

TM Forum Specification

Service Inventory Management

TMF638

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|--------------------------------------|--------------------------------|
| Maturity Level: General availability | Team Approved Date: 29-09-2023 |
| Release Status: Production | Approval Status: Team Approved |
| Version 5.0.0 | IPR Mode: RAND |

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Introduction

The following document is intended to provide details of the REST API interface for Service Inventory. The intent of this API is to provide a consistent/standardized mechanism to query and manipulate the Service inventory.

Sample Use Cases

Service inventory query for a customer

The Service Inventory API can be used to query the service instances for a customer via Self Service Portal or the Call Centre operator can query the service instances on behalf of the customer while a customer may have a complaint or a query.

Note: Only the CustomerFacingServices instances will be presented to the customer.

Service inventory update as part of service provisioning

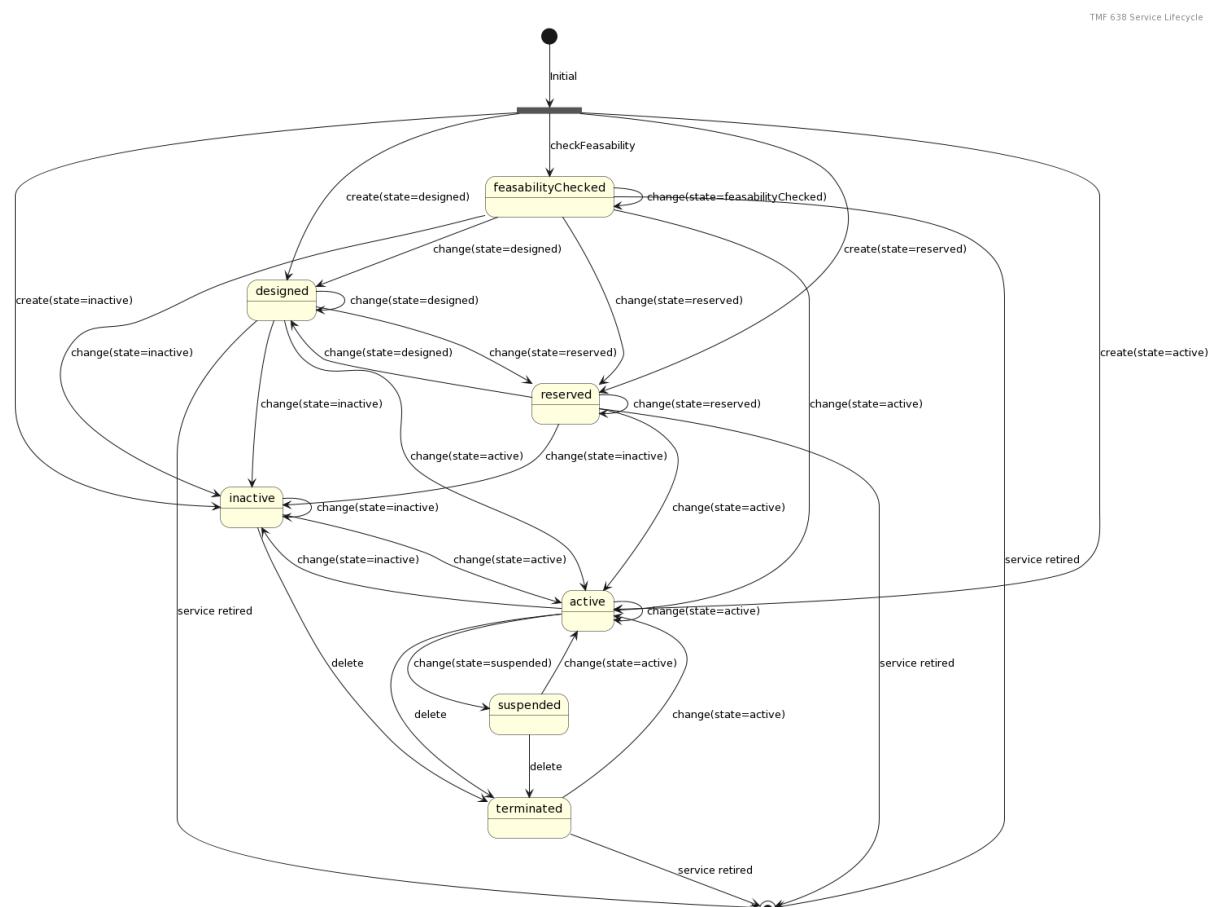
The Service Inventory API can be called by the Service Order Management to create a new service instance/ update an existing service instance in the Service Inventory.

Service entity can be requested with:

- service features and/or service characteristics OR;
- an explicit intent based entity

The intent based request uses an expression language to express the expectations of the intent.

Service Life Cycle



Support Of Polymorphism And Extension Patterns

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

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

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

The @referredType can be used within reference entities (like for instance an RelatedParty object) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the @type, when used, denotes the class type of the reference itself, such as RelatedParty, 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.

Resource Model

Managed Entity and Task Resource Models

Service resource

Service is a base class for defining the Service hierarchy. All Services are characterized as either being possibly visible and usable by a Customer or not. This gives rise to the two subclasses of Service: CustomerFacingService and ResourceFacingService.

Resource model

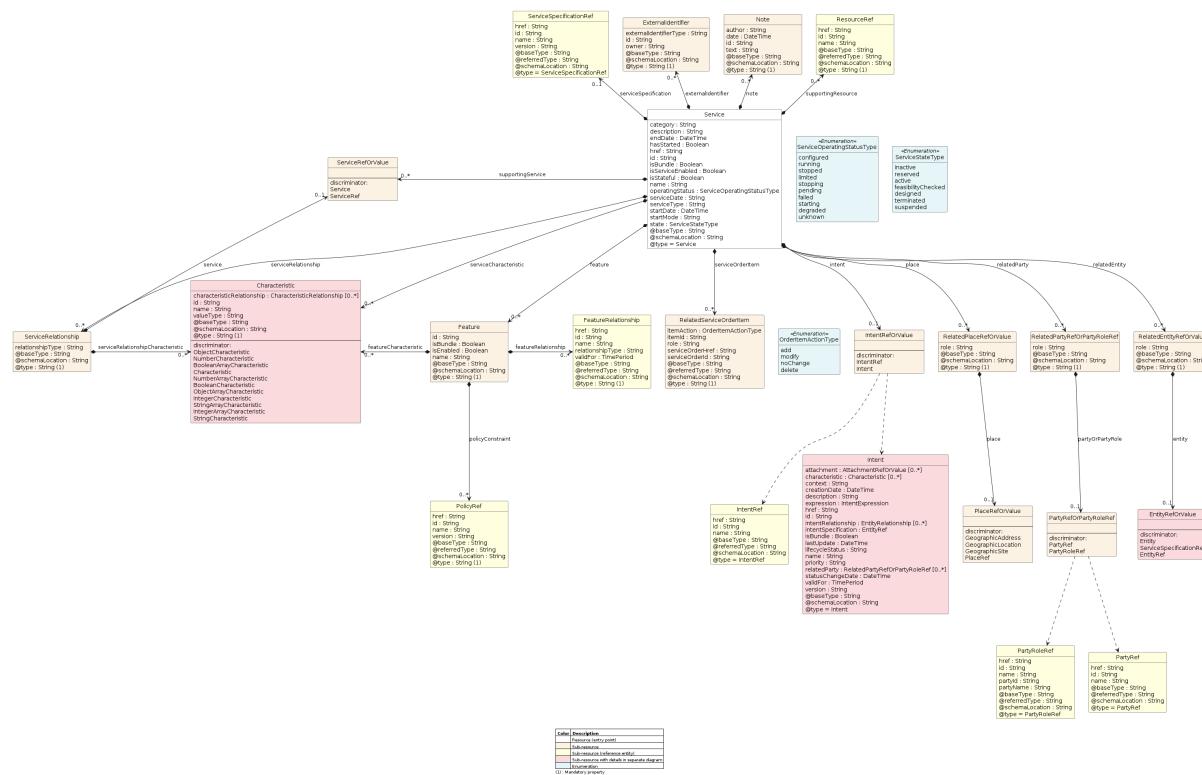
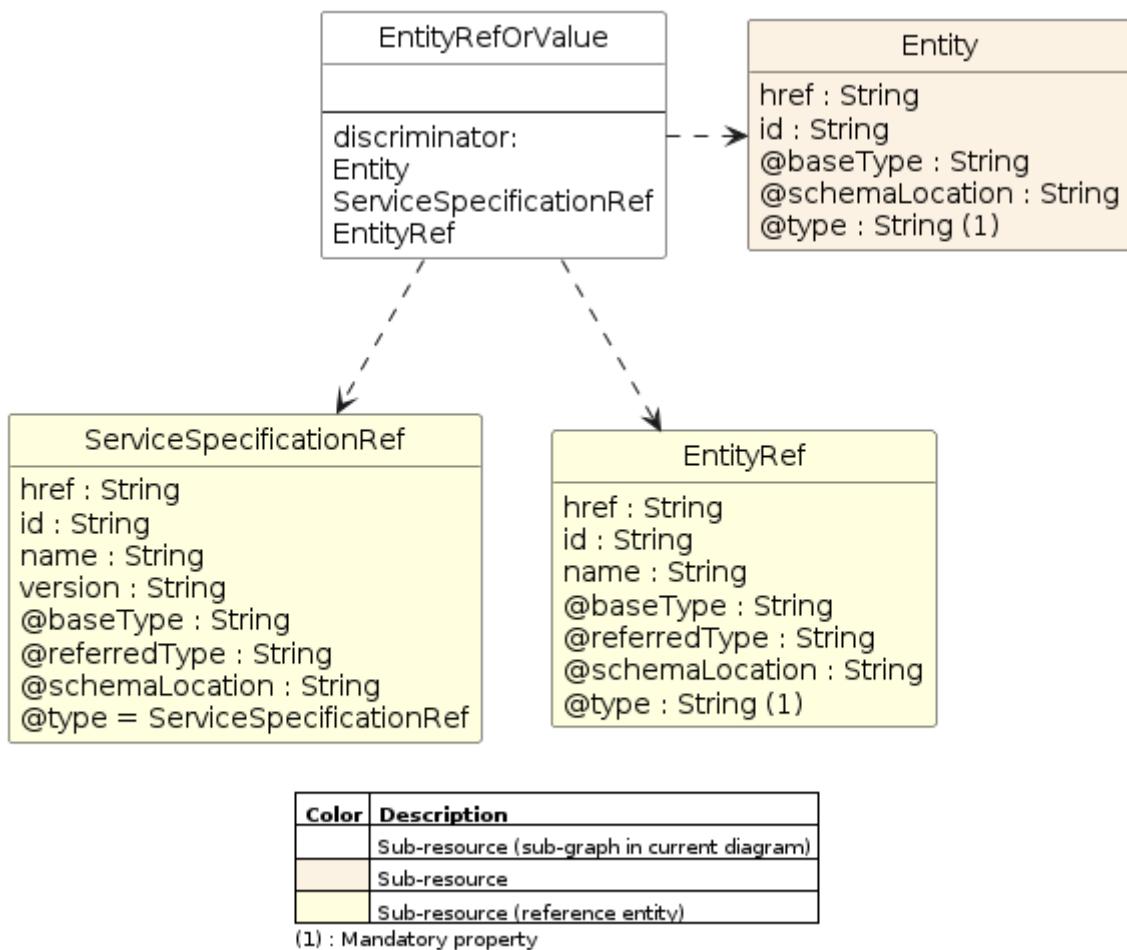
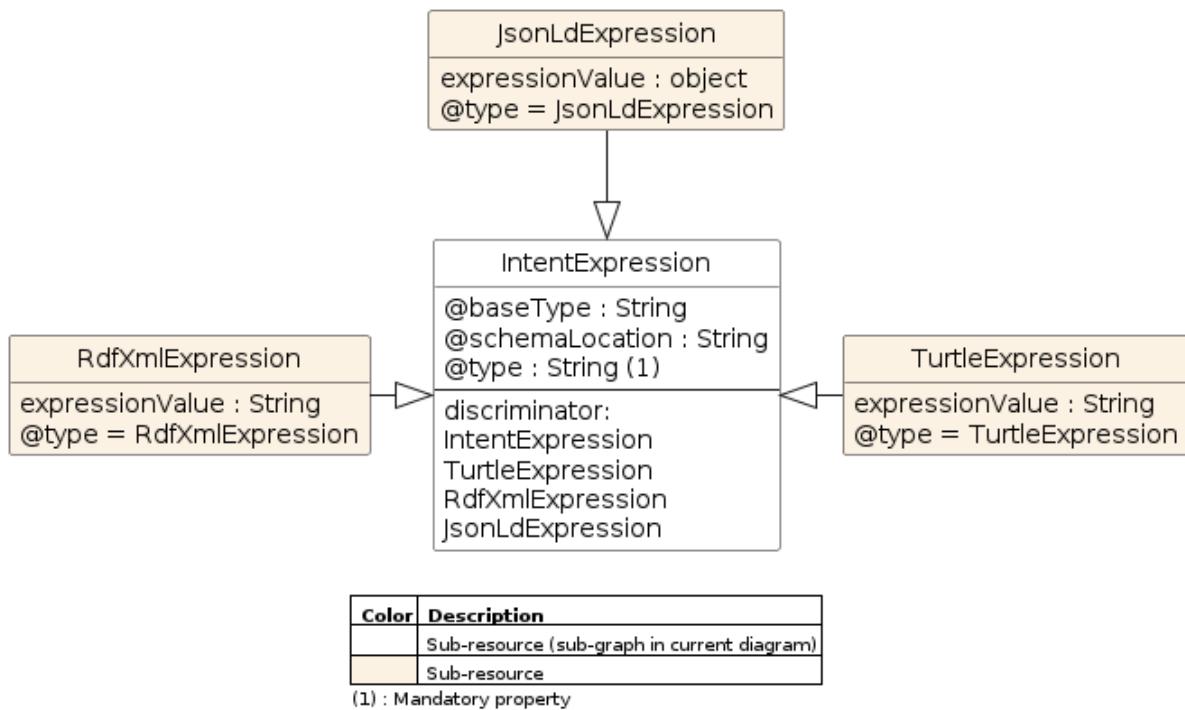


