***Frameworx Specification***

**Product Ordering API REST Specification**

**TMF622**

**Release 14.5.0**

**November 2014**

|  |  |
| --- | --- |
| **Latest Update: Frameworx Release 14.5** | **Member Evaluation** |
| **Version 2.0.0** | **IPR Mode: RAND** |

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Direct inquiries to the TM Forum office:

240 Headquarters Plaza,

East Tower – 10th Floor,

Morristown, NJ  07960 USA

Tel No.  +1 973 944 5100

Fax No.  +1 973 944 5110

TM Forum Web Page: [www.tmforum.org](http://www.tmforum.org/)

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# Introduction

The following document is the specification of the REST API for Product Order Management. It includes the model definition as well as all available operations. Possible actions are creating, updating and retrieving Product Orders.

The Product Ordering API provides a standardized mechanism for placing a product order with all of the necessary order parameters. The API consists of a simple set of operations that interact with CRM/Order Negotiation systems in a consistent manner. A product order is created based on a product offer that is defined in a catalog. The product offer identifies the product or set of products that are available to a customer, and includes characteristics such as pricing, product options and market.

The product order references the product offer and identifies any specific requests made by the customer.

Product Ordering API manages product order resource:

* A Product Order is a type of order which can be used to place an order between a customer and a service provider or between a service provider and a partner and vice versa,
* Main Product Order attributes are its identifier, state, priority category (mass market, Enterprise, etc.) related dates (start, completion, etc.), related billing account, related parties and order items
* Main Order Items (aka order lines) attributes are the ordered offering and product characteristics with the related action to be performed (e.g. add or delete the products), state, location information for delivery.

Product ordering API performs the following operations on Product Order:

* Retrieval of a product order or a collection of product orders depending on filter criteria
* Partial update of a product order (including updating rules)
* Creation of a product order (including default values and creation rules)
* Deletion of product order (for administration purposes)
* Notification of events on product order
  + Order creation
  + Order removal
  + Order state change
  + Order value change used to notify that any data in an order has just changed
  + Order information required used to notify that some data in the order need to be filled / are missing

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

* The Order Management system has access to the commercial catalog system.

# SAMPLE USE CASES

Reader will find examples of use cases using Product Order API in “Open Digital Business Scenarios and Use Cases” document

# RESOURCE MODEL

## Managed Entity and Task Resource Models

### ProductOrder lifecycle

Here is the state machine diagram for a product order. Each order states are described in the tab below.

The order item states are the same as the order ones. Note that the order and order item states are tightly linked and need to be consistent, for example :

* Order, state : InProgress
  + Order item 1, state : InProgress (Valid)
  + Order item 2, state : Pending (Valid)
  + Order item 3, state : Held (Valid)
  + Order item 4, state : Completed (Valid until there is another order item which is NOT completed)
  + Order item 5, state : Cancelled (Not valid : if an order item is cancelled, maybe the whole order should be cancelled too)



|  |  |
| --- | --- |
| Acknowledged | The *Acknowledged* state is where an order has been received and has passed message and basic business validations. |
| In Progress | The *In Progress* state is where an order has passed the Order Feasibility check successfully and service delivery has started. |
| Cancelled | The *Cancelled* state is where an In-Flight Order has been successfully cancelled. |
| Completed | The *Completed* state is where an order has complete provision and the service is now active. |
| Rejected | The *Rejected* state is where:   * An order failed the Order Feasibility check * Invalid information is provided through the order request * The order request fails to meet business rules for ordering. |
| Pending | The *Pending* state is used when an order is currently in a waiting stage for an action/activity to be completed before the order can progress further, pending order amend or cancel assessment. In situations where Access Seeker action is required, an “information required” notification will be issued on transition into this state.  A pending stage can lead into auto cancellation of an order, if no action is taken within the defined timeframes to be described under the Agreement. |
| Held | The *Held* state is used when an order cannot be progressed due to an issue. SP has temporarily delayed completing an order to resolve an infrastructure shortfall to facilitate supply of order. Upon resolution of the issue, the order will continue to progress. |
| Failed | All Order items have failed which results in the entire Order has *Failed*. |
| Partial | Some Order items have failed and some have succeeded so the entire Order is in a *Partial* state. This provides support for partial Failure of an Order |

