Service Inventory Management

NOTICE

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Introduction

The following document is intended to provide details of the Async 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

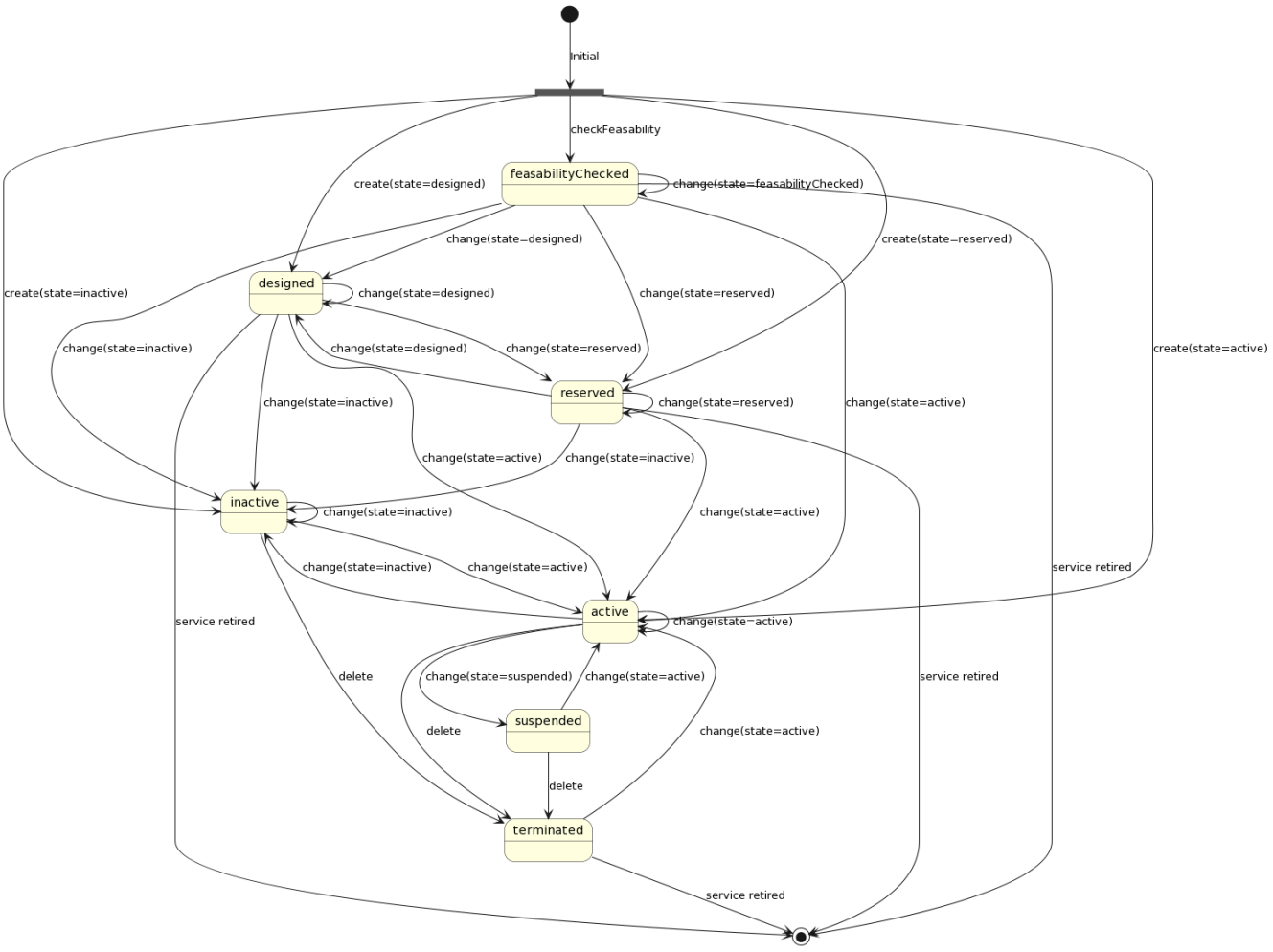
The Service Inventory API can be called by the Service Order Management to create a new service instance/ update an existing service instance in the Service Inventory.

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


Initial
checkFeasability
feasabilityChecked
create(state=designed)
change(state=feasabilityChecked)
change(state=designed)
create(state=reserved)
designed
create(state=inactive)
change(state=designed)
change(state=reserved)
change(state=inactive)
change(state=designed)
change(state=reserved)
create(state=active)
reserved
change(state=inactive)
change(state=reserved)
change(state=active)
change(state=active)
change(state=inactive)
inactive
change(state=inactive)
change(state=active)
change(state=inactive)
change(state=active)
service retired
active
service retired
change(state=active)
delete
change(state=suspended)
change(state=active)
service retired
suspended
delete
change(state=active)
delete
terminated
service retired

