



Frameworkx Specification

Product Catalog Management API REST Specification

TMF620

Release 14.5.0

November 2014

Latest Update: Frameworkx Release 14.5	Member Evaluation
Version 1.6.0	IPR Mode: RAND

NOTICE

Copyright © TM Forum 2014. All Rights Reserved.

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

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

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

Direct inquiries to the TM Forum office:

240 Headquarters Plaza,
East Tower – 10th Floor,
Morristown, NJ 07960 USA
Tel No. +1 973 944 5100
Fax No. +1 973 944 5110
TM Forum Web Page: www.tmforum.org



TABLE OF CONTENTS

NOTICE.....	2
Table of Contents.....	3
Introduction	5
SAMPLE USE CASES.....	6
Lifecycle management Use Case	6
Order management Use Case	7
RESOURCE MODEL.....	8
PRODUCT LIFECYCLE MANAGEMENT STATE MODEL.....	8
CATALOG RESOURCE	9
CATEGORY RESOURCE	11
PRODUCT OFFERING RESOURCE	13
PRODUCT SPECIFICATION RESOURCE	21
Export Job Resource	28
Import Job Resource	29
Notification Resource Models	32
API OPERATION TEMPLATES	41
GET /catalogManagement/category	42
GET /catalogManagement/productOffering/{ID}	43
GET /catalogManagement/productSpecification/{ID}	48
PUT /catalogManagement/category/{ID}	52
PUT /catalogManagement/productOffering/{ID}	53
PUT /catalogManagement/productSpecification	59
PATCH /catalogManagement/category/{ID}	65
PATCH /catalogManagement/productOffering/{ID}	67
PATCH /catalogManagement/productSpecification/{ID}	72
POST /catalogManagement/category.....	78
POST /catalogManagement/productOffering.....	80



POST /catalogManagement/productSpecification	86
POST catalogManagement/importJob	96
POST catalogManagement/exportJob	97
GET catalogManagement/exportJob	99
GET catalogManagement/importJob	99
DELETE API/{RESOURCE}/{ID}	100
API NOTIFICATION TEMPLATES	102
REGISTER LISTENER POST /hub	102
UNREGISTER LISTENER DELETE hub/{id}	102
publish {EventTYPE} POST /listener	103
lifecycle management Extensions to Catalog	104
Query all versioned catalog resources	105
Query a specific versioned CATALOG resource	106
Query current version of a catalog resource	106
Create new version of a CATALOG resource	107
Modify an existing version of a CATALOG resource	108
Role based Access Control	109
Release History	110

INTRODUCTION

The following document is the template for the REST API documentation.

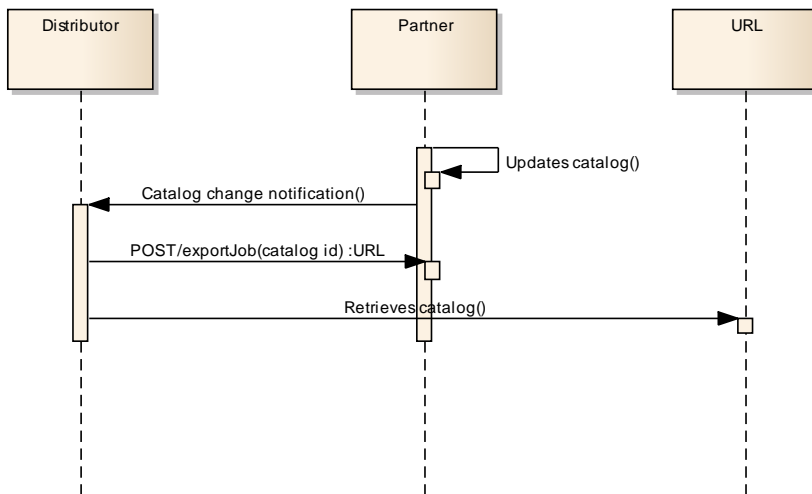
The catalog management API allows the management of the entire lifecycle of the catalog elements, the consultation of catalog elements during several processes such as ordering process, campaign management, sales management...

SAMPLE USE CASES

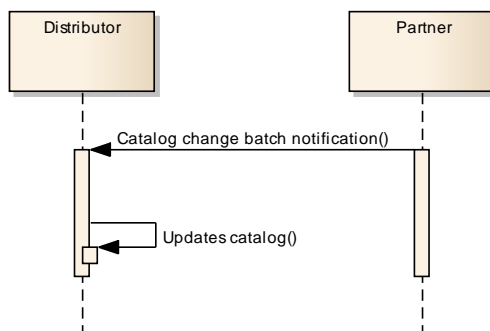
Lifecycle management Use Case

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).

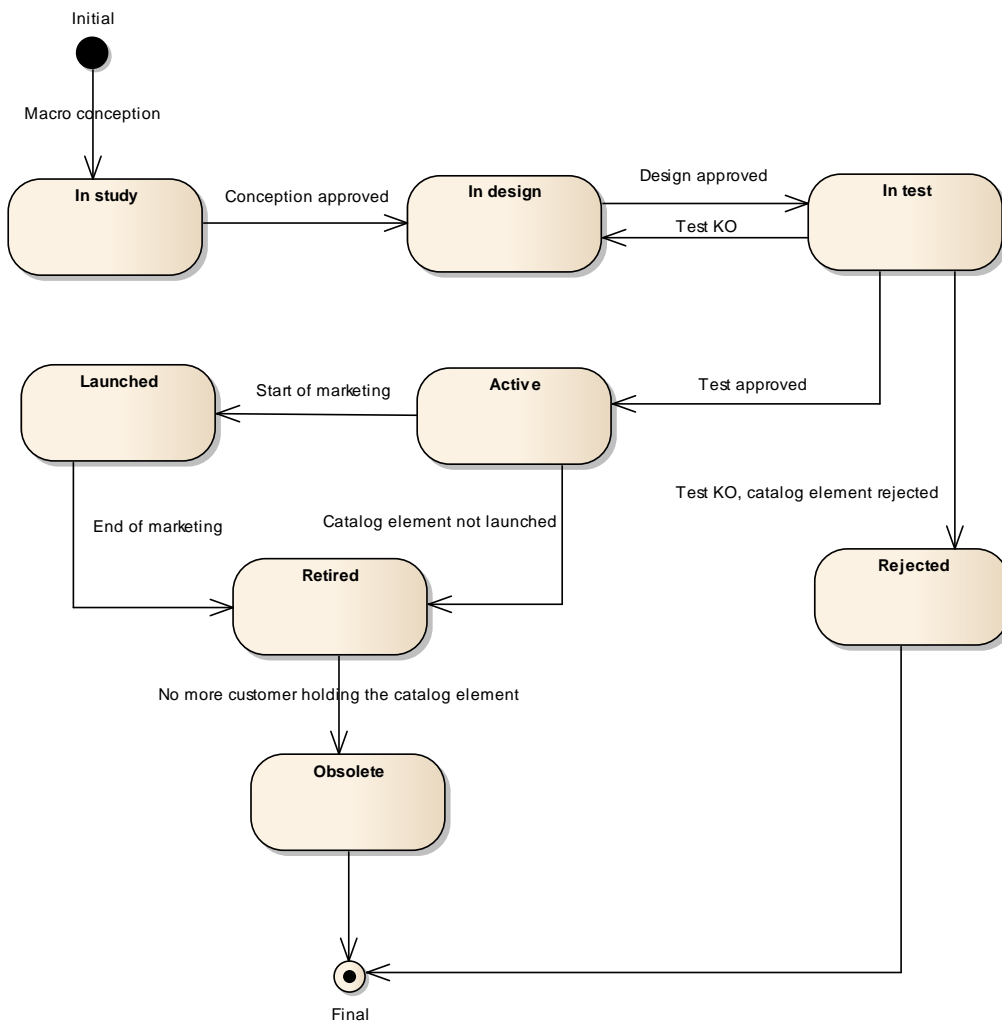
UC4: A distributor wants to know which SLA applies on a given product offering (GET/productOffering).

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 include 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 can not 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.

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

```
{
  "id": "10",
  "href": "http://serverlocation:port/catalogManagement/catalog/10",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "type": "Product Catalog",
  "category":
  [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "name": "Cloud offerings"
    }
  ]
}
```

```

    }
  ],
  "name": "Catalog Wholesale Business",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2013-04-19T16:42:23.0Z",
    "endDateTime": "2013-06-19T00:00:00.0Z"
  },
  "relatedParty":
  [
    {
      "id": "1234",
      "href": "http://serverLocation:port/partyManagement/partyRole/1234",
      "role": "Owner"
    },
    {
      "role": "Reviser",
      "name": "Roger Collins"
    }
  ]
}

```

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
category	Reference to the category
href	Reference of the catalog
id	Unique identifier of the catalog
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the catalog
type	Indicates if the catalog is a product, service or resource catalog
validFor	The period for which the catalog is valid
version	Catalog version

Category: 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.

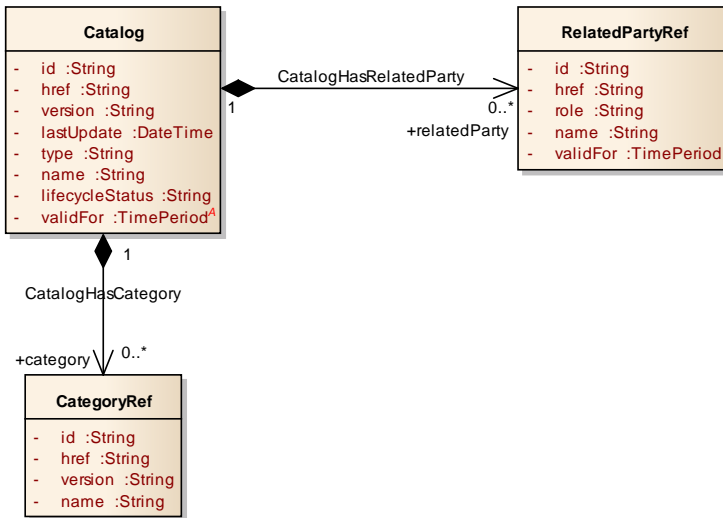
Field	Description
description	Description of the category
href	Reference of the catalog

id	Unique identifier of the category
isRoot	If true, this Boolean indicates that the category is a root of categories
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the category
parentId	Unique identifier of the parent 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

UML model:



CATEGORY RESOURCE

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.

Resource IDs for categories are strings and are defined by the catalog application.

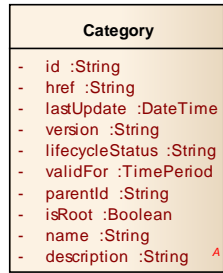
Below is a representation of the Category resource in JSON format.

