

TM Forum Specification

Product Test

TMF769

Maturity Level: Beta	Team Approved Date: 16-07-2024
Release Status: Pre-Production	Approval Status: Team Approved
Version 5.0.0	IPR Mode: RAND

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Table of Contents

NOTICE	i
Introduction	1
Sample Use Cases	2
Service Quality Assurance	2
New Product Validation	2
Partner Onboarding and Certification	2
Fault Detection and Troubleshooting	2
Performance Benchmarking	2
Regulatory Compliance	2
Customer Experience Optimization	3
Support Of Polymorphism And Extension Patterns	4
Resource Model	5
Managed Entity and Task Resource Models	5
ProductTest resource	5
ProductTestSpecification resource	20
Notification Resource Models	31
ProductTest	32
ProductTestSpecification	37
API Operations	46
Operations on ProductTest	46
List or find ProductTest objects	46
Retrieves a ProductTest by ID	52
Creates a ProductTest	55
Updates partially a ProductTest	59
Operations on ProductTestSpecification	65
List or find ProductTestSpecification objects	65
Retrieves a ProductTestSpecification by ID	68
Creates a ProductTestSpecification	72
Updates partially a ProductTestSpecification	78
Deletes a ProductTestSpecification	93
API NOTIFICATIONS	95
Register listener	95
Unregister listener	96
Publish Event to listener	96
Acknowledgements	98
Release History	98
Contributors to Document	98

Introduction

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

The ProductTest API serves as a standardized mechanism for placing a product test with all the necessary test parameters TO conduct thorough evaluations and assessments of CSP products. Its primary objective is to facilitate a wholistic and systematic examination of the various services encompassed within a product, thereby ensuring its quality, performance, and reliability.

The API consists of a simple set of operations that interact with Product/Service Management systems in a consistent manner. A product test is a procedure intended to check the quality, performance, or reliability of a service.

Moreover, the ProductTest API provides Communication Service Providers (CSPs) with the ability to expose a testing interface to partner CSPs, such as Internet Service Providers (ISPs), enabling them to perform and retrieve test results on products. This fosters collaboration and transparency within the ecosystem, allowing for mutual assurance of product quality and performance.

Operating on a modular architecture, the ProductTest API orchestrates the decomposition of the product into its constituent services and interfaces seamlessly with the ServiceTest API for individual service evaluations. By leveraging the capabilities of the ServiceTest API, it initiates and manages a series of service tests, each tailored to scrutinize specific aspects of the product's functionality.

Product Test Management API manages product test resource and product specification test resource:

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

Sample Use Cases

Service Quality Assurance

The broadband wholesale provider can use the ProductTest API to ensure the quality and reliability of the broadband services they offer to their clients, such as Internet Service Providers (ISPs) or telecommunication companies. By conducting regular product tests on various aspects like speed, latency, and reliability, they can identify any potential issues and proactively address them, thereby maintaining high service standards.

New Product Validation

When introducing a new broadband product or service, the wholesale provider can leverage the ProductTest API to validate its performance and compatibility across different network configurations and customer environments. This includes testing features like bandwidth allocation, network scalability, and interoperability with existing infrastructure to ensure seamless integration and optimal performance.

Partner Onboarding and Certification

To onboard new ISP partners onto their network, the wholesale provider can utilize the ProductTest API to certify their readiness and compatibility with the broadband services offered. By defining standardized test scenarios and parameters, they can evaluate the partner ISPs' network capabilities and ensure they meet the required standards before granting access to the wholesale network.

Fault Detection and Troubleshooting

In case of network faults or service disruptions, the broadband wholesale provider can employ the ProductTest API to quickly diagnose and troubleshoot the underlying issues. By automating diagnostic tests and analyzing test results in real-time, they can pinpoint the root cause of the problem and expedite the resolution process, minimizing downtime and customer impact.

Performance Benchmarking

The wholesale provider can use the ProductTest API to benchmark the performance of their broadband services against industry standards and competitor offerings. By conducting comparative tests on factors like speed, latency, and reliability, they can identify areas for improvement and differentiate their services based on superior performance metrics.

Regulatory Compliance

To comply with regulatory requirements and industry standards, such as quality of service (QoS) regulations, the broadband wholesale provider can utilize the ProductTest API to conduct regular compliance audits and performance assessments. This includes measuring key performance indicators (KPIs) mandated by regulatory bodies and generating comprehensive reports to demonstrate compliance.

Customer Experience Optimization

By continuously monitoring and analyzing service performance through the ProductTest API, the wholesale provider can proactively identify opportunities to enhance the overall customer experience. This includes optimizing network configurations, implementing service upgrades, and addressing potential bottlenecks to deliver faster, more reliable broadband services to end-users.

These use cases demonstrate how the ProductTest API can enable a broadband wholesale provider to ensure service quality, drive operational efficiency, and maintain a competitive edge in the broadband market.

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.

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. All resources and sub-resources of this API have a `@type` attributes that can be provided when this is useful. Such as `ServiceTest`, `ServiceTestSpecification` Entity. All resources and sub-resources of this API have a `@type` attributes that can be provided when this is useful.

The `@referredType` can be used within reference entities (like for instance `ServiceRef`) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the `@type`, when used, denotes the class types of the reference itself, such as `ServiceRef`, and not the class type of the referred object. However, since reference classes are rarely sub-classed, `@type` is generally not useful in reference objects.

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.

Notice that because these meta-attributes have a generic meaning, we will not repeat their definition in the resource description tables of each resource and each sub-resource.

Resource Model

Managed Entity and Task Resource Models

ProductTest resource

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

Resource model

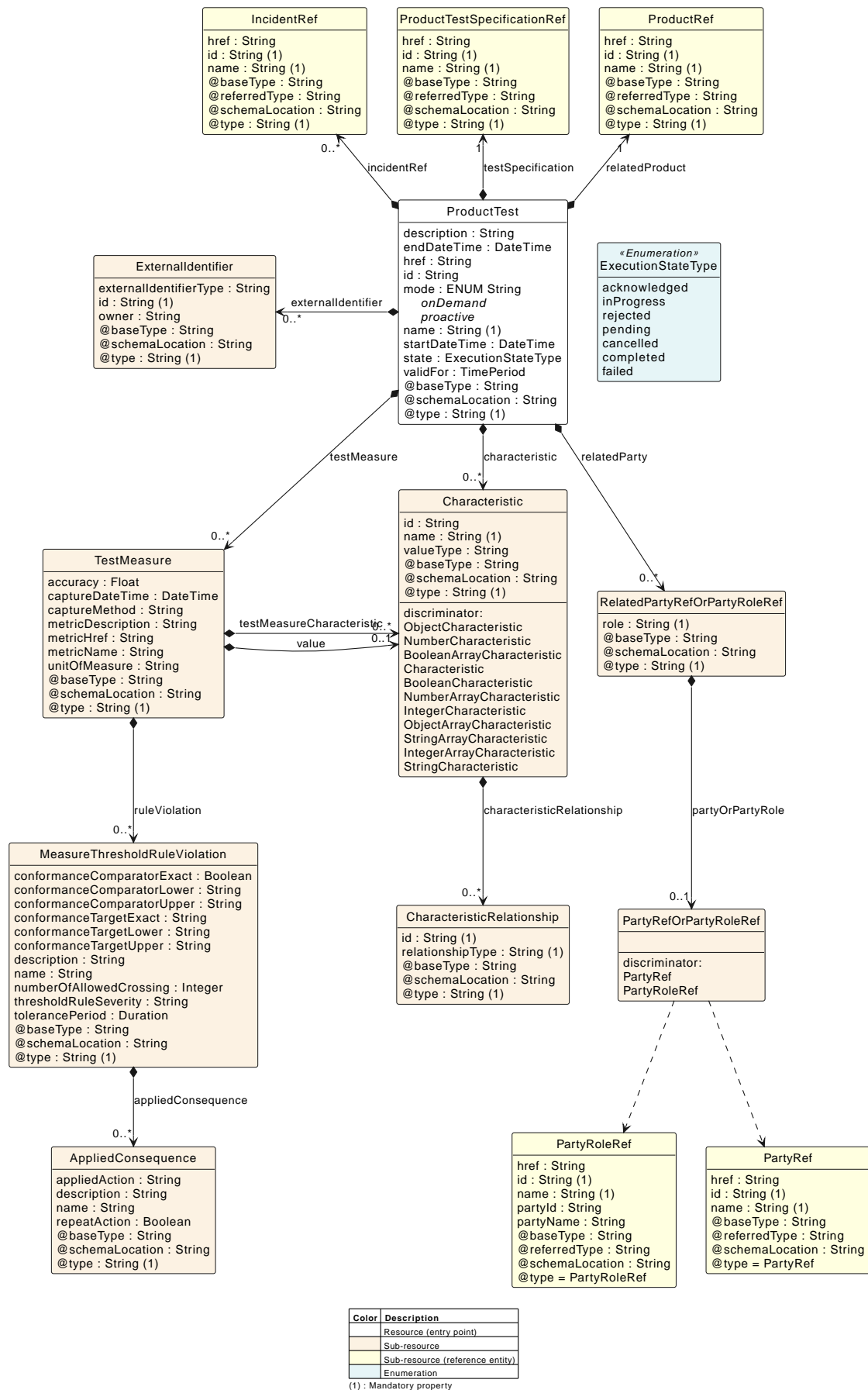


Figure 1 - ProductTest

[.] | .//

Figure 2 - ProductTest

Field descriptions

ProductTest fields

characteristic	<p>A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic...</p> <p>Characteristic can be instantiated as</p> <ul style="list-style-type: none"> * BooleanArrayCharacteristic * BooleanCharacteristic * IntegerArrayCharacteristic * IntegerCharacteristic * NumberArrayCharacteristic * NumberCharacteristic * ObjectArrayCharacteristic * ObjectCharacteristic * StringArrayCharacteristic * StringCharacteristic
description	A String. Description of the product test.
endTime	A DateTime. The end date and time of the product test.
externalIdentifier	An ExternalIdentifier. An identification of an entity that is owned by or originates in a software system different from the current system, for example a ProductOrder handed off from a commerce platform into an order handling system. The structure identifies the system itself, the nature of the entity within the system (e.g. class name) and the unique ID of the entity within the system. It is anticipated that multiple external IDs can be held for a single entity, e.g. if the entity passed through multiple systems on the way to the current system. In this case the consumer is expected to sequence the IDs in the array in reverse order of provenance, i.e. most recent system first in the list.
href	A String. Hyperlink reference.
id	A String. Unique identifier.
incidentRef	An IncidentRef. Incident reference.
mode	<p>A String. An indication of whether the product test is running in "proactive" or "onDemand" mode. ENUMERATED with values:</p> <ul style="list-style-type: none"> * onDemand * proactive
name	A String. The name of the product test.

relatedParty	A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity.
relatedProduct	A ProductRef. A Product reference.
startDateTime	A DateTime. The start date and time of the product test.
state	An ExecutionStateType. Possible values for the state of the execution. ENUMERATED with values: * acknowledged * rejected * pending * inProgress * cancelled * completed * failed
testMeasure	A TestMeasure. A TestMeasure specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.
testSpecification	A ProductTestSpecificationRef. Product Test specification reference: ProductTestSpecification(s) required to realize a Test Specification.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

ExternalIdentifier sub-resource fields

externalIdentifierType	A String. Type of the identification, typically would be the type of the entity within the external system.
id	A String. Identification of the entity within the external system.
owner	A String. Name of the external system that owns the entity.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

IncidentRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.

@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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.

ProductTestSpecificationRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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 sub-resource fields

characteristicRelationship	A 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.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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 can be instantiated as * BooleanArrayCharacteristic * BooleanCharacteristic * IntegerArrayCharacteristic * IntegerCharacteristic * NumberArrayCharacteristic * NumberCharacteristic * ObjectArrayCharacteristic * ObjectCharacteristic * StringArrayCharacteristic * StringCharacteristic

value	This property is present in subclasses
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ObjectCharacteristic sub-resource fields

characteristicRelationship	A 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 object. Value of the characteristic.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

NumberCharacteristic sub-resource fields

characteristicRelationship	A 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	A Number. Value of the characteristic.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

BooleanArrayCharacteristic sub-resource fields

characteristicRelationship	A 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	A Boolean. A characteristic which value is an array of Boolean(s).
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.

@schemaLocation	A String. 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.

BooleanCharacteristic sub-resource fields

characteristicRelationship	A 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	A Boolean. Value of the characteristic.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

NumberArrayCharacteristic sub-resource fields

characteristicRelationship	A 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	A Number. A characteristic which value is an array of Number(s).
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

IntegerCharacteristic sub-resource fields

characteristicRelationship	A 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 Integer. Value of the characteristic.
valueType	A String. Data type of the value of the characteristic.

