TM Forum Specification

Change Management API Conformance Profile

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NOTICE

Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100
Parsippany, NJ 07054, USA
Tel No. +1 973 944 5100
Fax No. +1 973 944 5110
TM Forum Web Page: www.tmforum.org

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INTRODUCTION - API DESCRIPTION

Change Management process is to respond to the customer's changing business requirements while maximizing value and reducing incidents, disruption and network. The Change Management API provides the standard integration capabilities between external applications and Change Management Application. The API consists of a simple set of operations that interact with Change Request in a consistent manner. A Change Request is an IT service management discipline. The objective of change management in this context is to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes to control IT infrastructure and Network, in order to minimize the number and impact of any related incidents upon service.

Change Request API performs the following operations on Change Request:

- Retrieval of a change request or a collection of change request s depending on filter criteria

- Partial update of a change request (including approve/reject, complete, abort and worklog exchange etc.)

- Creation of a change request (including default values and creation rules)

- Deletion of change request (for administration purposes e.g. backup & archive)

- Notification of events on change request

RESOURCE MODEL CONFORMANCE

Change Management API MANDATORY AND OPTIONAL RESOURCES

For the Resources defined by the API, here the following table indicates which are mandatory and which ones are optional.

Resource Name	Mandatory / Optional	Comments
Change Request	M	

Change Request Resource MANDATORY AND OPTIONAL ATTRIBUTES

For the resources defined by the API the following table indicates which ones are mandatory and which ones are optional.

Parameter	Mandatory/Optional	Comments
@type	O	
@baseType	O	
@schemaLocation	O	
actualEndTime	O	
actualStartTime	O	
budget	O	
channel	O	
completionDate	O	
currency	O	
description	O	
externalId	O	

href	M (in response messages) O (otherwise)	Value in response must be the same as the one set in Location header provided upon entity creation
id	M (in response messages) O (otherwise)	Generated by the server and provided in the response upon resource creation. Accepted in entity-creation requests if the server supports the incoming identifier as the reference to create new resources
impact	O	
plannedEndTime	O	
plannedStartTime	O	
priority	M	
requestDate	O	
requestType	O	
risk	O	
riskMitigationPlan	O	
riskValue	O	
scheduledDate	O	
status	M	
category	O	A list of category (CategoryRef[*])
@referredType	O	
Name	M	
Id	M	
href	M	
sla	O	A list of sla(SLARef[*])

	@referredType	O	
	href	M	
	id	M	
	name	O	
attachment		O	A list of attachments (Attachment[*])
	@type	O	
	@baseType	O	
	@schemaLocation	O	
	id	O	
	name	O	
	path	O	
	description	O	
	href	O	
	mimeType	O	
	Size	O	
	sizeUnit	O	
	url	O	
	validFor	O	
characteristic		O	A list of parameters (ChangeRequestCharacteristic[*])
	name	M	
	value	M	
specification		M	A specification (ChangeRequestSpecification)
	@type	O	
	@baseType	O	

	@schemaLocation	O	
	description	O	
	href	M	
	id	M	
	name	O	
	validFor	O	
relatedChangeRequest		O	A list of change requests (ChangeRequestRef[*])
	correlation	O	
	description	O	
	href	M	
	id	M	
relatedParty		O	A list of related parties (RelatedPartyRef[*])
	@referredType	O	
	href	O	
	id	O	
	name	O	
	role	O	
targetEntity		M	A list of target entity.(targetEntityRef[*])
	@referredType	O	
	description	O	
	href	M	
	id	M	
impactEntity		O	A list of impact entity.(impactEntityRef[*])
	@referredType	O	
	description	O	