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/category/42",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "version": "2.0",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2013-04-19T16:42:23.0Z"
  },
  "parentId": "41",
  "isRoot": false,
  "name": "Cloud Services",
  "description": "A category to hold all available cloud service offers"
}
Or for a root category (e.g. no parent)
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/category/42",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "version": "2.0",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2013-04-19T16:42:23.0Z"
  },
  "parentId": "41",
  "isRoot": true,
  "name": "Cloud Services",
  "description": "A category to hold all available cloud service offers"
}
```

Field Descriptions :

Category: 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.

Field	Description
description	Description of the category
href	Reference of the catalog
id	Unique identifier of the category
isRoot	If true, this Boolean indicates that the category is a root of categories
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the category
parentId	Unique identifier of the parent category
validFor	The period for which the category is valid
version	Category version

UML model:

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.

Formatted: Strikethrough

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

```
{
  "id": "42",
  "href": "http://serverlocation:port/productCatalogManagement/productOffering/42",
  "version": "12.0",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": true,
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2013-04-19T16:42:23.0Z",
    "endDateTime": "2013-06-19T00:00:00.0Z"
  },
  "category":
  [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "name": "Cloud offerings"
    }
  ]
}
```

```
    }
  ],
  "channel":
  [
    {
      "id": "13",
      "href": "http://serverlocation:port/marketSales/channel/13",
      "name": "Online Channel"
    }
  ],
  "place":
  [
    {
      "id": "12",
      "href": "http://serverlocation:port/marketSales/place/12",
      "name": "France"
    }
  ],
  "bundledProductOffering":
  [
    {
      "id": "15",
      "href":
"http://serverlocation:port/productCatalogManagement/productOffering/15",
      "lifecycleStatus": "Active",
      "name": "Offering 15"
    },
    {
      "id": "64",
      "href":
"http://serverlocation:port/productCatalogManagement/productOffering/64",
      "lifecycleStatus": "Active",
      "name": "Offering 64"
    }
  ],
  "serviceLevelAgreement":
  {
    "id": "28",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
  },
  "productSpecification":
  {
    "id": "13",
    "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
  },
}
```

```
"serviceCandidate":
  {
    "id": "13",
    "href":
"http://serverlocation:port/serviceCatalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
  },
"resourceCandidate":
  {
    "id": "13",
    "href":
"http://serverlocation:port/resourceCatalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
  },
"productOfferingTerm":
[
  {
    "name": "12 Month",
    "description": "12 month contract",
    "duration": "12",
    "validFor":
    {
      "startDateTime": "2013-04-19T16:42:23.0Z",
      "endDateTime": "2013-06-19T00:00:00.0Z"
    }
  }
],
"productOfferingPrice":
[
  {
    "name": "Monthly Price",
    "description": "monthlyprice",
    "validFor":
    {
      "startDateTime": "2013-04-19T16:42:23.0Z",
      "endDateTime": "2013-06-19T00:00:00.0Z"
    },
    "priceType": "recurring",
    "unitOfMeasure": "",
    "price":
    {
      "taxIncludedAmount": 12,
      "dutyFreeAmount": 10,
      "taxRate": 20,
      "currencyCode": "EUR",
      "percentage": 0
    },
    "recurringChargePeriod": "monthly"
  }
]
```

```

    },
    {
      "name": "Usage Price",
      "description": "usageprice",
      "validFor":
      {
        "startDateTime": "2013-04-19T16:42:23.0Z",
        "endDateTime": "2013-06-19T00:00:00.0Z"
      },
      "priceType": "usage",
      "unitOfMeasure": "second",
      "price":
      {
        "taxIncludedAmount": 12,
        "dutyFreeAmount": 10,
        "taxRate": 20,
        "currencyCode": "EUR",
        "percentage": 0
      },
      "recurringChargePeriod": "",
      "productOfferPriceAlteration":
      {
        "name": "Shipping Discount",
        "description": "One time shipping discount",
        "validFor":
        {
          "startDateTime": "2013-04-19T16:42:23.0Z"
        },
        "priceType": "one_timeOne-Time",
        "unitOfMeasure": "",
        "price":
        {
          "percentage": 100
        },
        "recurringChargePeriod": "",
        "priceCondition": "apply if total amount of the order is greater than
300.00"
      }
    }
  ]
}

```

Field Descriptions :

BundledProductOffering: A type of ProductOffering that belongs to a grouping of ProductOfferings made available to the market. It inherits of all attributes of ProductOffering.

Category: 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.

Field	Description
description	Description of the category
href	Reference of the catalog
id	Unique identifier of the category
isRoot	If true, this Boolean indicates that the category is a root of categories
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the category
parentId	Unique identifier of the parent category
validFor	The period for which the category is valid
version	Category version

Channel: Defines the channel for selling product offerings.

Field	Description
href	Reference of the channel
id	Unique identifier of the channel
name	Name of the channel

Place: Defines the places where the product offerings are sold.

Field	Description
href	Reference of the place
id	Unique identifier of the place
name	Name of the place

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

Field	Description
currencyCode	A string used as a code for specifying the currency associated to the given amounts. The ISO4217 norm uses 3 letters to define the currency (for example USD for US dollar or EUR for Euro)
dutyFreeAmount	All taxes excluded amount (expressed in the given currency)
percentage	Percentage to apply for ProdOfferPriceAlteration
taxIncludedAmount	All taxes included amount (expressed in the given currency)
priceType	Indicates the price type: recurring, one time, usage
taxRate	Tax rate

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

Field	Description
description	Description of the productOffering

href	Reference of the ProductOffering
id	Unique identifier of the productOffering
isBundle	isBundle determines whether a productOffering represents a single productOffering (false), or a bundle of productOfferings (true).
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the productOffering
validFor	The period for which the productOffering is valid
version	ProductOffering version

ProductOfferPriceAlteration: An amount, usually of money, that modifies a price charged for a productOffering.

Field	Description
applicationDuration	Duration during which the prodOfferPriceAlteration applies on the productOffering (for instance 2 months free of charge for the recurring charge)
description	Description of the prodOfferPriceAlteration
href	Reference of the prodOfferPriceAlteration
id	Unique identifier of the prodOfferPriceAlteration e
name	Name of the prodOfferPriceAlteration
priceCondition	Condition that triggers the price application
priceType	Indicates the price type: recurring, one time, usage
recurringChargePeriod	Could be month, week...
unitOfMeasure	Could be minutes, GB...
validFor	The period for which the prodOfferPriceAlteration is valid

ProductOfferingPrice: 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. The price may be influenced by this productOfferingTerm. A productOffering may be cheaper with a 24 month commitment than with a 12 month commitment.

Field	Description
description	Description of the productOfferingPrice
name	Name of the productOfferingPrice
priceType	Indicates the price type: recurring, one time, usage
recurringChargePeriod	Could be month, week...
unitOfMeasure	Could be minutes, GB...
validFor	The period for which the productOfferingPrice is valid
version	ProductOffering version

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

Field	Description
description	Description of the productOfferingTerm

duration	Duration of the productOfferingTerm
name	Name of the productOfferingTerm
validFor	The period for which the productOfferingterm is valid

ProductSpecification: 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
brand	The manufacturer or trademark of the specification
description	A narrative that explains in detail what the product specification is
href	Reference of the product specification
id	Unique identifier of the product specification
isBundle	isBundle determines whether a productSpecification represents a single productSpecification (false), or a bundle of productSpecification (true).
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the product specification
productNumber	An identification number assigned to uniquely identify the specification
validFor	The period for which the product specification is valid
version	Product specification version

ServiceCandidate: Is an entity that makes a ServiceSpecification available to a catalog. A ServiceCandidate and its associated ServiceSpecification may be published - made visible - in any number of ServiceCatalogs, or in none. One ServiceSpecification can be composed of other ServiceSpecifications. The Service Candidate consists of a subset of ServiceSpecification characteristics to fulfill a product offering. These ServiceSpecifications may also be published.

Field	Description
description	A narrative that explains in detail what the service candidate is
href	Reference of the service candidate
id	Unique identifier of the service candidate
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the service candidate
validFor	The period for which the service candidate is valid
version	Service candidate version

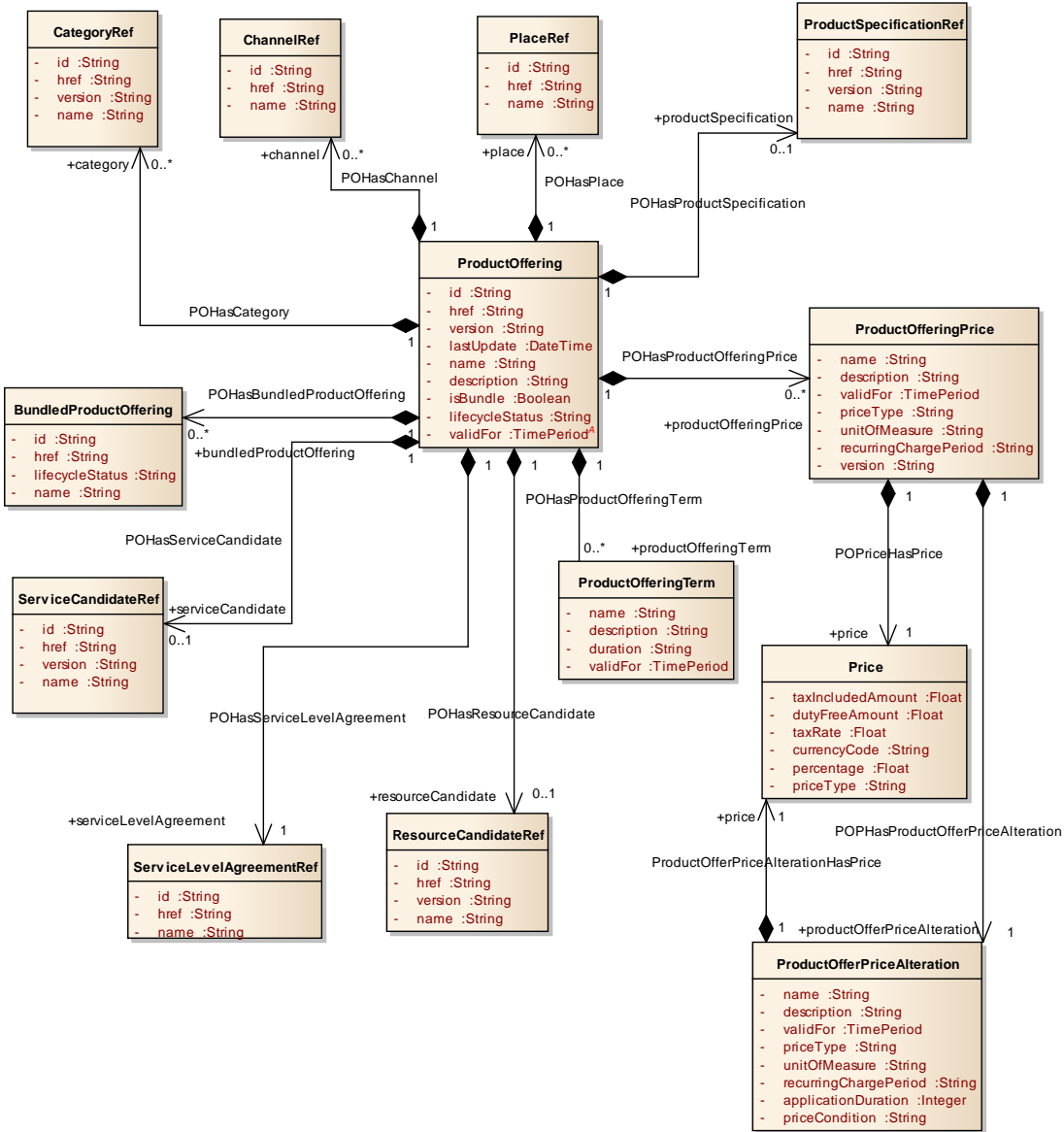
ServiceLevelAgreement: A service level agreement (SLA) is a type of agreement that represents a formal negotiated agreement between two parties designed to create a common understanding about products, services, priorities, responsibilities, and so forth. The SLA is a set of appropriate procedures and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

Field	Description
href	Reference of the service level agreement
id	Unique identifier of the service level agreement
name	Name of the service level agreement

ResourceCandidate: Is an entity that makes a ResourceSpecification available to a catalog. A ResourceCandidate and its associated ResourceSpecification may be published - made visible - in any number of ResourceCatalogs, or in none. One ResourceSpecification can be composed of other ResourceSpecifications. The ResourceCandidate consists of a subset of ResourceSpecification characteristics to fulfill a product offering. These ResourceSpecifications may also be published.

Field	Description
href	Reference of the resource candidate
id	Unique identifier of the resource candidate
name	Name of the resource candidate

UML model:



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.

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

```
{
  "id": "22",
  "href":
"http://serverLocation:port/productCatalogManagement/productSpecification/22",
  "productNumber": "I42-340-DX",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "name": "iPhone 42",
  "description": "Siri works on this iPhone",
  "isBundle": true,
  "brand": "Apple",
  "lifecycleStatus": "Active",
  "validFor":
  {
    "startDateTime": "2013-06-19T00:00:00.0Z",
    "endDateTime": "2013-04-19T16:42:23.0Z"
  },
  "relatedParty":
  [
    {
      "id": "1234",
      "href": "http
://serverLocation:port/partyManagement/partyRole/1234",
      "role": "Owner"
    }
  ],
  "attachment":
  [
    {
      "id": "22",
      "href":
"http://serverLocation:port/documentManagement/attachment/22",
      "type": "Picture",
      "url": "http://xxxxx"
    }
  ],
  "bundledProductSpecification":
  [
    {
      "id": "15",
      "href":
"http://serverLocation:port/productCatalogManagement/productSpecification/15",
      "lifecycleStatus": "Active",
      "name": "Product specification 15"
    }
  ]
}
```

