



Framework Specification

Service Ordering Management API Conformance Profile

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INTRODUCTION

The following document is the REST API Conformance for the Service Ordering API (TMF 641).

API DESCRIPTION

A service order will describe a list of service order items. A service order item references an action on an existing or future service. By service we designed Customer-Facing Service (CFS) as well as Resource Facing Service (RFS).

A service order is created based on service(s) that is(are) defined in a catalog.

RESOURCE MODEL CONFORMANCE

ServiceOrdering API MANDATORY AND OPTIONAL RESOURCES

Resource Name	Mandatory or Optional	Comments
ServiceOrder	M	

ServiceOrder resource MANDATORY AND OPTIONAL ATTRIBUTES

Attribute Name	Mandatory or Optional	Comments
id	M (in response messages) O (otherwise)	Initially generated by the server and provided in the response upon resource creation. Not available in POST request
href	M (in response messages) O (otherwise)	Initially generated by the server and provided in the response upon resource creation Value in response must be the same as the one set in Location header provided upon entity creation Not available in POST request
externalId	O	
priority	O	Implementation could defined a be default value
description	O	
category	O	
state	M (in response messages) O (otherwise)	Only required in response messages from the server when providing the ServiceOrdering entity contents (responses to create-POST and read-GET the entity)

Attribute Name	Mandatory or Optional	Comments
orderDate	M (in response messages)	Not available in POST request
completionDate	O	Not available in POST request
requestedStartDate	O	
requestedCompletionDate	O	
expectedCompletionDate	O	Not available in POST request
startDate	M (in response messages)	Not available in POST request
NotificationContact	O	
@baseType	O	
@type	O	
@schemaLocation	O	
relatedParty	O	Array of structures
id	M except if href provided	
href	M except if id provided	
role	M	
name	O	
@referredType	O	
orderRelationship	O	Array of structures
type	M	
id	M except if href provided	
href	M except if id provided	
@referredType	O	
note	O	Array of note(s)
date	O	
author	M	
text	M	
serviceOrderItem	M	Array of item – At least one must be provided
id	M	
action	M	
state	M (in response messages) O (otherwise)	Only required in response messages from the server when providing the ServiceOrdering entity contents (responses to create-POST and read-GET the entity)

Attribute Name	Mandatory or Optional	Comments
@type	O	
@schemaLocation	O	
@baseType	O	
appointment	O	Array of appointment(s)
id	M except if href provided	
href	M except if id provided	
@REFERREDTYPE	O	
orderItemRelationship	O	Array of Item relationship
type	M	
id	M	
Service		0 or 1
id	M except if href provided	
href	M except if id provided	
name	O	
serviceState	O	
@type	O	
@schemaLocation	O	
ServiceSpecificationRef	O	0 or 1
id	M	
href	M	
version	O	
name	O	
@type	O	
@schemaLocation	O	
@baseType	O	
TargetServiceSchema		0 or 1
@type	M	
@schemaLocation	M	
Place	O	Array of place(s)
id	M except if href provided	
href	M except if id provided	
name	O	
role	M	
@REFERREDTYPE	M	Because place could be a geographicAddress,

Attribute Name	Mandatory or Optional	Comments
		geographicLocation or a geographicSite, a type must be provided.
@schemaLocation	O	
ServiceCharacteristic		Array of product characteristic(s)
name	M	
valueType	M	
Value	M	1 – one value must be provided for each serviceCharacteristic
@type	M	
@schemaLocation	M	
ServiceRelationship		Array of service relationship(s)
type	M	
(service) targeted	M	A referred or valued service must be present

API OPERATIONS CONFORMANCE

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

SERVICE ORDER MANDATORY AND OPTIONAL OPERATIONS

Uniform API Operation	Mandatory/Optional	Comments
GET	M	GET must be used to retrieve a representation of a resource
POST	M	POST must be used to create a new resource
PUT	O	PUT must be used to completely update a resource identified by its resource URI
PATCH (JSON-MERGE)	O	PATCH must be used to partially update a resource
DELETE	O	DELETE must be used to remove 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.:?severity=<value> &status=<value>)

