TM Forum Specification

TMF679 Product Offering qualification API REST Specification

TMF679
Release 19.0.0
June 2019

Latest Update: TM Forum Release 19.0.0	Member Evaluation
Version 4.0.0	IPR Mode: RAND

NOTICE

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Introduction

The following document is the specification of the REST API for Product Offering Qualification management. It includes the model definition as well as all available operations. Possible actions are creating, updating and retrieving Product Offering Qualification. It should be noted that Product Offering Qualification   is a task-based API and has to follow this pattern.

The Product Offering Qualification API provides a standardized mechanism for placing a qualification request to check offer commercial eligibility with all of the necessary parameters. The API consists of a simple set of operations that interact with Catalog and Inventory systems in a consistent manner. A Product Offering Qualification is created based on a product offers that are defined in a catalog. 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 specific productOffering eligibility

- look for productOffering eligible (or not) from a product category

- look for productOffering eligible (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 qualification)

- expected activation date,

.

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).

Product Offering Qualification API performs the following operations on Product Offering Qualification:

- Retrieval of a Product Offering Qualification or a collection of Product Offering Qualification depending on filter criteria
- Partial update of a Product Offering Qualification
- Creation of a Product Offering Qualification
- Deletion of Product Offering Qualification (for administration purposes)
- Notification of events on Product Offering Qualification
    o Product Offering Qualification creation
    o Product Offering Qualification removal
    o Product Offering Qualification state change
    o Product Offering Qualification value change used to notify that any data in a Product Offering Qualification has just changed

The following Assumptions were considered in the development of this document:

- The Product Offering Qualification management system has access to the commercial catalog system.

SAMPLE USE CASES

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

To provide illustrations in the JSON example, we will use following use-case:

- Perform a productOfferingQualification request for a broadband offer on the Web channel for a specific geographic location. The product offering qualification resust is qualified (id: 9ffg-ze56-ed51)
- Perform a productOfferingQualification request for an new eLine on an existing UNI. The product offering qualification resust is alternate – requested eLine capabilities are not available but alternate configuration is available (id: isdf56-88gg-sd65)
- Retrieve the list of productOfferingQualification with result qualified.

Support of polymorphism and extension patterns

Support of polymorphic collections and types and schema based extension is provided by means of a list of generic meta-attributes that we describe below. Polymorphism in collections occurs when entities inherit from base entities, for instance an EligibilityRequest and MainOfferQualification inheriting properties from Product Offering Qualification entity.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v3.0 Part 2 document.

The @type attribute provides a way to represent the actual class type of an entity. For example, within a list of Product Offering Qualification instances some may be instances of EligibilityRequest where other could be instances of MainOfferQualification. The @type gives this information. All resources and sub-resources of this API have a @type attributes that can be provided when this is useful.

The @referredType can be used within reference entities (like for instance a ProductOfferingQualificationRef object) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the @type, when used, denotes the class type of the reference itself, such as EligibilityRequestRef or MainOfferQualificationRef, and not the class type of the referred object. However since reference classes are rarely sub-classed, @type is generally not useful in reference objects.

The @schemaLocation property can be used in resources to allow specifying user-defined properties of an Entity or to specify the expected *characteristics* of an entity.

The @baseType attribute gives a way to provide explicitly the base of class of a given resource that has been extended.

RESOURCE MODEL

Managed Entity and Task Resource Models

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).

