

TM Forum Specification

Product Inventory Management API Conformance Profile

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INTRODUCTION

The following document is the REST API Conformance for the Product Inventory API.

API DESCRIPTION

The intent of this API is to provide a consistent/standardized mechanism to query and manipulate the Product inventory.

This API allows the following operations

- Retrieve a list of Product stored in a server filtered by a given criteria
- Retrieve a specific Product in the inventory

RESOURCE MODEL CONFORMANCE

Product Inventory API MANDATORY AND OPTIONAL RESOURCES

Resource Name	Mandatory or Optional	Comments
Product	M	Only GET operation

Because POST, PATCH and DELETE operations are only for admin user and very limited UC they are not mandatories for this API

Product Inventory resource MANDATORY AND OPTIONAL ATTRIBUTES

The following table list service attribute rule for the GET response (attribute stated as mandatory must be available in GET response)

Attribute Name	Mandatory or Optional	Comments
id	M	
href	M	
description	M	
isBundle	M	
isCustomerVisible	O	
name	O	
productSerialNumber	O	
startDate	M	
status	M	
terminationDate	M	if the product is terminated
@type	O	
@schemaLocation	O	
@baseType	O	
productOrder	O	Array of productOrder

Attribute Name		Mandatory or Optional	Comments
	id	M	
	href	M	
	@referredType	O	
	orderItemId	M	
	orderItemAction	O	
productRelationship		M	Array of product relationship(s)
	type	M	
	productRef	M	id and href are mandatory
productCharacteristic		M	Array of product characteristic
	name	O	name/value are mandatory if schema extension not used.
	value	O	
	@type	O	@type/@schemaLocation are mandatory if name/value not used
	@schemaLocation	O	
realizingService		O	Array of supporting service
	id	M	
	href	M	
	name	O	
	role	O	
	@referredType	O	
supportingResource		O	Array of supporting resource
	id	M	
	href	M	
	role	O	
	name	O	
	@referredType	O	
productSpecification		M	A product specification (mandatory if the product is a productSpec instance)
	id	M	
	href	M	
	name	O	
	version	O	

Attribute Name		Mandatory or Optional	Comments
	targetResourceSchema	O	@type & @schemaLocation are mandatory if targetResourceSchema provided
productOffering		M	A product offering (mandatory if the product is a product offering instance)
	id	M	
	href	M	
	name	O	
	@REFERREDTYPE	O	
relatedParty		M	Array of related party
	id	M	
	href	M	
	role	M	
	name	O	
	validFor	O	
	@REFERREDTYPE	O	
place		M	Array of place
	id	M	
	href	M	
	name	O	
	role	O	
	@REFERREDTYPE	O	
	@SCHEMALOCATION	O	
productTerm		O	Array of product Term
	name	O	
	description	O	
	duration	O	Mandatory if validFor not filled
	validFor	O	
	@TYPE	O	
billingAccount			Array of billing Account
	id	M	
	href	M	
	name	O	

Attribute Name		Mandatory or Optional	Comments
	@referredType	O	
productPrice		M	an array of productPrice
	id	O	
	name	O	
	description	O	
	priceType	M	
	recurringChargePeriod	M	
	unitOfMeasure	O	
	@type	O	
	@schemaLocation	O	
priceAlteration		M	an array of priceAlteration
	id	O	
	name	O	
	description	O	
	priceType	M	
	recurringChargePeriod	M	
	unitOfMeasure	O	
	validFor	M	
	priority	M	
	@type	O	
	@schemaLocation	O	
price		M	
	taxIncludedAmount	O	
	dutyFreeAmount	O	Mandatory if taxIncludedAmount and taxRate not filled
	percentage	O	
	taxRate	O	
	@type		
	@schemaLocation		

API OPERATIONS CONFORMANCE

For every single resource use the following templates and define what operations are optional and what operations are mandatory.

