

TM Forum Specification

Payment Management API User Guide

TMF676

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N/A

Introduction

The following document is the specification of the REST API for Payments. It includes the model definition as well as all available operations for payments and refunds.

This API allows the following operations

- Notify of a performed payment
- Retrieve a list of payments filtered by a given criteria
- Retrieve a single performed payment
- Notify of a performed refund
- Retrieve a list of refunds filtered by a given criteria
- Retrieve a single performed refund

SAMPLE USE CASES

This section includes a set of main use cases that can be performed with this API. Additional use cases can be generated using the operations and resources defined in this specification.

- Request a list of performed payments stored on a server filtered by different criteria
- Request a specific payment stored on a server
- Notify of a new performed payment
- Request a list of performed refunds stored on a server filtered by different criteria
- Request a specific refund stored on a server
- Notify of a new performed refund

Note that typically refunds that undo a payment will be applied to the same payment method that was used to perform it.

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 `BillingAccount` and `SettlementAccount` inheriting properties from the abstract `Account` 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 `Account` instances some may be instances of `BillingAccount` where other could be instances of `SettlementAccount`. 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 `AccountRef` 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 `BillingAccountRef` or `SettlementAccountRef`, 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.

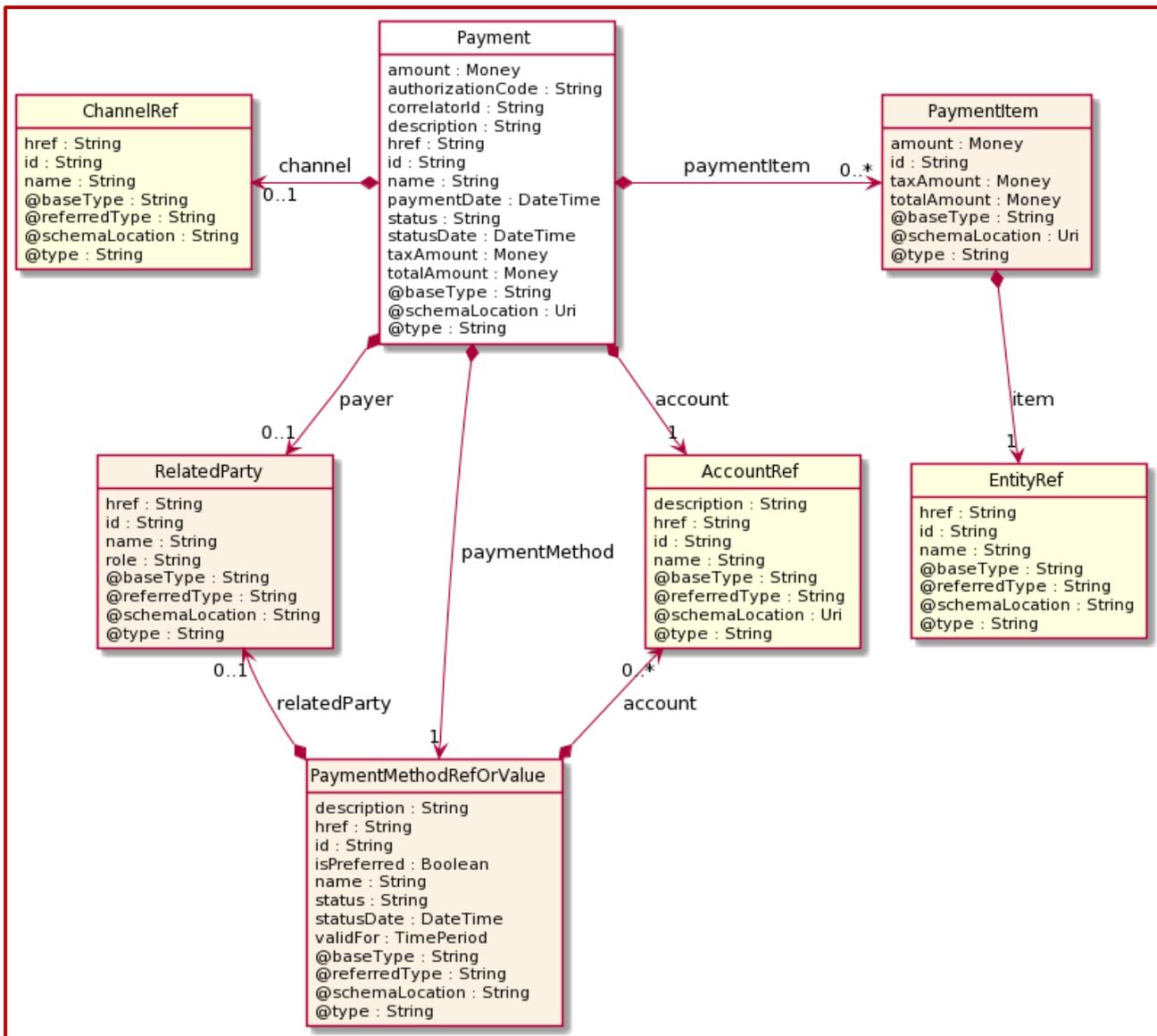
RESOURCE MODEL

Managed Entity and Task Resource Models

Payment resource

The Payment resource represents a performed payment. It contains both information about the payment and the payment method used to perform it.

Resource model



Field descriptionsPayment fields

account	An account reference (AccountRef). A account may be a party account or a financial account.
amount	A money (Money). Amount to be paid (net of taxes).
authorizationCode	A string. Authorization code retrieved from an external payment gateway that could be used for conciliation.
channel	A channel reference (ChannelRef). The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..
correlatorId	A string. Unique identifier in the client for the payment in case it is needed to correlate.
description	A string. Text describing the contents of the payment.
href	A string. Hypertext Reference of the Payment.
id	A string. Unique identifier of Payment.
name	A string. Screen name of the payment.
payer	A related party (RelatedParty). Related Entity reference. A related party defines party or party role linked to a specific entity.
paymentDate	A date time (DateTime). Date when the payment was performed.
paymentItem	A list of payment items (PaymentItem [*]). The paymentItem is the result of lettering process. It enables to assign automatically or manually part of incoming payment amount to a bill.
paymentMethod	A payment method ref or value (PaymentMethodRefOrValue). link to the resource that holds information about the payment mean used to complete the operation.
status	A string. Status of the payment.
statusDate	A date time (DateTime). Date when the status was recorded.
taxAmount	A money (Money). Tax applied.
totalAmount	A money (Money). Amount to be paid (including taxes).

