API Guide

Product Offering Qualification

March 2018

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1. List of Contributing Members

The following member of MEF participated in the development of this document and have requested to be included in this list.

AT&T	Iometrix
CableLabs	Orange
Colt	PCCW Global
Ericsson	

Table 1 Contributing Member Companies

2. Abstract

This API Guide is intended to help company to implement MEF Product Offering Qualification API. The API swagger is available on MEF GitHub. In order to help API adoption this document provides:

- API Resource Models
- Resource ProductOfferingQualification lifecycle
- Resource ProductOfferingQualification full representation
- Detailed description of all API Operations provided

3. Scope

The scope of this API guide covers the following capabilities for product offering qualification:

- Retrieve a geographic address
- The ability to validate an address for a specific site associated with the service delivery location.
- Retrieve address validations based on filtering criteria
- Retrieve a single address validation by id
- Retrieve sites based on filtering criteria
- Retrieve a single site by id
- The ability to determine if service can be delivered to a specific customer site within a Partner's domain.
- Retrieve product offering qualifications based on filtering criteria
- Retrieve a single product offering qualification by id

4. Compliance and Assumptions

4.1 Product Offering Qualification Interface

a) Restricted access sites (e.g., Carrier-owned) shall not be under consideration when determining serviceability of a given location.
b) Serviceability interface may or may not use the previously validated Address id from the Address Validation API call or Site id from the Site API call.
c) Quote/Pricing data will not be supported under Serviceability Interface (deferred for Quote API beyond Sonata R1).
d) Serviceability is not expected to reserve or guarantee resources.
e) In the "installation interval" in the serviceability response, "Business" hours or days reflect Seller's perspective.
f) The seller may be able to select a specific ENNI for an Access E-Line request, based on pre-negotiated criteria where buyer may not specify ENNI in the request.
g) Seller may have alternatives in parameters beyond what Buyer has requested in the Input (e.g., CoS, Diversity/Protection).

4.2 Site Interface

a) Site interface may or may not use the previously validated Address id from the Address Validation API call, or may also take the Address input directly.

4.3 Address Interface

a) When handling ambiguous, or in-sufficient data, as input, multiple/alternative addresses may be returned.

b) Should be able to handle addresses for new development area where a postal address is yet to be assigned. In this case, a geographic (lat/long) or referenced address is recommended.

c) Address Validation shall expect to validate the physical location (either postal address or no postal location, like cell-tower in a field), but the validation specific to either building or at a suite level at a physical location is left to the Seller's discretion, due to variations in the diverse types of Buildings & Products.

d) The maximum number of suggested Alternative addresses to be returned will be determined by the Seller.

