TM Forum Specification

ProductOfferingQualification API REST Specification

TMF679
Release 17.5.0
January 2018

Latest Update: TM Forum Release 17.5.0	Member Evaluation
Version 2.0.1	IPR Mode: RAND

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INTRODUCTION

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

In the Open Digital Economy where multiple actors (DSPs, CSPs, …) may be involved with the delivery of an end-to-end service, those actors need to collaborate and interact with the customer as needed.

Following diagram shows ProductOfferingQualification API within pre-ordering API package:
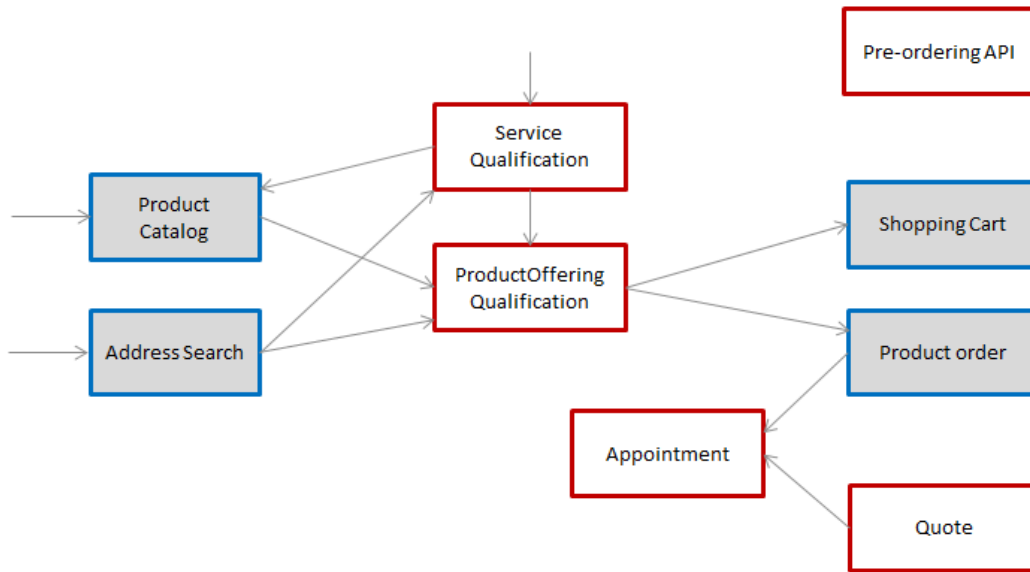
Product Offering Qualification API is one of Pre-Ordering Management API Family. Product Offering Qualification API goal is to provide Product Offering commercial eligibility. This API allows to

- request a specific productOffering eligibility
- look for productOffering eligibles (ot not) from a product category
- look for productOffering eligibles (or not) from a productspec description.

Because the API allows describing product from the inventory, it is also possible to use it to retrieve productOffering available to complete existing product.

In the request, the following attributes could/must be filled:

- productOffering, or productSpec, or productCategory will be indicated (at least one is mandatory),
- relatedParty, for which the qualification must be done
- place,(where the customer wants his productOffering)
- channel, (sale channel of the current interaction where to make the qulification)
- expected activation date,

 will be described.

In the response, the API will provide qualification result but also:

- Eligibility unavailability reason (if any)
- Alternate productOffering proposal (if any)

ProductOfferingQualification API could be used…

…. Before Shopping Cart or ProductOrder API

… After recommendation API to filtering result(s).

SAMPLE USE CASES

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

To provide some use-case:

- Retrieve a list of broadband (category) productOffering(s) available on France and sold on the web telco provider site.
- Retrieve the list of productOffering wich sold the productSpec 'Phone 6s' with characteristic memory set to 64Gb
- Check if offer "TV package ZZ" could be added on a customer existing TV access.
- ...

RESOURCE MODEL

Managed Entity and Task Resource Models

PRODUCT OFFERING QUALIFICATION RESOURCE

ProductOfferingQualification is used to perform a commercial eligibility. It allows to retrieve a list of productOffering that are commercially available in the context of the interaction (defined be place, channel, party, product).

Resource model

Lifecycle

.