Product Inventory MANDATORY AND OPTIONAL OPERATIONS

Uniform API Operation	Mandatory/Optional	Comments
GET	M	GET must be used to retrieve a representation of a resource

API GET FILTERING OPERATION CONFORMANCE

Definitions

Filtered Search: A filtered search can be applied using query parameters in order to obtain only the resource entities that meet the criteria defined by the filtering parameters included in the query request. Several elements can be applied to the filtered search. In that case logic, a logical AND is applied to combine the criteria (e.g.:?name=<value> &owner.id=<value>)

Filtered Response Data (Response Attribute selection): In order to apply a filter and limit the number of attributes included in the response, the GET request can include the “?fields=” query parameter. Several elements can be applied to the filter. In that case, a logical AND is applied to combine the values (e.g.:?fields=name,description will provide in the response only the values assigned to attributes name and description). Attribute selection capabilities are the same for collections retrieval and individual resource queries

Filtering in Product Inventory resource

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection	Response Attribute Selection
			First Level	N Level
id	M	M	M	M
href	NA	NA	O	O
name	O	NA	M	NA
description	O	NA	M	NA
isBundle	O	NA	O	NA
status	M	NA	M	NA
isCustomerVisible	O	NA	O	NA
productSerialNumber	M	NA	O	NA
startDate	M	NA	O	O
terminationDate	O	NA	O	O
productOrder				
id	O	NA	O	O
href	NA	NA	O	NA
productOrderItem	O	NA	O	NA

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection First Level	Response Attribute Selection N Level
productOrderAction	NA	NA	O	NA
productRelationship				
type	O	NA	O	NA
productRef	O	NA	O	NA
productCharacteristic				
name	O	NA	O	NA
value	O	NA	O	NA
realizingService				
id	O	NA	O	NA
href	NA	NA	O	NA
name	O	NA	O	NA
role	O	NA	O	NA
supportingResource				
id	O	NA	O	NA
role	O	NA	O	NA
href	NA	NA	O	NA
name	O	NA	O	NA
productSpecification				
id	M	NA	O	NA
href	NA	NA	NA	NA
version	O	NA	O	NA
name	O	NA	O	NA
productOffering				
id	M	NA	O	NA
href	NA	NA	NA	NA
name	O	NA	O	NA
productTerm				
name	NA	NA	O	NA
description	NA	NA	NA	NA
duration	NA	NA	O	NA
validFor	NA	NA	O	NA

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection First Level	Response Attribute Selection N Level
relatedParty				
id	O	NA	O	O
href	NA	NA	NA	NA
role	O	NA	O	O
name	O	NA	O	NA
validFor	NA	NA	NA	NA
place				
id	O	NA	O	NA
href	NA	NA	NA	NA
role	O	NA	O	NA
name	O	NA	O	NA
billing account				
id	O	NA	O	NA
href	NA	NA	NA	NA
name	O	NA	O	NA
ProductPrice				
id	O	NA	O	NA
name	O	NA	O	NA
description	NA	NA	NA	NA
priceType	O	NA	O	NA
recurringChargePeriod	O	NA	O	NA
unitOfMeasure	NA	NA	NA	NA
price alteration				
id	O	NA	O	NA
name	O	NA	O	NA
description	NA	NA	NA	NA
priceType	O	NA	O	NA
recurringChargePeriod	O	NA	O	NA
unitOfMeasure	NA	NA	NA	NA
validFor	O	NA	O	NA
priority	O	NA	O	NA

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection First Level	Response Attribute Selection N Level
price				
taxIncludedAmount	O	NA	O	NA
dutyFreeAmount	O	NA	O	NA
percentage	NA	NA	NA	NA
taxRate	NA	NA	NA	NA

GET /productInventory/product

Providing filtering criteria is mandatory to avoid too many answers retrieved. See example below:

- description
- relatedParty.id with an associated role
- productSpecification.id (or productOffering.id) + state
- billingAccount.id
- realizingService.id
- ...