Figure 1 - Service

Figure 2 - `EntityRefOrValue`

Figure 3 - *IntentExpression*

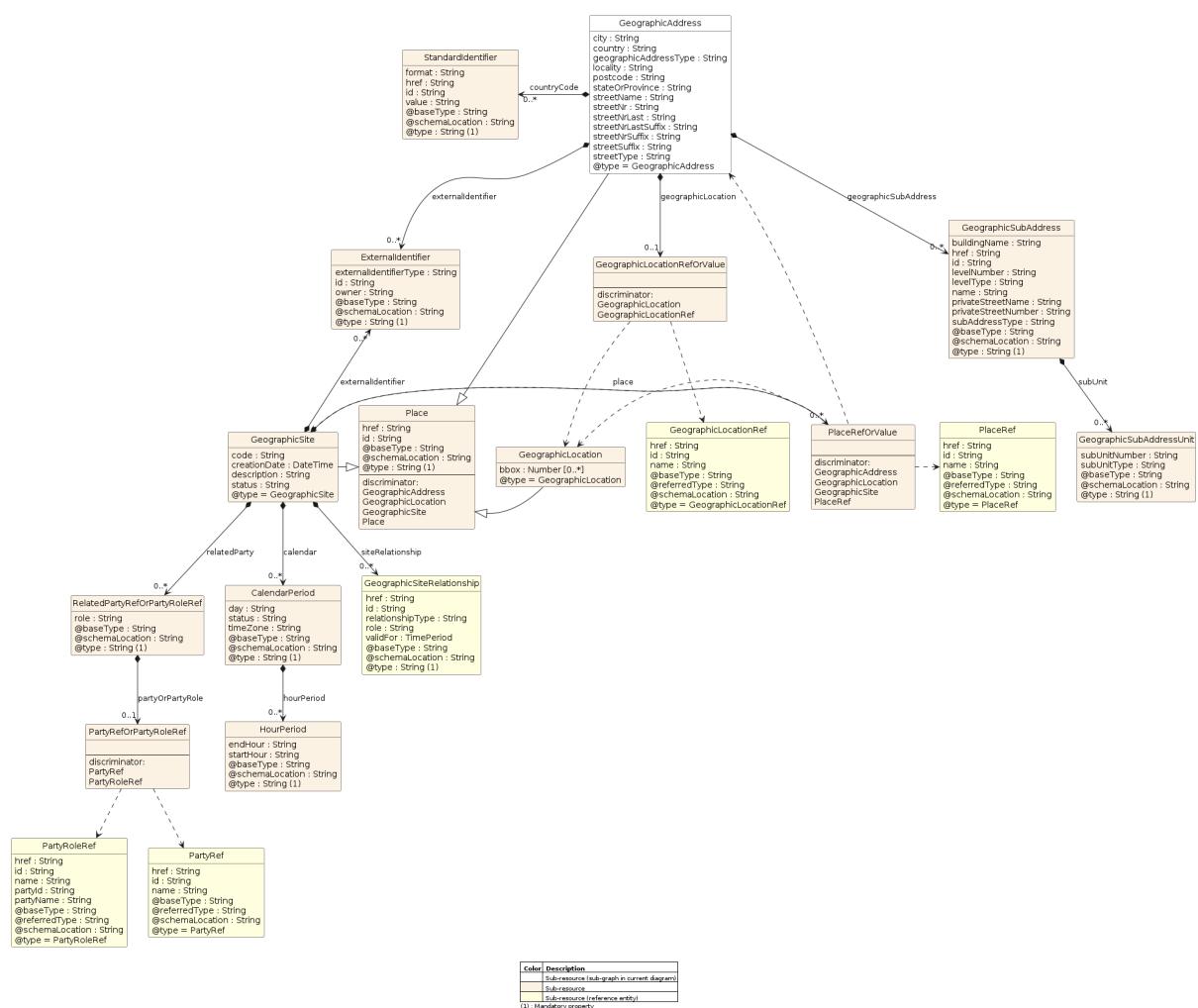


Figure 4 - GeographicAddress

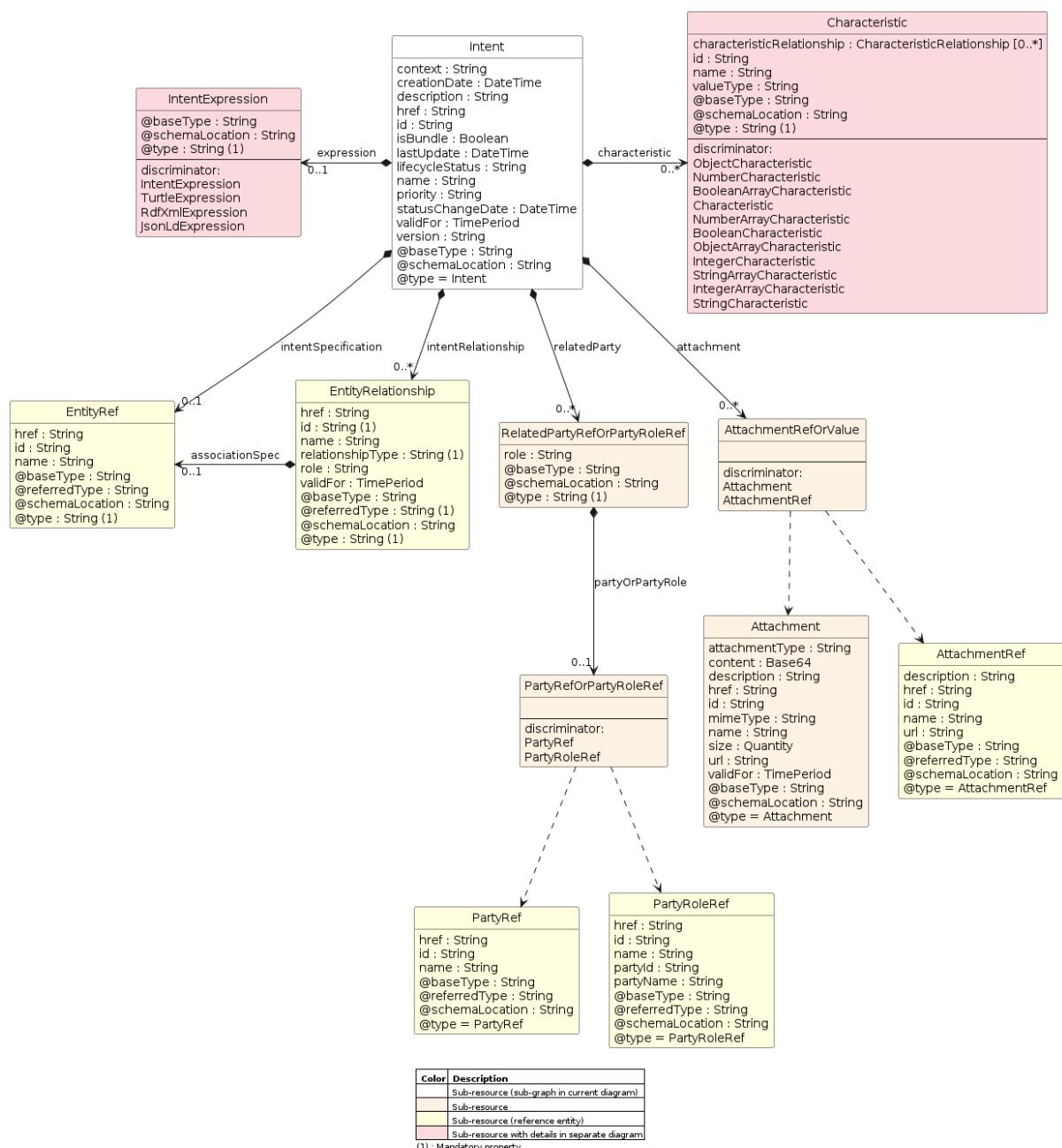


Figure 5 - Intent

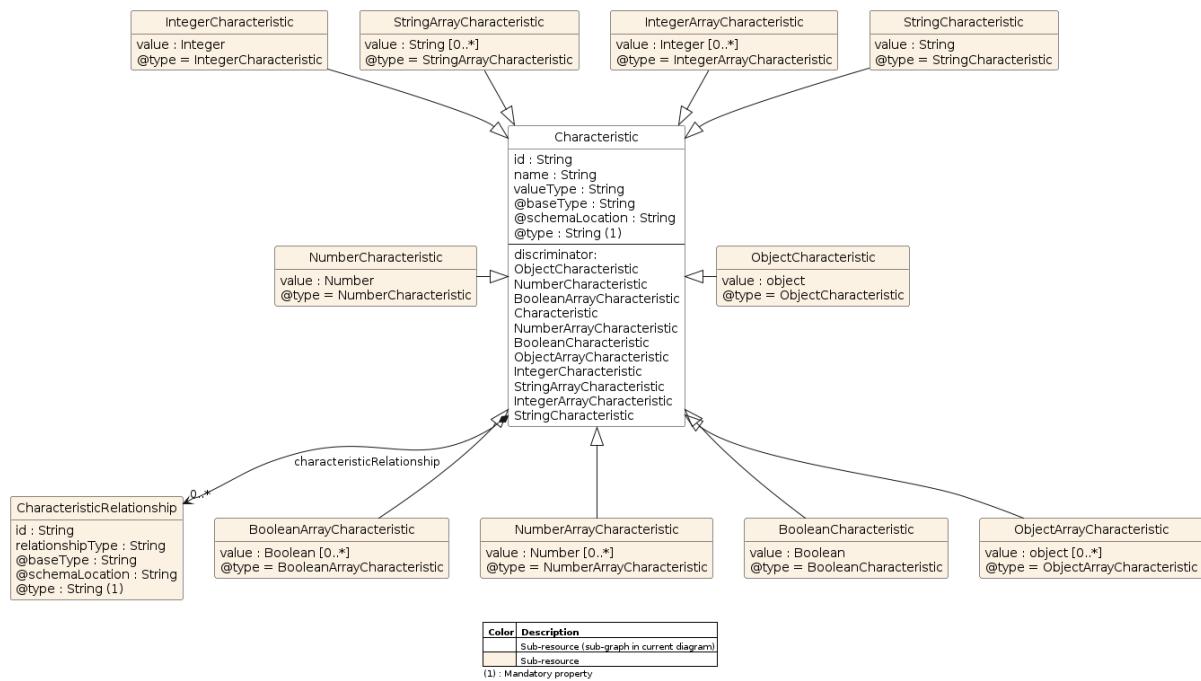


Figure 6 - Characteristic

Field descriptions

Service fields

| | |
|--------------------|--|
| category | A String. Is it a customer facing or resource facing service. |
| description | A String. Free-text description of the service. |
| endDate | A DateTime. Date when the service ends. |
| externalIdentifier | An ExternalIdentifier. A list of external identifiers associated with this service. |
| feature | A Feature. A list of feature associated with this service. |
| hasStarted | A Boolean. If TRUE, this Service has already been started. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| intent | An IntentRefOrValue. Intent Ref (if Intent already exists) or Value (if Intent be created or its details be presented). |
| isBundle | A Boolean. If true, the service is a ServiceBundle which regroup a service hierarchy. If false, the service is a 'atomic' service (hierarchy leaf). |
| isServiceEnabled | A Boolean. If FALSE and hasStarted is FALSE, this particular Service has NOT been enabled for use - if FALSE and hasStarted is TRUE then the service has failed. |
| isStateful | A Boolean. If TRUE, this Service can be changed without affecting any other services. |
| name | A String. Name of the service. |

| | |
|-----------------------|---|
| note | A Note. A list of notes made on this service. |
| operatingStatus | A ServiceOperatingStatusType. Valid values for the Operating status of the service. |
| place | A RelatedPlaceRefOrValue. A list of places (Place [*]). Used to define a place useful for the service (for example a geographical place where the service is installed). |
| relatedEntity | A RelatedEntityRefOrValue. A list of related entities in relationship with this service. |
| relatedParty | A RelatedPartyRefOrPartyRoleRef. A list of related party references (RelatedParty [*]). A related party defines party or party role linked to a specific entity. |
| serviceCharacteristic | A Characteristic. A list of characteristics that characterize this service (ServiceCharacteristic [*]). |
| serviceDate | A String. Date when the service was created (whatever its status). |
| serviceOrderItem | A RelatedServiceOrderItem. A list of service order items related to this service. |
| serviceRelationship | A ServiceRelationship. A list of service relationships (ServiceRelationship [*]). Describes links with other service(s) in the inventory. |
| serviceSpecification | A ServiceSpecificationRef. Service specification reference: ServiceSpecification(s) required to realize a ProductSpecification. |
| serviceType | A String. Business type of the service. |
| startDate | A DateTime. Date when the service starts. |
| startMode | A String. This attribute is an enumerated integer that indicates how the Service is started, such as: 0: Unknown; 1: Automatically by the managed environment; 2: Automatically by the owning device; 3: Manually by the Provider of the Service; 4: Manually by a Customer of the Provider; 5: Any of the above. |
| state | A ServiceStateType. Valid values for the lifecycle state of the service. |
| supportingResource | A ResourceRef. A list of supporting resources (SupportingResource [*]). Note: only Service of type RFS can be associated with Resources. |
| supportingService | A ServiceRefOrValue. A list of supporting services (SupportingService [*]). A collection of services that support this service (bundling, link CFS to RFS). |
| @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. |

Attachment sub-resource fields

| | |
|-----------------|--|
| attachmentType | A String. A business characterization of the purpose of the attachment, for example logo, instructionManual, contractCopy. |
| content | A Base64. The actual contents of the attachment object, if embedded, encoded as base64. |
| description | A String. A narrative text describing the content of the attachment. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| mime_type | A String. A technical characterization of the attachment content format using IETF Mime Types. |
| name | A String. The name of the attachment. |
| size | A Quantity. An amount in a given unit. |
| url | A String. Uniform Resource Locator, is a web page address (a subset of URI). |
| 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. |

AttachmentRef sub-resource fields

| | |
|-----------------|---|
| description | A String. A narrative text describing the content of the attachment. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| name | A String. Name of the referred entity. |
| url | A String. Link to the attachment media/content. |
| @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. |

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. |
| 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. |

CalendarPeriod sub-resource fields

| | |
|------------------------|---|
| day | A String. Day where the calendar status applies (e.g.: monday, mon-to-fri, weekdays, weekend, all week, ...). |
| hourPeriod | A HourPeriod. |
| status | A String. Indication of the availability of the caledar period (e.g.: available, booked, etc.). |
| timeZone | A String. Indication of the timezone applicable to the calendar information (e.g.: Paris, GMT+1). |
| @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 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. |

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. |

Entity sub-resource fields

| | |
|-----------------|---|
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| @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. |

EntityRef 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. |
|-------|--|

EntityRelationship sub-resource fields

| | |
|------------------|--|
| associationSpec | An EntityRef. Entity reference schema to be use for all entityRef class. |
| href | A String. |
| id | A String. |
| name | A String. |
| relationshipType | A String. Type of relationship such as migration, substitution, dependency, exclusivity. |
| role | A String. The association role for this entity. |
| 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. |
| @schemaLocation | A String. A URI to a JSON-Schema file that defines additional attributes and relationships. |
| @type | A String. |

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. |

Feature sub-resource fields

| | |
|-----------------------|---|
| featureCharacteristic | A Characteristic. This is a list of Characteristics for a particular feature. |
| featureRelationship | A FeatureRelationship. Configuration feature. |
| id | A String. Unique identifier. |
| isBundle | A Boolean. True if this is a feature group. Default is false. |
