TM Forum Specification

Product Inventory Management API REST Specification

TMF637
Release 18.0.0
June 2018

Latest Update: TM Forum Release 18.0.0	**Member Evaluation**
Version 3.0.1	**IPR Mode: RAND**

NOTICE

Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100
Parsippany, NJ 07054, USA
Tel No. +1 973 944 5100
Fax No. +1 973 944 5110
TM Forum Web Page: www.tmforum.org

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INTRODUCTION

The following document is the specification of the REST API for Product Inventory management. It includes the model definition as well as all available operations.

SAMPLE USE CASES

Reader will find example of use cases using Usage API in "Open Digital Business Scenarios and Use Cases" document.

In order to illustrate JSON we'll use the 2 following examples. These examples **are only for illustration purpose** and they must not be considered as product modeling guideline.

Example 1 – Voice over bundle Basic bundle:
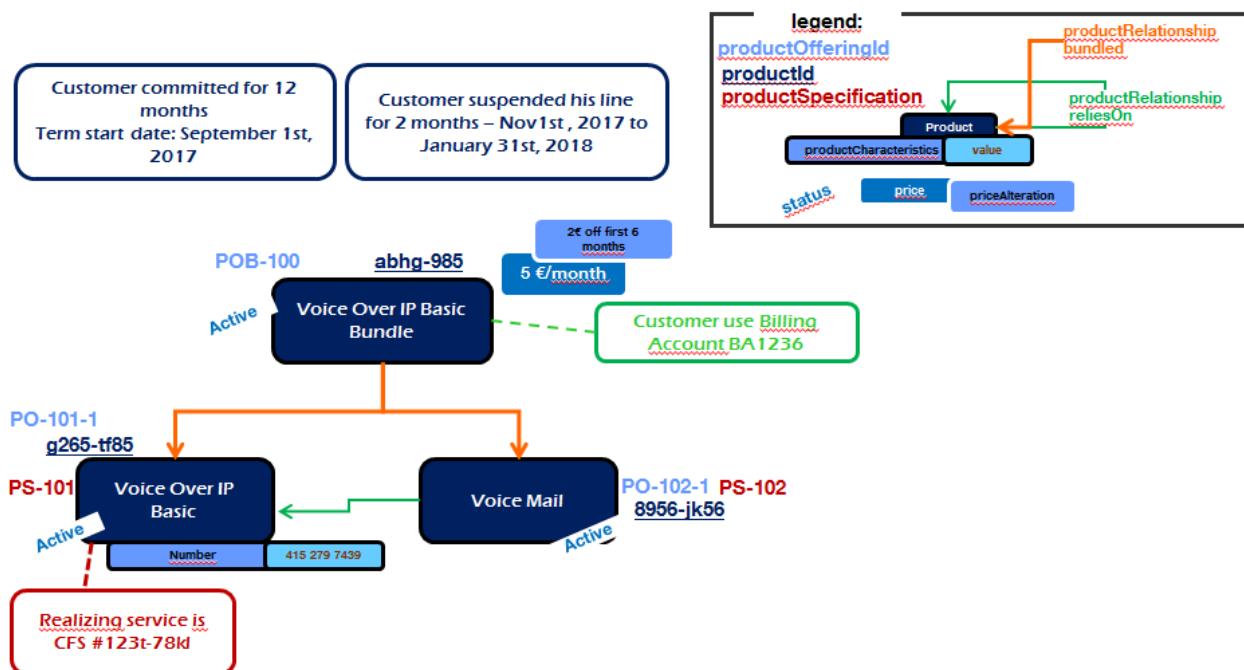
Example 2: UNI Ethernet access
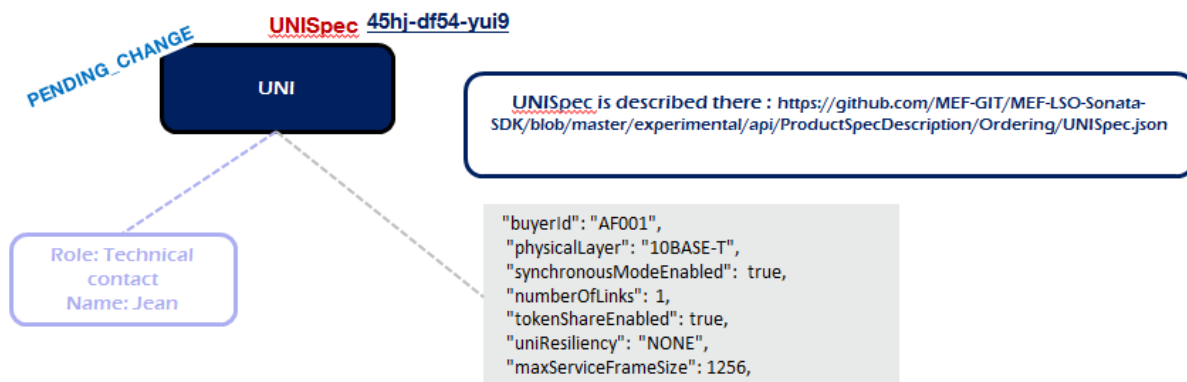
RESOURCE MODEL

Managed Entity and Task Resource Models

PRODUCT RESOURCE

A Product represents the subscription of a ProductOffering by a Party playing a PartyRole, such as a Customer. For example, Jean has subscribed to company ABC's internet ProductOffering.