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Resource model
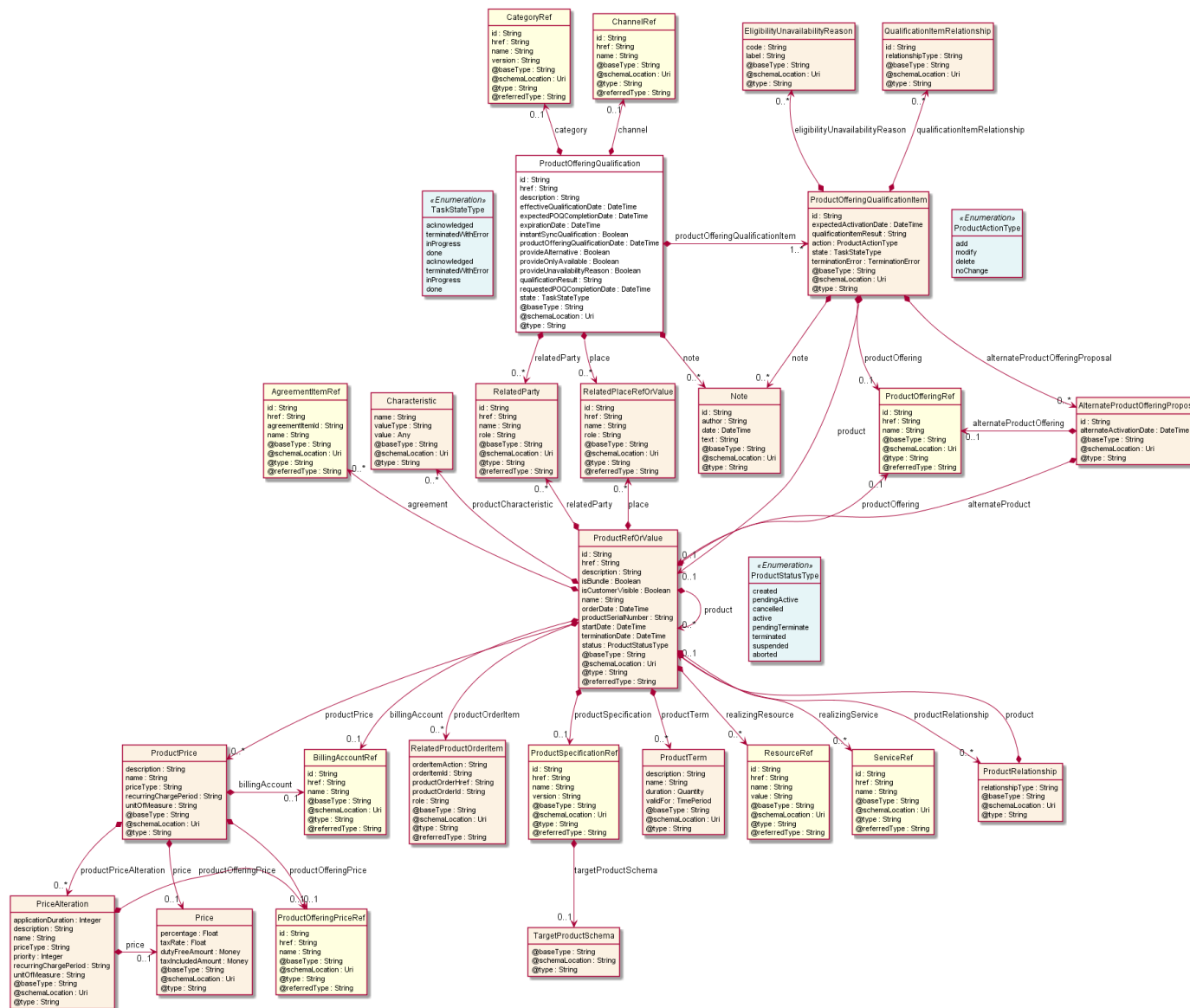
Lifecycle
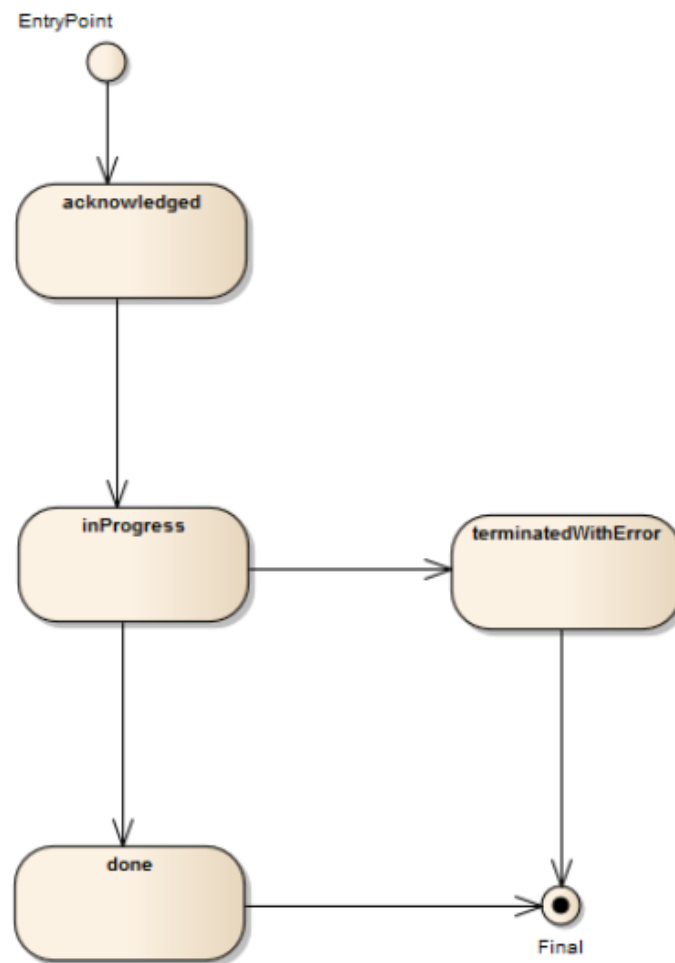
State definition:

Same apply for POQ & POQ Item

State	Definition
InProgress	The *In Progress* state is when the POQ is currently in the hands of the SP sales team to assess customer qualification request.. Everything should be updatable in this state
Acknowledged	The acknowledged state is where a POQ request has been received and has passed message and basic business validations.
TerminatedWith Error	The POQ could not be correctly completed by SP sales team. Qualification is not available or partial
Done	Qualification has been done. The POQ is ready for client.

Consistence rule must be provided by API supplier between POQ state and POQ.item state – example (informative):

- A POQ is in Acknowledged state if all POQ.items are in Acknowledged state
- A POQ is in Done state if all POQ.items are in Done state
- A POQ is in TerminatedWithError state if all POQ.items are in TerminatedWithError and Done state but at least one in TerminatedWithError state

- A POQ is in InProgress state if at least one POQ.items is in InProgress state

Field descriptions

ProductOfferingQualification fields

category	A category reference (CategoryRef). The category for grouping recommendations.
channel	A channel reference (ChannelRef). Channel used for the qualification.
description	A string. Description of the productOfferingQualification.
effectiveQualificationDate	A date time (DateTime). Effective date to productOfferingQualification completion.
expectedPOQCompletionDate	A date time (DateTime). Date when the requester expect to provide an answer for the qualification request.
expirationDate	A date time (DateTime). Date the qualification response expires.
href	A string. Hyperlink to access the productOfferingQualification.
id	A string. Unique identifier of the productOfferingQualification resource.
instantSyncQualification	A boolean. An indicator which when the value is "true" means that requester expects to get qualifcation result immediately in the response. If the indicator is true then the response code of 200 indicates the operation is successful otherwise a task is created with a response 201.
note	A list of notes (Note [*]). Free form text associated with the qualification request.
place	A list of related place ref or values (RelatedPlaceRefOrValue [*]). Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.
productOfferingQualificationDate	A date time (DateTime). Date when the productOfferingQualification has been submitted.
productOfferingQualificationItem	A list of product offering qualification items (ProductOfferingQualificationItem [1..*]). Qualification item for a product or a category.

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.
qualificationResult	A string. Result of the qualification (example: green, yellow, red).
relatedParty	A list of related parties (RelatedParty [*]). Party playing a role for this qualification (as requester for example).
requestedPOQCompletionDate	A date time (DateTime). Deadline date when the requester expected a qualification answer.
state	A task state type (TaskStateType). State of the productOfferingQualification defined in the state engine.