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.

PaymentItem sub-resource

The paymentItem is the result of lettering process. It enables to assign automatically or manually part of incoming payment amount to a bill.

amount	A money (Money). Amount to be paid (net of taxes).
id	A string. Unique identifier of the payment Item.
item	An entity reference (EntityRef). Entity reference schema to be use for all entityRef class.
taxAmount	A money (Money). Tax applied.
totalAmount	A money (Money). Amount to be paid (including taxes).

PaymentMethodRefOrValue sub-resource

link to the resource that holds information about the payment mean used to complete the operation.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Friendly name assigned to the payment method.
href	A string. A resource URI pointing to the resource in the server that stores the detailed information. This is typically the resource url to retrieve individual details for the specific payment method.
id	A string. Unique Identifier within the server for the payment method.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.
description	A string. Text describing the contents of the payment method.
isPreferred	A boolean. If the method is the preferred one by the owner. Typically used when querying for the payment methods of a specific customer or account.
status	A string.
statusDate	A date time (DateTime).

account	A list of account references (AccountRef [*]). A account may be a party account or a financial account.
relatedParty	A related party (RelatedParty). Related Entity reference. A related party defines party or party role linked to a specific entity.
validFor	A time period. Date interval in which the payment method is valid.

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.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.
role	A string. Role played by the related party.

AccountRef relationship

Account reference. A account may be a party account or a financial account.

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

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..

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

name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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 relationship

Entity reference schema to be use for all entityRef class.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.

Json representation sample

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

```
{
  "id": "12345",
  "href": "https://host:port/paymentManagement/v4/payment/12345",
  "correlatorId": "67890",
  "paymentDate": "2020-01-08T12:06:38.230Z",
  "name": "Example",
  "description": "a payment example",
  "status": "done",
  "statusDate": "2020-01-08T12:06:38.230Z",
  "@type": "Payment",
  "amount": {
    "unit": "EUR",
    "value": 10
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 1.6
  }
}
```

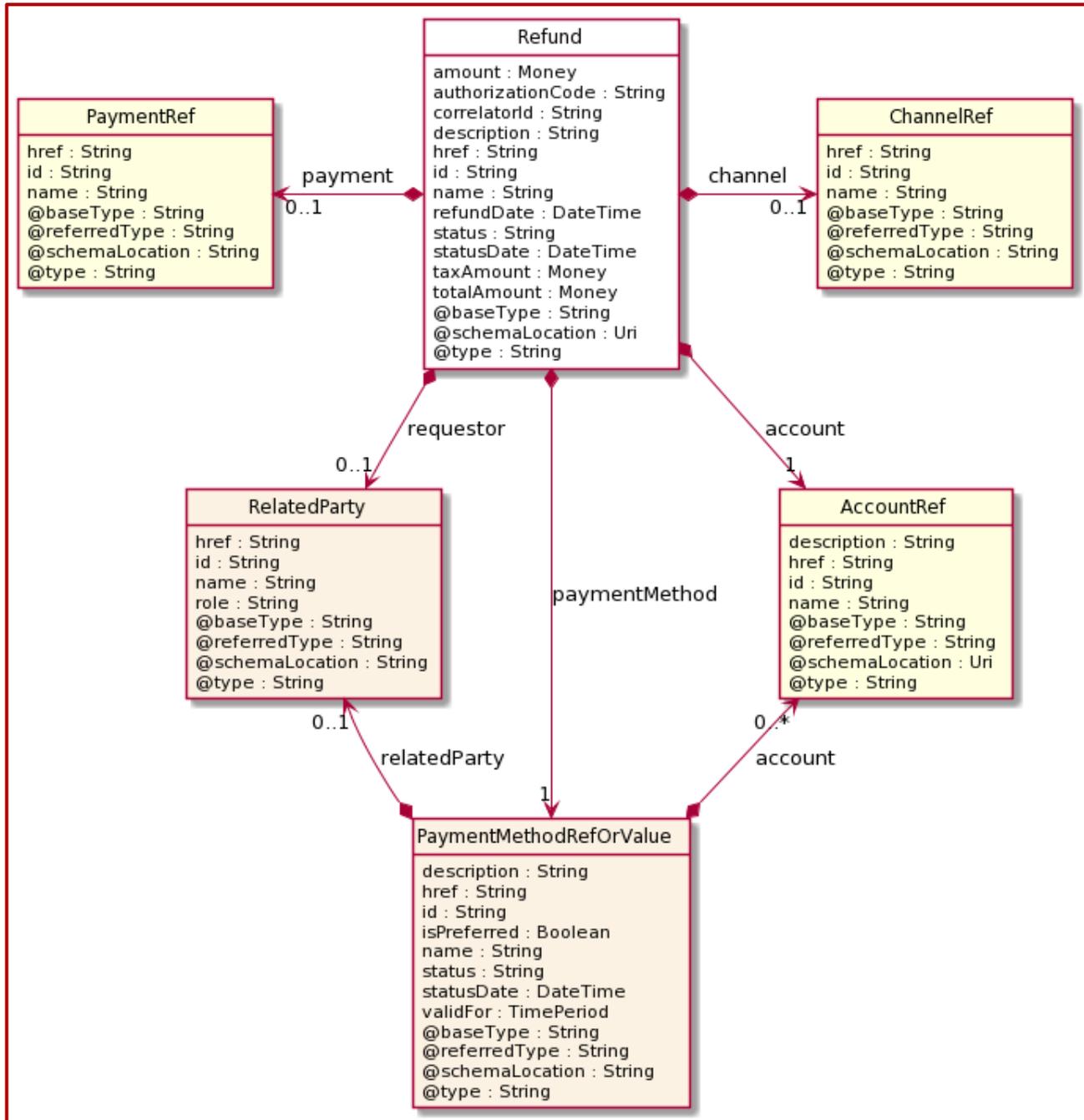
```
},
"totalAmount": {
  "unit": "EUR",
  "value": 11.6
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "44444",
  "href": "https://host:port/accountManagement/v4/account/44444",
  "name": "Telco fusion account",
  "description": "Michel Valette's telco account",
  "@referredType": "PartyAccount"
},
"paymentItem": [
  {
    "id": "1",
    "amount": {
      "unit": "EUR",
      "value": 6
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.96
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 6.96
    },
    "item": {
      "id": "1234",
      "@referredType": "CustomerBill",
      "href": "https://host:port/customerBillManagement/v4/customerBill/1234"
    }
  },
  {
    "id": "2",
    "amount": {
      "unit": "EUR",
      "value": 4
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.64
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 4.64
    },
    "item": {
      "id": "666",
      "href": "https://host:port/productOrdering/v4/productOrder/666",
      "@referredType": "ProductOrder"
    }
  }
]
```

```
    }
  }
},
"paymentMethod": {
  "id": "15492MIFB865654",
  "href": "https://host:port/paymentMethodManagement/v4/voucher/15492MIFB865654",
  "@referredType": "Voucher",
  "@type": "PaymentMethodRef"
},
"payer": {
  "id": "33333333333333",
  "href": "https://host:port/partyManagement/v4/individual/33333333333333",
  "name": "Jean Pontus",
  "role": "payer",
  "@referredType": "Individual"
}
}
```