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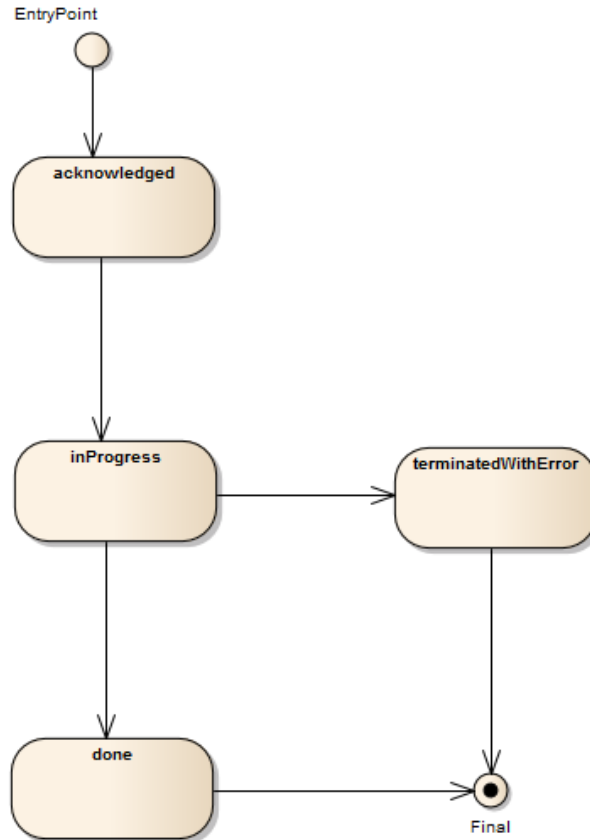
Field descriptions

ProductOfferingQualification fields

Field	Description
id	A string. Unique identifier of the productOfferingQualification resource.
href	A string. Hyperlink to access the productOfferingQualification.
productOfferingQualificationDate	A date time (DateTime). Date when the productOfferingQualification has been submitted.
description	A string. Description of the productOfferingQualifcation.
state	A string. State of the productOfferingQualification (acknowledged, inProgress, terminatedWithError, done).
qualificationResult	A string. Qualification result for this productOfferingQualification. It could be: - qualified (all qualification item are qualified), - alternate (At least one item alternate and no item with unqualified) ,

	- unqualified (At least one item unqualified)
expectedQualificationDate	A date (DateTime). Deadline date when the requester expected a qualification answer.
estimatedResponseDate	A sate (DateTime). Date when the requester expect to provide an answer for the qualification request.
effectiveQualificationDate	A date (DateTime). Effective date to productOfferingQualification completion.
expirationDate	A date (DateTime). Date the qualification response expires.
provideAlternative	A boolean. An indicator which when the value is "true" means that alternative solutions should be provided.
provideOnlyAvailable	A boolean. An indicator which when the value is "true" means that only available product offering must be listed in the response.
provideUnavailabilityReason	A boolean. An indicator which when the value is "true" means that unavailability reason are expected for non available product offering.
@baseType	A string. Indicates the base type of the resource. Here can be 'ProductOfferingQualification'.
@type	A string. Indicates the type of resource. Here can be 'ProductOfferingQualification'.
@schemaLocation	A string. Link to schema describing this REST resource.
productOfferingQualificationItem	A list of product offering qualification items (ProductOfferingQualificationItem [*]).
relatedParty	A list of related party references (RelatedPartyRef [*]). A related party defines party or party role linked to a specific entity.
channel	A channel reference (ChannelRef). The channel defines the channel for selling product offerings.

AlternateProductOfferingProposal sub-resource

Alternate product Offering proposal is used when the requested product offering is not available with characteristic and date asked for. An alternate proposal could be a distinct product offering or product Spec close to requested one or same as requested but with a different activation date.

Field	Description
id	A string. Identifier of an alternate product offering proposal.
alternateActivationDate	A date (DateTime). Alternate activation date in case seller is not able to meet requested expected activation date.
@type	A string. Indicates the (class) type of alternate product offering proposal.
@schemaLocation	An int (int). A link to the schema describing this REST resource.
alternateProductSpecification	A list of product specification references (ProductSpecificationRef [*]). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.
alternateProductOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

EligibilityUnavailabilityReason sub-resource

Reason for eligibility result if the productOfferingQualification result is no (meaning the productOffering or productSpec is not available).