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.

alternateActivationDate	A date time (DateTime). Alternate activation date in case seller is not able to meet requested expected activation date.
alternateProduct	A product ref or value (ProductRefOrValue). Alternate product proposal.
alternateProductOffering	A product offering reference (ProductOfferingRef). Alternate product offering proposal.
id	A string. Identifier of a alternate product offering proposal.

Characteristic sub-resource

Describes a given characteristic of an object or entity through a name/value pair.

name	A string. Name of the characteristic.
value	An any (Any). The value of the characteristic.
valueType	A string. Data type of the value of the characteristic.

EligibilityUnavailabilityReason sub-resource

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

code	A string. Unavailability reason code.
label	A string. Unavailability reason label.

Money sub-resource

A base / value business entity used to represent money.

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

Note sub-resource

Extra information about a given entity.

author	A string. Author of the note.
date	A date time (DateTime). Date of the note.
id	A string. Identifier of the note within its containing entity (may or may not be globally unique, depending on provider implementation).
text	A string. Text of the note.

Price sub-resource

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

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

PriceAlteration sub-resource

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

applicationDuration	An integer. Duration during which the alteration applies on the order item price (for instance 2 months free of charge for the recurring charge).
description	A string. A narrative that explains in detail the semantics of this order item price alteration.
name	A string. Name of the order item price alteration.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

priceType	A string. A category that describes the price such as recurring, one time and usage.
priority	An integer. Priority level for applying this alteration among all the defined alterations on the order item price.
productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...

ProductOfferingQualificationItem sub-resource

action	A product action type (ProductActionType). Can be "add" / "modify" / "no_change"/ "delete" - by default add is considered.
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.
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).
expectedActivationDate	A date time (DateTime). Date when the requester look for productOfferingQualification activation.
id	A string. Id of the productOfferingQualification item.
note	A list of notes (Note [*]). Extra information about a given entity.
product	A product ref or value (ProductRefOrValue). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
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.
qualificationItemRelationship	A list of qualification item relationships (QualificationItemRelationship [*]). Structure used to describe relationship between

productOfferingQualification item from the same ProductOfferingQualification.

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).

state	A task state type (TaskStateType). State of the productOfferingQualification item defined in the state engine.
terminationError	A list of termination errors (TerminationError [*]). This indicates an error that caused a qualificationItem to be terminated.

ProductPrice sub-resource

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

billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.
description	A string. A narrative that explains in detail the semantics of this product price.
name	A string. A short descriptive name such as "Subscription price".
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.
productPriceAlteration	A list of price alterations (PriceAlteration [*]). Is an amount, usually of money, that modifies the price charged for an order item.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...

ProductRefOrValue sub-resource

A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
name	A string. Name of the product. It could be the same as the name of the product offering.
description	A string. Is the description of the product. It could be copied from the description of the Product Offering.
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
isBundle	A boolean. If true, the product is a ProductBundle which is an instantiation of a BundledProductOffering. If false, the product is a ProductComponent which is an instantiation of a SimpleProductOffering.
isCustomerVisible	A boolean. If true, the product is visible by the customer.
name	A string. Name of the product. It could be the same as the name of the product offering.
orderDate	A date time (DateTime). Is the date when the product was ordered.
productSerialNumber	A string. Is the serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
startDate	A date time (DateTime). Is the date from which the product starts.
terminationDate	A date time (DateTime). Is the date when the product was terminated.
agreement	A list of agreement item references (AgreementItemRef [*]). Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.
place	A list of related place ref or values (RelatedPlaceRefOrValue [*]). Related Entity reference. A related place defines a place described by reference or by value linked to

a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.

product	A list of product ref or values (ProductRefOrValue [*]). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
productCharacteristic	A list of characteristics (Characteristic [*]). Describes a given characteristic of an object or entity through a name/value pair.
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.
productOrderItem	A list of related product order items (RelatedProductOrderItem [*]). RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.
productPrice	A list of product prices (ProductPrice [*]). An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.
productRelationship	A list of product relationships (ProductRelationship [*]). Linked products to the one instantiate, such as [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.
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.
productTerm	A list of product terms (ProductTerm [*]). Description of a productTerm linked to this product. This represent a commitment with a duration.
realizingResource	A list of resource references (ResourceRef [*]).
realizingService	A list of service references (ServiceRef [*]). for when Service is used by other entities.
relatedParty	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.
status	A product status type (ProductStatusType). Is the lifecycle status of the product.

ProductRelationship sub-resource

Linked products to the one instantiate, such as [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). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
relationshipType	A string. Type of the product relationship, such as [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.

ProductTerm sub-resource

Description of a productTerm linked to this product. This represent a commitment with a duration.

description	A string. Description of the productTerm.
duration	A quantity (Quantity). Duration of the productTerm.
name	A string. Name of the productTerm.
validFor	A time period. productTerm validity period.

QualificationItemRelationship sub-resource

Structure used to describe relationship between productOfferingQualification item from the same ProductOfferingQualification.

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

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

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

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.
role	A string. Role played by the related party.

RelatedPlaceRefOrValue sub-resource

Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
role	A string.

RelatedProductOrderItem sub-resource

RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
orderItemAction	A string. Action of the order item for this product.
orderItemId	A string. Identifier of the order item where the product was managed.
productOrderHref	A string. Reference of the related entity.
productOrderId	A string. Unique identifier of a related entity.
role	A string. role of the product order item for this product.

TargetProductSchema sub-resource

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

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

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

TerminationError sub-resource

This indicates an error that caused a qualificationItem to be terminated.

id   A string. Unique identifier of the termination error.

value   A string. Text to describe the termination error - for example: Unable to proceed to qualification because incomplete information provided.

AgreementItemRef relationship

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

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

href   A string. Reference of the related entity.

id   A string. Unique identifier of a related entity.

name   A string. Name of the related entity.

agreementItemId   A string. Identifier of the agreement.

BillingAccountRef relationship

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

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

href   A string. Reference of the billing account.

id   A string. Unique identifier of the billing account.

name   A string. Name of the billing account.