Filtered Data (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=category,state) will provide in the response only the values assigned to attributes category and state. Attribute selection capabilities are the same for collections retrieval and individual resource queries

Filtering in ServiceOrder resource

Attribute name	Filtered search First Level	Filtered search N Level	Attribute Selection First Level	Attribute Selection N Level
id	M	M	M	M
href	NA	NA	O	O
externalId	M	O	M	O
priority	O	O	O	O
description	O	NA	M	NA
category	O	NA	O	NA
state	M	NA	M	NA
orderDate	M	NA	O	O
completionDate	M	NA	O	O
requestedStartDate	O	NA	M	NA
requestedCompletionDate	O	NA	O	NA
expectedCompletionDate	O	NA	M	NA
startDate	O	NA	M	NA
notificationContact	O	NA	O	NA
OrderRelationship				
id	O	NA	O	O
type	O	NA	O	NA
href	NA	NA	O	NA
RelatedParty				
id	O	NA	O	O

Attribute name	Filtered search First Level	Filtered search N Level	Attribute Selection First Level	Attribute Selection N Level
href	NA	NA	NA	NA
role	O	NA	O	O
name	O	NA	O	NA
validFor	NA	NA	NA	NA
ServiceOrderItem				
id	NA	NA	M	O
state	O	NA	M	O
action	O	NA	O	O
OrderItemRelationship				
id	NA	NA	NA	NA
type	NA	NA	NA	NA
serviceSpecificationRef				
id	O	NA	O	NA
href	NA	NA	NA	NA
version	O	NA	O	NA
name	O	NA	O	NA
service				
id	O	NA	O	NA
href	NA	NA	NA	NA
name	O	NA	O	NA
serviceState	O	NA	O	NA
place				
id	O	NA	O	NA
href	NA	NA	NA	NA
role	O	NA	O	NA
name	O	NA	O	NA
appointment				
id	O	NA	O	O
href	NA	NA	O	NA
note				
date	NA	NA	NA	NA
author	NA	NA	NA	NA
text	NA	NA	NA	NA

GET /ServiceOrderingManagement/ServiceOrder/

Filtered Search: A filtered search can be applied using the following filtering criteria

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

- externalId
- description
- orderDate
- state + orderDate interval (orderDate > 11/4/2018 & orderDate > 11/9/2017)

Filtered 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 ServiceOrdering resource definition

GET /ServiceOrderingManagement /ServiceOrder/{ID}

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

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

API POST OPERATION CONFORMANCE

POST /ServiceOrderingManagement /ServiceOrder/

This Uniform Contract operation is used to create a ServiceOrder resource in the server.

The response to this operation must include a Location header set to /ServiceOrderingManagement /ServiceOrder/{ID} where {ID} indicates the identifier assigned by the server to the new ServiceOrder resource created

POST	M	
Response Status Code 201	M	
Other Status Codes	NA	

The following table indicates attributes that are required to be sent when creating a new ServiceOrder as well as attributes with special considerations. All other attributes defining the resource are not required to be sent as part of the BODY of the POST request message:

Attribute name	Mandatory	Default	Rule
id	NA		Must not be in POST request
href	NA		Must not be in POST request
externalId	O		
priority	O	"4"	Could be implementation-based defined
description	O		
category	O		
state	NA		Must not be in POST request
orderDate	NA		Must not be in POST request
completionDate	NA		Must not be in POST request
requestedStartDate	O		
requestedCompletionDate	O		
expectedCompletionDate	NA		Must not be in POST request
startDate	NA		

