**TM Forum Specification**

Payment Management API  
REST Specification

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Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100  
Parsippany, NJ 07054, USA

Tel No.  +1 973 944 5100

Fax No.  +1 973 944 5110

TM Forum Web Page: [www.tmforum.org](http://www.tmforum.org/)

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# 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.

# RESOURCE MODEL

## PAYMENT RESOURCE

The Payment resource represents a performed payment. It contains both information about the payment and the payment method used to perform it. That information could be used for reconciliation purposes with payment gateways, to centralize information of several payment gateways in a single place, to keep track of payment methods used in case refunds must be made, etc.

**Resource model**



**Figure 1 Payment resource model**

### Field Descriptions

| Element | Type | Mandatory in API messages | Description |
| --- | --- | --- | --- |
| id | string | Yes in response | Unique Identifier within the server for the payment. |
| href | string | Yes in response | 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 |
| @type | string | No | Type of payment in case it is polymorphic |
| @schemaLocation | string | No | location where to retrieve the schema of the payment or any of its spezializations in case it is polymorphic |
| correlatorId | string | No | Unique identifier in the client for the payment in case it is needed to correlate. |
| name | string | No | Screen name of the payment |
| paymentDate | date-time | Yes in response | Date when the payment was performed |
| authorizationCode | string | No | Authorization code retrieved from an external payment gateway that could be used for conciliation |
| description | string | No | Text describing the contents of the payment |
| amount | MoneyType | No | Amount to be paid (net of taxes) |
| taxAmount | MoneyType | No | Tax applied |
| totalAmount | MoneyType | Yes | Amount to be paid (including taxes) |
| channel | ChannelRef type | No | Channel used for the payment |
| account | AccountRef type | No | Account where the payment is charged |
| paymentItem | array of PaymentItem type | No | Elements that were paid with the payment. It could be a bill, an order, debt… |
| paymentMethod | PaymentMethod type | Yes | payment method used to perform the payment |
| status | string | Yes in response | Status of the payment |
| statusDate | string | No | Date when the status was recorded |
| payer | RelatedPartyRef type | No | A reference to the individual that is performing the payment |

Field Descriptions

**PaymentItem**: A payment can be made in the context of an order, a recharge, for ongoing bills, for administrative fee (e.g. re-sending a paper copy of a bill), damaged device penalty, and more. Most times each payment will only contain one payment item (a bill, a recharge, an order…). However, there can be use cases with multiple item (e.g. March bill was $45, April bill was $75, covered by a single payment of $115). This structure indicates how much was spent on each particular item and references them so they can be queried if more information is necessary.

This information can be stored in case a payment is backed out (e.g. due to chargeback from a credit card company). The system (or manual procedure) will find the entity impacted by the payment withdrawal and determine what needs to happen (if it was an order maybe the order process needs to be blocked, if it was a recharge maybe the prepaid balance needs to be adjusted down, etc.). If a refund or any other further action is needed, this array of payment items contains the necessary information to perform it.

|  |  |  |  |
| --- | --- | --- | --- |
| Field |  | Description | |
| amount | MoneyType | | Amount without taxes |
| taxAmount | MoneyType | | Taxes amount |
| totalAmount | MoneyType | | Amount including taxes |
| item | EntityRefType | | Reference where to get more information about the entity with another API call |

**AccountRef**: Reference to a telco account. It is used to reference the account that owns the payment. Also, it is used as a payment method type, as accounts could be billed to pay for goods.