Filtered Response Data: A filtered response can be requested for the attributes using the “?fields=” query parameter

- Any of the attributes in the first level of ProductInventory resource definition

GET /productInventory/product/{productId}

Filtered Response Data: A filtered response can be requested for the following attributes using the “?fields=” query parameter

- Any of the attributes in the first level of Product Inventory resource definition

API CONFORMANCE TEST SCENARIOS

This section describes the test scenarios required for the basic CONNECT certification of Product Inventory API.

Test Cases must be executed in the order defined for each resource because the result from one of the scenarios will be input for the next one.

Requests must be addressed to the endpoint provided for certification, specifically they must be addressed to the URI defined by the concatenation of the {apiRoot} and the specific resource, where the {apiRoot} is defined as {serverRoot}/location, being {serverRoot} the certification endpoint

Product Inventory resource TEST CASES

Nominal Scenarios

TC_ProductInventory_N1 – Retrieve a product from its id

This test case needs to have a product pre-existing already on the server side

```
{
  "id": "abhg-985",
  "href": "https://host:port/productInventoryManagement/product/abhg-985",
  "description": "product description",
  "isBundle": true,
  "isCustomerVisible": true,
  "name": "Voice Over IP Basic Bundle instance for Jean",
  "startDate": "2017-11-01T09:37:29.961Z",
  "status": "Active",
  "@baseType": "product",
  "@type": "product",
  "@schemaLocation": "https://host:port/standardProduct.json",
  "billingAccount": {
    "id": "BA1236",
    "href": "https....",
    "name": "Nice BA",
    "@referredType": "billingAccount"
  },
  "productOffering": {
    "id": "POB-100",
    "href": "https....",
    "name": "Voice Over IP Basic Bundle",
```

```
"@referredType": "string"
},
"productTerm": [
  {
    "name": "12 Months Commitment",
    "description": "12 Months Commitment",
    "duration": {
      "amount": 12,
      "units": "Months"
    },
    "validFor": {
      "startDateTime": "2017-11-01T09:37:29.961Z",
      "endDateTime": "2018-12-31T00:00:00.000Z"
    },
    "@type": "commercialCommitment"
  }
],
"productOrder": [
  {
    "id": "1023-98gh",
    "href": "https...",
    "orderItemId": "1",
    "orderItemAction": "add"
  }
],
"productRelationship": [
  {
    "type": "bundles",
    "product": "g265-tf85"
  },
  {
    "type": "bundles",
    "product": "8956-jk56"
  }
],
"relatedParty": [
  {
    "id": "45hj-8888",
    "href": "https...",
    "name": "Jean",
    "role": "buyer",
    "@referredType": "individual"
  }
],
"productPrice": [
  {
```



```
"id": "jk54",
"name": "VOIPMonthly Fee",
"description": "VOIP Bundle Monthly Fee",
"priceType": "recurring",
"recurringChargePeriod": "Months",
"priceAlteration": [
  {
    "id": "4522",
    "name": "2€ off first 6 months",
    "description": "2€ off first 6 months",
    "priceType": "recurring",
    "recurringChargePeriod": "month",
    "validFor": {
      "startDateTime": "2017-11-01T09:37:29.961Z",
      "endDateTime": "2018-06-30T00:00:00.000Z"
    },
    "priority": 1,
    "price": {
      "taxIncludedAmount": {
        "value": 2,
        "unit": "Euros"
      }
    }
  },
  {
    "taxIncludedAmount": {
      "value": 5,
      "unit": "Euros"
    },
    "taxRate": 16
  }
],
"price": {
  "taxIncludedAmount": {
    "value": 5,
    "unit": "Euros"
  },
  "taxRate": 16
}
]
```

- Send a GET message to `{apiRoot}/productInventory/product/abhg-985`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one product resource referring to `{abhg-985}`

- The body of the response for the resource with identifier { abhg-985} matches the values described above

