteration sub-resource

It is an amount, usually of money, that modifies the price charged for an order item.

applicationDuration	An integer. Duration during which the alteration applies on the order item price (for instance 2 months free of charge for the recurring charge).
description	A string. A narrative that explains in detail the semantics of this order item price alteration.
name	A string. A short descriptive name such as "Monthly discount".
priceCondition	A string. Condition that triggers the price application.
priceType	A string. A category that describes the price such as recurring, one time and usage.
priority	An integer. Priority level for applying this alteration among all the defined alterations on the order item price.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...
validFor	A time period. The period for which the price alteration is valid.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

ProdSpecCharValueUse sub-resource

A use of the ProdSpecCharacteristicValue by a ProductOffering to which additional properties (attributes) apply or override the properties of similar properties contained in ProdSpecCharacteristicValue. It should be noted that characteristics which their value(s) addressed by this object must exist in corresponding product specification. The available characteristic values for a ProductSpecCharacteristic in a Product specification can be modified at the ProductOffering level. For example, a characteristic 'Color' might have values White, Blue, Green, and Red. But, the list of values can be restricted to e.g. White and Blue in an associated product offering. It should be noted that the list of values in

'ProdSpecCharValueUse' is a strict subset of the list of values as defined in the corresponding product specification characteristics.

name	A string. Name of the associated productSpecCharacteristic.
description	A string. A narrative that explains in detail what the productSpecCharacteristic is.
valueType	A string. A kind of value that the characteristic value can take on, such as numeric, text and so forth.
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.
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.
validFor	A time period. The period for which the productSpecCharacteristic is valid.
productSpecCharacteristicValue	A list of product spec characteristic values (ProductSpecCharacteristicValue [1..*]). A number or text that can be assigned to a ProductSpecCharacteristic.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

ProductOfferingPrice (POP) sub-resource

An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased. The price is valid for a defined period of time and may not represent the actual price paid by a customer. It is based on both the basic cost to develop and produce products and the enterprise's policy on revenue targets. This price may be further revised through discounting (prodOfferPriceAlteration). The price, applied for a productOffering may also be influenced by the productOfferingTerm, the customer selected – e.g. a productOffering can be offered with multiple terms, like commitment periods for the contract and it may be cheaper with a 24-month commitment than with a 12-month commitment.

id	A string. unique id of this POP.
----	----------------------------------

href	A string. Hyperlink reference to the product offering price if it is exposed as a resource
name	A string. Name of the productOfferingPrice.
description	A string. Description of the productOfferingPrice.
version	A string. ProductOffering version.
validFor	A time period. The period for which the productOfferingPrice is valid.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
unitOfMeasure	A string. A unit representing how an ProductOffering is available at the offered price. Its meaning depends on the priceType. It could be a price, a rate, or a discount. It Could be minutes, GB...
recurringChargePeriod	A string. The period to repeat the application of the price Could be month, week...
@type	A string. The class type of this Product Offering Price (POP).
@baseType	A string. the immediate base class type of this product offering price (POP).
@schemaLocation	A string. hyperlink reference to the schema describing this POP.
isBundle	A boolean. A flag indicating if this POP is composite (bundle) or not.
price	A sub-resource that provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceAlteration	A list of priceAlteration sub-resources (PriceAlteration [*]). A priceAlteration object represents an amount, usually of money, that modifies the price charged for an order item

ProductOfferingTerm sub-resource

A condition under which a ProductOffering is made available to Customers. For instance, a productOffering can be offered with multiple commitment periods.

name	A string. Name of the productOfferingTerm.
description	A string. Description of the productOfferingTerm.
duration	A quantity (Quantity). Duration of the productOfferingTerm.
validFor	A time period. The period for which the productOfferingterm is valid.

@type	A string. The class type of ProductOfferingTerm.
@schemaLocation	A string. A link to the schema describing this product offering term.

ProductSpecCharacteristicValue sub-resource

A number or text that can be assigned to a ProductSpecCharacteristic.

default	A boolean. Indicates if the value is the default value for a characteristic.
unitOfMeasure	A string. Could be minutes, GB...
validFor	A time period. The period of time for which a value is applicable.
value	A discrete value that the characteristic can take on. The type of value is determined by 'valueType' characteristic.
valueFrom	A string. The low range value that a characteristic can take on.
valueTo	A string. The upper range value that a characteristic can take on.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text, and so forth.
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. Regular expression to define constraint on the allowed value.

AgreementRef relationship

Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

href	A string. Reference of the agreement.
id	A string. Identifier of the agreement.
name	A string. Name of the agreement.
@referredType	A string. class type of the referred agreement.

CategoryRef relationship

Category reference. The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other categories and/or product offerings, resource or service candidates.

id	A string. Unique reference of the category.
href	A string. Unique reference of the category.
version	A string. Category version.
name	A string. Name of the category.
@referredType	A string. the class type of the referred category.

ChannelRef relationship

Channel reference. It provides references to the corresponding channel for distribution and selling product offerings. The channel could be distribution channel or sales channel.

A distribution channel is the organization or entity by which a product catalog is presented to a customer.

A sales channel is a way by which a ServiceProvider makes available and sells ProductOfferings to the market. SalesChannels can include DirectSalesForce, SalesAgents, TeleMarketers, On-line, and AlternateChannels

id	A string. Unique identifier of the channel.
href	A string. Reference of the channel.
name	A string. Name of the channel.
@referredType	A string. (Class) type of the referred channel like DistributionChannel, SalesChannel and so on.

ConstraintRef relationship

Constraint reference. The Constraint resource represents a policy/rule applied to the product offering resource or its sub-resources.

id	A string. reference id to the target constraint.
href	A string. Hyperlink reference to the target constraint.
version	A string. constraint version.
name	A string. Name given to the constraint.
@referredType	A string. The (class) type of the referred constraint.

MarketSegmentRef relationship

provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

id	A string. Unique identifier of the market segment.
href	A string. Reference of the market segment.
name	A string. Name of the market segment.
@referredType	A string. (Class) type of the referred market segment.

PlaceRef relationship

Place reference. Place defines the places where the products are sold or delivered.

id	A string. Unique identifier of the place.
href	A string. Unique reference of the place.
name	A string. A user-friendly name for the place, such as "Paris Store", "London Store", "Main Home".
geoLocationUrl	A string (String). A url providing a map for localizing the place.
address	A string. A string characterizing an address (for instance a formatted address or an identifier taken from an address database or an address API).
@referredType	A string. class type of the referred Place object.
role	A string. Role of the place (for instance: 'home delivery', 'shop retrieval').

ProductSpecificationRef relationship

Product specification reference: A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

id	A string. Unique identifier of the product specification.
href	A string. Reference of the product specification.
version	A string. Version of the product specification.
name	A string. Name of the product specification.
@referredType	A string. class type of referred Product Specification.

ResourceCandidateRef relationship

ResourceCandidate reference: A resource candidate is an entity that makes a ResourceSpecification available to a catalog.

id	A string. Unique identifier of the resource candidate.
href	A string. Reference of the resource candidate.
version	A string. Version of the resource candidate.
name	A string. Name of the resource candidate.
@referredType	A string. The class type of referred resource candidate.

SLARef relationship

ServiceLevelAgreement reference: A service level agreement (SLA) is a type of agreement that represents a formal negotiated agreement between two parties designed to create a common understanding about products, services, priorities, responsibilities, and so forth. The SLA is a set of appropriate procedures and targets formally or informally agreed between parties in order to achieve and maintain specified Quality of Service.

id	A string. Unique identifier of service level agreement.
href	A string. Reference of the service level agreement.
name	A string. Name of the service level agreement.
@referredType	A string. Class type of referred Service Level Agreement.

ServiceCandidateRef relationship

ServiceCandidate reference. ServiceCandidate is an entity that makes a ServiceSpecification available to a catalog.

id	A string. Unique identifier of the service candidate.
href	A string. Unique reference of the service candidate.
version	A string. Version of the service candidate.
name	A string. Name of the service candidate.
@referredType	A string. The Class type of referred service candidate.

Json representation sample

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

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "2.0",
  "@type": "ProductOffering",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProductOffering.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": true,
  "isSellable": true,
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z",
    "endDateTime": "2017-06-19T00:00:00.0Z"
  },
  "category":
  [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "@referredType": "Category",
      "name": "Cloud offerings"
    }
  ],
  "channel":
  [
    {
      "id": "13",
      "@referredType": "DistributionChannel",
      "href": "http://serverlocation:port/marketSales/channel/13",
      "name": "Online Channel"
    }
  ],
  "marketSegment":
  [
    {
      "id": "213",
      "@referredType": "MarketSegment",
      "href": "http://serverlocation:port/marketSegment/213",
      "name": "Market Segment East"
    }
  ],
  "place":
  [
    {
      "id": "12",
      "@referredType": "Place",

```

```

        "href": "http://serverlocation:port/marketSales/place/12",
        "name": "France"
    }
],
"attachment":
[
    {
        "id": "29",
        "href": "http://serverlocation:port/documentManagement/attachment/29",
        "@type": "Image",
        "@baseType": "Attachment",
        "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/Image.yml",
        "name": "Product Picture",
        "mimeType": ".png",
        "description": "the 480x320 image",
        "url": "http://xxxxx",
        "validFor": {
            "startDateTime": "2017-03-19T16:42:23-04:00",
            "endDateTime": ""
        }
    }
],
"bundledProductOffering":
[
    {
        "id": "15",
        "href":
"http://serverlocation:port/catalogManagement/productOffering/15",
        "lifecycleStatus": "Active",
        "name": "Offering 15",
        "bundledProdOfferOption":
        {
            "numberRelOfferLowerLimit": 1,
            "numberRelOfferUpperLimit": 1,
            "numberRelOfferDefault": 1
        }
    },
    {
        "id": "64",
        "href":
"http://serverlocation:port/catalogManagement/productOffering/64",
        "lifecycleStatus": "Active",
        "name": "Offering 64",
        "bundledProdOfferOption":
        {
            "numberRelOfferLowerLimit": 1,
            "numberRelOfferUpperLimit": 5,
            "numberRelOfferDefault": 1
        }
    }
],
"serviceLevelAgreement":
{
    "id": "28",
    "@referredType": "ServiceLevelAgreement",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",

```

```

        "name": "Standard SLA"
    },
    "productSpecification":
    {
        "id": "13",
        "@referredType": "ProductSpecification",
        "href":
        "http://serverlocation:port/catalogManagement/productSpecification/13",
        "name": "specification product 13"
    },
    "prodSpecCharValueUse":
    [
        {
            "name": "color",
            "minCardinality": 1,
            "maxCardinality": 1,
            "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            },
            "productSpecification":
            {
                "id": "13",
                "@type": "ProductSpecification",
                "href":
                "http://serverlocation:port/catalogManagement/productSpecification/13",
                "name": "specification product 13"
            },
            "productSpecCharacteristicValue":
            [
                {
                    "valueType": "string",
                    "isDefault": true,
                    "value": "Black",
                    "unitOfMeasure": "",
                    "valueFrom": "",
                    "valueTo": "",
                    "validFor":
                    {
                        "startDateTime": "2017-04-19T16:42:23.0Z"
                    }
                },
                {
                    "valueType": "string",
                    "isDefault": false,
                    "value": "White",
                    "unitOfMeasure": "",
                    "valueFrom": "",
                    "valueTo": "",
                    "validFor":
                    {
                        "startDateTime": "2017-04-19T16:42:23.0Z"
                    }
                }
            ]
        }
    ],
    {
        "name": "size",

```



```

        "minCardinality": 1,
        "maxCardinality": 1,
        "validFor":
        {
            "startDateTime": "2017-04-19T16:42:23.0Z"
        },
        "productSpecification":
        {
            "id": "13",
            "href":
            "http://serverlocation:port/catalogManagement/productSpecification/13",
            "name": "specification product 13"
        },
        "productSpecCharacteristicValue":
        [
            {
                "valueType": "string",
                "isDefault": true,
                "value": "Large",
                "unitOfMeasure": "",
                "valueFrom": "",
                "valueTo": "",
                "validFor":
                {
                    "startDateTime": "2017-04-19T16:42:23.0Z"
                }
            }
        ]
    },
    "serviceCandidate":
    {
        "id": "14",
        "@referredType": "ServiceCandidate",
        "href":
        "http://serverlocation:port/serviceCatalogManagement/serviceCandidate/14",
        "version": "2.0",
        "name": "Service Candidate 14"
    },

    "resourceCandidate":
    {
        "id": "23",
        "@referredType": "ResourceCandidate",
        "href":
        "http://serverlocation:port/resourceCatalogManagement/resourceCandidate/23",
        "version": "1.0",
        "name": "Resource Candidate 23"
    },

    "productOfferingTerm":
    [
        {
            "name": "12 Month",
            "description": "12 month contract",
            "@type": "ProductOfferingTerm",
            "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProductOfferingTerm.yml",
            "duration": "12",

```

```

        "validFor": {
            "startDateTime": "2017-04-19T16:42:23.0Z",
            "endDateTime": "2017-06-19T00:00:00.0Z"
        }
    },
    "productOfferingPrice": [
        {
            "name": "Monthly Price",
            "description": "monthly price",
            "id": "161",
            "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/161",
            "@type": "ProductOfferingPrice",
            "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProductOfferingPrice.yml",
            "@baseType": "",
            "isBundle": false,
            "version": "1.0",
            "validFor": {
                "startDateTime": "2017-04-19T16:42:23.0Z",
                "endDateTime": "2017-06-19T00:00:00.0Z"
            },
            "priceType": "recurring",
            "unitOfMeasure": "",
            "recurringChargePeriod": "monthly",
            "price": {
                "dutyFreeAmount": "10",
                "percentage": 0.0,
                "taxIncludedAmount": "12",
                "taxRate": 20
            }
        },
        {
            "name": "Usage Price",
            "description": "usageprice",
            "id": "162",
            "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/162",
            "@type": "ProductOfferingPrice",
            "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProductOfferingPrice.yml",
            "@baseType": "",
            "isBundle": false,
            "version": "1.0",
            "validFor": {
                "startDateTime": "2017-04-19T16:42:23.0Z",
                "endDateTime": "2017-06-19T00:00:00.0Z"
            },
            "priceType": "usage",
            "unitOfMeasure": "Minute",
            "price": {
                "dutyFreeAmount": "1",
                "percentage": 0.0,