5. Resource Models

5.1 Geographic Address Model

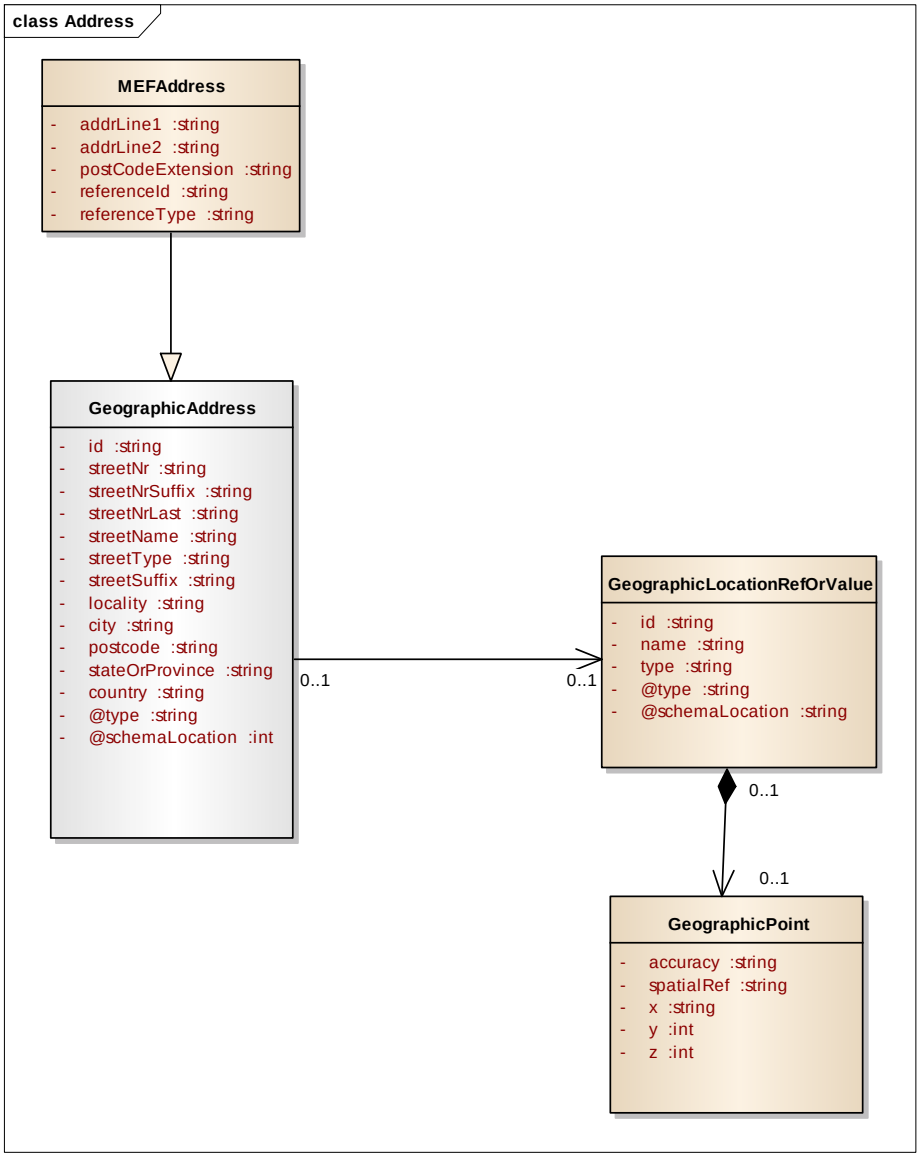

Figure 1 – GeographicAddress Resource Model

5.2 Address Validation Resource Model

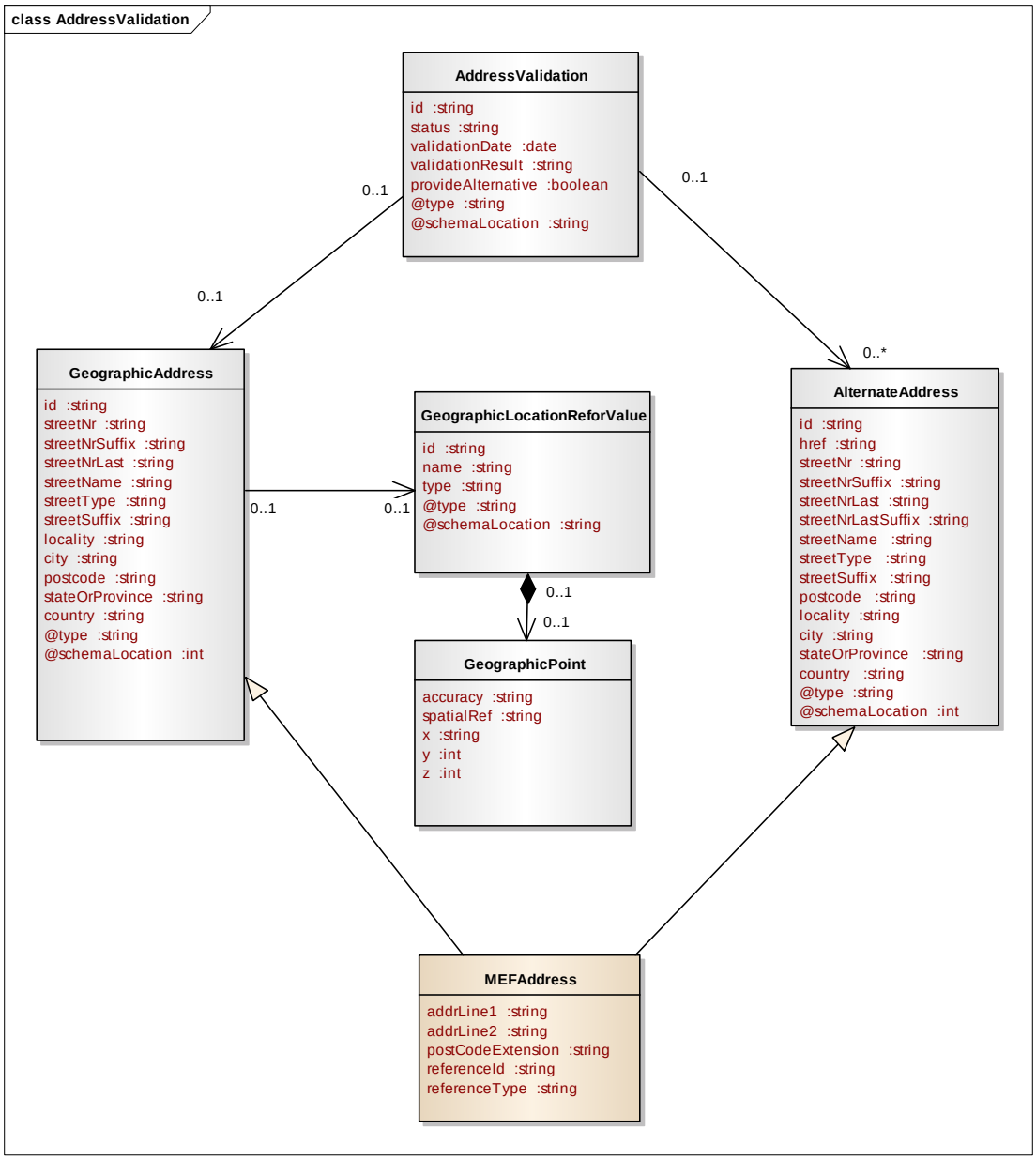

Figure 2 – AddressValidation Resource Model

5.3 Site Resource Model

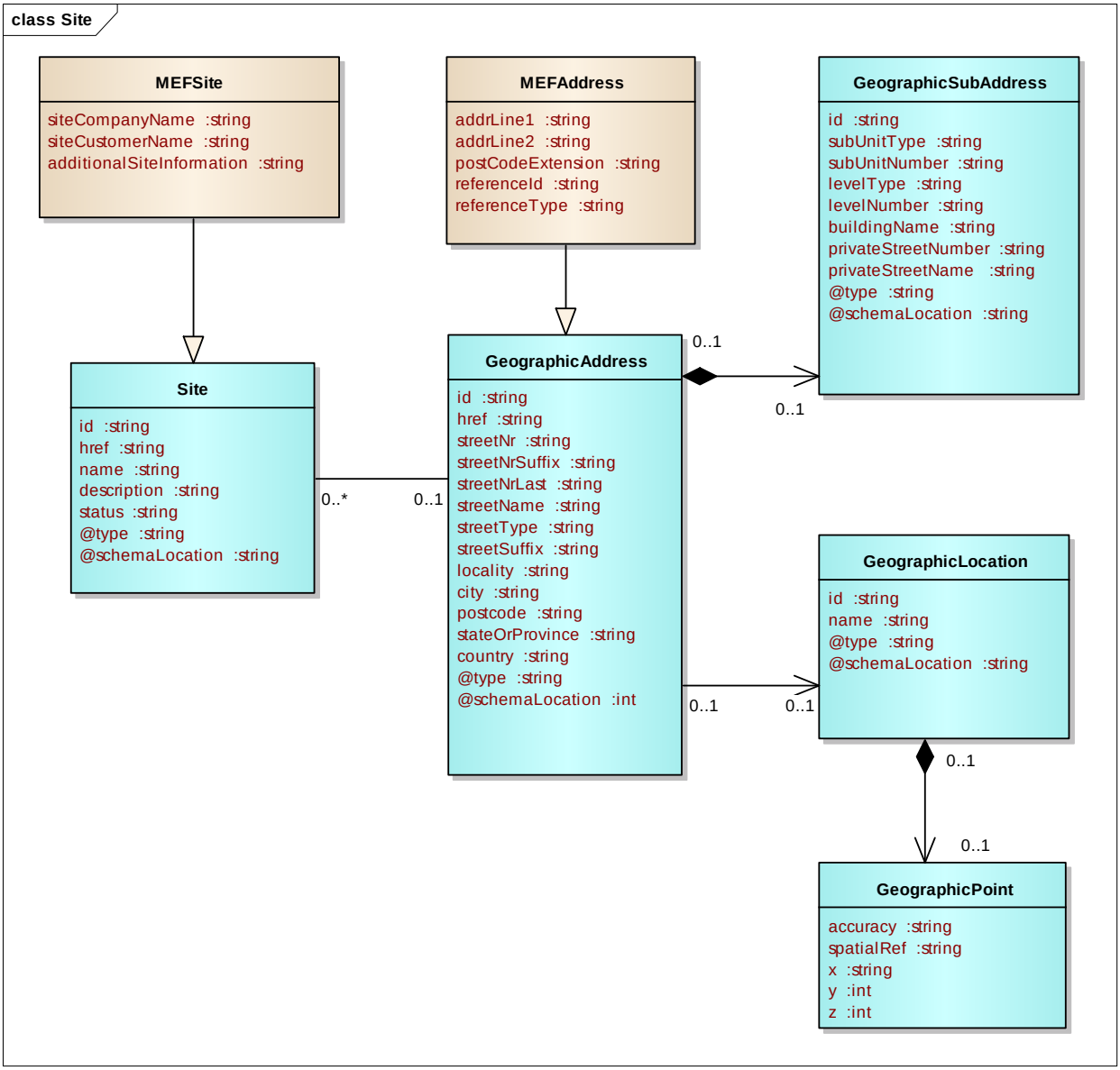

Figure 3 – Site Resource Model

174 5.4 Product Offering Qualification Resource Model

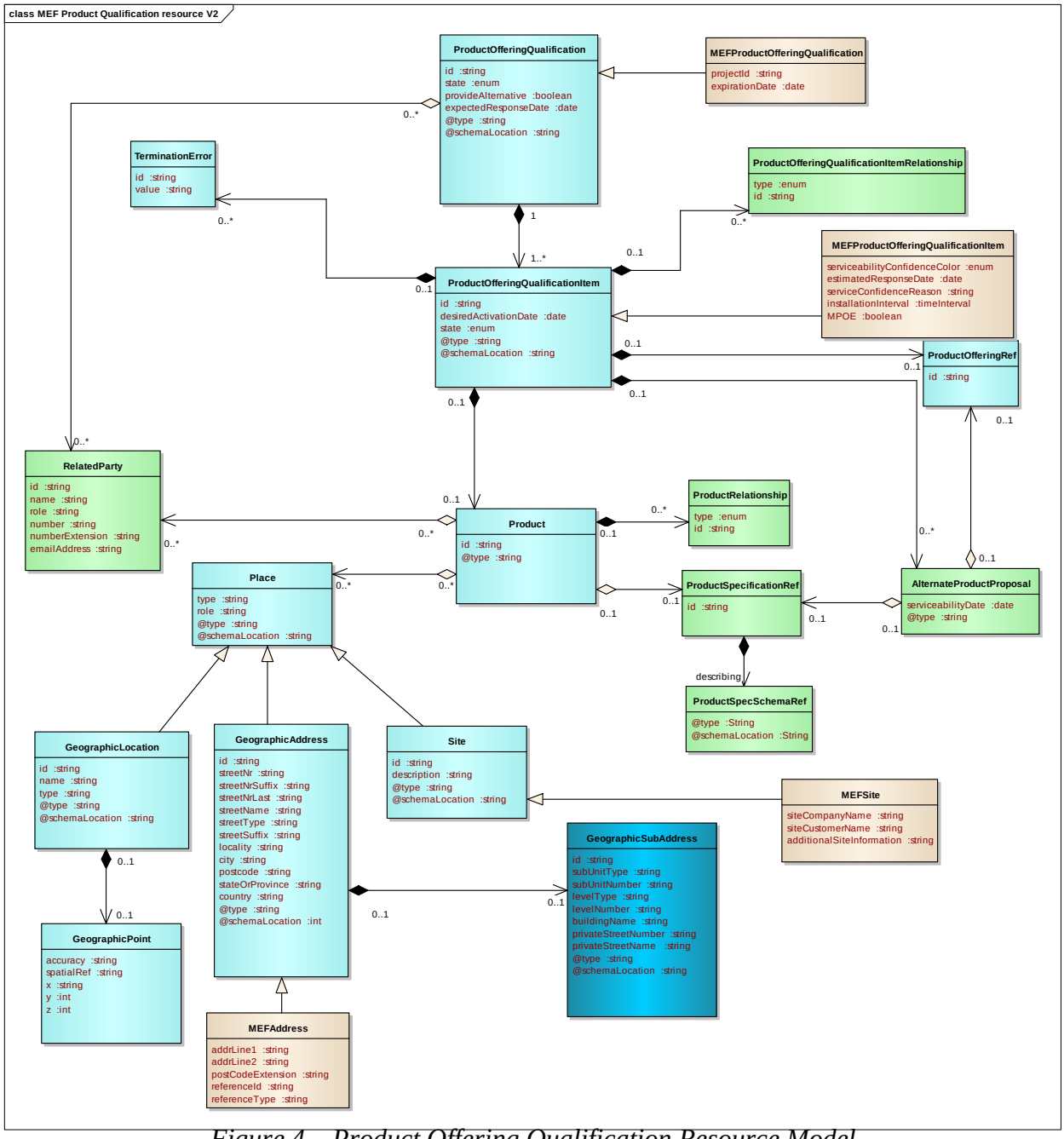

Figure 4 – Product Offering Qualification Resource Model

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6. State Diagram

Following diagram shows the state machine for a Product Offering Qualification:

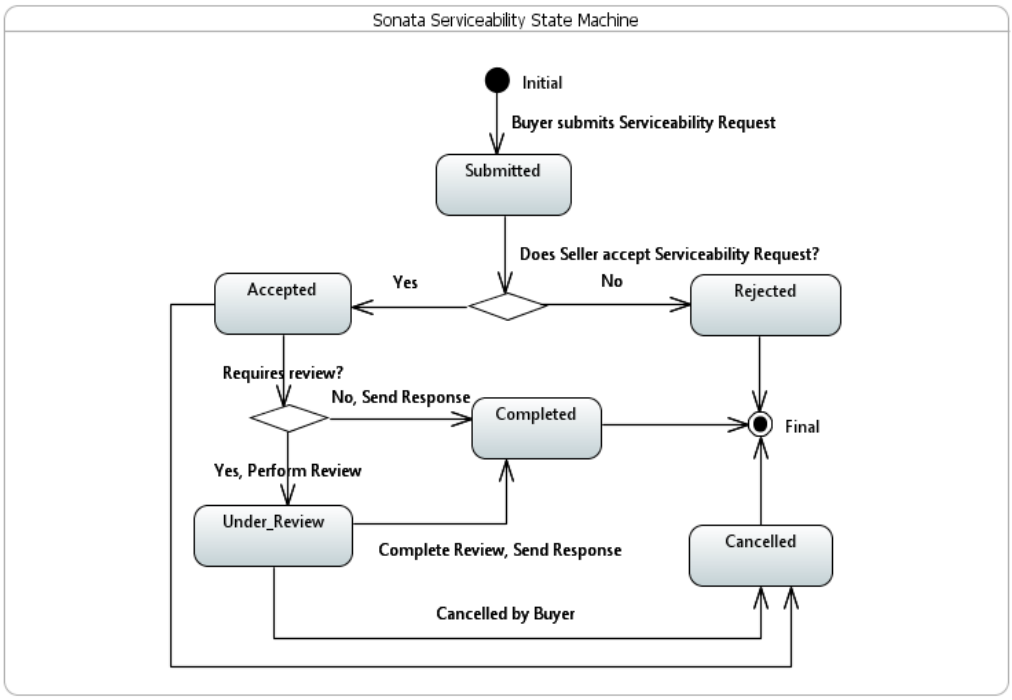

Figure 5 – Product Offering Qualification State Machine

7. Notifications

No notifications are supported over this API.

8. Data mapping between IPS model and API resource model:

IPS Class Model	Ethernet Serviceability Technical Specification	API resource or sub-resource	API attribute
Product Offering Qualification			
	id	ProductOfferingQualification	id
	state	ProductOfferingQualification	state
	projectId	MEFProductOfferingQualification	projectId
	Order Date	ProductOfferingQualification	provideAlternative
	provideAlternative	MEFProductOfferingQualification	expirationDate
	expirationDate	ProductOfferingQualification	state