Refund resource

The Refund resource represents a performed Refund. It contains both information about the refund and the payment method used to perform it.

Resource model



Field descriptions

Refund fields

- account An account reference (AccountRef). A account may be a party account or a financial account.
- amount A money (Money). Amount to be refunded (net of taxes).
- authorizationCode A string. Authorization code retrieved from an external payment gateway that could

	be used for conciliation.
channel	A channel reference (ChannelRef). The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..
correlatorId	A string. Unique identifier in the client for the refund in case it is needed to correlate.
description	A string. Text describing the contents of the refund.
href	A string. Hypertext Reference of the refund.
id	A string. Unique identifier of Refund.
name	A string. Screen name of the refund.
payment	A payment reference (PaymentRef). If an immediate payment has been done at the product order submission, the payment information are captured and stored (as a reference) in the order.
paymentMethod	A payment method ref or value (PaymentMethodRefOrValue). link to the resource that holds information about the payment mean used to complete the operation.
refundDate	A date time (DateTime). Date when the refund was performed.
requestor	A related party (RelatedParty). Related Entity reference. A related party defines party or party role linked to a specific entity.
status	A string. Status of the refund.
statusDate	A date time (DateTime). Date when the status was recorded.
taxAmount	A money (Money). Tax applied.
totalAmount	A money (Money). Amount to be paid (including taxes).

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.

PaymentMethodRefOrValue sub-resource

link to the resource that holds information about the payment mean used to complete the operation.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Friendly name assigned to the payment method.

href	A string. A resource URI pointing to the resource in the server that stores the detailed information. This is typically the resource url to retrieve individual details for the specific payment method.
id	A string. Unique Identifier within the server for the payment method.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.
description	A string. Text describing the contents of the payment method.
isPreferred	A boolean. If the method is the preferred one by the owner. Typically used when querying for the payment methods of a specific customer or account.
status	A string.
statusDate	A date time (DateTime).
account	A list of account references (AccountRef [*]). A account may be a party account or a financial account.
relatedParty	A related party (RelatedParty). Related Entity reference. A related party defines party or party role linked to a specific entity.
validFor	A time period. Date interval in which the payment method is valid.

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.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.
role	A string. Role played by the related party.

AccountRef relationship

Account reference. A account may be a party account or a financial account.

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

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). 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.

PaymentRef relationship

If an immediate payment has been done at the product order submission, the payment information are captured and stored (as a reference) in the order.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. A name for the payment.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and

relationships.

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

Json representation sample

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

```
{
  "id": "23456",
  "href": "https://host:port/paymentManagement/v4/refund/23456",
  "name": "Example of a Refund resource",
  "description": "Refund due to order 666 cancellation",
  "correlatorId": "67890",
  "refundDate": "2020-01-11T12:06:38.230Z",
  "status": "authorized",
  "statusCode": "2020-01-11T12:10:38.230Z",
  "@type": "Refund",
  "amount": {
    "unit": "EUR",
    "value": 4
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 0.64
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 4.64
  },
  "channel": {
    "id": "channel1",
    "name": "WEB Portal"
  },
  "account": {
    "id": "44444",
    "href": "https://host:port/accountManagement/v4/account/44444",
    "name": "Telco fusion account",
    "description": "Michel Valette's telco account",
    "@referredType": "PartyAccount"
  },
  "paymentMethod": {
    "description": "bank card",
    "@type": "bankCard",
    "brand": "MasterCard",
    "type": "Debit",
    "cardNumber": "0000000000000000",
    "expirationDate": "2025-01-01T12:00:00Z",
    "cvv": "123",
    "nameOnCard": "Mr Michel Valette",
    "bank": "Imaginary Bank.inc"
  },
  "payment": {
    "id": "12345",
```

```
"href": "https://host:port/paymentManagement/v4/payment/12345",
"name": "Some payment",
"description": "Payment related to this refund",
"@type": "PaymentRef"
},
"requestor": {
  "id": "1234567890",
  "href": "https://host:port/partyManagement/v4/individual/1234567890",
  "role": "premium client advisor",
  "name": "Jean-Claude Dusse",
  "@referredType": "Individual"
}
}
```

Notification Resource Models

8 notifications are defined for this API

Notifications related to Payment:

- PaymentCreateEvent
- PaymentAttributeValueChangeEvent
- PaymentStateChangeEvent
- PaymentDeleteEvent

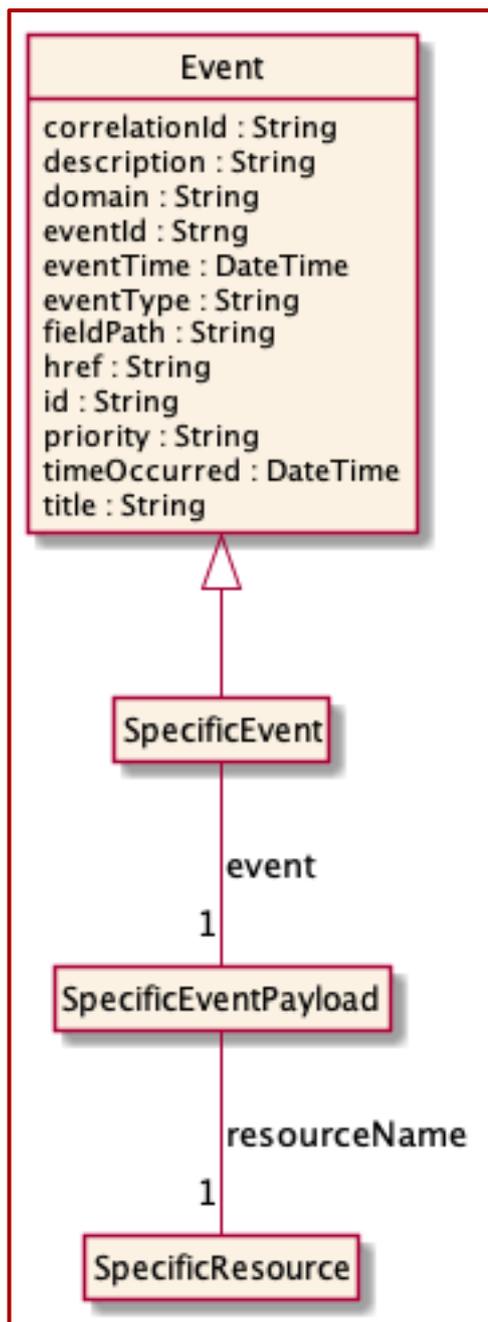
Notifications related to Refund:

- RefundCreateEvent
- RefundAttributeValueChangeEvent
- RefundStateChangeEvent
- RefundDeleteEvent

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).



Payment Create Event

Notification PaymentCreateEvent case for resource Payment

Json representation sample

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

```

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

```

```
"event": {
  "payment" :
    [-- SEE Payment RESOURCE SAMPLE --]
}
```

Payment Attribute Value Change Event

Notification PaymentAttributeValueChangeEvent case for resource Payment

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"PaymentAttributeValueChangeEvent",
  "event": {
    "payment" :
      [-- SEE Payment RESOURCE SAMPLE --]
  }
}
```

Payment State Change Event

Notification PaymentStateChangeEvent case for resource Payment

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"PaymentStateChangeEvent",
  "event": {
    "payment" :
      [-- SEE Payment RESOURCE SAMPLE --]
  }
}
```

Payment Delete Event

Notification PaymentDeleteEvent case for resource Payment

Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "PaymentDeleteEvent",
  "event": {
    "payment": {
      "-- SEE Payment RESOURCE SAMPLE --"
    }
  }
}
```

Refund Create Event

Notification RefundCreateEvent case for resource Refund

Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "RefundCreateEvent",
  "event": {
    "refund": {
      "-- SEE Refund RESOURCE SAMPLE --"
    }
  }
}
```

Refund Attribute Value Change Event

Notification RefundAttributeValueChangeEvent case for resource Refund

Json representation sample

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

```
{
  "eventId": "00001",
  "eventTime": "2015-11-16T16:42:25-04:00",
  "eventType": "RefundAttributeValueChangeEvent",
  "event": {
    "refund": {
      "-- SEE Refund RESOURCE SAMPLE --"
    }
  }
}
```

Refund State Change Event

Notification RefundStateChangeEvent case for resource Refund

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"RefundStateChangeEvent",
  "event": {
    "refund" :
      [-- SEE Refund RESOURCE SAMPLE --]
  }
}
```

Refund Delete Event

Notification RefundDeleteEvent case for resource Refund

Json representation sample

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

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"RefundDeleteEvent",
  "event": {
    "refund" :
      [-- SEE Refund RESOURCE SAMPLE --]
  }
}
```

API OPERATIONS

Remember the following Uniform Contract:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET Resource	GET must be used to retrieve a representation of a resource.
Create Entity	POST Resource	POST must be used to create a new resource

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

Notifications are also described in a subsequent section.

Operations on Payment

List payments

GET `/payment?fields=...&{filtering}`

Description

This operation lists payment 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

The example below includes the attributes within the Payment resource model that must be included in the query response.

Request
GET serverRoot/paymentManagement/v4/payment

Accept: application/json

Response

200

```
[
  {
    "id": "12345",
    "href": "https://host:port/paymentManagement/v4/payment/12345",
    "correlatorId": "632147",
    "paymentDate": "2020-01-08T12:06:38.230Z",
    "name": "Example #1",
    "status": "done",
    "statusDate": "2020-01-08T12:06:38.230Z",
    "@type": "Payment",
    "amount": {
      "unit": "EUR",
      "value": 10
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 1.6
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 11.6
    },
    "channel": {
      "id": "channel1",
      "name": "WEB Portal"
    },
    "account": {
      "id": "44444",
      "href": "https://host:port/accountManagement/v4/account/44444",
      "name": "Telco fusion account",
      "description": "Michel Valette's telco account",
      "@referredType": "PartyAccount"
    },
    "paymentItem": [
      {
        "id": "1",
        "amount": {
          "unit": "EUR",
          "value": 6
        },
        "taxAmount": {
          "unit": "EUR",
          "value": 0.96
        },
        "totalAmount": {
          "unit": "EUR",