```
    },
    {
        "id": "64",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/64",
        "lifecycleStatus": "Active",
        "name": "Product specification 64"
    }
],
"productSpecificationRelationship":
[
    {
        "id": "23",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/23",
        "type": "dependency",
        "validFor":
        {
            "startDateTime": "2013-04-19T16:42:23.0Z"
        }
    }
],
"serviceSpecification":
[
    {
        "id": "13",
        "href":
"http://serverlocation:port/serviceCatalogManagement/serviceSpecification/13",
        "name": "specification 13",
        "version": "1.1"
    }
],
"resourceSpecification":
[
    {
        "id": "13",
        "href":
"http://serverlocation:port/resourceCatalogManagement/resourceSpecification/13",
        "name": "specification 13",
        "version": "1.1"
    }
],
"productSpecCharacteristic":
[
    {
        "name": "Screen Size",
        "description": "Screen size",
        "valueType": "number",
        "configurable": false,
```

```
"productSpecCharacteristicValue":
[
  {
    "valueType": "number",
    "default": true,
    "value": "4.2",
    "unitOfMeasure": "inches",
    "valueFrom": "",
    "valueTo": "",
    "validFor":
    {
      "startDateTime": "2013-04-19T16:42:23.0Z"
    }
  }
],
"validFor":
{
  "startDateTime": "2013-04-19T16:42:23.0Z"
}
},
{
  "name": "Colour",
  "description": "Colour",
  "valueType": "string",
  "configurable": true,
  "ProductSpecCharacteristicValue":
  [
    {
      "valueType": "string",
      "default": true,
      "value": "Black",
      "unitOfMeasure": "",
      "valueFrom": "",
      "valueTo": "",
      "validFor":
      {
        "startDateTime": "2013-04-19T16:42:23.0Z"
      }
    },
    {
      "valueType": "string",
      "default": false,
      "value": "White",
      "unitOfMeasure": "",
      "valueFrom": "",
      "valueTo": "",
      "validFor":
      {
        "startDateTime": "2013-04-19T16:42:23.0Z"
      }
    }
  ],
}
```



```

        "validFor":
        {
            "startTime": "2013-04-19T16:42:23.0Z"
        }
    ]
}

```

Field Descriptions :

Attachment: describes a product through video, pictures...

Field	Description
href	Reference of the attachment
id	Unique identifier of the attachment
type	Attachment type such as video, picture
url	Uniform Resource Locator, is a web page address (a subset of URI)

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

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
brand	The manufacturer or trademark of the specification
description	A narrative that explains in detail what the product specification is
href	Reference of the product specification
id	Unique identifier of the product specification
isBundle	isBundle determines whether a productSpecification represents a single productSpecification (false), or a bundle of productSpecification (true).
lastUpdate	Date and time of the last update
lifecycleStatus	Used to indicate the current lifecycle status
name	Name of the product specification
productNumber	An identification number assigned to uniquely identify the specification
validFor	The period for which the product specification is valid
version	Product specification version

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.

Field	Description
configurable	If true, the Boolean indicates that the productSpecCharacteristic is configurable

description	A narrative that explains in detail what the productSpecCharacteristic is
name	Name of the productSpecCharacteristic
valueType	A kind of value that the characteristic can take on, such as numeric, text and so forth
validFor	The period for which the productSpecCharacteristic is valid

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

Field	Description
default	Indicates if the value is the default value for a characteristic
unitOfMeasure	Could be minutes, GB...
validFor	The period of time for which a value is applicable
value	A discrete value that the characteristic can take on
valueFrom	The low range value that a characteristic can take on
valueTo	The upper range value that a characteristic can take on
valueType	A kind of value that the characteristic can take on, such as numeric, text, and so forth

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

Field	Description
href	Reference of the productSpecification
validFor	The period for which the productSpecificationRelationship is valid
type	Type of relationship such as migration, substitution, dependency, exclusivity
id	Unique identifier of the productSpecification

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

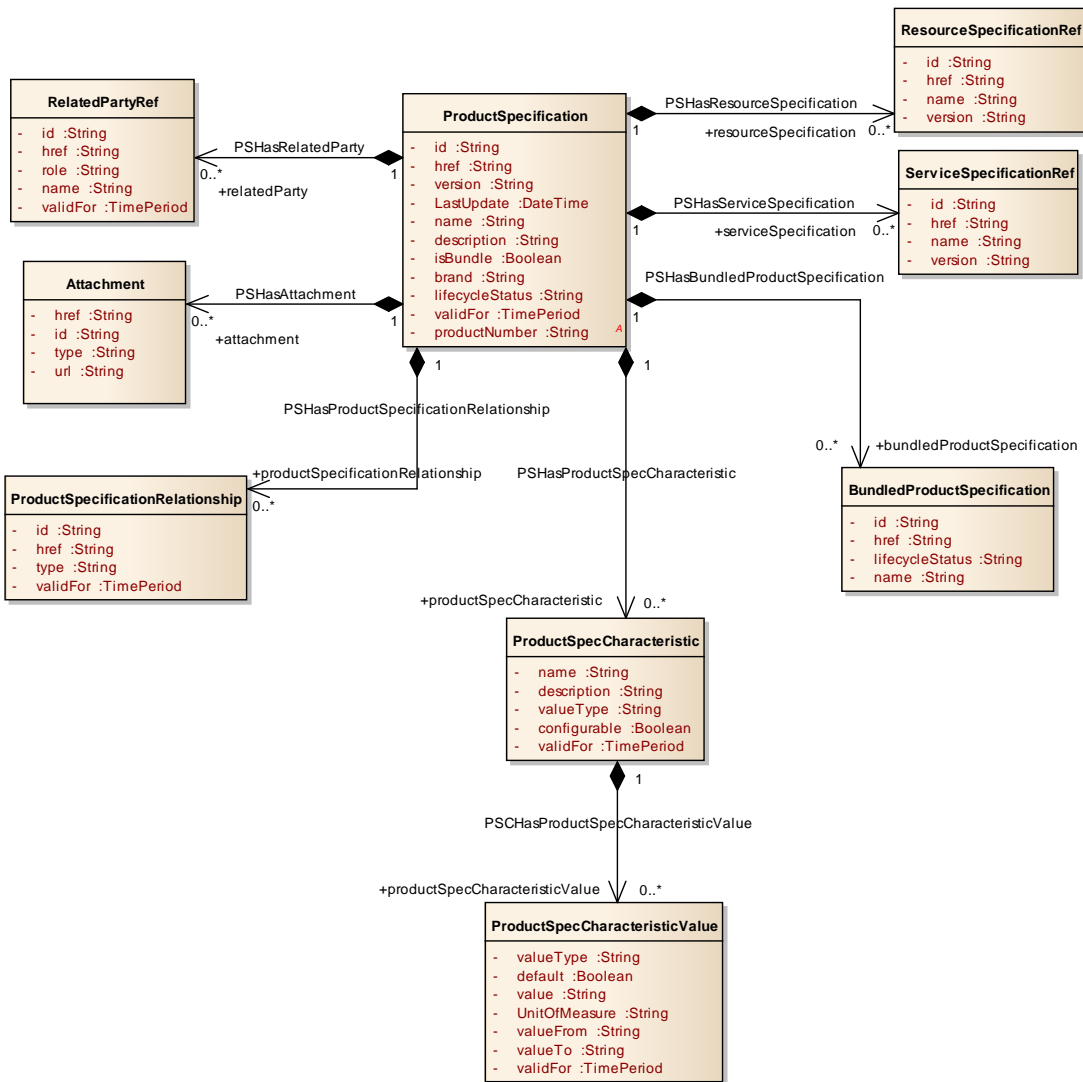
ResourceSpecification: ResourceSpecification(s) required to realize a ProductSpecification.

Field	Description
href	Reference of the resource specification
id	Unique identifier of the resource specification
name	Name of the requiredResourceSpecification
version	Resource specification version

ServiceSpecification: ServiceSpecification(s) required to realize a ProductSpecification.

Field	Description
href	Reference of the serviceSpecification
id	Unique identifier of the service specification
name	Name of the requiredServiceSpecification
version	Service specification version

UML model:



Export Job Resource

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

The ExportJob resource supports the following properties:

Attribute name	Description
query	Used to scope the exported data (identical to GET filter construct using target ID as base) "query": "type=productOffering&version=2.0"
path	URL of the root resource acting as the source for streaming content to the file specified by the ExportJob ../partyManagement/individual
content-type	The format of the exported data .By default "application/json"
status	notstarted, running, succeeded, failed
url	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
completionDate	Date at which the Job was completed.
creationDate	Date at which the Job was created.
errorLog	Reason for Failure

JSON representation of an ExportJob

```
{
```

```

"id": "54",
"href": "http://api/catalogManagement/exportJob/54",
"status": "running",
"path": "partyManagement/",
"content-type": "application/json",
"errorLog": "",
"creationDate": "2013-04-19T16:42:23-04:00",
"completionDate": "2013-04-21T16:42:23-04:00",
"url": "ftp://ftp.myCatalog.com/party/54"
}

```

UML Model:



Import Job Resource

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

The ImportJob resource supports the following properties:

Attribute name	Description
content-type	The format of the imported data. By default "application/json"
path	URL of the root resource where the content of the file specified by the ImportJob must be applied ../partyManagement/individual

status	notstarted, running, succeeded, failed
url	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	Date at which the Job was completed.
creationDate	Date at which the Job was created.
errorLog	Reason for Failure if status is failed

JSON representation of an ImportJob

```
{
  "id": "54",
  "href": "http://api/catalogManagement/importJob/54",
  "status": "completed",
  "path": "catalogManagement/",
  "content-type": "application/json",
  "errorLog": "",
  "creationDate": "2013-04-19T16:42:23-04:00",
  "completionDate": "2013-04-21T16:42:23-04:00",
  "url": "ftp://ftp.myCatalog.com/party/54"
}
```

UML Model:

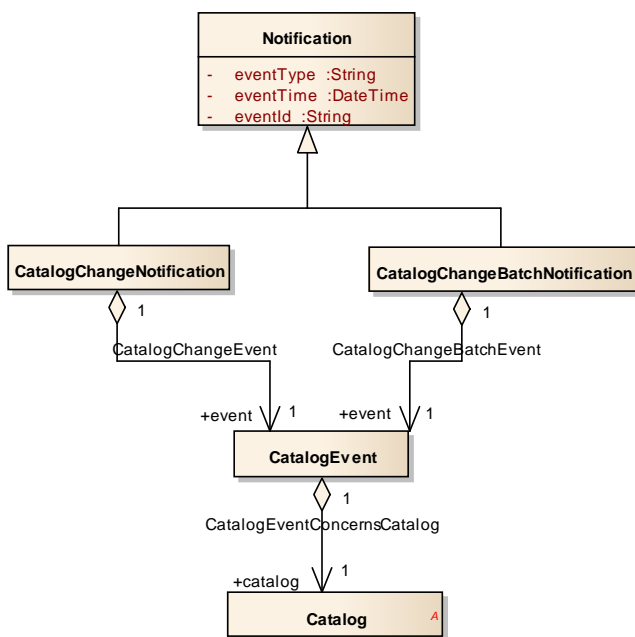
ImportJob
- id :String
- href :String
- contentType :String
- path :String
- status :String
- url :String
- completionDate :DateTime
- creationDate :DateTime
- errorLog :String

Notification Resource Models

Two notification event types are defined:

1. CatalogChangeNotification
2. CatalogChangeBatchNotification

Catalog Notification UML Diagram:



Catalog change notification: notifies that a catalog has been updated.