CategoryRef relationship

The category for grouping recommendations.

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

href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.
version	A string. Category version.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the channel.
name	A string. Name of the channel.

ProductOfferingPriceRef relationship

ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

ProductOfferingRef relationship

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

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

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.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.
targetProductSchema	A target product schema (TargetProductSchema). A target product schema reference. The reference object to the schema and type of target product which is described by product specification.
version	A string. Version of the product specification.

ResourceRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the resource.
name	A string. Name of the resource.
value	A string. The resource value that can be used to identify a resource with a public key (e.g.: a tel nr, an msisdn).

ServiceRef relationship

Service reference, for when Service is used by other entities.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

Json representation sample

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

```
{
   "id": "9ffg-ze56-ed51",
```

```
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-
ed51",
    "description": "Illustration of a POQ resource",
    "effectiveQualificationDate": "2019-05-03T09:37:23.429Z",
    "expectedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
    "expirationDate": "2019-05-12T09:37:23.429Z",
    "instantSyncQualification": false,
    "productOfferingQualificationDate": "2019-05-02T09:37:23.429Z",
    "provideAlternative": true,
    "provideOnlyAvailable": true,
    "provideUnavailabilityReason": false,
    "qualificationResult": "qualified",
    "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
    "channel": {
      "id": "1",
      "name": "Online chanel"
    },
    "note": [
      {
        "id": "1",
        "author": "Jean Pontus",
        "date": "2019-05-02T09:37:23.429Z",
        "text": "This is an illustration of the POQ resource"
      }
    ],
    "productOfferingQualificationItem": [
      {
        "id": "1",
        "expectedActivationDate": "2019-05-02T09:37:23.429Z",
        "qualificationItemResult": "qualified",
        "action": "add",
        "note": [
          {
            "id": "2",
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "home address is provided"
          }
        ],
        "product": {
          "@type": "Product",
          "relatedPlace": [
            {
              "id": "459-fgr-t78",
              "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/459-fgr-t78",
              "@type": "PlaceRef",
              "name": "Home address",
              "role": "install adress",
              "@referredType": "geographicAddress"
            }
          ]
        },
        "productOffering": {
          "id": "142789",
          "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
```

```
            "name": "TMF Broadband Offer",
            "@referredType": "ProductOffering"
          },
          "state": "done",
          "@type": "ProductOfferingQualificationItem"
        }
      ],
      "relatedParty": [
        {
          "id": "45",
          "href": "https://host:port/partyManagement/v4/individual/45",
          "name": "Jean Pustomer",
          "role": "prospect",
          "@type": "RelatedParty",
          "@referredType": "individual"
        },
        {
          "id": "dftr-fg455",
          "href": "https://host:port/partyManagement/v4/organization/dftr-fg455",
          "name": "TMF Provided",
          "role": "qualifier",
          "@type": "RelatedParty",
          "@referredType": "Organization"
        }
      ],
      "state": "done",
      "@type": "ProductOfferingQualification"
    }
```

Notification Resource Models

5 notifications are defined for this API

Notifications related to ProductOfferingQualification:
- ProductOfferingQualificationCreateEvent
- ProductOfferingQualificationAttributeValueChangeEvent
- ProductOfferingQualificationStateChangeEvent
- ProductOfferingQualificationDeleteEvent
- ProductOfferingQualificationInformationRequiredEvent

The notification structure for all notifications in this API follow the pattern depicted by the figure below.
A notification event resource (depicted by "SpecificEvent" placeholder) is a sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType).
This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).
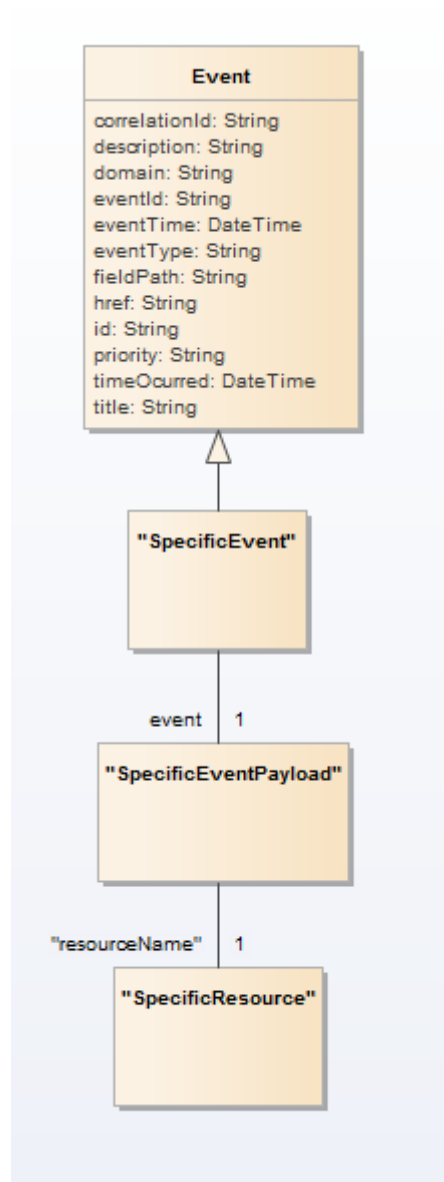
Product Offering Qualification Create Event

Notification ProductOfferingQualificationCreateEvent case for resource ProductOfferingQualification

Json representation sample

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

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

```
    }
```

Product Offering Qualification Attribute Value Change Event

Notification ProductOfferingQualificationAttributeValueChangeEvent case for resource ProductOfferingQualification

Json representation sample

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

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

Product Offering Qualification State Change Event

Notification ProductOfferingQualificationStateChangeEvent case for resource ProductOfferingQualification

Json representation sample

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

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

Product Offering Qualification Delete Event

Notification ProductOfferingQualificationDeleteEvent case for resource ProductOfferingQualification

Json representation sample

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

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

Product Offering Qualification Information Required Event

Notification ProductOfferingQualificationInformationRequiredEvent case for resource ProductOfferingQualification

Json representation sample

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

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

API OPERATIONS

Only allowed operations are listed:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET ProductOfferingQualification	GET must be used to retrieve a representation of a resource.
Create Entity	POST ProductOfferingQualification	POST must be used to create a new resource Note that POST ProductOfferingQualification with instantSyncResponse set to true will provide qualification in the response; The resource could not be created in this case (up to API provider). In this case code 200 is send back. If resource is created code 201 is send back.
Partial Update of an Entity	PATCH ProductOfferingQualification	PATCH must be used to partially update a resource
Remove an Entity	DELETE ProductOfferingQualification	DELETE must be used to remove a resource

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 a list of product offering qualification with only id, href, state and expiration date. The given criteria is ProductOfferingQualification result (qualified).