Field	Description
code	A string. Unavailability reason code.
label	A string. Unavailability reason label.
@type	A string. Indicates the (class) type of the unavailability reason.
@schemaLocation	A string. A link to the schema describing this REST resource.

Place sub-resource

Describe a place (using either geographicAddress or GeographicLocation) and/or identify an existing place (either an existing geographicAddress or existing GeographicLocation or existing GeographicSite) through its id.

Field	Description
id	A string. Id of place - Must be a geographicAddress id or GeographicLocation id or GeographicSite id.
href	A string. Href of a place.
name	A string. Name of the place.
role	A string. Role of the place - could be' installation place' for example.
@referredType	A string. Indicates the (class) type of place.
@schemaLocation	A string. A link to the schema describing this REST resource.

ProductCharacteristic sub-resource

Characteristics of the product to instantiate or to modify.

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

ProductOfferingQualificationItem sub-resource

Field	Description
id	A string. Id of the productOfferingQualification item.
state	A string. State of the productOfferingQualification item (acknowledged, inProgress, terminatedWithError, done).
expectedActivationDate	A date (DateTime). Date when the requester look for productOfferingQualification activation.

qualificationItemResult	A string. Qualification result for this productOfferingQualification item. It could be:
	
	   - qualified (request productOffering or productSpecification are available),
	   - unqualified (requested not available and not alternate

	available),
	- alternate (requested not available but proposal available) .
@type	A string. Indicates the (class) type of the productOfferingQualificationItem.
@schemaLocation	A string. Link to schema describing this REST resource.
eligibilityUnavailabilityReason	A list of eligibility unavailability reasons (EligibilityUnavailabilityReason [*]). Reason for eligibility result if the productOfferingQualification result is no (meaning the productOffering or productSpec is not available).
category	A category reference (CategoryRef). The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other categories and/or product offerings, resource or service candidates.
qualificationItemRelationship	A list of qualification item relationships (QualificationItemRelationship [*]). Stucture used to describe relationship between productOfferingQualifcation item from the same ProductOfferingQualification.
product	A product ref or value (ProductRefOrValue). Product reference. Configure the product characteristics (only configurable characteristics and necessary only if a non default value is selected) and/or identify the product that needs to be modified/deleted.
terminationError	A list of termination errors (TerminationError [*]). If qualifcationItem has not been done properly we indicate there the termination error(s).
productOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.
alternateProductOfferingProposal	A list of alternate product offering proposals (AlternateProductOfferingProposal [*]). Alternate product Offering proposal is used when the requested product offering is not available with characteristic and date asked for. An alternate proposal could be a distinct product offering or product Spec close to requested one or same as requested but with a different activation date.

Product sub-resource

Product reference. Configure the product characteristics & relationships (only configurable characteristics and necessary only if a non default value is selected) and/or identify the product that needs to be modified/deleted.

Field	Description
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
name	A string. Name of the product.
place	A list of place ref or values (PlaceRefOrValue [*]). Describe a place (using either geographicAddress or GeographicLocation) and/or identify an existing place (either an existing geographicAddress or existing GeographicLocation or existing GeographicSite) through its id.
productRelationship	A list of product relationships (ProductRelationship [*]). Linked products to the one instantiate, it can be :

	- "bundled" if the product is a bundle and you want to describe the "bundled" products inside this bundle - "reliesOn" if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) "targets" or "isTargeted" (depending on the way of expressing the link) for any other kind of links that may be useful.
characteristic	A list of product characteristics (ProductCharacteristic [*]). Characteristics of the product to instantiate or to modify.
relatedParty	A list of related party references (RelatedPartyRef [*]). A related party defines party or party role linked to a specific entity.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

ProductRelationship sub-resource

Linked products to the one instantiate, it can be :

   - "bundled" if the product is a bundle and you want to describe the "bundled" products inside this bundle
   - "reliesOn" if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product)

"targets" or "isTargeted" (depending on the way of expressing the link) for any other kind of links that may be useful.

Field	Description

type	A string. Type of the product relationship. It can be :
	
	   - "bundled" if the product is a bundle and you want to describe the "bundled" products inside this bundle
	   - "reliesOn" if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product)
	
	"targets" or "isTargeted" (depending on the way of expressing the link) for any other kind of links that may be useful.

product	A product ref or value (ProductRefOrValue). Product reference or described targeted by the relationship

QualificationItemRelationship sub-resource

Stucture used to describe relationship between productOfferingQualifcation item from the same ProductOfferingQualification.