### ProductOrder

Here under a product order composed of 4 order lines (orderItems) :

* Line “1” : Purchasing of a new simple product that needs a physical delivery place and an appointment to be delivered
* Line “2” : Modification of a characteristic value of an already owned product, and change the user associated to this Product
* Line “3” : Purchasing of a new simple product that needs (is supported by) another already owned product (in this case for example a new product that relies on the owned mobile access product to be installed)
* Line “4” : Purchasing of a bundled product composed of two atomic products

|  |
| --- |
| {    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "externalId":"NiceNameForTheConsumer\_42",    "priority":"1",    "description":"A wonderful 42 order for brand new products",    "category":"residential",    "state":"InProgress",    "orderDate":"2013-04-12T16:42:23-04:00",    "completionDate":"2013-04-19T16:42:23-04:00",    "requestedStartDate":"2013-04-12T16:42:23-04:00",    "requestedCompletionDate":"2013-04-19T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",    "notificationContact":"emailAddr-myAddress@hotmail.com",    "note":[       {          "text":"A free text detailing the note",          "date":"2013-04-12T16:42:23-04:00",          "author":"name"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"partner",          "id":"42",          "href":"http://serverlocation:port/partyManagement/partner/42"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"Acknowledged",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],           "appointment":"http://www.doodle.com/1WCV5647438",          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{          "place":{             "href":"http://map.google.com/.../1234112GDE",             "role":"DeliveryPlace"          },             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"InProgress",          "productOffering":{             "id":"43",             "href":"http: //serverlocation: port/catalogManagement/productOffering/43"          },          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443"                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],          "productOffering":{             "id":"51",             "href":"http: //serverlocation: port/catalogManagement/productOffering/51"          },          "product":{             "id":"511",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "productRelationship":[                {                   "type":"reliesOn",                   "product":{                      "productCharacteristic":[                         {                            "name":"MSISDN",                            "value":"003467488299002"                         }                      ]                   }                }             ]          }       },       {          "id":"4",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"44",             "href":"http://serverlocation:port/catalogManagement/productOffering/Bundle44",             "bundledProductOffering":[                {                      "id":" BundledPSTN444",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledPSTN444"         },  {                      "id":" Bundled Mobile443",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledMobile443"         }             ]          },          "product":{             "productRelationship":[                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"PSTNNumber",                            "value":"003427488299002"                         }                      ]                   }                },                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"MobileNumber",                            "value":"003464553000300"                         }                      ]                   }                }             ]          }       }    ] } |

Field Descriptions :

BillingAccount: is the billingAccount to use to bill the ordered products

|  |  |
| --- | --- |
| Field | Description |
| id | Unique identifier of the billing account |
| href | Reference of the billing account |

Note: Extra-information about the order (e.g. useful to add extra delivery information that could be useful for a human process : a digicode access to a building, …).

|  |  |
| --- | --- |
| Field | Description |
| date | Date of the note |
| author | Author of the note |
| text | Text of the note |

Product Order: is a type of order which can be used to place an order between a customer and a service provider or between a service provider and a partner and vice versa.

|  |  |
| --- | --- |
| Field | Description |
| category | Used to categorize the order from a business perspective that can be useful for the OM system (e.g. “enterprise”, “residential”, ...) |
| completionDate | Date when the order was completed |
| description | Description of the product order |
| expectedCompletionDate | Expected delivery date amended by the provider |
| externalId | ID given by the consumer and only understandable by him (to facilitate his searches afterwards) |
| href | Hyperlink to access the order |
| id | ID created on repository side (OM system) |
| notificationContact | Contact attached to the order to send back information regarding this order |
| orderDate | Date when the order was created |
| priority | A way that can be used by consumers to prioritize orders in OM system (from 0 to 4 : 0 is the highest priority, and 4 the lowest) |
| requestedCompletionDate | Requested delivery date from the requestor perspective |
| requestedStartDate | Order start date wished by the requestor |
| state | State of the order : described in the state-machine diagram above |