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the account |
| href | String | Reference to a resource in the server where to perform actions on the account. Most likely the given uri will be called using a different API |
| @referredType | String | Type of the referred account (e.g.:Financial account) |
| name | String | Account name |
| description | String | Description of the associated account |

**ChannelRefOrValue**: link to the resource that holds information about the channel used to perform the payment operation or just the channel itself with just its name

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier for the channel entity |
| href | String | A resource URI pointing to the resource in the OB that stores the channel information |
| @referredType | String | Type of channel |
| name | String | Name of the channel |
| description | String | Description of the channel |

**EntityRef**: Reference to an external entity. It is used to reference something that was paid with this payment.

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the entity in its environment |
| href | String | Reference to a resource in the server where to perform actions on the entity. Most likely the given uri will be called using a different API |
| @referredType | String | Referred entity type (e.g.: bill, product, account, etc.) |
| name | String | Entity name |
| description | String | Entity description |

**PaymentMethodRefOrValue**: Reference or value of the method used to process the payment. Mirrors the current definition of the Payment Methods Management API

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the payment method |
| href | String | Reference to a resource in the server where to perform actions on the payment method. The given uri will be called using the payment methods API |
| name | String | Friendly name assigned to the payment method |
| description | String | Description of the associated payment method |
| validFor | TimePeriod | Period the payment method is valid |
| account | AccountRef | Accounts that are linked to the payment method |
| preferred | boolean | Defines whether this method is the preferred one of the owner |
| relatedParty | relatedPartyRef | Reference to the customer or party that owns that payment method or can use it |
| @type | String | Type of payment method |
| @schemaLocation | String | Location where to retrieve a schema of the payment method |
| authorizationCode | String | Authorization code provided by a financial institution. Typically, this would be populated for recurring payments using the method, as payments have an authorization code of their own. |
| status | string | Status of the payment method |
| statusDate | date-time | Time the payment method changed |
| details | Object | Definition of the payment method. Its content depends on the type field |

**RelatedPartyRef**: link to the resource that holds information about the individual that performs the payment

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier for the party entity |
| href | String | A resource URI pointing to the resource in the OB that stores the party entity information |
| @referredType | String | Type of the party (customer, user, agent) |
| role | String | Role of the party |
| name | String | Name of the party |

### Json Representation Sample

|  |
| --- |
| {  "id": "12345",  "href": "{paymentsAPI}/payment/12345",  "correlatorId": "67890",  "paymentDate": "2017-05-08T12:06:38.230Z",  "authorizationCode": "xxxxxxxxxxxxxxxxx",  "name": "Example",  "description": "an example payment",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountsAPI}/accounts/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 6,  "units": "EUR"  },  "taxAmount": {  "amount": 0.96,  "units": "EUR"  },  "totalAmount": {  "amount": 6.96,  "units": "EUR"  },  "item": {  "id": "1234",  "@referredType": "bill",  "href": "{billingAPI}/accounts/44444/bills/1234"  }  },  {  "amount": {  "amount": 4,  "units": "EUR"  },  "taxAmount": {  "amount": 0.64,  "units": "EUR"  },  "totalAmount": {  "amount": 4.64,  "units": "EUR"  },  "item": {  "@referredType": "product",  "id": "9999",  "href": "{catalogAPI}/products/9999"  }  }  ],  "paymentMethod": {  "@type": "voucher",  "details": {  "code": "H%3845",  "description": "Get 300MB free",  "value": [{  "amount": 11.60,  "units": "EUR"  }]  }  },  "status": "pendingAuthorization",  "statusDate": "2017-05-08T12:06:38.230Z",  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "name": "somebody",  "@referredType": "individual"  }  } |

## REFUND RESOURCE



**Figure 2 Refund resource model**

### Field Descriptions

| Element | Type | Mandatory in API messages | Description |
| --- | --- | --- | --- |
| id | string | Yes in response | Unique Identifier within the server for the refund. |
| correlatorId | string | No | Unique identifier in the client for the refund in case it is needed to correlate. |
| @type | string | No | Type of refund, in case it is polymorphic |
| @schemaLocation | string | No | Location where to retrieve a schema of the refund |
| name | string | No | Screen name of the refund |
| href | string | Yes in response | 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 refund |
| refundDate | date-time | Yes in response | Date when the refund was performed |
| authorizationCode | string | No | Authorization code retrieved from an external payment gateway that can be used for conciliation |
| description | string | No | Text describing the contents of the refund |
| amount | MoneyType | No | Amount to be refunded (net of taxes) |
| taxAmount | MoneyType | No | Tax applied |
| totalAmount | MoneyType | Yes | Amount to be refunded (including taxes) |
| channel | ChannelRef type | No | Channel used for the refund |
| account | AccountRef type | No | Account where the refund is associated |
| paymentMethod | PaymentMethod type | Yes | Payment method where the amount will be refunded |
| relatedPayment | PaymentRef type | No | Payment related to this refund (e.g.: in case a refund is used to compensate for a previous payment) |
| reason | string | No | Reason for the refund |
| status | string | Yes in response | Status of the refund |
| statusDate | string | No | Date when the status was recorded |
| relatedParty | RelatedPartyRef type | No | references to the customer being refunded, the agent or individual that is performing the refund… |

