

# TM Forum Specification

## TMF648 Quote API REST Specification

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# Introduction

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

The customer Quote API provides a standardized mechanism for placing a customer quote with all of the necessary quote parameters. The API consists of a simple set of operations that interact with CRM/Order Negotiation systems in a consistent manner. A customer quote is created based on a product offer that is defined in a catalog. The quote identifies the product or set of products that are available to a customer, and includes characteristics such as pricing (eventually special pricing for the customer described in the quote), product options and agreement.

Quote API performs the following operations on customer quote:

- Retrieval of a customer quote or a collection of customer quote depending on filter criteria
- Partial update of a customer quote (including updating rules)
- Creation of a customer quote (including versioning, default values and creation rules)
- Deletion of customer quote (for administration purposes)
- Notification of events on quote
  - o Quote creation
  - o Quote removal
  - o Quote state change
  - o Quote value change used to notify that any data in an quote has just changed
  - o Quote information required used to notify that some data in the quote need to be filled / are missing
  - o Quote is a pending state waiting approval (for the whole quote or only for quote item)
  - o quote is accepted by the customer but there is a least one agreement to be signed

The following Assumptions were considered in the development of this document:

- The customer quote management system has access to the commercial catalog system.
- Supplier Quote is not managed in the scope of this document

## Sample Use Cases

Reader will find example of use cases using Usage API in “Open Digital Business Scenarios and Use Cases” document.

The following table maps out the UC case with Internal/External actors. An internal actor is a representative of the ISP – an external is typically a representative of the prospect/customer.

UC	Actor	Rule
A new quote or a new version of a quote is created	Internal External (Customer)	
An existing quote should be updated	Internal External (Customer)	Quote in status <i>In Progress</i> or <i>Pending</i>
An existing quote should be validated before to be send to the customer	Internal	Quote in status <i>In Progress</i> or <i>Pending</i>
An existing quote should be updated after submission to the customer	Internal External	Only status could be updated
a quote or a collection of quotes should be retrieved	Internal External (customer)	For an external access special checks and conditions are required (quote status, fields retrieved)
For technical reason a quote should be removed	Internal	

In order to illustrate JSON message we will use a Quote with following features:

- A global authorization
- 3 quote items:
  - For 10 lines for a TMF Tarif plan – an 10% off catalog price will be awarded
  - For 10 handsets (a commercial brochure will be provided in quote response)
  - For a support free for the 12 first months.

## 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 PricingRequest and Quoting inheriting properties from the Quote 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 Quote instances some may be instances of PricingRequest where other could be instances of Quoting. 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 a QuoteRef 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 PricingRequestRef or QuotingRef, 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

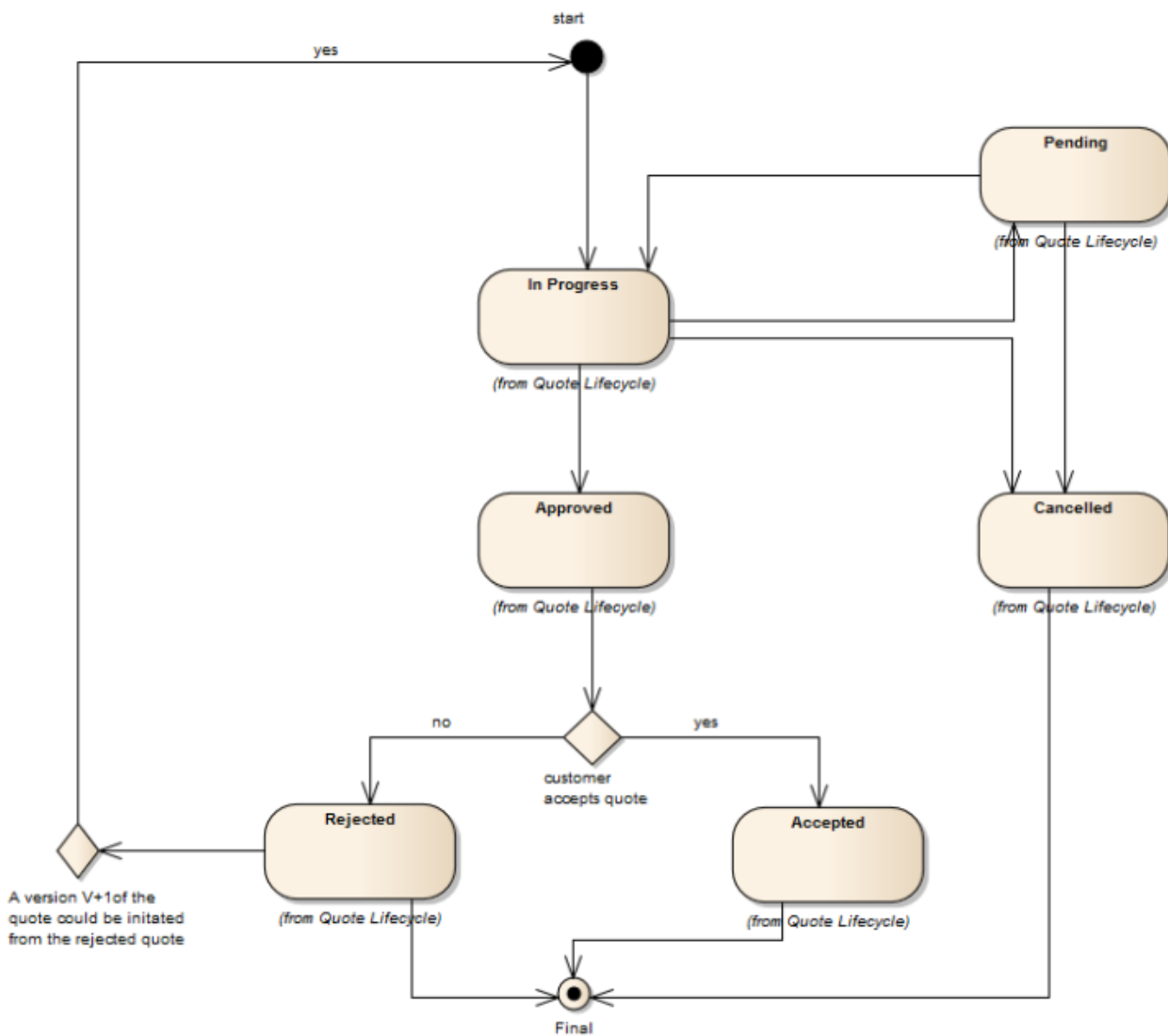
### Quote resource

Quote can be used to negotiate service and product acquisition or modification between a customer and a service provider. Quote contain list of quote items, a reference to customer (partyRole), a list of productOffering and attached prices and conditions.





## Lifecycle



### State definition:

State	Definition
<b>InProgress</b>	The <i>In Progress</i> state is when the quote is currently in the hands of the SP sales team to build it regarding customer requirements. The quote is under construction and needs more information. Everything should be updatable in this state
<b>Pending</b>	The <i>Pending</i> state is used when a quote needs to be validated from the SP perspective for tariff validation or to capture detailed information. The <i>Pending</i> state could be only for some quote items.
<b>Approved</b>	The <i>Approved</i> state is where the quote has been internally approved and sent to the customer. The quote is no longer updatable.
<b>Cancelled</b>	The <i>Cancelled</i> state is when the quote process is stopped from a SP decision. A <i>cancelled</i> quote has never been send to the customer.
<b>Accepted</b>	The <i>Accepted</i> state is used when the customer agreed to commit to the order and signed the quote.
<b>Rejected</b>	The <i>Rejected</i> state is used when the customer does not wish to progress with the quotation. It could his final decision and no other quote will be initiated from this quote or

it could be during negotiation phase and a new quote version is triggered from this quote. This new version of the quote is created with the *in Progress* state.