	expectedResponseDate	ProductOrder	requestedCompletionDate

IPS Class Model	Ethernet Serviceability Technical Specification	API resource or sub-resource	API attribute
Product Offering Qualification Item			
	id	ProductOfferingQualificationItem	id
	state	ProductOfferingQualificationItem	state
	MPOE	MEFProductOfferingQualificationItem	MPOE
	serviceabilityConfidence	MEFProductOfferingQualificationItem	serviceabilityConfidence
	installationInterval	MEFProductOfferingQualificationItem	installationInterval
	desiredActivationDate	ProductOfferingQualificationItem	desiredActivationDate
Product Offering Qualification Item Relationship			
	type	ProductOfferingQualificationItemRelationship	type
	id	ProductOfferingQualificationItemRelationship	id
Product Offering			
	id	ProductOfferingRef	id
Product Relationship			
	type	ProductRelationship	type
	id	ProductRelationship	id
Alternate Product Proposal			
	serviceabilityDate	AlternateProductProposal	serviceabilityDate
RelatedParty			
	id	RelatedParty	id
	role	RelatedParty	role
	name	RelatedParty	name
	emailAddress	RelatedParty	emailAddress
	number	RelatedParty	number
	numberExtension	RelatedParty	numberExtension
Place			
	type	Place	role
	id	Place	type
Site			
	siteCompanyName	MEFSite	siteCompanyName
	id	Site	id
	siteCustomerName	MEFSite	siteCustomerName
	additionnalSiteInformation	MEFSite	additionnalSiteInformation