Field	Description
type	A string. Type of relationship (ex: reliesOn, connectedTo, etc...).
id	A string. Id of the ProductOfferingQualificationItem (from the same ProductOfferingQualificationItem).

TerminationError sub-resource

If qualifcationItem has not been done properly we indicate there the termination error(s).

Field	Description
id	A string. Unique identifier of the termination error.
value	A string. Text to describe the termination error (Unable to proceed to qualification because incomplete information provided).

CategoryRef relationship

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

Field	Description
id	A string. Unique reference of the category.
href	A string. Unique reference of the category.
version	A string. Category version.
name	A string. Name of the category.
@referredType	A string. Indicates the (class) type of category.

ChannelRef relationship

Channel reference. The channel defines the channel for selling product offerings.

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

ProductOfferingRef relationship

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

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

ProductSpecificationRef relationship

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

Field	Description
id	A string. Unique identifier of the product specification.
href	A string. Reference of the product specification.
version	A string. Version of the product specification.
name	A string. Name of the product specification.
@referredType	A string. Indicates the (class) type of resource (here product specification).
@schemaLocation	A string. Link to schema describing this REST resource.

RelatedPartyRef relationship

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

Field	Description
id	A string. Unique identifier of a related party.
href	A string. Reference of the related party, could be a party reference or a party role reference.
role	A string. Role of the related party.
name	A string. Name of the related party.
@referredType	A string. Indicates the base (class) type of the party.

Json representation sample

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

5 items are described and reflect different situations:

#1	Qualification for 'Virtual Storage Medium' productOffering – It is eligible
#2	Request for a qualification for 'Mobile A+ Tariff Plan' productOffering – It is not eligible but alternate productOffering is available + unavailability reason is provided.
#3	Qualification for a 'Data Bundle for Mobile' category – a list of productOffering from this category is available. This list is retrieved.
#4	Qualification not done properly because input information are missing
#5	Request to retrieve eligible productOffering matching productSpec description

```
{
    "id": "56",
    "href": "http://hostname:port/productOfferingQualification/56",
    "productOfferingQualificationDateTime": "2017-10-02T00:00",
    "description": "qualification for productOffering",
```

```json
"state": "done",
"qualificationResult": "unqualified",
"expectedQualificationDate": "2017-10-05",
"estimatedResponseDate": "2017-10-04",
"effectiveQualificationDate": "2017-10-04",
"expirationDate": "2017-10-25",
"provideAlternative": true,
"provideOnlyAvailable": false,
"provideUnavailabilityReason": true,
"@baseType": "ProductOfferingQualification",
"@type": " ProductOfferingQualification ",
"@schemaLocation": "www:/…",
"productOfferingQualificationItem": [
  {
    "id": "1",
    "state": "done",
    "expectedActivationDate": "2017-10-04",
    "qualificationItemResult": "qualified",
    "productOffering": {
      "id": "7431",
      "href": "https://host:port/productOffering/productOffering/7431",
      "name": "Virtual Storage Medium"
    }
  },
                {
    "id": "2",
    "state": "done",
    "expectedActivationDate": "2017-10-11",
    "qualificationItemResult": "alternate",
    "eligibilityUnavailabilityReason": [
      {
        "code": "AZ123",
        "label": "This offer is not available on this channel"
      }
    ],
    "productOffering": {
      "id": "66",
      "href": "https://host:port/productOffering/productOffering/66",
      "name": "Mobile A+ Tariff Plan"
    },
    "alternateProductOfferingProposal": [
      {
        "id": "1",
        "alternateActivationDate": "2017-10-11",
        "alternateProductOffering": {
          "id": "67",
          "href": "https://host:port/productOffering/productOffering/67",
          "name": "Mobile A- Tariff Plan"
        }
      }
    ]
  },
                {
    "id": "3",
    "state": "done",
    "expectedActivationDate": "2017-10-11",
```

```
      "qualificationItemResult": "alternate",
      "category": {
        "id": "21",
        "href": "https://host:port/productOffering/category/21",
        "version": "1.0",
        "name": "Data Bundle for Mobile"
      },
      "alternateProductOfferingProposal": [
        {
          "id": "1",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "2495",
            "href": "https://host:port/productOffering/productOffering/2495",
            "name": "1 GB Data Bundle"
          }
        },
        {
          "id": "2",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "2495",
            "href": "https://host:port/productOffering/productOffering/2495",
            "name": "5 GB Data Bundle"
          }
        },
        {
          "id": "3",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "2495",
            "href": "https://host:port/productOffering/productOffering/2495",
            "name": "10 GB Data Bundle"
          }
        }
      ]
    },
            {
    "id": "4",
    "state": "done",
    "expectedActivationDate": "2017-10-11",
    "qualificationItemResult": "unqualified",
    "terminationError": [
      {
        "id": "99",
        "value": "Place information required to perform qualification"
      }
    ],
    "productOffering": {
      "id": "7431",
      "href": "https://host:port/productOffering/productOffering/7431",
      "name": "Fiber Access"
    }
  },
            {
    "id": "5",
```

```
      "state": "done",
      "expectedActivationDate": "2017-10-11",
      "qualificationItemResult": "alternate",
      "productReforValue": {
        "characteristic": [
          [
            {
              "name": "Colour",
              "value": "black"
            },
            {
              "name": "Memory",
              "value": "64GB"
            }
          ]
        ],
        "productSpecification": {
          "id": "111",
          "href": "https://host:port/productSpecification/productSpecification/111",
          "name": "iPhone 56S"
        }
      },
      "alternateProductOfferingProposal": [
        {
          "id": "1",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "852",
            "href": "https://host:port/productOffering/productOffering/852",
            "name": "iPhone 56s BlackBox"
          }
        },
        {
          "id": "2",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "854",
            "href": "https://host:port/productOffering/productOffering/854",
            "name": "iPhone 56s Batman Box"
          }
        }
      ]
    }
  ],
  "relatedParty": [
    {
      "id": "14",
      "href": "https://host:port/partyManagement/individual/14",
      "role": "customer",
      "name": "Jean Pontus"
    }
  ],
  "channel": {
    "id": "1",
    "href": "https://host:port/productCatalogManagement/channel/1",
    "name": "Online Channel"
```

```
    }
}
```