**Field Descriptions**

**AccountRef**: Reference to a telco account. It is used to reference the account associated with the refund.

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the account |
| href | String | Reference to a resource in the server where to perform actions on the account. Most likely the given uri will be called using a different API |
| @referredType | String | Type of the referred account (e.g.: financial account) |
| name | String | Account name |
| description | String | Description of the associated account |

**ChannelRefOrValue**: link to the resource that holds information about the channel used to perform the refund operation or just the channel itself with just its name

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier for the channel entity |
| href | String | A resource URI pointing to the resource in the OB that stores the channel information |
| @referredType | String | Type of channel |
| name | String | Name of the channel |
| description | String | Description of the channel |

**PaymentMethodRefOrValue**: Reference or value of the method used to process the payment. Mirrors the current definition of the Payment Methods Management API

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the payment method |
| href | String | Reference to a resource in the server where to perform actions on the payment method. The given uri will be called using the payment methods API |
| name | String | Friendly name assigned to the payment method |
| description | String | Description of the associated payment method |
| validFor | TimePeriod | Period the payment method is valid |
| account | AccountRef | Accounts that are linked to the payment method |
| preferred | boolean | Defines whether this method is the preferred one of the owner |
| relatedParty | relatedPartyRef | Reference to the customer or party that owns that payment method or can use it |
| @type | String | Type of payment method |
| authorizationCode | String | Authorization code provided by a financial institution. Typically, this would be populated for recurring payments using the method, as payments have an authorization code of their own. |
| status | string | Status of the payment method |
| statusDate | date-time | Time the payment method changed |
| details | Object | Definition of the payment method. Its content depends on the type field |

**RelatedPartyRef**: link to the resource that holds information about the individual that performs the payment

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier for the party entity |
| href | String | A resource URI pointing to the resource in the OB that stores the party entity information |
| @referredType | String | Type of the party (customer, user, agent) |
| role | String | Role of the party |
| name | String | Name of the party |

**PaymentRef**: Reference to a payment. It is used to reference a payment that is being compensated with the refund. The reference can be used to request details of the payment or perform actions on it.

|  |  |  |
| --- | --- | --- |
| Field | Type | Description |
| id | String | Unique identifier of the payment |
| href | String | Reference to a resource in the server where to perform actions on the payment using the payments API. |
| @referredPayment | String | Type of referred payment, in case it is polymorphic |
| name | String | payment name |
| description | String | Description of the associated payment |

### Json Representation Sample

|  |
| --- |
| {  "id": "12345",  "href": "{paymentsApi}/refund/67890",  "correlatorId": "67890",  "name": "Example refund",  "refundDate": "2017-05-11T12:06:38.230Z",  "authorizationCode": "xxxxxxxxxxxxxxxxxx",  "description": "Refund because the order 666 was cancelled",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountManagementAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "id": "88888",  "href": "{paymentMethodsAPI}/paymentMethod/88888",  "description": "bank card",  "validFor": {  "startDateTime": "2010-03-25T12:00:00",  "endDateTime": "2010-04-25T12:00:00"  },  "account": {  "id": "99999",  "href": "{customerManagementAPI}/customerAccount/99999",  "name": "John Doe’s account",  "description": "John Doe’s telco account"  },  "@type": "bankCard",  "details": {  "brand": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2019-03-25T12:00:00",  "cvv": "000",  "nameOnCard": "John Doe",  "bank": "Fictitious Bank.inc"  }  },  "relatedPayment": {  "id": "55555",  "href": "{paymentsAPI}/payments/55555",  "name": "Some payment",  "description": "John Doe’s last payment"  },  "reason": "orderCancelled",  "status": "pendingAuthorization",  "statusDate": "2017-05-11T12:06:38.230Z",  "relatedParty": {  "id": "1234567890"  "href": "{partiesAPI}/party/1234567890",  "role": "requestor",  "@referredType": "agent",  "name": "somebody"  }  } |