@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

ObjectArrayCharacteristic sub-resource fields

characteristicRelationship	A 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 object. Collection of characteristic values.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

StringArrayCharacteristic sub-resource fields

characteristicRelationship	A 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	A String. Collection of string characteristics.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

IntegerArrayCharacteristic sub-resource fields

characteristicRelationship	A 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 Integer. A characteristic which value is an array of Integer(s).

valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

StringCharacteristic sub-resource fields

characteristicRelationship	A 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	A String. Value of the characteristic.
valueType	A String. Data type of the value of the characteristic.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

RelatedPartyRefOrPartyRoleRef sub-resource fields

partyOrPartyRole	A PartyRefOrPartyRoleRef.
role	A String. Role played by the related party or party role in the context of the specific entity it is linked to. Such as 'initiator', 'customer', 'salesAgent', 'user'.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

ProductRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.

@schemaLocation	A String. 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.

TestMeasure sub-resource fields

accuracy	A Float. The number of digits of accuracy captured for associated Metrics.
captureDateTime	A DateTime. The date and time that the metric was captured.
captureMethod	A String. The method used to capture the Metrics (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 the metric.
ruleViolation	A MeasureThresholdRuleViolation. A measureThresholdRuleViolation is a violation of a rule that defines the in the MericDefMeasureThresholdRule.
testMeasureCharacteristic	<p>A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic...</p> <p>Characteristic can be instantiated as</p> <ul style="list-style-type: none"> * BooleanArrayCharacteristic * BooleanCharacteristic * IntegerArrayCharacteristic * IntegerCharacteristic * NumberArrayCharacteristic * NumberCharacteristic * ObjectArrayCharacteristic * ObjectCharacteristic * StringArrayCharacteristic * StringCharacteristic
unitOfMeasure	A String. The unit of measure for the metric values, such as meters, cubic yards, kilograms [ISO 1000].

value	<p>A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic...</p> <p>Characteristic can be instantiated as</p> <ul style="list-style-type: none"> * BooleanArrayCharacteristic * BooleanCharacteristic * IntegerArrayCharacteristic * IntegerCharacteristic * NumberArrayCharacteristic * NumberCharacteristic * ObjectArrayCharacteristic * ObjectCharacteristic * StringArrayCharacteristic * StringCharacteristic
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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 sub-resource fields

id	A String. Unique identifier of the characteristic.
relationshipType	A String. The type of relationship.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

PartyRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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.
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PartyRoleRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
partyId	A String. The identifier of the engaged party that is linked to the PartyRole object.
partyName	A String. The name of the engaged party that is linked to the PartyRole object.
@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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.

MeasureThresholdRuleViolation sub-resource fields

appliedConsequence	An AppliedConsequence. An Applied Consequence defines the action (prescribed action or notification) to take when a MeasureThresholdRuleViolation occurs.
conformanceComparatorExact	A Boolean. An operator that when applied on a value specifies whether it is the same target value or not. This operator is used to compare with the conformanceTargetExact if used.
conformanceComparatorLower	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 if used.
conformanceComparatorUpper	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 if used.
conformanceTargetExact	A String. To cater for values that are not numerical test metrics (e.g. a DSL line can be Synchronised or Unsynchronised. If the latter, the test should result in a rule violation). The allowed value can contain a REGEX expression.
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 if used. 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 if used. The conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
description	A String. Description for the MetricDefMeasureThresholdRule .
name	A String. Name for the MetricDefMeasureThresholdRule .
numberOfAllowedCrossing	An Integer. 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 Duration. A time interval in a given unit of time.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

AppliedConsequence sub-resource fields

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 Boolean. An indicator used 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 repeatAction is True, if the consequence is always applied as soon as the MetricMeasure value is in the range of values and if the repeatAction is False, the consequence is applied only if the previous MetricMeasure value was not in the same range.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

Json representation sample(s)

We provide below a JSON representation as example of the 'ProductTest' resource object.

```

{
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/b9b1727e-faae-497f-8e82-43ebe92de6ce",
  "id": "b9b1727e-faae-497f-8e82-43ebe92de6ce",
  "description": "When the request is received and the ServiceID is validated, the
ServiceID is used to Diagnose the network, the found details are then returned to
the Supplier.",
  "startDateTime": "2024-03-08T00:00:00.00Z",
  "endDateTime": "2024-03-08T00:00:01.00Z",
  "mode": "onDemand",
  "state": "completed",
  "validFor": {
    "startDateTime": "2024-03-08T00:00:00.00Z",
    "endDateTime": "2024-03-08T00:00:01.00Z"
  },
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "ISP-X",
        "@type": "PartyRef",
        "@referredType": "Organisation"
      }
    }
  ],
  "relatedProduct": {
    "href": "https://mycsp.com/tmf-api/productInventory/v5/product/ae443f8d-
aa6a-41f9-8ec7-8b01e7f666e6",
    "id": "ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "@type": "ProductRef",
    "name": "S410996"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-
c7b6b8c9f3e5",
    "name": "Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "characteristic": [
    {
      "name": "overallStatus",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    {
      "name": "committedRateUp",
      "value": 100,
      "@type": "NumberCharacteristic"
    },
    {
      "name": "committedRateDown",
      "value": 200,
      "@type": "NumberCharacteristic"
    }
  ],
  "testMeasure": [

```

```

{
  "captureDateTime": "2024-03-08T00:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "Uni Port Status",
  "metricDescription": "OLT - Uni Port Status",
  "value": {
    "name": "status",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-08T00:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "ONT reachability",
  "metricDescription": "OLT - ONT reachability",
  "value": {
    "name": "status",
    "value": "online",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-08T00:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "CFM",
  "metricDescription": "OLT - CFM Status",
  "value": {
    "name": "cfm",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "testMeasureCharacteristic": [
    {
      "name": "lastStatusChange",
      "value": "2024-03-07T23:59:00.001Z",
      "@type": "StringCharacteristic"
    },
    {
      "name": "previousStatusValue",
      "value": "down",
      "@type": "StringCharacteristic"
    }
  ],
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-08T00:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "DHCP/PPP status",
  "metricDescription": "OLT - DHCP/PPP status",
  "value": {
    "name": "dhcp/ppp",
    "value": "established",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-08T00:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",

```

```

        "metricName": "ENNI Status",
        "metricDescription": "PE - ENNI status",
        "value": {
            "name": "enniStatus",
            "value": "up",
            "@type": "StringCharacteristic"
        },
        "@type": "TestMeasure"
    },
    {
        "captureDateTime": "2024-03-08T00:00:00.001Z",
        "captureMethod": "Automatic capture by OLT",
        "metricName": "E2E Traffic",
        "metricDescription": "End to end traffic",
        "value": {
            "name": "e2eTraffic",
            "value": "yes",
            "@type": "StringCharacteristic"
        },
        "@type": "TestMeasure"
    }
],
"incidentRef": [
    {
        "id": "TIC-DEV00027757",
        "name": "MaintainerIncidentReference",
        "@type": "IncidentRef"
    }
],
"@type": "ProductTest"
}

```

ProductTestSpecification resource

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

Resource model

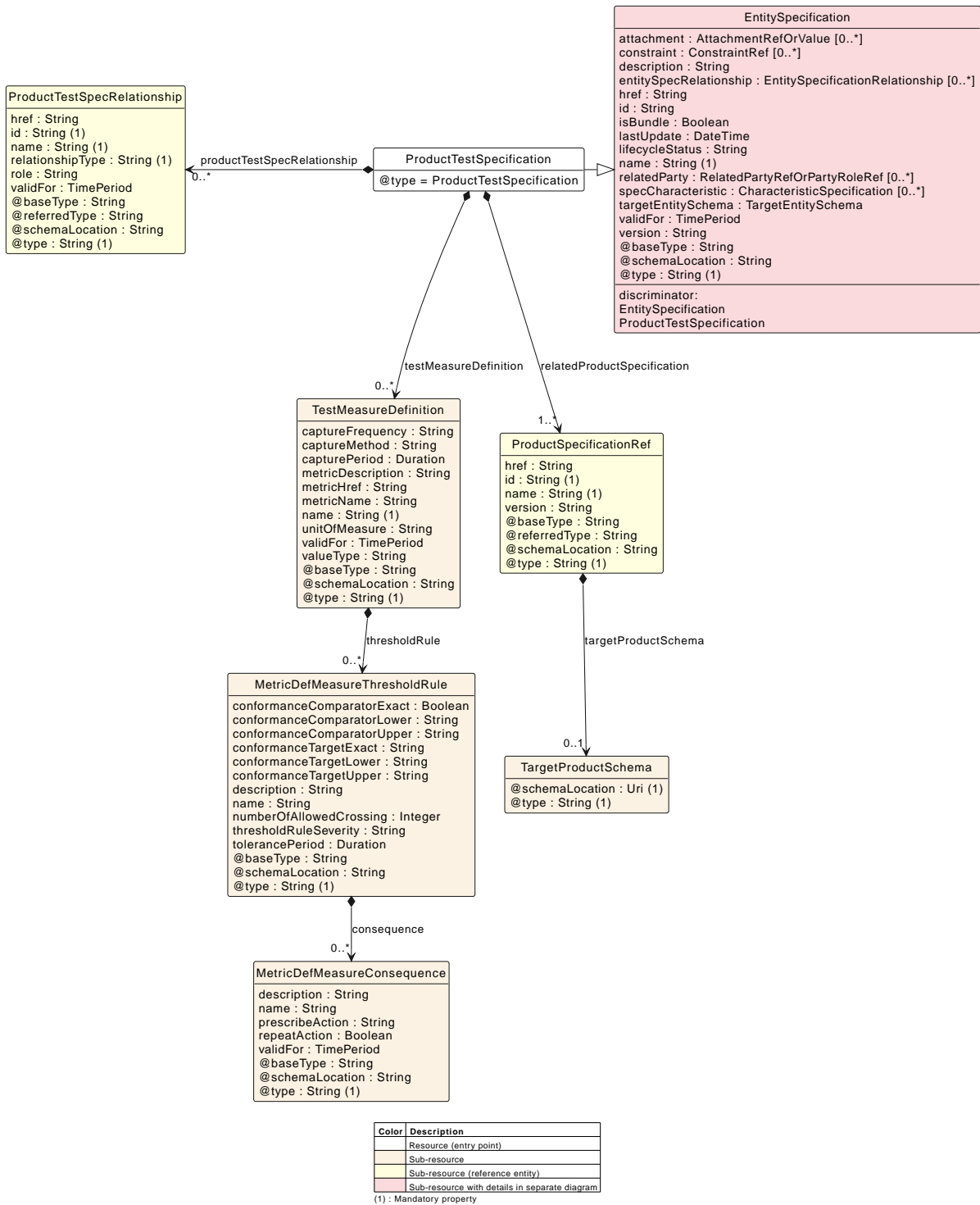


Figure 3 - ProductTestSpecification

[.] | .//

Figure 4 - ProductTestSpecification

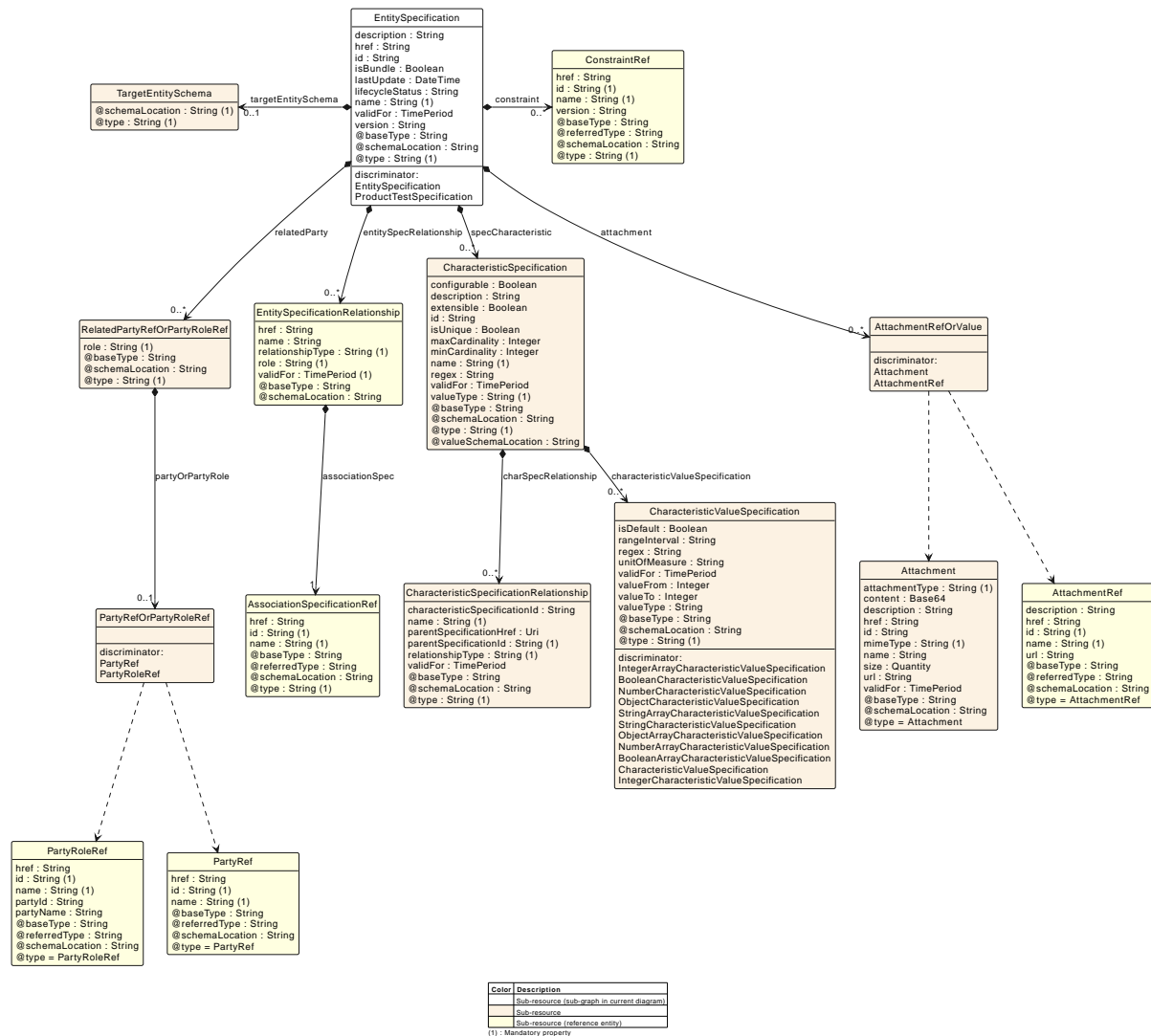


Figure 5 - EntitySpecification

[.] | .//

Figure 6 - EntitySpecification

Field descriptions

ProductTestSpecification fields

attachment	An AttachmentRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Attachment entity and not the AttachmentRefOrValue class itself.
constraint	A ConstraintRef. Constraint reference. The Constraint resource represents a policy/rule applied to an entity or entity spec.
description	A String. Description of a product test specification.
entitySpecRelationship	An EntitySpecificationRelationship. A migration, substitution, dependency or exclusivity relationship between/among entity specifications.
href	A String. Hyperlink reference.