Request
GET https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification? fields=id,href,state,expirationDate&QualificationResult=qualified Accept: application/json

Response

```
200

[
  {
    "id": "9ffg-ze56-ed51",
    "href": ".../productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-ed51",
    "state": "qualified",
    "expirationDate": "2019-04-11T14:52:21.823Z"
  },
  {
    "id": "7412",
    "href": ".../productOfferingQualificationManagement/v4/productOfferingQualification/7412",
    "state": "qualified",
    "expirationDate": "2019-04-18T14:21:31.325Z"
  },
  {
    "id": "3214",
    "href": ".../productOfferingQualificationManagement/v4/productOfferingQualification/3214",
    "state": "qualified",
    "expirationDate": "2019-04-21T18:08:31.325Z"
  },
  {
    "id": "6547",
    "href": ".../productOfferingQualificationManagement/v4/productOfferingQualification/6547",
    "state": "qualified",
    "expirationDate": "2019-04-29T10:48:28.325Z"
  }
]
```

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. The given criteria is the ProductOfferingQualification id 9ffg-ze56-ed51.

Request
GET https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification/9ffg-ze56-ed51 Accept: application/json

Response

200
 	
{
  "id": "9ffg-ze56-ed51",
  "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-ed51",
  "description": "Illustration of a POQ resource",
  "effectiveQualificationDate": "2019-05-03T09:37:23.429Z",
  "expectedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
  "expirationDate": "2019-05-12T09:37:23.429Z",
  "instantSyncQualification": false,
  "productOfferingQualificationDate": "2019-05-02T09:37:23.429Z",
  "provideAlternative": true,
  "provideOnlyAvailable": true,
  "provideUnavailabilityReason": false,
  "qualificationResult": "qualified",
  "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
  "channel": {
    "id": "1",
    "name": "Online chanel"
  },
  "note": [
    {
      "id": "1",

```
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "This is an illustration of the POQ resource",
            "@type": "Note"
        }
    ],
    "productOfferingQualificationItem": [
        {
            "id": "1",
            "expectedActivationDate": "2019-05-02T09:37:23.429Z",
            "qualificationItemResult": "qualified",
            "action": "add",
            "note": [
                {
                    "id": "2",
                    "author": "Jean Pontus",
                    "date": "2019-05-02T09:37:23.429Z",
                    "text": "home address is provided"
                }
            ],
            "product": {
                "@type": "Product",
                "relatedPlace": [
                    {
                        "id": "459-fgr-t78",
                        "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/459-fgr-t78",
                        "@type": "PlaceRef",
                        "name": "Home address",
                        "role": "install adress",
                        "@referredType": "GeographicAddress"
                    }
                ]
            },
            "productOffering": {
                "id": "142789",
                "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
                "name": "TMF Broadband Offer",
                "@referredType": "ProductOffering"
            },
            "state": "done",
            "@type": "ProductOfferingQualificationItem"
        }
    ],
    "relatedParty": [
        {
            "id": "45",
            "href": "https://host:port/partyManagement/v4/individual/45",
            "name": "Jean Pustomer",
            "role": "prospect",
            "@type": "RelatedParty",
            "@referredType": "Individual"
        },
        {
            "id": "dftr-fg455",
            "href": "https://host:port/partyManagement/v4/organization/dftr-fg455",
```

```
        "name": "TMF Provided",
        "role": "qualifier",
        "@type": "RelatedParty",
        "@referredType": "Organization"
      }
  ],
  "state": "done",
  "@type": "ProductOfferingQualification"
}
```

Create product offering qualification

POST /productOfferingQualification

Description

This operation creates a product offering qualification entity.

Mandatory and Non Mandatory Attributes

The following tables provide 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.

Non Mandatory Attributes	Rule
category	
channel	
description	
effectiveQualificationDate	Must be not provided in the POST request
expectedPOQCompletionDate	Must be not provided in the POST request
expirationDate	Must be not provided in the POST request
instantSyncQualification	False by default
note	
place	
productOfferingQualificationDate	
productOfferingQualificationItem	Could be not provided in POST request – in particular to filter on category or without any filter
provideAlternative	False by default
provideOnlyAvailable	True by default
provideUnavailabilityReason	False by default
qualificationResult	Must be not provided in the POST request
relatedParty	
requestedPOQCompletionDate	
state	Must be not provided in the POST request

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	id
qualificationItemRelationship	id, relationshipType
productOffering	id
relatedParty	id, @referredType
realizingService	id
realizingResource	id
productRelationship	relationshipType, product
productSpecification	id
note	id, text
relatedPlace	role and @referredType
product	If action <> add a product id must be provided

The following pre-conditions apply for this operation.

Pre-conditions
When creating a productOfferingQualification (post) an item should not have the state, qualificationItemResult, alternateProductOfferingProposal fields valued
If productOfferingQualificationItem.action is not valued, add action is considered by default.

Usage Samples

Here's an example of a request for creating a ProductOfferingQualification for a broadband access offering - instant qualification is not requested - the resulting ProductOfferingQualification is 9ffg-ze56-ed51.