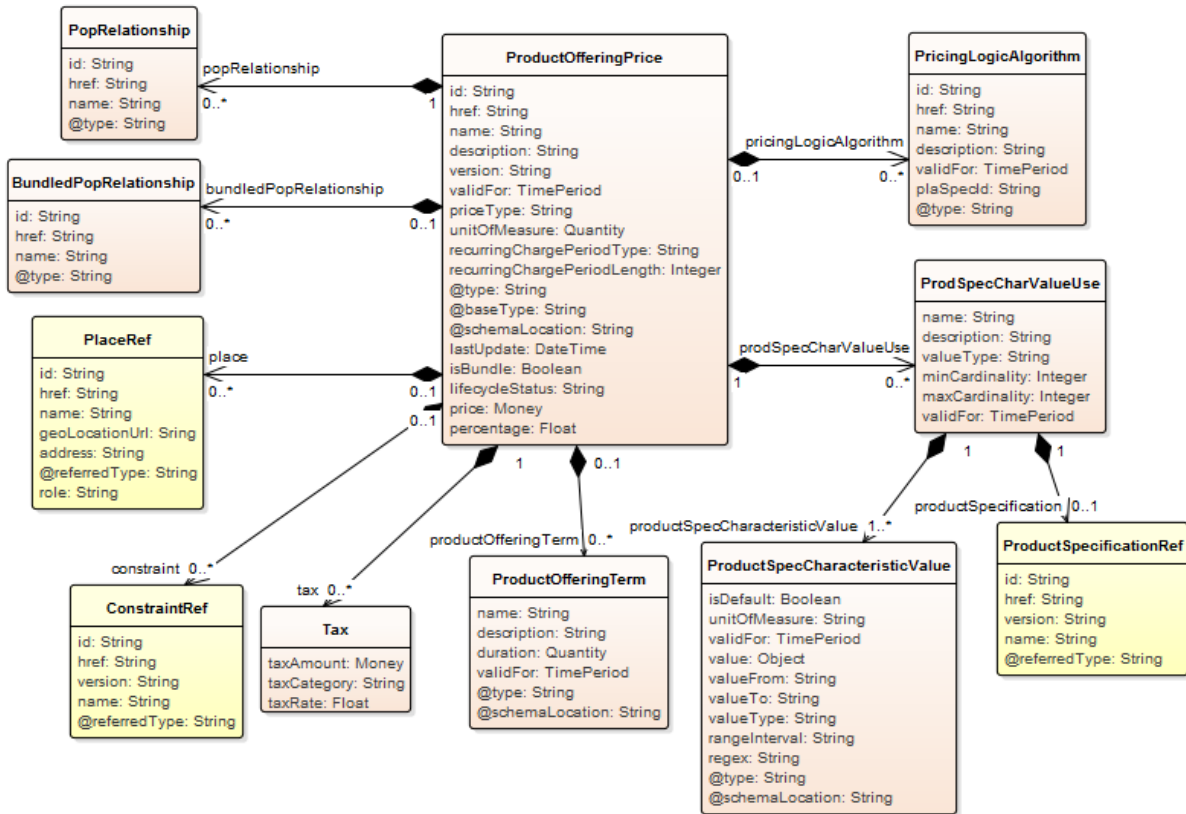
```

```
        "taxIncludedAmount": "1",
        "taxRate": 20.0
    },
    "recurringChargePeriod": "",
    "prodSpecCharValueUse": []
},
{
    "name": "Shipping Discount",
    "description": "One-time shipping discount",
    "id": "163",
    "href":
    "http://serverlocation:port/catalogManagement/productOfferingPrice/163",
    "@type": "ProductOfferPriceAlteration",
    "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/P
    roductOfferPriceAlteration.yml",
    "@baseType": "ProductOfferingPrice",
    "isBundle": false,
    "validFor": {
        "startDateTime": "2017-04-19T16:42:23.0Z"
    },
    "priceType": "One Time discount",
    "unitOfMeasure": "EUR",
    "price": {
        "percentage": 100.0
    },
    "priceCondition": "apply if total amount of the order is greater than
    300.00",
    "recurringChargePeriod": "",
    "prodSpecCharValueUse": []
}
]
}
```

PRODUCT OFFERING PRICE RESOURCE

The Product Offering Price (POP) resource describes prices that are related to product offerings. This resource represents both ComponentProdOfferPrice and CompositeProdOfferPrice with a flag 'isBundle'. If this flag is 'false', the POP is a (single) Component Product Offering Price.

Resource model



Field descriptions:

ProductOfferingPrice: It represents an amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased. This price may be further revised through discounting (prodOfferPriceAlteration). The price, applied for a productOffering may also be influenced by the productOfferingTerm, the customer selected – e.g. a productOffering can be offered with multiple terms, like commitment periods for the contract. The price is valid for a defined period of time and may not represent the actual price paid by a customer.

It should be noted that a product offering price can be created via Product Offering resource as well. However, some POP sub-resources may not be exposed thru Product Offering resource.

id	A string. unique id of this resource.
----	---------------------------------------

href	A string. Hyperlink reference of this resource
name	A string. Name of the productOfferingPrice.
description	A string. Description of the productOfferingPrice.
version	A string. ProductOfferingPrice version.
validFor	A time period. The period for which the productOfferingPrice is valid.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
unitOfMeasure	A money (Quantity). A number and unit representing how many (for instance 1 dozen) of an ProductOffering is available at the offered price. Its meaning depends on the priceType. It could be a price, a rate, or a discount.
recurringChargePeriodType	A string. The period to repeat the application of the price Could be month, week...
recurringChargePeriodLength	An integer. the period of the recurring charge: 1, 2, ... It sets to zero if it is not applicable.
@type	A string. The class type of this Product offering.
@baseType	A string. the immediate base class type of this product offering.
@schemaLocation	A string. hyperlink reference to the schema describing this resource.
lastUpdate	A date time (DateTime). the last update time of this POP.
isBundle	A boolean. A flag indicating if this POP is composite (bundle) or not.
lifecycleStatus	A string. the lifecycle status of this POP.
price	A money (Money). The amount of money that characterizes the price.
percentage	A float. Percentage to apply for ProdOfferPriceAlteration (Discount).
bundledPopRelationship	A list of bundled pop relationships (BundledPopRelationship [*]). this object represents a bundle relationship from a bundle product offering (parent) to a simple product offering (child). A simple product offering may participate in more than one bundle relationships.

popRelationship	A list of pop relationships (PopRelationship [*]). product offering relationship.
prodSpecCharValueUse	A list of prod spec char value uses (ProdSpecCharValueUse [*]). A use of the ProdSpecCharacteristicValue by a ProductOfferingPrice to which additional properties (attributes) apply or override the properties of similar properties contained in ProdSpecCharacteristicValue. It should be noted that characteristics which their value(s) addressed by this object must exist in corresponding product specification. The available characteristic values for a ProductSpecCharacteristic in a Product specification can be modified at the ProductOffering and ProductOfferingPrice level. The list of values in 'ProdSpecCharValueUse' is a strict subset of the list of values as defined in the corresponding product specification characteristics.
productOfferingTerm	A list of product offering terms (ProductOfferingTerm [*]) applicable to this POP. A condition under which a ProductOfferingPrice is made available to Customers. For instance, a POP can be offered with multiple commitment periods.
place	A list of place references (PlaceRef [*]). Place defines the places where the products are sold or delivered.
constraint	A list of constraint references (ConstraintRef [*]). The Constraint resource represents a policy/rule applied to POP.
pricingLogicAlgorithm	A list of pricing logic algorithms (PricingLogicAlgorithm [*]). The PricingLogicAlgorithm entity represents an instantiation of an interface specification to external rating function (without a modeled behavior in SID). Some of the parameters of the interface definition may be already set (such as price per unit) and some may be gathered during the rating process from the event (such as call duration) or from ProductCharacteristicValues (such as assigned bandwidth).
tax	A list of taxes (Tax [*]). An amount of money levied on the price of a Product by a legislative body.

BundledPopRelationship sub-resource

This object represents a bundle relationship from a bundle (composite) product offering price (parent) to a simple (component) product offering price (child). A simple product offering price may participate in more than one bundle relationships.

id	A string. Unique identifier of the associated product offering price.
href	A string. hyperlink reference of the associated product offering price.
name	A string. Name of the associated product offering price.
@type	A string. (Class) type of the associated product offering price.

Money sub-resource

A base / value business entity used to represent money.

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

PopRelationship sub-resource

product offering relationship.

id	A string. Unique identifier of the associated product offering price.
href	A string. hyperlink reference of the associated product offering price.
name	A string. Name of the associated product offering price.
@type	A string. (Class) type of the associated product offering price.

PricingLogicAlgorithm sub-resource

The PricingLogicAlgorithm entity represents an instantiation of an interface specification to external rating function (without a modeled behavior in SID). Some of the parameters of the interface definition may be already set (such as price per unit) and some may be gathered during the rating process from the event (such as call duration) or from ProductCharacteristicValues (such as assigned bandwidth).

id	A string. unique id of the PLA.
href	A string. hyperlink reference of this PLA.
name	A string. Name given to the PLA.
description	A string. Description of the PLA.

validFor	A time period. The period for which the PLA is valid.
plaSpecId	A string. id of corresponding PLA specification.
@type	A string. The class type of this PLA.

ProdSpecCharValueUse sub-resource

A use of the ProdSpecCharacteristicValue by a ProductOfferingPrice (POP) to which additional properties (attributes) apply or override the properties of similar properties contained in ProdSpecCharacteristicValue. It should be noted that characteristics which their value(s) addressed by this object must exist in corresponding product specification. The available characteristic values for a ProductSpecCharacteristic in a Product specification can be modified at the ProductOffering or ProductOfferingPrice level. The list of values in 'ProdSpecCharValueUse' is a strict subset of the list of values as defined in the corresponding product specification characteristics.

name	A string. Name of the associated productSpecCharacteristic.
description	A string. A narrative that explains in detail what the productSpecCharacteristic is.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text and so forth.
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.
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.
validFor	A time period. The period for which the productSpecCharacteristic is valid.
productSpecCharacteristicValue	A list of product spec characteristic values (ProductSpecCharacteristicValue [1..*]). A number or text that can be assigned to a ProductSpecCharacteristic.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a

ProductOffering to customers or other parties playing a party role.

ProductOfferingTerm sub-resource

A condition under which a ProductOfferingPrice is made available to customers. For instance, a productOfferingPrice can be offered with multiple commitment periods.

name	A string. Name of the productOfferingTerm.
description	A string. Description of the productOfferingTerm.
duration	A quantity (Quantity). Duration of the productOfferingTerm.
validFor	A time period. The period for which the productOfferingterm is valid.
@type	A string. The class type of ProductOfferingTerm.
@schemaLocation	A string. A link to the schema describing this product offering term.

ProductSpecCharacteristicValue sub-resource

A number or text that can be assigned to a ProductSpecCharacteristic.

default	A boolean. Indicates if the value is the default value for a characteristic.
unitOfMeasure	A string. Could be minutes, GB...
validFor	A time period. The period of time for which a value is applicable.
value	A discrete value that the characteristic can take on. The type of value is determined by 'valueType' characteristic.
valueFrom	A string. The low range value that a characteristic can take on.
valueTo	A string. The upper range value that a characteristic can take on.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text, and so forth.
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. Regular expression to define constraint on the allowed value.

Quantity sub-resource

A base / value and unit used to represent quantity.

amount	A long (Long). A quantity of something, typically the total of a thing or things in number, size, value, extent, or money.
units	A string. The unit of measure for the quantity, such as meters, cubic yards, kilograms [ISO 80000], and the currency referring to [ISO 4217].

Tax sub-resource

An amount of money levied on the price of a Product by a legislative body.

taxAmount	A money (Money). tax amount.
taxCategory	A money (Money). A categorization of the tax rate.
taxRate	A float. Tax rate.

ConstraintRef relationship

Constraint reference. The Constraint resource represents a policy/rule applied to a POP.

id	A string. reference id to the target constraint.
href	A string. Hyperlink reference to the target constraint.
version	A string. constraint version.
name	A string. Name given to the constraint.
@referredType	A string. The (class) type of the referred constraint.

PlaceRef relationship

Place reference. Place defines the places where products are sold or delivered and this POP can be applied.

id	A string. Unique identifier of the place.
href	A string. Unique reference of the place.
name	A string. A user-friendly name for the place, such as "Paris Store", "London Store", "Main Home".
geoLocationUrl	A string (String). A url providing a map for localizing the place.

address	A string. A string characterizing an address (for instance a formatted address or an identifier taken from an address database or an address API).
@referredType	A string. class type of the referred Place object.
role	A string. Role of the place (for instance: 'home delivery', 'shop retrieval').

ProductSpecificationRef relationship

Product specification reference: A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

id	A string. Unique identifier of the product specification.
href	A string. Reference of the product specification.
version	A string. Version of the product specification.
name	A string. Name of the product specification.
@referredType	A string. class type of referred Product Specification.

Json representation sample

Below is a representation of the ProductOfferingPrice resource in JSON format representing a component (simple) POP.