id	A String. Unique identifier.
isBundle	A Boolean. IsBundle determines whether specification represents a single specification (false), or a bundle of specifications (true).
lastUpdate	A DateTime. Date and time of the last update of the specification.
lifecycleStatus	A String. Used to indicate the current lifecycle status of this catalog item.
name	A String. Name given to the specification.
productTestSpecRelationship	A ProductTestSpecRelationship. A substitution, dependency or exclusivity relationship between/among product specifications.
relatedParty	A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity.
relatedProductSpecification	A ProductSpecificationRef. ProductSpecification reference. A product Specification represents entities that are orderable from the provider of the catalog.
specCharacteristic	A CharacteristicSpecification. This class defines a characteristic specification.
targetEntitySchema	A TargetEntitySchema. The reference object to the schema and type of target entity which is described by a specification.
testMeasureDefinition	A TestMeasureDefinition. A TestMeasureDefinition specifies a measure of a specific aspect of a product, service, or resource test, such as lost packets or connectivity status.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.
version	A String. Specification version.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

ProductTestSpecRelationship sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
relationshipType	A String. Type of relationship such as substitution, dependency, exclusivity.
role	A String. The association role for this product test specification.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.

@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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.

TestMeasureDefinition sub-resource fields

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.
capturePeriod	A Duration. A time interval in a given unit of time.
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.
thresholdRule	A 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.
unitOfMeasure	A String. Name of a service test specification.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.
valueType	A String. A kind of value that the Metric value can take on, such as numeric, text, and so forth.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

ProductSpecificationRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.

targetProductSchema	A TargetProductSchema. The reference object to the schema and type of target product which is described by product specification.
version	A String. Version of the product specification.
@baseType	A String. When sub-classing, this defines the super-class.
@referredType	A String. The actual type of the target instance when needed for disambiguation.
@schemaLocation	A String. 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.

MetricDefMeasureThresholdRule sub-resource fields

conformanceComparatorExact	A Boolean. An operator that when applied on a value specifies whether the value is the same or not. This operator is used to compare with the conformanceTargetExact if used.
conformanceComparatorLower	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 Service Test Management API REST Specification compare with the conformanceTargetLower if used.
conformanceComparatorUpper	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 if used.
conformanceTargetExact	A String. To cater for values that are not numerical test metrics (e.g. a DSL line can be Synchronised or Unsynchronised. If the latter, the test should result in a rule violation). The allowed value can contain a REGEX expression.
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 if used. 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 if used. The conformance comparators should also be logically defined so as to not lead to a logically impossible condition.
consequence	A MetricDefMeasureConsequence. A MetricDefMeasureConsequence defines the action (prescribed action or notification) to take when a MetricDefMeasureThresholdRule is crossed.
description	A String. Description for the MetricDefMeasureThresholdRule .
name	A String. Name for the MetricDefMeasureThresholdRule .

numberOfAllowedCrossing	An Integer. 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 Duration. A time interval in a given unit of time.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

MetricDefMeasureConsequence sub-resource fields

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 Boolean. An indicator used 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 repeatAction is True, if the consequence is always applied as soon as the MetricMeasure value is in the range of values and if the repeatAction is False, the consequence is applied only if the previous MetricMeasure value was not in the same range.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.

TargetProductSchema sub-resource fields

@schemaLocation	A Uri. This field provides a link to the schema describing the target product.
@type	A String. Class type of the target product.

EntitySpecification sub-resource fields

attachment	An AttachmentRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Attachment entity and not the AttachmentRefOrValue class itself.
constraint	A ConstraintRef. Constraint reference. The Constraint resource represents a policy/rule applied to an entity or entity spec.
description	A String. Description of the specification.
entitySpecRelationship	An EntitySpecificationRelationship. A migration, substitution, dependency or exclusivity relationship between/among entity specifications.
href	A String. Hyperlink reference.
id	A String. Unique identifier.
isBundle	A Boolean. IsBundle determines whether specification represents a single specification (false), or a bundle of specifications (true).
lastUpdate	A DateTime. Date and time of the last update of the specification.
lifecycleStatus	A String. Used to indicate the current lifecycle status of this catalog item.
name	A String. Name given to the specification.
relatedParty	A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity.
specCharacteristic	A CharacteristicSpecification. This class defines a characteristic specification.
targetEntitySchema	A TargetEntitySchema. The reference object to the schema and type of target entity which is described by a specification.
validFor	A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both.
version	A String. Specification version.
@baseType	A String. When sub-classing, this defines the super-class.
@schemaLocation	A String. 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.
	EntitySpecification can be instantiated as * ProductTestSpecification
productTestSpecRelationship	This property is present in subclasses
relatedProductSpecification	This property is present in subclasses
testMeasureDefinition	This property is present in subclasses

Json representation sample(s)

We provide below a JSON representation as example of the 'ProductTestSpecification' resource object.

```
{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
  "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
  "version": "1.0",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",
  "validFor": {
    "@type": "TimePeriod",
    "endDateTime": "2024-01-01T00:00:00.00Z",
    "startDateTime": "2025-01-01T00:00:00.00Z"
  },
  "specCharacteristic": [
    {
      "@type": "CharacteristicSpecification",
      "name": "overallStatus",
      "description": "This provides an overall status for the product based on
different tests executed",
      "valueType": "string",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "StringCharacteristicValueSpecification",
          "valueType": "string",
          "value": "V1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateUp",
      "description": "This provides the information of the CIR based on the product
definition",
      "valueType": "number",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "NumberCharacteristicValueSpecification",
          "valueType": "number",
          "value": "1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateDown",
      "description": "This provides the information of the CIR Down based on the
product definition",
      "valueType": "number",
      "configurable": false,
```

```

        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
            {
                "@type": "NumberCharacteristicValueSpecification",
                "valueType": "number",
                "value": "1"
            }
        ]
    },
    ],
    "testMeasureDefinition": [
        {
            "name": "Uni Port Status",
            "metricDescription": "OLT - Uni Port Status",
            "metricName": "Uni Port Status",
            "unitOfMeasure": "HeartBeat",
            "captureFrequency": "once",
            "captureMethod": "Automatic capture by OLT",
            "valueType": "string",
            "thresholdRule": [
                {
                    "@type": "MetricDefMeasureThresholdRule",
                    "conformanceTargetExact": "Down",
                    "description": "This UNI Port Status is down",
                    "name": "UniPortDown",
                    "numberOfAllowedCrossing": 0,
                    "thresholdRuleSeverity": "1",
                    "consequence": [
                        {
                            "@type": "MetricDefMeasureConsequence",
                            "prescribeAction": "raiseTicket",
                            "description": "Raise an incident ticket",
                            "name": "raiseTicket",
                            "repeatAction": false
                        },
                        {
                            "@type": "MetricDefMeasureConsequence",
                            "prescribeAction": "sendWarning",
                            "description": "Send a warning to the NOC",
                            "name": "sendWarning"
                        }
                    ]
                }
            ]
        }
    ],
    "@type": "TestMeasureDefinition"
},
{
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
        {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "PPP Terminated",
            "description": "This PPP session is down",
            "name": "PPP Status",

```



```

      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    },
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "No Session",
      "description": "This DHCP session is down",
      "name": "DHCPStatus",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    }
  ],
  "@type": "TestMeasureDefinition"
},
{
  "ProductTestSpecRelationship": [
    {
      "@type": "ProductTestSpecRelationship",
      "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
      "relationshipType": "dependency"
    }
  ],
  "relatedProductSpecification": [
    {
      "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
      "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
      "name": "FTTH Product Specification",
      "@type": "RelatedProductSpecification"
    }
  ],
  "@type": "ProductTestSpecification",

```

```
"@baseType": "ProductTestSpecification"  
}
```

Notification Resource Models

7 notifications are defined for this API.

Notifications related to ProductTest:

- Create Event
- Attribute Value Change Event
- State Change Event

Notifications related to ProductTestSpecification:

- Create Event
- Delete Event
- Attribute Value Change Event
- State Change Event

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 subclass 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).

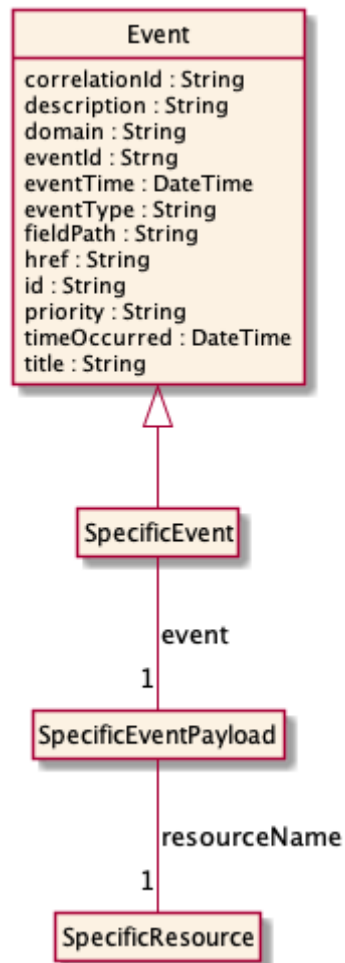


Figure 7 Notification Pattern

ProductTest

Create Event

Message example for ProductTestCreateEvent event

```

Content-Type: application/json

{
  "correlationId": "35768906-7ccc-4ca3-8892-c2bbd8054009",
  "description": "ProductTestCreateEvent",
  "domain": "Service Assurance",
  "eventId": "965dfdal-06c4-49cb-bcb9-1aa2a93fb2af",
  "eventTime": "2022-08-25T12:21:36.704Z",
  "eventType": "ProductTestCreateEvent",
  "priority": "1",
  "timeOccurred": "2022-08-25T12:21:32.568Z",
  "title": "ProductTestCreateEvent",
  "event": {
    "productTest": {
      "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/b9b1727e-faae-497f-8e82-43ebe92de6ce",
      "id": "b9b1727e-faae-497f-8e82-43ebe92de6ce",
      "description": "When the request is received and the ServiceID is
  
```

```

validated, the ServiceID is used to Diagnose the network, the found details are then
returned to the Supplier.",
  "startDateTime": "2024-03-08T00:00:00.00Z",
  "endDateTime": "2024-03-08T00:00:01.00Z",
  "mode": "onDemand",
  "state": "completed",
  "validFor": {
    "startDateTime": "2024-03-08T00:00:00.00Z",
    "endDateTime": "2024-03-08T00:00:01.00Z"
  },
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "ISP-X",
        "@type": "PartyRef",
        "@referredType": "Organisation"
      }
    }
  ],
  "relatedProduct": {
    "href": "https://mycsp.com/tmf-
api/productInventory/v5/product/ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "id": "ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "@type": "ProductRef",
    "name": "S410996"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-
c7b6b8c9f3e5",
    "name": "Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "characteristic": [
    {
      "name": "overallStatus",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    {
      "name": "committedRateUp",
      "value": 100,
      "@type": "NumberCharacteristic"
    },
    {
      "name": "committedRateDown",
      "value": 200,
      "@type": "NumberCharacteristic"
    }
  ],
  "testMeasure": [
    {
      "captureDateTime": "2024-03-08T00:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",
      "metricName": "Uni Port Status",
      "metricDescription": "OLT - Uni Port Status",
      "value": {

