Frameworx Specification

Service Test Management API REST Specification

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NOTICE

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INTRODUCTION

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

The Service Test API provides a standardized mechanism for placing a service test with all of the necessary test parameters. The API consists of a simple set of operations that interact with CRM/Service Management systems in a consistent manner. A service test is a procedure intended to check the quality, performance, or reliability of a service.

Service Test Management API manages service test resource and service specification test resource:

- A service test specification describes the service test in terms of parameters to be configured and measures to be taken.
- A service exists for a controlled test invocation on a service. The service test is executed according to a schedule. and contains service test configuration parameters that are to be applied at execution time, and service test measures that result.

SAMPLE USE CASES

SERVICE TEST FOR CUSTOMER EXPERIENCE ASSURANCE

The Service Test can be used for customer experience assurance while:

- The subscriber can launch service test from Self Service Portal to make sure the service quality while his/her experience is not good.
- The Call Center operator can execute service test to check the quality and analyze root cause for response while one customer has complaint

It could improve customer expereice and increase FCR(First Call Resolution) much.

PLANNED SERVICE TEST FOR IMPORTANCE SERVICE

The test job can be defined for some important services that the test will be executed against them periodically to assurance the service quality and find potential service downgrading in advance to avoid massive impact to customers.

RESOURCE MODEL

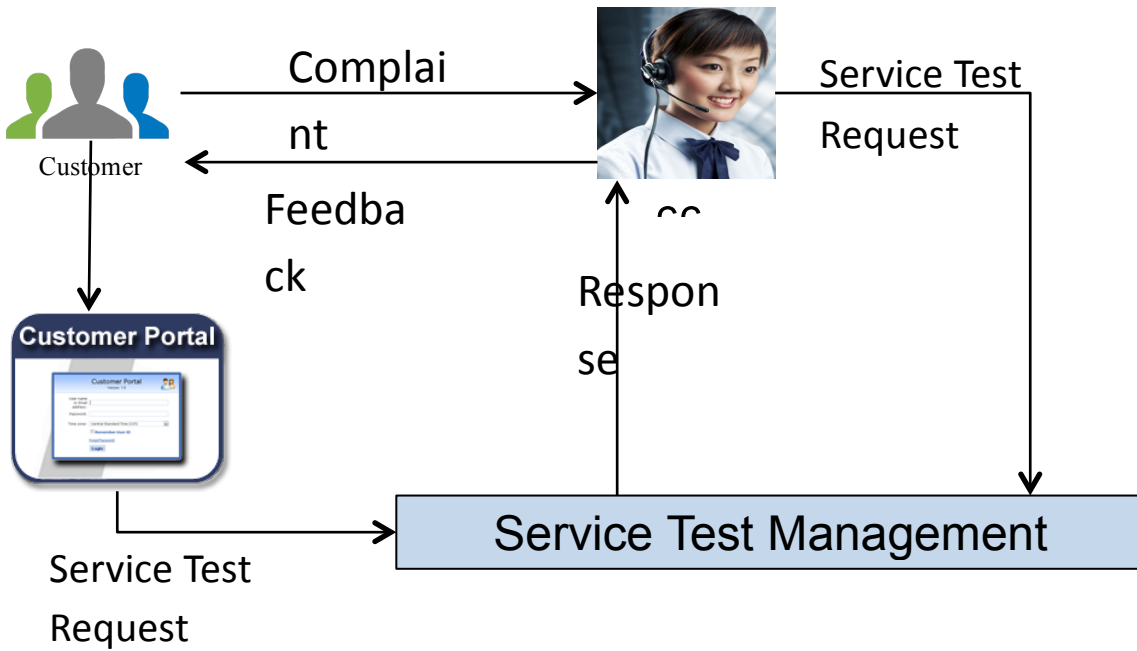## Managed Entity and Task Resource Models

SERVICE TEST SPECIFICATION RESOURCE

A service test specification describes the service test in terms of parameters to be configured and measures to be taken.
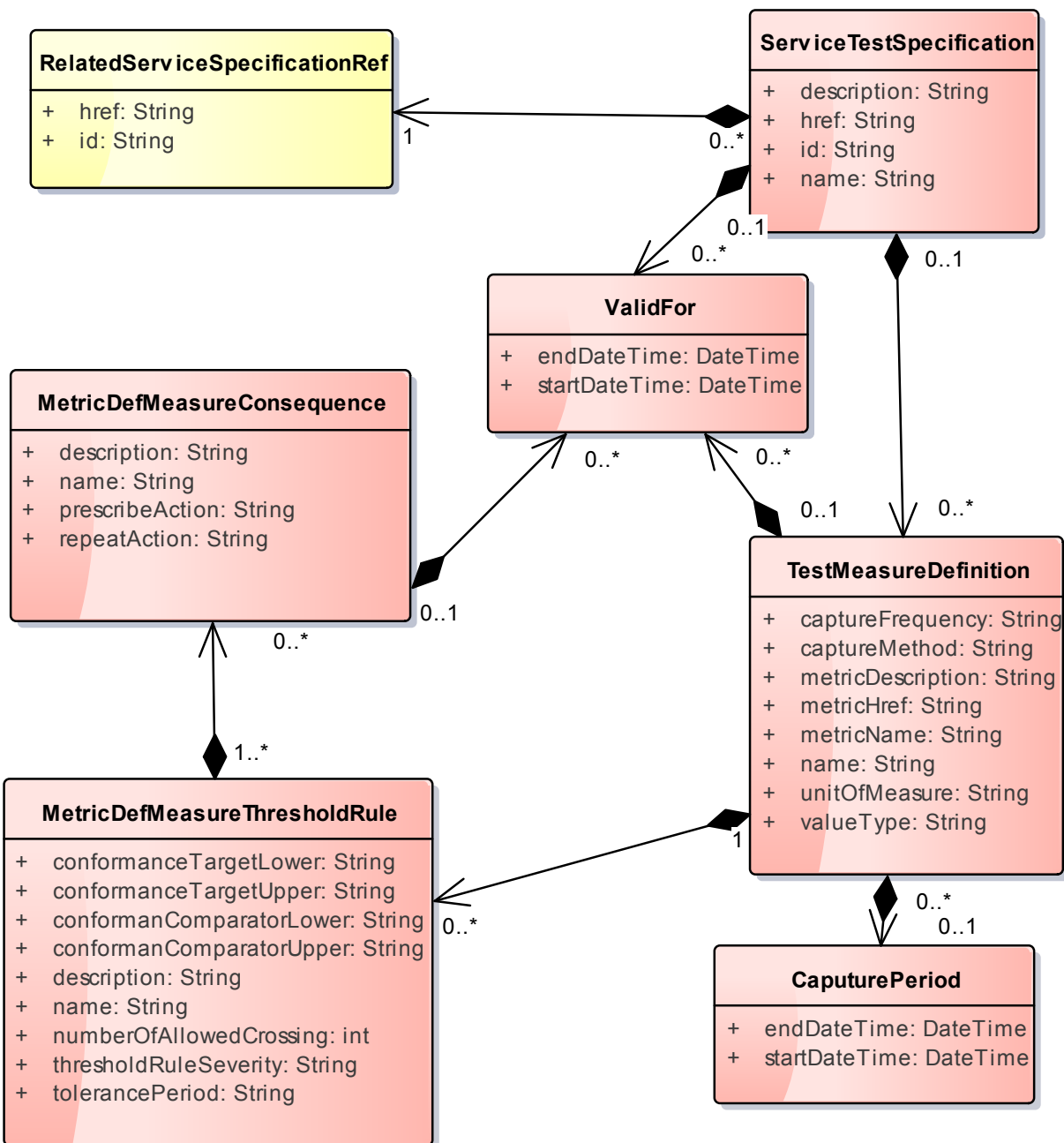
Resource Model