## Notification Resources Models

The following notifications are defined for this API

Notifications related to Payment:

- PaymentCreationNotification  
 - PaymentModificationNotification

Notifications related to User Refund:

- RefundCreationNotification

### Payment Creation Notification

Notification sent when a new payment has been performed.

**Json representation sample**

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

|  |
| --- |
| {  "eventId":"00001",  "eventTime":"2016-11-16T16:42:25-04:00",  "eventType":"PaymentCreationNotification",  "event": {  "payment" :  {-- SEE Payment RESOURCE SAMPLE --}  }  } |

### Payment Change Notification

Notification sent when the status of a payment has been modified.

**Json representation sample**

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

|  |
| --- |
| {  "eventId": "00001",  "eventTime": "2016-11-16T16:42:25-04:00",  "eventType": "PaymentChangeNotification",  "event": {  "payment":  {-- SEE Payment RESOURCE SAMPLE --}  }  } |

### Refund Creation Notification

Notification sent when a payment refund has been performed.

**Json representation sample**

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

|  |
| --- |
| {  "eventId": "00001",  "eventTime": "2016-11-16T16:42:25-04:00",  "eventType": "RefundCreationNotification",  "event": {  "refund":  {-- SEE Refund RESOURCE SAMPLE --}  }  } |

# API OPERATION TEMPLATES

For every single of operation on the entities use the following templates and provide sample REST requests and responses.

Remember that the following Uniform Contract rules must be used:

|  |  |  |
| --- | --- | --- |
| Operation on Entities | Uniform API Operation | Description |
| Query Entities | GET Resource | GET must be used to retrieve a representation of a resource. |
| Create Entity | POST Resource | POST must be used to create a new resource |
| Partial Update of an Entity | PATCH Resource | PATCH must be used to partially update a resource  For reconciliation processes |
| Complete Update of an Entity | PUT Resource | PUT must be used to completely update a resource identified by its resource URI |
| Remove an Entity | DELETE Resource | DELETE must be used to remove a resource |

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

## **PAYMENT RESOURCE**

GET /paymentManagement/v1/payment

Description:

The Application invokes this operation to retrieve a list of payments from the server.