| isEnabled | A Boolean. True if this feature is enabled. Default is true. |

| | |
|-------------------------------|---|
| <code>name</code> | A String. This is the name for the feature. |
| <code>policyConstraint</code> | A PolicyRef. Reference to manage a list of feature specification policy constraints. |
| <code>@baseType</code> | A String. When sub-classing, this defines the super-class. |
| <code>@schemaLocation</code> | A String. A URI to a JSON-Schema file that defines additional attributes and relationships. |
| <code>@type</code> | A String. When sub-classing, this defines the sub-class Extensible name. |

FeatureRelationship sub-resource fields

| | |
|-------------------------------|--|
| <code>href</code> | A String. Hyperlink reference. |
| <code>id</code> | A String. Unique identifier. |
| <code>name</code> | A String. Name of the referred entity. |
| <code>relationshipType</code> | A String. This is the type of the feature relationship. |
| <code>validFor</code> | A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both. |
| <code>@baseType</code> | A String. When sub-classing, this defines the super-class. |
| <code>@referredType</code> | A String. The actual type of the target instance when needed for disambiguation. |
| <code>@schemaLocation</code> | A String. A URI to a JSON-Schema file that defines additional attributes and relationships. |
| <code>@type</code> | A String. When sub-classing, this defines the sub-class Extensible name. |

GeographicAddress sub-resource fields

| | |
|--------------------------|---|
| <code>city</code> | A String. City that the address is in. |
| <code>country</code> | A String. Country that the address is in. |
| <code>countryCode</code> | A StandardIdentifier. Country codes are short alphabetic or numeric geographical codes (geocodes) developed to represent countries and dependent areas, for use in data processing and communications. Several different systems have been developed to do this. The term country code frequently refers to ISO 3166-1 alpha-2 or international dialing codes, the E.164 country calling codes. |

| | |
|-----------------------|---|
| 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. |
| geographicAddressType | A String. Classification of the address, e.g., residential, industrial. |
| geographicLocation | A GeographicLocationRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the GeographicLocation entity and not the GeographicLocationRefOrValue class itself. |
| geographicSubAddress | A GeographicSubAddress. Representation of a GeographicSubAddress It is used for addressing within a property in an urban area (country properties are often defined differently). It may refer to a building, a building cluster, or a floor of a multistory building. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| locality | A String. An area of defined or undefined boundaries within a local authority or other legislatively defined area, usually rural or semi rural in nature. [ANZLIC-STREET], or a suburb, a bounded locality within a city, town or shire principally of urban character [ANZLICSTREET]. |
| postcode | A String. Descriptor for a postal delivery area, used to speed and simplify the delivery of mail (also known as zipcode). |
| stateOrProvince | A String. The State or Province that the address is in. |
| streetName | A String. Name of the street or other street type. |
| streetNr | A String. Number identifying a specific property on a public street. It may be combined with streetNrLast for ranged addresses. |
| streetNrLast | A String. Last number in a range of street numbers allocated to a property. |
| streetNrLastSuffix | A String. Last street number suffix for a ranged address. |
| streetNrSuffix | A String. The first street number suffix. |
| streetSuffix | A String. A modifier denoting a relative direction. |
| streetType | A String. Alley, avenue, boulevard, brae, crescent, drive, highway, lane, terrace, parade, place, tarn, way, wharf. |
| @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. |
|--------------|--|

GeographicLocation sub-resource fields

| | |
|------------------------|---|
| bbox | A Number. A bounding box array that contains the geometry. The axes order follows the axes order of the geometry. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| @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. |

GeographicLocationRef 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. |

GeographicSite sub-resource fields

| | |
|---------------------|---|
| calendar | A CalendarPeriod. |
| code | A String. A code that may be used for some addressing schemes eg: [ANSI T1.253-1999]. |
| creationDate | A DateTime. Date and time when the GeographicSite was created. |
| description | A String. Text describing additional information regarding the site. |

| | |
|--------------------|---|
| 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. |
| place | A PlaceRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Place entity and not the PlaceRefOrValue class itself. |
| relatedParty | A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity. |
| siteRelationship | A GeographicSiteRelationship. |
| status | A String. The condition of the GeographicSite, such as planned, underConstruction, cancelled, active, inactive, former. |
| @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. |

GeographicSiteRelationship sub-resource fields

| | |
|------------------|--|
| href | A String. Reference of the related geographic site. |
| id | A String. Unique identifier of the related site entity within the server. |
| relationshipType | A String. Type of relationship. |
| role | A String. Role of the related site in the relationship. |
| validFor | A TimePeriod. A period of time, either as a deadline (endDateTime only) a startTime 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. |

GeographicSubAddress sub-resource fields

| | |
|---------------------|---|
| buildingName | A String. Allows for buildings that have well-known names. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| levelNumber | A String. Used where a level type may be repeated e.g. BASEMENT 1, BASEMENT 2. |
| levelType | A String. Describes level types within a building. |
| name | A String. Name of the subAddress to identify it with a meaningful identification. |
| privateStreetName | A String. Private streets internal to a property (e.g. a university) may have internal names that are not recorded by the land title office. |
| privateStreetNumber | A String. Private streets numbers internal to a private street. |
| subAddressType | A String. Type of subAddress : it can be a subunit or a private street. |
| subUnit | A GeographicSubAddressUnit. Representation of a SubUnit. It is used for describing subunit within a subAddress e.g. BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF. |
| @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. |