Fig.1: Service Test Specification Resource

Field descriptions

CaputurePeriod fields

A period of the capture.

endDateTime	A DateTime. The end date and time.
startDateTime	A DateTime. The start date and time

MetricDefMeasureConsequence fields

A MetricDefMeasureConsequence defines the action (prescribed action or notification) to take when a MetricDefMeasureThresholdRule is crossed.

description	A String. A narrative that explains in detail what the consequence is.
name	A String. A word, term, or phrase by which a MetricDefMeasureConsequence is known and distinguished from other MetricDefMeasureConsequences.
prescribeAction	A String. Recommended remedy for a violated threshold. This could be the hyperlink to the action.
repeatAction	A String. An indicator use to specify that a consequence should cease being applied if a value is in the same range as the previous value or continue being applied if a value is in the same range as the previous value.

If the repeatAcation is True, if the consequence is always applied as soon as the MetricMeasure value is in the range of values and if the repeatAcation is False, the consequence is applied only if the previous MetricMeasure value wasn't in the same range. |
| validFor | A period of a thing. |

MetricDefMeasureThresholdRule fields

A MetricDefMeasureThresholdRule is a rule that defines the condition (raise or clear) to achieve to apply consequences when a threshold is crossed or ceased to be crossed. It also defines the severity of the raise or clear of the threshold.

conformanceTargetLower	A String. A value used to determine if the threshold is crossed or ceases to be crossed. It represents the lower limit. the value should be less than the conformanceTargetUpper. the conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
conformanceTargetUpper	A String. A value used to determine if the threshold is crossed or ceases to be crossed. It represents the Upper limit. The value should be greater than the conformanceTargetLower. The conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
conformanComparatorLower	A String. An operator that when applied on a value specifies whether a threshold is crossed or ceased to be crossed. This operator is used to compare with the conformanceTargetLower.
conformanComparatorUpper	A String. An operator that when applied on a value specifies whether a threshold is crossed or ceased to be crossed. This operator is used to compare with the conformanceTargetUpper.
description	A String. Description for the MetricDefMeasureThresholdRule .
name	A String. Name for the MetricDefMeasureThresholdRule .
numberOfAllowedCrossin	A int. The number of allowed crossing occurrences in reference to the tolerancePeriod

g	without a consequence being initiated.
thresholdRuleSeverity	A String. A threshold can be generated in different severity levels. A crossing for each level may require a different condition and possibly trigger a different consequence.
tolerancePeriod	A String. An interval of time of allowed crossing occurrences before a consequence being initiated.
metricDefMeasureConsequence	A MetricDefMeasureConsequence defines the action (prescribed action or notification) to take when a MetricDefMeasureThresholdRule is crossed.

RelatedServiceSpecificationRef fields

The related service specification.

href	A String. Hyperlink to access service specification.
id	A String. The identifier of a service specification.

ServiceTestSpecification fields

The service test specification describes the service test in terms of parameters to be configured and measures to be taken.

description	A String. Description of a service test specification.
href	A String. Hyperlink to access a service test specification.
id	A String. Identifier of a service test specification.
name	A String. Name of a service test specification.
validFor	A period of a thing.
testMeasureDefinition	A TestMeasureDefinition specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.
relatedServiceSpecificationRef	The related service specification.

TestMeasureDefinition fields

A TestMeasureDefinition specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.

captureFrequency	A String. The frequency of capture for the metric. Note: This may be replaced by a set of entities similar to the Performance Monitoring.
captureMethod	A String. The method used to capture the Metric. Note: This may be replaced by a set of entities similar to the Performance Monitoring.
metricDescription	A String. Brief description of the metric.
metricHref	A String. Hyperlink to access a metric for detail information.
metricName	A String. The name of a metric that in the test measure.
name	A String. The name of the TestMeasureDefinition.
unitOfMeasure	A String. Name of a service test specification.
valueType	A String. A kind of value that the Metric value can take on, such as numeric, text, and so forth.
caputurePeriod	A period of the capture.
metricDefMeasureThresholdRule	A MetricDefMeasureThresholdRule is a rule that defines the condition (raise or clear) to achieve to apply consequences when a threshold is crossed or ceased to be crossed. It also defines the severity of the raise or clear of the threshold.
validFor	A period of a thing.