```

```
    "value": 6.96
  },
  "item": {
    "id": "1234",
    "href": "https://host:port/customerBillManagement/v4/customerBill/1234",
    "@referredType": "CustomerBill"
  }
},
{
  "id": "2",
  "amount": {
    "unit": "EUR",
    "value": 4
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 0.64
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 4.64
  },
  "item": {
    "id": "666",
    "href": "https://host:port/productOrdering/v4/productOrder/666",
    "@referredType": "ProductOrder"
  }
}
],
"paymentMethod": {
  "id": "15492MIFB865654",
  "href": "https://host:port/paymentMethodManagement/v4/voucher/15492MIFB865654",
  "@referredType": "Voucher",
  "@type": "PaymentMethodRef"
},
"payer": {
  "id": "33333333333333",
  "href": "https://host:port/partyManagement/v4/individual/33333333333333",
  "name": "Jean Pontus",
  "role": "payer",
  "@referredType": "Individual"
}
},
{
  "id": "369258",
  "href": "https://host:port/paymentManagement/v4/payment/369258",
  "correlatorId": "789414454",
  "paymentDate": "2020-01-08T12:06:38.230Z",
  "name": "Example #2",
  "status": "done",
  "statusDate": "2020-01-08T12:06:38.230Z",
  "@type": "Payment",
  "amount": {
    "unit": "EUR",
```

```
"value": 7.24
},
"taxAmount": {
  "unit": "EUR",
  "value": 1.16
},
"totalAmount": {
  "unit": "EUR",
  "value": 8.4
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "44444",
  "href": "https://host:port/accountManagement/v4/account/44444",
  "name": "Telco fusion account",
  "description": "Michel Valette's telco account",
  "@referredType": "PartyAccount"
},
"paymentMethod": {
  "id": "15492MIFB865654",
  "href": "https://host:port/paymentMethodManagement/v4/voucher/15492MIFB865654",
  "@referredType": "Voucher",
  "@type": "PaymentMethodRef"
},
"payer": {
  "id": "33333333333333",
  "href": "https://host:port/partyManagement/v4/individual/33333333333333",
  "name": "Jean Pontus",
  "role": "payer",
  "@referredType": "Individual"
}
},
{
  "id": "987321462",
  "href": "https://host:port/paymentManagement/v4/payment/987321462",
  "paymentDate": "2020-01-15T17:42:06.120Z",
  "name": "Example #3",
  "status": "done",
  "statusDate": "2020-01-15T17:42:06.120Z",
  "@type": "Payment",
  "amount": {
    "unit": "EUR",
    "value": 27
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 4.32
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 31.32
  }
}
```

```

    },
    "channel": {
      "id": "channel1",
      "name": "WEB Portal"
    },
  },
  "account": {
    "id": "849897498",
    "href": "https://host:port/accountManagement/v4/account/849897498",
    "description": "John Doe personal account",
    "@referredType": "PartyAccount"
  },
  "paymentMethod": {
    "id": "78913013154HGDI65621",
    "brand": "visa",
    "bank": "tmForum Bank",
    "cardNumber": "9874651646546846516",
    "expirationDate": "2021-01-31T00:00:00.000Z",
    "cvv": "007",
    "nameOnCard": "MR JOHN DOE",
    "@type": "BankCard"
  },
  "payer": {
    "id": "1320154rvb654654",
    "href": "https://host:port/partyManagement/v4/individual/1320154rvb654654",
    "name": "John Doe",
    "role": "payer",
    "@referredType": "Individual"
  }
}
]

```

Here is an example of a request for retrieving a list of payment(s). The given criteria is the correlatorId.

Request
GET serverRoot/paymentManagement/v4/payment?correlatorId=632147 Accept: application/json
Response
200 [{ "id": "12345", "href": "https://host:port/paymentManagement/v4/payment/12345", "correlatorId": "632147",

```
"paymentDate": "2020-01-08T12:06:38.230Z",
"name": "Example #1",
"status": "done",
"statusDate": "2020-01-08T12:06:38.230Z",
"@type": "Payment",
"amount": {
  "unit": "EUR",
  "value": 10
},
"taxAmount": {
  "unit": "EUR",
  "value": 1.6
},
"totalAmount": {
  "unit": "EUR",
  "value": 11.6
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "44444",
  "href": "https://host:port/accountManagement/v4/account/44444",
  "name": "Telco fusion account",
  "description": "Michel Valette's telco account",
  "@referredType": "PartyAccount"
},
"paymentItem": [
  {
    "id": "1",
    "amount": {
      "unit": "EUR",
      "value": 6
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.96
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 6.96
    },
    "item": {
      "id": "1234",
      "href": "https://host:port/customerBillManagement/v4/customerBill/1234",
      "@referredType": "CustomerBill"
    }
  },
  {
    "id": "2",
    "amount": {
      "unit": "EUR",
      "value": 4
    }
  }
]
```

```

    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.64
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 4.64
    },
    "item": {
      "id": "666",
      "href": "https://host:port/productOrdering/v4/productOrder/666",
      "@referredType": "ProductOrder"
    }
  },
  "paymentMethod": {
    "id": "15492MIFB865654",
    "href": "https://host:port/paymentMethodManagement/v4/voucher/15492MIFB865654",
    "@referredType": "Voucher",
    "@type": "PaymentMethodRef"
  },
  "payer": {
    "id": "33333333333333",
    "href": "https://host:port/partyManagement/v4/individual/33333333333333",
    "name": "Jean Pontus",
    "role": "payer",
    "@referredType": "Individual"
  }
}
]

```

Here is an example of a request for retrieving a list of payment(s). The given criteria is a date range.