```
{
  "id": "82",
  "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/82",
  "version": "1.0",
  "@type": "ProdOfferPriceCharge",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProdOfferPriceCharge.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "name": "Monthly Price",
  "description": "monthly price",
  "isBundle": false,
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z",
    "endDateTime": "2018-06-19T00:00:00.0Z"
  },
  "priceType": "recurring",
  "unitOfMeasure": {
    "amount": 10,
    "units": "Currency"
  }
}
```

```

    },
    "recurringChargePeriodType": "monthly",
    "recurringChargePeriodLength": 1,
    "percentage": 0.0,
    "price":
    {
        "amount": 10,
        "units": "EUR"
    },
    "pricingLogicAlgorithm":
    {
        "id": "533",
        "href": "http://serverlocation:port/catalogManagement/pla/533",
        "@type": "RecurringRatingPLA",
        "name": "PLA_rec",
        "description": "PLA that rates Recurring event",
        "plaSpecId": "525",
        "validFor":
        {
            "startDateTime": "2017-04-19T16:42:23.0Z",
            "endDateTime": "2018-06-19T00:00:00.0Z"
        }
    },
    "constraint": [
        {
            "@referredType": "PriceConstraint",
            "name": "PriceRuleNo1",
            "id": "445",
            "version": "1.0",
            "href": "http://serverlocation:port/catalogManagement/constraint/445"
        }
    ],
    "prodSpecCharValueUse": [
        {
            "name": "billingCycleDayOfMonth",
            "description": "Billing Cycle- Day Of Month",
            "minCardinality": 1,
            "maxCardinality": 1,
            "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            },
            "productSpecification":
            {
                "id": "13",
                "href":
                "http://serverlocation:port/catalogManagement/productSpecification/13",
                "name": "specification product 13"
            },
            "productSpecCharacteristicValue": [
                {
                    "valueType": "number",
                    "isDefault": true,
                    "value": "4",
                    "unitOfMeasure": "Day",
                    "valueFrom": "",
                    "valueTo": ""
                }
            ]
        }
    ]

```

```

        "rangeInterval": "",
        "regex": "[1-9]|[12]\\d|3[01]",
        "validFor":
        {
            "startDateTime": "2017-04-19T16:42:23.0Z"
        }
    }
]
},
"place": [
    {
        "id": "12",
        "@referredType": "Place",
        "href": "http://serverlocation:port/marketSales/place/12",
        "geoLocationUrl": "http://mymaps.com/YURZZ",
        "address": "Calle Quijote 5, Madrid Spain",
        "role": "default delivery",
        "name": "Madrid Spain"
    }
],
"popRelationship": [
    {
        "id": "85",
        "@type": "ProdOfferPriceChange",
        "href":
"http://serverlocation:port/catalogManagement/prodOfferPriceChange/85",
        "name": "LoyatyCharge"
    }
],
"bundledPopRelationship": [],
"productOfferingTerm": [
    {
        "name": "12 Month",
        "description": "12 month contract",
        "@type": "ProductOfferingTerm",
        "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/Pr
oductOfferingTerm.yml",
        "duration": {
            "amount": 12,
            "units": "Month"
        },
        "validFor": {
            "startDateTime": "2017-04-19T16:42:23.0Z",
            "endDateTime": "2017-06-19T00:00:00.0Z"
        }
    }
]
}

```

Below is a representation of the ProductOfferingPrice resource in JSON format representing a composite POP.

```

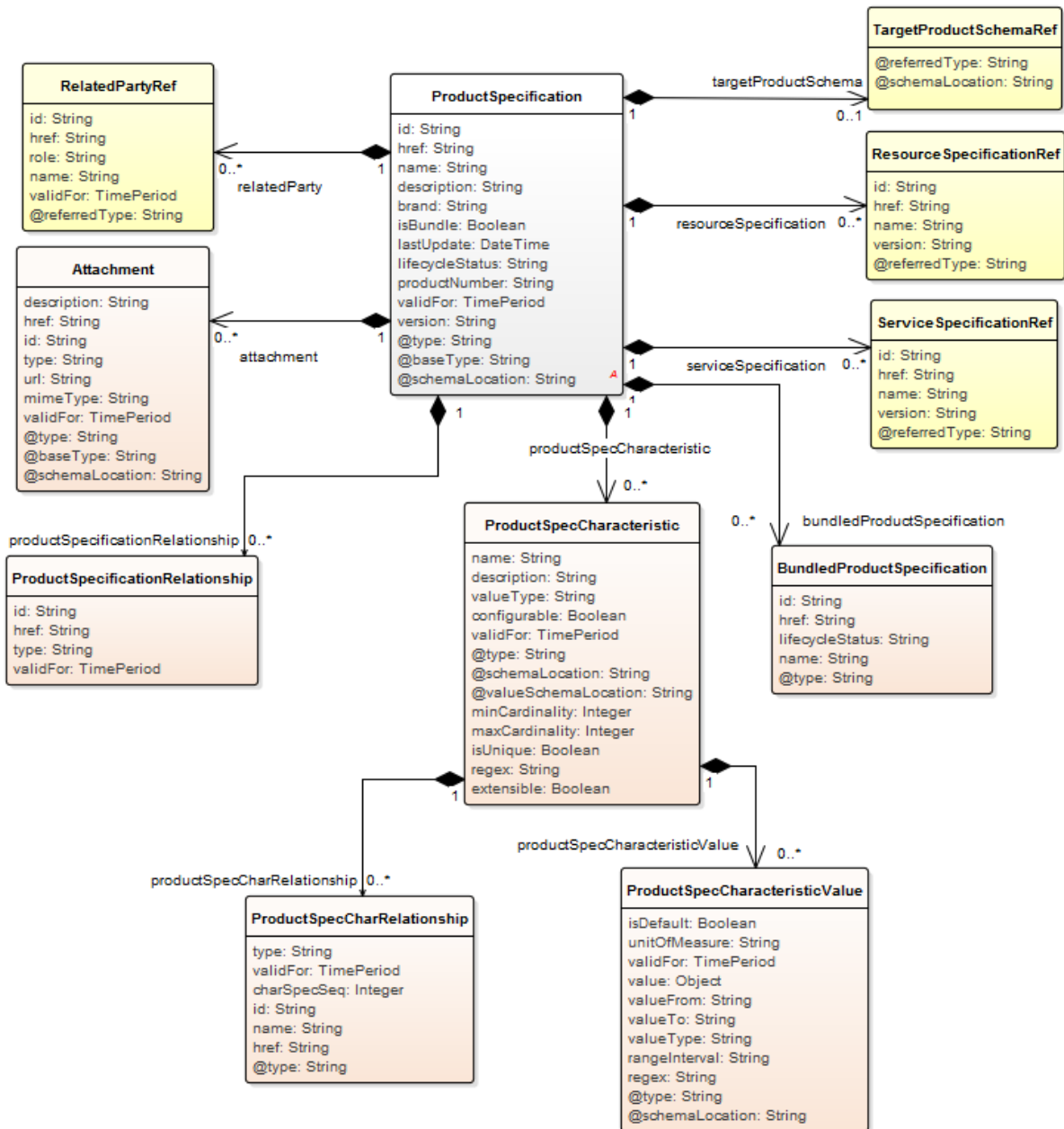
{
  "id": "89",
  "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/89",
  "version": "1.0",
  "@type": "CompositeProdOfferPrice",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/CompositeProdOfferPrice.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "name": "Composite Recurring Charge",
  "description": "Composite Recurring Charge",
  "isBundle": true,
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z",
    "endDateTime": "2018-06-19T00:00:00.0Z"
  },
  "constraint": [
    {
      "@referredType": "PriceConstraint",
      "name": "PriceRuleNo1",
      "id": "525",
      "href": "http://serverlocation:port/catalogManagement/constraint/525"
    }
  ],
  "popRelationship": [],
  "bundledPopRelationship": [
    {
      "id": "82",
      "@type": "ProdOfferPriceCharge",
      "href":
      "http://serverlocation:port/catalogManagement/productOfferingPrice/82",
      "name": "Monthly Price"
    },
    {
      "id": "84",
      "@type": "ProdOfferPriceAlteration",
      "href":
      "http://serverlocation:port/catalogManagement/productOfferingPriceAlteration/84",
      "name": "Discount Price"
    },
    {
      "id": "85",
      "@type": "ProdOfferPriceCharge",
      "href":
      "http://serverlocation:port/catalogManagement/prodOfferPriceCharge/85",
      "name": "LoyatyCharge"
    }
  ]
}

```

PRODUCT SPECIFICATION RESOURCE

The ProductSpecification Resource is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

Resource model:



Field descriptions:

ProductSpecification: is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

id	A string. Unique identifier of the product specification.
href	A string. Reference of the product specification.
name	A string. Name of the product specification.
description	A string. A narrative that explains in detail what the product specification is.
brand	A string. The manufacturer or trademark of the specification.
isBundle	A boolean. isBundle determines whether a productSpecification represents a single productSpecification (false), or a bundle of productSpecification (true).
lastUpdate	A date time (DateTime). Date and time of the last update.
lifecycleStatus	A string. Used to indicate the current lifecycle status.
productNumber	A string. An identification number assigned to uniquely identity the specification.
validFor	A time period. The period for which the product specification is valid.
version	A string. Product specification version.
@type	A string. class type of the product specification.
@baseType	A string. base class type (immediate parent) of the product specification.
@schemaLocation	A string. hyperlink reference to schema describing this object.
relatedParty	A list of related party references (RelatedPartyRef [*]). A related party defines party or party role linked to a specific entity.
productSpecCharacteristic	A list of product spec characteristics (ProductSpecCharacteristic [*]). A characteristic quality or distinctive feature of a ProductSpecification. The characteristic can be take on a discrete value, such as color, can take on a range of values, (for example, sensitivity of 100-240 mV), or can be derived from a formula (for example, usage time (hrs) = 30 - talk time

	*3). Certain characteristics, such as color, may be configured during the ordering or some other process.
serviceSpecification	A list of service specification references (ServiceSpecificationRef [*]). ServiceSpecification(s) required to realize a ProductSpecification.
productSpecificationRelationship	A list of product specification relationships (ProductSpecificationRelationship [*]). A migration, substitution, dependency or exclusivity relationship between/among product specifications.
resourceSpecification	A list of resource specification references (ResourceSpecificationRef [*]). The ResourceSpecification is required to realize a ProductSpecification.
attachment	A list of attachments (Attachment [*]). Complements the description of an element (for instance a product) through video, pictures...
bundledProductSpecification	A list of bundled product specifications (BundledProductSpecification [*]). A type of ProductSpecification that belongs to a grouping of ProductSpecifications made available to the market. It inherits of all attributes of ProductSpecification.

Attachment sub-resource

Complements the description of a product through video, pictures...

description	A string. A narrative text describing the content of the attachment.
href	A string. Reference of the attachment.
id	A string. Unique identifier of the attachment.
type	A string. Attachment type such as video, picture.
url	A string. Uniform Resource Locator, is a web page address (a subset of URI).
contentType	A string. Attachment mime type such as extension file for video, picture and document.
validFor	A time period. A base / value business entity used to represent a period of time between two timepoints.
@type	A string. the class type of the Attachment.
@baseType	A string. The immediate base class type of the attachment.

@schemaLocation	A string. A link to the schema describing this attachment entity.
-----------------	---

BundledProductSpecification sub-resource

A type of ProductSpecification that belongs to a grouping of ProductSpecifications made available to the market. It inherits of all attributes of ProductSpecification.

id	A string. Unique identifier of the product specification.
href	A string. Reference of the product specification.
lifecycleStatus	A string. Used to indicate the current lifecycle status.
name	A string. Name of the product specification.
@type	A string. the class type of the corresponding product specification.

ProductSpecCharRelationship sub-resource

An aggregation, migration, substitution, dependency or exclusivity relationship between/among productSpecCharacteristics.

type	A string. Type of relationship such as aggregation, migration, substitution, dependency, exclusivity.
validFor	A time period. The period for which the productSpecCharRelationship is valid.
charSpecSeq	An integer. The order in which a CharacteristicSpecification appears within another CharacteristicSpecification that defines a grouping of CharacteristicSpecifications. For example, a grouping may represent the name of an individual. The given name is first, the middle name is second, and the last name is third.
id	A string. the identifier of the associated product specification.
name	A string. Name of the target product specification characteristic.
href	A string. Hyperlink reference to the target product specification.
@type	A string. Class type of target product specification.

ProductSpecCharacteristic sub-resource

A characteristic quality or distinctive feature of a ProductSpecification. The characteristic can be take on a discrete value, such as color, can take on a range of values, (for example, sensitivity of 100-240 mV), or can be derived from a formula (for example, usage time (hrs) =

30 - talk time *3). Certain characteristics, such as color, may be configured during the ordering or some other process.

name	A string. Name of the productSpecCharacteristic.
description	A string. A narrative that explains in detail what the productSpecCharacteristic is.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text and so forth.
configurable	A boolean. If true, it indicates that the productSpecCharacteristic value can be configured at run time by a consumer that uses the catalog to place an order or change product in product inventory.
validFor	A time period. The period for which the productSpecCharacteristic is valid.
@type	A string. the class type of this characteristic.
@schemaLocation	A string. hyperlink reference to the schema describing this characteristic.
@valueSchemaLocation	A string. This (optional) field provides a link to the schema describing the value type.
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.
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.
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".
regex	A string. A rule or principle represented in regular expression used to derive the value of a characteristic value.
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 product.
productSpecCharRelationship	A list of product spec char relationships (ProductSpecCharRelationship [*]). An aggregation,

	migration, substitution, dependency or exclusivity relationship between/among productSpecCharacteristics.
productSpecCharacteristicValue	A list of product spec characteristic values (ProductSpecCharacteristicValue [*]). A number or text that can be assigned to a ProductSpecCharacteristic.

ProductSpecCharacteristicValue sub-resource

A number or text that can be assigned to a ProductSpecCharacteristic.

isDefault	A boolean. Indicates if the value is the default value for a characteristic.
unitOfMeasure	A string. Could be minutes, GB...
validFor	A time period. The period of time for which a value is applicable.
value	An object (Object). A discrete value that the characteristic can take on. The type of value is determined by 'valueType' characteristic.
valueFrom	A string. The low range value that a characteristic can take on.
valueTo	A string. The upper range value that a characteristic can take on.
valueType	A string. A kind of value that the characteristic can take on, such as numeric, text, and so forth.
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. Regular expression to define constraint on the allowed value.
@type	A string. The class type of the characteristic value.
@schemaLocation	A string. Hyperlink reference to schema describing this object.

ProductSpecificationRelationship sub-resource

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

id	A string. Unique identifier of the productSpecification.
href	A string. Reference of the productSpecification.

type	A string. Type of relationship such as migration, substitution, dependency, exclusivity.
validFor	A time period. The period for which the productSpecificationRelationship is valid.

RelatedPartyRef relationship

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

id	A string. Unique identifier of a related party.
href	A string. Reference of the related party, could be a party reference or a party role reference.
role	A string. Role of the related party.
name	A string. Name of the related party.
validFor	A time period. Validity period of the related party.
@referredType	A string. The class type of party/party role reference

ResourceSpecificationRef relationship

Resource Specification reference: The ResourceSpecification is required to realize a ProductSpecification.

id	A string. Unique identifier of the resource specification.
href	A string. Reference of the resource specification.
name	A string. Name of the requiredResourceSpecification.
version	A string. Resource specification version.
@referredType	A string. the class type of associated resource specification.

ServiceSpecificationRef relationship

Service specification reference: ServiceSpecification(s) required to realize a ProductSpecification.

id	A string. Unique identifier of the service specification.
href	A string. Reference of the serviceSpecification.
name	A string. Name of the requiredServiceSpecification.

version	A string. Service specification version.
@referredType	A string. the class type of associated service specification.

TargetProductSchemaRef relationship

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

@referredType	A string. class type of the target product.
@schemaLocation	A string. This field provides a link to the schema describing the target product.

Json representation sample:

Below is a representation of the ProductSpecification resource in JSON format.