ValidFor fields

A period of a thing.

endDateTime	A DateTime. The end date and time.
startDateTime	A DateTime. The start date and time

JSON representation sample

We provide below the JSON representation of an example of Service Test Specification Resource object:

```
{
   "description": "a service description",
   "href": "https://host:port/serviceTestManagement/serviceTestSpecification/12",
   "id": "12",
   "name": "monkey test",
   "validFor": {
      "endDateTime": "2017-03-01T00:00:00",
      "startDateTime": "2016-03-01T00:00:00"
   },
   "testMeasureDefinition": [
      {
         "captureFrequency": "once",
         "captureMethod": "automatic caputure by instrument",
         "metricDescription": "This is the flow speed in a service",
         "metricHref": "https://host:port/metricManagement/metric/21",
         "metricName": "Flow speed",
         "name": "Definition of Flow speed",
         "unitOfMeasure": "A second",
         "valueType": "bits",
         "capuPeriod": {
            "endDateTime": "T00:00:00",
            "startDateTime": "T00:00:00"
         },
         "metricDefMeasureThresholdRule": [
            {
               "conformanceTargetUpper": "2500",
               "conformanComparatorUpper": "greater than ",
               "description": "This speed is grater than the target upper",
               "name": "tooMuchTraffic",
               "numberOfAllowedCrossing": "0",
               "thresholdRuleSeverity": "1",
               "tolerancePeriod": "15 minutes",
               "metricDefMeasureConsequence": [
                  {
                     "appliedAction": "sendWarning",
                     "description": "send a warning to the system",
                     "name": "sendWarning",
                     "repeatAction": "False",
                     "validFor": {
                        "endDateTime": "2017-03-01T00:00:00",
                        "startDateTime": "2016-03-01T00:00:00"
                     }
                  },
```

```
                    {
                        "appliedAction": "generateReport",
                        "description": "generate a waring report ",
                        "name": "generateReport",
                        "repeatAction": "False",
                        "validFor": {
                            "endDateTime": "2017-03-01T00:00:00",
                            "startDateTime": "2016-03-01T00:00:00"
                        }
                    }
                ]
            }
        ],
        "validFor": {
            "endDateTime": "2017-03-01T00:00:00",
            "startDateTime": "2016-03-01T00:00:00"
        }
    }
  ],
  "relatedServiceSpecificationRef": {
      "href": "https://host:port/serviceManagement/serviceSpecification/31",
      "id": "31",
  }
}
```

SERVICES TEST RESOURCE

A service test is an entity that exists that exists for a controlled test invocation on a service. The service test is executed according to a schedule. and contains service test configuration parameters that are to be applied at execution time, and service test measures that result.

Resource Model
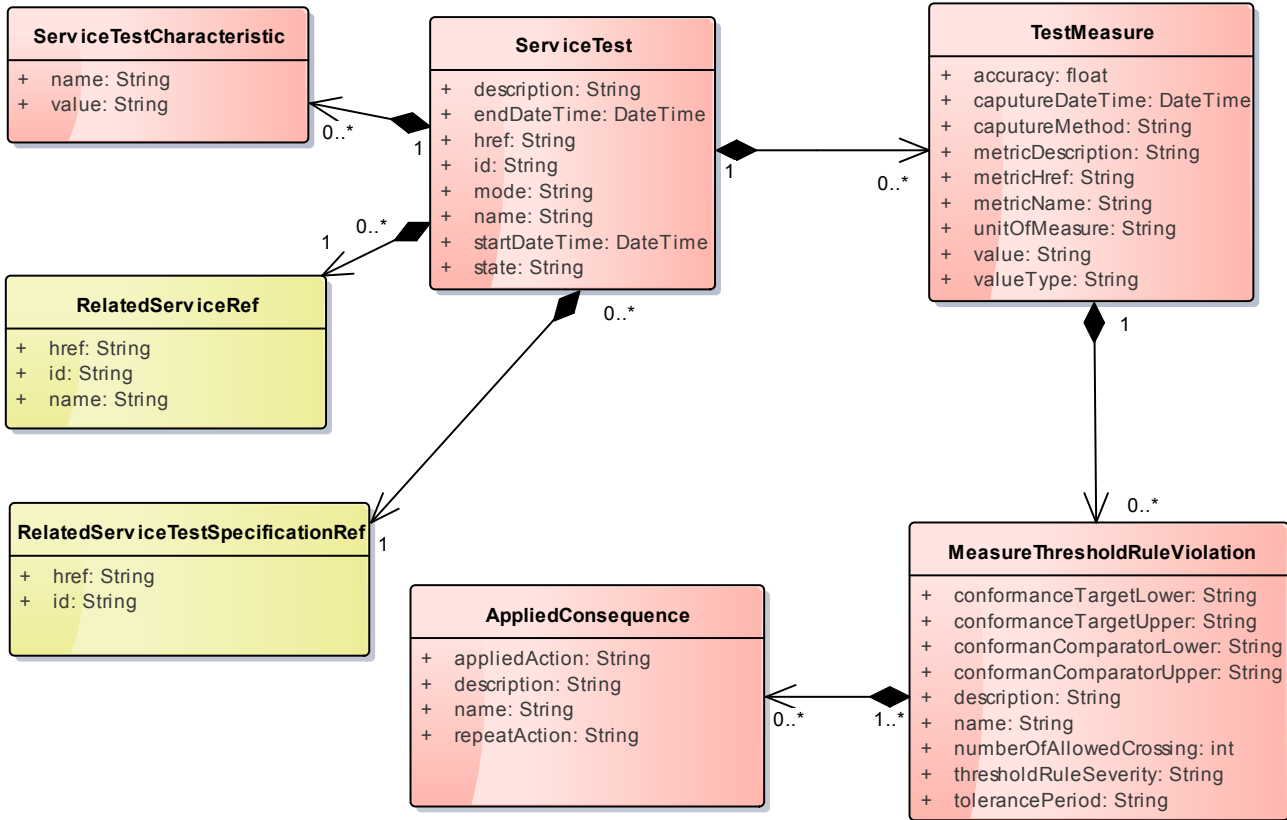
Fig.2: Service Test Resource