Request
GET serverRoot/paymentManagement/v4/payment?paymentDate.gt=2020-01-10&paymentDate.lt=2020-01-20 Accept: application/json
Response
200 [{ "id": "987321462", "href": "https://host:port/paymentManagement/v4/payment/987321462", "paymentDate": "2020-01-15T17:42:06.120Z",

```
"name": "Example #3",
"status": "done",
"statusDate": "2020-01-15T17:42:06.120Z",
"@type": "Payment",
"amount": {
  "unit": "EUR",
  "value": 27
},
"taxAmount": {
  "unit": "EUR",
  "value": 4.32
},
"totalAmount": {
  "unit": "EUR",
  "value": 31.32
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "849897498",
  "href": "https://host:port/accountManagement/v4/account/849897498",
  "description": "John Doe personal account",
  "@referredType": "PartyAccount"
},
"paymentMethod": {
  "id": "78913013154HGDI65621",
  "brand": "visa",
  "bank": "tmForum Bank",
  "cardNumber": "9874651646546846516",
  "expirationDate": "2021-01-31T00:00:00.000Z",
  "cvv": "007",
  "nameOnCard": "MR JOHN DOE",
  "@type": "BankCard"
},
"payer": {
  "id": "1320154rvb654654",
  "href": "https://host:port/partyManagement/v4/individual/1320154rvb654654",
  "name": "John Doe",
  "role": "payer",
  "@referredType": "Individual"
}
}
]
```

Retrieve payment

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

Description

This operation retrieves a payment 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

The example below includes the attributes within the Payment resource model that must be included in the query response.

Request
GET serverRoot/paymentManagement/v4/payment/12345 Accept: application/json
Response
200 <pre>{ "id": "12345", "href": "https://host:port/paymentManagement/v4/payment/12345", "correlatorId": "67890", "paymentDate": "2020-01-08T12:06:38.230Z", "name": "Example", "description": "a payment example", "status": "done", "statusDate": "2020-01-08T12:06:38.230Z", "@type": "Payment", "amount": { "unit": "EUR", "value": 10 }, "taxAmount": { "unit": "EUR", "value": 1.6 }, "totalAmount": { "unit": "EUR", "value": 11.6 }, "channel": {</pre>

```
"id": "channel1",
"name": "WEB Portal"
},
"account": {
  "id": "44444",
  "href": "https://host:port/accountManagement/v4/account/44444",
  "name": "Telco fusion account",
  "description": "Michel Valette's telco account",
  "@referredType": "PartyAccount"
},
"paymentItem": [
  {
    "id": "1",
    "amount": {
      "unit": "EUR",
      "value": 6
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.96
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 6.96
    },
    "item": {
      "id": "1234",
      "@referredType": "CustomerBill",
      "href": "https://host:port/customerBillManagement/v4/customerBill/1234"
    }
  },
  {
    "id": "2",
    "amount": {
      "unit": "EUR",
      "value": 4
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.64
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 4.64
    },
    "item": {
      "id": "666",
      "href": "https://host:port/productOrdering/v4/productOrder/666",
      "@referredType": "ProductOrder"
    }
  }
],
"paymentMethod": {
  "id": "15492MIFB865654",
```

```

    "href": "https://host:port/paymentMethodManagement/v4/voucher/15492MIFB865654",
    "@referredType": "Voucher",
    "@type": "PaymentMethodRef"
  },
  "payer": {
    "id": "33333333333333",
    "href": "https://host:port/partyManagement/v4/individual/33333333333333",
    "name": "Jean Pontus",
    "role": "payer",
    "@referredType": "Individual"
  }
}

```

Create payment

POST /payment

Description

This operation creates a payment entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a Payment, 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
totalAmount	
paymentMethod	
account	

Non Mandatory Attributes	Rule
amount	
authorizationCode	
channel	
correlatorId	
description	
name	
payer	
paymentDate	
paymentItem	
status	
statusDate	
taxAmount	

Usage Samples

The example below includes the attributes within the payment entity resource model that are mandatory to be included in the request when creating a new resource in the server.

Request

POST serverRoot/paymentManagement/v4/payment

Content-Type: application/json

```
{
  "name": "Example",
  "description": "a payment example",
  "@type": "Payment",
  "amount": {
    "unit": "EUR",
    "value": 10
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 1.6
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 11.6
  },
  "channel": {
    "id": "channel1",
    "name": "WEB Portal"
  },
  "account": {
    "id": "15463151",
    "href": "https://host:port/accountManagement/v4/account/15463151",
    "name": "Telco fusion account",
    "description": "Jean Pontus's telco account",
    "@referredType": "PartyAccount"
  },
  "paymentItem": [
    {
      "id": "1",
      "amount": {
        "unit": "EUR",
        "value": 6
      },
      "taxAmount": {
        "unit": "EUR",
        "value": 0.96
      },
      "totalAmount": {
        "unit": "EUR",
        "value": 6.96
      },
      "item": {
        "id": "1234",
        "href": "https://host:port/customerBillManagement/v4/customerBill/1234",

```

```

    "@referredType": "CustomerBill"
  }
},
{
  "id": "2",
  "amount": {
    "unit": "EUR",
    "value": 4
  },
  "taxAmount": {
    "unit": "EUR",
    "value": 0.64
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 4.64
  },
  "item": {
    "id": "666",
    "href": "https://host:port/productOrdering/v4/productOrder/666",
    "@referredType": "ProductOrder"
  }
}
],
"paymentMethod": {
  "@type": "Check",
  "description": "Check payment",
  "code": "56564655165446",
  "drawer": "Jean Pontus",
  "payee": "TMF Telco",
  "bank": "National Bank",
  "date": "2020-02-01T00:00:00.000Z"
},
"payer": {
  "id": "3333333333333333",
  "href": "https://host:port/partyManagement/v4/individual/3333333333333333",
  "name": "Jean Pontus",
  "role": "payer",
  "@referredType": "Individual"
}
}

```

Response

```

201
{
  "id": "12345",
  "href": "https://host:port/paymentManagement/v4/payment/12345",
  "paymentDate": "2020-01-08T12:06:38.230Z",
  "name": "Example",
  "description": "a payment example",