```

{
  "event": {
    "id": "01",
    "dateTime": "2013-04-19T16:42:25-30:00",
    "eventType": "Catalog change notification",
    "catalog": [
      {
        "id": "10",
        "href": "http://serverlocation:port/catalogManagement/catalog/10",
        "version": "2.0",
        "lastUpdate": "2013-04-19T16:42:23-04:00",
      }
    ]
  }
}

```



```

        "type": "Product Catalog",
        "name": "Catalog Wholesale Business"
    }
}

```

Catalog change batch notification: notifies in detail all catalog updates.

```

{
  "event": {
    "id": "01",
    "dateTime": "2013-04-19T16:42:25-30:00",
    "eventType": "Catalog change batch notification",
    "catalog": [
      {
        "id": "10",
        "href": "http://serverlocation:port/catalogManagement/catalog/10",
        "version": "2.0",
        "lastUpdate": "2013-04-19T16:42:23-04:00",
        "type": "Product Catalog",
        "name": "Catalog Wholesale Business",
        "update": [
          {
            "op": "add",
            "path": "/category",
            "value": {
              "id": "42",
              "href": "http://serverlocation:port/catalogManagement/category/42",
              "lastUpdate": "2013-04-19T16:42:23-04:00",
              "version": "2.0",
              "lifecycleStatus": "Active",
              "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": ""
              },
              "parentId": "",
              "isRoot": "true",
              "name": "Home, Audio/Entertainment",
              "description": "A category to hold all inside offers"
            }
          }
        ]
      }
    ]
  }
}

```

```

        "op": "add",
        "path": "/category",
        "value": {
            "id": "421",
            "href": "http://serverlocation:port/catalogManagement/catalog/421",
            "lastUpdate": "2013-04-19T16:42:23-04:00",
            "version": "2.0",
            "lifecycleStatus": "Active",
            "validFor": {
                "startDateTime": "2013-04-
19T16:42:23-04:00",
                "endDateTime": ""
            },
            "parentId": "42",
            "isRoot": "false",
            "name": "Wireless sensors",
            "description": "A category to hold all wireless
sensor offers"
        }
    }, {
        "op": "add",
        "path": "/productSpecification",
        "value": {
            "id": "14",
            "href":
"http://serverlocation:port/catalogManagement/productSpecification/14",
            "version": "2.0",
            "lastUpdate": "2013-04-19T16:42:23-04:00",
            "productNumber": "WS45-230-FC",
            "name": "Sensor",
            "description": "A wireless sensor",
            "isBundle": "false",
            "brand": "Oregon",
            "lifecycleStatus": "Active",
            "validFor": {
                "startDateTime": "2013-04-
19T16:42:23-04:00",
                "endDateTime": "2013-06-
19T00:00:00-04:00"
            },
            "relatedParty": [
                {
                    "role": "Owner",
                    "id": "1234",
                    "href": "http
://serverLocation:port/partyManagement/partyRole/1234"
                }
            ]
        }
    }
}

```

```

    ],
    "productSpecCharacteristic": [
      {
        "name": "Colour",
        "description": "Colour",
        "valueType": "string",
        "configurable": "true",
        "validFor": {
          "startDateTime":
"2013-04-19T16:42:23-04:00",
          "endDateTime": ""
        },
        "productSpecCharacteristicValue": [
          {
            "valueType":
"string",
            "default":
"true",
            "value":
"Black",
            "unitOfMeasure": "",
            "valueFrom":
"",
            "valueTo": "",
            "validFor": {
              "startDateTime": "2013-04-19T16:42:23-04:00",
              "endDateTime": ""
            }
          }, {
            "valueType":
"string",
            "default":
"false",
            "value":
"White",
            "unitOfMeasure": "",
            "valueFrom":
"",
            "valueTo": "",
            "validFor": {
              "startDateTime": "2013-04-19T16:42:23-04:00",

```

```

    "endTime": ""
  }, {
    "op": "add",
    "path": "/productOfferingPrice",
    "value": {
      "name": "MonthlyPrice",
      "description": "Monthly Price",
      "validFor": {
        "startTime": "2013-04-19T16:42:23-04:00",
        "endTime": "2013-06-19T00:00:00-04:00"
      },
      "priceType": "recurring",
      "unitOfMeasure": "",
      "price": {
        "taxIncludedAmount": "12.00",
        "dutyFreeAmount": "10.00",
        "taxRate": "20.00",
        "currencyCode": "EUR"
      },
      "recurringChargePeriod": "month"
    }
  }, {
    "op": "add",
    "path": "/productOffering",
    "value": {
      "id": "4211",
      "href": "http://serverlocation:port/catalogManagement/productOffering/4211",
      "version": "2.0",
      "lastUpdate": "2013-04-19T16:42:23-04:00",
      "name": "Sensor",
      "description": "A wireless sensor",
      "isBundle": "false",
      "lifecycleStatus": "Active",
      "validFor": {
        "startTime": "2013-04-19T16:42:23-04:00",

```

```

        "endDateTime": "2013-06-
19T00:00:00-04:00"
    },
    "category": [
        {
            "id": "421",
            "href":
"http://serverlocation:port/catalogManagement/category/421",
            "version": "2.0",
            "name": "Wireless sensors"
        }
    ],
    "channel": [
        {
            "id": "13",
            "href":
"http://serverlocation:port/marketSales/channel/13",
            "name": "Online Channel"
        }
    ],
    "place": [
        {
            "id": "12",
            "href":
"http://serverlocation:port/marketSales/place/12",
            "name": "France"
        }
    ],
    "bundledProductOffering": "",
    "serviceLevelAgreement": {
        "id": "28",
        "href":
"http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
        "name": "Standard SLA"
    },
    "productSpecification": [
        {
            "id": "14",
            "href":
"http://serverlocation:port/catalogManagement/productSpecification/14",
            "productNumber": "WS45-230-FC",
            "version": "2.0",
            "name": "Sensor"
        }
    ],
    "productOfferingTerm": [

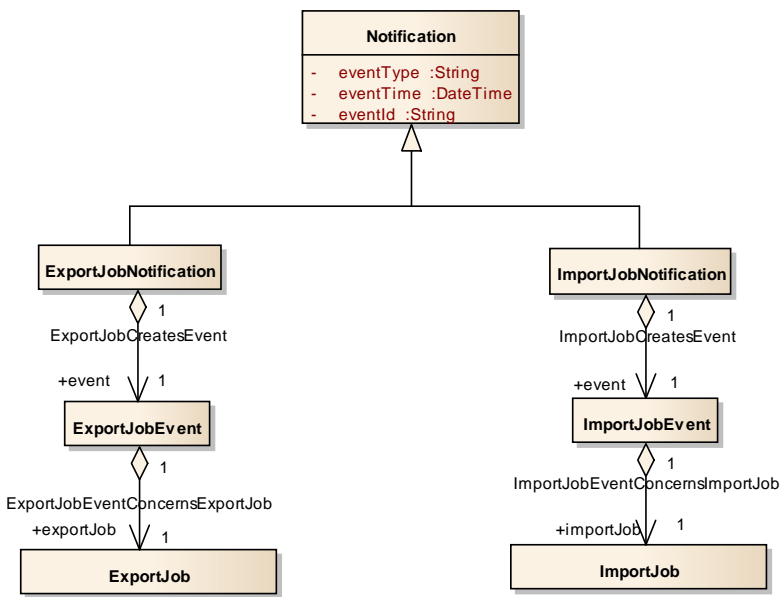
```

```
contract",
    "name": "12 Month",
    "description": "12 month",
    "duration": "12",
    "validFor": {
        "startDateTime":
            "2013-04-19T16:42:23-04:00",
        "endDateTime": "2013-
            06-19T00:00:00-04:00"
    },
    "productOfferingPrice": [
        {
            "name": "Monthly Price",
            "description": "monthlyprice",
            "validFor": {
                "startDateTime":
                    "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-
                    06-19T00:00:00-04:00"
            },
            "priceType": "recurring",
            "unitOfMeasure": "",
            "price": {
                "taxIncludedAmount":
                    "12.00",
                "dutyFreeAmount":
                    "10.00",
                "taxRate": "20.00",
                "currencyCode":
                    "EUR"
            },
            "recurringChargePeriod":
                "monthly"
        }
    ]
}
```

Export and Import Job Notifications

1. Export Job Completion Notification
2. Import Job Completion Notification

UML Model:



Event: ExportJobCompletionNotification

```

{
  "eventType": "ExportJobCompletionNotification",
  "eventTime": "2014-09-27T05:46:25.0Z",
  "eventId": "1154278",
  "event": { "exportJob": {
    "id": "54",
    "href": "http://api/catalogManagement/exportJob/54",
    "status": "succeeded",
    "path": "catalogManagement/",
    "content-type": "application/json",
    "errorLog": "",
    "creationDate": "2013-04-19T16:42:23-04:00",
  }
  }
}

```

```
"completionDate": "2013-04-21T16:42:23-04:00",  
"url": "ftp://ftp.mycatalog.com/catalogManagement/54.json"  
  }  
}
```

Event: ImportJobCompletionNotification

```
{  
  "eventType": "ImportJobCompletionNotification",  
  "eventTime": "2014-09-27T05:46:25.0Z",  
  "eventId": "1154278",  
  "event": { "importJob": {  
    "id": "54",  
    "href": "http://api/catalogManagement/importJob/54",  
    "status": "succeeded",  
    "path": "catalogManagement/",  
    "content-type": "application/json",  
    "errorLog": "",  
    "creationDate": "2013-04-19T16:42:23-04:00",  
    "completionDate": "2013-04-21T16:42:23-04:00",  
    "url": "ftp://ftp.mycatalog.com/catalogManagement/54.json"  
  }  
}  
}
```


API OPERATION TEMPLATES

For every single of operation on the entities use the following templates and provide sample REST requests and responses.

Remember that the following Uniform Contract rules must be used :

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.

GET /catalogManagement/category

This Uniform Contract operation is used to retrieve the representation of a managed entity or a task.

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- This operation retrieves productCategory from a catalog. 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.
- The resource represents a managed entity or a collection depending on the query pattern.
- The identifier is a string that can consist of numbers, not necessarily alphanumeric.

Behavior :

- Standard behavior and response codes for GET operations
- Filtering is enabled on all attributes, particularly due to the hierarchical nature of productCategory, children of a productCategory are obtained by filtering on the parentId attribute of the resource.
- Attribute selection is not enabled for this simple resource

REQUEST
GET /catalogManagement/category/{42} Accept: application/json
RESPONSE
200 Content-Type: application/json <pre>{ "id": "42", "href": "http://serverlocation:port/catalogManagement/category/42", "lastUpdate": "2013-04-19T16:42:23-04:00", "version": "2.0", "lifecycleStatus": "Active", "validFor": { "startDateTime": "2013-04-19T16:42:23-04:00", "endDateTime": "" }, "parentId": " 41", "isRoot": "false", "name": "Cloud Services",</pre>

```
"description": "A category to hold all available cloud service offers"
```

GET /catalogManagement/productOffering/{ID}

This Uniform Contract operation is used to retrieve the representation of a managed entity or a task.

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- This operation returns all productOfferings from the catalog, unless an ID is specified in which case a specific productOffering resource would be returned. The ProductOffering resource represents entities that are orderable from the provider of the catalog. This resource includes pricing information.
- The resource instance being returned is a productOffering or an array of product offering if the query returns multiple resources
- The resource is either a managed entity or a collection depending on the query pattern.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
 - 200 if no productOffering found for supplied categoryId (200) (filter expression)
 - 404 Not found when the supplied ID doesn't match a known productOffering.
- Filtering is enabled on all productOffering attributes.
- Attribute selection is enabled.

REQUEST

```
GET /catalogManagement/productOffering/{42}
Accept: application/json
```

RESPONSE

```
200
Content-Type: application/json
```

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
```

```

    "isBundle": "true",
    "lifecycleStatus": "Active",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "category": [
      {
        "id": "12",
        "href":
"http://serverlocation:port/catalogManagement/category/12",
        "version": "2.0",
        "name": "Cloud offerings"
      }
    ],
    "channel": [
      {
        "id": "13",
        "href":
"http://serverlocation:port/marketSales/channel/13",
        "name": "Online Channel"
      }
    ],
    "place": [
      {
        "id": "12",
        "href":
"http://serverlocation:port/marketSales/place/12",
        "name": "France"
      }
    ],
    "bundledProductOffering": [
      {
        "id": "15",
        "href":
"http://serverlocation:port/catalogManagement/productOffering/15",
        "lifecycleStatus": "Active",
        "name": "Offering 15"
      }, {
        "id": "64",
        "href":
"http://serverlocation:port/catalogManagement/productOffering/64",

```

```
        "lifecycleStatus": "Active",
        "name": "Offering 64"
    }
],
"serviceLevelAgreement": {
    "id": "28",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
},
"productSpecification": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
},
"serviceCandidate": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
},
"resourceCandidate": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
},
"productOfferingTerm": [
    {
        "name": "12 Month",
        "description": "12 month contract",
        "duration": "12",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    }
],
"productOfferingPrice": [
    {
        "name": "Monthly Price",
        "description": "monthlyprice",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    }
]
```

```

    },
    "priceType": "recurring",
    "unitOfMeasure": "",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": "monthly"
  }, {
    "name": "Usage Price",
    "description": "usageprice",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "priceType": "usage",
    "unitOfMeasure": "second",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": ""
  }
]
}

```

Another example of a query on the category.href attribute would be executed, however only a limited set of attributes is initially returned (id, name, description, productSpecification and validFor).