The request could include filters to retrieve only a specific subset of all the payments stored in the server such as filtering by type or validity date.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Payment information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/paymentManagement/v1/payment  Content-type: application/json  X-Total-Count: 2 |
| RESPONSE |
| 200  Content-Type: application/json  [{  "id": "12345",  "correlatorId": "67890",  "href": "{paymentManagementAPI}/payment/12345",  "paymentDate": "2017-05-08T12:06:38.230Z",  "name": "Example",  "description": "an example payment",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountManagementAPI}/accounts/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 6,  "units": "EUR"  },  "taxAmount": {  "amount": 0.96,  "units": "EUR"  },  "totalAmount": {  "amount": 6.96,  "units": "EUR"  },  "item": {  "@referredType": "bill",  "id": "1234",  "href": "{billingAPI}/account/44444/bill/1234"  }  },  {  "totalAmount": {  "amount": 4.64,  "units": "EUR"  },  "amount": {  "amount": 4,  "units": "EUR"  },  "taxAmount": {  "amount": 0.64,  "units": "EUR"  },  "item": {  "@referredType": "product",  "id": "9999",  "href": "{catalogAPI}/product/9999"  }  }],  "paymentMethod": {  "@type": "voucher",  "details": {  "id": "12345",  "code": "H%3845",  "description": "Get 300MB free",  "value": [{  "amount": 11.60,  "units": "EUR"  }]  }  },  "status": "pendingAuthorization",  "statusDate": "2017-05-08T12:06:38.230Z",  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "role": "customer",  "name": "somebody"  }  },  {  "id": "67890",  "correlatorId": "333333",  "href": "{paymentManagementAPI}/payment/67890",  "paymentDate": "2017-05-10T12:06:38.230Z",  "name": "second example",  "description": "a second example payment",  "amount": {  "amount": 5,  "units": "EUR"  },  "taxAmount": {  "amount": 0.8,  "units": "EUR"  },  "totalAmount": {  "amount": 5.8,  "units": "EUR"  },  "channel": {  "id": "channel2",  "href": "<http://server:port/channels/channel2>",  "name": "mobile app"  },  "account": {  "id": "55555",  "href": "{accountManagementAPI}/account/55555",  "name": "Telco fusion account",  "description": "Jane Doe’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 5,  "units": "EUR"  },  "taxAmount": {  "amount": 0.8,  "units": "EUR"  },  "totalAmount": {  "amount": 5.8,  "units": "EUR"  },  "item": {  "@referredType": "product",  "id": "1234",  "href": "{catalogAPI}/product/687954"  }  }],  "paymentMethod": {  "@type": "bankCard",  "details": {  "network": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2020-10-10T12:00:00",  "cvv": "000",  "nameOnCard": "Jane Doe",  "bank": "Fictitious Bank.inc"  }  }],  "status": "authorized",  "statusDate": "2017-05-11T12:06:38.230Z",  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "role": "customer",  "name": "somebody"  }  }] |

The example below shows the case where the reports for a user must only include payments performed in a specific time period

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/payments/v1/payment?startDate=2017-05-10&endDate=2017-05-12  Content-type: application/json  X-Total-Count: 1 |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "67890",  "correlatorId": "333333",  "href": "{paymentManagementAPI}/payment/67890",  "paymentDate": "2017-05-10T12:06:38.230Z",  "name": "second example",  "description": "a second example payment",  "amount": {  "amount": 5,  "units": "EUR"  },  "taxAmount": {  "amount": 0.8,  "units": "EUR"  },  "totalAmount": {  "amount": 5.8,  "units": "EUR"  },  "channel": {  "id": "channel2",  "href": "<http://server:port/channels/channel2>",  "name": "mobile app"  },  "account": {  "id": "55555",  "href": "{accountManagementAPI}/account/55555",  "name": "Telco fusion account",  "description": "Jane Doe’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 5,  "units": "EUR"  },  "taxAmount": {  "amount": 0.8,  "units": "EUR"  },  "totalAmount": {  "amount": 5.8,  "units": "EUR"  },  "item": {  "@referredType": "product",  "id": "1234",  "href": "{catalogAPI}/product/687954" }  }  ],  "paymentMethod": {  "@type": "bankCard",  "details": {  "brand": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2020-10-10T12:00:00",  "cvv": "000",  "nameOnCard": "Jane Doe",  "bank": "Fictitious Bank.inc"  }  }],  "status": "authorized",  "statusDate": "2017-05-11T12:06:38.230Z",  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "role": "customer",  "name": "somebody"  }  }] |

POST /paymentManagement/v1/payment

Description:

The Application invokes this operation to request a new payment to be created.

Behavior:

| Status Code | Description |
| --- | --- |
| 201 | Successful payment generated (resource created) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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 https://{serverRoot}/paymentManagement/v1/payment  Content-Type: application/json  {  "correlatorId": "987654321",  "name": "third example",  "description": "a third example payment",  "amount": {  "amount": 50,  "units": "EUR"  },  "taxAmount": {  "amount": 10,  "units": "EUR"  },  "totalAmount": {  "amount": 60,  "units": "EUR"  },  "channel": {  "id": "channel3",  "href": "<http://server:port/channels/channel3>",  "name": "Retailer"  },  "account": {  "id": "3210654",  "href": "{accountManagementAPI}/account/3210654",  "name": "Somebody’s telco account",  "description": "Somebody’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 50,  "units": "EUR"  },  "taxAmount": {  "amount": 10,  "units": "EUR"  },  "totalAmount": {  "amount": 60,  "units": "EUR"  },  "item": {  "@referredType": "order",  "id": "32",  "href": "{orderingAPI}/orders/32" }  }  ],  "paymentMethod": {  "@type": "bankCard",  "details": {  "brand": "Visa",  "type": "Creit",  "cardNumber": "1234567890123456",  "expirationDate": "2019-01-01T12:00:00",  "cvv": "000",  "nameOnCard": "Somebody",  "bank": "Fictitious Bank.inc"  }  },  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "role": "customer",  "name": "somebody"  }  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/paymentManagement/v1/payment/99999999  Response is not required to include a BODY with the contents of the payment resource created, but if included it must be filled with at least the mandatory parameters. |

GET /paymentManagement/v1/payment/{paymentId}

Description:

The Application invokes this operation to retrieve a specific payment.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | the payment information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/paymentManagement/v1/payment/99999999  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "99999999",  "href": "{paymentManagementAPI}/payment/99999999",  "paymentDate": "2017-05-11T12:00:00",  "correlatorId": "987654321",  "name": "third example",  "description": "a third example payment",  "amount": {  "amount": 50,  "units": "EUR"  },  "taxAmount": {  "amount": 10,  "units": "EUR"  },  "totalAmount": {  "amount": 60,  "units": "EUR"  },  "channel": {  "id": "channel3",  "href": "<http://server:port/channels/channel3>",  "name": "Retailer"  },  "account": {  "id": "3210654",  "href": "{accountManagementAPI}/account/3210654",  "name": "Somebody’s telco account",  "description": "Somebody’s telco account"  },  "paymentItem": [{  "amount": {  "amount": 50,  "units": "EUR"  },  "taxAmount": {  "amount": 10,  "units": "EUR"  },  "totalAmount": {  "amount": 60,  "units": "EUR"  },  "item": {  "@referredType": "order",  "id": "32",  "href": "{orderingAPI}/orders/32"  }  }],  "paymentMethod": {  "@type": "bankCard",  "details": {  "brand": "Visa",  "type": "Credit",  "cardNumber": "1234567890123456",  "expirationDate": "2019-01-01T12:00:00",  "cvv": "000",  "nameOnCard": "Somebody",  "bank": "Fictitious Bank.inc"  }  },  "status": "authorized",  "statusDate": "2017-05-11T12:00:00",  "payer": {  "id": "3333333333333"  "href": "{partiesAPI}/party/3333333333333",  "role": "customer",  "name": "somebody"  }  } |

## **REFUND RESOURCE**

Operations over refund resource are expected to be performed by a privileged user/system (such as an admin)

GET /paymentManagement/v1/refund

|  |
| --- |
| [{  "id": "12345",  "correlatorId": "67890",  "name": "Example refund",  "description": "Refund because the order 666 was cancelled",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountManagementAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "id": "88888",  "href": "{paymentMethodsAPI}/paymentMethod/88888",  "description": "bank card",  "validFor": {  "startDateTime": "2010-03-25T12:00:00",  "endDateTime": "2010-04-25T12:00:00"  },  "@type": "bankCard",  "details": {  "brand": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2019-03-25T12:00:00",  "cvv": "000",  "nameOnCard": "John Doe",  "bank": "Fictitious Bank.inc"  }  },  "relatedPayment": {  "id": "55555",  "href": "{paymentsAPI}/payment/55555",  "name": "Some payment",  "description": "John Doe’s last payment"  },  "reason": "orderCancelled",  "status": "pendingAuthorization",  "statusDate": "2017-05-11T12:06:38.230Z",  "relatedParty": [{  "id": "1234567890"  "href": "{partiesAPI}/individual/1234567890",  "role": "requestor",  "name": "somebody",  "@referredType": "individual"  }]  }] |

Description:

The Application invokes this operation to retrieve a list of refunds from the server.