OrderItem: Order items that have to be treated

|  |  |
| --- | --- |
| Field | Description |
| id | Identifier of the line item (generally it is a sequence number 01, 02, 03, …) |
| action | Can be “add” / “modify” / “no\_change”/ “delete” |
| state | State of the order item : described in the state machine diagram |
| appointment | Used to precise that an appointment was set up with a related party for this order item |

Place: Used to defined a place useful for the product (for example a delivery geographical place)

|  |  |
| --- | --- |
| Field | Description |
| href | Reference of a place (for instance in google map) |
| role | Role of the place (for instance delivery geographical place) |

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

May be a bundle product instantiation, in this case, it will contain the list of bundled product to instantiate

Nota: Each product to instantiate corresponds to a purchased productOffering. In case of bundles, the order of the list in the productOffering bundle must match the order of the list in the product instance bundle to deliver.

|  |  |
| --- | --- |
| Field | Description |
| id | Identifier of the owned product (useful for delete or modify command) |
| href | Reference to the owned product (useful for delete or modify command) |

ProductCharacteristic: Characteristics of the product to instantiate or to modify

|  |  |
| --- | --- |
| Field | Description |
| name | Name of the characteristic |
| value | Value of the characteristic |

ProductOffering: Ordered offering (pricing, default values, etc. are fetched by the OM directly from the catalogue). May be a bundle ProductOffering, in this case, it will contain the list of bundled offers that are ordered

|  |  |
| --- | --- |
| Field | Description |
| id | Unique identifier of the product offering |
| href | Reference of the product offering |

ProductRelationship: Linked products to the one instantiate.

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

RelatedParty: Defines parties which are involved in the order and the role they are playing. At product order level, it may be the customer and at the product level, it may be the user.

|  |  |
| --- | --- |
| Field | Description |
| id | Unique identifier of related party |
| href | Reference of the relatedParty, could be a party reference or a partyRole reference |
| role | Role of the related party |
| name | Name of the related party |

UML model:



## Notification Resource Models

Five notification types are defined :

* orderCreationNotification
* orderRemoveNotification
* orderStateChangeNotification
* orderValueChangeNotification
* orderInformationRequiredNotification

UML model:



### Order Creation Notification

Used to notify that a new order has just been created.

|  |
| --- |
| {       "eventId":"00001",       "eventTime":"2013-04-19T16:42:25-04:00",       "eventType":"orderCreationNotification",       "event":{       "productOrder":{    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "externalId":"NiceNameForTheConsumer\_42",    "priority":"1",    "description":"A wonderful 42 order for brand new products",    "category":"residential",    "state":"InProgress",    "orderDate":"2013-04-12T16:42:23-04:00",    "completionDate":"2013-04-19T16:42:23-04:00",    "requestedStartDate":"2013-04-12T16:42:23-04:00",    "requestedCompletionDate":"2013-04-19T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",    "notificationContact":"emailAddr-myAddress@hotmail.com",     "note":[       {          "text":"A free text detailing the note",          "date":"2013-04-12T16:42:23-04:00",          "author":"name"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"partner",          "id":"42",          "href":"http://serverlocation:port/partyManagement/partner/42"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"Acknowledged",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],           "appointment":"http://www.doodle.com/1WCV5647438",          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{          "place":{             "href":"http://map.google.com/.../1234112GDE",             "role":"DeliveryPlace"          },             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"InProgress",          "productOffering":{             "id":"43",             "href":"http: //serverlocation: port/catalogManagement/productOffering/43"          },          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443"                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],          "productOffering":{             "id":"51",             "href":"http: //serverlocation: port/catalogManagement/productOffering/51"          },          "product":{             "id":"511",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "productRelationship":[                {                   "type":"reliesOn",                   "product":{                      "productCharacteristic":[                         {                            "name":"MSISDN",                            "value":"003467488299002"                         }                      ]                   }                }             ]          }       },       {          "id":"4",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"44",             "href":"http://serverlocation:port/catalogManagement/productOffering/Bundle44",             "bundledProductOffering":[                {                      "id":" BundledPSTN444",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledPSTN444"         },  {                      "id":" Bundled Mobile443",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledMobile443"         }             ]          },          "product":{             "productRelationship":[                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"PSTNNumber",                            "value":"003427488299002"                         }                      ]                   }                },                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"MobileNumber",                            "value":"003464553000300"                         }                      ]                   }                }             ]          }       }    ] } } |