Field descriptions

AppliedConsequence fields

An Applied Consequence defines the action (prescribed action or notification) to take when a MeasureThresholdRuleViolation occurs.

appliedAction	A String. The action for a violated threshold. This could be a hyperlink to the action.
description	A String. A narrative that explains in detail what the consequence is.
name	A String. A word, term, or phrase by which Consequence is known and distinguished from other MetricDefMeasureConsequences.
repeatAction	A String. An indicator use to specify that a consequence should cease being applied if a value is in the same range as the previous value or continue being applied if a value is in the same range as the previous value. If the repeatAcation is True, if the consequence is always applied as soon as the MetricMeasure value is in the range of values and if the repeatAcation is False, the consequence is applied only if the previous MetricMeasure value wasn't in the same range.

MeasureThresholdRuleViolation fields

A measureThresholdRuleViolation is a volation of a rule that defines the in the MericDefMeasureThresholdRule.

conformanceTargetLower	A String. A value used to determine if the threshold is crossed or ceases to be crossed. It represents the lower limit. the value should be less than the conformanceTargetUpper.

	the conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
conformanceTargetUpper	A String. A value used to determine if the threshold is crossed or ceases to be crossed. It represents the Upper limit. The value should be greater than the conformanceTargetLower. The conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
conformanComparatorLower	A String. An operator that when applied on a value specifies whether a threshold is crossed or ceased to be crossed. This operator is used to compare with the conformanceTargetLower.
conformanComparatorUpper	A String. An operator that when applied on a value specifies whether a threshold is crossed or ceased to be crossed. This operator is used to compare with the conformanceTargetUpper.
description	A String. Description for the MetricDefMeasureThresholdRule .
name	A String. Name for the MetricDefMeasureThresholdRule .
numberOfAllowedCrossing	A int. The number of allowed crossing occurrences in reference to the tolerancePeriod without a consequence being initiated.
thresholdRuleSeverity	A String. A threshold can be generated in different severity levels. A crossing for each level may require a different condition and possibly trigger a different consequence.
tolerancePeriod	A String. An interval of time of allowed crossing occurrences before a consequence being initiated.
appliedConsequence	An Applied Consequence defines the action (prescribed action or notification) to take when a MeasureThresholdRuleViolation occurs.

RelatedServiceRef fields

The service of the service test

href	A String. Hyperlink to access a service .
id	A String. Identifier of a service .
name	A String. A name to describe a service.

RelatedServiceTestSpecificationRef fields

The service test specification used by the service test.

href	A String. Hyperlink to access a service test specification.
id	A String. Identifier of a service test specification.

ServiceTest fields

A service test is an entity that exists that exists for a controlled test invocation on a service. The service test is executed according to a schedule. and contains service test configuration parameters that are to be applied at execution time, and service test measures that result.

description	A String. Description of the service test
endDateTime	A DateTime. The end date and time of the service test.
href	A String. Hyperlink to access the service test
id	A String. The identifier of the service test
mode	A String. An indication of whether the service test is running in "PROACTIVE" or "ONDEMAND" mode
name	A String. The name of the service test
startDateTime	A DateTime. the start date and time of the service test.
state	A String. The actual state the service test is in

relatedServiceTestSpecificationRef	The service test specification used by the service test.
serviceTestCharacteristic	The configuration of the service test is set by the service test characteristic.
relatedServiceRef	The service of the service test
testMeasure	A TestMeasureDefinition specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.

ServiceTestCharacteristic fields

The configuration of the service test is set by the service test characteristic.

name	A String. The name of the characteristic.
value	A String. The value of characteristic.

TestMeasure fields

A TestMeasureDefinition specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.

accuracy	A float. The number of digits of accuracy captured for Metrics associated
caputureDateTime	A DateTime. The date and time that capture the metric.
caputureMethod	A String. "The method used to capture the Metrics. Note: This may be replaced by a set of entities similar to the Performance Monitoring Ref."
metricDescription	A String. Brief description of the metric.
metricHref	A String. Hyperlink to access a metric for detail information.
metricName	A String. The name of metric.
unitOfMeasure	A String. The unit of measure for the metric values, such as meters, cubic yards, kilograms [ISO 1000].
value	A String. The value of Metric in the test. This also could be a documents to record all values got during the service test.
valueType	A String. A kind of value that the Metric value associated with a metricValue can take on, such as numeric, text, and so forth.
measureThresholdRuleViolation	A measureThresholdRuleViolation is a volation of a rule that defines the in the MericDefMeasureThresholdRule.

JSON representation sample

We provide below the JSON representation of an example of Service Test Resource object:

```
{
  "href": "https://host:port/serviceTestManagement/serviceTest/3112",
  "id": "3112",
  "description:": "This service test is a simple one",
  "endDateTime": "2016-03-02T24:00:00",
  "mode": "PROACTIVE",
  "startDateTime": "2016-03-02T00:00:00",
  "state": "Completed",
  "relatedServiceRef": {
    "href": "https://host:port/serviceManagement/service/21",
    "id": "21",
    "name": "gameService"
```

```json
    },
    "relatedServiceTestSpecificationRef":{
        "href": "https://host:port/serviceTestManagement/serviceTest/22",
        "id": "22"
    },
    "serviceTestCharcteristic": [
        {
            "name": "number",
            "value": "3"
        },
        {
            "name": "restart",
            "value": "Ture"
        }
    ],
    "testMeasure": [
        {
            "accuracy": 0.0001,
            "caputureDateTime": "2016-03-02T11:12:00",
            "caputureMethod": "automatic caputure by instrument",
            "metricDescription": "This is the flow speed in a service",
            "metricHref": "https://host:port/metricManagement/metric/21",
            "metricName": "Flow speed",
            "unitOfMeasure": "A second",
            "value": "3000",
            "valueType": "bits",
            "measureThresholdRuleViolation": [
                {
                    "conformanceTargetUpper": "2500",
                    "conformanComparatorUpper": "greater than ",
                    "description": "This speed is grater than the target upper",
                    "name": "tooMuchTraffic",
                    "numberOfAllowedCrossing": "0",
                    "thresholdRuleSeverity": "1",
                    "appliedConsquence": [
                        {
                            "appliedAction": "sendWarning",
                            "description": "send a warning to the system",
                            "name": "sendWarning",
                            "repeatAction": "False"
                        },
                        {
                            "appliedAction": "generateReport",
                            "description": "generate a waring report ",
                            "name": "generateReport",
                            "repeatAction": "False"
                        }
                    ]
                }
            ]
        }
    ]
}
```