The request could include filters in order to retrieve only a specific subset of all the refunds stored in the server such as filtering by type or validity date.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | Refund information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/paymentManagement/v1/refund  Content-type: application/json  X-Total-Count: 2 |
| **RESPONSE** |
| 200  Content-Type: application/json  [{  "id": "12345",  "correlatorId": "67890",  "name": "Example refund",  "description": "Refund because the order 666 was cancelled",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountManagementAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "id": "88888",  "href": "{paymentMethodsAPI}/paymentMethod/88888",  "description": "bank card",  "validFor": {  "startDateTime": "2010-03-25T12:00:00",  "endDateTime": "2010-04-25T12:00:00"  },  "type": "bankCard",  "details": {  "brand": "MasterCard",  "@type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2019-03-25T12:00:00",  "cvv": "000",  "nameOnCard": "John Doe",  "bank": "Fictitious Bank.inc"  }  },  "relatedPayment": {  "id": "55555",  "href": "{paymentsAPI}/payment/55555",  "name": "Some payment",  "description": "John Doe’s last payment"  },  "reason": "orderCancelled",  "status": "pendingAuthorization",  "statusDate": "2017-05-11T12:06:38.230Z",  "relatedParty": [{  "id": "1234567890"  "href": "{partiesAPI}/individual/1234567890",  "role": "requestor",  "name": "somebody",  "@referredType": "individual"  }]  },  {  "id": "987634",  "correlatorId": "131313",  "name": "Another example refund",  "description": "Compensation for downtime",  "amount": {  "amount": 4,  "units": "EUR"  },  "taxAmount": {  "amount": 0.3,  "units": "EUR"  },  "totalAmount": {  "amount": 4.3,  "units": "EUR"  },  "channel": {  "id": "channel4",  "href": "{channelsAPI}/channel/channel4",  "name": "Call Center"  },  "account": {  "id": "44444",  "href": "{accountsAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "description": "account reference",  "@type": "account",  "details": {  "id": "44444",  "href": "{accountsAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  }  },  "reason": "compensation for downtime",  "status": "authorized",  "statusDate": "2017-07-09T12:06:38.230Z",  "relatedParty": [{  "id": "1234567890"  "href": "{partiesAPI}/individual/1234567890",  "role": "requestor",  "name": "somebody",  "@referredType": "individual"  }]  }] |

The example below shows the case where the reports for a user must only include refunds performed in a specific time period

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/paymentManagement/v1/refund?startDate=2017-05-10&endDate=2017-05-12  Content-type: application/json  X-Total-Count: 1 |
| **RESPONSE** |
| [{  "id": "12345",  "correlatorId": "67890",  "name": "Example refund",  "description": "Refund because the order 666 was cancelled",  "amount": {  "amount": 10,  "units": "EUR"  },  "taxAmount": {  "amount": 1.6,  "units": "EUR"  },  "totalAmount": {  "amount": 11.6,  "units": "EUR"  },  "channel": {  "id": "channel1",  "href": "<http://server:port/channels/channel1>",  "name": "WEB Portal"  },  "account": {  "id": "44444",  "href": "{accountManagementAPI}/account/44444",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "id": "88888",  "href": "{paymentMethodsAPI}/paymentMethod/88888",  "description": "bank card",  "validFor": {  "startDateTime": "2010-03-25T12:00:00",  "endDateTime": "2010-04-25T12:00:00"  },  "@type": "bankCard",  "details": {  "brand": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2019-03-25T12:00:00",  "cvv": "000",  "nameOnCard": "John Doe",  "bank": "Fictitious Bank.inc"  }  },  "relatedParty": [{  "id": "1234567890"  "href": "{customersAPI}/customer/1234567890",  "role": "requestor",  "name": "somebody",  "@referredType": "customer"  }]  }] |

POST /paymentManagement/v1/refund

Description:

The Application invokes this operation to request a new refund to be created.