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

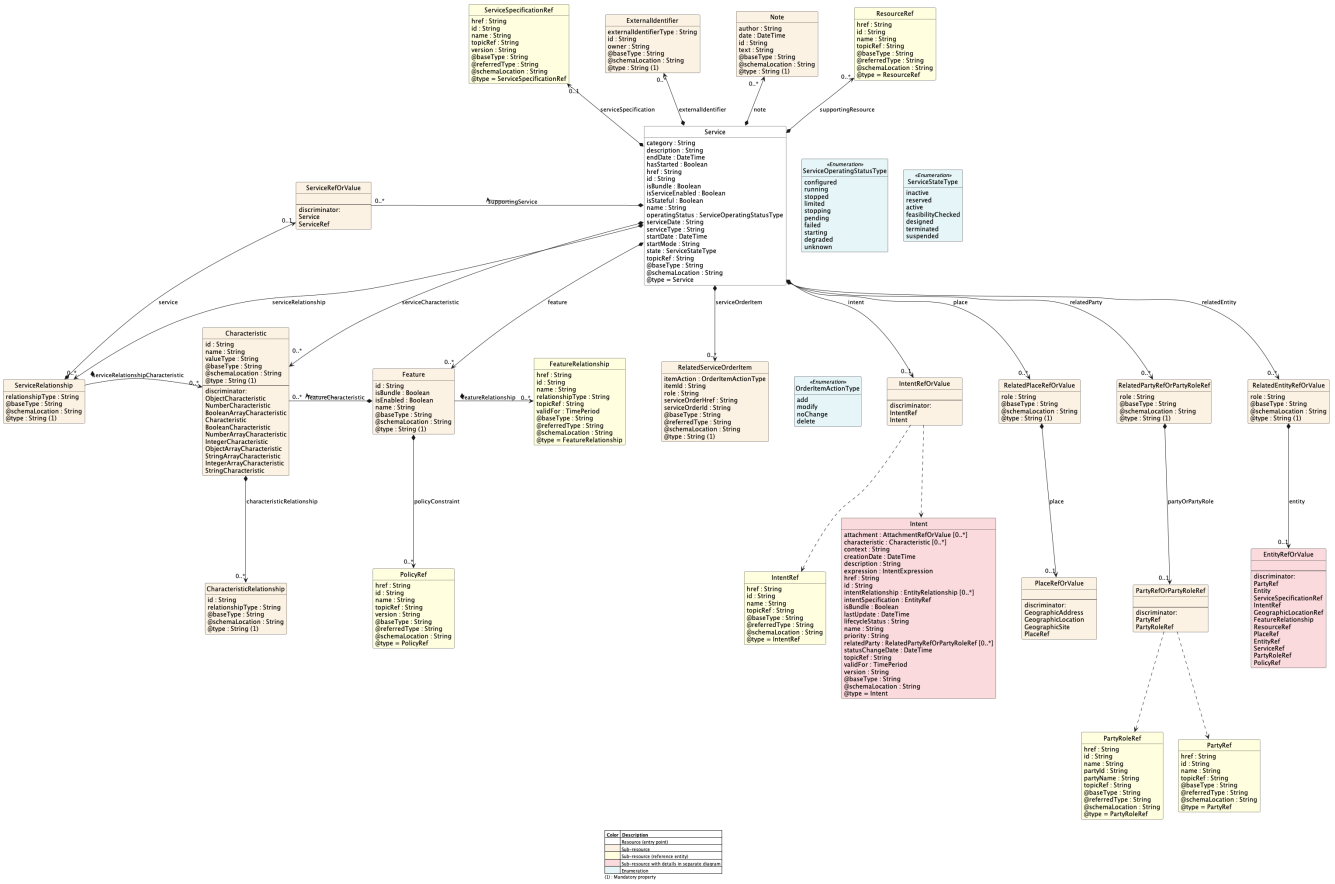


Figure 1 - Service

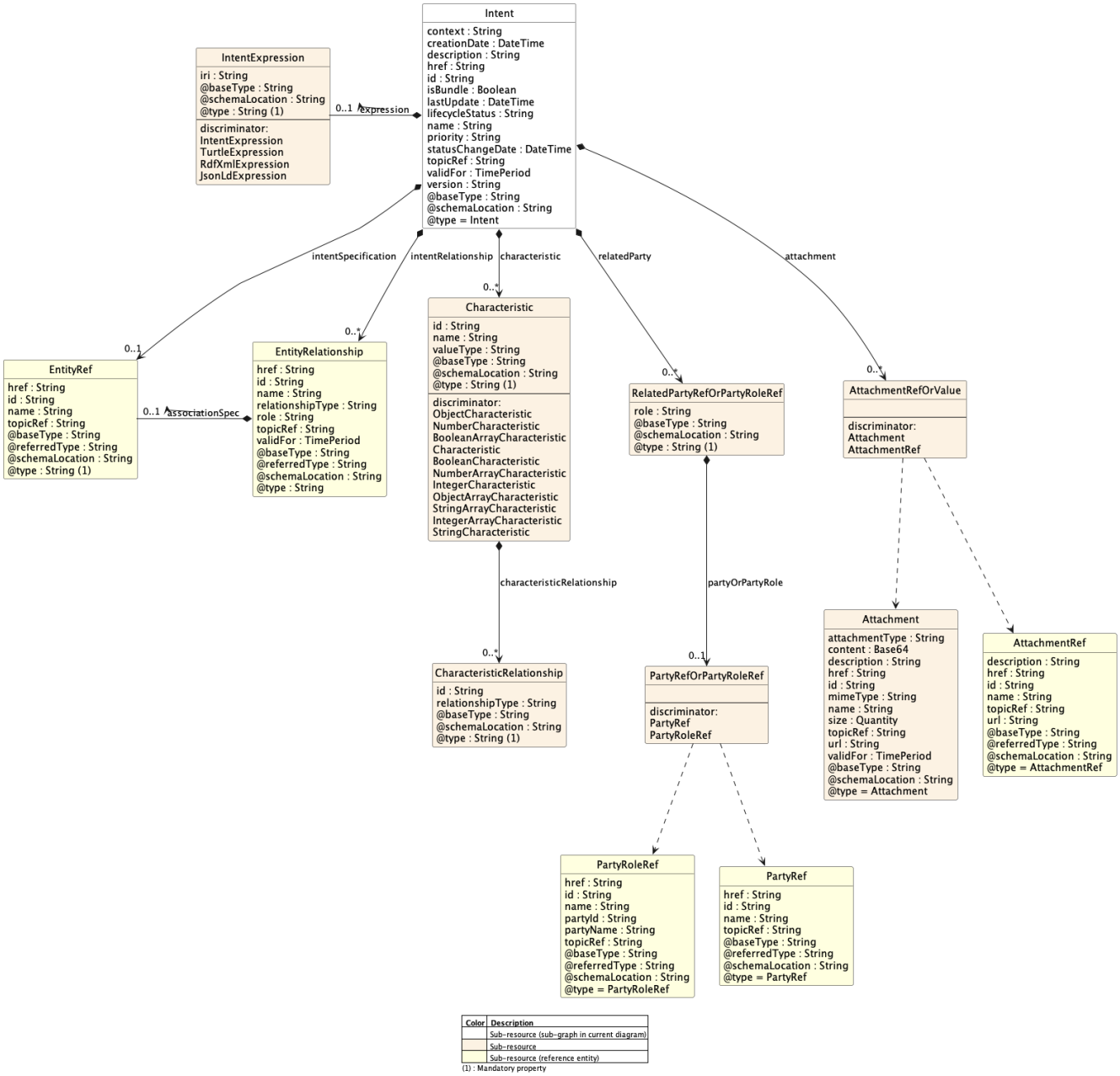