```
{
  "id": "22",
  "href":
"http://serverlocation:port/catalogManagement/productSpecification/22",
  "productNumber": "I42-340-DX",
  "version": "2.0",
  "@type": "ProductSpecification",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/Produ
ctSpecification.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "name": "iPhone 42",
  "description": "Siri works on this iPhone",
  "isBundle": true,
  "brand": "Apple",
  "lifecycleStatus": "Active",
  "validFor":
{
  "startDateTime": "2017-06-19T00:00:00.0Z",
  "endDateTime": "2018-04-19T16:42:23.0Z"
},
  "relatedParty":
[
  {
    "id": "1234",
    "href": "http://serverLocation:port/partyManagement/partyRole/1234",
    "role": "Owner",
    "name": "Gustave Flaubert",
    "validFor": {
      "startDateTime": "2017-03-19T16:42:23-04:00",
      "endDateTime": ""
    }
  }
],
  "attachment":
```

```

[
  {
    "id": "22",
    "href":
"http://serverlocation:port/documentManagement/attachment/22",
    "@type": "Image",
    "@baseType": "Attachment",
    "@schemaLocation":
"http://serverlocation:port/catalogManagement/schema/
Image.yml",
    "name": "Product Picture",
    "mimeType": ".jpeg",
    "url": "http://yyyyy",
    "description": "the product picture",
    "validFor": {
      "startDateTime": "2017-03-19T16:42:23-04:00",
      "endDateTime": ""
    }
  }
],
"bundledProductSpecification":
[
  {
    "id": "15",
    "@type": "ProductSpecification",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/15",
    "lifecycleStatus": "Active",
    "name": "Product specification 15"
  },
  {
    "id": "64",
    "@type": "ProductSpecification",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/64",
    "lifecycleStatus": "Active",
    "name": "Product specification 64"
  }
],
"targetProductSchema":{
  "@REFERREDType": "Product",
  "@schemaLocation":
"http://serverlocation:port/catalogManagement/schema/Product.yml"
},
"productSpecificationRelationship":
[
  {
    "id": "23",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/23",
    "type": "Dependency",
    "validFor":
    {
      "startDateTime": "2017-04-19T16:42:23.0Z"
    }
  }
],
"serviceSpecification":

```

```

[
  {
    "id": "22",
    "@referredType": "CustomerFacingServiceSpecification",
    "href":
"http://serverlocation:port/serviceCatalogManagement/serviceSpecification/22",
    "name": "specification 22",
    "version": "1.0"
  }
],
"resourceSpecification":
[
  {
    "id": "63",
    "@referredType": "PhysicalResourceSpecification",
    "href":
"http://serverlocation:port/resourceCatalogManagement/resourceSpecification/63",
    "name": "specification 63",
    "version": "1.0"
  }
],
"productSpecCharacteristic":
[
  {
    "name": "Screen Size",
    "description": "Screen size",
    "valueType": "Number",
    "configurable": false,
    "@type": "NumberChar",
    "@schemaLocation":
"http://serverlocation:port/catalogManagement/schema/NumberChar
.yml",
    "@valueSchemaLocation": "",
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "regex": "",
    "extensible": false,
    "productSpecCharRelationship": [
      {
        "type": "Dependency",

        "charSpecSeq": 1,
        "name": "Screen Size",
        "id": "43",
        "href":
"https://host:port/productSpecification/productSpe
cCharRelationship/43",
        "@type": "ProductSpecification",
        "validFor": {
          "startDateTime": "2017-04-19T16:42:23-04:00",
          "endDateTime": ""
        }
      }
    ]
  },
  "productSpecCharacteristicValue":
[

```



```

        {
            "isDefault": true,
            "value": "4.2",
            "unitOfMeasure": "inches",
            "valueFrom": "",
            "valueTo": "",
            "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            }
        }
    ],
    "validFor":
    {
        "startDateTime": "2017-04-19T16:42:23.0Z"
    }
},
{
    "name": "Colour",
    "description": "Colour",
    "valueType": "String",
    "@type": "String",
    "@schemaLocation":
    "http://serverlocation:port/catalogManagement/schema/String",
    "configurable": true,
    "@valueSchemaLocation": "a string ...",
    "minCardinality": 78,
    "maxCardinality": 13,
    "isUnique": true,
    "regex": "a string ...",
    "extensible": true,
    "productSpecCharRelationship": [],
    "productSpecCharacteristicValue":
    [
        {
            "isDefault": true,
            "value": "Black",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "@type": "",
            "@schemaLocation": "",
            "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            }
        },
        {
            "isDefault": false,
            "value": "White",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "@type": "",
            "@schemaLocation": "",
            "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            }
        }
    ]
}

```

```
    }
  ],
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z"
  }
]
}
```

Export Job Resource

An ExportJob resource represents a TASK used to export resources to a File.

Resource model



ExportJob fields

id	A string. Identifier of the export job.
href	A string. Reference of the export job.
query	A string. Used to scope the exported data. (identical to GET filter construct using target ID as base) "query": "@type=productOffering&version=2.0"
path	A string. URL of the root resource acting as the source for streaming content to the file specified by the export job. ../catalogManagement/productOffering
contentType	A string. The format of the exported data. It is by default "application/json".
status	A string. Status of the export job (not started, running, succeeded, failed).
url	A string. URL of the file containing the data to be exported. A file URL, which is of the form: file://host/path where host is the fully qualified domain name of the system on which the path is accessible, and path is a hierarchical directory path of the form directory/directory/.../name

Json representation sample

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

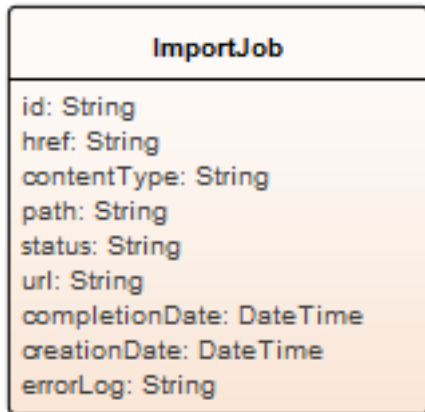
```
{
  "id": "3169",
```

```
"href": "https://host:port/catalogManagement/exportJob/3169",  
"query": "winterCatalog",  
"path": "/warning/system",  
"contentType": "text/html",  
"status": "completed",  
"url": "https://my/daily/job/NHCFD6",  
"completionDate": "2017-06-17T00:00",  
"creationDate": "2017-06-17T00:00",  
"errorLog": "http://my-platform/logging/errors.log"  
}
```

Import Job Resource

An ImportJob resource represent a TASK used to import resources from a File

Resource model



Field descriptions

ImportJob fields

id	A string. Identifier of the import job.
href	A string. Reference of the import job.
contentType	A string. Indicates the format of the imported data. By default, it is "application/json"
path	A string. URL of the root resource where the content of the file specified by the import job must be applied. ../catalogManagement/productOffering
status	A string. Status of the import job (not started, running, succeeded, failed).
url	A string. URL of the file containing the data to be imported. A file URL, which is of the form: file://host/path where host is the fully qualified domain name of the system on which the path is accessible, and path is a hierarchical directory path of the form directory/directory/.../name
completionDate	A date time (DateTime). Date at which the job was completed.
creationDate	A date time (DateTime). Date at which the job was created.
errorLog	A string. Reason for failure if status is failed.

Json representation sample

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

```
{
  "id": "6378",
  "href": "https://host:port/catalogManagement/importJob/6378",
  "contentType": "text/html",
  "path": "/warning/system",
  "status": "running",
  "url": "https://my/daily/job/NHCFD6",
  "completionDate": "2017-06-17T00:00",
  "creationDate": "2017-06-17T00:00",
  "errorLog": "http://my-platform/logging/errors.log"
}
```

Notification Resource Models

15 notifications are defined for this API

Notifications related to Catalog:

- CatalogCreationNotification
- CatalogRemoveNotification
- CatalogBatchNotification

Notifications related to Category:

- CategoryCreationNotification
- CategoryRemoveNotification

Notifications related to ProductOffering:

- ProductOfferingCreationNotification
- ProductOfferingAttributeValueChangeNotification
- ProductOfferingStateChangeNotification
- ProductOfferingRemoveNotification

Notifications related to ProductOfferingPrice:

- ProductOfferingPriceCreationNotification
- ProductOfferingPriceAttributeValueChangeNotification
- ProductOfferingPriceStateChangeNotification
- ProductOfferingPriceRemoveNotification

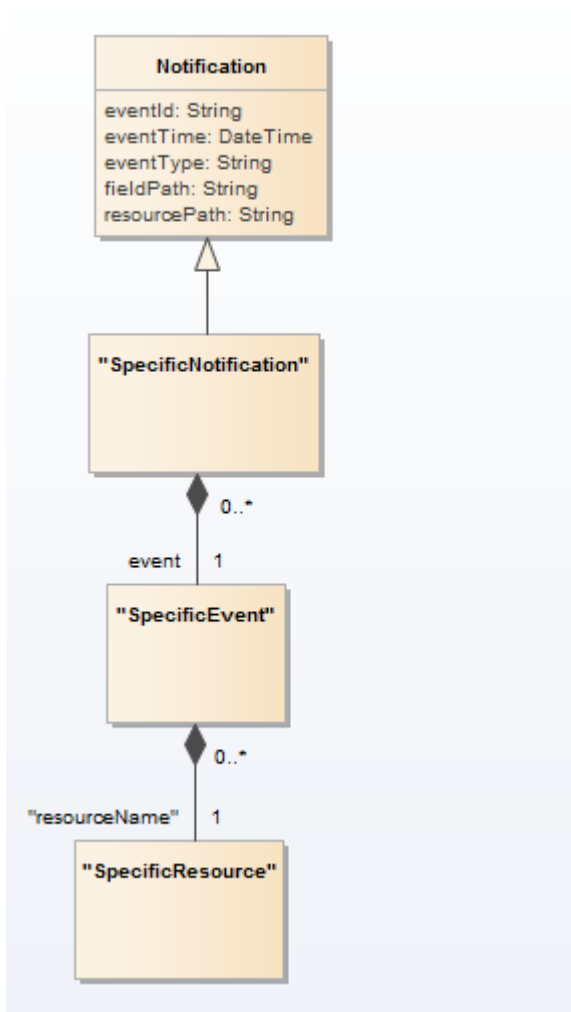
Notifications related to ProductSpecification:

- ProductSpecificationCreationNotification
- ProductSpecificationRemoveNotification

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

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

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



Catalog Creation Notification

Notification sent when a new Catalog resource is created.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"CatalogCreationNotification",
  "event": {
    "catalog" :
      {-- SEE Catalog RESOURCE SAMPLE --}
  }
}
```

Catalog Remove Notification

Notification sent when removing a Catalog resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"CatalogRemoveNotification",
  "event": {
    "catalog" :
      {-- SEE Catalog RESOURCE SAMPLE --}
  }
}
```

Catalog Batch Notification

Notification sent when a batch job on resource Catalog changes

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"CatalogBatchNotification",
  "event": {
    "catalog" :
      {-- SEE Catalog RESOURCE SAMPLE --}
  }
}
```

```
}  
}
```

Category Creation Notification

Notification sent when a new Category resource is created.

Json representation sample

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

```
{  
  "eventId":"00001",  
  "eventTime":"2015-11-16T16:42:25-04:00",  
  "eventType":"CategoryCreationNotification",  
  "event": {  
    "category" :  
      {-- SEE Category RESOURCE SAMPLE --}  
  }  
}
```

Category Remove Notification

Notification sent when removing a Category resource.

Json representation sample

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

```
{  
  "eventId":"00001",  
  "eventTime":"2015-11-16T16:42:25-04:00",  
  "eventType":"CategoryRemoveNotification",  
  "event": {  
    "category" :  
      {-- SEE Category RESOURCE SAMPLE --}  
  }  
}
```

Product Offering Creation Notification

Notification sent when a new ProductOffering resource is created.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingCreationNotification",
  "event": {
    "productOffering" :
      [-- SEE ProductOffering RESOURCE SAMPLE --]
  }
}
```

Product Offering Attribute Value Change Notification

Notification sent when changing an attribute of a ProductOffering resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingAttributeValueChangeNotification",
  "event": {
    "productOffering" :
      [-- SEE ProductOffering RESOURCE SAMPLE --]
  }
}
```

Product Offering State Change Notification

Notification sent when changing the state of a ProductOffering resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingStateChangeNotification",
  "event": {
    "productOffering" :
      [-- SEE ProductOffering RESOURCE SAMPLE --]
  }
}
```

```
}  
}
```

Product Offering Remove Notification

Notification sent when removing a ProductOffering resource.

Json representation sample

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

```
{  
  "eventId":"00001",  
  "eventTime":"2015-11-16T16:42:25-04:00",  
  "eventType":"ProductOfferingRemoveNotification",  
  "event": {  
    "productOffering" :  
      {-- SEE ProductOffering RESOURCE SAMPLE --}  
  }  
}
```

Product Offering Price Creation Notification

Notification sent when a new ProductOfferingPrice resource is created.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingPriceCreationNotification",
  "event": {
    "productOfferingPrice" :
      [-- SEE ProductOfferingPrice RESOURCE SAMPLE --]
  }
}
```

Product Offering Price Attribute Value Change Notification

Notification sent when changing an attribute of a ProductOfferingPrice resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingPriceAttributeValueChangeNotification",
  "event": {
    "productOfferingPrice" :
      [-- SEE ProductOfferingPrice RESOURCE SAMPLE --]
  }
}
```

Product Offering Price State Change Notification

Notification sent when changing the state of a ProductOfferingPrice resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductOfferingPriceStateChangeNotification",
  "event": {
    "productOfferingPrice" :
      [-- SEE ProductOfferingPrice RESOURCE SAMPLE --]
  }
}
```

```
}  
}
```

Product Offering Price Remove Notification

Notification sent when removing a ProductOfferingPrice resource.

