**TM Forum Specification**

**Service Qualification Management API REST Specification**

**TMF645**

**Release 18.5.0**

**January 2019**

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| **Latest Update: TM Forum Release 18.5.0** | **Member Evaluation** |
| **Version 4.0.0** | **IPR Mode: RAND** |

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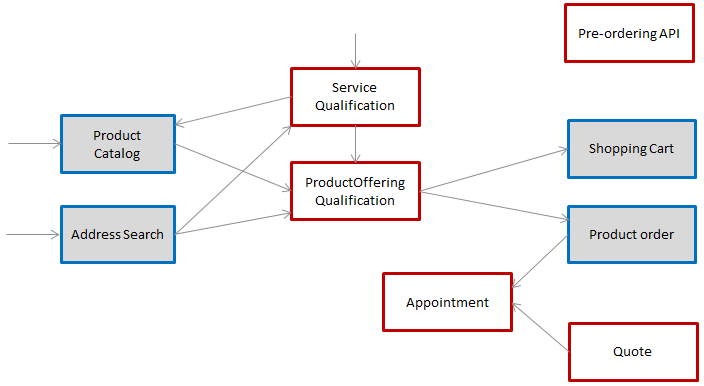
N/A

# Introduction

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

In the Open Digital Economy where multiple actors (SDPs, 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 ServiceQualification API within pre-ordering API package:



Service Qualification API is one of Pre-Ordering Management API Family. Service Qualification API goal is to provide service technical eligibility in the context of the interaction. This API allows to :

* request a specific service eligibility,
* look for service eligibles (or not) from a service category,
* look for service eligibles (or not) from a service specification and characteristics.

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

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

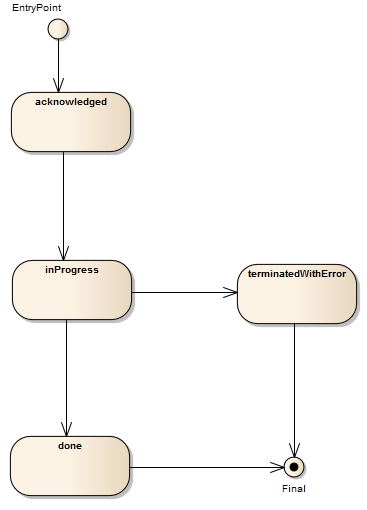
* service, serviceSpecification, category or service characteristics will be indicated (at least one is mandatory),
* relatedParty, for which the qualification must be done,
* place, where the customer wants his service,
* expected qualification date.

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

* Eligibility unavailability reason (if any)
* Alternate service proposal (if any).

## 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.



# 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-cases:

* Retrieve maximum download/upload speed for an access service at a specified address
* Check if we can deliver new access and IPTV (4k) services at a specified address
* Check if we can deliver new IP TV service at the same location of an existing and active Accesse service (i.e. without explicitly specifying address)
* Check if we can upgrade the download speed of an existing and active service from 100 Mb/s to 600Mb/s

# 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 a BillingAccount and SettlementAccount inheriting properties from the abstract Account 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 Account instances some may be instances of BillingAccount where other could be instances of SettlementAccount. 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 an AccountRef 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 BillingAccountRef or SettlementAccountRef, 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

### FIRST resource

## Notification Resource Models

### First Notification

# 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 Part 1 document.

Notifications are also described in a subsequent section.

## VERB url

# 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 part 1. Refer to the guidelines for more details.

## 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 Part 1 document.

# Acknowledgements

## Release History

|  |  |  |  |
| --- | --- | --- | --- |
| **Release Number** | **Date** | **Release led by:** | **Description** |
| Release 1.0 | 15/04/2016 | Pierre Gauthier TM Forum [pgauthier@tmforum.org](mailto:pgauthier@tmforum.org)  Takayuki Nakamura  NTT  nakamura.takayuki@nttcom.jp  Ludovic Robert  Orange  Ludovic.robert@orange.com | First release of the document |
| Release 2.0 | 02/10/2017 | Mariano Belaunde Orange [mariano.belaunde@orange.com](mailto:mariano.belaunde@orange.com)  Ludovic Robert  Orange  Ludovic.robert@orange.com | Generated from API Data Model..  +update to comply with API new pattern  + AP 910 feedbacks  + MEF change requests redistribution to TMF |
| Release 18.0.0  Version 3.0.1 | 05-Jan-2018 | Ludovic Robert  Orange  [Ludovic.robert@orange.com](mailto:Ludovic.robert@orange.com)  Sophie Bouleau  Orange  [Sophie.bouleau@orange](mailto:Sophie.bouleau@orange).com | Alignment with ProductOfferingQualification API |
| Release 18.5.0  Version 4.0.0 | 13-Jan-2019 | Jonathan Goldberg  Amdocs  [Jonathan.Goldberg@amdocs.com](mailto:Jonathan.Goldberg@amdocs.com) | Schema alignment for NaaS APIs |

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