```

```
"status": "initialized",
"statusDate": "2020-01-08T12:06:38.230Z",
"@type": "Payment",
"amount": {
  "unit": "EUR",
  "value": 10
},
"taxAmount": {
  "unit": "EUR",
  "value": 1.6
},
"totalAmount": {
  "unit": "EUR",
  "value": 11.6
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "15463151",
  "href": "https://host:port/accountManagement/v4/account/15463151",
  "name": "Telco fusion account",
  "description": "Jean Pontus's telco account",
  "@referredType": "PartyAccount"
},
"paymentItem": [
  {
    "id": "1",
    "amount": {
      "unit": "EUR",
      "value": 6
    },
    "taxAmount": {
      "unit": "EUR",
      "value": 0.96
    },
    "totalAmount": {
      "unit": "EUR",
      "value": 6.96
    },
    "item": {
      "id": "1234",
      "href": "https://host:port/customerBillManagement/v4/customerBill/1234",
      "@referredType": "CustomerBill"
    }
  },
  {
    "id": "2",
    "amount": {
      "unit": "EUR",
      "value": 4
    },
    "taxAmount": {
```

```
    "unit": "EUR",
    "value": 0.64
  },
  "totalAmount": {
    "unit": "EUR",
    "value": 4.64
  },
  "item": {
    "id": "666",
    "href": "https://host:port/productOrdering/v4/productOrder/666",
    "@referredType": "ProductOrder"
  }
},
"paymentMethod": {
  "@type": "Check",
  "description": "Check payment",
  "code": "56564655165446",
  "drawer": "Jean Pontus",
  "payee": "TMF Telco",
  "bank": "National Bank",
  "date": "2020-02-01T00:00:00.000Z"
},
"payer": {
  "id": "33333333333333",
  "href": "https://host:port/partyManagement/v4/individual/33333333333333",
  "name": "Jean Pontus",
  "role": "payer",
  "@referredType": "Individual"
}
}
```

Operations on Refund

List refunds

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

Description

This operation list refund 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 is an example of a request for retrieving a list of refund(s) requested by a given requestor

Request
GET serverRoot/paymentManagement/v4/refund?requestor.id=1234567890 Accept: application/json
Response
200 <pre>[{ "id": "23456", "href": "https://host:port/paymentManagement/v4/refund/23456", "name": "Example of a Refund resource", "description": "Refund due to order 666 cancellation", "refundDate": "2020-01-11T12:06:38.230Z", "status": "authorized", "statusDate": "2017-05-11T12:10:38.230Z", "@type": "Refund", "amount": { "amount": 10, "units": "EUR" }, "taxAmount": { "amount": 1.6, "units": "EUR" }, "totalAmount": { "amount": 11.6, "units": "EUR" }, "channel": { "id": "channel1", "name": "WEB Portal" }, "account": { "id": "856654654", "href": "https://host:port/accountManagement/v4/account/856654654", "name": "Telco fusion account", "description": "John Doe\u2019s telco account", "@referredType": "PartyAccount" }, "paymentMethod": { "description": "bank card", "@type": "BankCard", "brand": "MasterCard", "type": "Debit", } }]</pre>

```
"cardNumber": "0000000000000000",
"expirationDate": "2025-01-01T12:00:00Z",
"cvv": "123",
"nameOnCard": "Mr Michel Valette",
"bank": "Imaginary Bank.inc"
},
"payment": {
  "id": "55555",
  "href": "https://host:port/paymentManagement/v4/payment/55555",
  "name": "Some payment",
  "description": "Payment related to this refund",
  "@type": "PaymentRef"
},
"requestor": {
  "id": "1234567890",
  "href": "https://host:port/partyManagement/v4/individual/1234567890",
  "role": "premium client advisor",
  "name": "Jean-Claude Dusse",
  "@referredType": "Individual"
}
},
{
  "id": "987634",
  "href": "https://host:port/paymentManagement/v4/refund/987634",
  "name": "Another example of a Refund resource",
  "description": "Compensation for downtime",
  "refundDate": "2020-01-11T12:06:38.230Z",
  "status": "confirmed",
  "statusDate": "2020-01-11T12:10:38.230Z",
  "@type": "Refund",
  "amount": {
    "amount": 4,
    "units": "EUR"
  },
  "taxAmount": {
    "amount": 0.3,
    "units": "EUR"
  },
  "totalAmount": {
    "amount": 4.3,
    "units": "EUR"
  },
  "channel": {
    "id": "channel4",
    "href": "https://host:port/channel/v4/channel/channel4",
    "name": "Call Center"
  },
  "account": {
    "id": "44444",
    "href": "https://host:port/accountManagement/v4/account/44444",
    "name": "Telco fusion account",
    "description": "Michel Valette's telco account",
    "@referredType": "PartyAccount"
  }
},
```

```

"paymentMethod": {
  "id": "696871684",
  "href": "https://host:port/accountManagement/v4/account/696871684",
  "name": "Refund using Bank account transfer",
  "description": "Customer's bank account",
  "@referredType": "BankAccountTransfer"
},
"requestor": {
  "id": "1234567890",
  "href": "https://host:port/partyManagement/v4/individual/1234567890",
  "role": "premium client advisor",
  "name": "Jean-Claude Dusse",
  "@referredType": "Individual"
}
}
]

```

Retrieve refund

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

Description

This operation retrieves a refund 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

The example below includes the attributes within the Refund resource model that must be included in the query response.