Here is the state machine diagram for a service test. Each test states are described in the tab below.
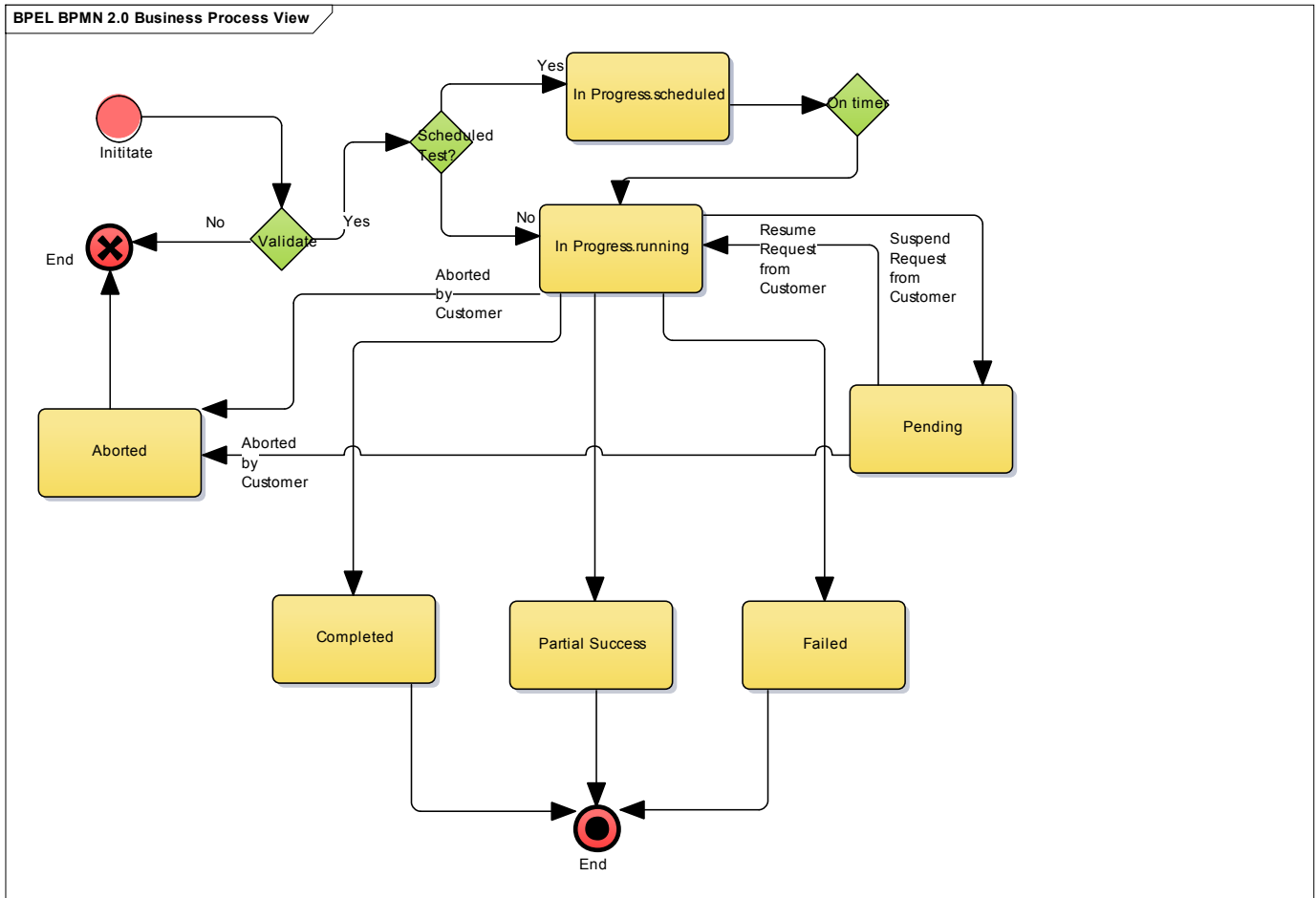
Fig. 3: State machine diagram for a service test

In Progress	The *In Progress* state is where a test has been started.
Aborted	The *Aborted* state is where a test execution has been successfully cancelled.
Completed	The *Completed* state is where the execution of test has been finished without error.
Pending	The *Pending* state is used when the customer needs to suspend the test execution or some more information needs to be provided. A pending stage can lead into auto cancellation of a test, if no action is taken within the defined timeframes to be described under the Agreement.
Failed	The execution of a test has *Failed*.
Partial Success	Some test items have failed and some have succeeded so the entire test is in a *Partial* Success state.