Json representation sample

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

```
{  
  "eventId":"00001",  
  "eventTime":"2015-11-16T16:42:25-04:00",  
  "eventType":"ProductOfferingPriceRemoveNotification",  
  "event": {  
    "productOfferingPrice" :  
      {-- SEE ProductOfferingPrice RESOURCE SAMPLE --}  
  }  
}
```

Product Specification Creation Notification

Notification sent when a new ProductSpecification resource is created.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductSpecificationCreationNotification",
  "event": {
    "productSpecification" :
      {-- SEE ProductSpecification RESOURCE SAMPLE --}
  }
}
```

Product Specification Remove Notification

Notification sent when removing a ProductSpecification resource.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ProductSpecificationRemoveNotification",
  "event": {
    "productSpecification" :
      {-- SEE ProductSpecification RESOURCE SAMPLE --}
  }
}
```

API OPERATION TEMPLATES

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 Catalog

List catalogs

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

Description

This operation list catalog 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 Catalog resources.

Request
GET /catalogManagement/catalog Accept: application/json
Response
200 <pre>[{ "id": "3583", "href": "https://host:port/entityCatalog/catalog/3583", "name": "Catalog Wholesale Business", "description": "This catalog ...", "@type": "a string ...", "@schemaLocation": "a string ...", "@baseType": "a string ...", "version": "1.0", "validFor": { "startDateTime": "2017-06-20T00:00", "endDateTime": "2018-01-13T00:00" }, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Active" }]</pre>

Retrieve catalog

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

Description

This operation retrieves a catalog 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 Catalog resource.

Request
GET /catalogManagement/catalog/3583 Accept: application/json
Response
200 <pre>{ "id": "3583", "href": "https://host:port/entityCatalog/catalog/3583", "name": "Catalog Wholesale Business", "description": "This catalog ...", "@type": "a string ...", "@schemaLocation": "a string ...", "@baseType": "a string ...", "version": "1.0", "validFor": { "startDateTime": "2017-06-20T00:00", "endDateTime": "2018-01-13T00:00" }, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Active" }</pre>

Create catalog

POST /catalog

Note: this operation is available only to ADMIN API users

Description

This operation creates a catalog entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a Catalog, 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
name	

Non- Mandatory Attributes	Default Value	Rule
description		
@type	ProductCatalog	
@schemaLocation		
@baseType		
version		
validFor		
lastUpdate		
lifecycleStatus		

Usage Samples

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

Request
POST /catalogManagement/catalog Content-Type: application/json <pre>{ "name": "Catalog Wholesale Business" }</pre>
Response
201 <pre>{ "id": "3583", "href": "https://host:port/entityCatalog/catalog/3583", "name": "Catalog Wholesale Business" }</pre>

Patch catalog

PATCH /catalog/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a catalog 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.

Notice that patching is possible only for 'admin' API users.

Patchable Attributes	Rule
name	
description	
@schemaLocation	
version	
validFor	
lifecycleStatus	

Non- Patchable Attributes	Rule
id	
href	
lastUpdate	
@type	
@baseType	

Usage Samples

Here's an example of a request for patching a Catalog resource.

Request
PATCH /catalogManagement/catalog/3583 Content-Type: application/merge-patch+json <pre>{ "name": "new name" }</pre>
Response
200 <pre>{ "id": "3583",</pre>

```

    "href": "https://host:port/entityCatalog/catalog/3583",
    "name": "new name",
    "description": "This catalog ...",
    "@type": "a string ...",
    "@schemaLocation": "a string ...",
    "@baseType": "a string ...",
    "version": "1.0",
    "validFor": {
      "startDateTime": "2017-06-20T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "lastUpdate": "2017-06-17T00:00",
    "lifecycleStatus": "Active"
  }

```

Delete catalog

DELETE /catalog/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a catalog entity.

Usage Samples

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

Request
DELETE /catalogManagement/catalog/42
Response
204

Operations on Category

List categories

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

Description

This operation list category 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 Category resources.

Request
GET /catalogManagement/category Accept: application/json
Response
200 <pre>[{ "id": "6187", "href": "https://host:port/catalogManagement/category/6187", "lastUpdate": "2017-06-17T00:00", "version": "2.1", "lifecycleStatus": "Launched", "validFor": { "startDateTime": "2017-06-13T00:00", "endDateTime": "2018-01-13T00:00" }, "parentId": "", "isRoot": true, "name": "Cloud", "description": "This category ...", "@type": "Category", "@baseType": "", "@schemaLocation": "a string ...", "subCategory": [], "productOffering": [{ "id": "2566", "href": "https://host:port/productOffering/productOffering/2566", "name": "Virtual Storage Medium", "@referredType": "ProductOffering" }] }]</pre>

```

    }
  ]
}
]
```

Retrieve category

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

Description

This operation retrieves a category 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 Category resource.

Request
GET /catalogManagement/category/6187 Accept: application/json
Response
200 <pre> { "id": "6187", "href": "https://host:port/catalogManagement/category/6187", "lastUpdate": "2017-06-17T00:00", "version": "2.1", "lifecycleStatus": "Launched", "validFor": { "startDateTime": "2017-06-13T00:00", "endDateTime": "2018-01-13T00:00" }, "parentId": "", "isRoot": true, "name": "Cloud", "description": "This category ...", "@type": "Category", "@baseType": "", "@schemaLocation": "a string ...", "subCategory": [], "productOffering": [{ "id": "2566",</pre>

```

    "href": "https://host:port/productOffering/productOffering/2566",
    "name": "Virtual Storage Medium",
    "@referredType": "a string ..."
  }
]
}

```

Create category

POST /category

Note: this operation is available only to ADMIN API users

Description

This operation creates a category entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a Category, 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
name	
parentId	If isRoot is set to "false", parentId is mandatory

Non- Mandatory Attributes	Default Value	Rule
lastUpdate		
version	1.0	
lifecycleStatus		
validFor		
parentId		
isRoot	true	
description		
@type	Category	
@baseType		
@schemaLocation		
subCategory		
productOffering		

Usage Samples

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

Request

```

POST /catalogManagement/category
Content-Type: application/json

```


<pre>{ "name": "Cloud" }</pre>
Response
<pre>201 { "id": "6187", "href": "https://host:port/catalogManagement/category/6187", "name": "Cloud" }</pre>

Patch category

PATCH /category/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a category 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.

Notice that patching is possible only for 'admin' API users.

Patchable Attributes	Rule
version	Should be greater than the current one
lifecycleStatus	Status should be valid Should be greater than startDateTime
validFor	endDateTime
parentId	The parent category should exist
isRoot	To be updated in compliance with the parentId. When isRoot is patched to false, parentId should indicate the parent category. When isRoot is patched to true, parentId should be empty.
name	
description	
@schemaLocation	It should exist
subCategory	It should exist

productOffering	It should exist
-----------------	-----------------

Non- Patchable Attributes	Rule
id	
href	
lastUpdate	
@type	
@baseType	

Usage Samples

Here's an example of a request for patching a Category resource.

Request
PATCH /catalogManagement/category/6187 Content-Type: application/merge-patch+json <pre>{ "name": "new name" }</pre>
Response
200 <pre>{ "id": "6187", "href": "https://host:port/catalogManagement/category/6187", "lastUpdate": "2017-06-17T00:00", "version": "2.1", "lifecycleStatus": "Launched", "validFor": { "startDateTime": "2017-06-13T00:00", "endDateTime": "2018-01-13T00:00" }, "parentId": "", "isRoot": true, "name": "new name", "description": "This category ...", "@type": "Category", "@baseType": "", "@schemaLocation": "a string ...", "subCategory": [{ "id": "6401", "href": "https://host:port/catalogManagement/category/6401", "version": "1.1", "name": "TV", "@referredType": "a string ..." }] }</pre>

```
"productOffering": [  
  {  
    "id": "2566",  
    "href": "https://host:port/productOffering/productOffering/2566",  
    "name": "Virtual Storage Medium",  
    "@referredType": "a string ..."  
  }  
]
```

Delete category

DELETE /category/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a category entity.

Usage Samples

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

Request
DELETE /catalogManagement/category/42
Response
204

Operations on Product Offering

List product offerings

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

Description

This operation list product offering entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation and a server may accept only queries with specified filtering to avoid an answer with too many items.

Usage Samples

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

Searching product offers on the category 'Secure Home'. The result items are shrunk to show only the id and name (fields=id,name)

Request
GET /catalogManagement/productOffering?fields=id,name&category.name="Secure Home" Accept: application/json
Response
200 <pre>[{ "id": "986781", "name": "Homelive Plus" }, { "id": "986782", "name": "Alarm Toolkit" }, { "id": "986783", "name": "Paranoia Home Kit" }]</pre>

Retrieve product offering

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

Description

This operation retrieves a product offering 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 ProductOffering resource.

Request
GET /catalogManagement/productOffering/1872 Accept: application/json
Response
200 <pre>{ "id": "1872", "href": "https://host:port/productOffering/productOffering/1872", "name": "My Quick BB Offer", "description": "This product offering ...", "isBundle": false, "isSellable": true, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Inactive", "validFor": { "startDateTime": "2017-06-18T00:00", "endDateTime": "2018-01-13T00:00" }, "version": "1.1", "@type": "a string ...", "@baseType": "a string ...", "@schemaLocation": "a string ...", "place": [{ "id": "9979", "href": "https://host:port/catalogManagement/place/9979", "name": "Main Store", "geoLocationUrl": "http://mymaps.com/YURFY", "address": "1 rue de l'impasse, Bruxelles Belgium", "@referredType": "a string ...", "role": "default delivery" }], "serviceLevelAgreement": { "id": "8082", "href": "https://host:port/slaManagement/sla/8082", "name": "a string ...", "@referredType": "a string ..." }, "productSpecification": { "id": "9881",</pre>

```

    "href": "https://host:port/catalogManagement/productSpecification/9881",
    "version": "1.1",
    "name": "Robotics999",
    "@referredType": "a string ..."
  },
  "channel": [
    {
      "id": "4406",
      "href": "https://host:port/catalogManagement/channel/4406",
      "name": "Online Channel",
      "@referredType": "a string ..."
    }
  ],
  "serviceCandidate": {
    "id": "8167",
    "href": "https://host:port/catalogManagement/serviceCandidate/8167",
    "version": "1.1",
    "name": "Mega Max",
    "@referredType": "a string ..."
  },
  "attachment": [
    {
      "description": "This attachment ...",
      "href": "http://hostname:port/documentManagement/attachment/22",
      "id": "22",
      "type": "Video",
      "url": "http://xxxxx",
      "mimeType": "a string ...",
      "validFor": {
        "startDateTime": "2017-06-15T00:00",
        "endDateTime": "2018-01-13T00:00"
      },
      "@type": "a string ...",
      "@baseType": "a string ...",
      "@schemaLocation": "a string ..."
    }
  ],
  "category": [
    {
      "id": "2646",
      "href": "https://host:port/catalogManagement/category/2646",
      "version": "2.1",
      "name": "Cloud",
      "@referredType": "a string ..."
    }
  ],
  "resourceCandidate": {
    "id": "8937",
    "href": "https://host:port/catalogManagement/resourceCandidate/8937",
    "name": "Mega Band",
    "@referredType": "a string ..."
  },
  "productOfferingTerm": [
    {
      "name": "New Client Condition",
      "description": "This product offering term ...",
      "duration": "three months",

```

```

    "validFor": {
      "startDateTime": "2017-06-15T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "@type": "a string ...",
    "@schemaLocation": "a string ..."
  }
],
"marketSegment": [
  {
    "id": "1266",
    "href": "https://host:port/productOfferingReferences/marketSegmentRef/1266",
    "name": "a string ...",
    "@referredType": "a string ..."
  }
],
"productOfferingPrice": [
  {
    "id": "1747",
    "href": "https://host:port/catalogManagement/productOfferingPrice/1747",
    "name": "Usage Price",
    "@type": "a string ..."
  }
],
"agreement": [
  {
    "href": "https://host:port/onboardingManagement/agreement/9934",
    "id": "9934",
    "name": "Summer Contract Agreement",
    "@referredType": "a string ..."
  }
],
"bundledProductOffering": [
  {
    "id": "1346",
    "href": "https://host:port/productOffering/bundledProductOffering/1346",
    "lifecycleStatus": "Inactive",
    "name": "Robust Offer",
    "bundledProductOffering": {
      "numberRelOfferLowerLimit": 6,
      "numberRelOfferUpperLimit": 76,
      "numberRelOfferDefault": 100
    }
  }
],
"prodSpecCharValueUse": [
  {
    "name": "a string ...",
    "description": "This prod spec char value use ...",
    "valueType": "a string ...",
    "minCardinality": 59,
    "maxCardinality": 90,
    "validFor": {
      "startDateTime": "2017-06-17T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "productSpecCharacteristicValue": [

```

```

    {
      "isDefault": false,
      "unitOfMeasure": "seconds",
      "validFor": {
        "startDateTime": "2017-06-16T00:00",
        "endDateTime": "2018-01-13T00:00"
      },
      "value": "blue",
      "valueFrom": "",
      "valueTo": "",
      "valueType": "string",
      "rangeInterval": "a string ...",
      "regex": "a string ..."
    }
  ],
  "productSpecification": {
    "id": "9141",
    "href": "https://host:port/catalogManagement/productSpecification/9141",
    "name": "Yolande132",
    "@referredType": "a string ..."
  }
}
]
}

```

Create product offering

POST /productOffering

Note: this operation is available only to ADMIN API users

Description

This operation creates a product offering entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a ProductOffering, 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
name	
bundledProductOffering	If isBundle is set to "true", bundledProductOffering is mandatory
productSpecification	it is mandatory if 'isBundle' is set to 'false'

Non- Mandatory Attributes	Default Value	Rule
description		
isBundle	false	
isSellable	true	
lastUpdate		
lifecycleStatus		

validFor		
version		
@type	ProductOffering	
@baseType		
@schemaLocation		
place		
serviceLevelAgreement		
channel		
serviceCandidate		
attachment		
category		
resourceCandidate		
productOfferingTerm		
marketSegment		
productOfferingPrice		
agreement		
prodSpecCharValueUse		

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
POST, PATCH and DELETE allowed if engaged role is authorized to expose catalog

Default Values Summary

When creating the resource, the following table summarizes the default values applicable to optional attributes of the resource (or sub-resources).