The association between ProductSpecification and Product allows ProductSpecification, to be instantiated as Product and related to customers or other involved parties.

Product Inventory Management API REST Specification

Resource model:
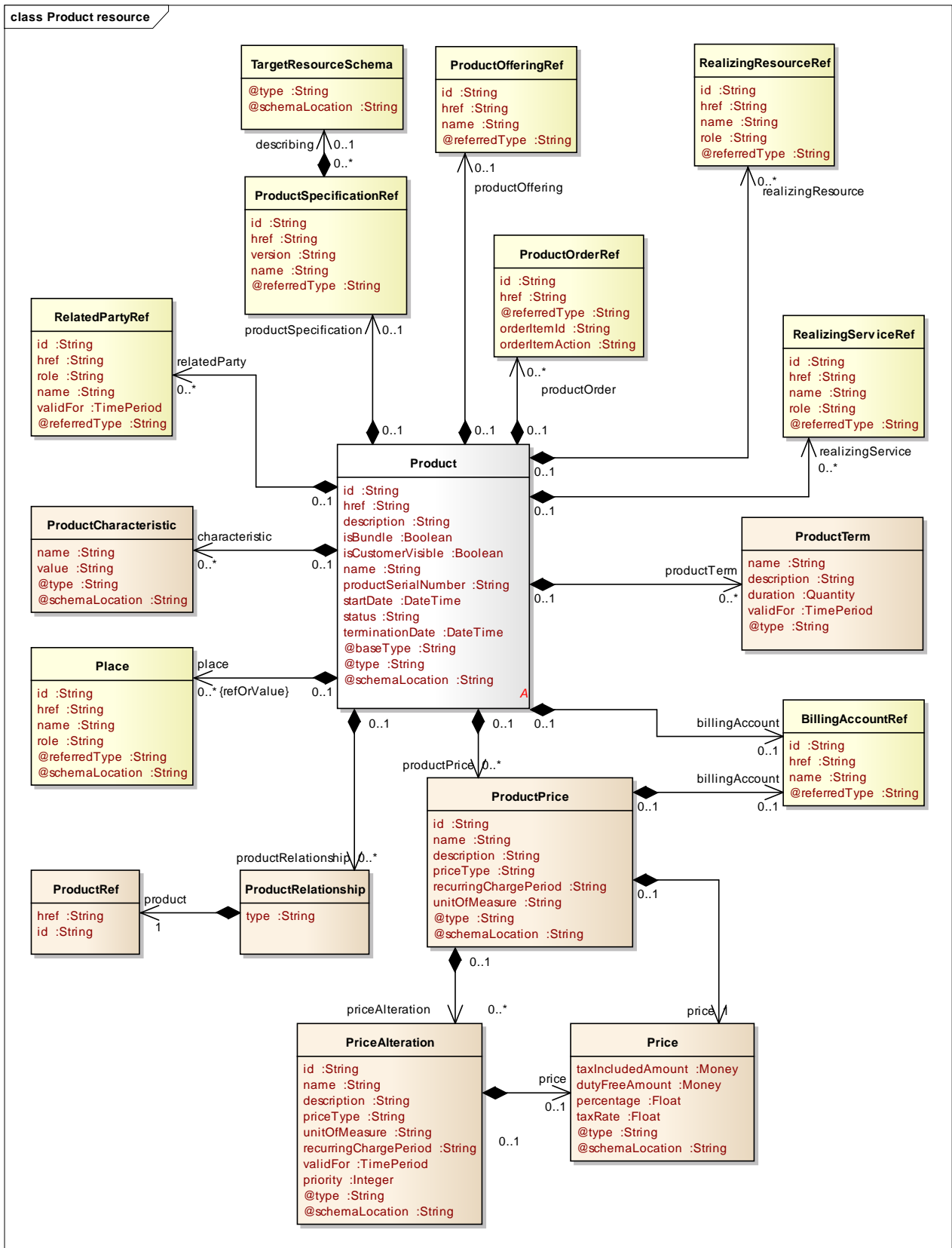
Lifecycle

A Product lifecycle is tracked by the status field. Typical lifecycle values that can be taken are: Created, Pending Active, Aborted, Cancelled, Active, Suspended, Pending Terminate and Terminate.

