TM Forum Specification

General Test Artifact Management API User Guide

TMF710

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NOTICE

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Introduction

The following document is the specification of the REST API for general test artifact management. It includes the model definition as well as all available operations.

SAMPLE USE CASES

The reader will find examples of use cases in TMF913 "Test API Component Suite" document.

Support of polymorphism and extension patterns

Support of polymorphic collections and types and schema based extension is provided by means of a list of generic meta-attributes that we describe below. Polymorphism in collections occurs when entities inherit from base entities, for instance GeneralTestArtifact inheriting properties from the abstract ManagedArtifact entity.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v3.0 Part 2 document.

The @type attribute provides a way to represent the actual class type of an entity. For example, within a list of ManagedArtifact instances some may be instances of GeneralTestArtifact where other could be instances of some other sub-class of ManagedArtifact. The @type gives this information. All resources and sub-resources of this API have a @type attributes that can be provided when this is useful.

The @schemaLocation property can be used in resources to allow specifying user-defined properties of an Entity or to specify the expected *characteristics* of an entity.

The @baseType attribute gives a way to provide explicitly the base of class of a given resource that has been extended.

RESOURCE MODEL

Managed Entity and Task Resource Models

General Test Artifact resource

A managed general test artifact resource.

Resource model
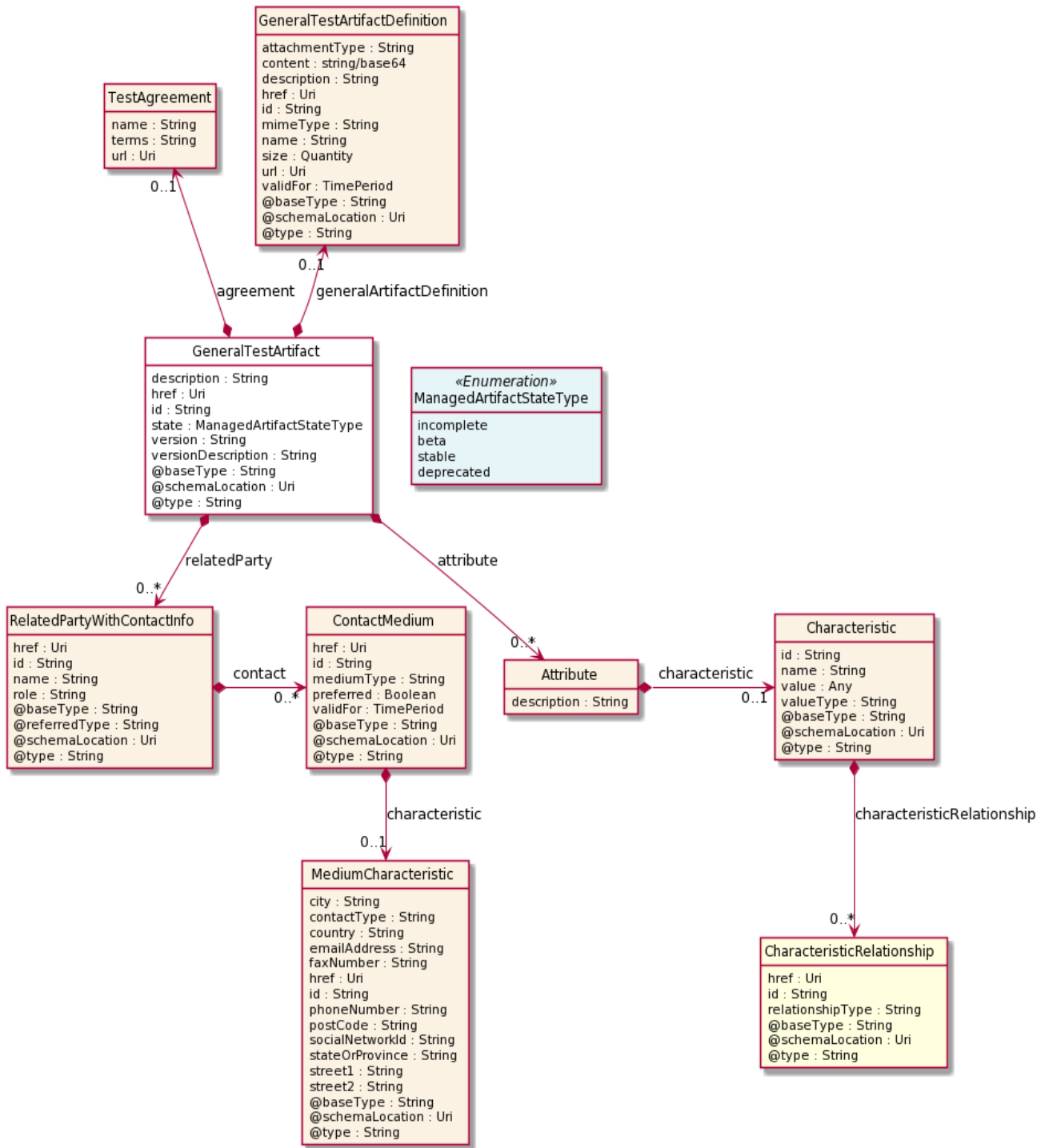
Field descriptions

GeneralTestArtifact fields

description   A string. The description for the artifact.