```

```

        "name": "status",
        "value": "up",
        "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
},
{
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "ONT reachability",
    "metricDescription": "OLT - ONT reachability",
    "value": {
        "name": "status",
        "value": "online",
        "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
},
{
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "CFM",
    "metricDescription": "OLT - CFM Status",
    "value": {
        "name": "cfm",
        "value": "up",
        "@type": "StringCharacteristic"
    },
    "testMeasureCharacteristic": [
        {
            "name": "lastStatusChange",
            "value": "2024-03-07T23:59:00.001Z",
            "@type": "StringCharacteristic"
        },
        {
            "name": "previousStatusValue",
            "value": "down",
            "@type": "StringCharacteristic"
        }
    ],
    "@type": "TestMeasure"
},
{
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "DHCP/PPP status",
    "metricDescription": "OLT - DHCP/PPP status",
    "value": {
        "name": "dhcp/ppp",
        "value": "established",
        "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
},
{
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "ENNI Status",
    "metricDescription": "PE - ENNI status",
    "value": {
        "name": "enniStatus",
        "value": "up",
        "@type": "StringCharacteristic"
    }
}

```

```

    },
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "E2E Traffic",
    "metricDescription": "End to end traffic",
    "value": {
      "name": "e2eTraffic",
      "value": "yes",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  }
],
"incidentRef": [
  {
    "id": "TIC-DEV00027757",
    "name": "Maintainer Incident Reference",
    "@type": "IncidentRef"
  }
],
"@type": "ProductTest"
}
},
"reportingSystem": {
  "id": "51d61d67-07a4-470f-b27b-b20fdf989e35",
  "name": "APP-675",
  "@type": "ReportingResource",
  "@referredType": "LogicalResource"
},
"source": {
  "id": "6a15927f-8feb-4ed0-91d9-b60dalb5a132",
  "name": "APP-374",
  "@type": "ReportingResource",
  "@referredType": "LogicalResource"
},
"@baseType": "Event",
"@type": "ProductTestCreateEvent"
}

```

Attribute Value Change Event

Message example for ProductTestAttributeValueChangeEvent event

```

Content-Type: application/json

{
  "correlationId": "67f7126c-4254-4733-9462-a12f47ff884a",
  "description": "ProductTestAttributeValueChangeEvent",
  "domain": "Service Assurance",
  "eventId": "96e15d34-31bb-4d80-98b1-3e8385dadbbf",
  "eventTime": "2022-08-25T12:21:36.714Z",
  "eventType": "ProductTestAttributeValueChangeEvent",
  "priority": "3",
  "timeOccurred": "2022-08-25T12:21:36.133Z",
  "title": "ProductTestAttributeValueChangeEvent",
  "event": {
    "productTest": {

```

```

      "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/b9b1727e-faae-497f-8e82-43ebe92de6ce",
      "id": "b9b1727e-faae-497f-8e82-43ebe92de6ce",
      "description": "Description change",
      "@type": "ProductTest"
    },
    "reportingSystem": {
      "id": "c69c6ace-082a-449e-be54-5eca894cc295",
      "name": "APP-675",
      "@type": "ReportingResource",
      "@referredType": "LogicalResource"
    },
    "source": {
      "id": "fca42cfb-4f81-40ba-a311-32915cb4bfe4",
      "name": "APP-374",
      "@type": "ReportingResource",
      "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@schemaLocation": "https://mycsp.com/tmf-
api/schema/Product/ProductTest.schema.json",
    "@type": "ProductTestAttributeValueChangeEvent"
  }

```

State Change Event

Message example for ProductTestStateChangeEvent event with ?fields=state property only

Content-Type: application/json

```

{
  "correlationId": "f5b717c5-4da9-4687-823e-b44d63f81805",
  "description": "ProductTestStateChangeEvent",
  "domain": "Service Assurance",
  "eventId": "18bab44e-a3f9-4995-b641-cdda15025387",
  "eventTime": "2022-08-25T12:21:36.678Z",
  "eventType": "ProductTestStateChangeEvent",
  "priority": "2",
  "timeOccurred": "2022-08-25T12:21:28.377Z",
  "title": "ProductTestStateChangeEvent",
  "event": {
    "productTest": {
      "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/b59f3c92-1192-4739-87de-a6aad611c3da",
      "id": "b59f3c92-1192-4739-87de-a6aad611c3da",
      "@type": "ProductTest",
      "state": "completed"
    },
    "reportingSystem": {
      "id": "49144272-e489-42b0-8710-c060469184ed",
      "name": "APP-675",
      "@type": "ReportingResource",
      "@referredType": "LogicalResource"
    },
    "source": {
      "id": "58ea2313-c057-43ba-910b-36876293c751",
      "name": "APP-374",
      "@type": "ReportingResource",

```

```

    "@referredType": "LogicalResource"
  },
  "@baseType": "Event",
  "@type": "ProductTestStateChangeEvent"
}

```

ProductTestSpecification

Create Event

Message example for ProductTestSpecificationCreateEvent event

```

Content-Type: application/json

{
  "correlationId": "1c8af9cd-847f-43ac-86de-0a40e6c51ca2",
  "description": "ProductTestSpecificationCreateEvent",
  "domain": "Service Assurance",
  "eventId": "57e8b58e-6121-427f-9f38-03848fe5876d",
  "eventTime": "2024-08-25T12:21:36.704Z",
  "eventType": "ProductTestSpecificationCreateEvent",
  "priority": "1",
  "timeOccurred": "2024-08-25T12:21:32.568Z",
  "title": "ProductTestSpecificationCreateEvent",
  "event": {
    "productTestSpecification": {
      "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
      "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
      "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
      "version": "1.0",
      "name": "Diagnostic Product FTTH",
      "lifecycleStatus": "active",
      "validFor": {
        "@type": "TimePeriod",
        "endDateTime": "2024-01-01T00:00:00.00Z",
        "startDateTime": "2025-01-01T00:00:00.00Z"
      },
    },
    "specCharacteristic": [
      {
        "@type": "CharacteristicSpecification",
        "name": "overallStatus",
        "description": "This provides an overall status for the product based on
different tests executed",
        "valueType": "string",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "StringCharacteristicValueSpecification",
            "valueType": "string",
            "value": "V1"
          }
        ]
      }
    ]
  }
}

```



```

    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateUp",
    "description": "This provides the information of the CIR based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  }
],
{
  "@type": "CharacteristicSpecification",
  "name": "committedRateDown",
  "description": "This provides the information of the CIR Down based on the
product definition",
  "valueType": "number",
  "configurable": false,
  "minCardinality": 1,
  "maxCardinality": 1,
  "isUnique": true,
  "extensible": false,
  "characteristicValueSpecification": [
    {
      "@type": "NumberCharacteristicValueSpecification",
      "valueType": "number",
      "value": "1"
    }
  ]
}
],
"testMeasureDefinition": [
  {
    "name": "Uni Port Status",
    "metricDescription": "OLT - Uni Port Status",
    "metricName": "Uni Port Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
      {
        "@type": "MetricDefMeasureThresholdRule",
        "conformanceTargetExact": "Down",
        "description": "This UNI Port Status is down",
        "name": "UniPortDown",
        "numberOfAllowedCrossing": 0,
        "thresholdRuleSeverity": "1",
        "consequence": [
          {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "raiseTicket",
            "description": "Raise an incident ticket",

```

```

        "name": "raiseTicket",
        "repeatAction": false
    },
    {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
    }
]
}
],
"@type": "TestMeasureDefinition"
},
{
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
        {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "PPP Terminated",
            "description": "This PPP session is down",
            "name": "PPP Status",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "raiseTicket",
                    "description": "Raise an incident ticket",
                    "name": "raiseTicket",
                    "repeatAction": false
                },
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "sendWarning",
                    "description": "Send a warning to the NOC",
                    "name": "sendWarning"
                }
            ]
        }
    ],
},
{
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "No Session",
    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "raiseTicket",
            "description": "Raise an incident ticket",
            "name": "raiseTicket",
            "repeatAction": false
        },
        {
            "@type": "MetricDefMeasureConsequence",

```

```

        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  },
  "@type": "TestMeasureDefinition"
},
],
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-
api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-
2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}
},
"reportingSystem": {
  "id": "409",
  "name": "APP-675",
  "@type": "ReportingResource",
  "@referredType": "LogicalResource"
},
"source": {
  "id": "4",
  "name": "APP-374",
  "@type": "ReportingResource",
  "@referredType": "LogicalResource"
},
"@baseType": "Event",
"@type": "ProductTestSpecificationCreateEvent"
}

```

Delete Event

Message example for ProductTestSpecificationDeleteEvent event

```

Content-Type: application/json

{
  "correlationId": "d697938a-374e-435d-ae29-e5c198ddced4",
  "description": "ProductTestSpecificationDeleteEvent",
  "domain": "Service Assurance",
  "eventId": "f4ea6f37-60d3-451d-8a4f-183fde2e19f0",
  "eventTime": "2024-08-25T12:21:36.724Z",
  "eventType": "ProductTestSpecificationDeleteEvent",

```

```

    "priority": "4",
    "timeOccurred": "2024-08-25T12:21:36.363Z",
    "title": "ProductTestSpecificationDeleteEvent",
    "event": {
      "productTestSpecification": {
        "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
        "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
        "@type": "productTestSpecification"
      }
    },
    "reportingSystem": {
      "id": "409",
      "name": "APP-675",
      "@type": "ReportingResource",
      "@referredType": "LogicalResource"
    },
    "source": {
      "id": "4",
      "name": "APP-374",
      "@type": "ReportingResource",
      "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@type": "ProductTestSpecificationDeleteEvent"
  }
}

```

Attribute Value Change Event

Message example for ProductTestSpecificationAttributeValueChangeEvent event

```

Content-Type: application/json

{
  "correlationId": "180874f1-6ea1-4391-9c99-a12f6cde93e6",
  "description": "ProductTestSpecificationAttributeValueChangeEvent",
  "domain": "Service Assurance",
  "eventId": "31cedf69-3b50-42bb-b116-ac37d82a90f1",
  "eventTime": "2024-08-25T12:21:36.714Z",
  "eventType": "ProductTestAttributeValueChangeEvent",
  "priority": "3",
  "timeOccurred": "2024-08-25T12:21:36.133Z",
  "title": "ProductTestSpecificationAttributeValueChangeEvent",
  "event": {
    "productTestSpecification": {
      "description": "A Product Test Specification is a formal document designed
to define the parameters and procedures for conducting thorough testing on a
specific product or service",
      "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
      "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
      "version": "1.0",
      "name": "Diagnostic Product FTTH",
      "lifecycleStatus": "active",
      "validFor": {
        "@type": "TimePeriod",
        "endTime": "2024-01-01T00:00:00.00Z",
        "startTime": "2025-01-01T00:00:00.00Z"
      }
    }
  }
}

```

```

    },
    "specCharacteristic": [
      {
        "@type": "CharacteristicSpecification",
        "name": "overallStatus",
        "description": "This provides an overall status for the product based on
different tests executed",
        "valueType": "string",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "StringCharacteristicValueSpecification",
            "valueType": "string",
            "value": "V1"
          }
        ]
      }
    ],
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateUp",
      "description": "This provides the information of the CIR based on the
product definition",
      "valueType": "number",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "NumberCharacteristicValueSpecification",
          "valueType": "number",
          "value": "1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateDown",
      "description": "This provides the information of the CIR Down based on
the product definition",
      "valueType": "number",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "NumberCharacteristicValueSpecification",
          "valueType": "number",
          "value": "1"
        }
      ]
    }
  ],
  "testMeasureDefinition": [
    {

```

```

"name": "Uni Port Status",
"metricDescription": "OLT - Uni Port Status",
"metricName": "Uni Port Status",
"unitOfMeasure": "HeartBeat",
"captureFrequency": "once",
"captureMethod": "Automatic capture by OLT",
"valueType": "string",
"thresholdRule": [
  {
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "Down",
    "description": "This UNI Port Status is down",
    "name": "UniPortDown",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  }
],
"@type": "TestMeasureDefinition"
},
{
  "name": "DHCP/PPP Status",
  "metricDescription": "DHCP/PPP Status",
  "metricName": "DHCP/PPP Status",
  "unitOfMeasure": "HeartBeat",
  "captureFrequency": "once",
  "captureMethod": "Automatic capture by OLT",
  "valueType": "string",
  "thresholdRule": [
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "PPP Terminated",
      "description": "This PPP session is down",
      "name": "PPP Status",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    }
  ]
}

```

```

    }
  ],
  {
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "No Session",
    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  }
],
"@type": "TestMeasureDefinition"
}
],
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
},
"@baseType": "Event",
"@type": "ProductTestSpecificationAttributeValueChangeEvent"
}

```

State Change Event

Message example for ProductTestSpecificationStateChangeEvent event

Content-Type: application/json

```
{
  "correlationId": "9800ed1f-1315-4594-accf-eae6f168d76f",
  "description": "ProductTetsSpecificationStateChangeEvent illustration",
  "domain": "Service Assurance",
  "eventId": "ec6d33c0-2b61-422b-98ce-0026aaf92f14",
  "eventTime": "2022-08-25T12:21:36.678Z",
  "eventType": "ProductTetsSpecificationStateChangeEvent",
  "priority": "2",
  "timeOccurred": "2022-08-25T12:21:28.377Z",
  "title": "ProductTetsSpecificationStateChangeEvent",
  "event": {
    "ProductTetsSpecification": {
      "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
      "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
      "state": "completed",
      "@type": "ProductTetsSpecification"
    }
  },
  "reportingSystem": {
    "id": "409",
    "name": "APP-675",
    "@type": "ReportingResource",
    "@referredType": "LogicalResource"
  },
  "source": {
    "id": "4",
    "name": "APP-374",
    "@type": "ReportingResource",
    "@referredType": "LogicalResource"
  },
  "@baseType": "Event",
  "@type": "ProductTetsSpecificationStateChangeEvent"
}
```


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 TMF630 REST Design Guidelines Part 1 document.