IPS Class Model	Ethernet Serviceability Technical Specification	API resource or sub-resource	API attribute
	siteDescription	Site	description
	role	Place	role
	type	Place	type
GeographicAddress			
	id	GeographicAddress	id
	streetNr	GeographicAddress	streetNr
	streetNrSuffix	GeographicAddress	streetNrSuffix
	streetNrLast	GeographicAddress	streetNrLast
	streetNrLastSuffix	GeographicAddress	streetNrLastSuffix
	streetName	GeographicAddress	streetName
	streetType	GeographicAddress	streetType
	streetSuffix	GeographicAddress	streetSuffix
	locality	GeographicAddress	locality
	postcode	GeographicAddress	postcode
	postcodeExtension	GeographicAddress	postcodeExtension
	country	GeographicAddress	country
	stateOrProvince	GeographicAddress	stateOrProvince
	referenceType	MEFAddress	referenceType
	referenceId	MEFAddress	referenceId
	addrLine1	MEFAddress	addrLine1
	addrLine2	MEFAddress	addrLine2
	city	GeographicAddress	city
	role	Place	role
	type	Place	type
Geographic Sub Address			
	id	GeographicSubAddress	id
	subUnitType	GeographicSubAddress	subUnitType
	subUnitNr	GeographicSubAddress	subUnitNr
	levelType	GeographicSubAddress	levelType
	levelNr	GeographicSubAddress	levelNr
	buildingName	GeographicSubAddress	buildingName
	privateStreetNr	GeographicSubAddress	privateStreetNr
	privateStreetName	GeographicSubAddress	privateStreetName
Geographic Point			

IPS Class Model	Ethernet Serviceability Technical Specification	API resource or sub-resource	API attribute
	id	GeographicLocation	id
	latitude	GeographicPoint	x
	longitude		y
	role	place	role
	type	place	type

182 *Table 2 – Class attribute to API attribute mappings*

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9. JSON Representation Samples

9.1 Geographic Address

Illustrated below is a JSON representation of an example of a ‘GeographicAddress’ resource object:

```
{
    "id": "9090",
    "streetNr": "225",
    "streetNrSuffix": "B",
    "streetName": " Strathmore",
    "streetType": "Terrace",
    "postcode": "5004",
    "city": "Brighton",
    "stateOrProvince": "SA",
    "country": "Australia",
    "geographicLocationRefOrValue":
    {
        "id": "4164",
        "href": "https://host:port/location/geographicLocation/4164",
        "name": "ExactPlace",
        "type": "point",
        "geoPoint": [
            {
                "accuracy": "",
                "spatialRef": "WGS84",
                "x": " 1.430937",
                "y": " 43.597208",
                "z": ""
            }
         ]
     },
  "addrLine1": "225B Strathmore Terrace",
  "addrLine2": "5004-78 Brighton, SA, Australia",
  "postCodeExtension": "78",
  "referenceId": "AZE456",
  "referenceType": "IGNCode",
  "@type": "MEFGographicAddress",
  "@schemaLocation": " http://wiki.mef.net/pages/..."
}
```

9.2 Address Validation

We provide below the JSON representations of examples of an 'AddressValidation' resource object:

Exhibit 1: Validation result is a success

```
{
  "id":"125",
  "status":"done",
  "validationDate":"2017-07-11T13:58:24.975Z",
  "validationResult":"partial",
  "provideaAlternative":true,
  "validAddress":{
    "id":"78963",
    "streetNr":"60",
    "streetName":"Spear",
    "postcode":"94106",
    "city":"San Francisco",
    "stateOrProvince":"CA",
    "country":"US"
```

```
  },
}
```

192 Exhibit 2: validation result is partial … several addresses match result:

```
{
  "id":"126",
  "status":"done",
  "validationDate":"2017-07-11T13:58:24.975Z",
  "validationResult":"partial",
  "provideaAlternative":true,
  "validAddress":{
     "streetNr":"60",
     "streetName":"Spear",
     "postcode":"94106",
     "city":"San Francisco",
     "stateOrProvince":"CA",
     "country":"US"
  },
  "alternateAddress":[
    {
      "id":"456987",
      "streetNr":"60",
      "streetNrSuffix":"A",
      "streetName":"Spear",
      "streetType":"Street",
      "postcode":"94105",
      "city":"san Francisco",
      "stateOrProvince":"CA",
      "country":"US"
    },
    {
      "id":"499999",
      "streetNr":"60",
      "streetNrSuffix":"B",
      "streetName":"Spare",
      "streetType":"Street",
      "postcode":"94105",
      "city":"san Francisco",
      "stateOrProvince":"CA",
      "country":"US"
    }
  ]
}
```

193 Exhibit 3: Validation result is a fail – no address matches and no alternative found

```
{
  "id":"127",
  "status":"done",
  "validationDate":"2017-07-11T13:58:24.975Z",
  "validationResult":"fail",
  "provideaAlternative":true,
  "validAddress":{
     "id":"78963",
     "streetNr":"60",
     "streetName":"Speart",
     "postcode":"94108",
     "city":"San Francicoso",
     "stateOrProvince":"CA",
     "country":"US"
  },
}
```

9.3 Site Resource

We provide below the JSON representations of examples of a 'Site' resource object:


```
{
  "id":"456",
  "name":"Orange Plano",
  "description":"Orange equipment in Plano, TX",
  "status":"Existing",
  "geographicAddress":{
    "id":"123",
    "streetNr":"45",
    "streetName":"Powell",
    "streetType":"Avenue",
    "city":"Plano",
    "postcode":"54369",
    "stateOrProvince":"TX",
    "country":"US",
    "geographicSubAddress":{
      "id":"17",
      "levelNumber":"17",
      "buildingName":"Beltre Building"
    },
    "postCodeExtension":"77"
  },
  "siteCompanyName":"A&M Lease Company",
  "siteCustomerName":"Air France",
  "additionnalSiteInformation":"No comment",
  "@type":"MEFSite",
  "@schemaLocation":" https://wiki.mef.net/pages/...."
}
```