Note that an implementation of the specification may enrich the list of states depicted in the diagram. The state machine specifying the typical state change transitions is provided below.

Field descriptions

Product fields

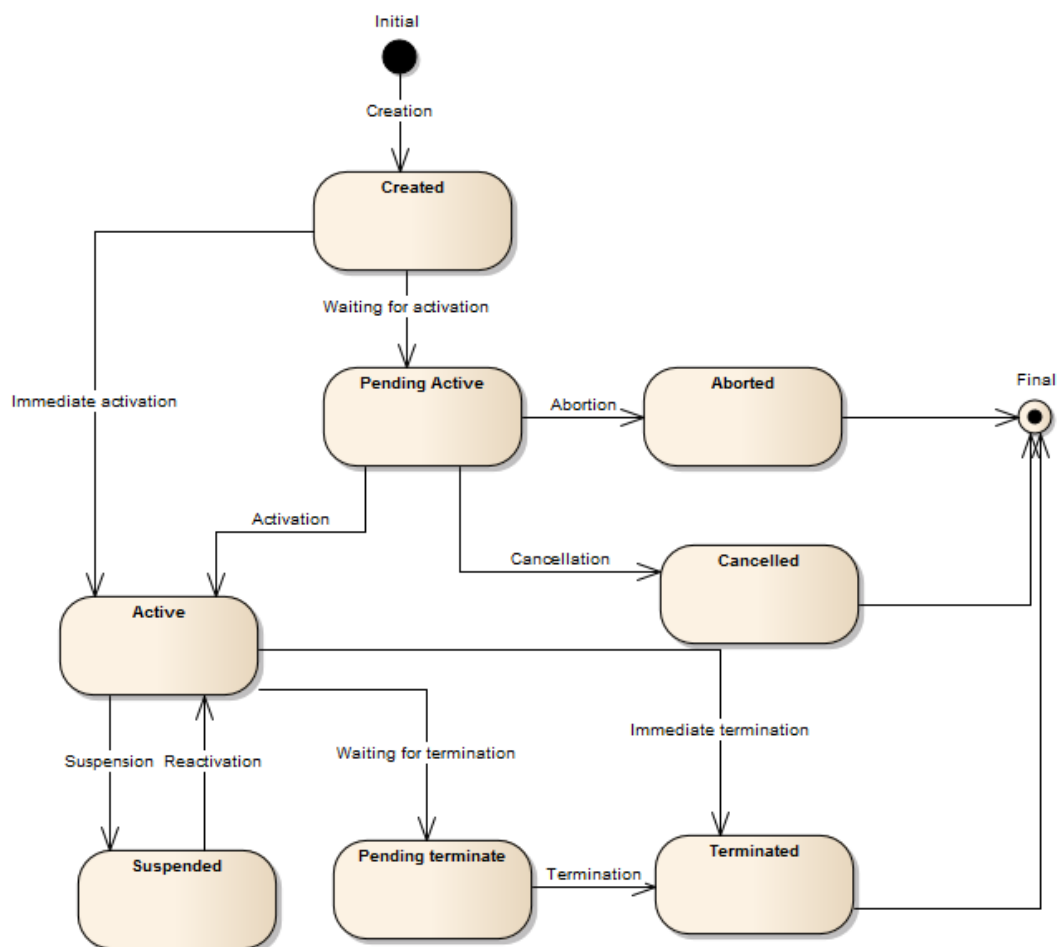| Field	Description
id	A string. Unique identifier of the product.
href	A string. Reference of the product.
description	A string. Is the description of the product. It could be copied from the description of the Product Offering.
isBundle	A boolean. If true, the product is a ProductBundle which is an instantiation of a BundledProductOffering. If false, the product is a ProductComponent which is an instantiation of a SimpleProductOffering.
isCustomerVisible	A boolean. If true, the product is visible by the customer.
name	A string. Name of the product. It could be the same as the name of the product offering.
productSerialNumber	A string. Is the serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
startDate	A date time (DateTime). Is the date from which the product has been created. It could not be the first date when the product has been activated.
status	A string. Is the lifecycle status of the product.
terminationDate	A date time (DateTime). Is the date when the product was terminated.
@baseType	A string. Indicates the base type of the resource. Here can be 'Product'.
@type	A string. Indicated the type of resource.
@schemaLocation	A string. A link to the schema describing this REST resource.
realizingService	A list of realizing service references (RealizingServiceRef [*]). RealizingService is a link to the service that realizes the product.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.
productOffering	A product offering reference (ProductOfferingRef). ProductOfferingRef (ProductOfferingRef)Recommended Product offering.
productTerm	A list of product terms (ProductTerm [*]). Description of a productTerm linked to this orderItem. This represent a commitment with a duration.
productOrder	A list of product order references (ProductOrderRef [*]). ProductOrder (ProductOrder) .The product order which the recommendation is related with.
characteristic	A list of product characteristics (ProductCharacteristic [*]). Characteristics of the product to instantiate or to modify.
productRelationship	A list of product relationships (ProductRelationship [*]). Represents a relationship between products - which potentially holds an entire product object or a product reference (with partial content).
realizingResource	A list of realizing resource references (RealizingResourceRef [*]). RealizingResource is a link to the resource that realizes the product.
relatedParty	A list of related party references (RelatedPartyRef [*]). relatedParty (RelatedPartyRef). The party which the recommendation is related with.
productPrice	A list of product prices (ProductPrice [*]). An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.