Notifications are also described in a subsequent section.

Operations on ProductTest

List or find ProductTest objects

GET /productTest?fields=...

Description

This operation list ProductTest 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 product tests.

Request

```
GET /productTest?mode=onDemand&state=completed
Content-Type: application/json
```

Response

```

200

[
  {
    "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/b9b1727e-faae-497f-8e82-43ebe92de6ce",
    "id": "b9b1727e-faae-497f-8e82-43ebe92de6ce",
    "description": "When the request is received and the ServiceID is validated, the ServiceID is used to Diagnose the network, the found details are then returned to the Supplier.",
    "startDateTime": "2024-03-08T00:00:00.00Z",
    "endDateTime": "2024-03-08T00:00:01.00Z",
    "mode": "onDemand",
    "state": "completed",
    "validFor": {
      "startDateTime": "2024-03-08T00:00:00.00Z",
      "endDateTime": "2024-03-08T00:00:01.00Z"
    },
    "relatedParty": [
      {
        "role": "ISP",
        "@type": "RelatedPartyRefOrPartyRoleRef",
        "partyOrPartyRole": {
          "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
          "href": "https://mycsp.com/tmf-api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
          "name": "ISP-X",
          "@type": "PartyRef",
          "@referredType": "Organisation"
        }
      }
    ],
    "relatedProduct": {
      "href": "https://mycsp.com/tmf-api/productInventory/v5/product/ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
      "id": "ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
      "@type": "ProductRef",
      "name": "S410996"
    },
    "testSpecification": {
      "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
      "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
      "name": "Service Diagnostics",
      "@type": "ProductTestSpecificationRef"
    },
    "characteristic": [
      {
        "name": "overallStatus",
        "value": "up",
        "@type": "StringCharacteristic"
      },
      {
        "name": "committedRateUp",
        "value": 100,
        "@type": "NumberCharacteristic"
      }
    ]
  }
]

```

```

        "name": "committedRateDown",
        "value": 200,
        "@type": "NumberCharacteristic"
    }
],
"testMeasure": [
    {
        "captureDateTime": "2024-03-08T00:00:00.001Z",
        "captureMethod": "Automatic capture by OLT",
        "metricName": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status",
        "value": {
            "name": "status",
            "value": "up",
            "@type": "StringCharacteristic"
        },
        "@type": "TestMeasure"
    },
    {
        "captureDateTime": "2024-03-08T00:00:00.001Z",
        "captureMethod": "Automatic capture by OLT",
        "metricName": "ONT reachability",
        "metricDescription": "OLT - ONT reachability",
        "value": {
            "name": "status",
            "value": "online",
            "@type": "StringCharacteristic"
        },
        "@type": "TestMeasure"
    },
    {
        "captureDateTime": "2024-03-08T00:00:00.001Z",
        "captureMethod": "Automatic capture by OLT",
        "metricName": "CFM",
        "metricDescription": "OLT - CFM Status",
        "value": {
            "name": "cfm",
            "value": "up",
            "@type": "StringCharacteristic"
        },
        "testMeasureCharacteristic": [
            {
                "name": "lastStatusChange",
                "value": "2024-03-07T23:59:00.001Z",
                "@type": "StringCharacteristic"
            },
            {
                "name": "previousStatusValue",
                "value": "down",
                "@type": "StringCharacteristic"
            }
        ],
        "@type": "TestMeasure"
    },
    {
        "captureDateTime": "2024-03-08T00:00:00.001Z",
        "captureMethod": "Automatic capture by OLT",
        "metricName": "DHCP/PPP status",
        "metricDescription": "OLT - DHCP/PPP status",
        "value": {
            "name": "dhcp/ppp",
            "value": "established",
            "@type": "StringCharacteristic"
        }
    }
]

```

```

    },
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by PE",
    "metricName": "ENNI Status",
    "metricDescription": "PE - ENNI status",
    "value": {
      "name": "enniStatus",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by PE",
    "metricName": "E2E Traffic",
    "metricDescription": "End to end traffic",
    "value": {
      "name": "e2eTraffic",
      "value": "yes",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  }
],
"incidentRef": [
  {
    "id": "TIC-DEV00027757",
    "name": "MaintainerIncidentReference",
    "@type": "IncidentRef"
  }
],
"@type": "ProductTest"
},
{
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/68c7a048-3ded-4b71-bf6a-8ef39c6704a2",
  "id": "68c7a048-3ded-4b71-bf6a-8ef39c6704a2",
  "name": "Product Test FTTH SL500",
  "description": "Product Test FTTH SL500",
  "startDateTime": "2024-03-09T12:00:00.00Z",
  "endDateTime": "2024-03-09T12:00:01.00Z",
  "mode": "onDemand",
  "state": "completed",
  "validFor": {
    "startDateTime": "2024-03-09T12:00:00.00Z",
    "endDateTime": "2024-03-09T12:00:01.00Z"
  },
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "f7559531-d142-4754-bcc8-b814e504ac48",
      "@type": "ExternalIdentifier"
    }
  ],
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",

```

```

    "partyOrPartyRole": {
      "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "name": "Updated ISP-X",
      "@type": "PartyRef",
      "@referredType": "Organisation"
    }
  ],
  "relatedProduct": {
    "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-
4dca-904a-ae2bbcb976d0",
    "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
    "@type": "ProductRef",
    "name": "S234186"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-
c7b6b8c9f3e5",
    "name": "Updated Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "characteristic": [
    {
      "name": "overallStatus",
      "value": "down",
      "@type": "StringCharacteristic"
    },
    {
      "name": "committedRateUp",
      "value": 100,
      "@type": "NumberCharacteristic"
    },
    {
      "name": "committedRateDown",
      "value": 200,
      "@type": "NumberCharacteristic"
    }
  ],
  "testMeasure": [
    {
      "captureDateTime": "2024-03-09T12:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",
      "metricName": "Uni Port Status",
      "metricDescription": "OLT - Uni Port Status",
      "value": {
        "name": "status",
        "value": "down",
        "@type": "StringCharacteristic"
      },
      "@type": "TestMeasure"
    },
    {
      "captureDateTime": "2024-03-09T12:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",
      "metricName": "ONT reachability",
      "metricDescription": "OLT - ONT reachability",
      "value": {
        "name": "status",
        "value": "online",

```

```

    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "CFM",
  "metricDescription": "OLT - CFM Status",
  "value": {
    "name": "cfm",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "testMeasureCharacteristic": [
    {
      "name": "lastStatusChange",
      "value": "2024-03-09T11:59:00.001Z",
      "@type": "StringCharacteristic"
    },
    {
      "name": "previousStatusValue",
      "value": "down",
      "@type": "StringCharacteristic"
    }
  ],
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "DHCP/PPP status",
  "metricDescription": "OLT - DHCP/PPP status",
  "value": {
    "name": "dhcp/ppp",
    "value": "established",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by PE",
  "metricName": "ENNI Status",
  "metricDescription": "PE - ENNI status",
  "value": {
    "name": "enniStatus",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by PE",
  "metricName": "E2E Traffic",
  "metricDescription": "End to end traffic",
  "value": {
    "name": "e2eTraffic",
    "value": "yes",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
}

```

```
    }
  ],
  "incidentRef": [
    {
      "id": "TIC-DEV00027757",
      "name": "MaintainerIncidentReference",
      "@type": "IncidentRef"
    }
  ],
  "@type": "ProductTest"
}
]
```

Retrieves a ProductTest by ID

GET /productTest/{id}?fields=...

Description

This operation retrieves a ProductTest entity. 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 specific product test.

Request

```
GET /productTest/6fa8f2a8-4f6c-4cb8-a3de-4d0273a02f19
Content-Type: application/json
```

Response

```
200

{
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/6fa8f2a8-4f6c-4cb8-a3de-4d0273a02f19",
  "id": "6fa8f2a8-4f6c-4cb8-a3de-4d0273a02f19",
  "name": "Product Test FTTH SL500",
  "description": "Product Test FTTH SL500",
  "startDateTime": "2024-03-09T12:00:00.00Z",
  "endDateTime": "2024-03-09T12:00:01.00Z",
  "mode": "onDemand",
  "state": "completed",
  "validFor": {
    "startDateTime": "2024-03-09T12:00:00.00Z",
    "endDateTime": "2024-03-09T12:00:01.00Z"
  },
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
    }
  ]
}
```

```

    "id": "f7559531-d142-4754-bcc8-b814e504ac48",
    "@type": "ExternalIdentifier"
  }
],
"relatedParty": [
  {
    "role": "ISP",
    "@type": "RelatedPartyRefOrPartyRoleRef",
    "partyOrPartyRole": {
      "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "name": "Updated ISP-X",
      "@type": "PartyRef",
      "@referredType": "Organisation"
    }
  }
],
"relatedProduct": {
  "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-
4dca-904a-ae2bbcb976d0",
  "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
  "@type": "ProductRef",
  "name": "S234186"
},
"testSpecification": {
  "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-
c7b6b8c9f3e5",
  "name": "Updated Service Diagnostics",
  "@type": "ProductTestSpecificationRef"
},
"characteristic": [
  {
    "name": "overallStatus",
    "value": "down",
    "@type": "StringCharacteristic"
  },
  {
    "name": "committedRateUp",
    "value": 100,
    "@type": "NumberCharacteristic"
  },
  {
    "name": "committedRateDown",
    "value": 200,
    "@type": "NumberCharacteristic"
  }
],
"testMeasure": [
  {
    "captureDateTime": "2024-03-09T12:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "Uni Port Status",
    "metricDescription": "OLT - Uni Port Status",
    "value": {
      "name": "status",
      "value": "down",
      "@type": "StringCharacteristic"
    }
  },
  "@type": "TestMeasure"
],

```



```

{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "ONT reachability",
  "metricDescription": "OLT - ONT reachability",
  "value": {
    "name": "status",
    "value": "online",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "CFM",
  "metricDescription": "OLT - CFM Status",
  "value": {
    "name": "cfm",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "testMeasureCharacteristic": [
    {
      "name": "lastStatusChange",
      "value": "2024-03-09T11:59:00.001Z",
      "@type": "StringCharacteristic"
    },
    {
      "name": "previousStatusValue",
      "value": "down",
      "@type": "StringCharacteristic"
    }
  ],
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "DHCP/PPP status",
  "metricDescription": "OLT - DHCP/PPP status",
  "value": {
    "name": "dhcp/ppp",
    "value": "established",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",
  "metricName": "ENNI Status",
  "metricDescription": "PE - ENNI status",
  "value": {
    "name": "enniStatus",
    "value": "up",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
{
  "captureDateTime": "2024-03-09T12:00:00.001Z",
  "captureMethod": "Automatic capture by OLT",

```

```
{
  "metricName": "E2E Traffic",
  "metricDescription": "End to end traffic",
  "value": {
    "name": "e2eTraffic",
    "value": "yes",
    "@type": "StringCharacteristic"
  },
  "@type": "TestMeasure"
},
],
"incidentRef": [
  {
    "id": "TIC-DEV00027757",
    "name": "MaintainerIncidentReference",
    "@type": "IncidentRef"
  }
],
"@type": "ProductTest"
}
```

Creates a ProductTest

POST /productTest?fields=...

Description

This operation creates a ProductTest entity.