Quote Item State	Significance
<b>In Progress</b>	The <i>In Progress</i> state is when the quote item is currently in the hands of the SP sales team to build it regarding customer requirements. The quote item is under construction and should need more information. Everything should be updatable in this state
<b>Pending</b>	The <i>Pending</i> state is used when a quote item needs to be validated from the SP perspective for tariff validation or to capture detailed information.
<b>Approved</b>	The <i>Approved</i> state is where the quote has been internally approved and sent to the customer. When the quote is shifted to the Approved state, all quote item are marked as Approved
<b>Rejected</b>	<p>The <i>Rejected</i> state is used when the customer does not wish to progress with the quotation. It could be for the whole quote or for only some quote item. If at least one quote item is rejected the quote is rejected.</p> <p>At the quote level it could his final decision and no other quote will be initiated from this quote or it could be during negotiation phase and a new quote version is triggered from this quote. All quote item will be set as <i>In Progress</i> in this new version.</p>

Note that the quote and quote item states are tightly linked and need to be consistent – To provide example of rules (informative):

Quote status	Quote item status eligible
In Progress	In Progress
Pending	Pending In Progress
Validated	Validated
Cancelled	Pending In Progress
Accepted	Validated

**Field descriptions**Quote fields

agreement	A list of agreement references (AgreementRef [*]). A reference to an agreement defining the context of the quote.
authorization	A list of authorizations (Authorization [*]). An authorization provided for the quote.
billingAccount	A list of billing account references (BillingAccountRef [*]). A reference to a billing account to provide quote context information.
category	A string. Used to categorize the quote from a business perspective that can be useful for the CRM system (e.g. "enterprise", "residential", ...).
contactMedium	A list of contact mediums (ContactMedium [*]). Information contact related to the quote requester.
description	A string. Description of the quote.
effectiveQuoteCompletionDate	A date time (DateTime). Date when the quote has been completed.
expectedFulfillmentStartDate	A date time (DateTime). this is the date wished by the requester to have the requested quote item delivered.
expectedQuoteCompletionDate	A date time (DateTime). This is expected date - from quote supplier - to be able to send back a response for this quote.
externalId	A string. ID given by the consumer and only understandable by him (to facilitate his searches afterwards).
href	A string. Hyperlink to access the quote.
id	A string. Unique identifier - attributed by quoting system.
instantSyncQuote	A boolean. An indicator which when the value is "true" means that requester expects to get quoting result immediately in the response. If the indicator is true then the response code of 200 indicates the operation is successful otherwise a task is created with a response 201.
note	A list of notes (Note [*]). Free form text associated with the quote.
productOfferingQualification	A list of product offering qualification references (ProductOfferingQualificationRef [*]). A reference to a previously done product offering qualification.
quoteDate	A date time (DateTime). Date and time when the quote was created.

quoteItem	A list of quote items (QuoteItem [1..*]). An item of the quote - it is used to describe an operation on a product to be quoted.
quoteTotalPrice	A list of quote prices (QuotePrice [*]). Quote total price.
relatedParty	A list of related parties (RelatedParty [*]). A reference to a party playing a role in this quote (customer, seller, requester, etc.).
requestedQuoteCompletionDate	A date time (DateTime). This is requested date - from quote requester - to get a complete response for this quote.
state	A quote state type (QuoteStateType). State of the quote : described in the state-machine diagram.
validFor	A time period. Quote validity period.
version	A string. Quote version - if the customer rejected the quote but negotiations still open a new version of the quote is managed.

#### AttachmentRefOrValue sub-resource

An attachment by value or by reference. For AttachmentRefOrValue, the attribute type, schemaLocation and referredType are related to the contained entity and not to AttachmentRefOrValue itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
description	A string. A narrative text describing the content of the attachment.
href	A string. URI for this Attachment.
id	A string. Unique identifier for this particular attachment.
url	A string. Uniform Resource Locator, is a web page address (a subset of URI).
href	A string. URI for this Attachment.
id	A string. Unique identifier for this particular attachment.
name	A string. The name of the attachment.
attachmentType	A string. Attachment type such as video, picture.
content	A string. 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. URI for this Attachment.
id	A string. Unique identifier for this particular attachment.

contentType	A string. Attachment mime type such as extension file for video, picture and document.
name	A string. The name of the attachment.
url	A string. Uniform Resource Locator, is a web page address (a subset of URI).
size	A quantity (Quantity). The size of the attachment.
validFor	A time period. The period of time for which the attachment is valid.

Authorization sub-resource

If special discount or special product offering price or specific condition need an approval for ISP sale representative it is described here.

approver	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.
givenDate	A date time (DateTime). Date when the authorization (approved or declined) was done.
name	A string. Name of the required authorization.
requestedDate	A date time (DateTime). Date when the authorization is requested for.
signatureRepresentation	A string. To describe a digital or manual signature.
state	A string. State of the authorization, such as: approved or declined.

Characteristic sub-resource

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

name	A string. Name of the characteristic.
value	An any (Any). The value of the characteristic.
valueType	A string. Data type of the value of the characteristic.

ContactMedium sub-resource

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

characteristic	A medium characteristic (MediumCharacteristic). Any additional characteristic(s) of this contact medium.
mediumType	A string. Type of the contact medium, such as: email address, telephone number, postal address.

preferred	A boolean. If true, indicates that is the preferred contact medium.
validFor	A time period. The time period that the contact medium is valid for.

MediumCharacteristic sub-resource

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

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

Money sub-resource

A base / value business entity used to represent money.

unit	A string. Currency (ISO4217 norm uses 3 letters to define the currency).
value	A float. A positive floating point number.

Note sub-resource

Extra information about a given entity.

author	A string. Author of the note.
date	A date time (DateTime). Date of the note.
id	A string. Identifier of the note within its containing entity (may or may not be globally unique, depending on provider implementation).

text A string. Text of the note.

#### Price sub-resource

Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

dutyFreeAmount A money (Money). All taxes excluded amount (expressed in the given currency).

percentage A float. Percentage to apply for ProdOfferPriceAlteration.

taxIncludedAmount A money (Money). All taxes included amount (expressed in the given currency).

taxRate A float. Tax rate.

#### PriceAlteration sub-resource

Is an amount, usually of money, that modifies the price charged for an order item.

applicationDuration An integer. Duration during which the alteration applies on the order item price (for instance 2 months free of charge for the recurring charge).

description A string. A narrative that explains in detail the semantics of this order item price alteration.

name A string. Name of the order item price alteration.

price A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

priceType A string. A category that describes the price such as recurring, one time and usage.

priority An integer. Priority level for applying this alteration among all the defined alterations on the order item price.

productOfferingPrice A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.

recurringChargePeriod A string. Could be month, week...

unitOfMeasure A string. Could be minutes, GB...

#### ProductPrice sub-resource

An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.

billingAccount A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.



description	A string. A narrative that explains in detail the semantics of this product price.
name	A string. A short descriptive name such as "Subscription price".
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.
productPriceAlteration	A list of price alterations (PriceAlteration [*]). Is an amount, usually of money, that modifies the price charged for an order item.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...

#### ProductRefOrValue sub-resource

A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
name	A string. Name of the product. It could be the same as the name of the product offering.
description	A string. Is the description of the product. It could be copied from the description of the Product Offering.
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
isBundle	A boolean. If true, the product is a ProductBundle which is an instantiation of a BundledProductOffering. If false, the product is a ProductComponent which is an instantiation of a SimpleProductOffering.
isCustomerVisible	A boolean. If true, the product is visible by the customer.

name	A string. Name of the product. It could be the same as the name of the product offering.
orderDate	A date time (DateTime). Is the date when the product was ordered.
productSerialNumber	A string. Is the serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
startDate	A date time (DateTime). Is the date from which the product starts.
terminationDate	A date time (DateTime). Is the date when the product was terminated.
agreement	A list of agreement item references (AgreementItemRef [*]). Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.
place	A list of related place ref or values (RelatedPlaceRefOrValue [*]). Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.
product	A list of product ref or values (ProductRefOrValue [*]). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
productCharacteristic	A list of characteristics (Characteristic [*]). Describes a given characteristic of an object or entity through a name/value pair.
productOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.
productOrderItem	A list of related product order items (RelatedProductOrderItem [*]). RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.
productPrice	A list of product prices (ProductPrice [*]). An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.

productRelationship	A list of product relationships (ProductRelationship [*]). Linked products to the one instantiate, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.
productTerm	A list of product terms (ProductTerm [*]). Description of a productTerm linked to this product. This represent a commitment with a duration.
realizingResource	A list of resource references (ResourceRef [*]).
realizingService	A list of service references (ServiceRef [*]). for when Service is used by other entities.
relatedParty	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.
status	A product status type (ProductStatusType). Is the lifecycle status of the product.

#### ProductRelationship sub-resource

Linked products to the one instantiate, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.

product	A product ref or value (ProductRefOrValue). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
relationshipType	A string. Type of the product relationship, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.

#### ProductTerm sub-resource

Description of a productTerm linked to this product. This represent a commitment with a duration.

description	A string. Description of the productTerm.
duration	A quantity (Quantity). Duration of the productTerm.

name	A string. Name of the productTerm.
validFor	A time period. productTerm validity period.

Quantity sub-resource

An amount in a given unit.