Figure 2 - Intent

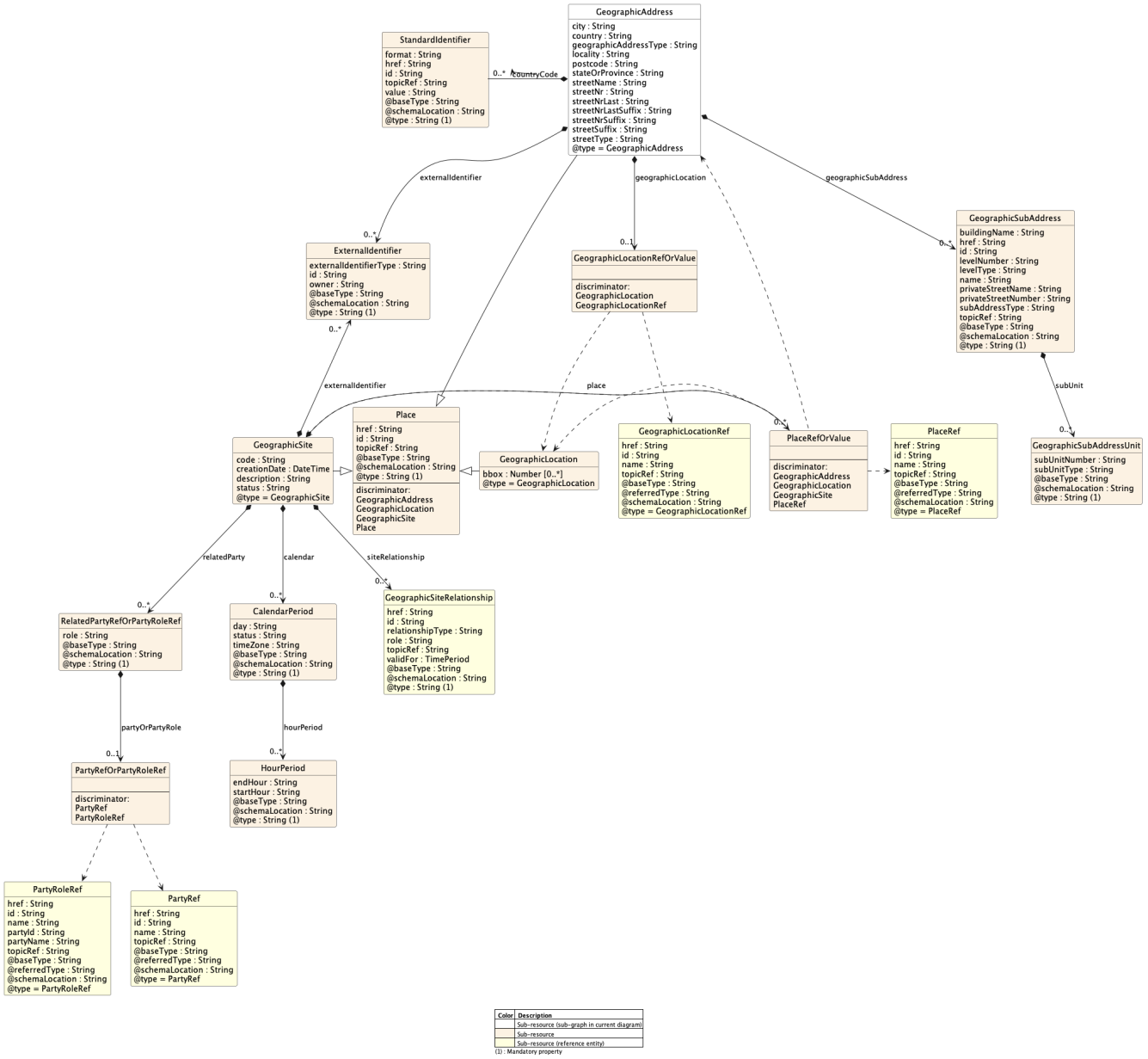


Figure 3 - GeographicAddress

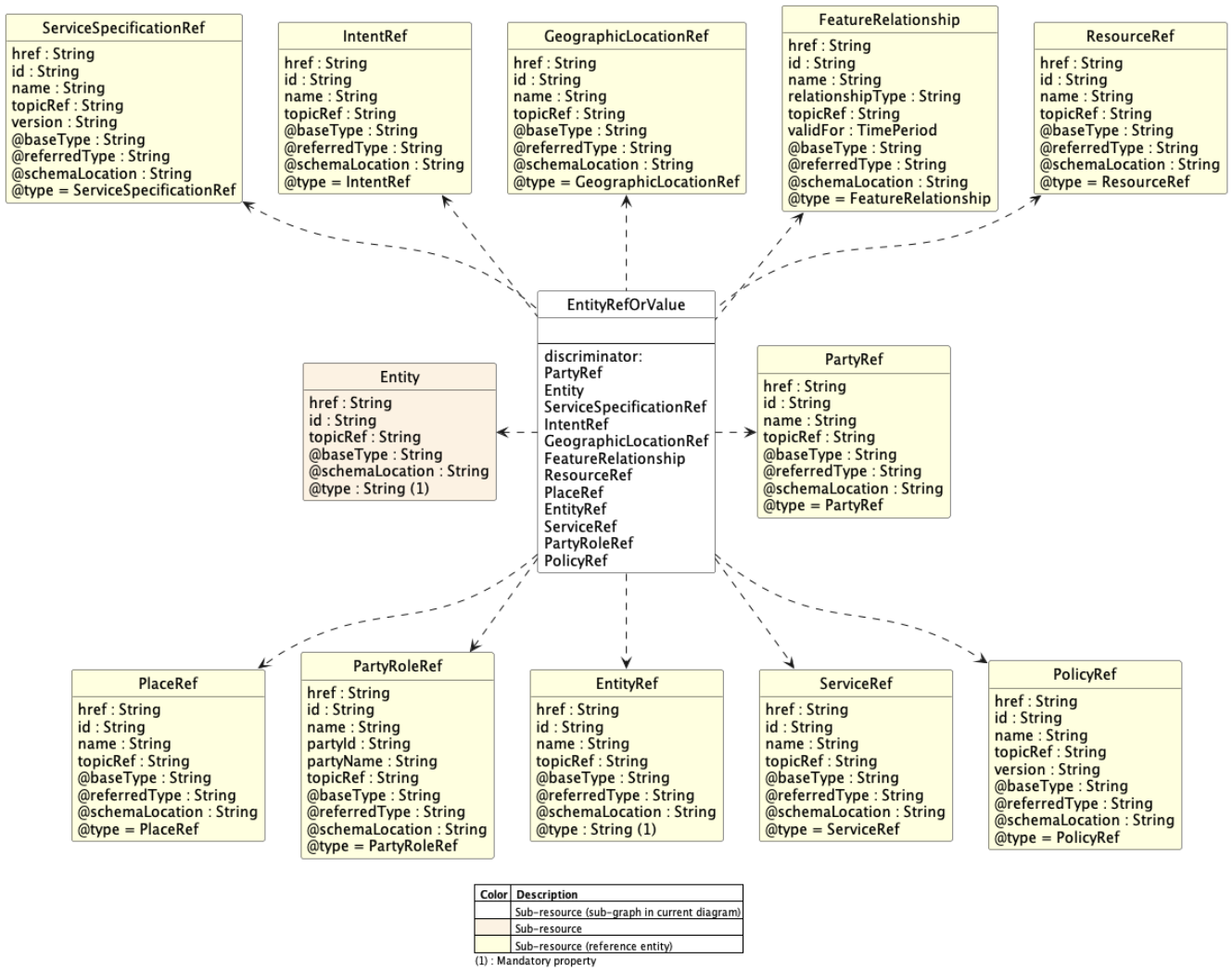


Figure 4 - EntityRefOrValue

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. 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.