Request

POST https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification
Content-Type: application/json

```
{
    "description": "Illustration of a POQ resource",
    "instantSyncQualification": false,
    "provideAlternative": true,
    "provideOnlyAvailable": true,
    "provideUnavailabilityReason": false,
    "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
    "channel": {
        "id": "1",
        "name": "Online chanel",
        "@type": "Channel"
    },
    "note": [
        {
            "id": "1",
```

```
        "author": "Jean Pontus",
        "date": "2019-05-02T09:37:23.429Z",
        "text": "This is an illustration of the POQ resource",
        "@type": "Note"
      }
    ],
    "productOfferingQualificationItem": [
      {
        "id": "1",
        "expectedActivationDate": "2019-05-02T09:37:23.429Z",
        "action": "add",
        "note": [
          {
            "id": "2",
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "home address is provided",
            "@type": "Note"
          }
        ],
        "product": {
          "@type": "Product",
          "relatedPlace": [
            {
              "id": "459-fgr-t78",
              "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/459-fgr-t78",
              "@type": "PlaceRef",
              "name": "Home address",
              "role": "install adress",
              "@referredType": "GeographicAddress"
            }
          ]
        },
        "productOffering": {
          "id": "142789",
          "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
          "name": "TMF Broadband Offer",
          "@type": "productOffering",
          "@referredType": "ProductOffering"
        },
        "@type": "ProductOfferingQualificationItem"
      }
    ],
    "relatedParty": [
      {
        "id": "45",
        "href": "https://host:port/partyManagement/v4/individual/45",
        "name": "Jean Pustomer",
        "role": "prospect",
        "@type": "RelatedParty",
        "@referredType": "Individual"
      }
    ],
    "@type": "ProductOfferingQualification"
}
```


Response

201

```
{
    "id": "9ffg-ze56-ed51",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-
ed51",
    "description": "Illustration of a POQ resource",
    "expectedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
    "instantSyncQualification": false,
    "productOfferingQualificationDate": "2019-05-02T09:37:23.429Z",
    "provideAlternative": true,
    "provideOnlyAvailable": true,
    "provideUnavailabilityReason": false,
    "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
    "channel": {
        "id": "1",
        "name": "Online chanel",
        "@type": "Channel"
    },
    "note": [
        {
            "id": "1",
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "This is an illustration of the POQ resource",
            "@type": "Note"
        }
    ],
    "productOfferingQualificationItem": [
        {
            "id": "1",
            "expectedActivationDate": "2019-05-02T09:37:23.429Z",
            "action": "add",
            "note": [
                {
                    "id": "2",
                    "author": "Jean Pontus",
                    "date": "2019-05-02T09:37:23.429Z",
                    "text": "home address is provided",
                    "@type": "Note"
                }
            ],
            "product": {
                "@type": "Product",
                "relatedPlace": [
                    {
                        "id": "459-fgr-t78",
                        "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/459-fgr-t78",
                        "@type": "PlaceRef",
```

```
                    "name": "Home address",
                    "role": "install adress",
                    "@referredType": "GeographicAddress"
                }
            ]
        },
        "productOffering": {
            "id": "142789",
            "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
            "name": "TMF Broadband Offer",
            "@referredType": "ProductOffering"
        },
        "state": "acknowledged",
        "@type": "ProductOfferingQualificationItem"
    }
],
"relatedParty": [
    {
        "id": "45",
        "href": "https://host:port/partyManagement/v4/individual/45",
        "name": "Jean Pustomer",
        "role": "prospect",
        "@type": "relatedParty",
        "@referredType": "individual"
    }
],
"state": "acknowledged",
"@type": "ProductOfferingQualification"
}
```

Here's an example of a request for creating a ProductOfferingQualification for a new eLine based on existing UNI - instant qualification is requested - the answer features alternat use - No resource are created.

Request

```
POST https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification
Content-Type: application/json

{
    "description": "POQ illustration with a relationship on existing product",
    "instantSyncQualification": true,
    "provideAlternative": true,
    "provideOnlyAvailable": true,
    "provideUnavailabilityReason": true,
    "productOfferingQualificationItem": [
        {
            "id": "1",
            "expectedActivationDate": "2019-05-22T09:37:23.429Z",
            "action": "add",
            "@type": "ProductOfferingQualificationItem",
            "product": {
                "@type": "Product",
```

```json
          "productRelationship": [
            {
              "relationshipType": "reliesOn",
              "@type": "ProductRelationship",
              "product": {
                "id": "6001",
                "href": "https://host:port/productInventoryManagement/v4/product/6001",
                "@type": "ProductRef"
              }
            }
          ],
          "productSpecification": {
            "id": "eLineSpec",
            "name": "ELine product specification",
            "@type": "ProductSpecification",
            "targetProductSchema": {
              "@schemaLocation": "https://MEF....",
              "@type": "eLine"
            }
          },
          "eLine": {
            "UNIBandwidthProfile": {
              "cir": {
                "amount": "500",
                "unit": "Mbp/s"
              }
            },
            "ENNIBandwidthProfile": {
              "cir": {
                "amount": "500",
                "unit": "Mbp/s"
              }
            }
          },
          "relatedParty": [
            {
              "name": "BuyerOrganizationCompanyName",
              "id": "45h-jkk",
              "role": "buyer",
              "@type": "relatedParty",
              "@referredType": "Organization"
            }
          ]
        },
        "productOffering": {
          "id": "56f-89d-fg45",
          "href": "https://host:port/productCatalogManagement/v4/productOffering/56f-89d-fg45",
          "name": "eLine Offering",
          "@type": "ProductOffering",
          "@referredType": "ProductOffering"
        }
      }
    ],
    "@type": "ProductOfferingQualification"
}
```