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.
place	A list of places (Place [*]).

Money sub-resource

A base / value business entity used to represent money.

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

Place sub-resource

Place defines the places where the products is installed or has a footprint (a place could be used for geo fencing)

Field	Description
id	A string. Unique identifier of the place.
href	A string. A reference to the place
name	A string. A user-friendly name for the place
role	A string. Role of the place (for instance: 'installation site', 'A-extremity site', 'Supervised Perimeter' etc...)
@referredType	A string. Indicate the type of Place class (example: 'geographicAddress')
@schemaLocation	A string. A link to the schema describing this REST resource

Price sub-resource

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

Field	Description
taxIncludedAmount	A money (Money). All taxes included amount (expressed in the given currency).
dutyFreeAmount	A money (Money). All taxes excluded amount (expressed in the given currency).
percentage	A float. A percentage - that is useful only for priceAlteration to describe a discount (-10%).
taxRate	A float. Tax rate.
@type	A string. Indicates the (class) type of the price.
@schemaLocation	A string. Link to the schema describing this REST resource.

PriceAlteration sub-resource

Is an amount, usually of money, or a percentage, that modifies the price charged for an order item.

Field	Description
id	A string. Id of the productOfferingPrice in the catalog.
name	A string. Name of the price alteration.
description	A string. Description of the price alteration.
priceType	A string. A category that describes the price such as recurring, one time and usage.
unitOfMeasure	A string. Could be minutes, GB...
recurringChargePeriod	A string. Could be month, week...
validFor	A time period. Validity period for the price alteration; This is useful for example for "First 3 month at half price" discount type.
priority	An integer. Priority to apply this price alteration - Useful if several price alterations has to be applied (in sum and in percentage).
@type	A string. Indicated the class (type) of the price alteration.
@schemaLocation	A string. A link to the schema describing the price alteration.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

ProductCharacteristic sub-resource

Field	Description
name	A string. Name of the characteristic.
value	A string. Value of the characteristic.
@type	A string. Indicates the (class) type of resource.
@schemaLocation	A string. This field provided a link to the schema describing this REST resource.

ProductPrice sub-resource

An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.

Field	Description
id	A string. Unique identifier of a productOfferingPrice.
name	A string. A short descriptive name such as "Subscription price".
description	A string. A narrative that explains in detail the semantics of this product price.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...
@type	A string. Indicates the type of ProductPrice class.
@schemaLocation	A string. A link to the schema describing this REST resource.

priceAlteration	A list of price alterations (PriceAlteration [*]). Is an amount, usually of money, or a percentage, that modifies the price charged for an order item.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.

ProductRelationship sub-resource

Represents a relationship between products - which potentially holds an entire product object or a product reference (with partial content).

Field	*Description*
type	A string. Type of the product relationship. It can be : - "bundled" if the product is a bundle and you want to describe the "bundled" products inside this bundle - "reliesOn" if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) "targets" or "isTargeted" (depending on the way of expressing the link) for any other kind of links that may be useful.
product	A product (Product). A product offering procured by a customer or other interested party playing a party role. A product is realized as one or more service(s) and / or resource(s).

ProductTerm sub-resource

Description of a productTerm linked to this orderItem. This represents a commitment with duration.

Field	*Description*
name	A string. Name of the commitment term.
description	A string. Description of the commitment term.
duration	A quantity (Quantity). Duration of the commitment term.
validFor	A time period. Commitment period - start date is when the commitment begin and the endDate when its end. If endDate is in the future, it is expected commitment ends (nothing prevent customer/operator to terminate before). If the endDate is in past or today that is the effective endDate.
@type	A string. Indicate the class (type) of the product term.