feature	A Feature. Configuration feature.
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 hierachy. If false, the service is a 'atomic' service (hierachy 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. Extra information about a given entity.
operatingStatus	A ServiceOperatingStatusType. Valid values for the Operating status of the service.
place	A RelatedPlaceRefOrValue. Entity reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the RelatedPlace entity and not the RelatedPlaceRefOrValue class itself.
relatedEntity	A RelatedEntityRefOrValue. A reference to an entity, where the type of the entity is not known in advance. A related entity defines a entity described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Entity and not the RelatedEntityRefOrValue class itself.
relatedParty	A RelatedPartyRefOrPartyRoleRef. RelatedParty reference. A related party defines party or party role or its reference, linked to a specific entity.
serviceCharacteristic	A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic…
serviceDate	A String. Date when the service was created (whatever its status).

serviceOrderItem	A RelatedServiceOrderItem. RelatedServiceOrderItem (a ServiceOrder item) .The service order item which triggered service creation/change/termination.
serviceRelationship	A ServiceRelationship.
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. Resource reference, for when Resource is used by other entities.
supportingService	A ServiceRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Service entity and not the ServiceRefOrValue class itself.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.

mimeType	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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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

value	A Boolean. A characteristic which value is an array of Boolean(s).
@type	A String. When sub-classing, this defines the sub-class Extensible name.

BooleanCharacteristic sub-resource fields

value	A Boolean. Value of the characteristic.
@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. Hour interval.
status	A String. Indication of the availability of the calendar 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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.

topicRef	A String. A reference to the topic from which this entity can be fetched.
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. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic…
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.
name	A String. This is the name for the feature.
policyConstraint	A PolicyRef. Reference to managed Policy 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.

FeatureRelationship sub-resource fields

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

GeographicAddress sub-resource fields

city	A String. City that the address is in.
country	A String. Country that the address is in.
countryCode	A StandardIdentifier. The corresponding identification of the resource in different standard, regulatory definitions. The standard specification identifier (e.g., ISO 3166-1 Alpha-2) and the corresponding value (e.g., BE) relevant to a particular resource. It is anticipated that multiple standards can provide definitions for a single entity, e.g., a country identifier can be specified in various standards (e.g., "ISO 3166-1 Alpha 2", "ISO 3166-1 Alpha 3", "ISO 3166-1 Numeric").

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.
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 know 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.
@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. An URI used to access to the geographic location resource.
id	A String. Unique identifier of the geographic location.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@type	A String. The name of the GeoJSON structure used in the geometry attribute.

GeographicLocationRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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. Calendar period.
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.
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. Details of geographic site relationship.
status	A String. The condition of the GeographicSite, such as planned, underConstruction, cancelled, active, inactive, former.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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.

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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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

value	An Integer. A characteristic which value is an array of Integer(s).
@type	A String. When sub-classing, this defines the sub-class Extensible name.

IntegerCharacteristic sub-resource fields

value	An Integer. Value of the characteristic.
@type	A String. When sub-classing, this defines the sub-class Extensible name.

Intent sub-resource fields

attachment	An AttachmentRefOrValue. The polymorphic attributes @type, @schemaLocation & @referredType are related to the Attachment entity and not the AttachmentRefOrValue class itself.
characteristic	A Characteristic. Describes a given characteristic of an object or entity through a name/value pair. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic...
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 uni-directional relationship from this entity to a target entity instance.
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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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

iri	A String. Internationalized Resource Identifier of the intent Expression.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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	A JsonLdExpressionValue. Json LD expression value schema.
@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

value	A Number. A characteristic which value is an array of Number(s).
@type	A String. When sub-classing, this defines the sub-class Extensible name.

NumberCharacteristic sub-resource fields

value	A Number. Value of the characteristic.

@type	A String. When sub-classing, this defines the sub-class Extensible name.

ObjectArrayCharacteristic sub-resource fields

value	An object. Collection of characteristic values.
@type	A String. When sub-classing, this defines the sub-class Extensible name.

ObjectCharacteristic sub-resource fields

value	An object. Value of the characteristic.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.

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.
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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.

ServiceRef sub-resource fields

href	A String. Hyperlink reference.
id	A String. Unique identifier.
name	A String. Name of the referred entity.
topicRef	A String. A reference to the topic from which this entity can be fetched.
@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. This is an abstract base class, the actual value is in one of the strongly-typed subclasses : StringCharacteristic, ObjectCharacteristic, FloatCharacteristic, BooleanCharacteristic, NumberCharacteristic, IntegerCharacteristic, StringArrayCharacteristic, ObjectArrayCharacteristic, BooleanArrayCharacteristic, NumberArrayCharacteristic, IntegerArrayCharacteristic…
@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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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.
topicRef	A String. A reference to the topic from which this entity can be fetched.
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

value	A String. Collection of string characteristics.
@type	A String. When sub-classing, this defines the sub-class Extensible name.