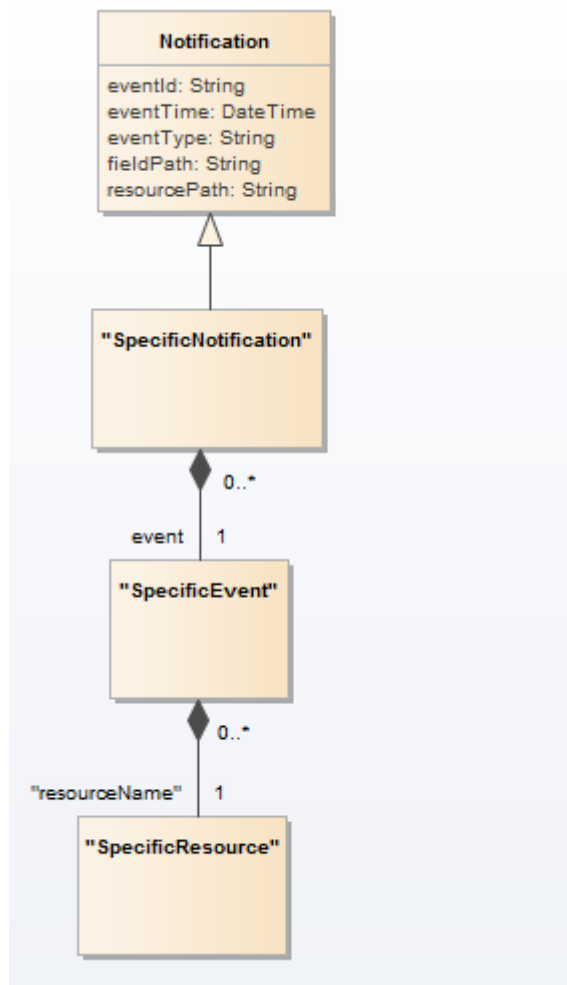## Notification Resource Models

3 notifications are defined for this API

Notifications related to ProductOfferingQualification:
- ProductOfferingQualificationCreationNotification
- ProductOfferingQualificationStateChangeNotification
- ProductOfferingQualificationRemoveNotification

The notification structure for all notifications in this API follow the pattern depicted by the figure below.
A notification resource (depicted by "SpecificNotification" placeholder) is a sub class of a generic
Notification structure containing an id of the event occurence (eventId), an event timestamp (eventTime),
and the name of the notification resource (eventType).
This notification structure owns an event structure ("SpecificEvent" placeholder) linked to the resource
concerned by the notification using the resource name as access field ("resourceName" placeholder).