9.4 Product Offering Qualification

We provide below the JSON representation of an example of a ProductOfferingQualification resource object:


```
{
  "id":"12",
  "state":"COMPLETED",
  "provideAlternative":false,
  "expectedResponseDate":"2017-07-21",
  "projectId":"12-123-2017",
  "expirationDate":"2017-08-19",
  "@type":"MEFProductOfferingQualification",
  "@schemaLocation":" http://wiki.mef.net/pages/....",
  "relatedParty":[
    {
      "id":"100",
      "name":"Orange France",
      "role":"buyer",
      "number":"973-3-9775555"
    },
    {
      "id":"1",
      "name":"ECITele",
      "role":"seller",
      "number":"973-3-926-2222"
    }
  ],
  "productOfferingQualificationItem":[
    {
      "id":"1",
      "desiredActivationDate":"2017-07-20",
      "state":"COMPLETED",
      "serviceabilityConfidence":"GREEN",
```

```
      "estimatedResponseDate":"2017-07-20",
      "serviceConfidenceReason":"checked by Siva himself",
      "installationInterval":{
        "amount":5,
        "timeUnit":"DAYS"
      },
      "MPOE":true,
      "product":{
        "productSpecificationRef":{
          "id":" UNISpec ",
          "describing":{
            "@type":"UNISPEC",
            "@schemaLocation":" http://mef/productSpec/qualification/UNISpec "
          },
          "portSpeed":{
            "amount":10,
            "unit":"Mbps"
          },
          "accessTechnology":"DIRECT_FIBER",
          "interfaceType":"ELECTRICAL",
          "accessMedium":"FIBER",
          "physicalLayer":"10BASE-TX"
        }
      },
      "relatedParty":[
        {
          "name":"Jessie",
          "role":"UNI Site Contact",
          "numberExtension":"+972",
          "number":"4758978555",
          "emailAddress":"Jessie@ airfrance.com"
        }
      ],
      "geographicAddress":[
        {
          "role":"UNI Site",
          "type":"FIELDED",
          "streetNr":"60",
          "streetName":"Ha-Yarkon",
          "streetType":"Street",
          "streetSuffix":"A",
          "city":"Tel Aviv-Yafo",
          "postcode":"78963",
          "stateOrProvince":"Tel Aviv Area",
          "country":"Israel",
          "geographicSubAddress":{
            "type":"Level",
            "name":"Air France Office",
            "levelType":"Floor",
            "levelNumber":"11"
          }
        }
      ]
    },
    {
      "id":"2",
      "desiredActivationDate":"2017-07-20",
      "state":"COMPLETED",
      "serviceabilityConfidence":"YELLOW",
      "estimatedResponseDate":"2017-07-20",
      "serviceConfidenceReason":"UNICEendPoint needs to be checked",
      "installationInterval":{
      "amount":15,
      "timeUnit":"DAYS"
    },
    "MPOE":true,
    "product":{
      "productSpecificationRef":{
        "id":" accessELineSpec ",
        "describing":{
          "@type":"UNISPEC",
```

```
          "@schemaLocation":" http://mef/productSpec/qualification/accessELineSpec "
        },
        "mtuSize":1456,
        "colorForwardingEnabled":true
      }
    },
    "relatedParty":[
      {
        "name":"Fahim",
        "role":"ENNI Site Contact",
        "numberExtension":"+972",
        "number":"4758978dsr",
        "emailAddress":"Fahim@ airfrance.com"
      }
    ]
  },
    {
      "id":"3",
      "desiredActivationDate":"2017-07-20",
      "state":"COMPLETED",
      "serviceabilityConfidence":"GREEN",
      "estimatedResponseDate":"2017-07-20",
      "serviceConfidenceReason":"Automatic processing",
      "installationInterval":{
        "amount":1,
        "timeUnit":"DAYS"
      },
      "MPOE":true,
      "product":{
        "productSpecificationRef":{
          "id":" ENNICeEndpointSpec ",
          "describing":{
            "@type":" ENNICeEndpointSpec ",
            "@schemaLocation":
              "http://mef/productSpec/qualification/ENNICeEndpointSpec"
          },
        "productRelationship":[
          {
             "type":"reliesOn",
             "id":"1217"
          }
        ],
        "ingressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Silver"
          }
        ],
        "egressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Silver"
          }
        ]
      },
      "productOfferingQualificationItemRelationship":[
        {
          "type":"Relies",
          "id":"2"
        }
      ]
    }
  },
```

```
    {
      "id":"4",
      "desiredActivationDate":"2017-07-20",
      "state":"COMPLETED",
      "serviceabilityConfidence":"YELLOW",
      "estimatedResponseDate":"2017-07-20",
      "serviceConfidenceReason":"Failed to complete verification",
      "installationInterval":{
        "amount":15,
        "timeUnit":"DAYS"
      },
      "MPOE":true,
      "product":{
        "productSpecificationRef":{
          "id":" UNICeEndpointSpec ",
          "describing":{
            "@type": "UNICeEndpointSpec",
            "@schemaLocation":
               "http://mef/productSpec/qualification/UNICeEndpointSpec"
          },
          "ingressBWProfile":[
            {
              "cosId":"Medium",
              "cir":{
                "amount":10,
                "unit":"Mbps"
              },
              "sellerCosName":"Silver"
            }
          ],
          "egressBWProfile":[
            {
              "cosId":"Medium",
              "cir":{
                "amount":10,
                "unit":"Mbps"
              },
              "sellerCosName":"Silver"
            }
          ]
        },
        "productOfferingQualificationItemRelationship":[
          {
            "type":"Relies",
            "id":"1"
          },
          {
            "type":"Relies",
            "id":"2"
          }
        ]
      }
    }
  ]
}
```


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10. API Operations

In the following tables, the use cases and operations defined in this specification are mapped to the API operations

10.1 Geographic Address API

Use Case	Operation on Entities	Uniform API Operation	Description
UC_SONATA_SERVICEABILITY_0003	getAddress	GET Resource	GET must be used to retrieve a representation of a resource.

Table 3 – GeographicAddress API Operations

RETRIEVE A GEOGRAPHIC ADDRESS

`GET /geographicAddress/{id}`

Description

This operation is used to retrieve a geographic address entity

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

401	Unauthorized
403	Forbidden
404	Not Found
405	Method Not Allowed
408	Request Time-out

Usage Samples

Request

```
GET /geographicAddressManagement/geographicAddress/9090
Accept: application/json
```

Response

```
{
  "id": "9090",
  "streetNr": "225",
  "streetNrSuffix": "B",
  "streetName": " Strathmore",
  "streetType": "Terrace",
  "postcode": "5004",
  "city": "Brighton",
  "stateOrProvince": "SA",
```

```
  "country": "Australia",
  "geographicLocationRefOrValue":
  {
    "id": "4164",
    "href": "https://host:port/location/geographicLocation/4164",
    "name": "ExactPlace",
    "type": "point",
    "geoPoint":[
      {
        "accuracy": "",
        "spatialRef": "WGS84",
        "x": "1.430937",
        "y": "43.597208",
        "z": ""
       }
    ]
  },
  "addrLine1": "225B Strathmore Terrace",
  "addrLine2": "5004-78 Brighton, SA, Australia",
  "postCodeExtension": "78",
  "referenceId": "AZE456",
  "referenceType": "IGNCode",
  "@type": "MEFGographicAddress",
  "@schemaLocation": " http://wiki.mef.net/pages/..."
}
```


10.2 Address Validation API

Use Case	Operation on Entities	Uniform API Operation	Description
UC_SONATA_SERVICEABILITY_0005 UC_SONATA_SERVICEABILITY_0006	getAddressValidations getAddressValidation	GET Resource	GET must be used to retrieve a representation of a resource.
UC_SONATA_SERVICEABILITY_0004	validateAddress	POST Resource	POST must be used to create a new resource.