Notification Resource Models

6 notifications are defined for this API

Notifications related to ServiceTestSpecification:
-ServiceTestSpecificationCreationNotification
-ServiceTestSpecificationAttributeValueChangeNotification
-ServiceTestSpecificationRemoveNotification

Notifications related to ServiceTest:
- ServiceTestCreationNotification
- ServiceTestAttributeValueChangeNotification
- ServiceTestRemoveNotification

The notification structure for all notifications in this API follow the pattern depicted by the figure below.
A notification resource (depicted by "SpecificNotification" placeholder) is a sub class of a generic Notification structure containing an id of the event occurence (eventId), an event timestamp (eventTime), and the name of the notification resource (eventType).
This notification structure owns an event structure ("SpecificEvent" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).
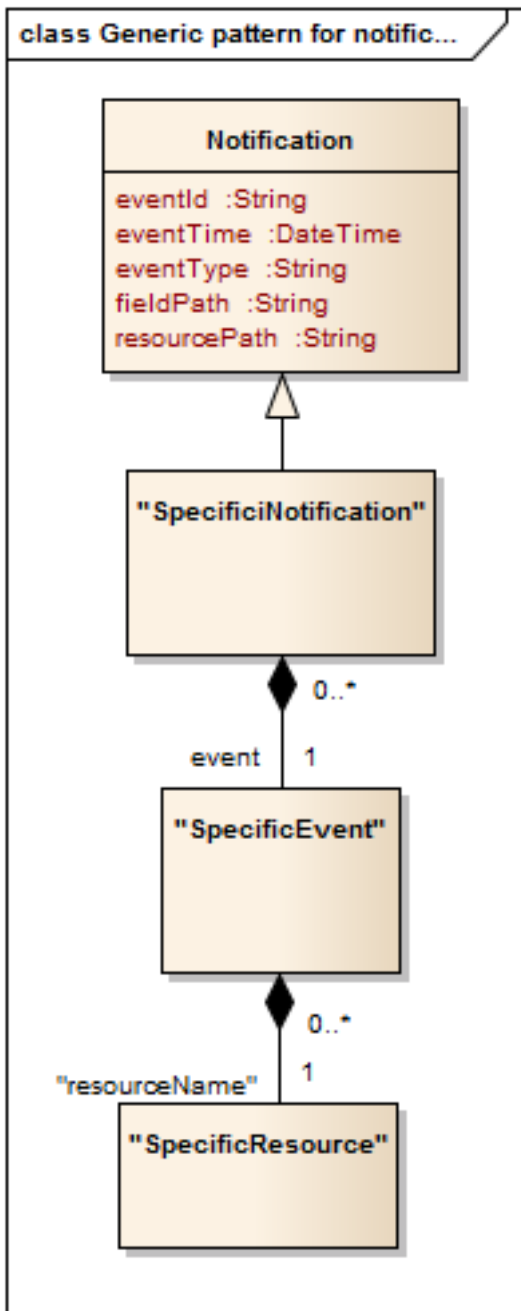
SERVICE TEST SPECIFICATION CREAT NOTIFICATION

Notification sent when a new ServiceTestSpecification resource is created.

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2016-03-01T16:42:25-45:00",
```

```
      "eventType":"ServiceTestSpecificationCreationNotification",
      "event": {
        " ServiceTestSpecification " :
            {-- SEE ServiceTestSpecification RESOURCE SAMPLE --}
      }
  }
```

SERVICE TEST SPECIFICATION ATTRIBUTE VALUE CHANGE NOTIFICATION

Notification sent when removing a ServiceTestSpecification resource.

Json representation sample

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

```
{
   "eventId":"00002",
   "eventTime":"2016-03-01T16:48:00",
   "eventType":" ServiceTestSpecificationAttributeChangeNotification ",
    "event": {
      "ServiceTestSpecification" :
          {-- SEE ServiceTestSpecification RESOURCE SAMPLE --}
   }
}
```

SERVICE TEST SPECIFICATION REMOVE NOTIFICATION

Notification sent when removing a ServiceTestSpecification resource.

Json representation sample

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

```
{
   "eventId":"00003",
   "eventTime":"2016-03-05T16:48:00",
   "eventType":"ServiceTestSpecificationRemoveNotification",
    "event": {
      "ServiceTestSpecification" :
          {-- SEE ServiceTestSpecification RESOURCE SAMPLE --}
   }
}
```

SERVICE TEST CREATION NOTIFICATION

Notification sent when a new ServiceTest resource is created.

Json representation sample

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

```
{
  "eventId":"00004",
  "eventTime":"2016-03-01T16:42:25",
  "eventType":"ServiceTestCreationNotification",
   "event": {
     "serveictTest" :
        {-- SEE ServiceTest RESOURCE SAMPLE --}
   }
}
```

SERVICE TEST ATTRIBUTE VALUE CHANGE NOTIFICATION

Notification sent when changing an attribute of a ServeictTest resource.

Json representation sample

We provide below the json representation of an example of a 'ServiceTest AttributeValueChangeNotification' notification object

```
{
  "eventId":"00005",
  "eventTime":"2016-03-02T16:42:25",
  "eventType":" ServiceTest AttributeValueChangeNotificationNotification",
   "event": {
     "serveictTest" :
        {-- SEE ServiceTest RESOURCE SAMPLE --}
   }
}
```

SERVICE TEST REMVOE NOTIFICATION

Notification sent when changing an attribute of a ServeictTest resource.

Json representation sample

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

```
{
  "eventId":"00005",
  "eventTime":"2016-03-02T16:42:25",
  "eventType":" ServiceTestRevmoveNotification",
   "event": {
     "serveictTest" :
        {-- SEE ServiceTest 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
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.

OPERATIONS ON SERVICE TEST SPECIFICATION

LIST SERVICE TEST SPECIFICATIONS

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

Description

This operation list service test specification 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 ServiceTestSpecification resources.