Quantity sub-resource

Description of a quantity like for the Duration attribute

Field	Description
amount	A float. A value for the quantity (for example 12)
units	A string. A unit associated with the quantity (for example months)

TargetResourceSchema sub-resource

Target to the schema describing the product spec resource (and type)

Field	Description
@type	A string. Indicated the type of the productSpec described there - for example an E-Line Spec, a CPE spec.
@schemaLocation	A string. A link to the schema describing the product spec.

BillingAccountRef relationship

BillingAccount reference. A BillingAccount is a detailed description of a bill structure.

Field	Description
id	A string. Unique identifier of the billing account.
href	A string. Reference of the billing account.
name	A string. Name of the billing account.
@referredType	A string. Indicates the (class) type of the billing account.

ProductOfferingRef relationship

ProductOfferingRef (ProductOfferingRef)Recommended Product offering.

Field	Description
id	A string. Unique identifier of product offering.
href	A string. Hypertext Reference of the product offering.
name	A string. Name of the product offering.
@referredType	A string. Indicate the (class) type of the productOffering.

ProductOrderRef relationship

ProductOrder (ProductOrder) .The product order(s) related to this product inventory.

Field	Description
id	A string. Unique identifier of product order.
href	A string. Hypertext Reference of the product order.
@referredType	A string. Indicate the class (type) of productOrder
orderItemId	A string. Identifier of the order item where the product was managed
orderItemAction	A string. Action of the order item for this product

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.

Field	Description
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. Indicate the productSpecification type class.
describing	A product specification schema reference (ProductSpecificationSchemaRef). ProductSpecification description could be done with schema use. This information allows to retrieve schema type and location.

ProductSpecificationSchemaRef relationship

ProductSpecification description could be done with schema use. This information allows to retrieve schema type and location.

Field	Description
@type	A string. Indicates the type of resource. Here it will be a product specification.
@schemaLocation	A string. URL to get to the schema description file.

RealizingResourceRef relationship

RealizingResource reference. RealizingResource is a link to the resource that realizes the product.

Field	Description
id	A string. Unique identifier of the resource.
href	A string. Reference of the resource.
name	A string. Name of the resource.
role	A string. Role of the resource.
@referredType	A string. Indicate the class (type) of the realizing resource.

RealizingServiceRef relationship

RealizingService reference. RealizingService is a link to the service that realizes the product.

Field	Description
id	A string. Unique identifier of the service.
href	A string. Reference of the service.
name	A string. Name of the service.

Field	Description
role	A string. Role of the realizing service.
@referredType	A string. Indicate the class (type) of the realizing service.

RelatedPartyRef relationship

relatedParty (RelatedPartyRef). The party which the product is related with.

Field	Description
id	A string. Unique identifier of related party.
href	A string. Hypertext Reference of the related party.
name	A string. Name of the related party.
role	A string. Role of the related party.
validFor	A TimePeriod. A period of time when this relatedParty plays a role with this product
@referredType	A string. Indicates the (class) type of party

Json representation sample

We provide below the json representation of an example of a 'Product' resource object – Example 1 'Voice over IP Basic' product.

```
{
  "id":"g265-tf85",
  "href":"https://host:port/productInventoryManagement/product/g265-tf85",
  "description":"product description",
  "isBundle":false,
  "isCustomerVisible":true,
  "name":"Voice Over IP Basic instance for Jean",
  "productSerialNumber":"N/A",
  "startDate":"2017-11-01T09:37:29.961Z",
  "status":"Active",
  "@baseType":"product",
  "@type":"product",
  "@schemaLocation":"https:://host:port/standardProduct.json",
  "realizingService":[
    {
      "id":"123t-78k",
      "href":"https...",
      "role":"RealizingService"
    }
  ],
  "productOffering":{
    "id":"PO-101-1",
    "href":"https...",
    "name":"Voice Over IP Basic"
  },
  "productOrder":[
    {
```

```
        "id":"1023-98gh",
        "href":"https...",
        "orderItemId":"2",
        "orderItemAction":"add"
      },
      {
        "id":"df65-gh12",
        "href":"https...",
        "orderItemId":"2",
        "orderItemAction":"suspend"
      },
      {
        "id":"5ghh-sd12",
        "href":"https...",
        "orderItemId":"3",
        "orderItemAction":"reactivate"
      }
    ],
    "characteristic":[
      {
        "name":"Number",
        "value":"415 279 7439"
      }
    ],
    "relatedParty":[
      {
        "id":"45hj-8888",
        "href":"https...",
        "name":"Jean",
        "role":"User",
        "@referredType":"individual"
      }
    ],
    "productSpecification":{
      "id":"PS-101",
      "href":"https...",
      "version":"1"
    }
  }
```