Request
GET serverRoot/paymentManagement/v4/refund/23456 Accept: application/json
Response
200 { "id": "23456", "href": "https://host:port/paymentManagement/v4/refund/23456", "name": "Example of a Refund resource", "description": "Refund due to order 666 cancellation", "refundDate": "2020-01-11T12:06:38.230Z", "status": "authorized",

```
"statusDate": "2017-05-11T12:10:38.230Z",
"@type": "Refund",
"amount": {
  "amount": 10,
  "units": "EUR"
},
"taxAmount": {
  "amount": 1.6,
  "units": "EUR"
},
"totalAmount": {
  "amount": 11.6,
  "units": "EUR"
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "856654654",
  "href": "https://host:port/accountManagement/v4/account/856654654",
  "name": "Telco fusion account",
  "description": "John Doe\u2019s telco account",
  "@referredType": "PartyAccount"
},
"paymentMethod": {
  "description": "bank card",
  "@type": "BankCard",
  "brand": "MasterCard",
  "type": "Debit",
  "cardNumber": "0000000000000000",
  "expirationDate": "2025-01-01T12:00:00",
  "cvv": "123",
  "nameOnCard": "Mr Michel Valette",
  "bank": "Imaginary Bank.inc"
},
"payment": {
  "id": "55555",
  "href": "https://host:port/paymentManagement/v4/payment/55555",
  "name": "Some payment",
  "description": "Payment related to this refund",
  "@type": "PaymentRef"
},
"requestor": {
  "id": "1234567890",
  "href": "https://host:port/partyManagement/v4/individual/1234567890",
  "role": "premium client advisor",
  "name": "Jean-Claude Dusse",
  "@referredType": "Individual"
}
}
```

Create refund**POST /refund****Description**

This operation creates a refund entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a Refund, 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
totalAmount	
paymentMethod	
account	

Non Mandatory Attributes	Rule
amount	
authorizationCode	
channel	
correlatorId	
description	
name	
payment	
refundDate	
requestor	
status	
statusDate	
taxAmount	

Usage Samples

The example below includes the attributes within the refund entity resource model that are mandatory to be included in the request when creating a new resource in the server.

Request
POST serverRoot/paymentManagement/v4/refund Content-Type: application/json <pre>{ "name": "Example of a Refund resource", "description": "Refund due to order 666 cancellation", "@type": "Refund",</pre>

```
"amount": {
  "amount": 10,
  "units": "EUR"
},
"taxAmount": {
  "amount": 1.6,
  "units": "EUR"
},
"totalAmount": {
  "amount": 11.6,
  "units": "EUR"
},
"channel": {
  "id": "channel1",
  "name": "WEB Portal"
},
"account": {
  "id": "856654654",
  "href": "https://host:port/accountManagement/v4/account/856654654",
  "name": "Telco fusion account",
  "description": "John Doe\u2019s telco account",
  "@referredType": "PartyAccount"
},
"paymentMethod": {
  "description": "bank card",
  "@type": "BankCard",
  "brand": "MasterCard",
  "type": "Debit",
  "cardNumber": "0000000000000000",
  "expirationDate": "2025-01-01T12:00:00",
  "cvv": "123",
  "nameOnCard": "Mr Michel Valette",
  "bank": "Imaginary Bank.inc"
},
"payment": {
  "id": "55555",
  "href": "https://host:port/paymentManagement/v4/payment/55555",
  "name": "Some payment",
  "description": "Payment related to this refund",
  "@type": "PaymentRef"
},
"requestor": {
  "id": "1234567890",
  "href": "https://host:port/partyManagement/v4/individual/1234567890",
  "role": "premium client advisor",
  "name": "Jean-Claude Dusse",
  "@referredType": "Individual"
}
}
```

Response

```
201
{
  "id": "23456",
  "href": "https://host:port/paymentManagement/v4/refund/23456",
  "name": "Example of a Refund resource",
  "description": "Refund due to order 666 cancellation",
  "refundDate": "2020-01-11T12:06:38.230Z",
  "status": "authorized",
  "statusCode": "2017-05-11T12:10:38.230Z",
  "@type": "Refund",
  "amount": {
    "amount": 10,
    "units": "EUR"
  },
  "taxAmount": {
    "amount": 1.6,
    "units": "EUR"
  },
  "totalAmount": {
    "amount": 11.6,
    "units": "EUR"
  },
  "channel": {
    "id": "channel1",
    "name": "WEB Portal"
  },
  "account": {
    "id": "856654654",
    "href": "https://host:port/accountManagement/v4/account/856654654",
    "name": "Telco fusion account",
    "description": "John Doe\u2019s telco account",
    "@referredType": "PartyAccount"
  },
  "paymentMethod": {
    "description": "bank card",
    "@type": "BankCard",
    "brand": "MasterCard",
    "type": "Debit",
    "cardNumber": "0000000000000000",
    "expirationDate": "2025-01-01T12:00:00",
    "cvv": "123",
    "nameOnCard": "Mr Michel Valette",
    "bank": "Imaginary Bank.inc"
  },
  "payment": {
    "id": "55555",
    "href": "https://host:port/paymentManagement/v4/payment/55555",
    "name": "Some payment",
    "description": "Payment related to this refund",
    "@type": "PaymentRef"
  },
  "requestor": {
    "id": "1234567890",
```

```
"href": "https://host:port/partyManagement/v4/individual/1234567890",  
"role": "premium client advisor",  
"name": "Jean-Claude Dusse",  
"@referredType": "Individual"  
}  
}
```

API NOTIFICATIONS

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

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

Register listener

POST /hub

Description

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

Behavior

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

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

Usage Samples

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

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

Unregister listener

DELETE /hub/{id}

Description

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

Behavior

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

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

Usage Samples

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

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

Publish Event to listener

POST /client/listener

Description

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

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

Behavior

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

Usage Samples

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

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

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

Acknowledgements

Version History

Version Number	Date Modified	Modified by:	Description of changes
4.0.0	29-Jul-2020	Alan Pope	Final edits prior to publication

Release History

Release Status	Date	Release led by:	Description
Release 0.1	05-Jun-2017	Guillermo Martínez (Telefónica)	First Release of Draft Version of the Document.
Release 1.0.0	17-Nov-2017	Guillermo Martínez (Telefónica)	Final Release of the document
Release 18.0.0 Version 1.0.1	19-Feb-2018	Adrienne Walcott	Formatting/style edits prior to publishing
Release 18.0.1 Version 1.0.2	02-May-2018	Adrienne Walcott	Updated to reflect TM Forum Approved status. Updated to TM Forum new brand guidelines
Pre-production	29-Jul-2020	Ludovic Robert - Orange Grégoire Laurent - Orange	Updated based on schema-library and Design Guideline v4 patterns