Attributes	Default Value
@type	ProductOffering

Usage Samples

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

Request
POST /catalogManagement/productOffering Content-Type: application/json <pre>{ "name": "My Quick BB Offer" }</pre>
Response

```

201

{
  "id": "1872",
  "href": "https://host:port/productOffering/productOffering/1872",
  "name": "My Quick BB Offer",
  "@type": "ProductOffering"
}

```

Patch product offering

PATCH /productOffering/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a product offering 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.

Notice that patching is possible only for 'admin' API users.

Patchable Attributes	Rule
name	
description	
isBundle	To be updated in compliance with the bundledProductOffering
isSellable	
lifecycleStatus	Status should be valid
validFor	endDateTime should be greater than startDateTime
version	Should be greater than the current one
@schemaLocation	It should exist
place	It should exist
serviceLevelAgreement	It should exist
productSpecification	It should exist
channel	It should exist
serviceCandidate	It should exist
attachment	
category	It should exist
resourceCandidate	It should exist
productOfferingTerm	
marketSegment	It should exist
productOfferingPrice	

agreement	It should exist
bundledProductOffering	To be updated in compliance with isBundle
prodSpecCharValueUse	

Non- Patchable Attributes	Rule
id	
href	
lastUpdate	
@type	
@baseType	

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
POST, PATCH and DELETE allowed if engaged role is authorized to expose catalog

Usage Samples

Here's an example of a request for patching a ProductOffering resource.

Changing the version of the product offer (using json-merge)

Request
PATCH /catalogManagement/productOffering/42 Content-Type: application/merge-patch+json <pre>{ "version": "2.1" }</pre>
Response
200 { Similar JSON as in GET response with version changed }

Delete product offering

DELETE /productOffering/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a product offering entity.

Usage Samples

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

Request
DELETE /catalogManagement/productOffering/42
Response
204

Operations on Product Offering Price

List product offering prices

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

Description

This operation list product offering price entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation and a server may accept only queries with specified filtering to avoid an answer with too many items.

Usage Samples

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

Request
GET /catalogManagement/productOfferingPrice Accept: application/json
Response
200 [{ "id": "82", "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/82", "version": "1.0", "@type": "ProdOfferPriceCharge", "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProdOfferPriceCharge.yml", "@baseType": "", "lastUpdate": "2017-04-19T16:42:23.0Z", "name": "Monthly Price", "description": "monthly price", "isBundle": false, "lifecycleStatus": "Active", "validFor": { "startDateTime": "2017-04-19T16:42:23.0Z", "endDateTime": "2018-06-19T00:00:00.0Z" }, "priceType": "recurring", "unitOfMeasure": { "amount": 10, "units": "Currency" }, "recurringChargePeriodType": "monthly", "recurringChargePeriodLength": 1, }

```

"percentage": 0.0,
"price":
{
    "amount": 10,
    "units": "EUR"
},
"pricingLogicAlgorithm":
{
    "id": "533",
    "href": "http://serverlocation:port/catalogManagement/pla/533",
    "@type": "RecurringRatingPLA",
    "name": "PLA_rec",
    "description": "PLA that rates Recurring event",
    "plaSpecId": "525",
    "validFor":
        {
            "startDateTime": "2017-04-19T16:42:23.0Z",
            "endDateTime": "2018-06-19T00:00:00.0Z"
        }
},
"constraint": [
    {
        "@referredType": "PriceConstraint",
        "name": "PriceRuleNo1",
        "id": "445",
        "version": "1.0",
        "href": "http://serverlocation:port/catalogManagement/constraint/445"
    }
],
"prodSpecCharValueUse": [
    {
        "name": "billingCycleDayOfMonth",
        "description": "Billing Cycle- Day Of Month ",
        "minCardinality": 1,
        "maxCardinality": 1,
        "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            }
    },
    "productSpecification":
        {
            "id": "13",
            "href":
                "http://serverlocation:port/catalogManagement/productSpecification/13",
            "name": "specification product 13"
        }
},
"productSpecCharacteristicValue": [
    {
        "valueType": "number",
        "isDefault": true,
        "value": "4",
        "unitOfMeasure": "Day",
        "valueFrom": "",
        "valueTo": ""
    }
]

```

```

        "rangeInterval": "",
        "regex": "[1-9][12]\\d|3[01]",
        "validFor":
        {
            "startDateTime": "2017-04-19T16:42:23.0Z"
        }
    }
}
],
"place": [
    {
        "id": "12",
        "@referredType": "Place",
        "href": "http://serverlocation:port/marketSales/place/12",
        "geoLocationUrl": "http://mymaps.com/YURZZ",
        "address": "Calle Quijote 5, Madrid Spain",
        "role": "default delivery",
        "name": "Madrid Spain"
    }
],
"popRelationship": [
    {
        "id": "85",
        "@type": "ProdOfferPriceCharge",
        "href":
"http://serverlocation:port/catalogManagement/prodOfferPriceCharge/85",
        "name": "LoyatyCharge"
    }
],
"bundledPopRelationship": [],
"productOfferingTerm": [
    {
        "name": "12 Month",
        "description": "12 month contract",
        "@type": "ProductOfferingTerm",
        "@schemaLocation": "http://serverlocation:port/catalogManagement/schema
/ProductOfferingTerm.yml",
        "duration": {
            "amount": 12,
            "units": "Month"
        },
        "validFor": {
            "startDateTime": "2017-04-19T16:42:23.0Z",
            "endDateTime": "2017-06-19T00:00:00.0Z"
        }
    }
]
}
]

```

Retrieve product offering price

GET

/productOfferingPrice/{id}?fields=...&{filtering}

Description

This operation retrieves a product offering price 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 ProductOfferingPrice resource.

Request
GET /catalogManagement/productOfferingPrice/82 Accept: application/json
Response
200 <pre>{ "id": "82", "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/82", "version": "1.0", "@type": "ProdOfferPriceCharge", "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProdOfferPriceCharge.yml", "@baseType": "", "lastUpdate": "2017-04-19T16:42:23.0Z", "name": "Monthly Price", "description": "monthly price", "isBundle": false, "lifecycleStatus": "Active", "validFor": { "startDateTime": "2017-04-19T16:42:23.0Z", "endDateTime": "2018-06-19T00:00:00.0Z" }, "priceType": "recurring", "unitOfMeasure": { "amount": 10, "units": "Currency" }, "recurringChargePeriodType": "monthly", "recurringChargePeriodLength": 1, "percentage": 0.0, "price": { "amount": 10, "units": "EUR" }, "pricingLogicAlgorithm":</pre>


```

{
  "id": "533",
  "href": "http://serverlocation:port/catalogManagement/pla/533",
  "@type": "RecurringRatingPLA",
  "name": "PLA_rec",
  "description": "PLA that rates Recurring event",
  "plaSpecId": "525",
  "validFor":
    {
      "startDateTime": "2017-04-19T16:42:23.0Z",
      "endDateTime": "2018-06-19T00:00:00.0Z"
    }
},
"constraint": [
  {
    "@referredType": "PriceConstraint",
    "name": "PriceRuleNo1",
    "id": "445",
    "version": "1.0",
    "href": "http://serverlocation:port/catalogManagement/constraint/445"
  }
],
"prodSpecCharValueUse": [
  {
    "name": "billingCycleDayOfMonth",
    "description": "Billing Cycle- Day Of Month ",
    "minCardinality": 1,
    "maxCardinality": 1,
    "validFor":
      {
        "startDateTime": "2017-04-19T16:42:23.0Z"
      },
    "productSpecification":
      {
        "id": "13",
        "href":
          "http://serverlocation:port/catalogManagement/productSpecification/13",
        "name": "specification product 13"
      },
    "productSpecCharacteristicValue": [
      {
        "valueType": "number",
        "isDefault": true,
        "value": "4",
        "unitOfMeasure": "Day",
        "valueFrom": "",
        "valueTo": "",
        "rangeInterval": "",
        "regex": "[1-9]|[12]\\d|3[01]",
        "validFor":
          {
            "startDateTime": "2017-04-19T16:42:23.0Z"
          }
      }
    ]
  }
]
}

```

```

    ],
    "place": [
      {
        "id": "12",
        "@referredType": "Place",
        "href": "http://serverlocation:port/marketSales/place/12",
        "geoLocationUrl": "http://mymaps.com/YURZZ",
        "address": "Calle Quijote 5, Madrid Spain",
        "role": "default delivery",
        "name": "Madrid Spain"
      }
    ],
    "popRelationship": [
      {
        "id": "85",
        "@type": "ProdOfferPriceCharge",
        "href":
"http://serverlocation:port/catalogManagement/prodOfferPriceCharge/85",
        "name": "LoyatyCharge"
      }
    ],
    "bundledPopRelationship": [],
    "productOfferingTerm": [
      {
        "name": "12 Month",
        "description": "12 month contract",
        "@type": "ProductOfferingTerm",
        "@schemaLocation": "http://serverlocation:port/catalogManagement/schema
/ProductOfferingTerm.yml",
        "duration": {
          "amount": 12,
          "units": "Month"
        },
        "validFor": {
          "startDateTime": "2017-04-19T16:42:23.0Z",
          "endDateTime": "2017-06-19T00:00:00.0Z"
        }
      }
    ]
  ]
}

```

Create product offering price

POST /productOfferingPrice

Note: this operation is available only to ADMIN API users

Description

This operation creates a product offering price entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a ProductOfferingPrice, 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
name	
priceType	It is Mandatory if 'isBundle' flag is 'false'
bundledPopRelationship	It is Mandatory if 'isBundle' flag is 'true'

Non- Mandatory Attributes	Default Value	Rule
description		
version		
validFor		
unitOfMeasure		
recurringChargePeriodType		
recurringChargePeriodLength		
@type	ProductOfferingPrice	
@baseType		
@schemaLocation		
lastUpdate		
isBundle	false	
lifecycleStatus		
price		
percentage		
popRelationship		
prodSpecCharValueUse		
productOfferingTerm		
place		
constraint		
pricingLogicAlgorithm		
tax		

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
POST, PATCH and DELETE allowed if engaged role is authorized to expose catalog

Default Values Summary

When creating the resource, the following table summarizes the default values applicable to optional attributes of the resource (or sub-resources).

Attributes	Default Value
@type	ProductOfferingPrice

Usage Samples

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

Request
POST /catalogManagement/productOfferingPrice Content-Type: application/json <pre>{ "name": "Usage Price" }</pre>
Response
201 <pre>{ "id": "7800", "href": "https://host:port/catalogManagement/productOfferingPrice/7800", "name": "Usage Price", "@type": "ProductOfferingPrice" }</pre>

Patch product offering price

PATCH /productOfferingPrice/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a product offering price 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.

Notice that patching is possible only for 'admin' API users.

Patchable Attributes	Rule
name	
description	
version	Should be greater than the current one
validFor	endDateTime should be greater than startDateTime
priceType	Type should be valid

unitOfMeasure	
recurringChargePeriodType	
recurringChargePeriodLength	
@schemaLocation	
isBundle	To be updated in compliance with the bundledPopRelationship
lifecycleStatus	Status should be valid
price	
percentage	
bundledPopRelationship	To be updated in compliance with isBundle
popRelationship	It should exist
prodSpecCharValueUse	
productOfferingTerm	
place	It should exist
constraint	It should exist
pricingLogicAlgorithm	
tax	

Non- Patchable Attributes	Rule
id	
href	
lastUpdate	
@type	
@baseType	

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
POST, PATCH and DELETE allowed if engaged role is authorized to expose catalog

Usage Samples

Here's an example of a request for patching a ProductOfferingPrice resource.