Attribute name	Mandatory	Default	Rule
NotificationContact	O		
note	O		If note present, author and text are mandatory. Date is optional and values by default with today date.
orderRelationship	O		If orderRelationship present, type and (id AND/OR href) are mandatory
ServiceOrderItem	M		At least one item must be provided.
orderItem.id	M		
orderItem.action	M		
orderItem.state	NA		Must not be in POST request
orderItemRelationship	O		if provided, type & id are mandatory
appointment	O		href or/and id must be provided
relatedParty	M		At least one relatedParty must be provided. href or/and id must be provided role is mandatory
place	O		href or/and id must be provided Role is mandatory
serviceRelationship	O		type is mandatory
serviceSpecification	O		href or/and id must be provided
targetServiceSchema	O		@type & @schemaLocation must be provided
serviceCharacteristic	O		name and valueType must be provided
value	O		@type & @schemaLocation must be provided

The response from the server must include a BODY with the contents of the new resource created, filled with at least the same information elements that were included in the request and are supported by the server. Notice that the value stored by the server may be different than the one set in the request (e.g.: serviceSpecification.Name)

If the POST request includes optional parameters (as per the model resource definition) that are not supported by the server, then the server must reject the request (replying with a 4xx error response) indicating the parameter not supported.

The BODY of the response from the server must include attribute “href” set to the same value as the one in the Location header.

The server must include in the BODY of the response, even if they are not included in the request, the following attributes that are mandatory in the definition of a ServiceOrder as per the resource model defined

- id
- href
- state
- orderDate
- orderItem.state

We must note that some attributes must not be send in the POST request and could be not valued in the POST answer:

- expectedCompletionDate
- completionDate
- startDate

The BODY of the response from the server could include attribute “href” (or “reference”) under each one of the entities within the ServiceOrder model that can be addressed individually and were included in the response. This applies to any of the following entities

- relatedParty
- serviceSpecification
- channel
- place
- service

API PATCH OPERATION CONFORMANCE

This section defines which attributes are patchable.

Since PATCH operation is optional and not included in the basic CONNECT certification this is not applicable in this conformance document.

API DELETE OPERATION CONFORMANCE

This section defines what operations can be used to delete a ServiceOrder resource.

Since DELETE operation is optional and not included in the basic CONNECT certification this is not applicable in this conformance document

API CONFORMANCE TEST SCENARIOS

This section describes the test scenarios required for the basic CONNECT certification of ServiceOrdering 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}/ServiceOrderingManagement/v1**, being {serverRoot} defines the certification endpoint

ServiceOrder resource TEST CASES

Nominal Scenarios

TC_ServiceOrder_N1 – Create new ServiceOrder with minimum required information

- Send a POST message to {apiRoot}/ServiceOrder/ with the following contents in the BODY

```
{
  "externalId": "OrangeBSS748",
  "priority": "1",
  "description": "Service order description",
  "category": "CloudServiceOrdering",
  "requestedStartDate": "2018-01-15T09:37:40.508Z",
  "requestedCompletionDate": "2018-01-15T09:37:40.508Z",
  "@type": "standard",
  "orderItem": [
    {
      "id": "1",
      "action": "add",
      "@type": "standard",
      "service": {
        "serviceState": "Active",
        "serviceCharacteristic": [
          {
            "name": "vCPE_IP",
            "valueType": "String",
            "value": {
              "@type": "IPAddress",
              "@schemaLocation": "http....",
              "vCPE_IP": "193.218.236.21"
            }
          }
        ]
      }
    }
  ],
  "serviceSpecification": {
    "id": "12",
    "href": "http://...:serviceSpecification/12",
```

```
        "name": "vCPE",
        "version": "1",
        "@type": "vCPE",
        "@schemaLocation": "http..."
    }
}
]
}
```

- Wait for a response from the server with the following characteristics
 - Response Code 201-Created
 - Include a location header in the body set to `/{apiRoot}/ServiceOrder/{IDSO1}` where `{IDSO1}` indicates the identifier assigned by the server to the new `ServiceOrder` resource
 - The response message includes all mandatory parameters (including `id`, `state` and `orderDate` that were not sent in the original request)
 - The body of the response matches the values set in the original request
- Send a GET message to `/{apiRoot}/ServiceOrder/{IDSO1}`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one `ServiceOrder` resource with ID set to `{IDSO1}`, the same identifier as assigned by the server to the new resource created
 - The response message includes all mandatory parameters
 - The body of the response for the resource with identifier `{IDSO1}` matches the values set in the original request