StringCharacteristic sub-resource fields

value	A String. Value of the characteristic.
@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/.
@type	A String. When sub-classing, this defines the sub-class Extensible name.

common sub-resource fields

@base	A Uri. Used to set the base IRI against which relative IRIs are resolved.
@container	A String. Used to set the default container type for a term.
@id	A Uri. Used to uniquely identify things that are being described in the document with IRIs or blank node identifiers.
@language	A String. Used to specify the language for a particular string value or the default language of a JSON-LD document.
@list	A {}. Used to express an ordered set of data.
@reverse	A String. Used to express reverse properties.
@set	A {}. Used to express an unordered set of data and to ensure that values are always represented as arrays.
@type	A String. Used to set the data type of a node or typed value.
@value	A String. Used to specify the data that is associated with a particular property in the graph.
@vocab	A Uri. Used to expand properties and values in @type with a common prefix IRI.

context sub-resource fields

@context	An object. Used to define the short-hand names that are used throughout a JSON-LD document.

graph sub-resource fields

@graph	A common. Used to express a graph.

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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "feature" : [ {
    "id" : "Feat1",
    "isEnabled" : true,
    "name" : "ElasticBandwith",
    "featureCharacteritic" : [ {
      "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "supportingResource" : [ {
    "id" : "6161",
    "href" : "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/5351",
    "name" : "GenInfra",
    "@type" : "ResourceRef",
    "@referredType" : "VirtualResource",
    "topicRef" :
"kafka://mycsp.com/{prefix}.resourceInventoryManagement.v5.retrieveResource.commandReq
uest"
  }, {
    "id" : "7171",
    "href" : "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/7171",
    "name" : "BNG_MUX",
    "value" : "01 25 65",
    "@type" : "ResourceRef",
    "@referredType" : "VNF",
    "topicRef" :
"kafka://mycsp.com/{prefix}.resourceInventoryManagement.v5.retrieveResource.commandReq
uest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```


The following table provides service state explanation:

A service is in state…	when the Service Component Activation Interface shall support the following operations
feasabilityChecked	The service component OS is requested to determine whether the necessary resources are available and sufficient for the installation of a given service. It should be noted that this is just an initial feasibility check and no RFS is created.
designed	The Service Component OS is requested to design the service. This could be use to allocate resource but nothing is supposed to be reserved.
reserved	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). As a result of the reservation request, a servce is instantiated & reserved.
inactive	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
active	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. When this request is complete, all RFS component shall be in active state
suspended	When a service is suspended, its usage is restricted. Restrictions can be added/removed for a feature or for the complete service.
terminated	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.

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 Create Event
- Service Delete Event
- Service Attribute Value Change Event
- Service State Change Event
- Service Operating Status 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).

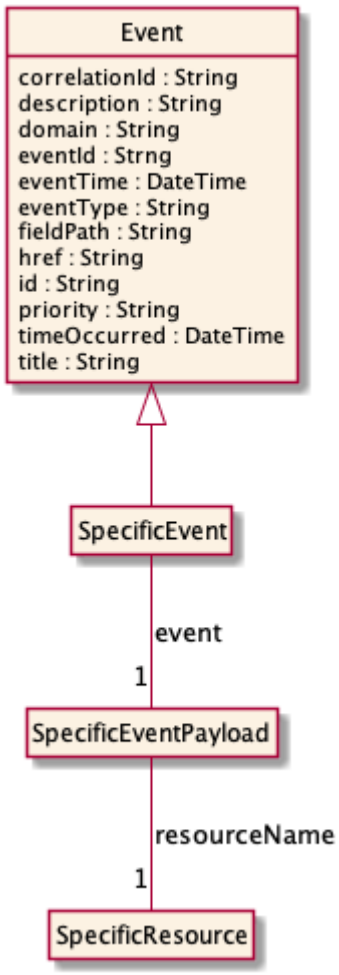


Figure 5 Notification Pattern

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",
        "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
      },
      "feature" : [ {
        "id" : "Feat1",
        "isEnabled" : true,
        "name" : "ElasticBandwith",
        "featureCharacteritic" : [ {
          "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",
          "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
        },
        "@type" : "ServiceRelationship"
      } ],
      "supportingService" : [ {
        "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5885",
        "id" : "5885",
        "@type" : "ServiceRef",
        "@referredType" : "Service",
        "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
      } ],
      "supportingResource" : [ {
        "id" : "6161",
        "href" : "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/5351",
        "name" : "GenInfra",
        "@type" : "ResourceRef",
        "@referredType" : "VirtualResource",
        "topicRef" :
"kafka://mycsp.com/{prefix}.resourceInventoryManagement.v5.retrieveResource.commandReq
uest"
      }, {
        "id" : "7171",
        "href" : "https://mycsp.com:8080/tmf-
api/resourceInventoryManagement/v5/resource/7171",
        "name" : "BNG_MUX",
        "value" : "01 25 65",
        "@type" : "ResourceRef",
        "@referredType" : "VNF",
        "topicRef" :
"kafka://mycsp.com/{prefix}.resourceInventoryManagement.v5.retrieveResource.commandReq
uest"
      } ],
      "relatedParty" : [ {
        "role" : "user",
        "partyOrPartyRole" : {
          "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
          "id" : "456",
          "name" : "John Doe",
          "@type" : "PartyRef",
```