Mandatory Attributes

Mandatory Attributes	Rule
name	
relatedProduct	
relatedProduct.@type	
relatedProduct.id	
relatedProduct.name	
testSpecification	
testSpecification.@type	
testSpecification.id	
testSpecification.name	
@type	

Usage samples

Creation of a new product test with POST operation

Request

```
POST /productTest
```

```

Content-Type: application/json

{
  "name": "Product Test FTTH SL500",
  "description": "Product Test FTTH SL500",
  "mode": "onDemand",
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "ISP Fibre X",
        "@type": "PartyRef"
      }
    }
  ],
  "relatedProduct": {
    "id": "ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "name": "S410996",
    "@type": "ProductRef"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "name": "Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "@type": "ProductTest"
}

```

Response

```

201

{
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/b9b1727e-faae-497f-8e82-43ebe92de6ce",
  "id": "b9b1727e-faae-497f-8e82-43ebe92de6ce",
  "description": "When the request is received and the ServiceID is validated, the
ServiceID is used to Diagnose the network, the found details are then returned to
the Supplier.",
  "startDateTime": "2024-03-08T00:00:00.00Z",
  "endDateTime": "2024-03-08T00:00:01.00Z",
  "mode": "onDemand",
  "state": "completed",
  "validFor": {
    "startDateTime": "2024-03-08T00:00:00.00Z",
    "endDateTime": "2024-03-08T00:00:01.00Z"
  },
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "ISP-X",
        "@type": "PartyRef",
        "@referredType": "Organisation"
      }
    }
  ]
}

```

```

    }
  },
  "relatedProduct": {
    "href": "https://mycsp.com/tmf-api/productInventory/v5/product/ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "id": "ae443f8d-aa6a-41f9-8ec7-8b01e7f666e6",
    "@type": "ProductRef",
    "name": "S410996"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "name": "Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "characteristic": [
    {
      "name": "overallStatus",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    {
      "name": "committedRateUp",
      "value": 100,
      "@type": "NumberCharacteristic"
    },
    {
      "name": "committedRateDown",
      "value": 200,
      "@type": "NumberCharacteristic"
    }
  ],
  "testMeasure": [
    {
      "captureDateTime": "2024-03-08T00:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",
      "metricName": "Uni Port Status",
      "metricDescription": "OLT - Uni Port Status",
      "value": {
        "name": "status",
        "value": "up",
        "@type": "StringCharacteristic"
      },
      "@type": "TestMeasure"
    },
    {
      "captureDateTime": "2024-03-08T00:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",
      "metricName": "ONT reachability",
      "metricDescription": "OLT - ONT reachability",
      "value": {
        "name": "status",
        "value": "online",
        "@type": "StringCharacteristic"
      },
      "@type": "TestMeasure"
    },
    {
      "captureDateTime": "2024-03-08T00:00:00.001Z",
      "captureMethod": "Automatic capture by OLT",

```

```

    "metricName": "CFM",
    "metricDescription": "OLT - CFM Status",
    "value": {
      "name": "cfm",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    "testMeasureCharacteristic": [
      {
        "name": "lastStatusChange",
        "value": "2024-03-07T23:59:00.001Z",
        "@type": "StringCharacteristic"
      },
      {
        "name": "previousStatusValue",
        "value": "down",
        "@type": "StringCharacteristic"
      }
    ],
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by OLT",
    "metricName": "DHCP/PPP status",
    "metricDescription": "OLT - DHCP/PPP status",
    "value": {
      "name": "dhcp/ppp",
      "value": "established",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by PE",
    "metricName": "ENNI Status",
    "metricDescription": "PE - ENNI status",
    "value": {
      "name": "enniStatus",
      "value": "up",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  },
  {
    "captureDateTime": "2024-03-08T00:00:00.001Z",
    "captureMethod": "Automatic capture by PE",
    "metricName": "E2E Traffic",
    "metricDescription": "End to end traffic",
    "value": {
      "name": "e2eTraffic",
      "value": "yes",
      "@type": "StringCharacteristic"
    },
    "@type": "TestMeasure"
  }
],
"incidentRef": [
  {
    "id": "TIC-DEV00027757",
    "name": "MaintainerIncidentReference",
    "@type": "IncidentRef"
  }
]

```

```

    }
  ],
  "@type": "ProductTest"
}

```

Updates partially a ProductTest

PATCH /productTest/{id}?fields=...

Description

This operation allows partial updates of a ProductTest entity. Support of json/merge (<https://tools.ietf.org/html/rfc7396>) 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

Non Patchable Attributes	Rule
href	
id	
@baseType	@baseType is immutable
@schemaLocation	@schemaLocation is immutable
@type	@type is immutable

Patchable Attributes	Rule
characteristic	
description	
endDateTime	
externalIdentifier	
incidentRef	
mode	
name	
relatedParty	
relatedProduct	
startDateTime	
state	
testMeasure	
testSpecification	
validFor	

Usage samples

Here's an example of a request for patching a product test using merge-patch+json. In this example, name, description and externalIdentifier is updated.

Request

```
PATCH /productTest/5bbe60db-e171-45e0-9211-4b629c2d1cc2
Content-Type: application/merge-patch+json

{
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
      "@type": "ExternalIdentifier"
    }
  ],
  "@type": "ProductTest"
}
```

Response

```
200

{
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/5bbe60db-e171-45e0-9211-4b629c2d1cc2",
  "id": "5bbe60db-e171-45e0-9211-4b629c2d1cc2",
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
  "startDateTime": "2024-03-09T12:00:00.00Z",
  "mode": "onDemand",
  "state": "pending",
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
      "@type": "ExternalIdentifier"
    }
  ],
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "href": "https://mycsp.com/tmf-api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "Updated ISP-X",
        "@type": "PartyRef",
        "@referredType": "Organisation"
      }
    }
  ]
}
```

```

    ],
    "relatedProduct": {
      "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-4dca-904a-ae2bbcb976d0",
      "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
      "@type": "ProductRef",
      "name": "S234186"
    },
    "testSpecification": {
      "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
      "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
      "name": "Updated Service Diagnostics",
      "@type": "ProductTestSpecificationRef"
    },
    "@type": "ProductTest"
  }
}

```

Here's an example of a request for patching a product test using json-patch+json. In this example, description is updated.

Request

```

PATCH /productTest/5f443a68-7745-4642-9b23-b338778b8fbb
Content-Type: application/json-patch+json

[
  {
    "op": "replace",
    "path": "/name",
    "value": "Product Test FTTH SL-500"
  }
]

```

Response

```

200

{
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/5f443a68-7745-4642-9b23-b338778b8fbb",
  "id": "5f443a68-7745-4642-9b23-b338778b8fbb",
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
  "startDateTime": "2024-03-09T12:00:00.00Z",
  "mode": "onDemand",
  "state": "pending",
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
      "@type": "ExternalIdentifier"
    }
  ],
  "relatedParty": [

```



```
{
  "role": "ISP",
  "@type": "RelatedPartyRefOrPartyRoleRef",
  "partyOrPartyRole": {
    "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
    "href": "https://mycsp.com/tmf-api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
    "name": "Updated ISP-X",
    "@type": "PartyRef",
    "@referredType": "Organisation"
  }
},
"relatedProduct": {
  "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-4dca-904a-ae2bbcb976d0",
  "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
  "@type": "ProductRef",
  "name": "S234186"
},
"testSpecification": {
  "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
  "name": "Updated Service Diagnostics",
  "@type": "ProductTestSpecificationRef"
},
"@type": "ProductTest"
}
```

Here's an example of a request for patching a product test using json-patch-query+json. In this example, the RelatedParty role attribute is updated.

Request

```
PATCH /productTest/c95e791e-b2d7-4e8c-add5-eb9329ceadf1
Content-Type: application/json-patch-query+json

[
  {
    "op": "replace",
    "path": "$.externalIdentifier[?(@.owner=='ISP-X')].owner",
    "value": "ISP-X-Updated"
  }
]
```

Response

```
200

{
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTest/c95e791e-b2d7-4e8c-add5-eb9329ceadf1",
  "id": "c95e791e-b2d7-4e8c-add5-eb9329ceadf1",
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
}
```

```

"startDateTime": "2024-03-09T12:00:00.00Z",
"mode": "onDemand",
"state": "pending",
"externalIdentifier": [
  {
    "externalIdentifierType": "Product",
    "owner": "ISP-X-Updated",
    "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
    "@type": "ExternalIdentifier"
  }
],
"relatedParty": [
  {
    "role": "ISP",
    "@type": "RelatedPartyRefOrPartyRoleRef",
    "partyOrPartyRole": {
      "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "href": "https://mycsp.com/tmf-api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
      "name": "Updated ISP-X",
      "@type": "PartyRef",
      "@referredType": "Organisation"
    }
  }
],
"relatedProduct": {
  "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-4dca-904a-ae2bbcb976d0",
  "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
  "@type": "ProductRef",
  "name": "S234186"
},
"testSpecification": {
  "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
  "name": "Updated Service Diagnostics",
  "@type": "ProductTestSpecificationRef"
},
"@type": "ProductTest"
}

```

Here's an example of a request for patching a product test using application/json. In this example, name, description and externalIdentifier is updated.

Request

```

PATCH /productTest/5bbe60db-e171-45e0-9211-4b629c2d1cc2
Content-Type: application/json

{
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
      "@type": "ExternalIdentifier"
    }
  ]
}

```

```

    }
  ],
  "@type": "ProductTest"
}

```

Response

```

200

{
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTest/5bbe60db-e171-45e0-9211-4b629c2d1cc2",
  "id": "5bbe60db-e171-45e0-9211-4b629c2d1cc2",
  "name": "Product Test FTTH SL-500",
  "description": "Product Test FTTH SL-500",
  "startDateTime": "2024-03-09T12:00:00.00Z",
  "mode": "onDemand",
  "state": "pending",
  "externalIdentifier": [
    {
      "externalIdentifierType": "Product",
      "owner": "ISP-X",
      "id": "d622a6c9-e256-4718-b8e7-3f3b8c7c1d54",
      "@type": "ExternalIdentifier"
    }
  ],
  "relatedParty": [
    {
      "role": "ISP",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "href": "https://mycsp.com/tmf-
api/partyManagement/v5/Organisation/cbfc8ba4-d8f6-4078-98b2-66384e1c3a20",
        "name": "Updated ISP-X",
        "@type": "PartyRef",
        "@referredType": "Organisation"
      }
    }
  ],
  "relatedProduct": {
    "href": "https://mycsp.com/tmf-api/productInventory/v5/product/95b34658-c50e-
4dca-904a-ae2bbcb976d0",
    "id": "95b34658-c50e-4dca-904a-ae2bbcb976d0",
    "@type": "ProductRef",
    "name": "S234186"
  },
  "testSpecification": {
    "id": "b5843d34-081f-432a-9d02-c7b6b8c9f3e5",
    "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/b5843d34-081f-432a-9d02-
c7b6b8c9f3e5",
    "name": "Updated Service Diagnostics",
    "@type": "ProductTestSpecificationRef"
  },
  "@type": "ProductTest"
}

```

Operations on ProductTestSpecification

List or find ProductTestSpecification objects

GET /productTestSpecification?fields=...

Description

This operation list ProductTestSpecification 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 multiple product test specifications.

Request

```
GET /productTestSpecification?name="Diagnostic Product FTTH"
Content-Type: application/json
```

Response

```
200

[
  {
    "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
    "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-
6b72ea67e712",
    "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
    "version": "1.0",
    "name": "Diagnostic Product FTTH",
    "lifecycleStatus": "active",
    "validFor": {
      "@type": "TimePeriod",
      "endTime": "2024-01-01T00:00:00.00Z",
      "startTime": "2025-01-01T00:00:00.00Z"
    },
    "specCharacteristic": [
      {
        "@type": "CharacteristicSpecification",
        "name": "overallStatus",
        "description": "This provides an overall status for the product based on
different tests executed",
        "valueType": "string",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
```

```

        "@type": "StringCharacteristicValueSpecification",
        "valueType": "string",
        "value": "V1"
    }
]
},
{
    "@type": "CharacteristicSpecification",
    "name": "committedRateUp",
    "description": "This provides the information of the CIR based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
        {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
        }
    ]
},
{
    "@type": "CharacteristicSpecification",
    "name": "committedRateDown",
    "description": "This provides the information of the CIR Down based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
        {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
        }
    ]
}
],
"testMeasureDefinition": [
    {
        "name": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status",
        "metricName": "Uni Port Status",
        "unitOfMeasure": "HeartBeat",
        "captureFrequency": "once",
        "captureMethod": "Automatic capture by OLT",
        "valueType": "string",
        "thresholdRule": [
            {
                "@type": "MetricDefMeasureThresholdRule",
                "conformanceTargetExact": "Down",
                "description": "This UNI Port Status is down",
                "name": "UniPortDown",
                "numberOfAllowedCrossing": 0,
                "thresholdRuleSeverity": "1",
                "consequence": [

```

```

        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "raiseTicket",
            "description": "Raise an incident ticket",
            "name": "raiseTicket",
            "repeatAction": false
        },
        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "sendWarning",
            "description": "Send a warning to the NOC",
            "name": "sendWarning"
        }
    ]
},
"@type": "TestMeasureDefinition"
},
{
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
        {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "PPP Terminated",
            "description": "This PPP session is down",
            "name": "PPP Status",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "raiseTicket",
                    "description": "Raise an incident ticket",
                    "name": "raiseTicket",
                    "repeatAction": false
                },
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "sendWarning",
                    "description": "Send a warning to the NOC",
                    "name": "sendWarning"
                }
            ]
        }
    ],
    {
        "@type": "MetricDefMeasureThresholdRule",
        "conformanceTargetExact": "No Session",
        "description": "This DHCP session is down",
        "name": "DHCPStatus",
        "numberOfAllowedCrossing": 0,
        "thresholdRuleSeverity": "1",
        "consequence": [
            {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "raiseTicket",
                "description": "Raise an incident ticket",
                "name": "raiseTicket",
            }
        ]
    }
}

```

```

        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  },
  "@type": "TestMeasureDefinition"
},
],
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-
api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-
2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}
]

```

Retrieves a ProductTestSpecification by ID

GET /productTestSpecification/{id}?fields=...