REQUEST

GET
 /catalogManagement/productOffering/**name,id,description,validFor,productSpecification,isBundle,bundledProductOffering**?category.id=12

Accept: application/json

RESPONSE for bundled ProductOffering

200

Content-Type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "bundledProductOffering": [
    {
      "id": "15",
      "href": "http://serverlocation:port/catalogManagement/productOffering/15",
      "lifecycleStatus": "Active",
      "name": "Offering 15"
    }, {
      "id": "64",
      "href": "http://serverlocation:port/catalogManagement/productOffering/64",
      "lifecycleStatus": "Active",
      "name": "Offering 64"
    }
  ],
  "productSpecification": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
  }
}
```

RESPONSE for simple ProductOffering

200

Content-Type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "false",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "productSpecification": {
    "id": "13",
```

```

    "href": "http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
  }
}

```

GET /catalogManagement/productSpecification/{ID}

This Uniform Contract operation is used to retrieve the representation of a managed entity or collection.

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- This operation returns productSpecifications from a catalog. 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 PartyRole.
- The resource instance being returned is a productSpecification or an array of productSpecifications if the query returns multiple specifications.
- The resource represents a managed entity or a collection.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
 - 200 if no productSpecification found
 - 404 Not found when the supplied ID doesn't match a known productSpecification.
- Filtering is enabled on all productSpecification attributes.
- Attribute selection is enabled.

REQUEST

```

GET /catalogManagement/productSpecification/22
Accept: application/json

```

RESPONSE

```

{
  "id": "22",
  "href": "http://serverlocation:port/catalogManagement/productSpecification/22",
  "productNumber": "WS45-230-FC",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "iPhone 42",
}

```



```
"description": "Siri works on this iPhone",
"isBundle": "true",
"brand": "Apple",
"lifecycleStatus": "Active",
"validFor": {
  "startDateTime": "2013-04-19T16:42:23-04:00",
  "endDateTime": "2013-06-19T00:00:00-04:00"
},
"relatedParty": [
  {
    "id": "1234",
    "role": "Owner",
    "href": "http://serverLocation:port/partyManagement/partyRole/1234"
  }
],
"attachment": [
  {
    "id": "22",
    "href": "http://serverlocation:port/documentManagement/attachment/22",
    "type": "Picture",
    "url": "http://xxxxx"
  }
],
"bundledProductSpecification": [
  {
    "id": "15",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/15",
    "lifecycleStatus": "Active",
    "name": "Product specification 15"
  }, {
    "id": "64",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/64",
    "lifecycleStatus": "Active",
    "name": "Product specification 64"
  }
],
"productSpecificationRelationship": [
  {
    "id": "23",
    "href":
```

```
"http://serverlocation:port/productCatalogManagement/productSpecification/23",
  "type": "dependency",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": ""
  }
},
"serviceSpecification": [
  {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/serviceSpecification/13",
    "name": "specification 1",
    "version": "1.1"
  }
],
"resourceSpecification": [
  {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/resourceSpecification/13",
    "name": "specification 1",
    "version": "1.1"
  }
],
"productSpecCharacteristic": [
  {
    "name": "Screen Size",
    "description": "Screen size",
    "valueType": "number",
    "configurable": "false",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": ""
    },
    "productSpecCharacteristicValue": [
      {
        "valueType": "number",
        "default": "true",
        "value": "4.2",
```

```

        "unitOfMeasure": "inches",
        "valueFrom": "",
        "valueTo": "",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
        }
    }
]
}, {
    "name": "Colour",
    "description": "Colour",
    "valueType": "string",
    "configurable": "true",
    "validFor": {
        "startDateTime": "2013-04-19T16:42:23-04:00",
        "endDateTime": ""
    },
    "productSpecCharacteristicValue": [
        {
            "valueType": "string",
            "default": "true",
            "value": "Black",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": ""
            }
        }, {
            "valueType": "string",
            "default": "false",
            "value": "White",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": ""
            }
        }
    ]
}

```

```

    ]
  }
}

```

PUT /catalogManagement/category/{ID}

This Uniform Contract operation is used to completely update the representation of a managed entity or a task.

Description :

- This operation completely updates a category.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

REQUEST

PUT /catalogManagement/category/42
Content-type: application/json

```

{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/category/42",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "version": "2.0",
  "lifecycleStatus": "Launched",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": ""
  },
  "parentId": "41",
  "isRoot": "false",
  "name": "Cloud Services",
  "description": "A category to hold all available cloud service offers"
}

```

RESPONSE

201

Content-Type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/category/42",
  "lastUpdate": "2013-04-25T09:28:10-04:00",
  "version": "2.0",
  "lifecycleStatus": "Launched",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": ""
  },
  "parentId": "41",
  "isRoot": "false",
  "name": "Cloud Services",
  "description": "A category to hold all available cloud service offers"
}
```

PUT /catalogManagement/productOffering/{ID}

This Uniform Contract operation is used to completely update the representation of a managed entity or a task.

Description :

- This operation completely updates a productOffering.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

REQUEST

PUT /catalogManagement/productOffering/42
Content-type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
```

```
"version": "2.0",
"lastUpdate": "2013-04-19T16:42:23-04:00",
"name": "Virtual Storage Medium",
"description": "Virtual Storage Medium",
"isBundle": "true",
"lifecycleStatus": "Active",
"validFor": {
  "startDateTime": "2013-04-19T16:42:23-04:00",
  "endDateTime": "2013-06-19T00:00:00-04:00"
},
"category": [
  {
    "id": "12",
    "href": "http://serverlocation:port/catalogManagement/category/12",
    "version": "2.0",
    "name": "Cloud offerings"
  }
],
"channel": [
  {
    "id": "13",
    "href": "http://serverlocation:port/marketSales/channel/13",
    "name": "Online Channel"
  },
  {
    "id": "14",
    "href": "http://serverlocation:port/marketSales/channel/14",
    "name": "Shop"
  }
],
"place": [
  {
    "id": "12",
    "href": "http://serverlocation:port/marketSales/place/12",
    "name": "France"
  },
  {
    "id": "14",
    "href": "http://serverlocation:port/marketSales/place/14",
    "name": "Belgium"
  }
],
"bundledProductOffering": [
  {
    "id": "15",
    "href": "http://serverlocation:port/catalogManagement/productOffering/15",
```

```

        "lifecycleStatus": "Active",
        "name": "Offering 15"
    }, {
        "id": "64",
        "href": "http://serverlocation:port/catalogManagement/productOffering/64",
        "lifecycleStatus": "Active",
        "name": "Offering 64"
    }
],
"serviceLevelAgreement": {
    "id": "28",
    "href":
"http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
},
"productSpecification": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
},
"serviceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
},
"resourceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
},
"productOfferingTerm": [
    {
        "name": "12 Month",
        "description": "12 month contract",
        "duration": "12",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    }
],

```

```

"productOfferingPrice": [
  {
    "name": "Monthly Price",
    "description": "monthlyprice",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "priceType": "recurring",
    "unitOfMeasure": "",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": "monthly"
  }, {
    "name": "Usage Price",
    "description": "usageprice",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "priceType": "usage",
    "unitOfMeasure": "second",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": ""
  }
]
}

```

RESPONSE

201
Content-Type: application/json

```

{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "3.0",
  "lastUpdate": "2013-06-05T08:30:45-04:00",
  "name": "Virtual Storage Medium",

```



```
"description": "Virtual Storage Medium",
"isBundle": "true",
"lifecycleStatus": "Active",
"validFor": {
  "startDateTime": "2013-04-19T16:42:23-04:00",
  "endDateTime": "2013-06-19T00:00:00-04:00"
},
"category": [
  {
    "id": "12",
    "href": "http://serverlocation:port/catalogManagement/category/12",
    "version": "2.0",
    "name": "Cloud offerings"
  }
],
"channel": [
  {
    "id": "13",
    "href": "http://serverlocation:port/marketSales/channel/13",
    "name": "Online Channel"
  },
  {
    "id": "14",
    "href": "http://serverlocation:port/marketSales/channel/14",
    "name": "Shop"
  }
],
"place": [
  {
    "id": "12",
    "href": "http://serverlocation:port/marketSales/place/12",
    "name": "France"
  },
  {
    "id": "14",
    "href": "http://serverlocation:port/marketSales/place/14",
    "name": "Belgium"
  }
],
"bundledProductOffering": [
  {
    "id": "15",
    "href": "http://serverlocation:port/catalogManagement/productOffering/15",
    "lifecycleStatus": "Active",
    "name": "Offering 15"
  }, {
    "id": "64",
```

```

        "href": "http://serverlocation:port/catalogManagement/productOffering/64",
        "lifecycleStatus": "Active",
        "name": "Offering 64"
    }
],
"serviceLevelAgreement": {
    "id": "28",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
},
"productSpecification": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
},
"serviceCandidate": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
},
"resourceCandidate": {
    "id": "13",
    "href": "http://serverlocation:port/catalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
},
"productOfferingTerm": [
    {
        "name": "12 Month",
        "description": "12 month contract",
        "duration": "12",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    }
],
"productOfferingPrice": [
    {
        "name": "Monthly Price",
        "description": "monthlyprice",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    }
],

```

```

    "priceType": "recurring",
    "unitOfMeasure": "",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": "monthly"
  }, {
    "name": "Usage Price",
    "description": "usageprice",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "priceType": "usage",
    "unitOfMeasure": "second",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": ""
  }
]
}

```

PUT /catalogManagement/productSpecification

This Uniform Contract operation is used to completely update the representation of a managed entity or a task.