### Order Remove Notification

Used to notify that an order was deleted.

|  |
| --- |
| {       "eventId":"00002",       "eventTime":"2013-04-19T16:42:25-30:00",       "eventType":"orderRemoveNotification",       "event":{       "productOrder":{          "id":" 42",      "href":"http://serverlocation:port/orderManagement/productOrder/42",           "externalID":"NiceNameForTheConsumer\_42"      }} } |

### Order State change Notification

Used to notify that an order state is evolving.

|  |
| --- |
| {       "eventId":"00003",       "eventTime":"2013-04-19T16:42:25-30:00",       "eventType":"orderStateChangeNotification",       "event":{       "productOrder":{          "id":" 42",      "href":"http://serverlocation:port/orderManagement/productOrder/42",          "externalID":"NiceNameForTheConsumer\_42",           "state":"Completed"  }} } |

### Order Value Notification

Used to notify that any data in an order has just changed.

|  |
| --- |
| {       "eventId":"00004",       "eventTime":"2013-04-19T16:42:25-30:00",       "eventType":"orderValueChangeNotification",       "event":{       "productOrder":{          "id":" 42",      "href":"http://serverlocation:port/orderManagement/productOrder/42",          "externalID":"NiceNameForTheConsumer\_42",           "orderItem":[             {                "id":"1",                "product":{                   "productCharacteristic":[                      {                         "name":"Colour",                         "value":"Black"                      }                   ]                }             }  ]  }} } |

### Order Information Required Notification

Used to notify that some data in the order needs to be filled / is missing.

* “resourcePath” allows to precise if it is a data at order level or at orderItem level (and which one of them) that is missing
* “fieldPath” details which field is missing, its structure is quite similar to GET filter criteria
  + “missing=” points at the missing field
  + “&<criteria>” can be used to identify a specific element in lists

Simple example : notification contact is missing

|  |
| --- |
| {    "eventId":"00005",    "eventTime":"2013-04-19T16:42:25-30:00",    "eventType":"orderInformationRequiredNotification",    "resourcePath":"/order/42 ",    "fieldPath":"missing=notificationContact",       "event":{    "productOrder":{       "id":" 42",       "href":"http://serverlocation:port/orderManagement/productOrder/42",       "externalID":"NiceNameForTheConsumer\_42"    }} } |

Complex example : in the order item “1”, the IMEI characteristic value is missing to instantiate the product “465665”

|  |
| --- |
| {    "eventId":"00006",    "eventTime":"2013-04-19T16:42:25-30:00",    "eventType":"orderInformationRequiredNotification",    "resourcePath":"/order/42/orderItem/1",    "fieldPath":"missing=product.productCharacteristic.value&product.id=465665&product.productCharacteristic.name=IMEI",       "event":{    "productOrder":{       "id":" 42",       "href":"http://serverlocation:port/orderManagement/productOrder/42",       "externalID":"NiceNameForTheConsumer\_42"    }} } |

# API OPERATION TEMPLATES

Remember the following Uniform Contract:

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

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

Notifications are also described in a subsequent section.

## GET /orderManagement/productOrder/{ID}

Note that collections can be retrieved via GET /orderManagement/productOrder with no {ID}

Description :

This operation is used to retrieve order information using the ID

Attribute selection is enabled on all first level attributes but not on inner classes.

Attribute selection may optionally be enabled on all attributes and inner classes.