TC_ServiceOrder_N2 – Create new ServiceOrder with minimum set of parameters supported by server

- Send a POST message to {apiRoot}/ServiceOrder/ with the following contents in the BODY

```
{
  "externalId": "OrangeBSS954",
  "priority": "2",
  "description": "Service order description",
  "category": "CloudServiceOrdering",
  "requestedStartDate": "2018-01-18T09:37:40.508Z",
  "requestedCompletionDate": "2018-01-19T09:37:40.508Z",
  "@type": "standard",
  "orderItem": [
    {
      "id": "1",
      "action": "add",
      "@type": "standard",
      "service": {
        "serviceState": "Active",
        "serviceCharacteristic": [
          {
            "name": "vCPE_IP",
            "valueType": "String",
            "value": {
              "@type": "IPAddress",
              "@schemaLocation": "http...",
              "vCPE_IP": "193.218.459.78"
            }
          }
        ]
      },
      "serviceSpecification": {
        "id": "12",
        "href": "http://...:serviceSpecification/12",
        "name": "vCPE",
        "version": "1",
        "@type": "vCPE",
        "@schemaLocation": "http..."
      }
    }
  ]
}
```

- Wait for a response from the server with the following characteristics
 - Response Code 201-Created

- Include a location header in the body set to `/{apiRoot}/ServiceOrder/{IDSO2}` where `{IDSO2}` indicates the identifier assigned by the server to the new `ServiceOrder` resource
- The response message includes all mandatory parameters (including `orderDate` and `state` that were not sent in the original request)
- The body of the response matches the values set in the original request
- Send a GET message to `/{apiRoot}/ServiceOrder/{IDSO2}`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one `ServiceOrder` resource with ID set to `{IDSO2}`, the same identifier as assigned by the server to the new resource created
 - The response message includes all mandatory parameters
 - The body of the response for the resource with identifier `{IDSO2}` matches the values set in the original request

TC_ServiceOrder_N3 – Search for ServiceOrder with specific characteristics

- Send a GET message to `/{apiRoot}/ServiceOrder?category=CloudServiceOrdering&orderItem.service.serviceSpecification=12`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes at least two `ServiceOrder` resources referring to `{IDSO1}` and `{IDSO2}`
 - 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}/ServiceOrder?priority=1&category=CloudServiceOrdering`

- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one ServiceOrder resource referring to {IDSO1} and there is no reference to ServiceOrder resource {IDSO2}
 - The response message includes all mandatory parameters
 - The body of the response for the resource with identifier {IDSO1} matches the values in the original request
- Send a GET message to `/{apiRoot}/ServiceOrder?externalId= OrangeBSS954`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one ServiceOrder resource referring to {IDSO2} and there is no reference to ServiceOrder resource {IDSO1}
 - The response message includes all mandatory parameters
 - The body of the response for the resource with identifier {IDSO2} matches the values in the original request

TC_ServiceOrder_N4 – Filtered retrieval of ServiceOrder

- Send a GET message to `/{apiRoot}/ServiceOrder/{IDSO2}?fields=id,href,externalId,priority,state`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one ServiceOrder resource referring to {IDSO2} and including only attributes id,href,externalId, priority and state.
- Send a GET message to `/{apiRoot}/ServiceOrder/{IDSO1}?fields= id, state, orderItem.id,orderItem.state,orderItem.action`
- Wait for a response from the server with the following characteristics

- Response Code 200-OK
- The body of the response includes one ServiceOrder resource referring to {IDSO1} and including only attributes id, state, and an array of order item with attributes: id, state, and action matching the values in the original request.