	href	M	
	id	M	
incident		O	A list of impact entity.(impactEntity[*])
	@type	O	
	@baseType	O	
	@schemaLocation	O	
	description	O	
	name	O	
location		O	A location (Place)
	href	M	
	id	M	
	role	O	
	name	O	
	@referredType	O	
	@type	O	
	@baseType	O	
	@schemaLocation	O	
note		O	A list of notes (Note[*])
	author	O	
	dateTime	O	
	text	O	
resolution		O	Resolution
	@type	O	
	@baseType	O	
	@schemaLocation	O	
	code	O	
	description	M	

	name	M	
	task	O	A list of tasks (Task[*])
		@type	O	
		@baseType	O	
		@schemaLocation	O	
		description	O	
		name	O	
		state	O	
workLog		O	Worklog
	@type	O	
	@baseType	O	
	@schemaLocation	O	
	creatDateTime	M	
	description	O	
	lastUpdateDateTime	O	
	record	O	A list of records (Record[*])
		dateTime	M	
		description	O	
		supportPerson	O	

NOTIFICATION MODEL CONFORMANCE

The Pub/Sub models are common and described in the TMF REST Design Guidelines. Use the following templates to describe the Hub Mandatory and Optional attributes and filtering support.

For the Notifications defined by the API the following table indicates which ones are mandatory and which ones are optional.

API MANDATORY AND OPTIONAL NOTIFICATIONS

Resource Name	Mandatory or Optional	Comments
ChangeRequestCreationNotification	O	
ChangeRequestAttributeValueChangeNotification	O	
ChangeRequestRemoveNotification	O	

API OPERATIONS CONFORMANCE

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

API MANDATORY AND OPTIONAL OPERATIONS

The following table indicates which ones are mandatory and which ones are optional for each one of the resources in the API (default is for all resources).

Uniform API Operation	Mandatory/Optional	Comments
GET	M for all resources	GET must be used to retrieve a representation of a resource
POST	M for all resources	POST must be used to create a new resource
PUT	O for all resources	PUT must be used to completely update a resource identified by its resource URI
PATCH	O for all resources	PATCH must be used to partially update a resource
DELETE	O for all resources	DELETE must be used to remove a resource

API GET OPERATION CONFORMANCE

For every single resource use the following template to specify the mandatory and optional features supported by the GET operation.

GET	M	
Response Status Code 200	M	
Other Status Codes	NA	

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>)

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

GET /changeRequest/{ID}?fields=...&{filtering}

This operation retrieves a change request entity.
Attribute selection is mandatory for all first level attributes.
Filtering is mandatory for first compliance level (L1) and optional otherwise.

GET /changeRequest?fields=...&{filtering}

This operation list change request entities.
Attribute selection is mandatory for all first level attributes.
Filtering is mandatory for first compliance level (L1) and optional otherwise.

API POST OPERATION CONFORMANCE

For every single resource, use the following template to specify the mandatory and optional features supported by the POST operation.

POST /changeRequest

This Uniform Contract operation is used to create a Change Request entity.

POST	M	
Status Code 201	M	
Other Status Codes	NA	

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

Mandatory and Non Mandatory Attributes

The following tables specifies the attributes required when an entity is created (and their default values if not) as well as attributes with special considerations:

Attributes	Mandatory	Rule
id	N	Accepted in entity-creation requests if the server supports the incoming identifier as the reference to create new resources
status	Y	
priority	Y	
targetEntity	Y	

Attributes	Mandatory	Rule
specification	Y	
actualEndTime	N	
acturalStartTime	N	
budget	N	
channel	N	
completionTime	N	
currency	N	
description	N	
externalId	N	
impact	N	
plannedEndTime	N	
plannedStartTime	N	
requestDate	N	
requestType	N	
risk	N	
riskMitigationPlan	N	
riskValue	N	
scheduledDate	N	
@type	N	
@baseType	N	
@schemaLocation	N	
characteristic.name	N	Mandatory if characteristic included.
characteristic.value	N	Mandatory if characteristic included.
specification.href	N	Mandatory if specification included.
specification.id	N	Mandatory if specification included.
impactEntity.href	N	Mandatory if impactEntity included.
impactEntity.id	N	Mandatory if impactEntity