A second representation – UNI product from example 2:

```
{
    "id":"45hj-df54-yui9",
    "href":"https...",
    "description":"UNI instance SPxxx",
    "name":"Name of the UNI",
    "startDate":"2018-03-16T09:37:29.961Z",
    "status":"PENDING_CHANGE",
    "@baseType":"product",
```

```json
"@type":"MEFproduct",
"productOrder":[
  {
    "id":"ff45-kl36-hg44",
    "href":"https....",
    "orderItemId":"1",
    "orderItemAction":"INSTALL"
  },
  {
    "id":"as45-df65-gh12",
    "href":"https...",
    "orderItemId":"1",
    "orderItemAction":"CHANGE"
  }
],
"relatedParty":[
  {
    "name":"Jean",
    "role":"Technical Contact"
  },
  {
    "name":"Jennifer",
    "role":"Implementation Contact"
  },
  {
    "name":"Jesse",
    "role":"Site Contact"
  }
],
"productSpecification":{
  "id":"UNISPec",
  "href":"https...",
  "version":"v2",
  "name":"UNI specification",
  "describing":{
    "@type":"UNISPec",
    "@schemaLocation":"https://github.com/MEF-GIT/MEF-LSO-Sonata/SDK/blob/master/experimental/api/ProductSpecDescription/Ordering/UNISpec.json"
  }
},
"buyerId":"AF001",
"physicalLayer":"10BASE-T",
"synchronousModeEnabled":true,
"numberOfLinks":1,
"tokenShareEnabled":true,
"uniResiliency":"NONE",
```

```
    "maxServiceFrameSize":1256,
    "place":[
      {
        "id":"4hhf9-rr54",
        "href":"https...",
        "name":"UNI Site for this customer",
        "role":"UNI Site",
        "@referredType":"geographicalSite",
        "@schemaLocation":"https...."
      }
    ]
  }
```

Notification Resource Models

5 notifications are defined for this API

Notifications related to Product:
  - ProductCreationNotification
  - ProductAttributeValueChangeNotification
  - ProductStateChangeNotification
  - ProductBatchNotification
  - ProductRemoveNotification

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 occurence (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).
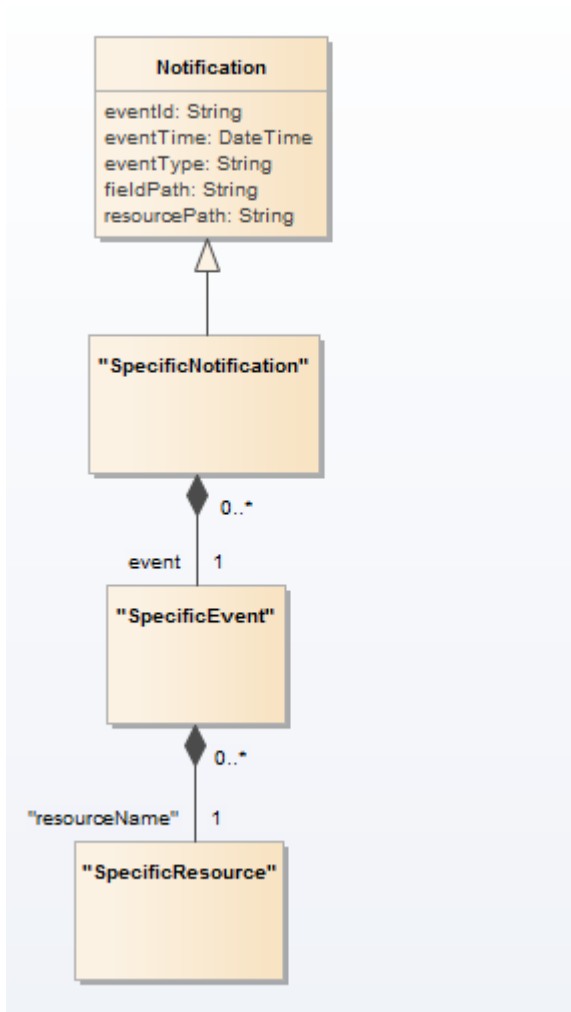
PRODUCT CREATION NOTIFICATION

Notification sent when a new Product resource is created.

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ProductCreationNotification",
    "event": {
      "product" :
         {-- SEE Product RESOURCE SAMPLE --}
   }
}
```

PRODUCT ATTRIBUTE VALUE CHANGE NOTIFICATION

Notification sent when changing an attribute of a Product resource.

Json representation sample

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

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"ProductAttributeValueChangeNotification",
     "event": {
       "product" :
          {-- SEE Product RESOURCE SAMPLE --}
    }
}
```

PRODUCT STATE CHANGE NOTIFICATION

Notification sent when changing the state of a Product resource.