Table 4 – AddressValidation API Operations

RETRIEVE ADDRESS VALIDATION

`GET /addressValidation/{id}`

Description

This operation is used to retrieve an addressValidation entity

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden

404	Not Found
405	Method Not Allowed
408	Request Time-out

Usage Samples

Request

```
GET /geographicAddressManagement/addressValidation/125
Accept: application/json
```

Response

```
{
  "id":"125",
  "status":"done",
  "validationDate":"2017-07-11T13:58:24.975Z",
  "validationResult":"partial",
  "provideaAlternative":true,
  "validAddress":{
    "id":"78963",
    "streetNr":"60",
    "streetName":"Spear",
    "postcode":"94106",
    "city":"San Francisco",
    "stateOrProvince":"CA",
    "country":"US"
  }
}
```

POST ADDRESS VALIDATION

`POST /addressValidation`

Description

This operation creates an addressValidation entity

Behavior

- Standard 201 response if address validation entity is created

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity

Note: This API could be used in synchronous/asynchronous context.

If the API Supplier is able – on the fly – to provide requested information it is possible to put this information in the POST response. If not, he will only provide an address validation id and the API user will use the GET operation to retrieve the result later.

Usage Samples

Request

```
POST /geographicAddressManagement/addressValidation
Content-Type: application/json
{
  "provideaAlternative": true,
  "validAddress":{
    "streetNr":"60",
    "streetName":"Spear",
    "postcode":"94106",
    "city":"San Francisco",
    "stateOrProvince":"CA",
    "country":"US"
  },
}
```

Response

```
201
{
   "id":"125"
}
```

10.3 Site API

Use Case	Operation on Entities	Uniform API Operation	Description
UC_SONATA_SERVICEABILITY_0001 UC_SONATA_SERVICEABILITY_0002	getSites getSite	GET Resource	GET must be used to retrieve a representation of a resource.

Table 5 – Site API Operations

LIST SITE

`GET /site?{filtering}`

Description

This operation is used to retrieve site(s) corresponding to search criteria(s)

The response will provide site summary

Only following attributes could be used as search criteria:

- name
- status
- streetNr
- streetName
- streetType
- city
- postcode
- country
- siteCustomerName
- siteCompanyName

Only following attributes will be retrieved in summary view:

- id
- name
- status
- streetNr
- streetName
- streetType
- city
- postcode
- country
- siteCustomerName
- siteCompanyName

276

277 **Behavior**

278 • Returns HTTP/1.1 status code 200 if the request was successful

279 Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out

280 **Usage Samples**

281 **Request**

```
GET /siteManagement/site?state=existing&city=Paris&siteCustomerName=Bank of
America&country=France
Accept: application/json
```

282 **Response**

```
[
  {
    "id": "10",
    "name": "BOA Paris Champs-Elysées",
    "status": "Planned",
    "siteCustomerName": "Bank of America",
    "geographicAddress": {
      "streetNr": "45",
      "streetName": "Champs-Elysées",
      "streetType": "Avenue",
      "city": "Paris",
      "postcode": "75002",
      "country": "France"
    }
  },
  {
    "id": "986",
    "name": " BOA Paris Montparnasse ",
    "status": "Former",
    "siteCompanyName": " BOA Paris Tour Montparnasse ",
    "siteCustomerName": " Bank of America ",
    "geographicAddress": {
      "streetNr": "1",
      "streetName": "Montparnasse",
      "streetType": "Avenue",
      "city": "Paris",
      "postcode": "75006",
      "country": "France"
    }
  }
]
```

283

284

RETRIEVE SITE

`GET /site/{id}`

Description

This operation is used to retrieve a site entity

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out

Usage Samples

Request

```
GET /siteManagement/site/456
Accept: application/json
```

Response


```
{
  "id":"456",
  "name":"Orange Plano",
  "description":"Orange equipment in Plano, TX",
  "status":"Existing",
  "geographicAddress":{
    "id":"123",
    "streetNr":"45",
    "streetName":"Powell",
    "streetType":"Avenue",
    "city":"Plano",
    "postcode":"54369",
    "stateOrProvince":"TX",
    "country":"US",
    "geographicSubAddress":{
       "id":"17",
       "levelNumber":"17",
       "buildingName":"Beltre Building"
    },
    "postCodeExtension":"77"
  },
  "siteCompanyName":"A&M Lease Company",
  "siteCustomerName":"Air France",
  "additionnalSiteInformation":"No comment",
  "@type":"MEFSite",
  "@schemaLocation":"http://wiki.mef.net/pages/...."
}
```

10.4 Product Offering Qualification API

Use Case	Operation on Entities	Uniform API Operation	Description
UC_SONATA_SERVICEABILITY_0008 UC_SONATA_SERVICEABILITY_0009	getProductOfferingQualifications getProductOfferingQualification	GET Resource	GET must be used to retrieve a representation of a resource.
UC_SONATA_SERVICEABILITY_0007	createProductOfferingQualification	POST Resource	POST must be used to create a new resource.

Table 6 – ProductOfferingQualification API Operations

RETRIEVE PRODUCT OFFERING QUALIFICATION

`GET /productOfferingQualification/{id}`

Description

This operation is used to retrieve a ProductOfferingQualification entity

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found
405	Method Not Allowed
408	Request Time-out

Usage Samples

This sample illustrates an productOffering qualification with alternate product proposition.

Request

```
GET /productOfferingQualificationManagement/productOfferingQualification/13
Accept: application/json
```

Response

```
{
  "id":"13",
  "state":"COMPLETED",
  "provideAlternative":true,
  "expectedResponseDate":"2017-07-21",
  "projectId":"12-123-2017",
```

```
  "expirationDate":"2017-08-19",
  "@type":"MEFProductOfferingQualification",
  "@schemaLocation":" http://wiki.mef.net/pages/....",
  "relatedParty":[
    {
      "id":"100",
      "name":"Orange France",
      "role":"buyer",
      "number":"973-3-9775555"
    },
    {
      "id":"1",
      "name":"ECITele",
      "role":"seller",
      "number":"973-3-926-2222"
    }
  ],
  "productOfferingQualificationItem":[
    {
      "id":"1",
      "desiredActivationDate":"2017-07-20",
      "state":"COMPLETED",
      "serviceabilityConfidence":"RED",
      "estimatedResponseDate":"2017-07-21",
      "product":{
        "productSpecificationRef":{
          "id":" UNISpec ",
          "describing":{
            "@type":"UNISPEC",
            "@schemaLocation":" http://mef/productSpec/qualification/UNISpec "
          },
          "portSpeed":{
            "amount":10,
            "unit":"Mbps"
          },
          "accessTechnology":"DIRECT_FIBER",
          "interfaceType":"ELECTRICAL",
          "accessMedium":"FIBER",
          "physicalLayer":"100BASE-TX"
        }
      },
      "relatedParty":[
        {
          "name":"Jessie",
          "role":"UNI Site Contact",
          "numberExtension":"+972",
          "number":"4758978555",
          "emailAddress":"Jessie@airfrance.com"
        }
      ],
      "geographicAddress":[
        {
          "role":"UNI Site",
          "type":"FIELDED",
          "streetNr":"60",
          "streetName":"Ha-Yarkon",
          "streetType":"Street",
          "streetSuffix":"A",
          "city":"Tel Aviv-Yafo",
          "postcode":"78963",
          "stateOrProvince":"Tel Aviv Area",
          "country":"Israel",
          "geographicSubAddress":{
```

```
            "type":"Level",
            "name":"Air France Office",
            "levelType":"Floor",
            "levelNumber":"11"
          }
        }
      ],
      "alternateProductProposal":[
        {
          "serviceabilityDate":"2017-07-21",
          "productSpecificationRef":{
            "id":" UNISpec ",
            "describing":{
              "@type":" UNISpec ",
             "@schemaLocation":"http://mef/productSpec/qualification/UNISpec"
            },
            "portSpeed":{
              "amount":1,
              "unit":"Mbps"
            },
            "accessTechnology":"BONDED_COPPER",
           "interfaceType":"ELECTRICAL",
            "accessMedium":"TWISTED_PAIR",
            "physicalLayer":"10BASE-TX"
          }
        }
      ]
    }
  ]
}
```