Description :

- This operation completely updates a productSpecification.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

REQUEST

PUT /catalogManagement/productSpecification
Content-type: application/json

```
{
  "id": "22",
  "href": "http://serverlocation:port/catalogManagement/productSpecification/22",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "iPhone 42",
  "description": "Siri works on this iPhone",
  "isBundle": "true",
  "brand": "Apple",
  "lifecycleStatus": "Launched",
  "validFor": {
    "startDateTime": "2013-06-20T16:42:23-04:00",
    "endDateTime": ""
  },
  "relatedParty": [
    {
      "id": "1234",
      "role": "Owner",
      "href": "http://serverLocation:port/partyManagement/partyRole/1234"
    }
  ],
  "attachment": [
    {
      "id": "22",
      "href": "http://serverlocation:port/documentManagement/attachment/22",
      "type": "Picture",
      "url": "http://xxxxx"
    }
  ],
  "bundledProductSpecification": [
    {
      "id": "15",
      "href": "http://serverlocation:port/catalogManagement/productSpecification/15",
      "lifecycleStatus": "Launched",
      "name": "Product specification 15"
    }, {
      "id": "64",
      "href": "http://serverlocation:port/catalogManagement/productSpecification/64",
      "lifecycleStatus": "Launched",
      "name": "Product specification 64"
    }
  ],
  "productSpecificationRelationship": [
```

```

    {
      "type": "dependency",
      "id": "23",
      "href": "
http://serverlocation:port/catalogManagement/productSpecification/23",
      "validFor": {
        "startDateTime": "2013-04-19T16:42:23-04:00",
        "endDateTime": ""
      }
    }
  ],
  "serviceSpecification": [
    {
      "id": "13",
      "href": "http://serverlocation:port/catalogManagement/serviceSpecification/13",
      "name": "specification 1",
      "version": "1.1"
    }
  ],
  "resourceSpecification": [
    {
      "id": "13",
      "href": "http://serverlocation:port/catalogManagement/resourceSpecification/13",
      "name": "specification 1",
      "version": "1.1"
    }
  ],
  "productSpecCharacteristic": [
    {
      "name": "Screen Size",
      "description": "Screen size",
      "valueType": "number",
      "configurable": "false",
      "validFor": {
        "startDateTime": "2013-04-19T16:42:23-04:00",
        "endDateTime": ""
      },
      "productSpecCharacteristicValue": [
        {
          "valueType": "number",
          "default": "true",
          "value": "4.2",
          "unitOfMeasure": "inches",
          "valueFrom": "",
          "valueTo": "",
          "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
          }
        }
      ]
    }
  ]
}

```

```

    ], {
      "name": "Colour",
      "description": "Colour",
      "valueType": "string",
      "configurable": "true",
      "validFor": {
        "startDateTime": "2013-04-19T16:42:23-04:00",
        "endDateTime": ""
      },
      "productSpecCharacteristicValue": [
        {
          "valueType": "string",
          "default": "true",
          "value": "Black",
          "unitOfMeasure": "",
          "valueFrom": "",
          "valueTo": "",
          "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
          }
        }, {
          "valueType": "string",
          "default": "false",
          "value": "White",
          "unitOfMeasure": "",
          "valueFrom": "",
          "valueTo": "",
          "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
          }
        }
      ]
    }
  ]
}

```

RESPONSE

201
Content-Type: application/json

```
{
  "id": "22",
```

```
"href": "http://serverlocation:port/catalogManagement/productSpecification/22",
"version": "2.0",
"lastUpdate": "2013-06-20T16:42:23-04:00",
"name": "iPhone 42",
"description": "Siri works on this iPhone",
"isBundle": "true",
"brand": "Apple",
"lifecycleStatus": "Launched",
"validFor": {
  "startDateTime": "2013-06-20T16:42:23-04:00",
  "endDateTime": ""
},
"relatedParty": [
  {
    "id": "1234",
    "role": "Owner",
    "href": "http://serverLocation:port/partyManagement/partyRole/1234"
  }
],
"attachment": [
  {
    "id": "22",
    "href": "http://serverlocation:port/documentManagement/attachment/22",
    "type": "Picture",
    "url": "http://xxxxx"
  }
],
"bundledProductSpecification": [
  {
    "id": "15",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/15",
    "lifecycleStatus": "Launched",
    "name": "Product specification 15"
  }, {
    "id": "64",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/64",
    "lifecycleStatus": "Launched",
    "name": "Product specification 64"
  }
],
"productSpecificationRelationship": [
  {
    "type": "dependency",
    "id": "23",
```

```

    "href": "
http://serverlocation:port/catalogManagement/productSpecification/23",
    "validFor": {
        "startDateTime": "2013-04-19T16:42:23-04:00",
        "endDateTime": ""
    }
},
"serviceSpecification": [
    {
        "id": "13",
        "href":
http://serverlocation:port/catalogManagement/serviceSpecification/13,
        "name": "specification 1",
        "version": "1.1"
    }
],
"resourceSpecification": [
    {
        "id": "13",
        "href":
http://serverlocation:port/catalogManagement/resourceSpecification/13,
        "name": "specification 1",
        "version": "1.1"
    }
],
"productSpecCharacteristic": [
    {
        "name": "Screen Size",
        "description": "Screen size",
        "valueType": "number",
        "configurable": "false",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
        },
        "productSpecCharacteristicValue": [
            {
                "valueType": "number",
                "default": "true",
                "value": "4.2",
                "unitOfMeasure": "inches",
                "valueFrom": "",
                "valueTo": "",
                "validFor": {
                    "startDateTime": "2013-04-19T16:42:23-04:00",
                    "endDateTime": ""
                }
            }
        ]
    }
]

```



```

    }
  ], {
    "name": "Colour",
    "description": "Colour",
    "valueType": "string",
    "configurable": "true",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": ""
    },
    "productSpecCharacteristicValue": [
      {
        "valueType": "string",
        "default": "true",
        "value": "Black",
        "unitOfMeasure": "",
        "valueFrom": "",
        "valueTo": "",
        "validFor": {
          "startDateTime": "2013-04-19T16:42:23-04:00",
          "endDateTime": ""
        }
      }, {
        "valueType": "string",
        "default": "false",
        "value": "White",
        "unitOfMeasure": "",
        "valueFrom": "",
        "valueTo": "",
        "validFor": {
          "startDateTime": "2013-04-19T16:42:23-04:00",
          "endDateTime": ""
        }
      }
    ]
  }
}

```

PATCH /catalogManagement/category/{ID}

This Uniform Contract operation is used to partially update the representation of a managed entity or a task.

Description :

- This operation partially updates a category.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

Specify which attributes are patchable using the following table (to capture RO attributes)

Attribute name	Patchable	Rule
Id	No	
lastUpdate	No	
version	Y	Should be greater than the current one
lifecycleStatus	Y	Status should be valid
startDateTime	Y	
endDateTime	Y	Should be greater than startDateTime
parentId	Y	The parent category should exist
isRoot	Y	To be updated in compliance with the parentId
name	Y	
description	Y	

Further document any rules that must be implemented when patching attributes.

Rule name	Rule/Pre Condition/Side Effects/Post Conditions
Root	<p>When isRoot is patched to false, parentId should indicate the parent category.</p> <p>When isRoot is patched to true, parentId should be empty.</p>

REQUEST
PATCH /catalogManagement/category/{42} Content-type: application/json <pre>{ "parentId": "", "isRoot": "true" }</pre>
RESPONSE
201 Content-Type: application/json <pre>{ "id": "42", "href": "http://serverlocation:port/catalogManagement/category/42", "lastUpdate": "2013-04-19T16:42:23-04:00", "version": "2.0", "lifecycleStatus": "Active", "validFor": { "startDateTime": "2013-04-19T16:42:23-04:00", "endDateTime": "" }, "parentId": "", "isRoot": "true", "name": "Cloud Services", "description": "A category to hold all available cloud service offers" }</pre>

PATCH /catalogManagement/productOffering/{ID}

This Uniform Contract operation is used to partially update the representation of a managed entity or a task.

Description :

- This operation partially updates a productOffering.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

Specify which attributes are patchable using the following table (to capture RO attributes)

Attribute name	Patchable	Rule
Id	No	
lastUpdate	No	
version	Y	Should be greater than the current one
lifecycleStatus	Y	Status should be valid
startDateTime	Y	
endDateTime	Y	Should be greater than startDateTime
isBundle	Y	To be updated in compliance with the bundledProductOffering
name	Y	
description	Y	

category	Y	
bundledProductOffering	Y	To be updated in compliance with isBundle
productSpecification	Y	It should exist
serviceCandidate	Y	It should exist
resourceCandidate	Y	It should exist
channel	Y	It should exist
place	Y	It should exist
productOfferingTerm	Y	
productOfferingPrice	Y	It should exist

Further document any rules that must be implemented when patching attributes.

Rule name	Rule/Pre Condition/Side Effects/Post Conditions
isBundle	<p>isBundle determines whether a productOffering represents a single productOffering (false), or a bundle of productOfferings (true).</p> <p>If false, then a productOffering will be returned, but the bundledProductOffering will be absent or empty and vice-versa if isBundle is true.</p>

REQUEST

PATCH /catalogManagement/productOffering/{42}
Content-type: application/json-patch+json

```
{
```

```

"op": "add",
"path": "/place",
"value": {
  "id": "44",
  "href": "http://serverlocation:port/marketSales/place/44",
  "name": "Spain"
}
}

```

RESPONSE

201
Content-Type: application/json

```

{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "2.0",
  "lastUpdate": "2013-06-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "category": [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "name": "Cloud offerings"
    }
  ],
  "channel": [
    {
      "id": "13",
      "href": "http://serverlocation:port/marketSales/channel/13",
      "name": "Online Channel"
    }
  ],
  "place": [
    {
      "id": "12",
      "href": "http://serverlocation:port/marketSales/place/12",
      "name": "France"
    }
  ],
}

```

```

    {
      "id": "44",
      "href": "http://serverlocation:port/marketSales/place/44",
      "name": "Spain"    }
  ],
  "bundledProductOffering": [
    {
      "id": "15",
      "href": "http://serverlocation:port/catalogManagement/productOffering/15",
      "lifecycleStatus": "Active",
      "name": "Offering 15"
    }, {
      "id": "64",
      "href": "http://serverlocation:port/catalogManagement/productOffering/64",
      "lifecycleStatus": "Active",
      "name": "Offering 64"
    }
  ],
  "serviceLevelAgreement": {
    "id": "28",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
  },
  "productSpecification": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
  },
  "serviceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
  },
  "resourceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
  },
  "productOfferingTerm": [
    {

```

```

        "name": "12 Month",
        "description": "12 month contract",
        "duration": "12",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    },
    ],
    "productOfferingPrice": [
        {
            "name": "Monthly Price",
            "description": "monthlyprice",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            },
            "priceType": "recurring",
            "unitOfMeasure": "",
            "price": {
                "taxIncludedAmount": "12.00",
                "dutyFreeAmount": "10.00",
                "taxRate": "20.00",
                "currencyCode": "EUR"
            },
            "recurringChargePeriod": "monthly"
        }, {
            "name": "Usage Price",
            "description": "usageprice",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            },
            "priceType": "usage",
            "unitOfMeasure": "second",
            "price": {
                "taxIncludedAmount": "12.00",
                "dutyFreeAmount": "10.00",
                "taxRate": "20.00",
                "currencyCode": "EUR"
            },
            "recurringChargePeriod": ""
        }
    ]
}

```

PATCH /catalogManagement/productSpecification/{ID}

This Uniform Contract operation is used to partially update the representation of a managed entity or a task.

Description :

- This operation partially updates a productSpecification.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

Specify which attributes are patchable using the following table (to capture RO attributes)

Attribute name	Patchable	Rule
Id	No	
lastUpdate	No	
version	Y	Should be greater than the current one
lifecycleStatus	Y	Status should be valid
startDateTime	Y	
endDateTime	Y	Should be greater than startDateTime
isBundle	Y	To be updated in compliance with the bundledProductSpecification
name	Y	
description	Y	

brand	Y	
relatedParty	Y	It should exist
attachment	Y	It should exist
bundledProductSpecification	Y	To be updated in compliance with isBundle
productSpecificationRelationship	Y	It should exist
serviceSpecification	Y	It should exist
resourceSpecification	Y	It should exist
productSpecCharacteristic	Y	It should exist
productSpecCharacteristicValue	Y	

Further document any rules that must be implemented when patching attributes.