GeographicSubAddressUnit sub-resource fields

| | |
|-----------------|---|
| subUnitNumber | A String. The discriminator used for the subunit, often just a simple number but may also be a range. |
| subUnitType | A String. The type of subunit e.g. BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF, RACK. |
| @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. |

HourPeriod sub-resource fields

| | |
|-----------------|---|
| endHour | A String. The time when the status ends applying. |
| startHour | A String. The time when the status starts applying. |
| @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. |
| 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. |

Intent sub-resource fields

| | |
|----------------|---|
| attachment | An AttachmentRefOrValue. Attachments that may be of relevance to this intent, such as picture, document, media. |
| characteristic | A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. |
| context | A String. A string used to give a context to the intent. |
| creationDate | A DateTime. Date and time of the creation of this REST resource. |
| description | A String. The description of the intent. |
| expression | An IntentExpression. An Intent expression. |

| | |
|---------------------|---|
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| intentRelationship | An EntityRelationship. A list of intents related to this intent. |
| intentSpecification | An EntityRef. Entity reference schema to be use for all entityRef class. |
| isBundle | A Boolean. IsBundle determines whether an intent represents a single intent (false), or a bundle of intents(true). |
| lastUpdate | A DateTime. Date and time of the last update of this REST resource. |
| lifecycleStatus | A String. Used to indicate the current lifecycle status of this intent. |
| name | A String. The name of the intent. |
| priority | A String. Can be used by intent owner to prioritize intents in an intent management system. |
| relatedParty | A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity. |
| statusChangeDate | A DateTime. A date time(DateTime). The date that the entity status changed to the current one. |
| validFor | A TimePeriod. A period of time, either as a deadline (endDateTime only) a startDateTime only, or both. |
| version | A String. A field that identifies the specific version of an instance of an intent. |
| @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. |

IntentExpression sub-resource fields

| | |
|-----------------|---|
| @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. |

IntentRef 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. |

JsonLdExpression sub-resource fields

| | |
|-----------------|---|
| expressionValue | An object. JsonLdExpression is the ontology-encoded form of the Intent as JSON-LD as defined in https://www.w3.org/TR/json-ld/ should be validated against https://raw.githubusercontent.com/json-ld/json-ld.org/main/schemas/jsonld-schema.json . |
| @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. |

Note sub-resource fields

| | |
|-----------------|---|
| author | A String. Author of the note. |
| date | A DateTime. Date of the note. |
| id | A String. Identifier of the note within its containing entity. |
| text | A String. Text of the note. |
| @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. |
| 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. |

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. |
| 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. |

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. |

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. |

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. |

Place sub-resource fields

| | |
|-----------------|---|
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| @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. |
|--------------|--|

PlaceRef 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. |

PolicyRef sub-resource fields

| | |
|------------------------|---|
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| name | A String. Name of the referred entity. |
| version | A String. |
| @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. |

RdfXmlExpression sub-resource fields

| | |
|------------------------|---|
| expressionValue | A String. RDF XML Expression value encoded object. |
| @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. |

RelatedEntityRefOrValue sub-resource fields

| | |
|---------------|----------------------|
| entity | An EntityRefOrValue. |
| role | A String. |

| | |
|-----------------|---|
| @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. |

RelatedPlaceRefOrValue sub-resource fields

| | |
|-----------------|--|
| place | A PlaceRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Place entity and not the PlaceRefOrValue class itself. |
| role | A String. |
| @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. |

RelatedServiceOrderItem sub-resource fields

| | |
|------------------|---|
| itemAction | An OrderItemActionType. Action to be performed on the product. |
| itemId | A String. Identifier of the order item where the service was managed. |
| role | A String. Role of the service order item for this service. |
| serviceOrderHref | A String. Reference of the related entity. |
| serviceOrderId | A String. Unique identifier of a related 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. |
|-------|--|

ResourceRef 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. |

ServiceRelationship sub-resource fields

| | |
|-----------------------------------|--|
| relationshipType | A String. |
| service | A ServiceRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Service entity and not the ServiceRefOrValue class itself. |
| serviceRelationshipCharacteristic | A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. |
| @baseType | A String. When sub-classing, this defines the super-class. |
| @schemaLocation | 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. |

ServiceSpecificationRef sub-resource fields

| | |
|-----------------|---|
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| name | A String. Name of the referred entity. |
| version | A String. Service specification version. |
| @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. |

StandardIdentifier sub-resource fields

| | |
|-----------------|---|
| format | A String. Standard/Regulatory definition identifier. e.g., ISO 3166-1. |
| href | A String. Hyperlink reference. |
| id | A String. Unique identifier. |
| value | A String. The value of the resource in the corresponding standard.e.g., a country code value. |
| @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. |
| 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. |

TurtleExpression sub-resource fields

| | |
|-----------------|--|
| expressionValue | A String. Turtle Expression value is the ontology-encoded form of the Intent as Turtle RDF as defined in https://www.w3.org/TR/turtle/ . |
| @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 'Service' resource object.

```
{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "active",
  "category": "CFS",
  "isServiceEnabled": true,
  "hasStarted": true,
  "startMode": "1",
  "isStateful": true,
  "serviceDate": "2018-01-15T12:26:11.747Z",
  "startDate": "2018-01-15T12:26:11.747Z",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
  },
  "feature": [
    {
      "id": "Feat1",
      "isEnabled": true,
      "name": "ElasticBandwidth",
      "featureCharacteristic": [
        {
          "id": "45gh-fg",
          "name": "isCapped",
          "value": true,
          "valueType": "boolean",
          "@type": "BooleanCharacteristic"
        }
      ],
      "@type": "Feature"
    }
  ],
  "serviceCharacteristic": [
    {
      "id": "SChar1"
    }
  ]
}
```

```
        "id": "452-gh6",
        "name": "vCPE",
        "valueType": "object",
        "value": {
            "@type": "VCPE",
            "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
            "vCPE_IP": "193.218.236.21",
            "MaxTxRate": 300,
            "TransmitPower": "11 dBm",
            "maxTream": "OFF"
        },
        "@type": "ObjectCharacteristic"
    }
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "ServiceRelationshipCharacteristic": [
        {
            "id": "126",
            "name": "CrossRef",
            "value": "44-11-h",
            "valueType": "string",
            "@type": "StringCharacteristic"
        }
    ],
    "@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5885",
    "id": "5885",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"supportingResource": [
{
    "id": "6161",
    "href": "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/5351",
    "name": "GenInfra",
    "@type": "ResourceRef",
    "@referredType": "VirtualResource"
},
{
    "id": "7171",
    "href": "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/7171",
    "name": "BNG_MUX",
    "value": "01 25 65",
    "@type": "ResourceRef",
    "@referredType": "VNF"
}
],
"relatedParty": [

```

```
{  
    "role": "user",  
    "partyOrPartyRole": {  
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",  
        "id": "456",  
        "name": "John Doe",  
        "@type": "PartyRef",  
        "@referredType": "Individual"  
    },  
    "@type": "RelatedPartyRefOrPartyRoleRef"  
}  
],  
"serviceOrderItem": [  
    {  
        "serviceOrderHref": "https://mycsp.com:8080/tmf-  
api/serviceOrdering/v5/serviceOrder/42",  
        "serviceOrderId": "42",  
        "role": "initiator",  
        "@referredType": "ServiceOrderItem",  
        "@type": "RelatedServiceOrderItem",  
        "itemId": "1",  
        "itemAction": "add"  
    },  
    {  
        "serviceOrderHref": "https://mycsp.com:8080/tmf-  
api/serviceOrdering/v5/serviceOrder/896",  
        "serviceOrderId": "896",  
        "role": "activator",  
        "@referredType": "ServiceOrderItem",  
        "@type": "RelatedServiceOrderItem",  
        "itemId": "4",  
        "itemAction": "modify"  
    }  
],  
"place": [  
    {  
        "role": "InstallationAddress",  
        "place": {  
            "href": "https://mycsp.com:8080/tmf-  
api/geographicAddressManagement/v5/geographicAddress/2435",  
            "id": "2435",  
            "name": "Customer primary location",  
            "@type": "PlaceRef",  
            "@referredType": "GeographicAddress"  
        },  
        "@type": "RelatedPlaceRefOrValue"  
    }  
],  
"note": [  
    {  
        "id": "77456",  
        "author": "Harvey Poupon",  
        "date": "2018-01-15T12:26:11.748Z",  
        "text": "This service was installed automatically, no issues were noted in  
testing.",  
        "@type": "Note"  
    }  
],  
"@type": "Service"  
}
```

The following table provides service state explanation:

| | |
|--------------------------|---|
| A service is in state... | when the Service Component Activation Interface shall support the following operations |
| feasabilityChecked | <p>The service component OS is requested to determine whether the necessary resources are available and sufficient for the installation of a given service.</p> <p>It should be noted that this is just an initial feasibility check and no RFS is created.</p> |
| designed | <p>The Service Component OS is requested to design the service. This could be used to allocate resource but nothing is supposed to be reserved.</p> |
| reserved | <p>The Service Component OS is requested to reserve a resource, or a set of resources, required for a service. This situation allows for the requesting OS to determine whether the underlying resources are available and reserve them in order to support a service (a RFS).</p> <p>As a result of the reservation request, a service is instantiated & reserved.</p> |
| inactive | <p>The service is deactivated - The Resource Facing service is deactivated and thus is no longer available for service. It remains allocated to the CFS that is managed by the high level service activation OS</p> |
| active | <p>The service component OS is requested to activate a given resource facing service such that the component is fully available and active as part of the CFS.</p> <p>When this request is complete, all RFS components shall be in active state</p> |
| suspended | <p>When a service is suspended, its usage is restricted. Restrictions can be added/removed for a feature or for the complete service.</p> |
| terminated | <p>The service is 'logically deleted'. The resource facing service is deleted and thus allocated from the CFS. All associated resources are freed and made available for service to other users.</p> |

The following table provides service operating status explanation:

| Service operating status | Definition |
|--------------------------|---|
| pending | The service provisioning has been initiated and/or the service is undergoing configuration. |
| configured | The service is configured fully on the network and ready to become operational. |
| starting | The service is transitioning and preparing to be in running status. |
| running | The service is fully up and in standard running status. |

| Service operating status | Definition |
|--------------------------|---|
| degraded | The service is degraded in some respect, such as in speed or operating capacity. Failure of a test or an unacceptable performance measurement has established that the service is not fully operating or is degraded. |
| failed | The service has an internal fault that prevents it from operating. |
| limited | Particular aspect(s) of the service is restricted for use and hence not fully operating. |
| stopping | The service is transitioning and preparing to be in stopped status. |
| stopped | The service is in stopped status and is not operational. |
| unknown | The operating status of the service not able to be determined. |

Notification Resource Models

5 notifications are defined for this API.

Notifications related to Service:

- Service Attribute Value Change Event
- Service Delete Event
- Service Operating Status Change Event
- Service Create Event
- Service 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 sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType). This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).