version   A string. The artifact version.

versionDescription	A string. The artifact version description.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
generalArtifactDefinition	A general test artifact definition (GeneralTestArtifactDefinition). General test artifact definition.
agreement	A test agreement (TestAgreement).
attribute	A list of attributes (Attribute [*]).
relatedParty	A list of related party with contact infos (RelatedPartyWithContactInfo [*]). Related party specialization that includes contact information.
state	A managed artifact state type (ManagedArtifactStateType). Possible values for the state of a managed artifact: 'incomplete', 'beta', 'stable', 'deprecated'.

Attribute sub-resource

characteristic	A characteristic (Characteristic). Describes a given characteristic of an object or entity through a name/value pair.
description	A string. The attribute description.

Characteristic sub-resource

Describes a given characteristic of an object or entity through a name/value pair.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

characteristicRelationship	A list of characteristic relationships (CharacteristicRelationship [*]). Another Characteristic that is related to the current Characteristic.
id	A string. Unique identifier of the characteristic.
name	A string. Name of the characteristic.
value	An any (Any). The value of the characteristic.
valueType	A string. Data type of the value of the characteristic.

CharacteristicRelationship sub-resource

Another Characteristic that is related to the current Characteristic.

href	An uri (Uri). Hyperlink reference.
id	A string. Unique identifier of the characteristic.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
relationshipType	A string. The type of relationship.

ContactMedium sub-resource

Indicates the contact medium that could be used to contact the party.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
characteristic	A medium characteristic (MediumCharacteristic). Any additional characteristic(s) of this contact medium.
mediumType	A string. Type of the contact medium, such as: email address, telephone number, postal address.
preferred	A boolean. If true, indicates that is the preferred contact medium.

validFor	A time period. The time period that the contact medium is valid for.

GeneralTestArtifactDefinition sub-resource

General test artifact definition.

attachmentType	A string. Attachment type such as video, picture.
content	A base 6 4 (Base64). The actual contents of the attachment object, if embedded, encoded as base64.
description	A string. A narrative text describing the content of the attachment.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
mimeType	A string. Attachment mime type such as extension file for video, picture and document.
name	A string. The name of the attachment.
url	An uri (Uri). Uniform Resource Locator, is a web page address (a subset of URI).
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
size	A quantity (Quantity). The size of the attachment.
validFor	A time period. The period of time for which the attachment is valid.

MediumCharacteristic sub-resource

Describes the contact medium characteristics that could be used to contact a party (an individual or an organization).

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

city	A string. The city.
contactType	A string. The type of contact, for example: phone number such as mobile, fixed home, fixed office. postal address such as shipping installation….
country	A string. The country.
emailAddress	A string. Full email address in standard format.
faxNumber	A string. The fax number of the contact.
phoneNumber	A string. The primary phone number of the contact.
postCode	A string. Postcode.
socialNetworkId	A string. Identifier as a member of a social network.
stateOrProvince	A string. State or province.
street1	A string. Describes the street.
street2	A string. Complementary street description.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedPartyWithContactInfo sub-resource

Related party specialization that includes contact information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
role	A string. Role played by the related party.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

contact   A list of contact mediums (ContactMedium [*]). Indicates the contact medium that could be used to contact the party.

TestAgreement sub-resource

name   A string. The agreement name.

terms   A string. The terms of the agreement.

url   An uri (Uri). The agreement URL.