LIST PRODUCT OFFERING QUALIFICATION

`GET /productOfferingQualification?{filtering}`

Description

This operation is used to retrieve ProductOfferingQualification(s) corresponding to search criteria(s)

Only following attributes could be used as search criteria:

- state
- expectedResponseDate
- projectId

Only following attributes will be retrieved in summary view:

- id
- state
- expectedResponseDate
- projectId

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out

Usage Samples

Request

```
GET /productOfferingQualificationManagement/productOfferingQualification?projectId=Air France
Accept: application/json
```

Response

```
[
  {
    "id": "145",
    "state": "COMPLETED",
    "expectedResponseDate": "2017-07-20",
    "projectId": " Air France "
  },
  {
    "id": "123",
    "state": "UNDER_REVIEW",
    "expectedResponseDate": "2017-07-25",
    "projectId": " Air France "
  },
  {
    "id": "214",
    "state": "UNDER_REVIEW",
    "expectedResponseDate": "2017-08-02",
    "projectId": " Air France "
  },
{
    "id": "12",
    "state": "REJECTED",
    "expectedResponseDate": "2016-09-25",
    "projectId": " Air France "
  }
]
```

POST PRODUCT OFFERING QUALIFICATION

`POST /productOfferingQualification`

Description

This operation creates a product offering qualification entity

Behavior

- Standard 201 response if product order created

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity (see below)

Specific business errors will be encapsulated in HTTP Response 422 Unprocessable entity:

- 100: A relatedParty – at productOfferingQualification level – with a role 'Buyer' must be provided

Note: This API could be used in synchronous/asynchronous context.

If the API Supplier is able – on the fly – to provide requested information it is possible to put this information in the POST response. If not, he will only provide a productOfferingQualification id and the API user will use the GET operation to retrieve the result later.

Usage Samples

Request

```
{
  "provideAlternative":false,
  "expectedResponseDate":"2017-07-21",
  "projectId":"12-123-2017",
  "@type":"MEFProductOfferingQualification",
  "@schemaLocation":" http://wiki.mef.net/pages/....",
  "relatedParty":[
    {
      "id":"100",
      "name":"Orange France",
      "role":"buyer",
      "number":"973-3-9775555"
    },
    {
      "id":"1",
      "name":"ECITele",
      "role":"seller",
      "number":"973-3-926-2222"
    }
  ],
  "productOfferingQualificationItem":[
    {
      "id":"1",
      "desiredActivationDate":"2017-07-20",
      "product":{
        "productSpecificationRef":{
          "id":" UNISpec ",
          "describing":{
            "@type":"UNISPEC",
            "@schemaLocation":" http://mef/productSpec/qualification/UNISpec "
          },
          "portSpeed":{
```

```
            "amount":10,
            "unit":"Mbps"
          },
          "accessTechnology":"DIRECT_FIBER",
          "interfaceType":"ELECTRICAL",
          "accessMedium":"FIBER"
        }
      },
      "relatedParty":[
        {
          "name":"Jessie",
          "role":"UNI Site Contact",
          "numberExtension":"+972",
          "number":"4758978555",
          "emailAddress":"Jessie@ airfrance.com"
        }
      ],
      "geographicAddress":[
        {
          "role":"UNI Site",
          "type":"FIELDED",
          "streetNr":"60",
          "streetName":"Ha-Yarkon",
          "streetType":"Street",
          "streetSuffix":"A",
          "city":"Tel Aviv-Yafo",
          "postcode":"78963",
          "stateOrProvince":"Tel Aviv Area",
          "country":"Israel",
          "geographicSubAddress":{
            "type":"Level",
            "name":"Air France Office",
            "levelType":"Floor",
            "levelNumber":"11"
          }
        }
      ]
    },
    {
      "id":"2",
      "desiredActivationDate":"2017-07-20",
      "product":{
        "productSpecificationRef":{
          "id":" accessELineSpec ",
          "describing":{
            "@type":"UNISPEC",
            "@schemaLocation":" http://mef/productSpec/qualification/ accessELineSpec "
          },
          "mtuSize":1456,
          "colorForwardingEnabled":true
        }
      },
      "relatedParty":[
        {
          "name":"Fahim",
          "role":"ENNI Site Contact",
          "numberExtension":"+972",
          "number":"4758978dsr",
          "emailAddress":"Fahim@ airfrance.com"
        }
      ]
    },
    {
      "id":"3",
      "desiredActivationDate":"2017-07-20",
      "product":{
        "productSpecificationRef":{
          "id":" ENNICeEndpointSpec ",
          "describing":{
            "@type":" ENNICeEndpointSpec ",
            "@schemaLocation":" http://mef/productSpec/qualification/ENNICeEndpointSpec "
```

```
        },
        "productRelationship":[
          {
            "type":"reliesOn",
            "id":"1217"
          }
        ],
        "ingressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Silver"
          }
        ],
        "egressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Silver"
          }
        ]
      },
      "productOfferingQualificationItemRelationship":[
        {
          "type":"Relies",
          "id":"2"
        }
      ]
    }
  },
  {
    "id":"4",
    "desiredActivationDate":"2017-07-20",
    "product":{
      "productSpecificationRef":{
        "id":" UNICeEndpointSpec ",
        "describing":{
          "@type":" UNICeEndpointSpec ",
          "@schemaLocation":" http://mef/productSpec/qualification/UNICeEndpointSpec "
        },
        "ingressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Silver"
          }
        ],
        "egressBWProfile":[
          {
            "cosId":"Medium",
            "cir":{
              "amount":10,
              "unit":"Mbps"
            },
            "sellerCosName":"Bronze"
          }
        ]
      },
      "productOfferingQualificationItemRelationship":[
        {
          "type":"Relies",
          "id":"1"
```

```
            },
            {
              "type":"Relies",
              "id":"2"
            }
          ]
        }
      }
    ]
}
```

345 **Response**

```
201
{
  "id": "12"
}
```

346

347

11. Appendix – Product Specification Description

11.1 Product Specification management in the API

The productOfferingQualification API is product-agnostic. The product specification information is managed with an API extension pattern. This pattern allows distinguishing 2 types of data:

- Catalog information: What are the product specification attributes? What is the attribute format? What is the cardinality of each attribute? In case of a predefined list, what are the values?
- Qualification-instantiated productSpec description: What are the attributes values for this productOffering qualification? These values should be filled accordingly to catalog information.

The pattern to describe the data is described in the following 3 steps:

Step 1: Identifying the productSpec

Basically, let's assume a productOfferingQualifcationItem is describing the productOffering Qualifcation of a productSpecification .

The first thing is to identify this productSpecification for the seller by means of an *identifier* (this id is the catalog id of the productSpec for the seller). This id should have been communicated by the seller to the buyer during the on-boarding process between the service provider and the

partner (or on-the-fly accessible with a catalog API).