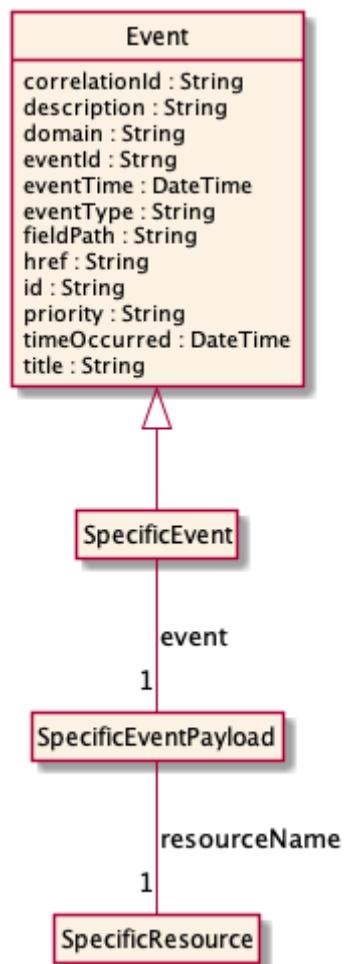


Figure 7 Notification Pattern

Service Attribute Value Change Event

Message example for ServiceAttributeValueChangeEvent event

```

Content-Type: application/json

{
  "correlationId": "7af07271-5f0c",
  "description": "ServiceAttributeValueChangeEvent illustration",
  "domain": "Commercial",
  "eventId": "4414-a94c-43a0a142a98c",
  "eventTime": "2022-08-25T12:19:28.526Z",
  "eventType": "ServiceAttributeValueChangeEvent",
  "priority": "3",
  "timeOcurred": "2022-08-25T12:19:19.786Z",
  "title": "ServiceAttributeValueChangeEvent",
  "event": {
    "service": {
      "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
      "id": "5351",
      "@type": "Service",
      "place": [
        {
          "role": "InstallationAddress",
        }
      ]
    }
  }
}
  
```

```

        "place": {
            "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
            "id": "2435",
            "name": "Customer primary location",
            "@type": "PlaceRefOrValue",
            "@referredType": "GeographicAddress"
        },
        "@type": "RelatedPlaceRefOrValue"
    }
}
},
"reportingSystem": {
    "id": "427",
    "name": "APP-755",
    "@type": "ReportingResource",
    "@referredType": "LogicalResource"
},
"source": {
    "id": "149",
    "name": "APP-78",
    "@type": "ReportingResource",
    "@referredType": "LogicalResource"
},
"@baseType": "Event",
"@type": "ServiceAttributeValueChangeEvent"
}
}

```

Service Delete Event

Message example for ServiceDeleteEvent event

```

Content-Type: application/json

{
    "correlationId": "36af9e61-4a51",
    "description": "ServiceDeleteEvent illustration",
    "domain": "Commercial",
    "eventId": "4154-a76e-bf08c4bccb2e",
    "eventTime": "2022-08-25T12:19:28.549Z",
    "eventType": "ServiceDeleteEvent",
    "priority": "1",
    "timeOcurred": "2022-08-25T12:19:24.023Z",
    "title": "ServiceDeleteEvent",
    "event": {
        "service": {
            "id": "5351",
            "href": "http://servername/service/5351",
            "@type": "Service"
        }
    },
    "reportingSystem": {
        "id": "427",
        "name": "APP-755",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "source": {
        "id": "149",
        "name": "APP-78",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    }
}

```

```

        "name": "APP-78",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@type": "ServiceDeleteEvent"
}

```

Service Operating Status Change Event

Message example for ServiceOperatingStatusChangeEvent event with ?fields=OperatingStatus property only

```

Content-Type: application/json

{
    "correlationId": "b382501b-c423",
    "description": "ServiceOperatingStatusChangeEvent illustration",
    "domain": "Commercial",
    "eventId": "4da6-b0f1-5a7fce3edc94",
    "eventTime": "2022-08-25T12:19:28.512Z",
    "eventType": "ServiceOperatingStatusChangeEvent",
    "priority": "4",
    "timeOcurred": "2022-08-25T12:19:28.180Z",
    "title": "ServiceOperatingStatusChangeEvent",
    "event": {
        "service": {
            "id": "5351",
            "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
            "operatingStatus": "running",
            "@type": "Service"
        }
    },
    "reportingSystem": {
        "id": "427",
        "name": "APP-755",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "source": {
        "id": "149",
        "name": "APP-78",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@type": "ServiceOperatingStatusChangeEvent"
}

```

Service Create Event

Message example for ServiceCreateEvent event

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

```
{  
    "correlationId": "b382501b-c423",  
    "description": "ServiceCreateEvent illustration",  
    "domain": "Commercial",  
    "eventId": "4da6-b0f1-5a7fce3edc94",  
    "eventTime": "2022-08-25T12:19:28.512Z",  
    "eventType": "ServiceCreateEvent",  
    "priority": "4",  
    "timeOcurred": "2022-08-25T12:19:28.180Z",  
    "title": "ServiceCreateEvent",  
    "event": {  
        "service": {  
            "id": "5351",  
            "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",  
            "serviceType": "Cloud",  
            "name": "vCPE serial 1355615",  
            "description": "Instantiation of vCPE",  
            "state": "active",  
            "category": "CFS",  
            "isServiceEnabled": true,  
            "hasStarted": true,  
            "startMode": "1",  
            "isStateful": true,  
            "startDate": "2018-01-15T12:26:11.747Z",  
            "serviceSpecification": {  
                "id": "1212",  
                "href": "https://mycsp.com:8080/tmf-api/serviceCatalogManagement/v5/serviceSpecification/1212",  
                "name": "vCPE",  
                "version": "1.0.0",  
                "@type": "ServiceSpecificationRef",  
                "@referredType": "ServiceSpecification"  
            },  
            "feature": [  
                {  
                    "id": "Feat1",  
                    "isEnabled": true,  
                    "name": "ElasticBandwith",  
                    "featureCharacteristic": [  
                        {  
                            "name": "isCapped",  
                            "value": true,  
                            "id": "45gh-fg",  
                            "valueType": "boolean",  
                            "@type": "BooleanCharacteristic"  
                        }  
                    ],  
                    "@type": "Feature"  
                }  
            ],  
            "serviceCharacteristic": [  
                {  
                    "id": "452-gh6",  
                    "name": "vCPE",  
                    "valueType": "object",  
                    "value": {  
                        "@type": "VCPE",  
                        "@schemaLocation": "http://my.schemas/vCPE.schema.json",  
                        "vCPE_IP": "193.218.236.21",  
                        "MaxTxRate": 300,  
                        "TransmitPower": "11 dBm",  
                        "maxTream": "OFF"  
                    }  
                }  
            ]  
        }  
    }  
}
```

```
        },
        "@type": "ObjectCharacteristic"
    }
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "ServiceRelationshipCharacteristic": [
        {
            "id": "126",
            "name": "CrossRef",
            "value": "44-11-h",
            "valueType": "string",
            "@type": "StringCharacteristic"
        }
    ],
    "service": {
        "href": "https://mycsp.com:8080/tmf-
api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-
api/serviceInventory/v5/service/5885",
    "id": "5885",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"supportingResource": [
{
    "id": "6161",
    "href": "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/5351",
    "name": "GenInfra",
    "@type": "ResourceRef",
    "@referredType": "VirtualResource"
},
{
    "id": "7171",
    "href": "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/7171",
    "name": "BNG_MUX",
    "value": "01 25 65",
    "@type": "ResourceRef",
    "@referredType": "VNF"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-
api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Party"
    }
}
]
```

```
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrder/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role": "initiator",
    "@referredType": "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
},
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrder/v5/serviceOrder/896",
    "serviceOrderId": "896",
    "role": "activation",
    "@referredType": "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "4",
    "itemAction": "modify"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
        "id": "2435",
        "name": "Customer primary location",
        "@type": "PlaceRefOrValue",
        "@referredType": "GeographicAddress"
    },
    "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed automatically, no issues were
noted in testing.",
    "@type": "Note"
}
],
"@type": "Service"
},
{
    "reportingSystem": {
        "id": "427",
        "name": "APP-755",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "source": {
        "id": "149",
        "name": "APP-78",
    }
}
```

```
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@type": "ServiceCreateEvent"
}
```

Service State Change Event

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

```
Content-Type: application/json

{
    "correlationId": "9b374459-e9b0",
    "description": "ServiceStateChangeEvent illustration",
    "domain": "Commercial",
    "eventId": "40c3-a3a0-2379e9894a7d",
    "eventTime": "2022-08-25T12:19:28.538Z",
    "eventType": "ServiceStateChangeEvent",
    "priority": "3",
    "timeOcurred": "2022-08-25T12:19:25.724Z",
    "title": "ServiceStateChangeEvent",
    "event": {
        "service": {
            "href": "https://mycsp.com:8080/tmf-
api/serviceInventory/v5/service/5351",
            "id": "5351",
            "@type": "Service",
            "state": "active"
        }
    },
    "reportingSystem": {
        "id": "427",
        "name": "APP-755",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "source": {
        "id": "149",
        "name": "APP-78",
        "@type": "ReportingResource",
        "@referredType": "LogicalResource"
    },
    "@baseType": "Event",
    "@type": "ServiceStateChangeEvent"
}
```

API Operations

Remember the following Uniform Contract:

| Operation on Entities | Uniform API Operation | Description |
|-----------------------------|-----------------------|--|
| Query Entities | GET Resource | GET must be used to retrieve a representation of a resource. |
| Create Entity | POST Resource | POST must be used to create a new resource |
| Partial Update of an Entity | PATCH Resource | PATCH must be used to partially update a resource |
| Remove an Entity | DELETE Resource | DELETE must be used to remove a resource |

Filtering and attribute selection rules are described in the TMF REST Design Guidelines Part 1 document.

Notifications are also described in a subsequent section.

Operations on Service

Retrieves a Service by ID

`GET /service/{id}?fields=...`

Description

This operation retrieves a Service 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 service.

Request

```
GET /service/5351
Content-Type: application/json
```

Response

```
200
{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
```

```
"description": "Instantiation of vCPE",
"state": "inactive",
"category": "CFS",
"startDate": "2018-01-15T12:26:11.747Z",
"serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
},
"serviceCharacteristic": [
{
    "id": "452-gh6",
    "name": "vCPE",
    "valueType": "object",
    "value": {
        "@type": "VCPE",
        "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
        "vCPE_IP": "193.218.236.21",
        "MaxTxRate": 300,
        "TransmitPower": "11 dBm",
        "maxTream": "OFF"
    },
    "@type": "ObjectCharacteristic"
}
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "ServiceRelationshipCharacteristic": [
{
        "id": "126",
        "name": "CrossRef",
        "value": "44-11-h",
        "valueType": "string",
        "@type": "StringCharacteristic"
    }
],
"service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
},
"@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id": "6500",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456"
    }
}
```

```
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrdering/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role" : "initiator",
    "@referredType" : "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
        "id": "2435",
        "name": "Customer primary location",
        "@type": "PlaceRef",
        "@referredType" : "GeographicAddress"
    },
    "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed automatically, no issues were noted in
testing.",
    "@type": "Note"
}
],
"@type": "Service"
}
```

Here's an example of a request for retrieving a specific service with Intent.