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifact' resource object

```json
{
    "id": "178ca8bb-81bc-47ef-911e-dd86a40b8974",
    "href": "https://mycsp:8080/tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-
dd86a40b8974",
    "description": "Sample general test artifact",
    "version": "1.2.3",
    "relatedParty": [
        {
            "name": "testUser",
            "@referredType": "Individual",
            "role": "Owner",
            "contact": [
                {
                    "mediumType": "email",
                    "characteristic": {
                        "emailAddress": "testUser@abc.com"
                    }
                }
            ]
        }
    ],
    "attribute": [
        {
            "characteristic": {
                "name": "name",
                "valueType": "string",
                "value": "test.zip"
            }
        },
        {
            "characteristic": {
                "name": "category",
                "valueType": "string",
                "value": "vnf"
            }
        },
        {
```

```
        "characteristic": {
          "name": "checksum",
          "valueType": "string",
          "value": "BC1A4D958133CAE622EAC4F6B845D78D"
        }
      }
    ],
    "generalArtifactDefinition": {
      "attachmentType": "zip",
      "content": "<base64-encoded general artifact, usually a binary of some sort>",
      "mimeType": "base64"
    }
  }
}
```

Notification Resource Models

5 notifications are defined for this API

Notifications related to GeneralTestArtifact:
   - GeneralTestArtifactCreateEvent
   - GeneralTestArtifactChangeEvent
   - GeneralTestArtifactDeleteEvent
   - GeneralTestArtifactAttributeValueChangeEvent
   - GeneralTestArtifactStateChangeEvent

The notification structure for all notifications in this API follow the pattern depicted by the figure below.
A notification event resource (depicted by "SpecificEvent" placeholder) is a sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType).
This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).
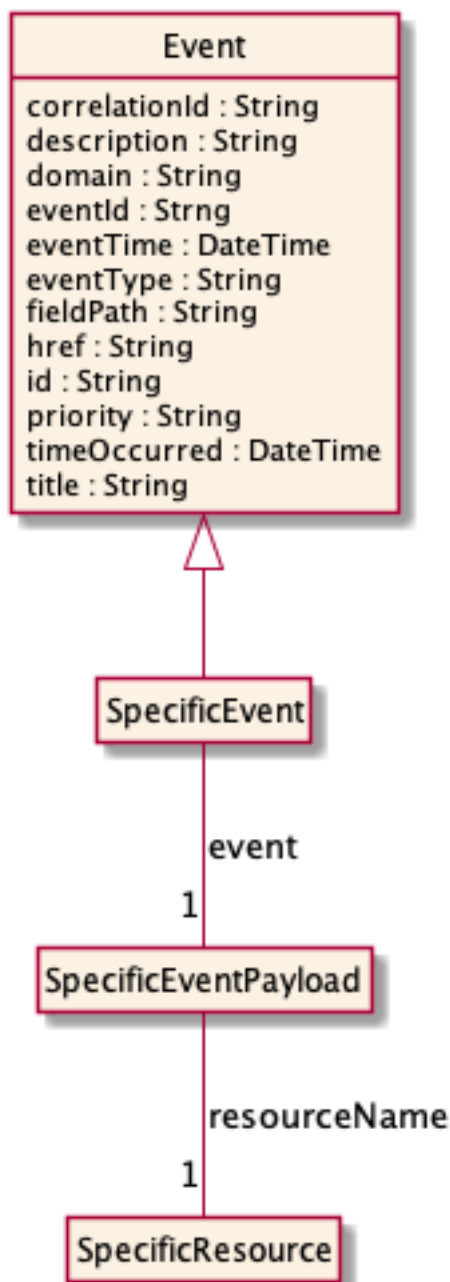
General Test Artifact Create Event

Notification GeneralTestArtifactCreateEvent case for resource GeneralTestArtifact

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifactCreateEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
```

```
      "eventType":"GeneralTestArtifactCreateEvent",
      "event": {
        "generalTestArtifact" :
            {-- SEE GeneralTestArtifact RESOURCE SAMPLE --}
      }
    }
```

General Test Artifact Change Event

Notification GeneralTestArtifactChangeEvent case for resource GeneralTestArtifact

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifactChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"GeneralTestArtifactChangeEvent",
     "event": {
        "generalTestArtifact" :
            {-- SEE GeneralTestArtifact RESOURCE SAMPLE --}
    }
}
```

General Test Artifact Delete Event

Notification GeneralTestArtifactDeleteEvent case for resource GeneralTestArtifact

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifactDeleteEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"GeneralTestArtifactDeleteEvent",
     "event": {
        "generalTestArtifact" :
            {-- SEE GeneralTestArtifact RESOURCE SAMPLE --}
    }
}
```

General Test Artifact Attribute Value Change Event

Notification GeneralTestArtifactAttributeValueChangeEvent case for resource GeneralTestArtifact

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifactAttributeValueChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"GeneralTestArtifactAttributeValueChangeEvent",
     "event": {
       "generalTestArtifact" :
          {-- SEE GeneralTestArtifact RESOURCE SAMPLE --}
    }
}
```

General Test Artifact State Change Event

Notification GeneralTestArtifactStateChangeEvent case for resource GeneralTestArtifact