Request
PATCH /catalogManagement/productOfferingPrice/82 Content-Type: application/merge-patch+json { "name": "new name" }
Response
200

```

{
  "id": "82",
  "href": "http://serverlocation:port/catalogManagement/productOfferingPrice/82",
  "version": "1.0",
  "@type": "ProdOfferPriceCharge",
  "@schemaLocation": "http://serverlocation:port/catalogManagement/schema/ProdOfferPriceCharge.yml",
  "@baseType": "",
  "lastUpdate": "2017-04-19T16:42:23.0Z",
  "name": "new name",
  "description": "monthly price",
  "isBundle": false,
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2017-04-19T16:42:23.0Z",
    "endDateTime": "2018-06-19T00:00:00.0Z"
  },
  "priceType": "recurring",
  "unitOfMeasure": {
    "amount": 10,
    "units": "Currency"
  },
  "recurringChargePeriodType": "monthly",
  "recurringChargePeriodLength": 1,
  "percentage": 0.0,
  "price":
  {
    "amount": 10,
    "units": "EUR"
  },
  "pricingLogicAlgorithm":
  {
    "id": "533",
    "href": "http://serverlocation:port/catalogManagement/pla/533",
    "@type": "RecurringRatingPLA",
    "name": "PLA_rec",
    "description": "PLA that rates Recurring event",
    "plaSpecId": "525",
    "validFor":
    {
      "startDateTime": "2017-04-19T16:42:23.0Z",
      "endDateTime": "2018-06-19T00:00:00.0Z"
    }
  },
  "constraint": [
    {
      "@referredType": "PriceConstraint",
      "name": "PriceRuleNo1",
      "id": "445",
      "version": "1.0",
      "href": "http://serverlocation:port/catalogManagement/constraint/445"
    }
  ],
  "prodSpecCharValueUse": [
    {
      "name": "billingCycleDayOfMonth",

```

```

        "description": "Billing Cycle- Day Of Month ",
        "minCardinality": 1,
        "maxCardinality": 1,
        "validFor":
            {
                "startDateTime": "2017-04-19T16:42:23.0Z"
            },
        "productSpecification":
            {
                "id": "13",
                "href":
                    "http://serverlocation:port/catalogManagement/productSpecification/13",
                "name": "specification product 13"
            },
        "productSpecCharacteristicValue": [
            {
                "valueType": "number",
                "isDefault": true,
                "value": "4",
                "unitOfMeasure": "Day",
                "valueFrom": "",
                "valueTo": "",
                "rangeInterval": "",
                "regex": "[1-9]|[12]\\d|3[01]",
                "validFor":
                    {
                        "startDateTime": "2017-04-19T16:42:23.0Z"
                    }
            }
        ]
    },
    "place": [
        {
            "id": "12",
            "@referredType": "Place",
            "href": "http://serverlocation:port/marketSales/place/12",
            "geoLocationUrl": "http://mymaps.com/YURZZ",
            "address": "Calle Quijote 5, Madrid Spain",
            "role": "default delivery",
            "name": "Madrid Spain"
        }
    ],
    "popRelationship": [
        {
            "id": "85",
            "@type": "ProdOfferPriceCharge",
            "href":
                "http://serverlocation:port/catalogManagement/prodOfferPriceCharge/85",
            "name": "LoyatyCharge"
        }
    ],
    "bundledPopRelationship": [],
    "productOfferingTerm": [
        {
            "name": "12 Month",

```

```
    "description": "12 month contract",
    "@type": "ProductOfferingTerm",
    "@schemaLocation": "http://serverlocation:port/catalogManagement/schema
/ProductOfferingTerm.yml",
    "duration": {
      "amount": 12,
      "units": "Month"
    },
    "validFor": {
      "startDateTime": "2017-04-19T16:42:23.0Z",
      "endDateTime": "2017-06-19T00:00:00.0Z"
    }
  }
}
```

Delete product offering price

DELETE /productOfferingPrice/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a product offering price entity.

Usage Samples

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

Request
DELETE /catalogManagement/productOfferingPrice/42
Response
204

Operations on Product Specification

List product specifications

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

Description

This operation list product specification entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation and a server may accept only queries with specified filtering to avoid an answer with too many items.

Usage Samples

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

Request
<pre>GET /catalogManagement/productSpecification Accept: application/json</pre>
Response
<pre>200 [{ "id": "6567", "href": "https://host:port/catalogManagement/productSpecification/6567", "name": "Clara987", "description": "This product specification ...", "brand": "Google", "isBundle": false, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Active", "productNumber": "WS45-230-FC", "validFor": { "startDateTime": "2017-06-19T00:00", "endDateTime": "2018-01-13T00:00" }, "version": "1.5", "@type": "a string ...", "@baseType": "a string ...", "@schemaLocation": "a string ...", "relatedParty": [{ "id": "7869", "href": "https://host:port/partyManagement/organization/7869", "role": "bill responsible", "@referredType": "a string ...", "name": "Gustave Flaubert",</pre>

```

    "validFor": {
      "startDateTime": "2017-06-16T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  },
],
"productSpecCharacteristic": [
  {
    "name": "Screen color",
    "description": "This product spec characteristic ...",
    "valueType": "string",
    "configurable": false,
    "validFor": {
      "startDateTime": "2017-06-20T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "@type": "a string ...",
    "@schemaLocation": "a string ...",
    "@valueSchemaLocation": "a string ...",
    "minCardinality": 1,
    "maxCardinality": 10,
    "isUnique": false,
    "regex": "a string ...",
    "extensible": false,
    "productSpecCharRelationship": [
      {
        "type": "aggregation",
        "validFor": {
          "startDateTime": "2017-06-14T00:00",
          "endDateTime": "2018-01-13T00:00"
        },
        "charSpecSeq": 54,
        "id": "6429",
        "name": "a string ...",
        "href": "https://host:port/catalogManagement/productSpecification/6429",
        "@type": "a string ..."
      }
    ],
    "productSpecCharacteristicValue": [
      {
        "isDefault": true,
        "unitOfMeasure": "seconds",
        "validFor": {
          "startDateTime": "2017-06-17T00:00",
          "endDateTime": "2018-01-13T00:00"
        },
        "value": "grey",
        "valueFrom": "",
        "valueTo": "",
        "valueType": "string",
        "rangeInterval": "a string ...",
        "regex": "a string ...",
        "@type": "a string ...",
        "@schemaLocation": "a string ..."
      }
    ]
  }
]
}

```

```

],
"serviceSpecification": [
  {
    "id": "3025",
    "href": "https://host:port/catalogManagement/serviceSpecification/3025",
    "name": "Zoulou15",
    "version": "1.1",
    "@referredType": "a string ..."
  }
],
"targetProductSchema": {
  "@referredType": "a string ...",
  "@schemaLocation": "a string ..."
},
"productSpecificationRelationship": [
  {
    "id": "2543",
    "href": "https://host:port/catalogManagement/productSpecification/2543",
    "type": "dependency",
    "validFor": {
      "startDateTime": "2017-06-16T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  }
],
"resourceSpecification": [
  {
    "id": "3295",
    "href": "https://host:port/catalogManagement/resourceSpecification/3295",
    "name": "Pentium300",
    "version": "3.2",
    "@referredType": "a string ..."
  }
],
"attachment": [
  {
    "description": "This attachment ...",
    "href": "http://hostname:port/documentManagement/attachment/22",
    "id": "22",
    "type": "Document",
    "url": "http://yyyyy",
    "mimeType": "a string ...",
    "validFor": {
      "startDateTime": "2017-06-15T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "@type": "a string ...",
    "@baseType": "a string ...",
    "@schemaLocation": "a string ..."
  }
],
"bundledProductSpecification": [
  {
    "id": "5190",
    "href": "https://host:port/catalogManagement/productSpecification/5190",
    "lifecycleStatus": "Active",
    "name": "Robotics999",

```

```

    "@type": "a string ..."
  }
]
}
]

```

Retrieve product specification

GET

`/productSpecification/{id}?fields=...&{filtering}`

Description

This operation retrieves a product 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

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

Request
GET /catalogManagement/productSpecification/6567 Accept: application/json
Response
200 <pre> { "id": "6567", "href": "https://host:port/catalogManagement/productSpecification/6567", "name": "Clara987", "description": "This product specification ...", "brand": "Google", "isBundle": false, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Active", "productNumber": "WS45-230-FC", "validFor": { "startDateTime": "2017-06-19T00:00", "endDateTime": "2018-01-13T00:00" }, "version": "1.5", "@type": "a string ...", "@baseType": "a string ...", "@schemaLocation": "a string ..." </pre>

```

"relatedParty": [
  {
    "id": "7869",
    "href": "https://host:port/partyManagement/organization/7869",
    "role": "bill responsible",
    "@referredType": "Organization",
    "name": "Gustave Flaubert",
    "validFor": {
      "startDateTime": "2017-06-16T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  }
],
"productSpecCharacteristic": [
  {
    "name": "Screen color",
    "description": "This product spec characteristic ...",
    "valueType": "string",
    "configurable": false,
    "validFor": {
      "startDateTime": "2017-06-20T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "@type": "a string ...",
    "@schemaLocation": "a string ...",
    "@valueSchemaLocation": "a string ...",
    "minCardinality": 1,
    "maxCardinality": 10,
    "isUnique": false,
    "regex": "a string ...",
    "extensible": false,
    "productSpecCharRelationship": [
      {
        "type": "aggregation",
        "validFor": {
          "startDateTime": "2017-06-14T00:00",
          "endDateTime": "2018-01-13T00:00"
        },
        "charSpecSeq": 54,
        "id": "6429",
        "name": "a string ...",
        "href": "https://host:port/catalogManagement/productSpecification/6429",
        "@type": "a string ..."
      }
    ],
    "productSpecCharacteristicValue": [
      {
        "isDefault": true,
        "unitOfMeasure": "seconds",
        "validFor": {
          "startDateTime": "2017-06-17T00:00",
          "endDateTime": "2018-01-13T00:00"
        },
        "value": "grey",
        "valueFrom": "",
        "valueTo": "",
        "valueType": "string",

```

```

        "rangeInterval": "a string ...",
        "regex": "a string ...",
        "@type": "a string ...",
        "@schemaLocation": "a string ..."
    }
  ]
}
],
"serviceSpecification": [
  {
    "id": "3025",
    "href": "https://host:port/catalogManagement/serviceSpecification/3025",
    "name": "Zoulou15",
    "version": "1.1",
    "@referredType": "a string ..."
  }
],
"targetProductSchema": {
  "@referredType": "a string ...",
  "@schemaLocation": "a string ..."
},
"productSpecificationRelationship": [
  {
    "id": "2543",
    "href": "https://host:port/catalogManagement/productSpecification/2543",
    "type": "dependency",
    "validFor": {
      "startDateTime": "2017-06-16T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  }
],
"resourceSpecification": [
  {
    "id": "3295",
    "href": "https://host:port/catalogManagement/resourceSpecification/3295",
    "name": "Pentium300",
    "version": "3.2",
    "@referredType": "a string ..."
  }
],
"attachment": [
  {
    "description": "This attachment ...",
    "href": "http://hostname:port/documentManagement/attachment/22",
    "id": "22",
    "type": "Document",
    "url": "http://yyyyy",
    "mimeType": "a string ...",
    "validFor": {
      "startDateTime": "2017-06-15T00:00",
      "endDateTime": "2018-01-13T00:00"
    },
    "@type": "a string ...",
    "@baseType": "a string ...",
    "@schemaLocation": "a string ..."
  }
]
}

```

```

    ],
    "bundledProductSpecification": [
      {
        "id": "5190",
        "href": "https://host:port/ catalogManagement/productSpecification/5190",
        "lifecycleStatus": "Active",
        "name": "Robotics999",
        "@type": "a string ..."
      }
    ]
  }
}

```

Create product specification

POST /productSpecification

Note: this operation is available only to ADMIN API users

Description

This operation creates a product specification entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a ProductSpecification, 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
name	
bundledProductSpecification	If isBundle is set to "true", bundledProductSpecification is mandatory

Non- Mandatory Attributes	Default Value	Rule
description		
brand		
isBundle	false	
lastUpdate		
lifecycleStatus		
productNumber		
validFor		
version		
@type	ProductSpecification	
@baseType		
@schemaLocation		
relatedParty		
productSpecCharacteristic		
serviceSpecification		
productSpecificationRelationship		
resourceSpecification		
attachment		

Usage Samples

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

Request
POST /catalogManagement/productSpecification Content-Type: application/json <pre>{ "name": "Clara987" }</pre>
Response
201 <pre>{ "id": "6567", "href": "https://host:port/catalogManagement/productSpecification/6567", "name": "Clara987" }</pre>

Patch product specification

PATCH /productSpecification/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a product 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.

Notice that patching is possible only for 'admin' API users.

Patchable Attributes	Rule
name	
description	
brand	

isBundle	To be updated in compliance with the bundledProductSpecification
lifecycleStatus	Status should be valid
productNumber	
validFor	endDateTime Should be greater than startDateTime
version	Should be greater than the current one
@schemaLocation	
relatedParty	It should exist
productSpecCharacteristic	
serviceSpecification	It should exist
productSpecificationRelationship	
resourceSpecification	It should exist
attachment	It should exist
bundledProductSpecification	To be updated in compliance with isBundle

Non- Patchable Attributes	Rule
id	
href	
@type	
@baseType	
lastUpdate	

Usage Samples

Here's an example of a request for patching a ProductSpecification resource.