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

TC_ServiceOrder_N5 – Filtered Search and Filtered data response

- Send a GET message to `/{apiRoot}/ServiceOrder?externalId=OrangeBSS748&fields=id,state,category,description`
- Wait for a response from the server with the following characteristics
 - Response Code 200-OK
 - The body of the response includes one ServiceOrder resource referring to {IDSO1} and there is no reference to ServiceOrder resource {IDSO2}
 - The body of the response for the resource includes only attributes id, state and category matching the values in the corresponding original request

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

Error Scenarios

TC_ServiceOrder_E1 – Unknown Trouble ServiceOrder identifier

- Send a GET message to `/{apiRoot}/ServiceOrder/{IDSO3}`, where {IDSO3} 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

TC_ServiceOrder_E2 – Invalid Request – unexpected parameter

- Send a POST message to {apiRoot}/ServiceOrder/ with the following contents in the BODY.

```
{
  "externalId": "OrangeBSS777",
  "priority": "1",
  "description": "Service order description",
  "category": "TMF resource illustration",
  "state": "acknowledged",
  "requestedStartDate": "2018-01-15T09:37:40.508Z",
  "requestedCompletionDate": "2018-01-15T09:37:40.508Z",
  "expectedCompletionDate": "2018-01-15T09:37:40.508Z",
  "@type": "standard",
  "note": {
    "date": "2018-01-15T09:37:40.508Z",
    "author": "Jean Pontus",
    "text": "bla bla bla"
  },
  "relatedParty": [
    {
      "id": "456",
      "href": "http://serverlocation:port/partyManagement/party/456",
      "role": "requester"
    }
  ],
  "orderItem": [
    {
      "id": "1",
      "action": "add",
      "state": "acknowledged",
      "@type": "standard",
      "service": {
        "serviceState": "Active",
        "serviceCharacteristic": [
          {
            "name": "vCPE_IP",
            "valueType": "String",
            "value": {
              "@type": "IPAddress",
              "@schemaLocation": "http...",
              "vCPE_IP": "193.218.236.21"
            }
          }
        ]
      }
    }
  ],
  "serviceSpecification": {
    "id": "12",
    "href": "http://...:serviceSpecification/12",
    "name": "vCPE",
    "version": "1",
    "@type": "vCPE",
    "@schemaLocation": "http..."
  }
}
```

```

    }
  }
]
}

```

Notice that this request features unexcepting parameters as state, orderItem.state and expectedCompletionDate.

- Wait for an error response from the server indicating the unexpected parameters in the request

TC_ServiceOrder_E3 – Invalid Request – Missing parameter mandatory in context

- Send a POST message to {apiRoot}/ServiceOrder/ with the following contents in the BODY.

```

{
  "externalId": "OrangeBSS566",
  "priority": "2",
  "description": "Service order description",
  "category": "CloudServiceOrdering",
  "requestedStartDate": "2018-01-18T09:37:40.508Z",
  "requestedCompletionDate": "2018-01-19T09:37:40.508Z",
  "@type": "standard",
  "orderItem": [
    {
      "id": "1",
      "action": "add",
      "@type": "standard",
      "service": {
        "serviceState": "Active",
        "serviceCharacteristic": [
          {
            "name": "vCPE_IP",
            "valueType": "String",
            "value": {
              "@type": "IPAddress",
              "@schemaLocation": "http...",
              "vCPE_IP": "193.218.459.78"
            }
          }
        ]
      }
    },
    {
      "serviceSpecification": {
        "name": "vCPE",
        "version": "1",
        "@type": "vCPE",
        "@schemaLocation": "http..."
      }
    }
  ]
}
]

```

```
}
```

- Notice that this request is missing a service specification id or href in the order item described (action is add so it must be specified) but any other mandatory parameter could be used
- Wait for an error response from the server indicating the mandatory parameter is missing in the request

ACKNOWLEDGEMENTS

RELEASE HISTORY

Release Number	Date	Release led by:	Description
Release 18.0.0 Version 1.0.0	12-Jan-2018	Ludovic Robert	First Release of the Document.