Request
GET /serveictTestManagement/serviceTestSpecification Accept: application/json

Response

```
200

[
{
   "description": "a service description",
   "href": "https://host:port/serviceTestManagement/serviceTestSpecification/12",
   "id": "12",
   "name": "monkey test",
   "validFor": {
      "endDateTime": "2017-03-01T00:00:00",
      "startDateTime": "2016-03-01T00:00:00"
   },
   "testMeasureDefinition": [
      {
         "captureFrequency": "once",
         "captureMethod": "automatic caputure by instrument",
         "metricDescription": "This is the flow speed in a service",
         "metricHref": "https://host:port/metricManagement/metric/21",
         "metricName": "Flow speed",
         "name": "Definition of Flow speed",
         "unitOfMeasure": "A second",
         "valueType": "bits",
         "caputurePeriod": {
            "endDateTime": "T00:00:00",
            "startDateTime": "T00:00:00"
         },
         "metricDefMeasureThresholdRule": [
            {
               "conformanceTargetUpper": "2500",
```

```
              "conformanComparatorUpper": "greater than ",
              "description": "This speed is grater than the target upper",
              "name": "tooMuchTraffic",
              "numberOfAllowedCrossing": "0",
              "thresholdRuleSeverity": "1",
              "tolerancePeriod": "15 minutes",
              "metricDefMeasureConsequence": [
                {
                  "appliedAction": "sendWarning",
                  "description": "send a warning to the system",
                  "name": "sendWarning",
                  "repeatAction": "False",
                  "validFor": {
                     "endDateTime": "2017-03-01T00:00:00",
                     "startDateTime": "2016-03-01T00:00:00"
                  }
                },
                {
                  "appliedAction": "generateReport",
                  "description": "generate a waring report ",
                  "name": "generateReport",
                  "repeatAction": "False",
                  "validFor": {
                     "endDateTime": "2017-03-01T00:00:00",
                     "startDateTime": "2016-03-01T00:00:00"
                  }
                }
              ]
            }
          ],
          "validFor": {
             "endDateTime": "2017-03-01T00:00:00",
             "startDateTime": "2016-03-01T00:00:00"
          }
        }
     ],
     "relatedServiceSpecificationRef": {
        "href": "https://host:port/serviceManagement/serviceSpecification/31",
        "id": "31",
     }
  }
]
```

RETRIEVE SERVICE TEST SPECIFICATION

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

Description

This operation retrieves a service test specification 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 ServiceTestSpecification resource.

Request
GET /serveictTestManagement/serviceTestSpecification/12?fields=description,href,id,name,validFor, relatedServiceSpecificationRef Accept: application/json

Response

200
 	
{
  "description": "a service description",
  "href": "https://host:port/serviceTestManagement/serviceTestSpecification/12",
  "id": "12",
  "name": "monkey test",
  "validFor": {
    "endDateTime": "2017-03-01T00:00:00",
    "startDateTime": "2016-03-01T00:00:00"
  },
  "relatedServiceSpecificationRef": {
    "href": "https://host:port/serviceManagement/serviceSpecification/31",
    "id": "31",
  }
}

CREATE SERVICE TEST SPECIFICATION

POST /serviceTestSpecification

Note: this operation is available only to ADMIN API users

Description

This operation creates a service test specification entity.

Mandatory and Non Mandatory Attributes

The following tables provides the list of mandatory and non mandatory attributes when creating a ServiceTestSpecification, including any possible rule conditions and applicable default values.

Mandatory Attributes	Rule
name	
relatedServiceSpecification	
id	Automatically generated
href	Automatically generated

Additional Rules

The following table provides additional rules indicating mandatory fields in sub-resources or relationships when creating a ServiceTestSpecification resource.

Context	Mandatory Sub-Attributes
RelatedServiceSpecificationRef	href, id
ValidFor	endDateTime, startDateTime
TestMeasureDefinition	metricName, metricHref, name
CaputurePeriod	endDateTime, startDateTime
MetircDefMeasureThresholdRule	conformanceTargetLower, conformanceTargetUpper, conformanComparatorLower, conformanComparatorUpper, name

Usage Samples

Here's an example of a request for creating a ServiceTestSpecification resource. In this example the request only passes mandatory attributes.

Request

```
POST /serveictTestManagement/ServiceTestSpecification
Content-Type: application/json

{
    "description": "a service description",
    "name": "monkey test",
    "validFor": {
        "endDateTime": "2017-03-01T00:00:00",
        "startDateTime": "2016-03-01T00:00:00"
    },
    "relatedServiceSpecificationRef": {
        "href": "https://host:port/serviceManagement/serviceSpecification/31",
        "id": "31",
    }
}
```

Response

```
201

{
  "description": "a service description",
  "href": "https://host:port/serviceTestManagement/serviceTestSpecification/13",
  "id": "13",
  "name": "monkey test",
  "validFor": {
    "endDateTime": "2017-03-01T00:00:00",
    "startDateTime": "2016-03-01T00:00:00"
  },
  "relatedServiceSpecificationRef": {
    "href": "https://host:port/serviceManagement/serviceSpecification/31",
    "id": "31",
  }
}
```

PATCH SERVICE TEST SPECIFICATION

PATCH /serviceTestSpecification/{id}

Note: this operation is available only to ADMIN API users

Description

This operation allows partial updates of a service test specification 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.

Non Patchable Attributes	Rule
href	
id	

Usage Samples

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

Request

PATCH /serveictTestManagement/ServiceTestSpecification/13
Content-Type: application/merge-patch+json
 	
{
  "name": "new name"
}

Response

201
 	
{
  "description": "a service description",
  "href": "https://host:port/serviceTestManagement/serviceTestSpecification/13",
  "id": "13",
  "name": "new name",
  "validFor": {
    "endDateTime": "2017-03-01T00:00:00",
    "startDateTime": "2016-03-01T00:00:00"
  },
  "relatedServiceSpecificationRef": {
    "href": "https://host:port/serviceManagement/serviceSpecification/31",
    "id": "31",
  }
}

DELETE SERVICE TEST SPECIFICATION

DELETE /serviceTestSpecification/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a service test specification type entity.

Usage Samples

Here's an example of a request for deleting a ServiceTestSpecification resource.

Request
DELETE /serveictTestManagement/serviceTestSpecification/12

Response	
204	

OPERATIONS ON SERVICE TEST

LIST SERVEICE TESTS

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

Description

This operation list service test 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 ServeictTest resources.