Attributes	Mandatory	Rule
		included
relatedChangeRequest.id	N	Mandatory if relatedChangeRequest included
relatedChangeRequest.href	N	Mandatory if relatedChangeRequest included
resolution.name	N	Mandatory if resolution included
resolution.description	N	Mandatory if resolution included
sla.href	N	Mandatory if sla included
sla.id	N	Mandatory if sla included
targetEntity.id	N	Mandatory if targetEntity included
targetEntity.href	N	Mandatory if targetEntity included
worklog.createTime	N	Mandatory if worklog included
worklog.record	N	Mandatory if worklog included

Specify the attributes that must be included in the BODY of the response, even if they are not included in the request because they are mandatory in the definition of the resource to be created as per the resource model defined

- href
- id
- …

API PATCH OPERATION CONFORMANCE

PATCH   /changeRequest/{ID}

This Uniform Contract operation is used to partially update the representation of a Change Request Resource.

PATCH	O	
Status Code 200	M	
Other Status Codes	NA	

Specify which attributes are patchable using the following table:

Attribute Name	Patchable ? (Y/N)	Rule
href	N	
id	N	
@baseType	N	
@type	N	
@schemaLocation	N	
actualEndTime	Y	
actualStartTime	Y	
budget	Y	

Attribute Name	Patchable ? (Y/N)	Rule
channel	Y	
completionDate	Y	
currency	Y	
description	Y	
externalId	Y	
impact	Y	
plannedEndTime	Y	
plannedStartTime	Y	
priority	Y	
requestDate	Y	
requestType	Y	
risk	Y	
riskMitigationPlan	Y	
riskValue	Y	
scheduledDate	Y	
status	Y	
category	Y	
SLA	Y	

Attribute Name	Patchable ? (Y/N)	Rule
characteristic	Y	
specification	Y	
workLog	Y	
targetEntity	Y	
impactEntity	Y	
relatedChangeRequest	Y	
location	Y	
note	Y	
resolution	Y	
relatedParty	Y	
attachment	Y	
incident	Y	

API DELETE OPERATION CONFORMANCE

DELETE /changeRequest/{ID}

This Uniform Contract operation is used to delete a Change Request entity.

DELETE	O	
Status Code 204	M	
Other Status Codes	NA	

API CONFORMANCE TEST SCENARIOS

This section describes the test scenarios required for the basic CONNECT certification of the 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}/changeRequest/v2**, where {serverRoot} defines the certification endpoint

Change Request Resource TEST CASES

Nominal Scenarios

TC_ChangeRequest_N1 – Create new Change Request with minimum required information

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

```
{
  "status":"1",
  "priority":"1",
  "targetEntity":[{
    "id":"dffd",
    "href":"/dffd"
  }],
  "specification":{
    "id":"d",
    "href":"href"
  }
}
```

- 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}/changeRequest/{ID1} where {ID1} indicates the identifier assigned by the server to the new change request resource

    - The response message includes all mandatory parameters

- The body of the response matches the values set in the original request

- Send a GET message to /{apiRoot}/changeRequest/

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The body of the response includes one Change Request resource with ID set to {ID1}, 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 {ID1} matches the values set in the original request

- Send a GET message to /{apiRoot}/changeRequest/{ID1}

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The response message includes all mandatory parameters

    - The body of the response includes a Change Request resource structure that matches the values in the original request

TC_ChangeRequest_N2 – Create new Change Request with minimum set of parameters supported by server

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

```
{
  "id":"12",
  "status":"2",
  "priority":"2",
  "targetEntity":[{
    "id":"dffd",
    "href":"/dffd"
  }],
  "specification":{
```

```
            "id":"d",
            "href":"d"
        },

    }
```

- 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}/changeRequest/{ID2} where {ID2} indicates the identifier assigned by the server to the new Change Request resource