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

QuoteItem sub-resource

A quote items describe an action to be performed on a productOffering or a product in order to get pricing elements and condition.

action	A string. Action to be performed on this quote item (add, modify, remove, etc.).
appointment	A list of appointment references (AppointmentRef [*]). A reference to appointment(s) associated with this quote item.
attachment	A list of attachment ref or values (AttachmentRefOrValue [*]). A reference to attachment(s) associated with this quote item.
id	A string. Identifier of the quote item (generally it is a sequence number 01, 02, 03, ...).
note	A list of notes (Note [*]). Free form text associated with the quote item.
product	A product ref or value (ProductRefOrValue). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
productOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.
productOfferingQualificationItem	A product offering qualification item reference (ProductOfferingQualificationItemRef). A reference to a previously done POQ with item specified.
quantity	An integer. Quantity asked for this quote item.
quoteItem	A list of quote items (QuoteItem [*]). A structure to embedded quote item within quote item.

quoteItemAuthorization	A list of authorizations (Authorization [*]). Authorization related to this quote item.
quoteItemPrice	A list of quote prices (QuotePrice [*]). Price for this quote item.
quoteItemRelationship	A list of quote item relationships (QuoteItemRelationship [*]). A relationship from item within a quote.
relatedParty	A list of related parties (RelatedParty [*]). A reference to a party playing a role in this quote item.
state	A string. State of the quote item : described in the state machine diagram.

#### QuoteItemRelationship sub-resource

Used to describe relationship between quote item. These relationship could have an impact on pricing and conditions.

id	A string. ID of the related order item (must be in the same quote).
relationshipType	A string. Relationship type as relies on, bundles, etc...

#### QuotePrice sub-resource

Description of price and discount awarded.

description	A string. Description of the quote/quote item price.
name	A string. Name of the quote /quote item price.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceAlteration	A list of price alterations (PriceAlteration [*]). Is an amount, usually of money, that modifies the price charged for an order item.
priceType	A string. indicate if the price is for recurrent or no-recurrent charge.
productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased. The price is valid for a defined period of time.
recurringChargePeriod	A string. Used for recurring charge to indicate period (month, week, etc..).
unitOfMeasure	A string. Unit of Measure if price depending on it (Gb, SMS volume, etc..).

#### RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.
role	A string. Role played by the related party.

#### RelatedPlaceRefOrValue sub-resource

Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
role	A string.

#### RelatedProductOrderItem sub-resource

RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
orderItemAction	A string. Action of the order item for this product.
orderItemId	A string. Identifier of the order item where the product was managed.
productOrderHref	A string. Reference of the related entity.
productOrderId	A string. Unique identifier of a related entity.
role	A string. role of the product order item for this product.

TargetProductSchema sub-resource

The reference object to the schema and type of target product which is described by product specification.

@schemaLocation A string. This field provides a link to the schema describing the target product.

@type A string. Class type of the target product.

AgreementItemRef relationship

Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

@referredType A string. The actual type of the target instance when needed for disambiguation.

href A string. Reference of the related entity.

id A string. Unique identifier of a related entity.

name A string. Name of the related entity.

agreementItemId A string. Identifier of the agreement.

AgreementRef relationship

Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

@referredType A string. The actual type of the target instance when needed for disambiguation.

href A string. Reference of the related entity.

id A string. Unique identifier of a related entity.

name A string. Name of the agreement.

name A string. Name of the agreement.

AppointmentRef relationship

Refers an appointment, such as a Customer presentation or internal meeting or site visit.

@referredType A string. The actual type of the target instance when needed for disambiguation.

description A string. An explanatory text regarding the appointment made with a party.

href A string. The reference of the appointment.

id A string. The identifier of the referred appointment.

BillingAccountRef relationship

BillingAccount reference. A BillingAccount is a detailed description of a bill structure.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the billing account.
id	A string. Unique identifier of the billing account.
name	A string. Name of the billing account.

ProductOfferingPriceRef relationship

ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

ProductOfferingQualificationItemRef relationship

It's a productOfferingQualification item that has been executed previously.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Id of an item of a product offering qualification.
name	A string. Name of the related entity.
id	A string. Id of an item of a product offering qualification.
productOfferingQualificationHref	A string. Reference of the related entity.
productOfferingQualificationId	A string. Unique identifier of a related entity.
productOfferingQualificationName	A string. Name of the related entity.

ProductOfferingQualificationRef relationship

It's a productOfferingQualification that has been executed previously.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
---------------	--



href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

ProductOfferingRef relationship

ProductOffering reference. A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.

ProductSpecificationRef relationship

Product specification reference: A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the related entity.
targetProductSchema	A target product schema (TargetProductSchema). A target product schema reference. The reference object to the schema and type of target product which is described by product specification.
version	A string. Version of the product specification.

ResourceRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
href	A string. Reference of the related entity.
id	A string. Unique identifier of a related entity.
name	A string. Name of the resource.
name	A string. Name of the resource.

value A string. The resource value that can be used to identify a resource with a public key (e.g.: a tel nr, an msisdn).

### ServiceRef relationship

Service reference, for when Service is used by other entities.

@referredType A string. The actual type of the target instance when needed for disambiguation.

href A string. Reference of the related entity.

id A string. Unique identifier of a related entity.

name A string. Name of the related entity.

### Json representation sample

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

```
{
  "id": "12dd-78hg",
  "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
  "category": "BSBS Quote",
  "description": "Quote illustration",
  "effectiveQuoteCompletionDate": "2019-05-013T12:45:12.028Z",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "externalId": "QO-tr-89",
  "instantSyncQuote": false,
  "quoteDate": "2019-05-06T12:45:12.028Z",
  "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "version": "1",
  "agreement": [
    {
      "id": "7778-jj56",
      "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",
      "name": "Global Agrrement",
      "@type": "Agreement",
      "@referredType": "MassAgreement"
    }
  ],
  "billingAccount": [
    {
      "id": "BA4569",
      "href": "https://host:port/accountManagement/v4/billingAccount/BA4569",
      "@type": "BillingAccount"
    }
  ],
  "contactMedium": [
    {
      "mediumType": "email",
      "preferred": true,
      "characteristic": {
        "emailAddress": "jean.pontus@PerfectCustomer.com",

```

```
  },
  "validFor": {
    "startDateTime": "2019-05-06T12:45:12.028Z"
  }
},
"note": [
  {
    "id": "1",
    "author": "Jean Pontus",
    "date": "2019-05-06T12:45:12.031Z",
    "text": "This is a quote request following today call",
    "@type": "Note"
  }
],
"productOfferingQualification": [
  {
    "id": "22ds-ty55",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
  }
],
"authorization": [
  {
    "givenDate": "2019-05-08T12:45:12.031Z",
    "name": "Discount validation",
    "requestedDate": "2019-05-09T12:45:12.031Z",
    "signatureRepresentation": "Manager approval",
    "state": "validated",
    "approver": [
      {
        "name": "Joe Doe",
        "role": "B2B Discount approver"
      }
    ]
  }
],
"quoteItem": [
  {
    "id": "1",
    "@type": "QuoteItem",
    "action": "add",
    "quantity": 10,
    "state": "approved",
    "product": {
      "@type": "product",
      "productCharacteristic": [
        {
          "name": "Voice Bundle",
          "valueType": "string",
          "value": "unlimited"
        },
        {
          "name": "Data Bundle",
          "valueType": "object",
          "value": {
```

```
        "volume": 50,
        "unit": "Gb/month"
      }
    ],
    "productSpecification": {
      "id": "ssp7-ty89",
      "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
      "name": "TMF Tariff Plan"
    }
  },
  "productOffering": {
    "id": "54gg-zza1",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
    "name": "TMF Tarif Plan 25"
  },
  "quoteItemPrice": [
    {
      "description": "Tariff plan 25 fee",
      "name": "Tariff Plan 25 tariff",
      "priceType": "recurring",
      "recurringChargePeriod": "month",
      "price": {
        "taxRate": 16,
        "dutyFreeAmount": {
          "unit": "EUR",
          "value": 30
        },
        "taxIncludedAmount": {
          "unit": "EUR",
          "value": 34.8
        }
      }
    },
    {
      "applicationDuration": 0,
      "description": "Specific Discount for PerfectCustomer company",
      "name": "10% off",
      "priceType": "recurring",
      "priority": 1,
      "recurringChargePeriod": "month",
      "price": {
        "percentage": 10
      }
    }
  ]
},
{
  "id": "2",
  "@type": "QuoteItem",
  "action": "add",
  "quantity": 10,
  "state": "approved",
```

```
"attachment": [
  {
    "attachmentType": "brochure",
    "description": "handset brochure",
    "mimeType": "pdf",
    "name": "Handset commercial brochure.pdf",
    "url": "www.tmf_hanset/contentMangement/brochure.pdf",
    "size": {
      "amount": 3.7,
      "units": "Mb"
    },
    "validFor": {
      "startDateTime": "2019-05-06T12:45:12.031Z"
    }
  }
],
"product": {
  "@type": "Product",
  "productSpecification": {
    "id": "qq45-ytr7",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
    "name": "Handset",
    "version": "1"
  }
},
"productOffering": {
  "id": "z789-78ga",
  "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
  "name": "TMF handset T9+"
},
"quoteItemPrice": [
  {
    "description": "Handset",
    "name": "Handset Fee",
    "priceType": "nonRecurring",
    "price": {
      "taxRate": 16,
      "dutyFreeAmount": {
        "unit": "EUR",
        "value": 350
      },
      "taxIncludedAmount": {
        "unit": "EUR",
        "value": 406
      }
    }
  }
]
},
{
  "id": "3",
  "@type": "QuoteItem",
  "action": "add",
  "quantity": 1,
  "state": "approved",
```

```
"productOffering": {
  "id": "ssdd-4dfd",
  "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
  "name": "Gold Support"
},
"quoteItemPrice": [
  {
    "description": "Gold support annual fee",
    "name": "GoldAnnualFee",
    "priceType": "recurring",
    "recurringChargePeriod": "year",
    "price": {
      "taxRate": 16,
      "dutyFreeAmount": {
        "unit": "EUR",
        "value": 100
      },
      "taxIncludedAmount": {
        "unit": "EUR",
        "value": 116
      }
    }
  },
  {
    "description": "First year free",
    "name": "FreeYear",
    "priceType": "recurring",
    "priority": 1,
    "recurringChargePeriod": "year",
    "price": {
      "percentage": 100
    }
  }
]
],
"relatedParty": [
  {
    "name": "Jean Pontus",
    "role": "Buyer Contact",
    "id": "qsdd-9888",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
```

```
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"state": "approved",
"validFor": {
  "endDateTime": "2019-05-06T12:45:12.033Z",
  "startDateTime": "2019-05-06T12:45:12.033Z"
},
"@type": "Quote"
}
```