PRODUCT OFFERING QUALIFICATION CREATION NOTIFICATION

Notification sent when a new ProductOfferingQualification resource is created.

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ProductOfferingQualificationCreationNotification",
    "event": {
      "productOfferingQualification" :
         {-- SEE ProductOfferingQualification RESOURCE SAMPLE --}
   }
}
```

PRODUCT OFFERING QUALIFICATION STATE CHANGE NOTIFICATION

Notification sent when changing the state of a ProductOfferingQualification resource.

Json representation sample

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

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"ProductOfferingQualificationStateChangeNotification",
    "event": {
      "productOfferingQualification" :
         {-- SEE ProductOfferingQualification RESOURCE SAMPLE --}
   }
}
```

PRODUCT OFFERING QUALIFICATION REMOVE NOTIFICATION

Notification sent when removing a ProductOfferingQualification resource.

Json representation sample

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

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

```
    "productOfferingQualification" :
      {-- SEE ProductOfferingQualification RESOURCE SAMPLE --}
  }
}
```

API OPERATIONS

Remember the following Uniform Contract:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET Resource	GET must be used to retrieve a representation of a resource.
Create Entity	POST Resource	POST must be used to create a new resource
Partial Update of an Entity	PATCH Resource	PATCH must be used to partially update a resource
Complete Update of an Entity	PUT Resource	PUT must be used to completely update a resource identified by its resource URI
Remove an Entity	DELETE Resource	DELETE must be used to remove a resource
Execute an Action on an Entity	POST on TASK Resource	POST must be used to execute Task Resources
Other Request Methods	POST on TASK Resource	GET and POST must not be used to tunnel other request methods.

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

Notifications are also described in a subsequent section.

OPERATIONS ON PRODUCT OFFERING QUALIFICATION

LIST PRODUCT OFFERING QUALIFICATIONS

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

Description

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

Usage Samples

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

Get id, href and effective qualification date for productOfferingQualification done.

Request
GET /productOfferingQualificationManagement/productOfferingQualification?fields=id,href,effectiveQualificationDate&state =done   Accept: application/json

Response

200
 	
 [
 {
   "id": "56",
   "href": "http://hostname:port/productOfferingQualification/56",
   "effectiveQualificationDate": "2017/10/1",
 },
 {
   "id": "66",
   "href": "http://hostname:port/productOfferingQualification/66",
   "effectiveQualificationDate": "2017/10/2",
 },
 {
   "id": "31",
   "href": "http://hostname:port/productOfferingQualification/31",
   "effectiveQualificationDate": "2017/9/19",
 }
 ]

RETRIEVE PRODUCT OFFERING QUALIFICATION

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

Description

This operation retrieves a product offering qualification entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

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

Request
GET /productOfferingQualificationManagement/productOfferingQualification/56 Accept: application/json