Then we need to provide additional information to retrieve catalog information used to describe this productSpec:

- @type – This is type of productSpec as defined in the MEF. In the example, id and @type have same value but nothing prevents a service provider to have id AZ45hT7 as a productSpec knows a UNISpec in the MEF.

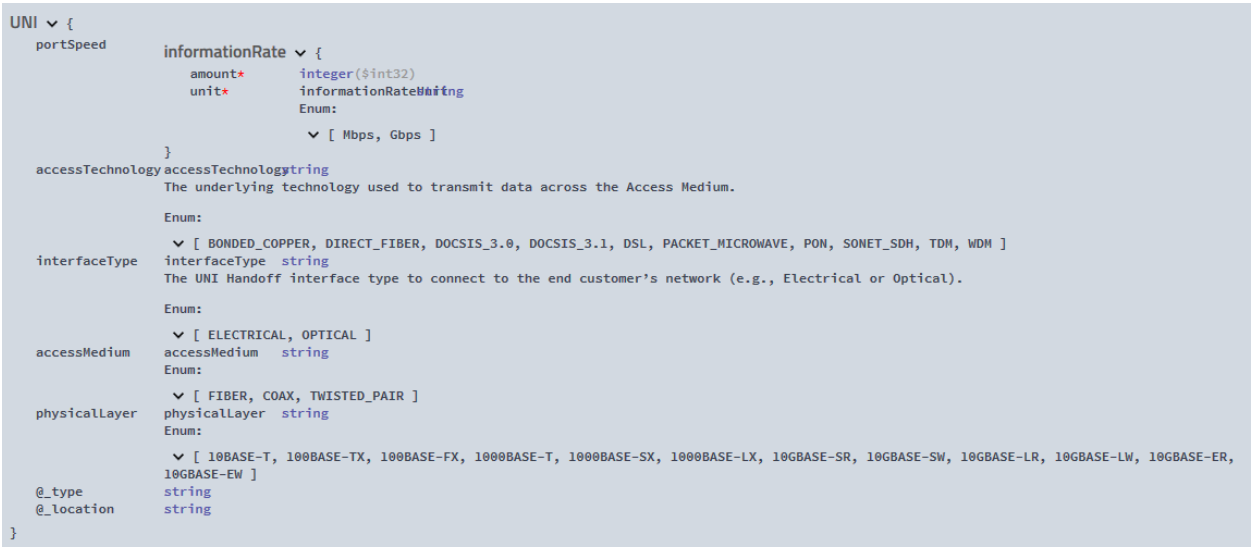
- @schemaLocation describes a URL … and this URL targets the MEF server. Following this URL we have a JSON describing the productSpec. We have there the catalog view of the product spec
- @baseType – is an additional information (optional) to indicate the productSpec category type

@type and @schemaLocation are mandatory information to be filled in the order item.

Step 2: Getting the productSpec description

If we follow the link indicated in the @schemaLocation we reach a JSON file stored in the MEF server where the serviceability productSpec catalog description is available. The buyer uses this description to describe the qualification and describe the 'to-be-qualified' product.

We have the following information for the UNI Spec:



We note also there that we have @type and @location attributes. These attributes could be optionally used by a service provider to enrich the productSpec with additional attribute specific to this service provider. Use of this extension must be agreed during the on-boarding process between the service provider and the partner.

Step 3: Describing the 'to-be-qualified' productSpec

The buyer uses the productSpec Description (step 2) to describe the instance of the 'to-be-qualified' productSpec. This description is done in a straightforward way with the list of attributes and values directly described in the product structure (described in Orange below).

```
"productOfferingQualificationItem":[
  {
    "id":"1",
    "desiredActivationDate":"2017-07-20",
    "product":{
      "productSpecificationRef":{
        "id":" UNISpec ",
        "describing":{
          "@type":"UNISPEC",
          "@schemaLocation":" http://mef/productSpec/qualification/UNISpec "
        },
        "portSpeed":{
          "amount":10,
          "unit":"Mbps"
        },
        "accessTechnology":"DIRECT_FIBER",
        "interfaceType":"ELECTRICAL",
        "accessMedium":"FIBER"
      }
```

11.2 Product Specification description

11.2.1 UNI Specification

The UNI description for product offering qualification is found here: **https://github.com/MEF-GIT/MEF-LSO-Sonata-SDK/blob/master/experimental/api/ProductSpecDescription/Serviceability/UNISpec.json**

```
UNI {
portSpeed (informationRate, optional):
accessTechnology (string, optional): = ['BONDED_COPPER', 'DIRECT_FIBER', 'DOCSIS_3.0',
'DOCSIS_3.1', 'DSL', 'PACKET_MICROWAVE', 'PON', 'SONET_SDH', 'TDM', 'WDM'],
interfaceType (string, optional): = ['ELECTRICAL', 'OPTICAL'],
accessMedium (string, optional): = ['FIBER', 'COAX', 'TWISTED_PAIR'],
physicalLayer (string, optional): = ['10BASE-T', '100BASE-TX', '100BASE-FX', '1000BASE-T',
'1000BASE-SX', '1000BASE-LX', '10GBASE-SR', '10GBASE-SW', '10GBASE-LR', '10GBASE-LW',
'10GBASE-ER', '10GBASE-EW'],
@_type (string, optional): ,
@_location (string, optional):
}
informationRate {
amount (integer): ,
unit (string): = ['Mbps', 'Gbps']
}
```

11.2.2 E-Line Specification

An E-Line is decomposed into 3 distinct product specifications:

- ELine description is found here: **https://github.com/MEF-GIT/MEF-LSO-Sonata-SDK/blob/master/experimental/api/ProductSpecDescription/Serviceability/ELineSpec.json**
- uniCeEndpoint description is found here: **https://github.com/MEF-GIT/MEF-LSO-Sonata-**

406 **SDK/blob/master/experimental/api/ProductSpecDescription/Serviceability/UNICEE**
407 **ndPointSpec.json**
408 • enniCeEndpoint description is found here: **https://github.com/MEF-GIT/MEF-LSO-**
409 **Sonata-**
410 **SDK/blob/master/experimental/api/ProductSpecDescription/Serviceability/ENNICE**
411 **EndPointSpec.json**

412 These 3 productSpecs must be ordered **together** in the **same** productOffering qualification
413 request in 3 distinct productOffering items.

414 ELine description:

```
AccessELine {
mtuSize (integer, optional):
colorForwardingEnabled (boolean, optional):,
@type (string, optional): ,
@schemaLocation (string, optional):
}
```

415 uniCeEndpoint description:

```
uniCeEndpoint {
ingressBWProfile (Array[BandwidthProfile], optional): ,
egressBWProfile (Array[BandwidthProfile], optional): ,
@type (string, optional): ,
@schemaLocation (string, optional):
}
BandwidthProfile {
cosId (string, optional):
cir (informationRate, optional):
sellerCosName (string, optional):
}
informationRate {
amount (integer): ,
unit (string): = ['Mbps', 'Gbps']
}
```

416 enniCeEndpoint description:

```
enniCeEndpoint {
ingressBWProfile (Array[BandwidthProfile], optional): ,
egressBWProfile (Array[BandwidthProfile], optional): ,
@type (string, optional): ,
@schemaLocation (string, optional):
}
BandwidthProfile {
cosId (string, optional):
cir (informationRate, optional):
sellerCosName (string, optional):
}
informationRate {
amount (integer): ,
unit (string): = ['Mbps', 'Gbps']
}
}
```

417