Rule name	Rule/Pre Condition/Side Effects/Post Conditions
isBundle	<p>isBundle determines whether a productSpecification represents a single productSpecification (false), or a bundle of productSpecification (true).</p> <p>If false, then a productSpecification will be returned, but the bundledProductSpeciciation will be absent or empty and vice-versa if isBundle is true.</p>

REQUEST

PATCH /catalogManagement/productSpecification/{22}
Content-type: application/json-patch+json

```
{
  "op": "add",
  "path": "/attachment",
  "value": {
    "id": "44",
    "href": "http://serverlocation:port/documentManagement/attachment/44",
    "type": "Video",
    "url": "http://yyyyy"
  }
}
```

RESPONSE

```
201
Content-Type: application/json

{
  "id": "22",
  "href": "http://serverlocation:port/catalogManagement/productSpecification/22",
  "productNumber": "I54-340-KC",
  "version": "2.0",
  "lastUpdate": "2013-06-19T16:42:23-04:00",
  "name": "iPhone 42",
  "description": "Siri works on this iPhone",
  "isBundle": "true",
  "brand": "Apple",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "relatedParty": [
    {
      "id": "1234",
      "role": "Owner",
      "href": "http://serverLocation:port/partyManagement/partyRole/1234"
    }
  ],
  "attachment": [
    {
      "id": "22",
      "href":
        "http://serverlocation:port/documentManagement/attachment/22",
      "type": "Picture",
      "url": "http://xxxxx"
    }
  ]
}
```

```

        "href":
"http://serverlocation:port/documentManagement/attachment/44",
        "type": "Video",
        "url": "http://yyyyy"
    }
],
    "bundledProductSpecification": [
    {
    "id": "15",
        "href":
"http://serverlocation:port/catalogManagement/productSpecification/15",
        "lifecycleStatus": "Active",
        "name": "Product specification 15"
    }, {
    "id": "64",
        "href":
"http://serverlocation:port/catalogManagement/productSpecification/64",
        "lifecycleStatus": "Active",
        "name": "Product specification 64"
    }
],
    "productSpecificationRelationship": [
    {
        "type": "dependency",
        "id": "23",
        "href": "
http://serverlocation:port/catalogManagement/productSpecification/23",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": ""
        }
    }
],
    "serviceSpecification": [
    {
    "id": "13",
        "href":
"http://serverlocation:port/catalogManagement/serviceSpecification/13",
        "name": "specification 1",
        "version": "1.1"
    }
],
    "resourceSpecification": [
    {
    "id": "13",
        "href":
"http://serverlocation:port/catalogManagement/resourceSpecification/13",

```

```

        "name": "specification 1",
        "version": "1.1"
    },
    "productSpecCharacteristic": [
        {
            "name": "Screen Size",
            "description": "Screen size",
            "valueType": "number",
            "configurable": "false",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": ""
            },
            "productSpecCharacteristicValue": [
                {
                    "valueType": "number",
                    "default": "true",
                    "value": "4.2",
                    "unitOfMeasure": "inches",
                    "valueFrom": "",
                    "valueTo": "",
                    "validFor": {
                        "startDateTime": "2013-04-19T16:42:23-04:00",
                        "endDateTime": ""
                    }
                }
            ]
        },
        {
            "name": "Colour",
            "description": "Colour",
            "valueType": "string",
            "configurable": "true",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": ""
            },
            "productSpecCharacteristicValue": [
                {
                    "valueType": "string",
                    "default": "true",
                    "value": "Black",
                    "unitOfMeasure": "",
                    "valueFrom": "",
                    "valueTo": "",
                    "validFor": {
                        "startDateTime": "2013-04-19T16:42:23-04:00",

```

```

        "endTime": ""
      }, {
        "valueType": "string",
        "default": "false",
        "value": "White",
        "unitOfMeasure": "",
        "valueFrom": "",
        "valueTo": "",
        "validFor": {
          "startTime": "2013-04-19T16:42:23-04:00",
          "endTime": ""
        }
      }
    ]
  }
}

```

POST /catalogManagement/category

This Uniform Contract operation is used to create a managed entity or a task.

Description :

- This operation creates a category
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- Standard POST behavior.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

ID Management :

The response provide the category id.

Specify the attributes required when an entity is created (and their default values if not):

Attribute name	Mandatory	Default	Rule
isRoot	N	true	

name	Y		
parentId	Y		If isRoot is set to "false", parentId is mandatory

- Further specify any rules on the creation of the entity

Rule name	Rule

REQUEST

POST catalogManagement/category
Content-type: application/json

```
{
  "version": "1.0",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": ""
  },
  "parentid": "http://serverlocation:port/catalogManagement/category/42",
  "isRoot": "false",
  "name": "Cloud Services",
  "description": "A category to hold all available cloud service offers"
}
```

RESPONSE

201
Content-Type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/category/42",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "version": "1.0",
}
```

```

"lifecycleStatus": "Active",
"validFor": {
  "startDateTime": "2013-04-19T16:42:23-04:00",
  "endDateTime": ""
},
"parentid": "http://serverlocation:port/catalogManagement/category/42",
"isRoot": "false",
"name": "Cloud Services",
"description": "A category to hold all available cloud service offers"
}

```

POST /catalogManagement/productOffering

This Uniform Contract operation is used to create a managed entity or a task.

Description :

- This operation creates a productOffering
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- Standard POST behavior.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

ID Management :

The response provides the productOffering id.

Specify the attributes required when an entity is created (and their default values if not):

Attribute name	Mandatory	Default	Rule
name	Y		
isBundle	N	false	
bundledProductOffering	Y		If isBundle is set to "true", bundledProductOffering is mandatory

productSpecification	Y		
productOfferingPrice	Y		

- Further specify any rules on the creation of the entity

Rule name	Rule

REQUEST

POST catalogManagement/productOffering
Content-type: application/json

```
{
  "version": "1.0",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "category": [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "name": "Cloud offerings"
    }
  ],
  "channel": [
    {
      "id": "13",
      "href": "http://serverlocation:port/marketSales/channel/13",
      "name": "Online Channel"
    }
  ],
  "place": [
    {
```

```

        "id": "12",
        "href": "http://serverlocation:port/marketSales/place/12",
        "name": "France"
    }
],
"bundledProductOffering": [
    {
        "id": "15",
        "href": "http://serverlocation:port/catalogManagement/productOffering/15",
        "lifecycleStatus": "Active",
        "name": "Offering 15"
    }, {
        "id": "64",
        "href": "http://serverlocation:port/catalogManagement/productOffering/64",
        "lifecycleStatus": "Active",
        "name": "Offering 64"
    }
],
"serviceLevelAgreement": {
    "id": "28",
    "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
    "name": "Standard SLA"
},
"productSpecification": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/productSpecification/13",
    "version": "2.0",
    "name": "specification product 1"
},
"serviceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/serviceCandidate/13",
    "version": "2.0",
    "name": "specification service 1"
},
"resourceCandidate": {
    "id": "13",
    "href":
"http://serverlocation:port/catalogManagement/resourceCandidate/13",
    "version": "2.0",
    "name": "specification resource 1"
},
"productOfferingTerm": [
    {
        "name": "12 Month",

```

```

        "description": "12 month contract",
        "duration": "12",
        "validFor": {
            "startDateTime": "2013-04-19T16:42:23-04:00",
            "endDateTime": "2013-06-19T00:00:00-04:00"
        }
    },
    ],
    "productOfferingPrice": [
        {
            "name": "Monthly Price",
            "description": "monthlyprice",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            },
            "priceType": "recurring",
            "unitOfMeasure": "",
            "price": {
                "taxIncludedAmount": "12.00",
                "dutyFreeAmount": "10.00",
                "taxRate": "20.00",
                "currencyCode": "EUR"
            },
            "recurringChargePeriod": "monthly"
        }, {
            "name": "Usage Price",
            "description": "usageprice",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            },
            "priceType": "usage",
            "unitOfMeasure": "second",
            "price": {
                "taxIncludedAmount": "12.00",
                "dutyFreeAmount": "10.00",
                "taxRate": "20.00",
                "currencyCode": "EUR"
            },
            "recurringChargePeriod": ""
        }
    ]
}

```

RESPONSE

201

Content-Type: application/json

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "1.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  "category": [
    {
      "id": "12",
      "href": "http://serverlocation:port/catalogManagement/category/12",
      "version": "2.0",
      "name": "Cloud offerings"
    }
  ],
  "channel": [
    {
      "id": "13",
      "href": "http://serverlocation:port/marketSales/channel/13",
      "name": "Online Channel"
    }
  ],
  "place": [
    {
      "id": "12",
      "href": "http://serverlocation:port/marketSales/place/12",
      "name": "France"
    }
  ],
  "bundledProductOffering": [
    {
      "id": "15",
      "href": "http://serverlocation:port/catalogManagement/productOffering/15",
      "lifecycleStatus": "Active",
      "name": "Offering 15"
    }, {
      "id": "64",
      "href": "http://serverlocation:port/catalogManagement/productOffering/64",
      "lifecycleStatus": "Active",

```

```

        "name": "Offering 64"
    },
    ],
    "serviceLevelAgreement": {
        "id": "28",
        "href": "http://serverlocation:port/slaManagement/serviceLevelAgreement/28",
        "name": "Standard SLA"
    },
    "productSpecification": {
        "id": "13",
        "href":
"http://serverlocation:port/catalogManagement/productSpecification/13",
        "version": "2.0",
        "name": "specification product 1"
    },
    "serviceCandidate": {
        "id": "13",
        "href":
"http://serverlocation:port/catalogManagement/serviceCandidate/13",
        "version": "2.0",
        "name": "specification service 1"
    },
    "resourceCandidate": {
        "id": "13",
        "href":
"http://serverlocation:port/catalogManagement/resourceCandidate/13",
        "version": "2.0",
        "name": "specification resource 1"
    },
    "productOfferingTerm": [
        {
            "name": "12 Month",
            "description": "12 month contract",
            "duration": "12",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            }
        }
    ],
    "productOfferingPrice": [
        {
            "name": "Monthly Price",
            "description": "monthlyprice",
            "validFor": {
                "startDateTime": "2013-04-19T16:42:23-04:00",
                "endDateTime": "2013-06-19T00:00:00-04:00"
            }
        }
    ]
}

```

```
    },
    "priceType": "recurring",
    "unitOfMeasure": "",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": "monthly"
  }, {
    "name": "Usage Price",
    "description": "usageprice",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    "priceType": "usage",
    "unitOfMeasure": "second",
    "price": {
      "taxIncludedAmount": "12.00",
      "dutyFreeAmount": "10.00",
      "taxRate": "20.00",
      "currencyCode": "EUR"
    },
    "recurringChargePeriod": ""
  }
]
}
```

POST /catalogManagement/productSpecification

This Uniform Contract operation is used to create a managed entity or a task.

Description :

- This operation creates a productSpecification.
- The resource represents a managed entity.
- The ID may be a string (or a string containing numbers).

Behavior :

- Standard POST behavior.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

ID Management :

The response provides the productSpecification id.