Description

This operation retrieves a ProductTestSpecification entity. 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 specific product test specification.

Request

```

GET /productTestSpecification/f9e62391-8538-4458-97be-97dc8c6b8e8a
Content-Type: application/json

```

Response

200

```
{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/f9e62391-8538-4458-97be-
97dc8c6b8e8a",
  "id": "f9e62391-8538-4458-97be-97dc8c6b8e8a",
  "version": "1.0",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",
  "validFor": {
    "@type": "TimePeriod",
    "endDateTime": "2024-01-01T00:00:00.00Z",
    "startDateTime": "2025-01-01T00:00:00.00Z"
  },
  "specCharacteristic": [
    {
      "@type": "CharacteristicSpecification",
      "name": "overallStatus",
      "description": "This provides an overall status for the product based on
different tests executed",
      "valueType": "string",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "StringCharacteristicValueSpecification",
          "valueType": "string",
          "value": "V1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateUp",
      "description": "This provides the information of the CIR based on the
product definition",
      "valueType": "number",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "NumberCharacteristicValueSpecification",
          "valueType": "number",
          "value": "1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
```



```

        "name": "committedRateDown",
        "description": "This provides the information of the CIR Down based on the
product definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
            {
                "@type": "NumberCharacteristicValueSpecification",
                "valueType": "number",
                "value": "1"
            }
        ]
    },
    "testMeasureDefinition": [
        {
            "name": "Uni Port Status",
            "metricDescription": "OLT - Uni Port Status",
            "metricName": "Uni Port Status",
            "unitOfMeasure": "HeartBeat",
            "captureFrequency": "once",
            "captureMethod": "Automatic capture by OLT",
            "valueType": "string",
            "thresholdRule": [
                {
                    "@type": "MetricDefMeasureThresholdRule",
                    "conformanceTargetExact": "Down",
                    "description": "This UNI Port Status is down",
                    "name": "UniPortDown",
                    "numberOfAllowedCrossing": 0,
                    "thresholdRuleSeverity": "1",
                    "consequence": [
                        {
                            "@type": "MetricDefMeasureConsequence",
                            "prescribeAction": "raiseTicket",
                            "description": "Raise an incident ticket",
                            "name": "raiseTicket",
                            "repeatAction": false
                        },
                        {
                            "@type": "MetricDefMeasureConsequence",
                            "prescribeAction": "sendWarning",
                            "description": "Send a warning to the NOC",
                            "name": "sendWarning"
                        }
                    ]
                }
            ]
        }
    ],
    "@type": "TestMeasureDefinition"
},
{
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [

```

```

    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "PPP Terminated",
      "description": "This PPP session is down",
      "name": "PPP Status",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    },
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "No Session",
      "description": "This DHCP session is down",
      "name": "DHCPStatus",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    }
  ],
  "@type": "TestMeasureDefinition"
},
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-9lad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-
api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-
2ffe0959998e",

```

```
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "@referredType": "vCPEProductSpecification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}
```

Creates a ProductTestSpecification

POST /productTestSpecification?fields=...

Description

This operation creates a ProductTestSpecification entity.

Mandatory Attributes

Mandatory Attributes	Rule
name	
relatedProductSpecification	
relatedProductSpecification.@type	
relatedProductSpecification.id	
relatedProductSpecification.name	
@type	

Usage samples

Creation of a new product test specification with POST operation

Request

```
POST /productTestSpecification
Content-Type: application/json

{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "version": "1.0",
  "name": "Diagnostic Product FTTH",
  "validFor": {
    "@type": "TimePeriod",
    "endDateTime": "2024-01-01T00:00:00.00Z",
    "startDateTime": "2025-01-01T00:00:00.00Z"
  },
  "specCharacteristic": [
    {
      "@type": "CharacteristicSpecification",
      "name": "overallStatus",

```

```

    "description": "This provides an overall status for the product based on
different tests executed",
    "valueType": "string",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "StringCharacteristicValueSpecification",
        "valueType": "string",
        "value": "V1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateUp",
    "description": "This provides the information of the CIR based on the product
definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateDown",
    "description": "This provides the information of the CIR Down based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  }
],
"testMeasureDefinition": [
  {
    "name": "Uni Port Status",
    "metricDescription": "OLT - Uni Port Status",
    "metricName": "Uni Port Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",

```

```

"valueType": "string",
"thresholdRule": [
  {
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "Down",
    "description": "This UNI Port Status is down",
    "name": "UniPortDown",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  }
],
"@type": "TestMeasureDefinition"
},
{
  "name": "DHCP/PPP Status",
  "metricDescription": "DHCP/PPP Status",
  "metricName": "DHCP/PPP Status",
  "unitOfMeasure": "HeartBeat",
  "captureFrequency": "once",
  "captureMethod": "Automatic capture by OLT",
  "valueType": "string",
  "thresholdRule": [
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "PPP Terminated",
      "description": "This PPP session is down",
      "name": "PPP Status",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    }
  ]
},
{
  "@type": "MetricDefMeasureThresholdRule",
  "conformanceTargetExact": "No Session",

```

```

    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  },
  "@type": "TestMeasureDefinition"
},
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-9lad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Response

```

201

{
  "description": "A Product Test Specification is a formal document designed to define the parameters and procedures for conducting thorough testing on a specific product or service",
  "href": "https://mycsp.com/tmf-api/productTestManagement/v5/productTestSpecification/ba01e0f0-8e6a-452d-9535-6b72ea67e712",
  "id": "ba01e0f0-8e6a-452d-9535-6b72ea67e712",
  "version": "1.0",
  "name": "Diagnostic Product FTTH",

```

```

    "lifecycleStatus": "active",
    "validFor": {
      "@type": "TimePeriod",
      "endTime": "2024-01-01T00:00:00.00Z",
      "startTime": "2025-01-01T00:00:00.00Z"
    },
    "specCharacteristic": [
      {
        "@type": "CharacteristicSpecification",
        "name": "overallStatus",
        "description": "This provides an overall status for the product based on
different tests executed",
        "valueType": "string",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "StringCharacteristicValueSpecification",
            "valueType": "string",
            "value": "V1"
          }
        ]
      },
      {
        "@type": "CharacteristicSpecification",
        "name": "committedRateUp",
        "description": "This provides the information of the CIR based on the product
definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
          }
        ]
      },
      {
        "@type": "CharacteristicSpecification",
        "name": "committedRateDown",
        "description": "This provides the information of the CIR Down based on the
product definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
          }
        ]
      }
    ]
  }
}

```

```

    }
  ],
  "testMeasureDefinition": [
    {
      "name": "Uni Port Status",
      "metricDescription": "OLT - Uni Port Status",
      "metricName": "Uni Port Status",
      "unitOfMeasure": "HeartBeat",
      "captureFrequency": "once",
      "captureMethod": "Automatic capture by OLT",
      "valueType": "string",
      "thresholdRule": [
        {
          "@type": "MetricDefMeasureThresholdRule",
          "conformanceTargetExact": "Down",
          "description": "This UNI Port Status is down",
          "name": "UniPortDown",
          "numberOfAllowedCrossing": 0,
          "thresholdRuleSeverity": "1",
          "consequence": [
            {
              "@type": "MetricDefMeasureConsequence",
              "prescribeAction": "raiseTicket",
              "description": "Raise an incident ticket",
              "name": "raiseTicket",
              "repeatAction": false
            },
            {
              "@type": "MetricDefMeasureConsequence",
              "prescribeAction": "sendWarning",
              "description": "Send a warning to the NOC",
              "name": "sendWarning"
            }
          ]
        }
      ]
    }
  ],
  "@type": "TestMeasureDefinition"
},
{
  "name": "DHCP/PPP Status",
  "metricDescription": "DHCP/PPP Status",
  "metricName": "DHCP/PPP Status",
  "unitOfMeasure": "HeartBeat",
  "captureFrequency": "once",
  "captureMethod": "Automatic capture by OLT",
  "valueType": "string",
  "thresholdRule": [
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "PPP Terminated",
      "description": "This PPP session is down",
      "name": "PPP Status",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        }
      ]
    }
  ]
}

```



```

        "name": "sendWarning"
      }
    ],
    {
      "@type": "MetricDefMeasureThresholdRule",
      "conformanceTargetExact": "No Session",
      "description": "This DHCP session is down",
      "name": "DHCPStatus",
      "numberOfAllowedCrossing": 0,
      "thresholdRuleSeverity": "1",
      "consequence": [
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "raiseTicket",
          "description": "Raise an incident ticket",
          "name": "raiseTicket",
          "repeatAction": false
        },
        {
          "@type": "MetricDefMeasureConsequence",
          "prescribeAction": "sendWarning",
          "description": "Send a warning to the NOC",
          "name": "sendWarning"
        }
      ]
    }
  ],
  "@type": "TestMeasureDefinition"
},
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-9lad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Updates partially a ProductTestSpecification

PATCH /productTestSpecification/{id}?fields=...

Description

This operation allows partial updates of a ProductTestSpecification entity. Support of json/merge (<https://tools.ietf.org/html/rfc7396>) 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

Non Patchable Attributes	Rule
href	
id	
validFor	
@baseType	@baseType is immutable
@schemaLocation	@schemaLocation is immutable
@type	@type is immutable

Patchable Attributes	Rule
attachment	
constraint	
description	
entitySpecRelationship	
isBundle	
lastUpdate	
lifecycleStatus	
name	
productTestSpecRelationship	
relatedParty	
relatedProductSpecification	
specCharacteristic	
targetEntitySchema	
testMeasureDefinition	
version	

Usage samples

Here's an example of a request for patching a product test specification using merge-patch+json. In this example, the version is updated.

Request

```
PATCH /productTestSpecification/629cd10a-f34d-4dcf-a3bb-0f054338ff45
Content-Type: application/merge-patch+json

{
  "version": "1.1",
  "@type": "ProductTestSpecification"
}
```

Response

```
200

{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/629cd10a-f34d-4dcf-a3bb-
0f054338ff45",
  "id": "629cd10a-f34d-4dcf-a3bb-0f054338ff45",
  "version": "1.1",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",
  "validFor": {
    "@type": "TimePeriod",
    "endTime": "2024-01-01T00:00:00.00Z",
    "startTime": "2025-01-01T00:00:00.00Z"
  },
  "specCharacteristic": [
    {
      "@type": "CharacteristicSpecification",
      "name": "overallStatus",
      "description": "This provides an overall status for the product based on
different tests executed",
      "valueType": "string",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "StringCharacteristicValueSpecification",
          "valueType": "string",
          "value": "V1"
        }
      ]
    },
    {
      "@type": "CharacteristicSpecification",
      "name": "committedRateUp",
      "description": "This provides the information of the CIR based on the product
definition",
      "valueType": "number",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
    }
  ]
}
```

```

        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
          }
        ]
      },
      {
        "@type": "CharacteristicSpecification",
        "name": "committedRateDown",
        "description": "This provides the information of the CIR Down based on the
product definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
          {
            "@type": "NumberCharacteristicValueSpecification",
            "valueType": "number",
            "value": "1"
          }
        ]
      }
    ],
    "testMeasureDefinition": [
      {
        "name": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status",
        "metricName": "Uni Port Status",
        "unitOfMeasure": "HeartBeat",
        "captureFrequency": "once",
        "captureMethod": "Automatic capture by OLT",
        "valueType": "string",
        "thresholdRule": [
          {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "Down",
            "description": "This UNI Port Status is down",
            "name": "UniPortDown",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "raiseTicket",
                "description": "Raise an incident ticket",
                "name": "raiseTicket",
                "repeatAction": false
              },
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "sendWarning",
                "description": "Send a warning to the NOC",
                "name": "sendWarning"
              }
            ]
          }
        ]
      }
    ]
  }
}

```

```

    ],
    "@type": "TestMeasureDefinition"
  },
  {
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
      {
        "@type": "MetricDefMeasureThresholdRule",
        "conformanceTargetExact": "PPP Terminated",
        "description": "This PPP session is down",
        "name": "PPP Status",
        "numberOfAllowedCrossing": 0,
        "thresholdRuleSeverity": "1",
        "consequence": [
          {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "raiseTicket",
            "description": "Raise an incident ticket",
            "name": "raiseTicket",
            "repeatAction": false
          },
          {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "sendWarning",
            "description": "Send a warning to the NOC",
            "name": "sendWarning"
          }
        ]
      }
    ],
  },
  {
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "No Session",
    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  }
],
"@type": "TestMeasureDefinition"
}
],

```

```

"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-9lad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-
api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-
2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Here's an example of a request for patching a product test specification using json-patch+json. In this example, the version is updated.

Request

```

PATCH /productTestSpecification/80ebb914-6f9c-4109-84d5-97f851d69ecd
Content-Type: application/json-patch+json

[
  {
    "op": "test",
    "path": "/version",
    "value": "1.1"
  },
  {
    "op": "replace",
    "path": "/version",
    "value": "1.2"
  }
]

```

Response

```

200

{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/80ebb914-6f9c-4109-84d5-
97f851d69ecd",
  "id": "80ebb914-6f9c-4109-84d5-97f851d69ecd",
  "version": "1.2",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",

```