Request

```
GET /service/5352
Content-Type: application/json
```

Response

```
200
```

```
{
  "id": "5352",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5352",
  "category": "MobileService",
  "description": "Mobile Line",
  "hasStarted": true,
  "isBundle": false,
  "isServiceEnabled": true,
  "isStateful": true,
  "serviceDate": "2020-04-01T12:15:39.434Z",
  "startDate": "2020-04-03T12:15:39.434Z",

  "relatedParty": [
    {
      "role": "member",
      "@type": "RelatedPartyRefOrPartyRoleRef",
      "partyOrPartyRole": {
        "id": "9866",
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/9866",
        "name": "Sandy Smith",
        "@type": "PartyRef",
        "@referredType": "Individual"
      }
    }
  ],
  "serviceSpecification": {
    "id": "cfs45",
    "href": ".../serviceCatalog/v5/serviceSpecification/cfs45",
    "name": "c_Mobile",
    "@type": "ServiceSpecificationRef"
  },
  "state": "active",
  "supportingService": [
    {
      "serviceSpecification": {
        "id": "cfs89",
        "href": ".../serviceCatalog/v5/serviceSpecification/cfs89",
        "name": "c_MobileSupport",
        "@type": "ServiceSpecificationRef"
      },
      "serviceCharacteristic": [
        {
          "id": "sd-8",
          "name": "IMSI",
          "valueType": "string",
          "value": "228 01 21 76510739",
          "@type": "StringCharacteristic"
        }
      ],
      "state": "active",
      "@type": "Service"
    },
    {
      "id": "741-853",
      "href": "http://serverlocation:port/tmf-api/serviceInventory/v5/service/741-853",
      "@referredType": "Service",
      "@type": "ServiceRef"
    }
  ],
  "intent": {
    "id": "741-853",
    "href": "http://serverlocation:port/tmf-api/serviceInventory/v5/service/741-853",
    "name": "Call"
  }
}
```

```
"@type": "Intent",
"id": "42",
"creationDate": "2022-10-23T00:30:00.00Z",
"lifecycleStatus": "active",
"description": "Intent for ordering live broadcast service for an event",
"validFor": {
    "startDateTime": "2022-10-23T00:30:00.00Z",
    "endDateTime": "2022-10-19T23:30:00.00Z"
},
"isBundle": true,
"version": "1.0.0",
"intentSpecification": {
    "@type": "IntentSpecificationRef",
    "id": "EventLiveBroadcast_IntentSpec",
    "name": "EventLiveBroadcastIntentSpec",
    "@referredType": "IntentSpecification",
    "@href": "/intent/v5/IntentSpecification/EventLiveBroadcast_IntentSpec"
},
"name": "EventLiveBroadcast",
"expression": {
    "@type": "JsonLdExpression",
    "expressionValue": {
        "@context": {
            "icm": "http://www.models.tmforum.org/tio/v1.0.0/IntentCommonModel#",
            "cat": "http://www.operator.com/Catalog#",
            "idan": "http://www.idan-tmforum-
catalyst.org/IntentDrivenAutonomousNetworks#",
            "xsd": "http://www.w3.org/2001/XMLSchema#",
            "t": "http://www.w3.org/2006/time#",
            "elb": "http://www.operator.com/Catalog/EventWirelessAccess#",
            "app": "http://www.operator.com/Catalog/StreamingApplication#",
            "geo": "https://tmforum.org/2020/07/geographicPoint#"
        },
        "idan:EventLiveBroadcast000001": {
            "@type": "icm:Intent",
            "icm:intentOwner": "idan:Salesforce",
            "icm:hasExpectation": {
                "idan:Delivery_service": {
                    "@type": "icm:DeliveryExpectation",
                    "icm:target": "_:service",
                    "icm:params": {
                        "icm:targetDescription": "cat:EventWirelessAccess"
                    }
                },
                "idan:Delivery_app": {
                    "@type": "icm:DeliveryExpectation",
                    "icm:target": "_:application",
                    "icm:params": {
                        "icm:targetDescription": "cat:StreamingApplication"
                    }
                }
            },
            "idan:Property_service": {
                "@type": "icm:PropertyExpectation",
                "icm:target": "_:service",
                "icm:params": {
                    "elb:serviceQuality": [
                        {
                            "icm:value": "4KUHD"
                        }
                    ],
                    "elb:numberOfParticipants": [
                        {
                            "icm:atMost": "200"
                        }
                    ],
                    "elb:areaOfService": [
                        {
                            "geo:geographicPoints": [

```

```
        "geo:longitude": 90,
        "geo:latitude": 44,
        "geo:altitude": 84
    },
    {
        "geo:longitude": 84,
        "geo:latitude": -12,
        "geo:altitude": 24
    },
    {
        "geo:longitude": 131,
        "geo:latitude": -36,
        "geo:altitude": 29
    },
    {
        "geo:longitude": 7,
        "geo:latitude": 81,
        "geo:altitude": -42
    }
]
}
},
"idan:Property_app": {
    "@type": "icm:PropertyExpectation",
    "icm:target": "_:application",
    "icm:params": {
        "app:appType": [
            {
                "icm:value": "AWS MediaLive"
            },
            {
                "icm:value": "Facebook Live"
            },
            {
                "icm:value": "YouTube"
            }
        ]
    }
},
"idan:Reporting": {
    "@type": "icm:ReportingExpectation",
    "icm:target": "idan:EventLiveBroadcast",
    "icm:params": {
        "icm:reportingInterval": [
            {
                "t:Duration": [
                    {
                        "t:numbericDuration": 10,
                        "t:temporalUnit": "unitMinute"
                    }
                ]
            },
            "icm:reportingEvent": [
                "icm:StateComplies",
                "icm:StateDegrades"
            ]
        ]
    }
},
"lastUpdate": "2023-03-09T08:42:33.044Z"
},
"@type": "Service"
```

```
}
```

List or find Service objects

GET /service?fields=...

Description

This operation list Service 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 services with filter.

Request

```
GET /service?serviceType=Cloud&state=active
Content-Type: application/json
```

Response

```
200
[
  {
    "id": "5351",
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
    "serviceType": "Cloud",
    "name": "vCPE serial 1355615",
    "description": "Instantiation of vCPE",
    "state": "active",
    "category": "CFS",
    "isServiceEnabled": true,
    "hasStarted": true,
    "startMode": "1",
    "isStateful": true,
    "serviceDate": "2018-01-15T12:26:11.747Z",
    "startDate": "2018-01-15T12:26:11.747Z",
    "serviceSpecification": {
      "id": "1212",
      "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
      "name": "vCPE",
      "version": "1.0.0",
      "@type": "ServiceSpecificationRef",
      "@referredType": "ServiceSpecification"
    },
    "feature": [
      {
        "id": "Feat1",
        "isEnabled": true,
        "name": "ElasticBandwidth",
        "featureCharacteristic": [
          ...
        ]
      }
    ]
  }
]
```

```
{  
    "id": "45gh-fg",  
    "name": "isCapped",  
    "value": true,  
    "valueType": "boolean",  
    "@type": "BooleanCharacteristic"  
},  
],  
"@type": "Feature"  
},  
"serviceCharacteristic": [  
    {  
        "id": "452-gh6",  
        "name": "vCPE",  
        "valueType": "object",  
        "value": {  
            "@type": "VCPE",  
            "@schemaLocation": "http://my.schemas/VCPE.schema.json",  
            "vCPE_IP": "193.218.236.21",  
            "MaxTxRate": 300,  
            "TransmitPower": "11 dBm",  
            "maxTream": "OFF"  
        },  
        "@type": "ObjectCharacteristic"  
    },  
],  
"serviceRelationship": [  
    {  
        "relationshipType": "DependentOn",  
        "ServiceRelationshipCharacteristic": [  
            {  
                "id": "126",  
                "name": "CrossRef",  
                "value": "44-11-h",  
                "valueType": "string",  
                "@type": "StringCharacteristic"  
            }  
        ],  
        "service": {  
            "href": "https://mycsp.com:8080/tmf-  
api/serviceInventory/v5/service/5645",  
            "id": "5645",  
            "@type": "ServiceRef",  
            "@referredType": "Service"  
        },  
        "@type": "ServiceRelationship"  
    }  
],  
"supportingService": [  
    {  
        "href": "https://mycsp.com:8080/tmf-  
api/serviceInventory/v5/service/5885",  
        "id": "5885",  
        "@type": "ServiceRef",  
        "@referredType": "Service"  
    }  
],  
"relatedParty": [  
    {  
        "role": "user",  
        "partyOrPartyRole": {  
            "href": "https://mycsp.com:8080/tmf-  
api/serviceInventory/v5/service/5885",  
            "id": "5885",  
            "@type": "ServiceRef",  
            "@referredType": "Service"  
        }  
    }  
]
```

```
api/partyManagement/v5/individual/456",
    "id": "456",
    "name": "John Doe",
    "@type": "PartyRef",
    "@referredType": "Individual"
},
"@type": "RelatedPartyRefOrPartyRoleRef"
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrdering/v5/serviceOrder/42",
        "serviceOrderId": "42",
        "role": "initiator",
        "@referredType": "ServiceOrderItem",
        "@type": "RelatedServiceOrderItem",
        "itemId": "1",
        "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "@type": "RelatedPlaceRefOrValue",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
            "id": "2435",
            "name": "Customer primary location",
            "@referredType": "GeographicAddress",
            "@type": "PlaceRef"
        }
    }
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed automatically, no issues were noted
in testing.",
        "@type": "Note"
    }
],
"@type": "Service"
}
]
```

Here's an example of a request for retrieving multiple services with field selector.

Request

```
GET /service?state=active&fields=id,name,state
Content-Type: application/json
```

Response

```

200
[
  {
    "id": "5351",
    "name": "vCPE serial 1355615",
    "state": "active",
    "@type": "Service"
  },
  {
    "id": "5352",
    "name": "vDPI serial 1355445",
    "state": "active",
    "@type": "Service"
  }
]

```

Creates a Service

POST /service?fields=...

Description

This operation creates a Service entity.

Mandatory Attributes

| Mandatory Attributes | Rule |
|----------------------------|------|
| serviceSpecification | |
| serviceSpecification.@type | |
| serviceSpecification.id | |
| state | |
| @type | |

Usage samples

Creation of a new Service with POST operation

Request

```

POST /service
Content-Type: application/json

{
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "active",
  "category": "CFS",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-

```

```
api/serviceCatalogManagement/v5/serviceSpecification/1212",
  "name": "vCPE",
  "version": "1.0.0",
  "@type": "ServiceSpecificationRef",
  "@referredType": "ServiceSpecification"
},
"feature": [
  {
    "id": "Feat1",
    "isEnabled": true,
    "name": "ElasticBandwidth",
    "featureCharacteristic": [
      {
        "id": "45gh-fg",
        "name": "isCapped",
        "value": true,
        "valueType": "boolean",
        "@type": "BooleanCharacteristic"
      }
    ],
    "@type": "Feature"
  }
],
"serviceCharacteristic": [
  {
    "id": "452-gh6",
    "name": "vCPE",
    "valueType": "object",
    "value": {
      "@type": "VCPE",
      "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
      "vCPE_IP": "193.218.236.21",
      "MaxTxRate": 300,
      "TransmitPower": "11 dBm",
      "maxTream": "OFF"
    },
    "@type": "ObjectCharacteristic"
  }
],
"serviceRelationship": [
  {
    "relationshipType": "DependentOn",
    "service": {
      "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
      "id": "5645",
      "@type": "ServiceRef",
      "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
  }
],
"relatedParty": [
  {
    "role": "user",
    "partyOrPartyRole": {
      "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id": "456",
      "name": "John Doe",
      "@type": "PartyRef",
      "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
  }
]
```

```

] ,
"place": [
{
  "role": "InstallationAddress",
  "place": {
    "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
    "id": "2435",
    "name": "Customer primary location",
    "@type": "PlaceRef",
    "@referredType" : "GeographicAddress"
  },
  "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
  "id": "77456",
  "author": "Harvey Poupon",
  "date": "2018-01-15T12:26:11.748Z",
  "text": "This service was installed for a rock star.",
  "@type": "Note"
}
],
"@type": "Service"
}