Json representation sample

We provide below the json representation of an example of a 'GeneralTestArtifactStateChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"GeneralTestArtifactStateChangeEvent",
     "event": {
       "generalTestArtifact" :
          {-- SEE GeneralTestArtifact RESOURCE SAMPLE --}
    }
}
```

API OPERATIONS

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
Remove an Entity	DELETE Resource	DELETE must be used to remove a resource

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

Notifications are also described in a subsequent section.

Operations on General Test Artifact

List general test artifacts

```
GET /generalTestArtifact?fields=...&{filtering}
```

Description

This operation list general test artifact entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving a list of general artifacts.

Request
GET /tmf-api/generalTestArtifact/v4/generalTestArtifact Accept: application/json
Response

200
 	
[
  {
    "id": "178ca8bb-81bc-47ef-911e-dd86a40b8974",
    "href": "https://mycsp:8080/tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974",
    "description": "Sample general test artifact",
    "version": "1.2.3",
    "relatedParty": [
      {
        "name": "testUser",
        "@referredType": "Individual",
        "role": "Owner",
        "contact": [
          {
            "mediumType": "email",
            "characteristic": {
              "emailAddress": "testUser@abc.com"
            }
          }
        ]
      }
    ],
    "attribute": [
      {
        "characteristic": {
          "name": "name",
          "valueType": "string",
          "value": "test.zip"
        }
      },
      {
        "characteristic": {
          "name": "category",
          "valueType": "string",
          "value": "vnf"

```
            }
         },
         {
            "characteristic": {
               "name": "checksum",
               "valueType": "string",
               "value": "BC1A4D958133CAE622EAC4F6B845D78D"
            }
         }
      ],
      "generalArtifactDefinition": {
         "attachmentType": "zip",
         "content": "<base64-encoded general artifact, usually a binary of some sort>",
         "mimeType": "base64",
         "url": "http://myservice.com/artifact/1234"
      }
   }
]
```

Retrieve general test artifact

GET /generalTestArtifact/{id}?fields=...&{filtering}

Description

This operation retrieves a general test artifact entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving a specific general artifact.

Request
GET /tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974 Accept: application/json
Response

200
 	
{
   "id": "178ca8bb-81bc-47ef-911e-dd86a40b8974",
   "href": "https://mycsp:8080/tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974",

```
    "description": "Sample general test artifact",
    "version": "1.2.3",
    "relatedParty": [
        {
            "name": "testUser",
            "@referredType": "Individual",
            "role": "Owner",
            "contact": [
                {
                    "mediumType": "email",
                    "characteristic": {
                        "emailAddress": "testUser@abc.com"
                    }
                }
            ]
        }
    ],
    "attribute": [
        {
            "characteristic": {
                "name": "name",
                "valueType": "string",
                "value": "test.zip"
            }
        },
        {
            "characteristic": {
                "name": "category",
                "valueType": "string",
                "value": "vnf"
            }
        },
        {
            "characteristic": {
                "name": "checksum",
                "valueType": "string",
                "value": "BC1A4D958133CAE622EAC4F6B845D78D"
            }
        }
    ],
    "generalArtifactDefinition": {
        "attachmentType": "zip",
        "content": "<base64-encoded general artifact, usually a binary of some sort>",
        "mimeType": "base64",
        "url": "http://myservice.com/artifact/1234"
    }
}
```

Create general test artifact

```
POST /generalTestArtifact
```

Description

This operation creates a general test artifact entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a GeneralTestArtifact, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
description	
version	
termsOfService	
contact	
license	

Non Mandatory Attributes	Rule
versionDescription	
@baseType	
@schemaLocation	
@type	
generalArtifactDefinition	
agreement	
attribute	
relatedParty	
state	

Usage Samples

Here's an example of a request for creating a general artifact.

Request

POST /tmf-api/generalTestArtifact/v4/generalTestArtifact
Content-Type: application/json
 	
{
  "description": "Sample general test artifact",
  "version": "1.2.3",
  "relatedParty": [
    {
      "name": "testUser",
      "@referredType": "Individual",
      "role": "Owner",
      "contact": [
        {
          "mediumType": "email",

```
                "characteristic": {
                    "emailAddress": "testUser@abc.com"
                }
            }
        ]
    }
],
"attribute": [
    {
        "characteristic": {
            "name": "name",
            "valueType": "string",
            "value": "test.zip"
        }
    },
    {
        "characteristic": {
            "name": "category",
            "valueType": "string",
            "value": "vnf"
        }
    },
    {
        "characteristic": {
            "name": "checksum",
            "valueType": "string",
            "value": "BC1A4D958133CAE622EAC4F6B845D78D"
        }
    }
],
"generalArtifactDefinition": {
    "attachmentType": "zip",
    "content": "<base64-encoded general test artifact, usually a binary of some sort>",
    "mimeType": "base64"
}
}
```

Response

201