Behavior :

* Return status codes
  + 200 OK - the request was successful
  + 404 Not found - the supplied ID does not match a known productOrder

Use case : Get a specific order based on its ID

|  |
| --- |
| **REQUEST** |
| GET /orderManagement/productOrder/42  Accept: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "externalId":"NiceNameForTheConsumer\_42",    "priority":"1",    "description":"A wonderful 42 order for brand new products",    "category":"residential",    "state":"InProgress",    "orderDate":"2013-04-12T16:42:23-04:00",    "completionDate":"2013-04-19T16:42:23-04:00",    "requestedStartDate":"2013-04-12T16:42:23-04:00",    "requestedCompletionDate":"2013-04-19T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",    "notificationContact":"emailAddr-myAddress@hotmail.com",    "note":[       {          "text":"A free text detailing the note",          "date":"2013-04-12T16:42:23-04:00",          "author":"name"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"partner",          "id":"42",          "href":"http://serverlocation:port/partyManagement/partner/42"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"Acknowledged",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],           "appointment":"http://www.doodle.com/1WCV5647438",          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{          "place":{             "href":"http://map.google.com/.../1234112GDE",             "role":"DeliveryPlace"          },             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"InProgress",          "productOffering":{             "id":"43",             "href":"http: //serverlocation: port/catalogManagement/productOffering/43"          },          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443"                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],          "productOffering":{             "id":"51",             "href":"http: //serverlocation: port/catalogManagement/productOffering/51"          },          "product":{             "id":"511",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "productRelationship":[                {                   "type":"reliesOn",                   "product":{                      "productCharacteristic":[                         {                            "name":"MSISDN",                            "value":"003467488299002"                         }                      ]                   }                }             ]          }       },       {          "id":"4",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"44",             "href":"http://serverlocation:port/catalogManagement/productOffering/Bundle44",             "bundledProductOffering":[                {                      "id":" BundledPSTN444",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledPSTN444"         },  {                      "id":" Bundled Mobile443",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledMobile443"         }             ]          },          "product":{             "productRelationship":[                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"PSTNNumber",                            "value":"003427488299002"                         }                      ]                   }                },                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"MobileNumber",                            "value":"003464553000300"                         }                      ]                   }                }             ]          }       }    ] } |

## GET /orderManagement/productOrder/?{field selector}&{filtering expression}

Description :

This operation is used to retrieve order information using filter criteria.

Filtering selection is enabled on all first level attributes but not on inner classes with the exception of relatedParties.

Filtering may optionally be enabled on all attributes and inner classes.

Attribute selection is enabled on all first level attributes but not on inner classes.

Attribute selection may optionally be enabled on all attributes and inner classes.

Behavior :

* Return status codes
  + 200 OK - the request was successful (includes situation in which no orders matched supplied criteria)
  + 400 Bad Request - error

Use case : Get all the orders for a given customer that were completed before a specified date

|  |
| --- |
| **REQUEST** |
| GET /orderManagement/productOrder?relatedParty.role=customer& relatedParty.id=345221&completionDate.lt=2013-09-10 T00:00:00 -04:00  Accept: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  [ {    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "externalId":"NiceNameForTheConsumer\_42",    "priority":"1",    "description":"A wonderful 42 order for brand new products",    "category":"residential",    "state":"Completed",    "orderDate":"2013-04-12T16:42:23-04:00",    "completionDate":"2013-04-19T16:42:23-04:00",    "requestedStartDate":"2013-04-12T16:42:23-04:00",    "requestedCompletionDate":"2013-04-19T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",    "notificationContact":"emailAddr-myAddress@hotmail.com",    "note":[       {          "text":"A free text detailing the note",          "date":"2013-04-12T16:42:23-04:00",          "author":"name"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"partner",          "id":"42",          "href":"http://serverlocation:port/partyManagement/partner/42"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"Completed",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],           "appointment":"http://www.doodle.com/1WCV5647438",          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{          "place":{             "href":"http://map.google.com/.../1234112GDE",             "role":"DeliveryPlace"          },             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"Completed",          "productOffering":{             "id":"43",             "href":"http: //serverlocation: port/catalogManagement/productOffering/43"          },          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443"                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"add",          "state":"Completed",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],          "productOffering":{             "id":"51",             "href":"http: //serverlocation: port/catalogManagement/productOffering/51"          },          "product":{             "id":"511",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "productRelationship":[                {                   "type":"reliesOn",                   "product":{                      "productCharacteristic":[                         {                            "name":"MSISDN",                            "value":"003467488299002"                         }                      ]                   }                }             ]          }       },       {          "id":"4",          "action":"add",          "state":"Completed",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"44",             "href":"http://serverlocation:port/catalogManagement/productOffering/Bundle44",             "bundledProductOffering":[                {                      "id":" BundledPSTN444",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledPSTN444"         },  {                      "id":" Bundled Mobile443",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledMobile443"         }             ]          },          "product":{             "productRelationship":[                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"PSTNNumber",                            "value":"003427488299002"                         }                      ]                   }                },                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"MobileNumber",                            "value":"003464553000300"                         }                      ]                   }                }             ]          }       }    ] }] |