## Notification Resource Models

5 notifications are defined for this API

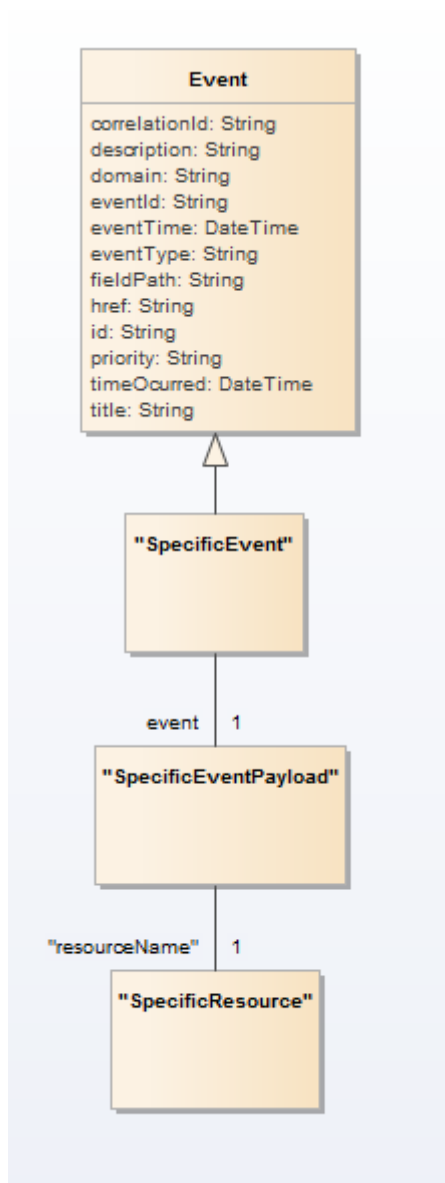
Notifications related to Quote:

- QuoteCreateEvent
- QuoteStateChangeEvent
- QuoteDeleteEvent
- QuoteInformationRequiredEvent
- QuoteAttributeValueChangeEvent

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).



## Quote Create Event

Notification QuoteCreateEvent case for resource Quote

### Json representation sample

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

```

{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"QuoteCreateEvent",
  "event": {
    "quote" :
      {-- SEE Quote RESOURCE SAMPLE --}
  }
}

```



```
}
```

### Quote State Change Event

Notification QuoteStateChangeEvent case for resource Quote

#### Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "QuoteStateChangeEvent",
  "event": {
    "quote": {
      "-- SEE Quote RESOURCE SAMPLE --"
    }
  }
}
```

### Quote Delete Event

Notification QuoteDeleteEvent case for resource Quote

#### Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "QuoteDeleteEvent",
  "event": {
    "quote": {
      "-- SEE Quote RESOURCE SAMPLE --"
    }
  }
}
```

### Quote Information Required Event

Notification QuoteInformationRequiredEvent case for resource Quote

#### Json representation sample

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

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

```
"eventType": "QuoteInformationRequiredEvent",
"event": {
  "quote" :
    {-- SEE Quote RESOURCE SAMPLE --}
}
}
```

### Quote Attribute Value Change Event

Notification QuoteAttributeValueChangeEvent case for resource Quote

#### Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "QuoteAttributeValueChangeEvent",
  "event": {
    "quote" :
      {-- SEE Quote RESOURCE SAMPLE --}
  }
}
```

## API OPERATIONS

Only allowed operations are listed:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET Quote	GET must be used to retrieve a representation of a resource.
Create Entity	POST Quote  (could be used to create a new quote version)	POST must be used to create a new resource  Note that POST Quote with instantSyncResponse set to true will provide quoting in the response; The resource could not be created in this case (up to API provider). In this case code 200 is send back.  If resource is created code 201 is send back.
Partial Update of an Entity	PATCH Resource	PATCH must be used to partially update a resource
Remove an Entity	DELETE Resource	DELETE must be used to remove a resource

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

Notifications are also described in a subsequent section.

### Operations on Quote

#### List quotes

**GET** /quote?fields=...&{filtering}

## Description

This operation list quote entities.

Attribute selection is enabled for all first level attributes.

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

## Usage Samples

Here's an example of a request for retrieving a list of quote(s). The given criteria is the state (inProgress) and expectedQuoteCompletionDate (.gt).

Request
GET https://serverRoot/tmf-api/quoteManagement/v4/quote?fields=id,href,expectedQuoteCompletionDate&state=inProgress&expectedQuoteCompletionDate.gt=2019-04-12T12:33:43.331Z Accept: application/json
Response
200 <pre>[   {     "id": "9ffg-ze56-ed51",     "href": ".../QuoteManagement/v4/quote/9ffg-ze56-ed51",     "state": "accepted",     "expectedQuoteCompletionDate": "2019-04-11T14:52:21.823Z"   },   {     "id": "7412",     "href": ".../QuoteManagement/v4/quote/7412",     "state": "approved",     "expectedQuoteCompletionDate": "2019-04-18T14:21:31.325Z"   },   {     "id": "3214",     "href": ".../QuoteManagement/v4/quote/3214",     "state": "pending",     "expectedQuoteCompletionDate": "2019-04-21T18:08:31.325Z"   },   {     "id": "6547",     "href": ".../QuoteManagement/v4/quote/6547",     "state": "inProgress",     "expectedQuoteCompletionDate": "2019-04-29T10:48:28.325Z"   } ]</pre>

**Retrieve quote****GET** /quote/{id}?fields=...&{filtering}**Description**

This operation retrieves a quote entity.

Attribute selection is enabled for all first level attributes.

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

**Usage Samples**

Here's an example of a request for retrieving a quote. The given criteria is the quote id 12dd-78hg.

Request
GET https://serverRoot/tmf-api/quoteManagement/v4/quote/12dd-78hg Accept: application/json
Response
200  <pre>{   "id": "12dd-78hg",   "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",   "category": "BSBS Quote",   "description": "Quote illustration",   "effectiveQuoteCompletionDate": "2019-05-013T12:45:12.028Z",   "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",   "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",   "externalId": "QO-tr-89",   "instantSyncQuote": false,   "quoteDate": "2019-05-06T12:45:12.028Z",   "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",   "version": "1",   "agreement": [     {       "id": "7778-jj56",       "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",       "name": "Global Agrrement",       "@baseType": "Agreement",       "@referredType": "MassAgreement"     }   ],   "billingAccount": [     {       "id": "BA4569",</pre>

```
    "href": "https://host:port/accountManagement/v4/billingAccount/BA4569"
  }
],
"contactMedium": [
  {
    "mediumType": "email",
    "preferred": true,
    "characteristic": {
      "emailAddress": "jean.pontus@PerfectCustomer.com",
    },
    "validFor": {
      "startDateTime": "2019-05-06T12:45:12.028Z"
    }
  }
],
"note": [
  {
    "id": "1",
    "author": "Jean Pontus",
    "date": "2019-05-06T12:45:12.031Z",
    "text": "This is a quote request following today call"
  }
],
"productOfferingQualification": [
  {
    "id": "22ds-ty55",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
  }
],
"authorization": [
  {
    "givenDate": "2019-05-08T12:45:12.031Z",
    "name": "Discount validation",
    "requestedDate": "2019-05-09T12:45:12.031Z",
    "signatureRepresentation": "Manager approval",
    "state": "validated",
    "approver": [
      {
        "name": "Joe Doe",
        "role": "B2B Discount approver"
      }
    ]
  }
],
"quoteItem": [
  {
    "id": "1",
    "action": "add",
    "quantity": 10,
    "state": "approved",
    "product": {
      "@type": "Product",
      "productCharacteristic": [
        {
          "name": "Voice Bundle",

```