```
{
    "id": "178ca8bb-81bc-47ef-911e-dd86a40b8974",
    "href": "https://mycsp:8080/tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974",
    "description": "Sample general test artifact",
    "version": "1.2.3",
    "relatedParty": [
        {
            "name": "testUser",
            "@referredType": "Individual",
            "role": "Owner",
```

```
        "contact": [
            {
                "mediumType": "email",
                "characteristic": {
                    "emailAddress": "testUser@abc.com"
                }
            }
        ]
    }
],
"attribute": [
    {
        "characteristic": {
            "name": "name",
            "valueType": "string",
            "value": "test.zip"
        }
    },
    {
        "characteristic": {
            "name": "category",
            "valueType": "string",
            "value": "vnf"
        }
    },
    {
        "characteristic": {
            "name": "checksum",
            "valueType": "string",
            "value": "BC1A4D958133CAE622EAC4F6B845D78D"
        }
    }
],
"generalArtifactDefinition": {
    "content": "<base64-encoded general artifact, usually a binary of some sort>",
    "mimeType": "base64",
    "url": "http://myservice.com/artifact/1234"
}
}
```

Patch general test artifact

PATCH /generalTestArtifact/{id}

Description

This operation allows partial updates of a general test artifact entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning

mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
description	
versionDescription	
@baseType	
@schemaLocation	
@type	
generalArtifactDefinition	
agreement	
attribute	
relatedParty	
state	

Non Patchable Attributes	Rule
id	
href	
version	

Usage Samples

Here's an example of a request for patching a GeneralTestArtifact resource.

Request

PATCH /tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974
Content-Type: application/merge-patch+json
 	
{
  "name": "new name"
}

Response

200
 	
{
  "id": "178ca8bb-81bc-47ef-911e-dd86a40b8974",
  "href": "https://mycsp:8080/tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-

```
dd86a40b8974",
   "description": "Sample general test artifact",
   "version": "1.2.3",
   "relatedParty": [
      {
         "name": "testUser",
         "@referredType": "Individual",
         "role": "Owner",
         "contact": [
            {
               "mediumType": "email",
               "characteristic": {
                  "emailAddress": "testUser@abc.com"
               }
            }
         ]
      }
   ],
   "attribute": [
      {
         "characteristic": {
            "name": "name",
            "valueType": "string",
            "value": "test.zip"
         }
      },
      {
         "characteristic": {
            "name": "category",
            "valueType": "string",
            "value": "vnf"
         }
      },
      {
         "characteristic": {
            "name": "checksum",
            "valueType": "string",
            "value": "BC1A4D958133CAE622EAC4F6B845D78D"
         }
      }
   ],
   "generalArtifactDefinition": {
      "attachmentType": "zip",
      "content": "<base64-encoded general artifact, usually a binary of some sort>",
      "mimeType": "base64"
   },
   "name": "new name"
}
```

Delete general test artifact

```
DELETE /generalTestArtifact/{id}
```

Description

This operation deletes a general test artifact entity.

Usage Samples

Here's an example of a request for deleting a general artifact.

Request
DELETE /tmf-api/generalTestArtifact/v4/generalTestArtifact/178ca8bb-81bc-47ef-911e-dd86a40b8974
Response
204

API NOTIFICATIONS

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.

Usage Samples

Here's an example of a request for registering a listener.

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.

Usage Samples

Here's an example of a request for un-registering a listener.

Request
DELETE /api/hub/42 Accept: application/json
Response
204

Publish Event to listener

POST /client/listener

Description

Clears the communication endpoint address that was set by creating the Hub.

Provides to a registered listener the description of the event that was raised. The /client/listener url is the callback url passed when registering the listener.

Behavior

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

Usage Samples

Here's an example of a notification received by the listener. In this example "EVENT TYPE" should be replaced by one of the notification types supported by this API (see Notification resources Models section) and EVENT BODY refers to the data structure of the given notification type.

Request

POST /client/listener
Accept: application/json
 	
{
   "event": {
        EVENT BODY
     },
   "eventType": "EVENT_TYPE"
}

Response
201

For detailed examples on the general TM Forum notification mechanism, see the TMF REST Design Guidelines.

Acknowledgements

Document History

Version History

Version Number	Date Modified	Modified by:	Description of changes
4.0.0	21-Sep-2020	Alan Pope	Final edits for initial release

Release History

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