## PATCH /orderManagement/productOrder/{ID}

Description :

This operation is used to modify orders and/or their items.

Behavior :

* Return status codes
  + 200 OK - the request was successful
  + 400 Bad Request - error

|  |  |  |
| --- | --- | --- |
| Attribute name | Patchable | Rule |
| id | No |  |
| href | No |  |
| externalID | No |  |
| state | Yes | To manage the order delivery process : InProgress (start process), Held / Pending (suspend process)  Influence the orderItem states |
| priority | Yes |  |
| category | Yes |  |
| orderDate | No |  |
| requestedStartDate | Yes | Only when order is in “Acknowledged” state – delivery process not started |
| completionDate | No |  |
| requestedCompletionDate | Yes | Only when order is in “Acknowledged” state – delivery process not started |
| expectedCompletionDate | Yes |  |
| notificationContact | Yes |  |
| note | Yes |  |
| relatedParty | Yes | Only when order is in “Acknowledged” state – delivery process not started |
| orderItem.id | No |  |
| orderItem.action | No |  |
| orderItem.state | Yes | To manage the order item delivery process : InProgress (start sub process), Held / Pending (suspend sub process)  Influence the order states |
| orderItem.billingAccount | Yes | Only when order is in “Acknowledged” state – delivery process not started |
| orderItem.productOffering | Yes | Only when order is in “Acknowledged” state – delivery process not started |
| orderItem.product | Yes | Only when order item is in “Acknowledged” or “Pending” state – delivery process not started or suspended |
| orderItem.product.place | Yes | Only when order item is in “Acknowledged” or “Pending” state – delivery process not started or suspended |
| orderItem.appointment | Yes | Only when order item is in “Acknowledged” or “Pending” state – delivery process not started or suspended |

Further document any rules that must be implemented when patching attributes.

|  |  |
| --- | --- |
| Rule name | Rule/Pre Condition/Side Effects/Post Conditons |
| State patches | When patching an order state to :   * “Pending” / “Held” : all “InProgress” order items SHOULD be set to “Pending” / “Held” * “InProgress” :   + all “Acknowledged” order items MUST be set to “InProgress”   + all “Pending”/”Held” order items MAY be set to “InProgress”   When patching an order item state to :   * “Pending” / “Held” : the order state itself SHOULD be set to “Pending” / “Held” |

Use case : Resume order

Note : Suspend would be the same request using the “Pending” state.