```

Response

```

201

{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "active",
  "category": "CFS",
  "serviceDate" : "2018-01-15T12:26:11.747Z",
  "startDate": "2018-01-15T12:26:11.747Z",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
  },
  "feature": [
  {
    "id": "Feat1",
    "isEnabled": true,
    "name": "ElasticBandwidth",
    "featureCharacteristic": [
      {
        "id": "45gh-fg",
        "name": "isCapped",
        "value": true,
      }
    ]
  }
]
}

```

```
        "valueType": "boolean",
        "@type": "BooleanCharacteristic"
    }
],
"@type": "Feature"
}
],
"serviceCharacteristic": [
{
    "id": "452-gh6",
    "name": "vCPE",
    "valueType": "object",
    "value": {
        "@type": "VCPE",
        "@schemaLocation": "https://mycsp.com:8080/tmf-api/schema/VCPE.schema.json",
        "vCPE_IP": "193.218.236.21",
        "MaxTxRate": 300,
        "TransmitPower": "11 dBm",
        "maxTream": "OFF"
    },
    "@type": "ObjectCharacteristic"
}
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
}
],
"supportingResource": [
{
    "id": "7171",
    "href": "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/7171",
    "name": "BNG_MUX",
    "value": "01 25 65",
    "@type": "ResourceRef",
    "@referredType": "VNF"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {

```

```

    "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
    "id": "2435",
    "name": "Customer primary location",
    "@type": "PlaceRef",
    "@referredType" : "GeographicAddress"
},
"@type": "RelatedPlaceRefOrValue"
},
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed for a rock star.",
    "@type": "Note"
}
],
"@type": "Service"
}

```

Creation of a new Service with intent with POST operation

Request

```

POST /service
Content-Type: application/json

{
    "category": "MobileService",
    "description": "Mobile Line",
    "relatedParty": [
        {
            "role": "member",
            "@type": "RelatedPartyRefOrPartyRoleRef",
            "partyOrPartyRole": {
                "id": "9866",
                "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/9866",
                "name": "Sandy Smith",
                "@type": "PartyRef",
                "@referredType": "Individual"
            }
        }
    ],
    "serviceSpecification": {
        "id": "cfs45",
        "href": ".../serviceCatalog/v5/serviceSpecification/cfs45",
        "name": "c_Mobile",
        "@type": "ServiceSpecificationRef"
    },
    "state": "active",
    "supportingService": [
        {
            "serviceSpecification": {
                "id": "cfs89",
                "href": ".../serviceCatalog/v5/serviceSpecification/cfs89",
                "name": "c_MobileSupport",
                "@type": "ServiceSpecificationRef"
            }
        }
    ]
}

```

```
"serviceCharacteristic": [
    {
        "id": "sd-8",
        "name": "IMSI",
        "valueType": "string",
        "value": "228 01 21 76510739",
        "@type": "StringCharacteristic"
    }
],
"state": "active",
"@type": "Service"
},
{
    "id": "741-853",
    "href": "http://serverlocation:port/tmf-api/serviceInventory/v5/service/741-853",
    "@referredType": "Service",
    "@type": "ServiceRef"
},
],
"intent": {
    "@type": "Intent",
    "id": "42",
    "creationDate": "2022-10-23T00:30:00.00Z",
    "lifecycleStatus": "active",
    "description": "Intent for ordering live broadcast service for an event",
    "validFor": {
        "startDateTime": "2022-10-23T00:30:00.00Z",
        "endDateTime": "2022-10-19T23:30:00.00Z"
    },
    "isBundle": true,
    "version": "1.0.0",
    "intentSpecification": {
        "@type": "IntentSpecificationRef",
        "id": "EventLiveBroadcast_IntentSpec",
        "name": "EventLiveBroadcastIntentSpec",
        "@referredType": "IntentSpecification",
        "@href": "/intent/v5/IntentSpecification/EventLiveBroadcast_IntentSpec"
    },
    "name": "EventLiveBroadcast",
    "expression": {
        "@type": "JsonLdExpression",
        "expressionValue": {
            "@context": {
                "icm": "http://www.models.tmforum.org/tio/v1.0.0/IntentCommonModel#",
                "cat": "http://www.operator.com/Catalog#",
                "idan": "http://www.idan-tmforum-catalyst.org/IntentDrivenAutonomousNetworks#",
                "xsd": "http://www.w3.org/2001/XMLSchema#",
                "t": "http://www.w3.org/2006/time#",
                "elb": "http://www.operator.com/Catalog/EventWirelessAccess#",
                "app": "http://www.operator.com/Catalog/StreamingApplication#",
                "geo": "https://tmforum.org/2020/07/geographicPoint#"
            },
            "idan:EventLiveBroadcast000001": {
                "@type": "icm:Intent",
                "icm:intentOwner": "idan:Salesforce",
                "icm:hasExpectation": {
                    "idan:Delivery_service": {
                        "@type": "icm:DeliveryExpectation",
                        "icm:target": "_:service",
                        "icm:params": {
                            "icm:targetDescription": "cat:EventWirelessAccess"
                        }
                    }
                }
            }
        }
    }
}
```

```
        }
    },
    "idan:Delivery_app": {
        "@type": "icm:DeliveryExpectation",
        "icm:target": "_:application",
        "icm:params": {
            "icm:targetDescription": "cat:StreamingApplication"
        }
    },
    "idan:Property_service": {
        "@type": "icm:PropertyExpectation",
        "icm:target": "_:service",
        "icm:params": {
            "elb:serviceQuality": [
                {
                    "icm:value": "4KUHD"
                },
                "elb:numberOfParticipants": [
                    {
                        "icm:atMost": "200"
                    }
                ],
                "elb:areaOfService": [
                    {
                        "geo:geographicPoints": [
                            {
                                "geo:longitude": 90,
                                "geo:latitude": 44,
                                "geo:altitude": 84
                            },
                            {
                                "geo:longitude": 84,
                                "geo:latitude": -12,
                                "geo:altitude": 24
                            },
                            {
                                "geo:longitude": 131,
                                "geo:latitude": -36,
                                "geo:altitude": 29
                            },
                            {
                                "geo:longitude": 7,
                                "geo:latitude": 81,
                                "geo:altitude": -42
                            }
                        ]
                    }
                ]
            }
        }
    },
    "idan:Property_app": {
        "@type": "icm:PropertyExpectation",
        "icm:target": "_:application",
        "icm:params": {
            "app:appType": [
                {
                    "icm:value": "AWS MediaLive"
                },
                {
                    "icm:value": "Facebook Live"
                },
                {
                    "icm:value": "YouTube"
                }
            ]
        }
    },
    "idan:Reporting": {
        "@type": "icm:ReportingExpectation",
        "icm:target": "idan:EventLiveBroadcast",
        "icm:params": {
            "icm:target": "idan:EventLiveBroadcast"
        }
    }
}
```

```
        "icm:params": {
            "icm:reportingInterval": [
                "t:Duration": [
                    "t:numbericDuration": 10,
                    "t:temporalUnit": "unitMinute"
                ]
            ],
            "icm:reportingEvent": [
                "icm:StateComplies",
                "icm:StateDegrades"
            ]
        }
    }
},
"lastUpdate": "2023-03-09T08:42:33.044Z"
},
"@type": "Service"
}
```

Response

```
201

{
    "id": "5352",
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5352",
    "category": "MobileService",
    "description": "Mobile Line",
    "hasStarted": true,
    "isBundle": false,
    "isServiceEnabled": true,
    "isStateful": true,
    "serviceDate": "020-04-01T12:15:39.434Z",
    "startDate": "2020-04-03T12:15:39.434Z",

    "relatedParty": [
        {
            "role": "member",
            "@type": "RelatedPartyRefOrPartyRoleRef",
            "partyOrPartyRole": {
                "id": "9866",
                "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/9866",
                "name": "Sandy Smith",
                "@type": "PartyRef",
                "@referredType": "Individual"
            }
        }
    ],
    "serviceSpecification": {
        "id": "cfs45",
        "href": ".../serviceCatalog/v5/serviceSpecification/cfs45",
        "name": "c_Mobile",
        "@type": "ServiceSpecificationRef"
    },
    "state": "active",
    "supportingService": [

```

```

{
  "serviceSpecification": {
    "id": "cfs89",
    "href": ".../serviceCatalog/v5/serviceSpecification/cfs89",
    "name": "c_MobileSupport",
    "@type": "ServiceSpecificationRef"
  },
  "serviceCharacteristic": [
    {
      "id": "sd-8",
      "name": "IMSI",
      "valueType": "string",
      "value": "228 01 21 76510739",
      "@type": "StringCharacteristic"
    }
  ],
  "state": "active",
  "@type": "Service"
},
{
  "id": "741-853",
  "href": "http://serverlocation:port/tmf-api/serviceInventory/v5/service/741-853",
  "@referredType": "Service",
  "@type": "ServiceRef"
}
],
"intent": {
  "@type": "Intent",
  "id": "42",
  "creationDate": "2022-10-23T00:30:00.00Z",
  "lifecycleStatus": "active",
  "description": "Intent for ordering live broadcast service for an event",
  "validFor": {
    "startDateTime": "2022-10-23T00:30:00.00Z",
    "endDateTime": "2022-10-19T23:30:00.00Z"
  },
  "isBundle": true,
  "version": "1.0.0",
  "intentSpecification": {
    "@type": "IntentSpecificationRef",
    "id": "EventLiveBroadcast_IntentSpec",
    "name": "EventLiveBroadcastIntentSpec",
    "@referredType": "IntentSpecification",
    "@href": "/intent/v5/IntentSpecification/EventLiveBroadcast_IntentSpec"
  },
  "name": "EventLiveBroadcast",
  "expression": {
    "@type": "JsonLdExpression",
    "expressionValue": {
      "@context": {
        "icm": "http://www.models.tmforum.org/tio/v1.0.0/IntentCommonModel#",
        "cat": "http://www.operator.com/Catalog#",
        "idan": "http://www.idan-tmforum-catalyst.org/IntentDrivenAutonomousNetworks#",
        "xsd": "http://www.w3.org/2001/XMLSchema#",
        "t": "http://www.w3.org/2006/time#",
        "elb": "http://www.operator.com/Catalog/EventWirelessAccess#",
        "app": "http://www.operator.com/Catalog/StreamingApplication#",
        "geo": "https://tmforum.org/2020/07/geographicPoint#"
      },
      "idan:EventLiveBroadcast000001": {
        "@type": "icm:Intent",
        "name": "EventLiveBroadcast"
      }
    }
  }
}

```

```
"icm:intentOwner": "idan:Salesforce",
"icm:hasExpectation": {
    "idan:Delivery_service": {
        "@type": "icm:DeliveryExpectation",
        "icm:target": "_:service",
        "icm:params": {
            "icm:targetDescription": "cat:EventWirelessAccess"
        }
    },
    "idan:Delivery_app": {
        "@type": "icm:DeliveryExpectation",
        "icm:target": "_:application",
        "icm:params": {
            "icm:targetDescription": "cat:StreamingApplication"
        }
    },
    "idan:Property_service": {
        "@type": "icm:PropertyExpectation",
        "icm:target": "_:service",
        "icm:params": {
            "elb:serviceQuality": [
                {
                    "icm:value": "4KUHD"
                }
            ],
            "elb:numberOfParticipants": [
                {
                    "icm:atMost": "200"
                }
            ],
            "elb:areaOfService": [
                {
                    "geo:geographicPoints": [
                        {
                            "geo:longitude": 90,
                            "geo:latitude": 44,
                            "geo:altitude": 84
                        },
                        {
                            "geo:longitude": 84,
                            "geo:latitude": -12,
                            "geo:altitude": 24
                        },
                        {
                            "geo:longitude": 131,
                            "geo:latitude": -36,
                            "geo:altitude": 29
                        },
                        {
                            "geo:longitude": 7,
                            "geo:latitude": 81,
                            "geo:altitude": -42
                        }
                    ]
                }
            ]
        }
    },
    "idan:Property_app": {
        "@type": "icm:PropertyExpectation",
        "icm:target": "_:application",
        "icm:params": {
            "app:appType": [
                {
                    "icm:value": "AWS MediaLive"
                },
                {
                    "icm:value": "Facebook Live"
                },
                {
                    "icm:value": "YouTube"
                }
            ]
        }
    }
}
```

```

        }
    ],
},
"idan:Reporting": {
    "@type": "icm:ReportingExpectation",
    "icm:target": "idan:EventLiveBroadcast",
    "icm:params": {
        "icm:reportingInterval": [
            {
                "t:Duration": [
                    {
                        "t:numbericDuration": 10,
                        "t:temporalUnit": "unitMinute"
                    }
                ]
            },
            "icm:reportingEvent": [
                "icm:StateComplies",
                "icm:StateDegrades"
            ]
        ]
    }
},
"lastUpdate": "2023-03-09T08:42:33.044Z"
},
"@type": "Service"
}