Json representation sample

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

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"ProductStateChangeNotification",
     "event": {
       "product" :
          {-- SEE Product RESOURCE SAMPLE --}
    }
}
```

PRODUCT BATCH NOTIFICATION

Notification sent when a batch job on resource Product changes

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ProductBatchNotification",
    "event": {
      "product" :
          {-- SEE Product RESOURCE SAMPLE --}
   }
}
```

PRODUCT REMOVE NOTIFICATION

Notification sent when removing a Product resource.

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ProductRemoveNotification",
    "event": {
      "product" :
          {-- SEE Product RESOURCE SAMPLE --}
   }
}
```

API OPERATIONS

Remember the following Uniform Contract:

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

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

Notifications are also described in a subsequent section.

OPERATIONS ON PRODUCT

LIST PRODUCTS

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

Description

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

Providing filtering criteria is mandatory to avoid too many answers retrieved. See example below:

- relatedParty information (id or name)
- productOrder (id)
- productOfferingId & date
- productSpecification & date
- realizingService (id)
- realizingResource (id)
- place (id or name)
- description
- name

Usage Samples

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

Searching a product linked to a given Billing Account. The result items are shrinked to show only the id and the name (fields=id,name)

Request
GET /productInventoryManagement/product?fields=id,name&billingAcount.id="BA136" Accept: application/json
Response
200 [

```
    {
       "id": "abhg-985",
       "name": "Voice Over IP Basic Bundle"
    }
]
```

RETRIEVE PRODUCT

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

Description

This operation retrieves a product 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 Product resource. The 'Voice Over IP Basic Bundle' product from example 1 is used for illustration:

Request
GET /productInventoryManagement/product/abhg-985 Accept: application/json
Response

200
 	
 {
  "id": "abhg-985",
  "href": "https://host:port/productInventoryManagement/product/abhg-985",
  "description": "product description",
  "isBundle": true,
  "isCustomerVisible": true,
  "name": "Voice Over IP Basic Bundle instance for Jean",
  "startDate": "2017-11-01T09:37:29.961Z",
  "status": "Active",
  "@baseType": "product",
  "@type": "product",
  "@schemaLocation": "https::://host:port/standardProduct.json",

```
 "billingAccount": {
   "id": "BA1236",
   "href": "https....",
   "name": "Nice BA",
   "@referredType": "billingAccount"
 },
 "productOffering": {
   "id": "POB-100",
   "href": "https....",
   "name": "Voice Over IP Basic Bundle",
   "@referredType": "string"
 },
 "productTerm": [
   {
     "name": "12 Months Commitment",
     "description": "12 Months Commitment",
     "duration": {
       "amount": 12,
       "units": "Months"
     },
     "validFor": {
       "startDateTime": "2017-11-01T09:37:29.961Z",
       "endDateTime": "2018-12-31T00:00:00.000Z"
     },
     "@type": "commercialCommitment"
   }
 ],
 "productOrder": [
   {
     "id": "1023-98gh",
     "href": "https...",
     "orderItemId": "1",
     "orderItemAction": "add"
   },
 {
     "id": "df65-gh12",
     "href": "https...",
     "orderItemId": "1",
     "orderItemAction": "suspend"
   },
   {
     "id": "5ghh-sd12",
     "href": "https...",
     "orderItemId": "1",
     "orderItemAction": "reactivate"
   }
 ],
 "productRelationship": [
   {
     "type": "bundles",
     "product": "g265-tf85"
   },
     {
```

```json
      "type": "bundles",
      "product": "8956-jk56"
    }
  ],
  "relatedParty": [
   {
     "id": "45hj-8888",
     "href": "https...",
     "name": "Jean",
     "role": "buyer",
     "@referredType": "individual"
   }
  ],
  "productPrice": [
   {
     "id": "jk54",
     "name": "VOIP Monthly Fee",
     "description": "VOIP Bundle Monthly Fee",
     "priceType": "recurring",
     "recurringChargePeriod": "Months",
     "priceAlteration": [
      {
        "id": "4522",
        "name": "2€ off first 6 months",
        "description": "2€ off first 6 months",
        "priceType": "recurring",
        "recurringChargePeriod": "month",
        "validFor": {
           "startDateTime": "2017-11-01T09:37:29.961Z",
           "endDateTime": "2018-06-30T00:00:00.000Z"
           },
        "priority": 1,
        "price": {
         "taxIncludedAmount": {
           "value": 2,
           "unit": "Euros"
         }
        }
      }
     ],
     "price": {
"taxIncludedAmount": {
         "value": 5,
         "unit": "Euros"
        },
        "taxRate": 16
       }
   }
  ]
}
```

CREATE PRODUCT

POST /product

Note: this operation is available only to ADMIN API users

Description

This operation creates a product entity.

Mandatory and Non Mandatory Attributes

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

Attributes not available on POST request	Rule
id	must be provided by product inventory system
href	must be provided by product inventory system
startDate	must be provided by product inventory system

Mandatory Attributes	Rule
productOffering	A productSpecification or productOffering must be provided
productSpecification	A productSpecification or productOffering must be provided
status	

Non Mandatory Attributes	Default Value	Rule
description		
isBundle	no	
isCustomerVisible	yes	
productSerialNumber		
name		
terminationDate		
@baseType	product	
@type	product	
@schemaLocation		
realizingService		
billingAccount		
productOffering		A productSpecification or productOffering must be provided
productTerm		
productOrder		
characteristic		
productRelationship		

Non Mandatory Attributes	Default Value	Rule
realizingResource		
productPrice		
productSpecification		A productSpecification or productOffering must be provided
place		
relatedParty		

Additional Rules

The following table provides additional rules indicating mandatory fields in sub-resources or relationships when creating a Product resource.

Context	Mandatory Sub-Attributes
productOffering	id, href
productSpecification	id, href
billingAccount	id, href
relatedParty	id, href, role
place	id, href, role
realizingService	id, href
realizingResource	id, href
productTerm	duration
productCharacteristic	name, value
productOrder	id, href
productPrice	price, priceType
priceAlteration	price, priceType
price	tax includedAmount or dutyFreeAmount (both could be present)
describing	@type

Usage Samples

Here's an example of a request for creating a Product resource.

Request