```
          "@referredType" : "Individual",
          "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
        },
        "@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",
          "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
        },
        "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
```

```
    }
  },
  "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 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",
      "topicRef" : "kafka://broker-address/topic-name"
    }
  },
  "reportingSystem" : {
    "id" : "427",
    "name" : "APP-755",
    "@type" : "ReportingResource",
    "@referredType" : "LogicalResource"
  },
  "source" : {
    "id" : "149",
```

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

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",
          "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
        },
        "@type" : "RelatedPlaceRefOrValue"
      } ],
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    }
  },
  "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 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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    }
  },
  "reportingSystem" : {
    "id" : "427",
    "name" : "APP-755",
    "@type" : "ReportingResource",
    "@referredType" : "LogicalResource"
  },
  "source" : {
    "id" : "149",
    "name" : "APP-78",
    "@type" : "ReportingResource",
```

```
    "@referredType" : "LogicalResource"
  },
  "@baseType" : "Event",
  "@type" : "ServiceStateChangeEvent"
}
```

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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    }
  },
  "reportingSystem" : {
    "id" : "427",
    "name" : "APP-755",
    "@type" : "ReportingResource",
    "@referredType" : "LogicalResource"
  },
  "source" : {
    "id" : "149",
    "name" : "APP-78",
    "@type" : "ReportingResource",
    "@referredType" : "LogicalResource"
  },
  "@baseType" : "Event",
  "@type" : "ServiceOperatingStatusChangeEvent"
}
```

API OPERATIONS

Every operation consists of two parts:

- REQUEST: Publish a message on a 'commandRequest' channel.
- RESPONSE: Subscribe to the corresponding 'commandReply' channel to receive the response.

Remember the following Async Uniform Contract:

Operation on Entities	Uniform Async API Operation	Description
Query One Entity	retrieveResource	retrieve must be used to retrieve a representation of a resource.
Query Entities	listResource	list must be used to retrieve a list of resources.
Create Entity	createResource	create must be used to create a new resource
Partial Update of an Entity	patchResource	patch must be used to partially update a resource
Remove an Entity	deleteResource	delete must be used to remove a resource

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

Notifications are also described in a subsequent section.

Operations on Service

Retrieves a Service by ID

Request topic: {prefix}.serviceInventoryManagement.v5.retrieveService.commandRequest

Reply topic: {prefix}.serviceInventoryManagement.v5.retrieveService.commandReply

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

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.retrieveService.commandReply
Parameters: {
```

```
    "id": 5351
}
```

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel:
{prefix}.serviceInventoryManagement.v5.retrieveService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id" : "6500",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

List or find Service objects

Request topic: {prefix}.serviceInventoryManagement.v5.listService.commandRequest

Reply topic: {prefix}.serviceInventoryManagement.v5.listService.commandReply

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 Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.listService.commandReply
```

Request message header

```
{
    "Parameters": {
```

```
        "filtering": "serviceType=Cloud&state=active"
    }
}
```

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.listService.commandRequest
```

Response Payload

```
[ {
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "feature" : [ {
    "id" : "Feat1",
    "isEnabled" : true,
    "name" : "ElasticBandwith",
    "featureCharacteritic" : [ {
      "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/5885",
    "id" : "5885",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
```

```
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    }
  } ],
  "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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
} ]
```

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

Request Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.listService.commandReply
```

Request message header

```
{
    "Parameters": {
        "filtering": "state=active",
        "fields": "id,name,state"
    }
}
```

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.listService.commandRequest
```

Response Payload

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

Creates a Service

Request topic: {prefix}.serviceInventoryManagement.v5.createService.commandRequest

Reply topic: {prefix}.serviceInventoryManagement.v5.createService.commandReply

Description

This operation creates a Service entity.

Mandatory Attributes

Mandatory Attributes	Rule
state	
serviceSpecification	

Usage samples

Creation of a new Service with POST operation

Request Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.createService.commandReply
```

Request Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "feature" : [ {
    "id" : "Feat1",
    "isEnabled" : true,
    "name" : "ElasticBandwith",
    "featureCharacteritic" : [ {
      "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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 Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 201
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.createService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "feature" : [ {
    "id" : "Feat1",
    "isEnabled" : true,
    "name" : "ElasticBandwith",
    "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.resourceInventoryManagement.v5.retrieveResource.commandReq
uest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

Creation of a new Service with intent with POST operation

Request Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.createService.commandReply
```

Request Payload

```
{
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    }
```

```
  } ],
  "serviceSpecification" : {
    "id" : "cfs45",
    "href" : ".../serviceCatalog/v5/serviceSpecification/cfs45",
    "name" : "c_Mobile",
    "@type" : "ServiceSpecificationRef",
    "topicRef" : "kafka://broker-address/topic-name"
  },
  "state" : "active",
  "supportingService" : [ {
    "serviceSpecification" : {
      "id" : "cfs89",
      "href" : ".../serviceCatalog/v5/serviceSpecification/cfs89",
      "name" : "c_MobileSupport",
      "@type" : "ServiceSpecificationRef",
      "topicRef" : "kafka://broker-address/topic-name"
    },
    "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",
    "topicRef" :
"kafka://serverlocation/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "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: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 Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 201
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.createService.commandRequest
```