  - The response message includes all mandatory parameters

  - The body of the response matches the values set in the original request

- Send a GET message to /{apiRoot}/changeRequest/

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource with ID set to {ID2}, 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 {ID2} matches the values set in the original request

- Send a GET message to /{apiRoot}/changeRequest/{ID2}

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The response message includes all mandatory parameters

- The body of the response includes a Change Request resource structure that matches the values in the original request

TC_ChangeRequest_N3 – Search for ChangeRequests with specific characteristics

- Send a GET message to /{apiRoot}/changeRequest

- Wait for a response from the server with the following characteristics
  - Response Code 200-OK

  - The body of the response includes at least two change request resources referring to {ID1} and {ID2}

  - 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}/changeRequest?status =1

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource referring to {ID1} and there is no reference to Change Request resource {ID2}

  - The response message includes all mandatory parameters

  - The body of the response for the resource with identifier {ID1} matches the values in the original request

- Send a GET message to /{apiRoot}/changeRequest?priority=1

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource referring to {ID1} and there is no reference to Change Request resource {ID2}

  - The response message includes all mandatory parameters

- The body of the response for the resource with identifier {ID1} matches the values in the original request

TC_ChangeRequest_N4 – Filtered retrieval of Tickets

- Send a GET message to /{apiRoot}/changeRequest/{ID1}?fields=status

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource referring to {ID1} and including only attributes name and status, matching the values in the original request

- Send a GET message to /{apiRoot}/changeRequest/{ID2}?fields= priority,status

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource referring to {ID2} and including only attributes severity and status, matching the values in the original request

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

TC_ChangeRequest_N5 – Filtered Search and Filtered data response

- Send a GET message to /{apiRoot}/changeRequest?status=1& priority=1

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one Change Request resource referring to {ID1} and there is no reference to Change Request resource {ID2}

- The body of the response for the resource with each identifier includes only attribute description, matching the values in the corresponding original request

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

Error Scenarios

TC_ChangeRequest_E1 – Unknown Change Request identifier

- Send a GET message to /{apiRoot}/changeRequest/{ID3}, where {ID3} does not match any of the identifiers previously creted in the server

- Wait for a response from the server with the following characteristics

    o Response Code 404-Not Found

TC_ChangeRequest_E2 – Invalid Request – Missing mandatory parameter

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

```
{
  "status": "1",
  "priority": "1"
}
```

Notice that this request is missing mandatory parameter "specification" and "targetEntity" , 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

TC_ChangeRequest_E3 – Invalid Request – Missing parameter mandatory in characteristic

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

```
{
  "status":"1",
  "priority":"2",
```

```
    "targetEntity":[{
       "id":"dffd",
       "href":"/dffd"
    }],
    "specification":{
       "id":"d",
       "href":"d"
    },
    "characteristic":[{
       "name":"jjdfj"

    }]
}
```

Notice that this request is missing mandatory parameters "value" when information element "characteristic" is included in the request, but any other parameter that becomes mandatory based on the context could be used

- Wait for an error response from the server indicating the mandatory parameter is missing in the request

Note: Not all the test cases are included in this document. There are more test cases in CTK file which is coming soon.

ACKNOWLEDGEMENTS

VERSION HISTORY

Release Number	Date	Release led by:	Description
Release 1.0	07/15/2015	Pierre Gauthier TM Forum pgauthier@tmforum.orf	First Release of Draft Version of the Document.
Release 1.1	03/15/2017		Updated version including Test scenarios
Release 2.0	12-Jun-2018	Hongxia Hao haohongxia@huawei.com	Align with the new swagger. And let @attributes to be optional in one sentence. Add Test Cases
Release 2.0.1	28-Jun-2018	Adrienne Walcott	Formatting/style edits prior to R18 publishing

RELEASE HISTORY

Release Number	Date	Modified by	Description
18.0.0	Mar-2018	Hongxia Hao	Initial Release.