Response

201

```
{
  "description": "POQ illustration with a relationship on existing product",
  "effectiveQualificationDate": "2019-05-02T09:37:23.429Z",
  "expirationDate": "2019-05-02T09:37:23.429Z",
  "instantSyncQualification": true,
  "provideAlternative": true,
  "provideOnlyAvailable": true,
  "provideUnavailabilityReason": true,
  "qualificationResult": "qualified",
  "requestedPOQCompletionDate": "2019-05-02T09:37:23.429Z",
  "productOfferingQualificationItem": [
    {
      "id": "1",
      "expectedActivationDate": "2019-05-22T09:37:23.429Z",
      "qualificationItemResult": "qualified",
      "action": "add",
      "alternateProductOfferingProposal": [
        {
          "id": "1",
          "alternateActivationDate": "2019-05-02T09:37:23.429Z",
          "alternateProductOffering": {
            "id": "456-hjk-56f",
            "href": "https://host:port/productCatalogManagement/v4/productOffering/456-hjk-56f",
            "name": "ELine",
            "@referredType": "ProductOfferingQualification"
          },
          "alternateProduct": {
            "@type": "product",
            "productSpecification": {
              "id": "eLineSpec",
              "name": "ELine product specification",
              "targetProductSchema": {
                "@schemaLocation": "https://MEF....",
                "@type": "eLine"
              },
              "eLine": {
                "UNIBandwidthProfile": {
                  "cir": {
                    "amount": "200",
                    "unit": "Mbp/s"
                  }
                },
                "ENNIBandwidthProfile": {
                  "cir": {
                    "amount": "200",
                    "unit": "Mbp/s"
                  }
```

```
                    }
                  }
                }
              }
            }
          ],
          "eligibilityUnavailabilityReason": [
            {
              "code": "11111",
              "label": "Cannot provided requested bandwith profile required"
            }
          ],
          "product": {
            "@type": "Product",
            "productRelationship": [
              {
                "relationshipType": "reliesOn",
                "product": {
                  "id": "6001",
                  "href": "https://host:port/productInventoryManagement/v4/product/6001"
                }
              }
            ],
            "productSpecification": {
              "id": "eLineSpec",
              "name": "ELine product specification",
              "targetProductSchema": {
                "@schemaLocation": "https://MEF....",
                "@type": "eLine"
              }
            },
            "eLine": {
              "UNIBandwidthProfile": {
                "cir": {
                  "amount": "500",
                  "unit": "Mbp/s"
                }
              },
              "ENNIBandwidthProfile": {
                "cir": {
                  "amount": "500",
                  "unit": "Mbp/s"
                }
              }
            },
            "relatedParty": [
              {
                "name": "BuyerOrganizationCompanyName",
                "role": "buyer",
                "@referredType": "Organization"
              }
            ]
          },
          "productOffering": {
            "id": "56f-89d-fg45",
```

```
            "href": "https://host:port/productCatalogManagement/v4/productOffering/56f-89d-fg45",
            "name": "eLine Offering",
            "@referredType": "ProductOffering"
        }
      }
    ],
    "@type": "ProductOfferingQualification"
}
```

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
category	
channel	
description	
effectiveQualificationDate	
expectedPOQCompletionDate	
expirationDate	
instantSyncQualification	
note	
place	
productOfferingQualificationItem	
provideAlternative	
provideOnlyAvailable	
provideUnavailabilityReason	
qualificationResult	
relatedParty	
requestedPOQCompletionDate	
state	

Non Patchable Attributes	Rule
id	
href	
productOfferingQualificationDate	

Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
If productOfferingQualificationItem.action is not valued, add action is considered by default.

Usage Samples

Here's an example of a request for updating a product offering Qualification - Change address where to perform the qualification. Assumption: the full resource representation is sent in PATCH response

---

Request

```
PATCH https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification/9ffg-ze56-ed51
Content-Type: application/json-patch+json

[
  {
    "op": "replace",
    "path": "/productOfferingQualificationItem/product/relatedPlace/id?productOfferingQualificationItem.id=1",
    "value": "qsd-ggg-dfr"
  }
]
```

Response

```
200

{
  "id": "9ffg-ze56-ed51",
  "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-ed51",
  "description": "Illustration of a POQ resource",
  "expectedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
  "instantSyncQualification": false,
  "productOfferingQualificationDate": "2019-05-02T09:37:23.429Z",
  "provideAlternative": true,
  "provideOnlyAvailable": true,
  "provideUnavailabilityReason": false,
  "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
  "channel": {
```

```
        "id": "1",
        "name": "Online chanel"
    },
    "note": [
        {
            "id": "1",
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "This is an illustration of the POQ resource",
            "@type": "Note"
        }
    ],
    "productOfferingQualificationItem": [
        {
            "id": "1",
            "expectedActivationDate": "2019-05-02T09:37:23.429Z",
            "action": "add",
            "note": [
                {
                    "id": "2",
                    "author": "Jean Pontus",
                    "date": "2019-05-02T09:37:23.429Z",
                    "text": "home address is provided"
                },
                {
                    "id": "3",
                    "author": "Jean Pontus",
                    "date": "2019-05-02T11:44:23.429Z",
                    "text": "home address updated"
                }
            ],
            "product": {
                "@type": "Product",
                "relatedPlace": [
                    {
                        "id": "qsd-ggg-dfr",
                        "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/qsd-ggg-dfr",
                        "@type": "PlaceRef",
                        "name": "Home address",
                        "role": "install adress",
                        "@referredType": "geographicAddress"
                    }
                ]
            },
            "productOffering": {
                "id": "142789",
                "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
                "name": "TMF Broadband Offer",
                "@referredType": "ProductOffering"
            },
            "state": "acknowledged",
            "@type": "ProductOfferingQualificationItem"
        }
    ],
    "relatedParty": [
```

```
        {
            "id": "45",
            "href": "https://host:port/partyManagement/v4/individual/45",
            "name": "Jean Pustomer",
            "role": "prospect",
            "@type": "RelatedParty",
            "@referredType": "Individual"
        }
    ],
    "state": "acknowledged",
    "@type": "ProductOfferingQualification"
}
```

Here's an example of a request for updating a product offering Qualification - Add a note & a related party.
Assumption: the full resource representation is sent in PATCH response