Response Payload

```
{
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    }
  } ],
  "serviceSpecification" : {
    "id" : "cfs45",
    "href" : ".../serviceCatalog/v5/serviceSpecification/cfs45",
    "name" : "c_Mobile",
    "@type" : "ServiceSpecificationRef",
    "topicRef" : "kafka://broker-address/topic-name"
  },
  "state" : "active",
  "supportingService" : [ {
    "serviceSpecification" : {
      "id" : "cfs89",
      "href" : ".../serviceCatalog/v5/serviceSpecification/cfs89",
      "name" : "c_MobileSupport",
      "@type" : "ServiceSpecificationRef",
      "topicRef" : "kafka://broker-address/topic-name"
    },
    "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",
    "topicRef" :
"kafka://serverlocation/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "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:reportingInterval" : [ {
                  "t:Duration" : [ {
                    "t:numbericDuration" : 10,
                    "t:temporalUnit" : "unitMinute"
                  } ]
                } ],
                "icm:reportingEvent" : [ "icm:StateComplies", "icm:StateDegrades" ]
              }
            }
          }
        }
      }
    },
    "lastUpdate" : "2023-03-09T08:42:33.044Z"
  },
  "@type" : "Service",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```


Updates partially a Service

Request topic: {prefix}.serviceInventoryManagement.v5.patchService.commandRequest

Reply topic: {prefix}.serviceInventoryManagement.v5.patchService.commandReply

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 optiona. 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 createService operation applies to the patchService operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

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

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.

This example uses the PatchServiceMergePatchRequest request message (used for a payload of type application/merge-patch+json).

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandReply
Parameters: {
    "id": 5351
}
```

Request Payload

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

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id" : "6500",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
```

```
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
```

```
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

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

This example uses the PatchServiceJsonPatchRequest request message (used for a payload of type application/json-patch+json).

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandReply
Parameters: {
    "id": 5351
}
```

Request Payload

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

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id" : "6500",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
```

```
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

Here’s an example of a request for updating a service using json-patch-query - In this example,

service related party role is updated.

This example uses the PatchServicePatchQueryRequest request message (used for a payload of type application/json-patch-query+json).

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandReply
Parameters: {
    "id": 5351
}
```

Request Payload

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

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
```

```
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id" : "6500",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
      "name" : "John Doe",
      "@type" : "PartyRef",
```

```
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

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

This example uses the PatchServiceJsonRequest request message (used for a payload of type application/json).

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandReply
Parameters: {
    "id": 5351
}
```

Request Payload

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

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 200
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.patchService.commandRequest
```

Response Payload

```
{
  "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",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceCatalogManagement.v5.retrieveServiceSpecification.c
ommandRequest"
  },
  "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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
    },
    "@type" : "ServiceRelationship"
  } ],
  "supportingService" : [ {
    "href" : "https://mycsp.com:8080/tmf-api/serviceInventory/v5/service/6500",
    "id" : "6500",
    "@type" : "ServiceRef",
    "@referredType" : "Service",
    "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
  } ],
  "relatedParty" : [ {
    "role" : "user",
    "partyOrPartyRole" : {
      "href" : "https://mycsp.com:8080/tmf-api/partyManagement/v5/individual/456",
      "id" : "456",
```

```
      "name" : "John Doe",
      "@type" : "PartyRef",
      "@referredType" : "Individual",
      "topicRef" :
"kafka://mycsp.com/{prefix}.partyManagement.v5.retrieveIndividual.commandRequest"
    },
    "@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",
      "topicRef" :
"kafka://mycsp.com/{prefix}.geographicAddressManagement.v5.retrieveGeographicAddress.c
ommandRequest"
    },
    "@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",
  "topicRef" :
"kafka://mycsp.com/{prefix}.serviceInventory.v5.retrieveService.commandRequest"
}
```

Deletes a Service

Request topic: {prefix}.serviceInventoryManagement.v5.deleteService.commandRequest

Reply topic: {prefix}.serviceInventoryManagement.v5.deleteService.commandReply

Description

This operation deletes a Service entity.

Usage samples

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

Request message header

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Reply-Channel: {prefix}.serviceInventoryManagement.v5.deleteService.commandReply
Parameters: {
    "id": 5351
}
```

Response Headers

```
X-Correlation-Id: 4226B739-1DD2-4B43-A393-5E6F05CEF169
Status-Code: 204
X-Request-Channel: {prefix}.serviceInventoryManagement.v5.deleteService.commandRequest
```

NOTIFICATIONS

Topic for Service entity: {prefix}.serviceInventoryManagement.v5.service.notificationEvent

For every single of operation on the entities use the following templates and provide sample notification message payloads.

It is assumed that consumers will subscribe to the notificationEvent channel to receive notifications, and that the server component will post notifications to that channel.

Publish Event to listener

Here’s an example of a notification received by the consumer. 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.

{ "event": { EVENT BODY }, "eventType": "EVENT_TYPE" }

For detailed examples on the general TM Forum notification mechanism, see the TMF Async 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

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