Response

200
 	
{
  "id": "56",
  "href": "http://hostname:port/productOfferingQualification/56",
  "productOfferingQualificationDateTime": "2017-10-02T00:00",
  "description": "qualification for productOffering",
  "state": "done",
  "qualificationResult": "alternate",
  "expectedQualificationDate": "2017-10-05",
  "estimatedResponseDate": "2017-10-04",
  "effectiveQualificationDate": "2017-10-04",
  "expirationDate": "2017-10-25",
  "provideAlternative": true,
  "provideOnlyAvailable": false,
  "provideUnavailabilityReason": true,
  "productOfferingQualificationItem": [
    {
      "id": "1",
      "state": "done",
      "expectedActivationDate": "2017-10-04",
      "qualificationItemResult": "qualified",
      "productOffering": {
        "id": "7431",
        "href": "https://host:port/productOffering/productOffering/7431",
        "name": "Virtual Storage Medium"

```
                }
        },
                    {
      "id": "2",
      "state": "done",
      "expectedActivationDate": "2017-10-11",
      "qualificationItemResult": "alternate",
      "eligibilityUnavailabilityReason": [
        {
          "code": "AZ123",
          "label": "This offer is not available on this channel"
        }
      ],
      "productOffering": {
        "id": "66",
        "href": "https://host:port/productOffering/productOffering/66",
        "name": "Mobile A+ Tariff Plan"
      },
      "alternateProductOfferingProposal": [
        {
          "id": "1",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "67",
            "href": "https://host:port/productOffering/productOffering/67",
            "name": "Mobile A- Tariff Plan"
          }
        }
      ]
    },
                    {
      "id": "3",
      "state": "done",
      "expectedActivationDate": "2017-10-11",
      "qualificationItemResult": "alternate",
      "category": {
        "id": "21",
        "href": "https://host:port/productOffering/category/21",
        "version": "1.0",
        "name": "Data Bundle for Mobile"
      },
      "alternateProductOfferingProposal": [
        {
          "id": "1",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "2495",
            "href": "https://host:port/productOffering/productOffering/2495",
            "name": "1 GB Data Bundle"
          }
        },
        {
          "id": "2",
          "alternateActivationDate": "2017-10-11",
          "alternateProductOffering": {
            "id": "2495",
```

```
                    "href": "https://host:port/productOffering/productOffering/2495",
                    "name": "5 GB Data Bundle"
                }
            }
    ],
    "relatedParty": [
        {
            "id": "14",
            "href": "https://host:port/partyManagement/individual/14",
            "role": "customer",
            "name": "Jean Pontus"
        }
    ],
    "channel": {
        "id": "1",
        "href": "https://host:port/productCatalogManagement/channel/1",
        "name": "Online Channel"
    }
}
```

CREATE PRODUCT OFFERING QUALIFICATION

POST /productOfferingQualification

Description

This operation creates a product offering qualification entity.

Mandatory and Non Mandatory Attributes

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

Mandatory Attributes	Rule
productOfferingQualificationItem	At least one productOfferingQualification item must be in the request.
relatedParty	At least one relatedParty must be provided (for which the qualification must be done).

Non Mandatory Attributes	Default Value	Rule
productOfferingQualificationDateTime		This date is filled on server side when the request is recorded.
description		
state		only filled on server side
qualificationResult		only filled on server side
expectedQualificationDate		
estimatedResponseDate		
effectiveQualificationDate		
expirationDate		
provideAlternative	False	
provideOnlyAvailable	True	
provideUnavailabilityReason	False	

Non Mandatory Attributes	Default Value	Rule
channel		

Additional Rules

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

Context	Mandatory Sub-Attributes
productOfferingQualificationItem	category OR productOffering OR product
productOffering	id OR href
category	id OR href
relatedParty	role + id OR href
qualificationItemRelationship	type, id
productRelationship	type, id
productCharacteristic	name, value
productSpecification	id OR href
channel	id OR href

The following pre-conditions apply for this operation.

Pre-conditions
PATCH allowed if state different than Accepted or Rejected.

Default Values Summary

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

Attributes	Default Value
provideAlternative	False
provideOnlyAvailable	True
provideUnavailabilityreason	False

Usage Samples

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

Request

POST /productOfferingQualificationManagement/productOfferingQualification
Content-Type: application/json

{
    "description": "qualification for productOffering",
    "expectedQualificationDate": "2017-10-05",
    "provideAlternative": true,
    "provideOnlyAvailable": false,

```
"provideUnavailabilityReason": true,
"productOfferingQualificationItem": [
  {
    "id": "1",
    "expectedActivationDate": "2017-10-04"
    ],
    "productOffering": {
      "id": "7431",
      "href": "https://host:port/productOffering/productOffering/7431",
      "name": "Virtual Storage Medium"
    }
  },
            {
    "id": "2",
    "expectedActivationDate": "2017-10-11",
    "productOffering": {
      "id": "66",
      "href": "https://host:port/productOffering/productOffering/66",
      "name": "Mobile A+ Tariff Plan"
    }
  },
            {
    "id": "3",
    "expectedActivationDate": "2017-10-11",
    "category": {
      "id": "21",
      "href": "https://host:port/productOffering/category/21",
      "version": "1.0",
      "name": "Data Bundle for Mobile"
    }
  },
            {
    "id": "4",
    "expectedActivationDate": "2017-10-11",
    "productOffering": {
      "id": "7431",
      "href": "https://host:port/productOffering/productOffering/7431",
      "name": "Fiber Access"
    }
  },
            {
    "id": "5",
    "expectedActivationDate": "2017-10-11",
    "productRefOrValue": {
      "characteristic": [
        [
          {
            "name": "Colour",
            "value": "black"
          },
          {
            "name": "Memory",
            "value": "64GB"
          }
        ]
      ],
```

```
      "productSpecification": {
        "id": "111",
        "href": "https://host:port/productSpecification/productSpecification/111",
        "name": "iPhone 56S"
      }
    }
  }
],
"relatedParty": [
  {
    "id": "14",
    "href": "https://host:port/partyManagement/individual/14",
    "role": "customer",
    "name": "Jean Pontus"
  }
],
"channel": {
  "id": "1",
  "href": "https://host:port/productCatalogManagement/channel/1",
  "name": "Online Channel"
}
}
```