```
    "valueType": "string",
    "value": "unlimited"
  },
  {
    "name": "Data Bundle",
    "valueType": "object",
    "value": {
      "volume": 50,
      "unit": "Gb/month"
    }
  }
],
"productSpecification": {
  "id": "ssp7-ty89",
  "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
  "name": "TMF Tariff Plan"
}
},
"productOffering": {
  "id": "54gg-zza1",
  "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
  "name": "TMF Tarif Plan 25"
},
"quoteItemPrice": [
  {
    "description": "Tariff plan 25 fee",
    "name": "Tariff Plan 25 tariff",
    "priceType": "recurring",
    "recurringChargePeriod": "month",
    "price": {
      "taxRate": 16,
      "dutyFreeAmount": {
        "unit": "EUR",
        "value": 30
      },
      "taxIncludedAmount": {
        "unit": "EUR",
        "value": 34.8
      }
    }
  },
  {
    "priceAlteration": [
      {
        "applicationDuration": 0,
        "description": "Specific Discount for PerfectCustomer company",
        "name": "10% off",
        "priceType": "recurring",
        "priority": 1,
        "recurringChargePeriod": "month",
        "price": {
          "percentage": 10
        }
      }
    ]
  }
]
}
```

```
},
{
  "id": "2",
  "action": "add",
  "quantity": 10,
  "state": "approved",
  "attachment": [
    {
      "attachmentType": "brochure",
      "description": "handset brochure",
      "mimeType": "pdf",
      "name": "Handset commercial brochure.pdf",
      "url": "www.tmf_hanset/contentMangement/brochure.pdf",
      "size": {
        "amount": 3.7,
        "units": "Mb"
      },
      "validFor": {
        "startDateTime": "2019-05-06T12:45:12.031Z"
      }
    }
  ],
  "product": {
    "@type": "Product",
    "productSpecification": {
      "id": "qq45-ytr7",
      "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
      "name": "Handset",
      "version": "1"
    }
  },
  "productOffering": {
    "id": "z789-78ga",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
    "name": "TMF handset T9+"
  },
  "quoteItemPrice": [
    {
      "description": "Handset",
      "name": "Handset Fee",
      "priceType": "nonRecurring",
      "price": {
        "taxRate": 16,
        "dutyFreeAmount": {
          "unit": "EUR",
          "value": 350
        },
        "taxIncludedAmount": {
          "unit": "EUR",
          "value": 406
        }
      }
    }
  ]
}
```



```
{
  "id": "3",
  "action": "add",
  "quantity": 1,
  "state": "approved",
  "productOffering": {
    "id": "ssdd-4dfd",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
    "name": "Gold Support"
  },
  "quoteItemPrice": [
    {
      "description": "Gold support annual fee",
      "name": "GoldAnnualFee",
      "priceType": "recurring",
      "recurringChargePeriod": "year",
      "price": {
        "taxRate": 16,
        "dutyFreeAmount": {
          "unit": "EUR",
          "value": 100
        },
        "taxIncludedAmount": {
          "unit": "EUR",
          "value": 116
        }
      }
    },
    {
      "description": "First year free",
      "name": "FreeYear",
      "priceType": "recurring",
      "priority": 1,
      "recurringChargePeriod": "year",
      "price": {
        "percentage": 100
      }
    }
  ]
},
"relatedParty": [
  {
    "name": "Jean Pontus",
    "role": "Buyer Contact",
    "id": "qsdd-9888",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
  }
]
```

```

    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"state": "approved",
"validFor": {
  "endDateTime": "2019-05-06T12:45:12.033Z",
  "startDateTime": "2019-05-06T12:45:12.033Z"
},
"@type": "Quote"
}

```

## Create quote

### POST /quote

#### Description

This operation creates a quote entity.

#### Mandatory and Non Mandatory Attributes

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

Mandatory Attributes	Rule
quoteItem	At least one quoteItem must be present

Non Mandatory Attributes	Rule
agreement	
authorization	Must be not provided in the POST request
billingAccount	
category	
contactMedium	
description	
effectiveQuoteCompletionDate	Must be not provided in the POST request
expectedFulfillmentStartDate	
expectedQuoteCompletionDate	Must be not provided in the POST request
externalId	
instantSyncQuote	By default False
note	
productOfferingQualification	
quoteDate	Must be not provided in the POST request

quoteTotalPrice	
relatedParty	
requestedQuoteCompletionDate	
state	
validFor	
version	

### Additional Rules

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

Context	Mandatory Sub-Attributes
relatedParty	id, @referredType
note	text, id
billingAccount	id
agreement	id
productOffering	id
realizingService	id
realizingResource	id
productRelationship	relationshipType, product
quoteItemRelationship	id, relationshipType
productSpecification	id
relatedPlace	role, @referredType
productOrderItem	productOrderId
quotePrice	priceType
productOfferingQualification	id
appointment	id
productOfferingQualificationItem	productOfferingQualificationId, id

The following pre-conditions apply for this operation.

Pre-conditions
When creating a quote (post) a quote item should not have the state field valued
When creating a quote (post) a quote item should not have the quoteItemAuthorization valued
When creating a quote (post) a quote item should not have the quoteItemPrice valued
if quantity is not specified, by default 1 is considered

### Usage Samples

Here's an example of a request for creating a quote with instantSync set to false - a quote resource is created - the resulting quote is 87h-98g.

<b>Request</b>
----------------

POST https://serverRoot/tmf-api/quoteManagement/v4/quote  
Content-Type: application/json

```
{
  "category": "BSBS Quote",
  "description": "Quote illustration",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "externalId": "QO-tr-89",
  "instantSyncQuote": false,
  "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "version": "1",
  "agreement": [
    {
      "id": "7778-jj56",
      "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",
      "name": "Global Agrrement",
      "@baseType": "Agreement",
      "@referredType": "MassAgreement"
    }
  ],
  "billingAccount": [
    {
      "id": "BA4569",
      "href": "https://host:port/accountManagement/v4/billingAccount/BA4569"
    }
  ],
  "contactMedium": [
    {
      "mediumType": "email",
      "preferred": true,
      "characteristic": {
        "emailAddress": "jean.pontus@PerfectCustomer.com",
      },
      "validFor": {
        "startDateTime": "2019-05-06T12:45:12.028Z"
      }
    }
  ],
  "note": [
    {
      "id": "1",
      "author": "Jean Pontus",
      "date": "2019-05-06T12:45:12.031Z",
      "text": "This is a quote request following today call",
      "@type": "Note"
    }
  ],
  "productOfferingQualification": [
    {
      "id": "22ds-ty55",
      "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
    }
  ],
  "quoteItem": [
    {

```

```
"id": "1",
"action": "add",
"quantity": 10,
"product": {
  "@type": "product",
  "productCharacteristic": [
    {
      "name": "Voice Bundle",
      "valueType": "string",
      "value": "unlimited"
    },
    {
      "name": "Data Bundle",
      "valueType": "object",
      "value": {
        "volume": 50,
        "unit": "Gb/month"
      }
    }
  ],
  "productSpecification": {
    "id": "ssp7-ty89",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
    "name": "TMF Tariff Plan"
  }
},
"productOffering": {
  "id": "54gg-zza1",
  "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
  "name": "TMF Tarif Plan 25"
}
},
{
  "id": "2",
  "action": "add",
  "quantity": 10,
  "attachment": [
    {
      "attachmentType": "brochure",
      "description": "handset brochure",
      "mimeType": "pdf",
      "name": "Handset commercial brochure.pdf",
      "url": "www.tmf_hanset/contentMangement/brochure.pdf",
      "size": {
        "amount": 3.7,
        "units": "Mb"
      },
      "validFor": {
        "startDateTime": "2019-05-06T12:45:12.031Z"
      }
    }
  ],
  "product": {
    "@type": "product",
    "productSpecification": {
```

```

    "id": "qq45-ytr7",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
    "name": "Handset",
    "version": "1"
  }
},
"productOffering": {
  "id": "z789-78ga",
  "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
  "name": "TMF handset T9+"
}
},
{
  "id": "3",
  "action": "add",
  "quantity": 1,
  "productOffering": {
    "id": "ssdd-4dfd",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
    "name": "Gold Support"
  }
}
],
"relatedParty": [
  {
    "name": "Jean Pontus",
    "role": "Buyer Contact",
    "id": "qsdd-9888",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"@type": "Quote"
}

```

**Response**

201