```

"validFor": {
  "@type": "TimePeriod",
  "endTime": "2024-01-01T00:00:00.00Z",
  "startTime": "2025-01-01T00:00:00.00Z"
},
"specCharacteristic": [
  {
    "@type": "CharacteristicSpecification",
    "name": "overallStatus",
    "description": "This provides an overall status for the product based on
different tests executed",
    "valueType": "string",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "StringCharacteristicValueSpecification",
        "valueType": "string",
        "value": "V1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateUp",
    "description": "This provides the information of the CIR based on the product
definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateDown",
    "description": "This provides the information of the CIR Down based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  }
]

```

```

    ],
    "testMeasureDefinition": [
      {
        "name": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status",
        "metricName": "Uni Port Status",
        "unitOfMeasure": "HeartBeat",
        "captureFrequency": "once",
        "captureMethod": "Automatic capture by OLT",
        "valueType": "string",
        "thresholdRule": [
          {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "Down",
            "description": "This UNI Port Status is down",
            "name": "UniPortDown",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "raiseTicket",
                "description": "Raise an incident ticket",
                "name": "raiseTicket",
                "repeatAction": false
              },
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "sendWarning",
                "description": "Send a warning to the NOC",
                "name": "sendWarning"
              }
            ]
          }
        ]
      },
      {
        "@type": "TestMeasureDefinition"
      }
    ],
    {
      "name": "DHCP/PPP Status",
      "metricDescription": "DHCP/PPP Status",
      "metricName": "DHCP/PPP Status",
      "unitOfMeasure": "HeartBeat",
      "captureFrequency": "once",
      "captureMethod": "Automatic capture by OLT",
      "valueType": "string",
      "thresholdRule": [
        {
          "@type": "MetricDefMeasureThresholdRule",
          "conformanceTargetExact": "PPP Terminated",
          "description": "This PPP session is down",
          "name": "PPP Status",
          "numberOfAllowedCrossing": 0,
          "thresholdRuleSeverity": "1",
          "consequence": [
            {
              "@type": "MetricDefMeasureConsequence",
              "prescribeAction": "raiseTicket",
              "description": "Raise an incident ticket",
              "name": "raiseTicket",
              "repeatAction": false
            },
            {
              "@type": "MetricDefMeasureConsequence",

```



```

        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
    }
  ],
  {
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "No Session",
    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "raiseTicket",
        "description": "Raise an incident ticket",
        "name": "raiseTicket",
        "repeatAction": false
      },
      {
        "@type": "MetricDefMeasureConsequence",
        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
      }
    ]
  }
],
"@type": "TestMeasureDefinition"
},
],
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Here's an example of a request for patching a product test specification using json-patch-query+json. In this example, the capture period amount for the Test Measure Definition is updated.

Request

```
PATCH /productTestSpecification/c209961b-ad64-49e3-afb9-896a8071ac34
Content-Type: application/json-patch-query+json
```

```
[
  {
    "op": "test",
    "path": "$.testMeasureDefinition[?(@.name=='Uni Port
Status')].metricDescription",
    "value": "OLT - Uni Port Status"
  },
  {
    "op": "replace",
    "path": "$.testMeasureDefinition[?(@.name=='Uni Port
Status')].metricDescription",
    "value": "OLT - Uni Port Status Updated"
  }
]
```

Response

```
200
```

```
{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/c209961b-ad64-49e3-afb9-
896a8071ac34",
  "id": "c209961b-ad64-49e3-afb9-896a8071ac34",
  "version": "1.2",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",
  "validFor": {
    "@type": "TimePeriod",
    "endDateTime": "2024-01-01T00:00:00.00Z",
    "startDateTime": "2025-01-01T00:00:00.00Z"
  },
  "specCharacteristic": [
    {
      "@type": "CharacteristicSpecification",
      "name": "overallStatus",
      "description": "This provides an overall status for the product based on
different tests executed",
      "valueType": "string",
      "configurable": false,
      "minCardinality": 1,
      "maxCardinality": 1,
      "isUnique": true,
      "extensible": false,
      "characteristicValueSpecification": [
        {
          "@type": "StringCharacteristicValueSpecification",
          "valueType": "string",
          "value": "S1"
        }
      ]
    }
  ],
  {

```

```

        "@type": "CharacteristicSpecification",
        "name": "committedRateUp",
        "description": "This provides the information of the CIR based on the
product definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
            {
                "@type": "NumberCharacteristicValueSpecification",
                "valueType": "number",
                "value": "1"
            }
        ]
    },
    {
        "@type": "CharacteristicSpecification",
        "name": "committedRateDown",
        "description": "This provides the information of the CIR Down based on the
product definition",
        "valueType": "number",
        "configurable": false,
        "minCardinality": 1,
        "maxCardinality": 1,
        "isUnique": true,
        "extensible": false,
        "characteristicValueSpecification": [
            {
                "@type": "NumberCharacteristicValueSpecification",
                "valueType": "number",
                "value": "1"
            }
        ]
    }
],
"testMeasureDefinition": [
    {
        "name": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status Updated",
        "metricName": "Uni Port Status",
        "unitOfMeasure": "HeartBeat",
        "captureFrequency": "once",
        "captureMethod": "Automatic capture by OLT",
        "valueType": "string",
        "thresholdRule": [
            {
                "@type": "MetricDefMeasureThresholdRule",
                "conformanceTargetExact": "Down",
                "description": "This UNI Port Status is down",
                "name": "UniPortDown",
                "numberOfAllowedCrossing": 0,
                "thresholdRuleSeverity": "1",
                "consequence": [
                    {
                        "@type": "MetricDefMeasureConsequence",
                        "prescribeAction": "raiseTicket",
                        "description": "Raise an incident ticket",
                        "name": "raiseTicket",
                        "repeatAction": false
                    }
                ]
            }
        ]
    }
],

```

```

        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "sendWarning",
            "description": "Send a warning to the NOC",
            "name": "sendWarning"
        }
    ]
}
],
"@type": "TestMeasureDefinition"
},
{
    "name": "DHCP/PPP Status",
    "metricDescription": "DHCP/PPP Status",
    "metricName": "DHCP/PPP Status",
    "unitOfMeasure": "HeartBeat",
    "captureFrequency": "once",
    "captureMethod": "Automatic capture by OLT",
    "valueType": "string",
    "thresholdRule": [
        {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "PPP Terminated",
            "description": "This PPP session is down",
            "name": "PPP Status",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "raiseTicket",
                    "description": "Raise an incident ticket",
                    "name": "raiseTicket",
                    "repeatAction": false
                },
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "sendWarning",
                    "description": "Send a warning to the NOC",
                    "name": "sendWarning"
                }
            ]
        },
        {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "No Session",
            "description": "This DHCP session is down",
            "name": "DHCPStatus",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "raiseTicket",
                    "description": "Raise an incident ticket",
                    "name": "raiseTicket",
                    "repeatAction": false
                },
                {
                    "@type": "MetricDefMeasureConsequence",
                    "prescribeAction": "sendWarning",
                    "description": "Send a warning to the NOC",
                    "name": "sendWarning"
                }
            ]
        }
    ]
}

```

```

    }
  ]
}

],
"@type": "TestMeasureDefinition"
}
],
"ProductTestSpecRelationship": [
  {
    "@type": "ProductTestSpecRelationship",
    "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
    "relationshipType": "dependency"
  }
],
"relatedProductSpecification": [
  {
    "href": "https://mycsp.com/tmf-
api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-
2ffe0959998e",
    "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
    "name": "FTTH Product Specification",
    "@type": "RelatedProductSpecification"
  }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Here's an example of a request for patching a product test specification using application/json. In this example, the version is updated.

Request

```

PATCH /productTestSpecification/629cd10a-f34d-4dcf-a3bb-0f054338ff45
Content-Type: application/json

{
  "version": "1.1",
  "@type": "ProductTestSpecification"
}

```

Response

```

200

{
  "description": "A Product Test Specification is a formal document designed to
define the parameters and procedures for conducting thorough testing on a specific
product or service",
  "href": "https://mycsp.com/tmf-
api/productTestManagement/v5/productTestSpecification/629cd10a-f34d-4dcf-a3bb-
0f054338ff45",
  "id": "629cd10a-f34d-4dcf-a3bb-0f054338ff45",
  "version": "1.1",
  "name": "Diagnostic Product FTTH",
  "lifecycleStatus": "active",

```

```

"validFor": {
  "@type": "TimePeriod",
  "endDateTime": "2024-01-01T00:00:00.00Z",
  "startDateTime": "2025-01-01T00:00:00.00Z"
},
"specCharacteristic": [
  {
    "@type": "CharacteristicSpecification",
    "name": "overallStatus",
    "description": "This provides an overall status for the product based on
different tests executed",
    "valueType": "string",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "StringCharacteristicValueSpecification",
        "valueType": "string",
        "value": "V1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateUp",
    "description": "This provides the information of the CIR based on the product
definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  },
  {
    "@type": "CharacteristicSpecification",
    "name": "committedRateDown",
    "description": "This provides the information of the CIR Down based on the
product definition",
    "valueType": "number",
    "configurable": false,
    "minCardinality": 1,
    "maxCardinality": 1,
    "isUnique": true,
    "extensible": false,
    "characteristicValueSpecification": [
      {
        "@type": "NumberCharacteristicValueSpecification",
        "valueType": "number",
        "value": "1"
      }
    ]
  }
]

```

```

    ],
    "testMeasureDefinition": [
      {
        "name": "Uni Port Status",
        "metricDescription": "OLT - Uni Port Status",
        "metricName": "Uni Port Status",
        "unitOfMeasure": "HeartBeat",
        "captureFrequency": "once",
        "captureMethod": "Automatic capture by OLT",
        "valueType": "string",
        "thresholdRule": [
          {
            "@type": "MetricDefMeasureThresholdRule",
            "conformanceTargetExact": "Down",
            "description": "This UNI Port Status is down",
            "name": "UniPortDown",
            "numberOfAllowedCrossing": 0,
            "thresholdRuleSeverity": "1",
            "consequence": [
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "raiseTicket",
                "description": "Raise an incident ticket",
                "name": "raiseTicket",
                "repeatAction": false
              },
              {
                "@type": "MetricDefMeasureConsequence",
                "prescribeAction": "sendWarning",
                "description": "Send a warning to the NOC",
                "name": "sendWarning"
              }
            ]
          }
        ]
      },
      {
        "@type": "TestMeasureDefinition"
      }
    ],
    {
      "name": "DHCP/PPP Status",
      "metricDescription": "DHCP/PPP Status",
      "metricName": "DHCP/PPP Status",
      "unitOfMeasure": "HeartBeat",
      "captureFrequency": "once",
      "captureMethod": "Automatic capture by OLT",
      "valueType": "string",
      "thresholdRule": [
        {
          "@type": "MetricDefMeasureThresholdRule",
          "conformanceTargetExact": "PPP Terminated",
          "description": "This PPP session is down",
          "name": "PPP Status",
          "numberOfAllowedCrossing": 0,
          "thresholdRuleSeverity": "1",
          "consequence": [
            {
              "@type": "MetricDefMeasureConsequence",
              "prescribeAction": "raiseTicket",
              "description": "Raise an incident ticket",
              "name": "raiseTicket",
              "repeatAction": false
            },
            {
              "@type": "MetricDefMeasureConsequence",

```

```

        "prescribeAction": "sendWarning",
        "description": "Send a warning to the NOC",
        "name": "sendWarning"
    }
}
],
{
    "@type": "MetricDefMeasureThresholdRule",
    "conformanceTargetExact": "No Session",
    "description": "This DHCP session is down",
    "name": "DHCPStatus",
    "numberOfAllowedCrossing": 0,
    "thresholdRuleSeverity": "1",
    "consequence": [
        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "raiseTicket",
            "description": "Raise an incident ticket",
            "name": "raiseTicket",
            "repeatAction": false
        },
        {
            "@type": "MetricDefMeasureConsequence",
            "prescribeAction": "sendWarning",
            "description": "Send a warning to the NOC",
            "name": "sendWarning"
        }
    ]
}
],
"@type": "TestMeasureDefinition"
}
],
"ProductTestSpecRelationship": [
    {
        "@type": "ProductTestSpecRelationship",
        "id": "927f2d17-91ad-4ec9-8880-7f962b92bc77",
        "relationshipType": "dependency"
    }
],
"relatedProductSpecification": [
    {
        "href": "https://mycsp.com/tmf-api/productCatalogManagement/v5/productSpecification/89af318b-8793-4915-b6a3-2ffe0959998e",
        "id": "89af318b-8793-4915-b6a3-2ffe0959998e",
        "name": "FTTH Product Specification",
        "@type": "RelatedProductSpecification"
    }
],
"@type": "ProductTestSpecification",
"@baseType": "ProductTestSpecification"
}

```

Deletes a ProductTestSpecification

DELETE /productTestSpecification/{id}

Description

This operation deletes a ProductTestSpecification entity.

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": ""
}
```

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
1	26-04-2024	Florin Tene	Initial version

Contributors to Document

Florin Tene	
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