```
POST /productInventoryManagement/product
Content-Type: application/json

{
    "description": "product description",
    "name": "Voice Over IP Basic instance for Jean",
    "status": "Active",
    "@type": "product",
    "realizingService": [
        {
```

```
        "id": "123t-78k",
        "href": "https...",
        "role": "RelalizingService"
     }
   ],
   "productOffering": {
    "id": "PO-101-1",
    "href": "https...",
    "name": "Voice Over IP Basic"
   },
   "characteristic": [
    {
      "name": "Number",
      "value": "415 279 7439"
    }
   ],
   "relatedParty": [
    {
      "id": "45hj-8888",
      "href": "https...",
      "name": "Jean",
      "role": "User",
      "@referredType": "individual"
    }
   ],
   "productSpecification": {
    "id": "PS-101",
    "href": "https...",
    "version": "1"
   }
  }
```

Response

```
201

{
   "id": "g265-tf85",
   "href": "https://host:port/productInventoryManagement/product/g265-tf85",
   ]
}
```

PATCH PRODUCT

PATCH /product/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a product 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.

Because this operation is for AMDIM, except id and href, all other attribute could be updated.

Usage Samples

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

Changing the billing account (using json-patch)

Request

PATCH /productInventoryManagement/product/abhg-985
Content-Type: application/json-patch+json
 	
{
   "path": "/billingAccount/id/",
   "value": "BA7896",
   "op": "replace"
}

Response
201 { Similar JSON as in GET response with tax rate changed}

DELETE PRODUCT

DELETE /product/{id}

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Note: this operation is available only to ADMIN API users

Description

This operation deletes a product entity.

Usage Samples

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

Request
DELETE /productInventoryManagement/product/8956-jk56
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 204 if the request was successful.

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

Usage Samples

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

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

UNREGISTER LISTENER

DELETE /hub/{id}

Description

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

Behavior

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

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

Usage Samples

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

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

PUBLISH EVENT TO LISTENER

POST /client/listener

Description

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

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

Behavior

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

Usage Samples

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

Request

POST /client/listener
Accept: application/json
 	
{
   "event": {
         EVENT BODY
      },
   "eventType": "EVENT_TYPE"
}

Response
201

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

ACKNOWLEDGEMENTS

VERSION HISTORY

Version Number	Date	Release led by:	Description
Release 1.0	15-Apr-2016	Pierre Gauthier TM Forum pgauthier@tmforum.org	First Release of Draft Version of the Document.
Release 2.0	15-Apr-2016	Pierre Gauthier TM Forum pgauthier@tmforum.org Mariano Belaunde Orange mariano.belaunde@orange.com	Generated from API Data Model.
Release 3.0		Ludovic Robert	Updated • to be aligned with Guideline 3.0 • to integrate change requests from MEF • to integrate change requests from Amdocs, Telefonica, Vodafone & Orange
Release 3.0.1	27-Jun-2018	Adrienne Walcott	Formatting/style edits prior to R18 publishing

RELEASE HISTORY

Release Number	Date	Release led by:	Description
Release 18.0.0	25-Jun-2018	Pierre Gauthier TM Forum pgauthier@tmforum.org	Initial Release

CONTRIBUTORS TO DOCUMENT

Mariano Belaunde Ludovic Robert	Orange
Pierre Gauthier	TM Forum
Jacob Avraham Jonathan Goldberg	Amdocs