```

{
  "id": "12dd-78hg",

```

```
"href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
"category": "BSBS Quote",
"description": "Quote illustration",
"expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
"expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
"externalId": "QO-tr-89",
"instantSyncQuote": false,
"quoteDate": "2019-05-06T12:45:12.028Z",
"requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
"version": "1",
"agreement": [
  {
    "id": "7778-jj56",
    "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",
    "name": "Global Agreement",
    "@baseType": "Agreement",
    "@referredType": "MassAgreement"
  }
],
"billingAccount": [
  {
    "id": "BA4569",
    "href": "https://host:port/accountManagement/v4/billingAccount/BA4569"
  }
],
"contactMedium": [
  {
    "mediumType": "email",
    "preferred": true,
    "characteristic": {
      "emailAddress": "jean.pontus@PerfectCustomer.com",
    },
    "validFor": {
      "startDateTime": "2019-05-06T12:45:12.028Z"
    }
  }
],
"note": [
  {
    "id": "1",
    "author": "Jean Pontus",
    "date": "2019-05-06T12:45:12.031Z",
    "text": "This is a quote request following today call"
  }
],
"productOfferingQualification": [
  {
    "id": "22ds-ty55",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
  }
],
"quoteItem": [
  {
    "id": "1",
    "action": "add",
```

```
"quantity": 10,
"state": "InProgress",
"product": {
  "@type": "Product",
  "productCharacteristic": [
    {
      "name": "Voice Bundle",
      "valueType": "string",
      "value": "unlimited"
    },
    {
      "name": "Data Bundle",
      "valueType": "object",
      "value": {
        "volume": 50,
        "unit": "Gb/month"
      }
    }
  ],
  "productSpecification": {
    "id": "ssp7-ty89",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
    "name": "TMF Tariff Plan"
  }
},
"productOffering": {
  "id": "54gg-zza1",
  "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
  "name": "TMF Tarif Plan 25"
}
},
{
  "id": "2",
  "action": "add",
  "quantity": 10,
  "state": "InProgress",
  "attachment": [
    {
      "attachmentType": "brochure",
      "description": "handset brochure",
      "mimeType": "pdf",
      "name": "Handset commercial brochure.pdf",
      "url": "www.tmf_hanset/contentMangement/brochure.pdf",
      "size": {
        "amount": 3.7,
        "units": "Mb"
      },
      "validFor": {
        "startDateTime": "2019-05-06T12:45:12.031Z"
      }
    }
  ]
},
"product": {
  "@type": "Product",
  "productSpecification": {
```



```
    "id": "qq45-ytr7",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
    "name": "Handset",
    "version": "1"
  }
},
"productOffering": {
  "id": "z789-78ga",
  "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
  "name": "TMF handset T9+"
}
},
{
  "id": "3",
  "action": "add",
  "quantity": 1,
  "state": "InProgress",
  "productOffering": {
    "id": "ssdd-4dfd",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
    "name": "Gold Support"
  }
}
],
"relatedParty": [
  {
    "name": "Jean Pontus",
    "role": "Buyer Contact",
    "id": "qsdd-9888",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"state": "InProgress",
"@type": "Quote"
}
```

Here's an example of a request for creating a quote with `instantSync` set to `true` - quoting result is directly provided in response and not resource is created.

**Request**

POST https://serverRoot/tmf-api/quoteManagement/v4/quote

Content-Type: application/json

```
{
  "category": "BSBS Quote",
  "description": "instantSyncQuote Quote illustration",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "instantSyncQuote": true,
  "quoteItem": [
    {
      "id": "1",
      "action": "add",
      "quantity": 1,
      "product": {
        "@type": "Product",
        "productCharacteristic": [
          {
            "name": "Voice Bundle",
            "valueType": "string",
            "value": "unlimited"
          },
          {
            "name": "Data Bundle",
            "valueType": "object",
            "value": {
              "volume": 50,
              "unit": "Gb/month"
            }
          }
        ],
        "productSpecification": {
          "id": "ssp7-ty89",
          "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
          "name": "TMF Tariff Plan"
        }
      },
      "productOffering": {
        "id": "54gg-zza1",
        "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
        "name": "TMF Tarif Plan 25"
      }
    }
  ],
  "relatedParty": [
    {
      "name": "Jean Pontus",
      "role": "Buyer Contact",
      "id": "qsdd-9888",
      "@referredType": "Individual"
    }
  ]
}
```

```

    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  }
],
"@type": "Quote"
}

```

## Response

201

```

{
  "category": "BSBS Quote",
  "description": "instantSyncQuote Quote illustration",
  "effectiveQuoteCompletionDate": "2019-05-013T12:45:12.028Z",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "instantSyncQuote": true,
  "quoteItem": [
    {
      "id": "1",
      "action": "add",
      "quantity": 1,
      "product": {
        "@type": "Product",
        "productCharacteristic": [
          {
            "name": "Voice Bundle",
            "valueType": "string",
            "value": "unlimited"
          },
          {
            "name": "Data Bundle",
            "valueType": "object",
            "value": {
              "volume": 50,
              "unit": "Gb/month"
            }
          }
        ]
      },
      "productSpecification": {
        "id": "ssp7-ty89",
        "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
        "name": "TMF Tariff Plan"
      }
    },
    {
      "productOffering": {
        "id": "54gg-zza1",
        "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
        "name": "TMF Tarif Plan 25"
      }
    }
  ],
}

```

```
"quoteItemPrice": [
  {
    "description": "Tariff plan 25 fee",
    "name": "Tariff Plan 25 tariff",
    "priceType": "recurring",
    "recurringChargePeriod": "month",
    "price": {
      "taxRate": 16,
      "dutyFreeAmount": {
        "unit": "EUR",
        "value": 30
      },
      "taxIncludedAmount": {
        "unit": "EUR",
        "value": 34.8
      }
    },
    "priceAlteration": [
      {
        "applicationDuration": 0,
        "description": "Specific Discount for PerfectCustomer company",
        "name": "10% off",
        "priceType": "recurring",
        "priority": 1,
        "recurringChargePeriod": "month",
        "price": {
          "percentage": 10
        }
      }
    ]
  }
],
"relatedParty": [
  {
    "name": "Jean Pontus",
    "role": "Buyer Contact",
    "id": "qsdd-9888",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"validFor": {
```

```

    "endTime": "2019-05-06T12:45:12.033Z",
    "startTime": "2019-05-06T12:45:12.033Z"
  },
  "@type": "Quote"
}

```

## Patch quote

### PATCH /quote/{id}

#### Description

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

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

#### Patchable and Non Patchable Attributes

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

Patchable Attributes	Rule
agreement	
authorization	
billingAccount	
category	
contactMedium	
description	
effectiveQuoteCompletionDate	
expectedFulfillmentStartDate	
expectedQuoteCompletionDate	
externalId	
instantSyncQuote	
note	
productOfferingQualification	
quoteDate	
quoteItem	
quoteTotalPrice	
relatedParty	
requestedQuoteCompletionDate	
state	
validFor	
version	

Non Patchable Attributes	Rule
id	
href	
quoteDate	

### Additional Rules

The following pre-conditions apply for this operation.

Pre-conditions
When creating a quote (post) a quote item should not have the state field valued
When creating a quote (post) a quote item should not have the quoteItemAuthorization valued
When creating a quote (post) a quote item should not have the quoteItemPrice valued

### Usage Samples

Here's an example of a request for updating a quote - In this example buyer contact is changed and items 1 & 2 quantity is changed to 12.

Request
PATCH https://serverRoot/tmf-api/quoteManagement/v4/quote/12dd-78hg Content-Type: application/json-patch+json  <pre>[   {     "op": "replace",     "path": "/relatedParty/name?relatedParty.role=Buyer Contact",     "value": "Louise Pontus"   },   {     "op": "replace",     "path": "/quoteItem/quantity?id=2",     "value": 12   },   {     "op": "replace",     "path": "/quoteItem/quantity?id=3",     "value": 12   } ]</pre>
Response
200  <pre>{</pre>