|  |
| --- |
| **REQUEST** |
| PATCH orderManagement/productOrder/42  Content-type: application/json  {    "state":"InProgress" } |
| **RESPONSE** |
| 201  Content-Type: application/json  {    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "externalId":"NiceNameForTheConsumer\_42",    "priority":"1",    "description":"A wonderful 42 order for brand new products",    "category":"residential",    "state":"InProgress",    "orderDate":"2013-04-12T16:42:23-04:00",    "completionDate":"2013-04-19T16:42:23-04:00",    "requestedStartDate":"2013-04-12T16:42:23-04:00",    "requestedCompletionDate":"2013-04-19T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",    "notificationContact":"emailAddr-myAddress@hotmail.com",    "note":[       {          "text":"A free text detailing the note",          "date":"2013-04-12T16:42:23-04:00",          "author":"name"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"partner",          "id":"42",          "href":"http://serverlocation:port/partyManagement/partner/42"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],           "appointment":"http://www.doodle.com/1WCV5647438",          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{          "place":{             "href":"http://map.google.com/.../1234112GDE",             "role":"DeliveryPlace"          },             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"InProgress",          "productOffering":{             "id":"43",             "href":"http: //serverlocation: port/catalogManagement/productOffering/43"          },          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443"                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"123456",                "href":"http://serverlocation:port/billingManagement/billingAccount/123456"          }],          "productOffering":{             "id":"51",             "href":"http: //serverlocation: port/catalogManagement/productOffering/51"          },          "product":{             "id":"511",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "productCharacteristic":[                {                   "name":"anotherCharacteristic",                   "value":"itsValue"                }             ],             "productRelationship":[                {                   "type":"reliesOn",                   "product":{                      "productCharacteristic":[                         {                            "name":"MSISDN",                            "value":"003467488299002"                         }                      ]                   }                }             ]          }       },       {          "id":"4",          "action":"add",          "state":"InProgress",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"44",             "href":"http://serverlocation:port/catalogManagement/productOffering/Bundle44",             "bundledProductOffering":[                {                      "id":" BundledPSTN444",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledPSTN444"         },  {                      "id":" Bundled Mobile443",                      "href":"http://serverlocation:port/catalogManagement/productOffering/BundledMobile443"         }             ]          },          "product":{             "productRelationship":[                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"PSTNNumber",                            "value":"003427488299002"                         }                      ]                   }                },                {                   "type":"bundled",                   "product":{                      "productCharacteristic":[                         {                            "name":"MobileNumber",                            "value":"003464553000300"                         }                      ]                   }                }             ]          }       }    ] } |

## POST orderManagement/productorder

Description:

This operation is used to create a new order.

The mandatory attributes for the creation are :

* relatedParties.role and reference to identify at least the customer
* at least one orderItem with :
  + an action
  + a productOffering

Behavior :

* Return status codes
  + 201 Created - the request was successful
  + 400 Bad Request – error

ID Management :

POST should be used without specifying the id and the href, the OM system is in charge of generating the id + href for the ProductOrder.

When performing a POST, these are the allowed attributes (all Product Order attributes that are not in that list MUST NOT be used during POST, they are calculated/defined by the OM system) :

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | Mandatory | Default | Rule |
| externalID | N | N/A |  |
| state | N | “Acknowledged” |  |
| priority | N | 4 (the lowest) |  |
| Description | N | N/A |  |
| category | N | “uncategorized” |  |
| requestedStartDate | N | No specified default value |  |
| requestedCompletionDate | N | No specified default value |  |
| notificationContact | N | No specified default value |  |
| note | N | No specified default value |  |
| relatedParty | Y |  | They must be at least a defined party linked to the order (Customer, …) |
| orderItem.id | Y |  |  |
| orderItem.action | Y |  |  |
| orderItem.state | N | “Acknowledged” |  |
| orderItem.billingAccount | Y |  |  |
| orderItem.productOffering | N |  | The productOffering may not be useful when doing a “modify” or “delete” on an owned product |
| orderItem.product | Y |  |  |
| orderItem.product.place | N |  |  |
| orderItem.appointment | N |  |  |

* Further specify any rules on the creation of the entity

|  |  |
| --- | --- |
| Rule name | Rule |
| POST Mandatory attributes within product Order | * + Within “billingAccount”     - id AND/OR href   + Within “note”     - text   + Within “relatedParty”     - id AND/OR href AND/OR name     - role |
| POST Mandatory attributes within product Order item | * + Within “place”     - Role     - id AND/OR href   + Within “productOffering”     - id AND/OR href   + Within “product”     - Depends on the order item “action”, cf. rule below |
| POST Mandatory attributes within product (in each order item) | * + If orderItem.action = “add” :     - productCharacteristics   + If orderItem.action = “modify”     - id AND/OR href   + If orderItem.action = “delete”     - id AND/OR href |