Request
GET /serveictTestManagement/serveictTest Accept: application/json
Response

200
 	
[
{
  "href": "https://host:port/serviceTestManagement/serviceTest/3112",
  "id": "3112",
  "description:": "This service test is a simple one",
  "endDateTime": "2016-03-02T24:00:00",
  "mode": "PROACTIVE",
  "startDateTime": "2016-03-02T00:00:00",
  "state": "Completed",
  "relatedServiceRef": {
    "href": "https://host:port/serviceManagement/service/21",
    "id": "21",
    "name": "gameService"
  },
  "relatedServiceTestSpecificationRef":{

```json
      "href": "https://host:port/serviceTestManagement/serviceTest/22",
      "id": "22"
    },
    "serviceTestCharcteristic": [
      {
        "name": "number",
        "value": "3"
      },
      {
        "name": "restart",
        "value": "Ture"
      }
    ],
    "testMeasure": [
      {
        "accuracy": 0.0001,
        "caputureDateTime": "2016-03-02T11:12:00",
        "caputureMethod": "automatic caputure by instrument",
        "metricDescription": "This is the flow speed in a service",
        "metricHref": "https://host:port/metricManagement/metric/21",
        "metricName": "Flow speed",
        "unitOfMeasure": "A second",
        "value": "3000",
        "valueType": "bits",
        "measureThresholdRuleViolation": [
          {
            "conformanceTargetUpper": "2500",
            "conformanComparatorUpper": "greater than ",
            "description": "This speed is grater than the target upper",
            "name": "tooMuchTraffic",
            "numberOfAllowedCrossing": "0",
            "thresholdRuleSeverity": "1",
            "appliedConsquence": [
              {
                "appliedAction": "sendWarning",
                "description": "send a warning to the system",
                "name": "sendWarning",
                "repeatAction": "False"
              },
              {
                "appliedAction": "generateReport",
                "description": "generate a waring report ",
                "name": "generateReport",
                "repeatAction": "False"
              }
            ]
          }
        ]
      }
    ]
  }
]
```

RETRIEVE SERVICE TEST

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

Description

This operation retrieves a service test 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 ServeictTest resource.

Request
GET /serveictTestManagement/serveictTest/3112?fields=href,id,description Accept: application/json
Response

200
 	
{
   "href": "https://host:port/serviceTestManagement/serviceTest/3112",
   "id": "3112",
   "description:": "This service test is a simple one",
}

CREATE SERVICE TEST

POST /serveictTest

Note: this operation is available only to ADMIN API users

Description

This operation creates a service test entity.

Mandatory and Non Mandatory Attributes

The following tables provides the list of mandatory and non mandatory attributes when creating a ServeictTest, including any possible rule conditions and applicable default values.

Mandatory Attributes	Rule
name	
id	Automatically generated
href	Automatically generated

relatedService	
relatedServiceTestSpecification	

Additional Rules

The following table provides additional rules indicating mandatory fields in sub-resources or relationships when creating a ServeictTest resource.

Context	Mandatory Sub-Attributes
RelatedServiceRef	href, id
RelatedServiceTestSpecificationRef	hefe, id
ServiceTestCharacteristic	name, value
MeasureThresholdRuleViolation	name, conformanceTargetLower, conformanceTargetUpper, conformanComparatorLower, conformanComparatorUpper
TetMeasure	metricHref, metricName

Usage Samples

Here's an example of a request for creating a ServeictTest resource. In this example the request only passes mandatory attributes.

Request

```
POST /serveictTestManagement/serveictTest
Content-Type: application/json

{
    "description:": "This service test is a simple one",
    "endDateTime": "2016-03-02T24:00:00",
    "mode": "PROACTIVE",
    "startDateTime": "2016-03-02T00:00:00",
    "state": " In Progress",
    "relatedServiceRef": {
        "href": "https://host:port/serviceManagement/service/21",
        "id": "21",
        "name": "gameService"
    },
    "relatedServiceTestSpecificationRef":{
        "href": "https://host:port/serviceTestManagement/serviceTest/22",
        "id": "22"
    },
}
```

Response

```
201

{
    "href": "https://host:port/serviceTestManagement/serviceTest/89757",
```

```
    "id": "89757",
    "description:": "This service test is a simple one",
    "endDateTime": "2016-03-02T24:00:00",
    "mode": "PROACTIVE",
    "startDateTime": "2016-03-02T00:00:00",
    "state": "In Progress",
    "relatedServiceRef": {
        "href": "https://host:port/serviceManagement/service/21",
        "id": "21",
        "name": "gameService"
    },
    "relatedServiceTestSpecificationRef":{
        "href": "https://host:port/serviceTestManagement/serviceTest/22",
        "id": "22"
    },
}
```

PATCH SERVICE TEST

PATCH /serveictTest/{id}

Description

This operation allows partial updates of a service test 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.

Non Patchable Attributes	Rule
id	
href	

Usage Samples

Here's an example of requests for patching a ServeictTest resource.

Changing the status to 'prospective' (using json-merge)

Request
PATCH /serveictTestManagement/serveictTest/42 Content-Type: application/merge-patch+json

```
{
    "status": "Completed"
}
```

Response

```
201

{
    "href": "https://host:port/serviceTestManagement/serviceTest/89757",
    "id": "89757",
    "description:": "This service test is a simple one",
    "endDateTime": "2016-03-02T24:00:00",
    "mode": "PROACTIVE",
    "startDateTime": "2016-03-02T00:00:00",
    "state": "Completed",
    "relatedServiceRef": {
        "href": "https://host:port/serviceManagement/service/21",
        "id": "21",
        "name": "gameService"
    },
    "relatedServiceTestSpecificationRef":{
        "href": "https://host:port/serviceTestManagement/serviceTest/22",
        "id": "22"
    },
}
```

DELETE SERVICE TEST

DELETE /serveictTest/{id}

Note: this operation is available only to ADMIN API users

Description

This operation deletes a service test entity.

Usage Samples

Here's an example of a request for deleting a ServeictTest resource.

Request
DELETE /serveictTestManagement/serveictTest/89757
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

RELEASE HISTORY

Release Number	Date	Release led by:	Description

CONTRIBUTORS TO DOCUMENT