```

Updates partially a Service

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

Description

This operation allows partial updates of a Service entity. Support of json/merge (<https://tools.ietf.org/html/rfc7386>) is mandatory, support of json/patch (<http://tools.ietf.org/html/rfc5789>) is optional. Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

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

| Patchable Attributes | Rule |
|-----------------------|------|
| category | |
| description | |
| endDate | |
| externalIdentifier | |
| feature | |
| hasStarted | |
| intent | |
| isBundle | |
| isServiceEnabled | |
| isStateful | |
| name | |
| note | |
| operatingStatus | |
| place | |
| relatedEntity | |
| relatedParty | |
| serviceCharacteristic | |
| serviceOrderItem | |
| serviceRelationship | |
| serviceSpecification | |
| serviceType | |
| startDate | |
| startMode | |
| state | |
| supportingResource | |
| supportingService | |

Usage samples

Here's an example of a request for patching a service using merge-patch+json. In this example, service status is changed to inactive and supporting service is updated.

Request

```
PATCH /service/5351
Content-Type: application/merge-patch+json

{
```

```
"state": "inactive",
"supportingService": [
  {
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id": "6500",
    "@type": "ServiceRef",
    "@referredType": "Service"
  }
],
"@type": "Service"
}
```

Response

```
200

{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "inactive",
  "category": "CFS",
  "startDate": "2018-01-15T12:26:11.747Z",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
  },
  "serviceCharacteristic": [
    {
      "id": "452-gh6",
      "name": "vCPE",
      "valueType": "object",
      "value": {
        "@type": "VCPE",
        "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
        "vCPE_IP": "193.218.236.21",
        "MaxTxRate": 300,
        "TransmitPower": "11 dBm",
        "maxTream": "OFF"
      },
      "@type": "ObjectCharacteristic"
    }
  ],
  "serviceRelationship": [
    {
      "relationshipType": "DependentOn",
      "ServiceRelationshipCharacteristic": [
        {
          "id": "126",
          "name": "CrossRef",
          "value": "44-11-h",
          "valueType": "string",
          "@type": "StringCharacteristic"
        }
      ]
    }
  ]
}
```

```
        }
    ],
    "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id": "6500",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-api/serviceOrdering/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role": "initiator",
    "@referredType": "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-api/geographicAddressManagement/v5/geographicAddress/2435",
        "id": "2435",
        "name": "Customer primary location",
        "@type": "PlaceRef",
        "@referredType": "GeographicAddress"
    },
    "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "Note about the service"
}
]
```

```
        "text": "This service was installed automatically, no issues were noted in testing.",
        "@type": "Note"
    },
],
"@type": "Service"
}
```

Here's an example of a request for updating a service using json-patch+json. In this example, service status is changed to inactive.

Request

```
PATCH /service/5351
Content-Type: application/json-patch+json

[
    { "op": "replace",
      "path": "state",
      "value": "inactive"
    }
]
```

Response

```
200

{
    "id": "5351",
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
    "serviceType": "Cloud",
    "name": "vCPE serial 1355615",
    "description": "Instantiation of vCPE",
    "state": "inactive",
    "category": "CFS",
    "startDate": "2018-01-15T12:26:11.747Z",
    "serviceSpecification": {
        "id": "1212",
        "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
        "name": "vCPE",
        "version": "1.0.0",
        "@type": "ServiceSpecificationRef",
        "@referredType": "ServiceSpecification"
    },
    "serviceCharacteristic": [
        {
            "id": "452-gh6",
            "name": "vCPE",
            "valueType": "object",
            "value": {
                "@type": "VCPE",
                "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
                "vCPE_IP": "193.218.236.21",
                "MaxTxRate": 300,
                "TransmitPower": "11 dBm",
                "maxTream": "OFF"
            }
        }
    ]
}
```

```
        },
        "@type": "ObjectCharacteristic"
    }
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "ServiceRelationshipCharacteristic": [
        {
            "id": "126",
            "name": "CrossRef",
            "value": "44-11-h",
            "valueType": "string",
            "@type": "StringCharacteristic"
        }
    ],
    "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id": "6500",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-api/serviceOrdering/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role": "initiator",
    "@referredType": "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
```

```

    "api/geographicAddressManagement/v5/geographicAddress/2435",
    "id": "2435",
    "name": "Customer primary location",
    "@type": "PlaceRef",
    "@referredType" : "GeographicAddress"
  },
  "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
  "id": "77456",
  "author": "Harvey Poupon",
  "date": "2018-01-15T12:26:11.748Z",
  "text": "This service was installed automatically, no issues were noted in testing.",
  "@type": "Note"
},
"@type": "Service"
}
]

```

Here's an example of a request for updating a service using json-patch-query - In this example, service related party role is updated.

Request

```

PATCH /service/5351
Content-Type: application/json-patch-query+json

[
  {
    "op": "replace",
    "path": "/note/author?note.id=77456",
    "value": "Mr. N. Bene"
  }
]

```

Response

```

200

{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "inactive",
  "category": "CFS",
  "startDate": "2018-01-15T12:26:11.747Z",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
  }
}

```

```
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
},
"serviceCharacteristic": [
{
    "id": "452-gh6",
    "name": "vCPE",
    "valueType": "object",
    "value": {
        "@type": "VCPE",
        "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
        "vCPE_IP": "193.218.236.21",
        "MaxTxRate": 300,
        "TransmitPower": "11 dBm",
        "maxTream": "OFF"
    },
    "@type": "ObjectCharacteristic"
}
],
"serviceRelationship": [
{
    "relationshipType": "DependentOn",
    "ServiceRelationshipCharacteristic": [
        {
            "id": "126",
            "name": "CrossRef",
            "value": "44-11-h",
            "valueType": "string",
            "@type": "StringCharacteristic"
        }
    ],
    "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5645",
        "id": "5645",
        "@type": "ServiceRef",
        "@referredType": "Service"
    },
    "@type": "ServiceRelationship"
}
],
"supportingService": [
{
    "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id": "6500",
    "@type": "ServiceRef",
    "@referredType": "Service"
}
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
```

```
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrdering/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role" : "initiator",
    "@referredType" : "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
        "id": "2435",
        "name": "Customer primary location",
        "@type": "PlaceRef",
        "@referredType" : "GeographicAddress"
    },
    "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
    "id": "77456",
    "author": "Mr. N. Bene",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed automatically, no issues were noted in
testing.",
    "@type": "Note"
}
],
"@type": "Service"
}
```

Here's an example of a request for patching a service using application/json. In this example, service status is changed to inactive and supporting service is updated.

Request

```
PATCH /service/5351
Content-Type: application/json

{
    "state": "inactive",
    "supportingService": [
        {
            "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
            "id": "6500",
            "@type": "ServiceRef",
            "@referredType": "Service"
        }
    ],
    "@type": "Service"
}
```

Response

```
200

{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "serviceType": "Cloud",
  "name": "vCPE serial 1355615",
  "description": "Instantiation of vCPE",
  "state": "inactive",
  "category": "CFS",
  "startDate": "2018-01-15T12:26:11.747Z",
  "serviceSpecification": {
    "id": "1212",
    "href": "https://mycsp.com:8080/tmf-
api/serviceCatalogManagement/v5/serviceSpecification/1212",
    "name": "vCPE",
    "version": "1.0.0",
    "@type": "ServiceSpecificationRef",
    "@referredType": "ServiceSpecification"
  },
  "serviceCharacteristic": [
    {
      "id": "452-gh6",
      "name": "vCPE",
      "valueType": "object",
      "value": {
        "@type": "VCPE",
        "@schemaLocation": "http://host:port/schema/VCPE.schema.json",
        "vCPE_IP": "193.218.236.21",
        "MaxTxRate": 300,
        "TransmitPower": "11 dBm",
        "maxTream": "OFF"
      },
      "@type": "ObjectCharacteristic"
    }
  ],
  "serviceRelationship": [
    {
      "relationshipType": "DependentOn",
      "ServiceRelationshipCharacteristic": [
        {
          "id": "126",
          "name": "CrossRef",
          "value": "44-11-h",
          "valueType": "string",
          "@type": "StringCharacteristic"
        }
      ],
      "service": {
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5656",
        "id": "5656",
        "@type": "ServiceRef",
        "@referredType": "Service"
      },
      "@type": "ServiceRelationship"
    }
  ],
  "supportingService": [
  ]
```

```
        "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
        "id": "6500",
        "@type": "ServiceRef",
        "@referredType": "Service"
    }
],
"relatedParty": [
{
    "role": "user",
    "partyOrPartyRole": {
        "href": "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
        "id": "456",
        "name": "John Doe",
        "@type": "PartyRef",
        "@referredType": "Individual"
    },
    "@type": "RelatedPartyRefOrPartyRoleRef"
}
],
"serviceOrderItem": [
{
    "serviceOrderHref": "https://mycsp.com:8080/tmf-
api/serviceOrdering/v5/serviceOrder/42",
    "serviceOrderId": "42",
    "role" : "initiator",
    "@referredType" : "ServiceOrderItem",
    "@type": "RelatedServiceOrderItem",
    "itemId": "1",
    "itemAction": "add"
}
],
"place": [
{
    "role": "InstallationAddress",
    "place": {
        "href": "https://mycsp.com:8080/tmf-
api/geographicAddressManagement/v5/geographicAddress/2435",
        "id": "2435",
        "name": "Customer primary location",
        "@type": "PlaceRef",
        "@referredType" : "GeographicAddress"
    },
    "@type": "RelatedPlaceRefOrValue"
}
],
"note": [
{
    "id": "77456",
    "author": "Harvey Poupon",
    "date": "2018-01-15T12:26:11.748Z",
    "text": "This service was installed automatically, no issues were noted in
testing.",
    "@type": "Note"
}
],
"@type": "Service"
}
```

Deletes a Service

DELETE /service/{id}

Description

This operation deletes a Service entity.

Usage samples

Here's an example of a request for deleting a specific service.

Request

```
DELETE /service/5351
Content-Type: application/json
```

Response

```
204

{
  "id": "5351",
  "href": "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5351",
  "@type": "Service"
}
```

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 |
|----------------|---------------|---|--|
| Version 5.0.0 | December 2022 | Amita Giriya Telstra amita.giriya@team.telstra.com | Upgrade to V5 design patterns and OAS3 |
| Version 5.0.0 | December 2022 | Anu Aulakh Telstra anu.aulakh@team.telstra.com | Upgrade to V5 design patterns and OAS3 |

Contributors to Document

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