<p>Request</p> <p>PATCH /catalogManagement/productSpecification/6567 Content-Type: application/merge-patch+json</p> <pre>{ "name": "new name" }</pre>
<p>Response</p> <p>200</p> <pre>{ "id": "6567", "href": "https://host:port/catalogManagement/productSpecification/6567", "name": "new name", "description": "This product specification ...", "brand": "Google", "isBundle": false, "lastUpdate": "2017-06-17T00:00", "lifecycleStatus": "Active", "productNumber": "WS45-230-FC", "validFor": { "startDateTime": "2017-06-19T00:00",</pre>

```

    "endDateTime": "2018-01-13T00:00"
  },
  "version": "1.5",
  "@type": "a string ...",
  "@baseType": "a string ...",
  "@schemaLocation": "a string ...",
  "relatedParty": [
    {
      "id": "7869",
      "href": "https://host:port/partyManagement/organization/7869",
      "role": "bill responsible",
      "name": "Gustave Flaubert",
      "validFor": {
        "startDateTime": "2017-06-16T00:00",
        "endDateTime": "2018-01-13T00:00"
      }
    }
  ],
  "productSpecCharacteristic": [
    {
      "name": "Screen color",
      "description": "This product spec characteristic ...",
      "valueType": "string",
      "configurable": false,
      "validFor": {
        "startDateTime": "2017-06-20T00:00",
        "endDateTime": "2018-01-13T00:00"
      },
      "@type": "a string ...",
      "@schemaLocation": "a string ...",
      "@valueSchemaLocation": "a string ...",
      "minCardinality": 1,
      "maxCardinality": 5,
      "isUnique": false,
      "regex": "a string ...",
      "extensible": false,
      "productSpecCharRelationship": [
        {
          "type": "aggregation",
          "validFor": {
            "startDateTime": "2017-06-14T00:00",
            "endDateTime": "2018-01-13T00:00"
          },
          "charSpecSeq": 54,
          "id": "6429",
          "name": "a string ...",
          "href": "https://host:port/catalogManagement/productSpecification/6429",
          "@type": "a string ..."
        }
      ],
      "productSpecCharacteristicValue": [
        {
          "isDefault": true,
          "unitOfMeasure": "seconds",
          "validFor": {
            "startDateTime": "2017-06-17T00:00",
            "endDateTime": "2018-01-13T00:00"
          }
        }
      ]
    }
  ]
}

```

```

    },
    "value": "grey",
    "valueFrom": "",
    "valueTo": "",
    "valueType": "string",
    "rangeInterval": "a string ...",
    "regex": "a string ...",
    "@type": "a string ...",
    "@schemaLocation": "a string ..."
  }
]
},
"serviceSpecification": [
  {
    "id": "3025",
    "href": "https://host:port/catalogManagement/serviceSpecification/3025",
    "name": "Zoulou15",
    "version": "1.1",
    "@referredType": "a string ..."
  }
],
"targetProductSchema": {
  "@referredType": "a string ...",
  "@schemaLocation": "a string ..."
},
"productSpecificationRelationship": [
  {
    "id": "2543",
    "href": "https://host:port/catalogManagement/productSpecification/2543",
    "type": "dependency",
    "validFor": {
      "startDateTime": "2017-06-16T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  }
],
"resourceSpecification": [
  {
    "id": "3295",
    "href": "https://host:port/catalogManagement/resourceSpecification/3295",
    "name": "Pentium300",
    "version": "3.2",
    "@referredType": "a string ..."
  }
],
"attachment": [
  {
    "description": "This attachment ...",
    "href": "http://hostname:port/documentManagement/attachment/22",
    "id": "22",
    "type": "Document",
    "url": "http://yyyyy",
    "mimeType": "a string ...",
    "validFor": {
      "startDateTime": "2017-06-15T00:00",
      "endDateTime": "2018-01-13T00:00"
    }
  }
]

```

```

    },
    "@type": "a string ...",
    "@baseType": "a string ...",
    "@schemaLocation": "a string ..."
  }
],
"bundledProductSpecification": [
  {
    "id": "5190",
    "href": "https://host:port/catalogManagement/productSpecification/5190",
    "lifecycleStatus": "Active",
    "name": "Robotics999",
    "@type": "a string ..."
  }
]
}

```

Delete product specification

DELETE /productSpecification/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a product specification entity.

Usage Samples

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

Request
DELETE /catalogManagement/productSpecification/42
Response
204

Operations on Import Job

List import jobs

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

Description

This operation list import job 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 ImportJob resources.

List all started active jobs. The result items are shrunk to show only the id (fields=id)

Request
GET /catalogManagement/importJob?fields=id&status="started" Accept: application/json
Response
200 [{ "id": "42" }, { "id": "43" }]

Retrieve import job

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

Description

This operation retrieves an import job 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 ImportJob resource.

Request
GET /catalogManagement/importJob/6378 Accept: application/json
Response
200 <pre>{ "id": "6378", "href": "https://host:port/catalogManagement/importJob/6378", "contentType": "text/html", "path": "/warning/system", "status": "running", "url": "https://my/daily/job/NHCFD6", "completionDate": "2017-06-17T00:00", "creationDate": "2017-06-17T00:00", "errorLog": "http://my-platform/logging/errors.log" }</pre>

Create import job

POST /importJob

Description

This operation creates an import job entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a ImportJob, 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
url	

Non- Mandatory Attributes	Default Value	Rule
contentType		
path		
status		
completionDate		
creationDate		
errorLog		

Usage Samples

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

Request
<pre>POST /catalogManagement/importJob Content-Type: application/json { "url": "https://my/daily/job/NHCFD6" }</pre>
Response
<pre>201 { "id": "6378", "href": "https://host:port/catalogManagement/importJob/6378", "url": "https://my/daily/job/NHCFD6" }</pre>

Delete import job

DELETE /importJob/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes an import job entity.

Usage Samples

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

Request
<pre>DELETE /catalogManagement/importJob/42</pre>
Response
<pre>204</pre>

Operations on Export Job

List export jobs

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

Description

This operation list export job 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 ExportJob resources.

Request
GET /catalogManagement/exportJob Accept: application/json
Response
200 [{ "id": "3169", "href": "https://host:port/catalogManagement/exportJob/3169", "query": "winterCatalog", "path": "/warning/system", "contentType": "text/html", "status": "completed", "url": "https://my/daily/job/NHCFD6", "completionDate": "2017-06-17T00:00", "creationDate": "2017-06-17T00:00", "errorLog": "http://my-platform/logging/errors.log" }]

Retrieve export job

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

Description

This operation retrieves an export job 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 ExportJob resource.

Request
GET /catalogManagement/exportJob/3169 Accept: application/json
Response
200 <pre>{ "id": "3169", "href": "https://host:port/catalogManagement/exportJob/3169", "query": "winterCatalog", "path": "/warning/system", "contentType": "text/html", "status": "completed", "url": "https://my/daily/job/NHCFD6", "completionDate": "2017-06-17T00:00", "creationDate": "2017-06-17T00:00", "errorLog": "http://my-platform/logging/errors.log" }</pre>

Create export job

POST /exportJob

Description

This operation creates an export job entity.

Mandatory and Non- Mandatory Attributes

The following tables provides the list of mandatory and non-mandatory attributes when creating a ExportJob, 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
url	

Non- Mandatory Attributes	Default Value	Rule
query		
path		

contentType		
status		
completionDate		
creationDate		
errorLog		

Usage Samples

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

Request
<pre>POST /catalogManagement/exportJob Content-Type: application/json { "url": "https://my/daily/job/NHCFD6" }</pre>
Response
<pre>201 { "id": "3169", "href": "https://host:port/catalogManagement/exportJob/3169", "url": "https://my/daily/job/NHCFD6" }</pre>

Delete export job

DELETE /exportJob/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes an export job entity.

Usage Samples

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

Request
<pre>DELETE /catalogManagement/exportJob/42</pre>

Response
204

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 201 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": {

<pre>EVENT BODY }, "eventType": "EVENT_TYPE" }</pre>
Response
201

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

LIFECYCLE MANAGEMENT EXTENSIONS TO CATALOG

In Lifecycle Management, there is a requirement to distinguish between entities existing with different life cycle version numbers and accessible via different ACL mechanisms.

For example, the same Product Offerings may exist in a Catalog but with different version numbers.

It may be possible for an administrator to see all the existing versions or for a partner to see only a subset of all the existing versions.

The entity version number is not dependent on the version number of the API. For example, in PLM the same API (running at a specific version number) may be used to retrieve entities with different PLM version numbers.

In order to distinguish resources representing entities running with different version numbers and accessible through the same API version the following directive can be used `/id:(version=x)` and the version attribute is added to each entity.

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "1.0",
  "lastUpdate": "2017-04-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "lifecycleStatus": "Active",
  ....
}
```

Note that the catalog resources in this case may have the same ID but may be distinguished by the inclusion of the version number in their ID i.e. `/42:(version=1.0)`, `/42:(version=2.0)`.

In the following examples we will assume that two versions of the VirtualStorage Product Offer exist in the Product Catalog. The Inactive and Active versions respectively version 1.0 and version 2.0.

Query all versioned catalog resources

Users with different roles may have access to different versions of the entities in the catalog. For example, user A may have access to only the version 1.0 of the entities while user B may have access to version 1.0 and version 2.0.

Admin user of Catalog have access to all the versions of the resources while non admin users have by default access to only the latest version of the entities in the Catalog.

For example, the following request on the admin endpoint will return all the versioned resources matching a specific ID.

REQUEST
GET api/admin/catalogManagement/productOffering/?id=VirtualStorage Accept: application/json
RESPONSE
200 Content-Type: application/json <pre> [{ "id": "VirtualStorage", "href": "http://serverlocation:port/catalogManagement/productOffering/VirtualStorage", "version": "1.0", "lastUpdate": "2017-04-19T16:42:23-04:00", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", "isBundle": "true", "lifecycleStatus": "Inactive", }, { "id": " VirtualStorage ", "href": "http://serverlocation:port/catalogManagement/productOffering/ VirtualStorage ", "version": "2.0", "lastUpdate": "2017-04-19T16:42:23-05:00", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", "isBundle": "true", "lifecycleStatus": "Active", }] </pre>

Query a specific versioned CATALOG resource

In general, a non admin API user only has visibility to the latest version number or visibility to a subset of versioned catalog resources.

It may be possible for an admin API user to retrieve a resource with a specific version number by using an ID and versioning filtering criteria.

REQUEST
GET api/admin/catalogManagement/productOffering/?id=VirtualStorage&version=1.0 Accept: application/json
RESPONSE
200 Content-Type: application/json <pre>[{ "id": "42", "href": "http://serverlocation:port/catalogManagement/productOffering/42", "version": "1.0", "lastUpdate": "2017-04-19T16:42:23-04:00", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", "isBundle": "true", "lifecycleStatus": "Active", }]</pre>

Query current version of a catalog resource

By default, only the most current version is returned (for admin and non admin).

REQUEST
GET api/admin/catalogManagement/productOffering/VirtualStorage Accept: application/json
RESPONSE
200 Content-Type: application/json <pre>{ "id": "42", "href": "http://serverlocation:port/catalogManagement/productOffering/42", "version": "2.0", "lastUpdate": "2017-04-19T16:42:23-04:00", "name": "Virtual Storage Medium", }</pre>

```

    "description": "Virtual Storage Medium",
    "isBundle": "true",
    "lifecycleStatus": "Active",
    .....
  }

```

Create new version of a CATALOG resource

POST is used to create a new version of a catalog resource.

The constraint is that the version numbers for the resource having the same ID must differ.

REQUEST
POST catalogManagement/productOffering Content-type: application/json <pre> { "id": "VirtualStorage", "version": "3.0", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", "isBundle": "true", "lifecycleStatus": "Active", "validFor": { "startDateTime": "2017-04-19T16:42:23-04:00", "endDateTime": "2017-06-19T00:00:00-04:00" }, ... } </pre>
RESPONSE
201 Content-Type: application/json <pre> { "id": "VirtualStorage", "href": "http://serverlocation:port/catalogManagement/productOffering/42", "version": "3.0", "lastUpdate": "2017-04-19T16:42:23-04:00", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", "isBundle": "true", "lifecycleStatus": "Active", "validFor": { "startDateTime": "2017-04-19T16:42:23-04:00", "endDateTime": "2017-06-19T00:00:00-04:00" }, ... } </pre>

Modify an existing version of a catalog resource

By default, PATCH or PUT will be acting only on the latest version of a Catalog Resource. For example, PATCH `../productOffering/VirtualStorage` will only update the VirtualStorage ProductOffering at Version 2.0 (which is the most current).

To update a specific version of an entity the (Version=X) directive is added to the ID (i.e. `/id:(version=x)`).

Note that this capability is only available to API users having the proper authorizations to change the catalog entities with specific version numbers.

For example, to change the VirtualStorage versioned at 1.0 we could use `/productOffering/VirtualStorage(Version=1.0)`

REQUEST
PATCH <code>/catalogManagement/productOffering/VirtualStorage(version=1.0)</code> Content-type: <code>application/json-patch+json</code> <pre>{ "lifecycleStatus": "Active" }</pre>
RESPONSE
200 Content-Type: <code>application/json</code> <pre>{ "id": "VirtualStorage", "href": "http://serverlocation:port/catalogManagement/productOffering/VirtualStorage", "version": "1.0", "lifecycleStatus": "Active", }</pre>

Role based Access Control

The user presents their credentials for authentication

If the credentials are valid

1. The user is given access to the catalog
2. As defined by their role(s)

3. As defined by their access rights
4. As defined by the access type: CRUD, discover
5. As defined by the pre-defined filter

For example, if they issue a get on a catalog that a party has no access they get an error response

Or if they try to modify an area of the catalog but do not have Write Access they get an error response

Normally we anticipate that the OAUTH2 or Open ID Connect are used as the authorization APIs and that ACL are established between authorized parties with regards to the content of the Catalog (i.e., GET but also enable of update operations on specific entities).

ACKNOWLEDGEMENTS

Version History

Version Number	Date	Release led by:	Description
Version 1.0	04/15/2013	Pierre Gauthier TM Forum pgauthier@tmforum.org	First Release of Draft Version of the Document.
Version 1.1			Updated for use in the Paris Spec Jam – and rebranded.
Version 2.0	15/04/2016	Pierre Gauthier TM Forum pgauthier@tmforum.org Mariano Belaunde Orange mariano.belaunde@orange.com	Re-generated from API Data Model and re-branded.
Version 2.1.0 (R16.5.0)	November 2016	Kamal Maghsoudlou Ericsson kamal.maghsoudlou@ericsson.com	<ul style="list-style-type: none"> • Miscellaneous updates including: • Added productSpecCharRelationship to ProductSpecification • Added prodSpecCharValueUse to ProductOffering • Added BundledProdOfferOption to productOffering relationships • Aligned response codes to API Guideline
Version 2.1.3	Jun 2017	Kamal Maghsoudlou Ericsson kamal.maghsoudlou@ericsson.com	<p>Miscellaneous updates including:</p> <ul style="list-style-type: none"> • Added ProductOffering Price REST resource • Added constraints • Corrected reported issues • Updated Category resource • Added JSON-LD annotations for type, basetype and schema location • Updated UML diagrams

Version Number	Date	Release led by:	Description
			<ul style="list-style-type: none"> Miscellaneous corrections and clarifications
Version 2.2.0	November 2017	Kamal Maghsoudlou Ericsson kamal.maghsoudlou@ericsson.com	Incorporated comments from API team review
Version 2.2.1	16-Jan-2018	Adrienne Walcott	Formatting/style edits prior to publishing

Release History

Release Number	Date	Release led by:	Description
R16.5.0	November 2016	Kamal Maghsoudlou	
17.5.0	November 2017	Kamal Maghsoudlou Ericsson kamal.maghsoudlou@ericsson.com	First Release of Draft Version of the Document.