Response

```
201

{
  "id": "56",
  "href": "http://hostname:port/productOfferingQualification/56",
}
```

PATCH PRODUCT OFFERING QUALIFICATION

PATCH /productOfferingQualification/{id}

Description

This operation allows partial updates of a product offering qualification entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
description	Could be patched by the requester only if productOfferingQualification is acknowledged or inProgress
state	Only modified by server side
qualificationResult	Provided by server once qualification done
expectedQualificationDate	Could be patched by the requester only if productOfferingQualification is acknowledged
estimatedResponseDate	Only modified by server side
expirationDate	Only modified by server side
provideAlternative	Could be patched by the requester only if productOfferingQualification is acknowledged or inProgress
provideOnlyAvailable	Could be patched by the requester only if productOfferingQualification is acknowledged or inProgress
provideUnavailabilityReason	Could be patched by the requester only if productOfferingQualification is acknowledged or inProgress
productOfferingQualificationItem	An item could be patched only if qualification has not been started for this item (state is still acknowledged)
relatedParty	Could be patched by the requester only if productOfferingQualification is acknowledged or inProgress
channel	Could be patched by the requester only if productOfferingQualification is acknowledged

Non Patchable Attributes	Rule
id	
href	
productOfferingQualificationDateTime	Timestamp on server side.
effectiveQualificationDate	Provided by server once qualification done
productOfferingQualificationItem. qualificationItemResult	Provided by server once qualification done

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
PATCH allowed if state different than *done* or *terminatedWithError*.

Usage Samples

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

Here we took the same example and we change the phone Memory size:

Request
PATCH /productOfferingQualificationManagement/productOfferingQualification/56 Content-Type: application/merge-patch+json
{

```
        "id": "56",
        "href": "http://hostname:port/productOfferingQualification/56",
        "productOfferingQualificationItem": [
                        {
            "id": "5",
            "productRefOrValue": {
              "characteristic": [
                [
                    {
                        "name": "Colour",
                        "value": "black"
                    },
                    {
                        "name": "Memory",
                        "value": "128GB"
                    }
                ]
              ],
              "productSpecification": {
                "id": "111",
                "href": "https://host:port/productSpecification/productSpecification/111",
                "name": "iPhone 56S"
              }
            }
          }
        ]
}
```

Response

```
201

{
  "id": "56",
  "href": "http://hostname:port/productOfferingQualification/56",
}
```

DELETE PRODUCT OFFERING QUALIFICATION

DELETE /productOfferingQualification/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a product offering qualification entity.

Usage Samples

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

Request
DELETE /productOfferingQualificationManagement/productOfferingQualification/42

Response
204

API NOTIFICATIONS

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.

REGISTER LISTENER

POST /hub

Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

Behavior

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

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

Usage Samples

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

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

UNREGISTER LISTENER

DELETE /hub/{id}

Description

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

Behavior

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

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

Usage Samples

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

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

PUBLISH EVENT TO LISTENER

POST /client/listener

Description

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

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

Behavior

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

Usage Samples

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

Request

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

Response
201

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

tmforum

ACKNOWLEDGEMENTS

CONTRIBUTORS TO DOCUMENT

Mariano Belaunde	Orange
Pierre Gauthier	TM Forum
Takayuki Nakamura	NTT
Ludovic Robert	Orange