Behavior:

| Status Code | Description |
| --- | --- |
| 201 | Successful refund generated (resource created) |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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 https://{serverRoot}/paymentManagement/v1/refund  Content-Type: application/json  {  "correlatorId": "000312456",  "name": "Example refund",  "description": "Refund because the payment was wrong",  "amount": {  "amount": 20,  "units": "EUR"  },  "taxAmount": {  "amount": 3,  "units": "EUR"  },  "totalAmount": {  "amount": 23,  "units": "EUR"  },  "channel": {  "id": "channel3",  "href": "{channelsAPI}/channel/channel3",  "name": "Retailer"  },  "account": {  "id": "55556666",  "href": "{accountManagementAPI}/account/55556666",  "name": "Jane Doe’s account",  "description": "Jane Doe’s telco account"  },  "paymentMethod": {  "description": "cash paid in store",  "@type": "cash",  "details": {}  },  "relatedPayment": {  "id": "654987321",  "href": "{paymentsAPI}/payment/654987321",  "name": "Some payment",  "description": "Jane Doe’s last payment"  },  "relatedParty": [{  "id": "9876543210"  "href": "{agentsAPI}/agents/9876543210",  "role": "requestor",  "name": "agent",  "@referredType": "individual"  },{  "id": "0123456789"  "href": "{customersAPI}/customer/0123456789",  "role": "customer",  "name": "John Doe",  "@referredType": "customer"  }]  } |
| **RESPONSE** |
| 201  Content-Type: application/json  Location: https://{serverRoot}/paymentManagement/v1/refund/00000001  Response is not required to include a BODY with the contents of the payment resource created, but if included it must be filled with at least the mandatory parameters. |

GET /paymentManagement/v1/refund/{refundId}

Description:

The Application invokes this operation to retrieve a specific refund.

Behavior:

| Status Code | Description |
| --- | --- |
| 200 | the refund information was returned successfully |
| 400 | Request Error |
| 500 | The server encountered an unexpected condition which prevented it from fulfilling the request |
| Other | The server may use other HTTP error status codes to reflect the error, the client must be processed in accordance with the error messages in other HTTP specification. |

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

|  |
| --- |
| **REQUEST** |
| GET https://{serverRoot}/paymentManagement/v1/refund/321987654  Content-type: application/json |
| **RESPONSE** |
| 200  Content-Type: application/json  {  "id": "321987654",  "correlatorId": "67890",  "name": "Example refund",  "description": "a single refund",  "amount": {  "amount": 30,  "units": "EUR"  },  "taxAmount": {  "amount": 4.2,  "units": "EUR"  },  "totalAmount": {  "amount": 34.2,  "units": "EUR"  },  "channel": {  "id": "channel4",  "href": "{channelAPI}/channel/channel4",  "name": "Call Center"  },  "account": {  "id": "321456987",  "href": "{accountManagementAPI}/account/321456987",  "name": "Telco fusion account",  "description": "John Doe’s telco account"  },  "paymentMethod": {  "id": "333333",  "href": "{paymentMethodsAPI}/paymentMethod/333333",  "description": "bank card",  "validFor": {  "startDateTime": "2010-03-25T12:00:00",  "endDateTime": "2020-04-25T12:00:00"  },  "type": "@bankCard",  "details": {  "brand": "MasterCard",  "type": "Debit",  "cardNumber": "00000000000000000",  "expirationDate": "2019-03-25T12:00:00",  "cvv": "000",  "nameOnCard": "John Doe",  "bank": "Fictitious Bank.inc"  }  },  "relatedParty": [{  "id": "9876543210"  "href": "{agentsAPI}/agents/9876543210",  "role": "requestor",  "name": "agent",  "@referredType": "individual"  },{  "id": "0123456789"  "href": "{customersAPI}/customer/0123456789",  "role": "customer",  "name": "John Doe",  "@referredType": "customer"  }]  } |

# API notification

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 error status code 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  {  "eventId": "111",  "eventType": " EVENT\_TYPE ",  "event": {  EVENT BODY as described in event model section  }  } |
| **RESPONSE** |
| 201 |

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

# ACKNOWLEDGEMENTS

## Release History

|  |  |  |  |
| --- | --- | --- | --- |
| **Release Number** | **Date** | **Release led by:** | **Description** |
| 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 |