|  |
| --- |
| **REQUEST** |
| POST /orderManagement/productOrder  Content-type: application/json  {   "note":[       {          "text":"A free text detailing the note"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221",          "name":"John Doe"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443",                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"delete",          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456"          }       }    ] } |
| **RESPONSE** |
| 201  Content-Type: application/json  {    "id":"42",    "href":"http://serverlocation:port/orderManagement/productOrder/42",    "priority":"4",    "category":"uncategorized",    "state":"Acknowledged",    "orderDate":"2013-04-12T16:42:23-04:00",    "expectedCompletionDate":"2013-04-19T16:42:23-04:00",   "note":[       {          "text":"A free text detailing the note"       }    ],    "relatedParty":[       {          "role":"customer",          "id":"345221",          "href":"http://serverlocation:port/partyManagement/customer/345221"          "name":"John Doe"       },       {          "role":"seller",          "id":"4563",          "href":"http://serverlocation:port/partnerManagement/partner/4563"       }    ],    "orderItem":[       {          "id":"1",          "action":"add",          "state":"Acknowledged",          "billingAccount":[{                "id":"1789",                "href":"http://serverlocation:port/billingManagement/billingAccount/1789"          }],          "productOffering":{             "id":"42",             "href":"http: //serverlocation: port/catalogManagement/productOffering/42"          },          "product":{             "productCharacteristic":[                {                   "name":"Colour",                   "value":"White"                },                {                   "name":"Memory",                   "value":"16"                }             ]          }       },       {          "id":"2",          "action":"modify",          "state":"Acknowledged",          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456",             "relatedParty":[                {                   "role":"user",                   "id":"5667443",                   "href":"http://serverlocation:port/partyManagement/user/5667443",                   "name":"Jimmy Doe"                }             ]          }       },       {          "id":"3",          "action":"delete",          "state":"Acknowledged",          "product":{             "id":"456",             "href":"http: //serverlocation: port/inventoryManagement/product/456"          }       }    ] } |

## DELETE orderManagement/productorder/{ID}

This operation is used to delete a managed entity or a product order entirely.

***Warning : it should only be used for administration matters***

Description :

This operation is used to delete an order.

The only usable and also mandatory attributes for the deletion are id AND/OR href.

Behavior :

* Returns HTTP/1.1 status code 200 if the request was successful.
* 404 if the product order does not exist
* 403 if the operation is forbidden

|  |
| --- |
| **REQUEST** |
| DELETE /orderManagement/productOrder/5868839 |
| **RESPONSE** |
| 200 |

# API NOTIFICATIOn TEMPLATES

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.

|  |
| --- |
| **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.

|  |
| --- |
| **REQUEST** |
| DELETE /api/hub/{id}  Accept: application/json |
| **RESPONSE** |
| 204 |

## publish {EventTYPE} POST /listener

Description :

Provide the Event description

Behavior :

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

|  |
| --- |
| **REQUEST** |
| POST /client/listener  Accept: application/json  {    "event": {  EVENT BODY   },  "eventType": "eventType" } |
| **RESPONSE** |
| 201  Content-Type: application/json |

Example see TMF REST Design Guidelines.

## Release History

|  |  |  |  |
| --- | --- | --- | --- |
| **Release Number** | **Date** | **Release led by:** | **Description** |
| Release 1.0 | 04/15/2013 | Pierre Gauthier  TM Forum  [pgauthier@tmforum.org](mailto:pgauthier@tmforum.org) | First Release of Draft Version of the Document. |
| Release 1.1 |  |  | Updated for use in the Paris Spec Jam – and rebranded,. |

## Change Request

*Template to submit a Change Request for this specification.*

*You can only track one change request at a time.*

*To submit a Change Request, amend the current document enabling the “…” function on Word : modify the resource model, the notification resource models, add examples for each operation, …*

*The justification below and the current amended document have to be tracked in the TMForum JIRA platform :*

|  |  |  |  |
| --- | --- | --- | --- |
| *Tag* | *CR Title* | *Business justification and brief description of the solution* | *JIRA issue number* |
| *1* | *Adding item relationships* | *// explain here why this modification is needed* | *// track JIRA issue number here* |
| *2* | *Adding business grouping of items* | *//* | *//* |