```

"id": "12dd-78hg",
"href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
"category": "BSBS Quote",
"description": "Quote illustration",
"expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
"expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
"externalId": "QO-tr-89",
"instantSyncQuote": false,
"quoteDate": "2019-05-06T12:45:12.028Z",
"requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
"version": "1",
"agreement": [
  {
    "id": "7778-jj56",
    "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",
    "name": "Global Agreement",
    "@baseType": "Agreement",
    "@referredType": "MassAgreement"
  }
],
"billingAccount": [
  {
    "id": "BA4569",
    "href": "https://host:port/accountManagement/v4/billingAccount/BA4569"
  }
],
"contactMedium": [
  {
    "mediumType": "email",
    "preferred": true,
    "characteristic": {
      "emailAddress": "jean.pontus@PerfectCustomer.com",
    },
    "validFor": {
      "startDateTime": "2019-05-06T12:45:12.028Z"
    }
  }
],
"note": [
  {
    "id": "1",
    "author": "Jean Pontus",
    "date": "2019-05-06T12:45:12.031Z",
    "text": "This is a quote request following today call"
  }
],
"productOfferingQualification": [
  {
    "id": "22ds-ty55",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
  }
],
"quoteItem": [
  {
    "id": "1",

```

```
"action": "add",
"quantity": 12,
"state": "InProgress",
"product": {
  "@type": "Product",
  "productCharacteristic": [
    {
      "name": "Voice Bundle",
      "valueType": "string",
      "value": "unlimited"
    },
    {
      "name": "Data Bundle",
      "valueType": "object",
      "value": {
        "volume": 50,
        "unit": "Gb/month"
      }
    }
  ],
  "productSpecification": {
    "id": "ssp7-ty89",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
    "name": "TMF Tariff Plan"
  }
},
"productOffering": {
  "id": "54gg-zza1",
  "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
  "name": "TMF Tarif Plan 25"
}
},
{
  "id": "2",
  "action": "add",
  "quantity": 12,
  "state": "InProgress",
  "attachment": [
    {
      "attachmentType": "brochure",
      "description": "handset brochure",
      "mimeType": "pdf",
      "name": "Handset commercial brochure.pdf",
      "url": "www.tmf_hanset/contentMangement/brochure.pdf",
      "size": {
        "amount": 3.7,
        "units": "Mb"
      },
      "validFor": {
        "startDateTime": "2019-05-06T12:45:12.031Z"
      }
    }
  ]
},
"product": {
  "@type": "Product",
```



```

    "productSpecification": {
      "id": "qq45-ytr7",
      "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
      "name": "Handset",
      "version": "1"
    }
  },
  "productOffering": {
    "id": "z789-78ga",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
    "name": "TMF handset T9+"
  }
},
{
  "id": "3",
  "action": "add",
  "quantity": 1,
  "state": "InProgress",
  "productOffering": {
    "id": "ssdd-4dfd",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
    "name": "Gold Support"
  }
}
],
"relatedParty": [
  {
    "name": "Louise Pontus",
    "role": "Buyer Contact",
    "@referredType": "Individual"
  },
  {
    "name": "PerfectCustomer",
    "role": "Buyer organization",
    "id": "55",
    "@referredType": "Organization"
  },
  {
    "name": "Joe Doe",
    "role": "Seller Contact",
    "id": "45gh-gh89",
    "@referredType": "Individual"
  }
],
"state": "InProgress",
"@type": "Quote"
}

```

Here's an example of a request for updating a quote - In this example buyer contact is changed and items 1 & 2 quantity is changed to 12.

**Request**

PATCH https://serverRoot/tmf-api/quoteManagement/v4/quote/12dd-78hg  
Content-Type: application/merge-patch+json

```
{
  "id": "12dd-78hg",
  "category": "BSBS Quote",
  "description": "Quote illustration",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "externalId": "QO-tr-89",
  "instantSyncQuote": false,
  "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "version": "1",
  "quoteItem": [
    {
      "id": "1",
      "action": "add",
      "quantity": 12
    },
    {
      "id": "2",
      "action": "add",
      "quantity": 12
    },
    {
      "id": "3",
      "action": "add",
      "quantity": 1
    }
  ],
  "relatedParty": [
    {
      "name": "Louise Pontus",
      "role": "Buyer Contact",
      "@referredType": "Individual"
    },
    {
      "name": "PerfectCustomer",
      "role": "Buyer organization",
      "id": "55",
      "@referredType": "Organization"
    },
    {
      "name": "Joe Doe",
      "role": "Seller Contact",
      "id": "45gh-gh89",
      "@referredType": "Individual"
    }
  ],
  "state": "InProgress",
  "@type": "Quote"
}
```

}
<b>Response</b>
200 <pre>{   "id": "12dd-78hg",   "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",   "category": "BSBS Quote",   "description": "Quote illustration",   "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",   "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",   "externalId": "QO-tr-89",   "instantSyncQuote": false,   "quoteDate": "2019-05-06T12:45:12.028Z",   "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",   "version": "1",   "agreement": [     {       "id": "7778-jj56",       "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",       "name": "Global Agreement",       "@baseType": "Agreement",       "@referredType": "MassAgreement"     }   ],   "billingAccount": [     {       "id": "BA4569",       "href": "https://host:port/accountManagement/v4/billingAccount/BA4569"     }   ],   "contactMedium": [     {       "mediumType": "email",       "preferred": true,       "characteristic": {         "emailAddress": "jean.pontus@PerfectCustomer.com",       },       "validFor": {         "startDateTime": "2019-05-06T12:45:12.028Z"       }     }   ],   "note": [     {       "id": "1",       "author": "Jean Pontus",       "date": "2019-05-06T12:45:12.031Z",       "text": "This is a quote request following today call"     }   ] }</pre>

```
],
"productOfferingQualification": [
  {
    "id": "22ds-ty55",
    "href": "https://host:port/productOfferingQualificationManagement/v4/productOfferingQualification/22ds-ty55"
  }
],
"quoteItem": [
  {
    "id": "1",
    "action": "add",
    "quantity": 12,
    "state": "InProgress",
    "product": {
      "@type": "Product",
      "productCharacteristic": [
        {
          "name": "Voice Bundle",
          "valueType": "string",
          "value": "unlimited"
        },
        {
          "name": "Data Bundle",
          "valueType": "object",
          "value": {
            "volume": 50,
            "unit": "Gb/month"
          }
        }
      ]
    },
    "productSpecification": {
      "id": "ssp7-ty89",
      "href": "https://host:port/productCatalogManagement/v4/productSpecification/ssp7-ty89",
      "name": "TMF Tariff Plan"
    }
  },
  {
    "id": "54gg-zza1",
    "href": "https://host:port/productCatalogManagement/v4/productSpecification/54gg-zza1",
    "name": "TMF Tarif Plan 25"
  }
],
{
  "id": "2",
  "action": "add",
  "quantity": 12,
  "state": "InProgress",
  "attachment": [
    {
      "attachmentType": "brochure",
      "description": "handset brochure",
      "mimeType": "pdf",
      "name": "Handset commercial brochure.pdf",
      "url": "www.tmf_handset/contentMangement/brochure.pdf",
      "size": {
```

```
        "amount": 3.7,
        "units": "Mb"
    },
    "validFor": {
        "startDateTime": "2019-05-06T12:45:12.031Z"
    }
},
"product": {
    "@type": "Product",
    "productSpecification": {
        "id": "qq45-ytr7",
        "href": "https://host:port/productCatalogManagement/v4/productSpecification/qq45-ytr7",
        "name": "Handset",
        "version": "1"
    }
},
"productOffering": {
    "id": "z789-78ga",
    "href": "https://host:port/productCatalogManagement/v4/productOffering/z789-78ga",
    "name": "TMF handset T9+"
}
},
{
    "id": "3",
    "action": "add",
    "quantity": 1,
    "state": "InProgress",
    "productOffering": {
        "id": "ssdd-4dfd",
        "href": "https://host:port/productCatalogManagement/v4/productOffering/ssdd-4dfd",
        "name": "Gold Support"
    }
}
],
"relatedParty": [
    {
        "name": "Louise Pontus",
        "role": "Buyer Contact",
        "@referredType": "Individual"
    },
    {
        "name": "PerfectCustomer",
        "role": "Buyer organization",
        "id": "55",
        "@referredType": "Organization"
    },
    {
        "name": "Joe Doe",
        "role": "Seller Contact",
        "id": "45gh-gh89",
        "@referredType": "Individual"
    }
],
"state": "InProgress",
```

```
"@type": "Quote"  
}
```

## Delete quote

**DELETE** /quote/{id}

### Description

This operation deletes a quote entity.

### Usage Samples

Here's an example of a request for deleting a quote.

<b>Request</b>
DELETE https://serverRoottmf-api/quoteManagement/v4/quote/87g-8tt
<b>Response</b>
204

## API Notifications

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.

### Register listener

**POST** /hub

#### Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

**Behavior**

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 409 if request is not successful.

**Usage Samples**

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

Request
POST /api/hub Accept: application/json  {"callback": "http://in.listener.com"}
Response
201 Content-Type: application/json Location: /api/hub/42  {"id": "42", "callback": "http://in.listener.com", "query": null}

## Unregister listener

**DELETE** /hub/{id}

### Description

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

### Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 404 if the resource is not found.

### Usage Samples

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

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

## Publish Event to listener

**POST** /client/listener

### Description

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

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

### Behavior

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

### Usage Samples



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

<b>Request</b>
POST /client/listener Accept: application/json  { "event": { EVENT BODY }, "eventType": "EVENT_TYPE" }
<b>Response</b>
201

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

## Lifecycle management extension to quote

In Lifecycle Management, there is a requirement to distinguish between entities existing with different life cycle version numbers. The same quote may exist but with different version numbers.

It may be possible for a sale administrator to see all the existing versions or for a partner to see only a subset of all the existing versions.

The entity version number is not dependent on the version number of the API.

In order to distinguish resources representing entities running with different version numbers and accessible through the same API version, the following directive can be used `/id:(version=x)` and the version attribute is added to each entity.