Specify the attributes required when an entity is created (and their default values if not):

Attribute name	Mandatory	Default	Rule
name	Y		
isBundle	N	false	
bundledProductSpecification	Y		If isBundle is set to "true", bundledProductSpecification is mandatory
productSpecCharacteristic	Y		
productSpecCharacteristicValue	Y		

- Further specify any rules on the creation of the entity

Rule name	Rule

REQUEST

POST catalogManagement/productSpecification
Content-type: application/json

```
{
  "productNumber": "I42-340-DX",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23.0Z",
  "name": "iPhone 42",
  "description": "Siri works on this iPhone",
  "isBundle": true,
```

```
"brand": "Apple",
"lifecycleStatus": "Active",
"validFor":
{
  "startDateTime": "2013-06-19T00:00:00.0Z",
  "endDateTime": "2013-04-19T16:42:23.0Z"
},

"relatedParty":
[
  {
    "id": "1234",
    "href": "http
://serverLocation:port/partyManagement/partyRole/1234",
    "role": "Owner"
  }
],

"attachment":
[
  {
    "id": "22",
    "href":
"http://serverLocation:port/documentManagement/attachment/22",
    "type": "Picture",
    "url": "http://xxxxx"
  }
],

"bundledProductSpecification":
[
  {
    "id": "15",
    "href":
"http://serverLocation:port/productCatalogManagement/productSpecification/15",
    "lifecycleStatus": "Active",
```



```
        "name": "Product specification 15"
    },
    {
        "id": "64",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/64",
        "lifecycleStatus": "Active",
        "name": "Product specification 64"
    }
],

"productSpecificationRelationship":
[
    {
        "id": "23",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/23",
        "type": "dependency",
        "validFor":
        {
            "startDateTime": "2013-04-19T16:42:23.0Z"
        }
    }
],

"serviceSpecification":
[
    {
        "id": "13",
        "href":
"http://serverlocation:port/serviceCatalogManagement/serviceSpecification/13",
        "name": "specification 13",
        "version": "1.1"
    }
],
```

```
"resourceSpecification":
[
  {
    "id": "13",
    "href":
"http://serverlocation:port/resourceCatalogManagement/resourceSpecification/13",
    "name": "specification 13",
    "version": "1.1"
  }
],

"productSpecCharacteristic":
[
  {
    "name": "Screen Size",
    "description": "Screen size",
    "valueType": "number",
    "configurable": false,
    "ProductSpecCharacteristicValue":
    [
      {
        "valueType": "number",
        "default": true,
        "value": "4.2",
        "unitOfMeasure": "inches",
        "valueFrom": "",
        "valueTo": "",
        "validFor":
        {
          "startDateTime": "2013-04-19T16:42:23.0Z"
        }
      }
    ]
  },

  "validFor":
  {
```

```
        "startDateTime": "2013-04-19T16:42:23.0Z"
    }
},
{
    "name": "Colour",
    "description": "Colour",
    "valueType": "string",
    "configurable": true,
    "ProductSpecCharacteristicValue":
    [
        {
            "valueType": "string",
            "default": true,
            "value": "Black",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "validFor":
            {
                "startDateTime": "2013-04-19T16:42:23.0Z"
            }
        },
        {
            "valueType": "string",
            "default": false,
            "value": "White",
            "unitOfMeasure": "",
            "valueFrom": "",
            "valueTo": "",
            "validFor":
            {
                "startDateTime": "2013-04-19T16:42:23.0Z"
            }
        }
    ]
},
]
```

```
        "validFor":
        {
            "startDateTime": "2013-04-19T16:42:23.0Z"
        }
    ]
}
```

RESPONSE

```
201
Content-Type: application/json

{
    "id": "22",
    "href":
"http://serverLocation:port/productCatalogManagement/productSpecification/22",
    "productNumber": "I42-340-DX",
    "version": "2.0",
    "lastUpdate": "2013-04-19T16:42:23.0Z",
    "name": "iPhone 42",
    "description": "Siri works on this iPhone",
    "isBundle": true,
    "brand": "Apple",
    "lifecycleStatus": "Active",
    "validFor":
    {
        "startDateTime": "2013-06-19T00:00:00.0Z",
        "endDateTime": "2013-04-19T16:42:23.0Z"
    },
    "relatedParty":
    [
        {
            "id": "1234",
            "href": "http
://serverLocation:port/partyManagement/partyRole/1234",
```

```
        "role": "Owner"
    }
],

"attachment":
[
    {
        "id": "22",
        "href":
"http://serverlocation:port/documentManagement/attachment/22",
        "type": "Picture",
        "url": "http://xxxxx"
    }
],

"bundledProductSpecification":
[
    {
        "id": "15",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/15",
        "lifecycleStatus": "Active",
        "name": "Product specification 15"
    },
    {
        "id": "64",
        "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/64",
        "lifecycleStatus": "Active",
        "name": "Product specification 64"
    }
],

"productSpecificationRelationship":
[
```

```
{
  "id": "23",
  "href":
"http://serverlocation:port/productCatalogManagement/productSpecification/23",
  "type": "dependency",
  "validFor":
  {
    "startDateTime": "2013-04-19T16:42:23.0Z"
  }
},

"serviceSpecification":
[
  {
    "id": "13",
    "href":
"http://serverlocation:port/serviceCatalogManagement/serviceSpecification/13",
    "name": "specification 13",
    "version": "1.1"
  }
],

"resourceSpecification":
[
  {
    "id": "13",
    "href":
"http://serverlocation:port/resourceCatalogManagement/resourceSpecification/13",
    "name": "specification 13",
    "version": "1.1"
  }
],

"productSpecCharacteristic":
[
  {
```

```
    "name": "Screen Size",
    "description": "Screen size",
    "valueType": "number",
    "configurable": false,
    "ProductSpecCharacteristicValue":
    [
      {
        "valueType": "number",
        "default": true,
        "value": "4.2",
        "unitOfMeasure": "inches",
        "valueFrom": "",
        "valueTo": "",
        "validFor":
        {
          "startDateTime": "2013-04-19T16:42:23.0Z"
        }
      }
    ],
    "validFor":
    {
      "startDateTime": "2013-04-19T16:42:23.0Z"
    }
  },
  {
    "name": "Colour",
    "description": "Colour",
    "valueType": "string",
    "configurable": true,
    "ProductSpecCharacteristicValue":
    [
      {
        "valueType": "string",
        "default": true,
        "value": "Black",
```

```
        "unitOfMeasure": "",
        "valueFrom": "",
        "valueTo": "",
        "validFor":
        {
            "startDateTime": "2013-04-19T16:42:23.0Z"
        }
    },
    {
        "valueType": "string",
        "default": false,
        "value": "White",
        "unitOfMeasure": "",
        "valueFrom": "",
        "valueTo": "",
        "validFor":
        {
            "startDateTime": "2013-04-19T16:42:23.0Z"
        }
    }
],
"validFor":
{
    "startDateTime": "2013-04-19T16:42:23.0Z"
}
}
]
```

POST catalogManagement/importJob

ImportJob Tasks are created as resources.

The ImportJob is attached to the URL of the root resource where the content of the file specified by the ImportJob will be applied.

For example to apply the content of the import file located at <ftp://ftp.myCatalog.com/catalog.json> to the catalogManagement root.

REQUEST
POST ../partyManagement/importJob Content-type: application/json <pre>{ "url": "ftp://ftp.myCatalog.com/catalog.json" }</pre>
RESPONSE
201 Content-Type: application/json Location: ../partyManagement/importJob/554 <pre>{ "id": "54", "href": "http://api/catalogManagement/importJob/54", "status": "running", "path": "catalogManagement/", "content-type": "application/json", "errorLog": "", "creationDate": "2013-04-19T16:42:23-04:00", "url": "ftp://ftp.myCatalog.com/catalog.json" }</pre>

POST catalogManagement/exportJob

ExportJob Tasks are created as resources.

The ExportJob is attached to a specific resource acting as the root for the collection of resources to be streamed to a File.

An ExportJob can be attached to a specific Resource in the Catalog Management application for example:

- ../catalogManagement/exportJob
Export all the resources within catalogManagement subject to query and path

assignments.

- `../catalogManagement/catalog/2/exportJob`
Export all the resources within the catalog with "id" = 2 subject to query and path assignments.

For example:

REQUEST

POST `../catalogManagement/exportJob`
Content-type: application/json

```
{
```

RESPONSE

201
Content-Type: application/json
Location: `../catalogManagement/exportJob/54`

```
{  
  "id": "54",  
  "href": "http://api/catalogManagement/exportJob/54",  
  "status": "running",  
  "path": "catalogManagement",  
  "content-type": "application/json",  
  "errorLog": "",  
  "creationDate": "2013-04-19T16:42:23-04:00",  
  "completionDate": "",  
  "url": "ftp://ftp.catalogManagement.com/catalog/54"  
}
```

GET catalogManagement/exportJob

ExportJob resources can be found under the API/exportJob collection and may be retrieved using the normal GET constructs for individual resources or queries on the exportJob collection i.e GET ../catalogManagement/exportJob/?(name=value)*

For example:

REQUEST
GET ../catalogManagement/exportJob/54 Content-type: application/json { }
RESPONSE
200 Content-Type: application/json { "id": "54", "href": "http://api/catalogManagement/exportJob/54", "status": "running", "path": "catalogManagement/", "content-type": "application/json", "errorLog": "", "creationDate": "2013-04-19T16:42:23-04:00", "completionDate": "2013-04-21T16:42:23-04:00", "url": "ftp://ftp.catalogManagement.com/catalog/54" }

GET catalogManagement/importJob

ImportJob resources can be found under the API/importJob collection and may be retrieved using the normal GET constructs for individual resources or queries on the importJob collection. GET ../catalogManagement/importJob/?(name=value)*

For example:

REQUEST
GET ../catalogManagement/importJob/54 Content-type: application/json <pre>{</pre>
RESPONSE
200 Content-Type: application/json <pre>{ "id": "54", "href": "http://api/catalogManagement/importJob/54", "status": "running", "path": "catalogManagement", "content-type": "application/json", "errorLog": "", "creationDate": "2013-04-19T16:42:23-04:00", "completionDate": "2013-04-21T16:42:23-04:00", "url": "ftp://ftp.myCatalog.com/catalog.json" }</pre>

DELETE API/{RESOURCE}/{ID}

No delete operations

This Uniform Contract operation is used to delete a managed entity or a task.

Description :

- Provide an overall description of the Operation
- Describe if the resource represents a managed entity or a task.
- Describe the structure of the identifier.

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 200 if the request was successful.
- Any other special return and/or exception codes.

REQUEST
DELETE API/{RESOURCE}/{ID}
RESPONSE
200

Example see TMF REST Design Guidelines.

API NOTIFICATION TEMPLATES

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.

REQUEST
POST /api/hub Accept: application/json <pre>{ "callback": "http://in.listener.com" }</pre>
RESPONSE
201 Content-Type: application/json Location: /api/hub/42 <pre>{ "id": "42", "callback": "http://in.listener.com", "query": null }</pre>

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.

REQUEST
DELETE /api/hub/{id}

Accept: application/json

RESPONSE

204

publish {EventTYPE} POST /listener

Description :

Provide the Event description

Behavior :

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

REQUEST

POST /client/listener Accept: application/json

<pre>{ "event": { EVENT BODY }, "eventType": "eventType" }</pre>
--

RESPONSE

201 Content-Type: application/json

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": "2013-04-19T16:42:23-04:00",
  "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": "2013-04-19T16:42:23-04:00", "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": "2013-04-19T16:42:23-04:00", "name": "Virtual Storage Medium", "description": "Virtual Storage Medium", </pre>

```

      "isBundle": "true",
      "lifecycleStatus": "Active",
.....
    }
  ]

```

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": "2013-04-19T16:42:23-04:00", "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

```
{
  "id": "42",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "2.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "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

```
{
  "id": "VirtualStorage",
  "version": "3.0",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  "lifecycleStatus": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23-04:00",
    "endDateTime": "2013-06-19T00:00:00-04:00"
  },
  ...
}
```

RESPONSE

201
Content-Type: application/json

```
{
  "id": "VirtualStorage",
  "href": "http://serverlocation:port/catalogManagement/productOffering/42",
  "version": "3.0",
  "lastUpdate": "2013-04-19T16:42:23-04:00",
  "name": "Virtual Storage Medium",
  "description": "Virtual Storage Medium",
  "isBundle": "true",
  ...
}
```

```

    "lifecycleStatus": "Active",
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23-04:00",
      "endDateTime": "2013-06-19T00:00:00-04:00"
    },
    ...
  }

```

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 `/catalogManagement/productOffering/VirtualStorage(Version=1.0)`
 Content-type: application/json-patch+json

```

{
  "lifecycleStatus": "Active"
}

```

RESPONSE

201
 Content-Type: application/json

```

{
  "id": "VirtualStorage",
  "href": "http://serverlocation:port/catalogManagement/productOffering/VirtualStorage",
  "version": "1.0",
  "lifecycleStatus": "Active",
  .....
}

```

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 establisher between authorized parties with regards to the content of the Catalog (i.e GET but also enable of update operations on specific entities).



Release History

Release Number	Date	Release led by:	Description
Release 1.0	04/15/2013	Pierre Gauthier TM Forum pgauthier@tmforum.org	First Release of Draft Version of the Document.
Release 1.1			Updated for use in the Paris Spec Jam – and rebranded.