Request

```
PATCH https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification/9ffg-ze56-ed51
Content-Type: application/merge-patch+json

{
    "id": "9ffg-ze56-ed51",
    "note": [
        {
            "id": "1",
            "author": "Jean Pontus",
            "date": "2019-05-02T09:37:23.429Z",
            "text": "This is an illustration of the POQ resource",
            "@type": "Note"
        },
        {
            "id": "2",
            "author": "Jean Pontus",
            "date": "2019-05-22T09:37:23.429Z",
            "text": "Please contact Jean-Luc Tymen to get the POQ context if needed",
            "@type": "Note"
        }
    ],
    "relatedParty": [
        {
            "id": "45",
            "href": "https://host:port/partyManagement/v4/individual/45",
            "name": "Jean Pustomer",
            "role": "prospect",
            "@type": "RelatedParty",
            "@referredType": "Individual"
        },
        {
            "id": "dftr-fg455",
            "href": "https://host:port/partyManagement/v4/organization/dftr-fg455",
            "name": "TMF Provided",
```

```
          "role": "qualifier",
          "@type": "RelatedParty",
          "@referredType": "Organization"
        },
        {
          "id": "dftr-azer",
          "href": "https://host:port/partyManagement/v4/individual/dftr-azer",
          "name": "Jean-Luc Tymen",
          "role": "contact ",
          "@type": "RelatedParty",
          "@referredType": "Individual"
        }
      ],
      "@type": "ProductOfferingQualification"
}
```

Response

```
200

{
  "id": "9ffg-ze56-ed51",
  "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/9ffg-ze56-
ed51",
  "description": "Illustration of a POQ resource",
  "expirationDate": "2019-05-12T09:37:23.429Z",
  "instantSyncQualification": false,
  "productOfferingQualificationDate": "2019-05-02T09:37:23.429Z",
  "provideAlternative": true,
  "provideOnlyAvailable": true,
  "provideUnavailabilityReason": false,
  "requestedPOQCompletionDate": "2019-05-03T09:37:23.429Z",
  "channel": {
    "id": "1",
    "name": "Online chanel"
  },
  "note": [
    {
      "id": "1",
      "author": "Jean Pontus",
      "date": "2019-05-02T09:37:23.429Z",
      "text": "This is an illustration of the POQ resource",
      "@type": "Note"
    },
    {
      "id": "2",
      "author": "Jean Pontus",
      "date": "2019-05-22T09:37:23.429Z",
      "text": "Please contact Jean-Luc Tymen to get the POQ context if needed",
      "@type": "Note"
    }
  ],
```

```
"productOfferingQualificationItem": [
  {
    "id": "1",
    "expectedActivationDate": "2019-05-02T09:37:23.429Z",
    "action": "add",
    "note": [
      {
        "id": "2",
        "author": "Jean Pontus",
        "date": "2019-05-02T09:37:23.429Z",
        "text": "home address is provided"
      }
    ],
    "product": {
      "@type": "Product",
      "relatedPlace": [
        {
          "id": "459-fgr-t78",
          "@type": "PlaceRef",
          "href": "https://host:port/geographicAddressManagement/v4/geographicAddress/459-fgr-t78",
          "name": "Home address",
          "role": "install adress",
          "@referredType": "GeographicAddress"
        }
      ]
    },
    "productOffering": {
      "id": "142789",
      "href": "https://host:port/productCatalogManagement/v4/productOffering/142789",
      "name": "TMF Broadband Offer",
      "@referredType": "ProductOffering"
    },
    "state": "done",
    "@type": "ProductOfferingQualificationItem"
  }
],
"relatedParty": [
  {
    "id": "45",
    "href": "https://host:port/partyManagement/v4/individual/45",
    "name": "Jean Pustomer",
    "role": "prospect",
    "@type": "RelatedParty",
    "@referredType": "Individual"
  },
  {
    "id": "dftr-fg455",
    "href": "https://host:port/partyManagement/v4/organization/dftr-fg455",
    "name": "TMF Provided",
    "role": "qualifier",
    "@type": "RelatedParty",
    "@referredType": "Organization"
  }
],
"state": "inProgress",
```

```
    "@type": "ProductOfferingQualification"
}
```

Delete product offering qualification

DELETE /productOfferingQualification/{id}

Description

This operation deletes a product offering qualification entity.

Usage Samples

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

Request
DELETE https://serverRoot/tmf-api/productOfferingQualification/v4/productOfferingQualification/9ffg-ze56-ed51
Response
204

API NOTIFICATIONS

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

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

Register listener

POST /hub

Description

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

Behavior

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

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

Usage Samples

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

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

Unregister listener

DELETE /hub/{id}

Description

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

Behavior

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

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

Usage Samples

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

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

Publish Event to listener

POST /client/listener

Description

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

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

Behavior

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

Usage Samples

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

Request

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

Response
201

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

Acknowledgements

VERSION History

Release Number	Date	Release led by:	Description
Release 1.0.0	04/15/2016	Pierre Gauthier TM Forum pgauthier@tmforum.org Takayuki Nakamura NTT nakamura.takayuki@nttcom.jp Ludovic Robert Orange Ludovic.robert@orange.com	First Release of Draft Version of the Document.
Release 2.0.0	10/2/2017	Pierre Gauthier TM Forum pgauthier@tmforum.org Mariano Belaunde Orange mariano.belaunde@orange.com Ludovic Robert Orange Ludovic.robert@orange.com	Regenerated from the API Data Model – and rebranded. +update to comply with API new pattern + AP 910 feedbacks + MEF change requests redistribution to TMF
Release 4.0.0		Pierre Gauthier TM Forum pgauthier@tmforum.org Ludovic Robert Orange Ludovic.robert@orange.com	Schema-driven API with polymorphism pattern Following Jira have been integrated: • AP-1244 • AP-1122 • AP-1251 • AP-1125 • AP-1142 (for ítem related to POQ) *Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0*

Release History

Release Number	Date	Release led by:	Description
Release 16.5	04/15/2016	See above Release 1.0.0	
Release 17.5	10/15/2017	See above Release 2.0.0	
Release 19.0		see above Release 4.0.0	Version 4.0 of the API REST *Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0*