```
{
  "id": "12dd-78hg",
  "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
  "category": "BSBS Quote",
  "description": "Quote illustration",
  "effectiveQuoteCompletionDate": "2019-05-013T12:45:12.028Z",
  "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
  "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "externalId": "QO-tr-89",
  "instantSyncQuote": false,
  "quoteDate": "2019-05-06T12:45:12.028Z",
  "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z",
  "version": "1",
  "agreement": [
    {
      "id": "7778-jj56",
      "href": "https://host:port/agreementManagement/v4/agreement/7778-jj56",
      "name": "Global Agrrement",
      "@baseType": "Agreement",
      "@referredType": "MassAgreement"
    }
  ],
  ....
}
```

Note that the quote resources in this case may have the same ID but may be distinguished by the inclusion of the version number in their ID i.e. `/Quote: 12dd-78hg (version=1.0)`, `/Quote: 12dd-78hg (version=2.0)`.

In the following examples, we will assume that two versions of the Quote exist. The Inactive and Active version have respectively version 1.0 and version 2.0.

## Query all versioned quote resources

Users with different roles may have access to different versions of the entities in the quote repository. For example, user A may have access to only the version 1.0 of the entities while user B may have access to version 1.0 and version 2.0.

Sales Admin user has access to all the versions of the resources while other users have by default access to only the latest version of the quote.

For example, the following request on the admin endpoint will return all the versioned resources matching a specific ID.

REQUEST
GET serverRoot/tmf-api/quoteManagement/v4/quote?id=12dd-78hg Accept: application/json
RESPONSE
200 Content-Type: application/json [ { "id": "12dd-78hg", "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg", "category": "BSBS Quote", "description": "Quote illustration", "effectiveQuoteCompletionDate": "2019-05-013T12:45:12.028Z", "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z", "expectedQuoteCompletionDate": "2019-05-14T12:45:12.028Z", "externalId": "QO-tr-89", "instantSyncQuote": false, "quoteDate": "2019-05-06T12:45:12.028Z", "requestedQuoteCompletionDate": "2019-05-14T12:45:12.028Z", "version": "1", ..... }, ]

```
{
  {
    "id": "12dd-78hg",
    "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
    "category": "BSBS Quote",
    "description": "Quote illustration",
    "effectiveQuoteCompletionDate": "2019-05-016T12:45:12.028Z",
    "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
    "expectedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
    "externalId": "QO-tr-89bis",
    "instantSyncQuote": false,
    "quoteDate": "2019-05-15T12:45:12.028Z",
    "requestedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
    "version": "2",
    .....
  }
}
```

## Query a specific versioned quote resource

In general, a non-sales admin API user only has visibility to the latest version number or visibility to a subset of versioned catalog resources.

It may be possible for an admin API user to retrieve a resource with a specific version number by using an ID and versioning filtering criteria.

REQUEST
GET serverRoot/tmf-api/quoteManagement/v4/quote?id=12dd-78hg&version=2.0 Accept: application/json
RESPONSE
200 Content-Type: application/json [

```

    {
      "id": "12dd-78hg",
      "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
      "category": "BSBS Quote",
      "description": "Quote illustration",
      "effectiveQuoteCompletionDate": "2019-05-016T12:45:12.028Z",
      "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",
      "expectedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
      "externalId": "QO-tr-89bis",
      "instantSyncQuote": false,
      "quoteDate": "2019-05-15T12:45:12.028Z",
      "requestedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
      "version": "2",
      .....
    }
  ]

```

## Query current version of a quote resource

By default, only the most current version is returned (for admin and non-admin).

REQUEST
GET serverRoot/tmf-api/quoteManagement/v4/quote/12dd-78hg Accept: application/json
RESPONSE
200 Content-Type: application/json <pre> {   "id": "12dd-78hg",   "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",   "category": "BSBS Quote",   "description": "Quote illustration",   "effectiveQuoteCompletionDate": "2019-05-016T12:45:12.028Z",   "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z", </pre>

```

"expectedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
"externalId": "QO-tr-89bis",
"instantSyncQuote": false,
"quoteDate": "2019-05-15T12:45:12.028Z",
"requestedQuoteCompletionDate": "2019-05-16T12:45:12.028Z",
"version": "2",
.....
}

```

## Create new version of a quote

POST is used to create a new version of a quote resource.

The constraint is that the version numbers for the resource having the same ID must differ.

REQUEST
POST serverRoot/tmf-api/quoteManagement/quote Content-type: application/json  <pre> {   "id": "12dd-78hg",   "category": "BSBS Quote",   "description": "Quote illustration",   "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",   "externalId": "QO-tr-89ter",   "instantSyncQuote": false,   "requestedQuoteCompletionDate": "2019-05-20T12:45:12.028Z",   "version": "3",   ..... } </pre>
RESPONSE
201 Content-Type: application/json  <pre> {   "id": "12dd-78hg",   "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",   "category": "BSBS Quote",   "description": "Quote illustration",   "expectedFulfillmentStartDate": "2019-05-21T12:45:12.028Z",   "expectedQuoteCompletionDate": "2019-05-20T12:45:12.028Z", </pre>

```

"externalId": "QO-tr-89ter",
"instantSyncQuote": false,
"quoteDate": "2019-05-18T12:45:12.028Z",
"requestedQuoteCompletionDate": "2019-05-20T12:45:12.028Z",
"version": "3",
    ....
}

```

## Modify an existing version of a catalog resource

By default, PATCH or PUT will be acting only on the latest version of a quote. For example, PATCH `/.../quote/12dd-78hg` will only update the quote 12dd-78hg at Version 2.0 (which is the most current).

To update a specific version of an entity the `(Version=X)` directive is added to the ID (i.e. `/id:(version=x)`).

Note that this capability is only available to API users having the proper authorizations to change the catalog entities with specific version numbers.

For example, to change the quote 12dd-78hg versioned at 1.0 we could use: `/quote/12dd-78hg (Version=1.0)`

### REQUEST

```

PATCH serverRoot/tmf-api/quoteManagement/v4/quote/12dd-78hg (Version=1.0)
Content-type: application/merge-patch+json
{
"category": "B2B Quote "
}

```

### RESPONSE

```

200
Content-Type: application/json
{
  "id": "12dd-78hg",
  "href": "https://host:port/quoteManagement/v4/quote/12dd-78hg",
  "category": "B2B Quote",
  "description": "Quote illustration",
  ...
  "version": "1",
  ....
}

```

```
},
```



## Acknowledgements

### VERSION History

Release Number	Date	Release led by:	Description
Release 1.0.0	04/15/2016	Pierre Gauthier TM Forum <a href="mailto:pgauthier@tmforum.org">pgauthier@tmforum.org</a>	First Release of Draft Version of the Document.
Release 1.1.0			Updated for use in the Paris Spec Jam – and rebranded.
Release 2.0.0	04/15/2016	Pierre Gauthier TM Forum <a href="mailto:pgauthier@tmforum.org">pgauthier@tmforum.org</a>  Mariano Belaunde Orange <a href="mailto:mariano.belaunde@orange.com">mariano.belaunde@orange.com</a>	Regenerated from the API Data Model – and rebranded.  +update to comply with API new pattern  + AP 935 feedbacks
Release 4.0.0		P. Gauthier / L.Robert	Schema-driven API with polymorphism pattern  Following Jira have been integrated: <ul style="list-style-type: none"> <li>• AP-1248</li> <li>• AP-1253</li> <li>• AP-1245</li> <li>• AP-1252</li> <li>• AP-1272</li> </ul> <p><i>Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0</i></p>

### Release History

Release Number	Date	Release led by:	Description
Release 17.5	10/15/2017	Ludovic Robert Orange <a href="mailto:ludovic.robert@orange.com">ludovic.robert@orange.com</a>	
Release 19.0		Ludovic Robert Orange <a href="mailto:ludovic.robert@orange.com">ludovic.robert@orange.com</a>	Version 4.0 of the API REST  <i>Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0</i>