TC_ProductInventory_N2 – Search for Product with specific characteristics

This test case needs to have another product pre-existing already on the server side:

```
{
  "id": "g265-tf85",
  "href": "https://host:port/productInventoryManagement/product/g265-tf85",
  "description": "product description",
  "isBundle": false,
  "isCustomerVisible": true,
  "name": "Voice Over IP Basic instance for Jean",
  "productSerialNumber": "N/A",
  "startDate": "2017-11-01T09:37:29.961Z",
  "status": "Active",
  "@baseType": "product",
  "@type": "product",
  "@schemaLocation": "https://host:port/standardProduct.json",
  "realizingService": [
    {
      "id": "123t-78k",
      "href": "https...",
      "role": "RealizingService"
    }
  ],
  "productOffering": {
    "id": "PO-101-1",
    "href": "https...",
    "name": "Voice Over IP Basic"
  },
  "productOrder": [
    {
      "id": "1023-98gh",
      "href": "https...",
      "orderItemId": "2",
      "orderItemAction": "add"
    }
  ],
  "characteristic": [
```

```
{
  "name":"Number",
  "value":"415 279 7439"
},
"relatedParty":[
  {
    "id":"45hj-8888",
    "href":"https...",
    "name":"Jean",
    "role":"User",
    "@referredType":"individual"
  }
],
"productSpecification":{
  "id":"PS-101",
  "href":"https...",
  "version":"1"
}
}
```

- Send a GET message to
`/{apiRoot}/productInventory/product/?relatedParty.id=45hj-8888`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes two product resources, referring to { g265-tf856} and { abhg-985}
 - The body of the response for the resource with each identifier matches the values in the corresponding original request
- Send a GET message to
`/{apiRoot}/productInventory/product/?productOffering.id= PO-101-1`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one product resource, referring to { g265-tf85}

- The response message includes all mandatory parameters
- The body of the response for the resource with identifier { g265-tf85} matches the values in the original request
- Send a GET message to
/{apiRoot}/productInventory/product/?billingAccount.id= BA1236
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one product resource, referring to { abhg-985}
 - The response message includes all mandatory parameters
 - The body of the response for the resource with identifier { abhg-985} matches the values in the original request

TC_ProductInventory_N3 – Filtered retrieval of product data

- Send a GET message to /{apiRoot}/ productInventory/product/{ abhg-985}?fields=name,status
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one productn resource, referring to { abhg-985} and including only attributes *name* (Voice Over IP Basic Bundle instance for Jean) and *status*(Active), matching the values in the original request

Notice that this test case is using parameters " name" and "status" to filter the data included in the response but any other parameter could be used

TC_ProductInventory_N4 – Filtered Search and Filtered data response

- Send a GET message to
`/{apiRoot}/productInventory/product//?realizingService.id=123t-78k &fields=id,href`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one product resource, referring to {123t-78k }
 - The body of the response for the resource with each identifier includes only attributes *id(g265-tf85)* and *href(https://host:port/productInventoryManagement/product/g265-tf85)*, matching the values in the corresponding original request

Notice that this test case is using parameters "id" and "href" to filter the data included in the response but any other parameter could be used

Error Scenarios**TC_ProductInventory_E1 – Unknown Product**

- Send a GET message to `/{apiRoot}/productInventory/product/{8}`, where {8} does not match any of the identifiers previously created in the server
- Wait for a response from the server with the following characteristics
 - Response Code 404-Not Found

ACKNOWLEDGEMENTS**VERSION HISTORY**

Version Number	Date	Release led by:	Description
1.0.0	03/04/2018	Ludovic Robert	First Release of Draft version of the Document
1.0.1	27-Jun-2018	Adrienne Walcott	Formatting/style edits prior to R18 publishing

RELEASE HISTORY

Release Number	Date	Release led by:	Description
Release 18.0	25-Jun-2018	Ludovic Robert	Initial Release

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