



Frameworkx Specification

Billing Management API REST Specification

TMF636
Release 14.5.0
November 2014

Latest Update: Frameworkx Release 14.5	Member Evaluation
Version 1.1.0	IPR Mode: RAND

NOTICE

Copyright © TM Forum 2014. All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published, and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this section are included on all such copies and derivative works. However, this document itself may not be modified in any way, including by removing the copyright notice or references to TM FORUM, except as needed for the purpose of developing any document or deliverable produced by a TM FORUM Collaboration Project Team (in which case the rules applicable to copyrights, as set forth in the [TM FORUM IPR Policy](#), must be followed) or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by TM FORUM or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and TM FORUM DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY OWNERSHIP RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Direct inquiries to the TM Forum office:

240 Headquarters Plaza,
East Tower – 10th Floor,
Morristown, NJ 07960 USA
Tel No. +1 973 944 5100
Fax No. +1 973 944 5110
TM Forum Web Page: www.tmforum.org

TABLE OF CONTENTS

NOTICE.....	2
Table of Contents.....	3
List of Tables.....	5
Introduction	6
SAMPLE USE CASES.....	8
RESOURCE MODEL.....	9
Managed Entity and Task Resource Models	9
BillingAccount Resource.....	9
Customer billing cycle specification Resource	10
Customer bill Format Resource.....	10
customer bill presentation media Resource	10
applied customer billing charge Resource	14
Settlement note ADVICE Resource.....	16
Notification Resource Models	22
BillingAccount State Change Notification	23
SettlementNoteAdvice Notification	24
API OPERATION TEMPLATES	25
GET API/billingManagement/ BillingAccount /{ID}.....	26
PUT API/BillingManagement/BillingAccount/{ID}	28
PATCH API/billingManagement/ BillingAccount /{ID}.....	28
POST API/bILLING Management/BillingAccount	30
DELETE API/billingManagement/BillingAccount/{ID}	35
POST API/bILLING Management/AppliedCustomerbillingcharge.....	35
GET API/bILLING Management/AppliedCustomerbillingcharge	39
DELETE API/billingManagement/ appliedCustomerBillingCharge /{ID}.....	40
PATCH API/billingManagement/ appliedCustomerBillingCharge /{ID}.....	41
PUT API/billingManagement/ appliedCustomerBillingCharge /{ID}.....	41
GET API/bILLINGManagement/SettlementnoteADVICE /{ID}	41

Billing Management API REST Specification

DELETE API/billingManagement/ Settlement note ADVICE /{ID} 44

PATCH API/billingManagement/ Settlement note ADVICE /{ID} 45

PUT API/billingManagement/ Settlement note ADVICE /{ID} 45

POST API/billingManagement/ Settlement note ADVICE /{ID} 45

GET API/bILLING Management/ CUSTOMER BILLING CYCLE Specification 46

GET API/bILLING Management/ CUSTOMER BILL Format..... 47

GET API/bILLING Management/ CUSTOMER BILL Presentation Media..... 48

API NOTIFICATION TEMPLATES 49

REGISTER LISTENER POST /hub 49

UNREGISTER LISTENER DELETE hub/{id} 49

Release History 51

Contributors to Document 51

LIST OF TABLES

N/A

INTRODUCTION

The Billing API provides standardized mechanism for billing account, bill item and settlement note advice management either in B2B or B2B2C contexts.

It allows creation, update and retrieval of a billing account either in a B2B2C relationship context (creation of mass market customer billing account within a “Billing on Behalf of” process for example) or in a B2B context (creation of a billing account for a partner or B2B customer).

It also allows creation and query of bill items allowing partners or B2B customer to check their invoice.

In addition, it allows notification of settlement note advice to partners who can, then, query it.

Billing API manages the following Data resources:

- **Billing account**
 - o A billing account is a detailed description of a customer’s bill structure
 - o Main billing account attributes are its identifier and name, rating type (prepaid, postpaid), status, identifier of related customer account, billing cycle information, bill format and presentation media (post mail, email, web page), billing currency, billing account balance identifier, payment means (e.g. credit card) related party reference and role (Invoice responsible, payer, etc.)
- **Bill item** (aka Applied Customer Billing Charge in SID terminology)
 - o A bill item is an amount, usually of money, for which a person or an organization is financially liable
 - o Main bill item attributes are its identifier, creation date, description (additional data displayed on the bill), type of charge (recurring, one time or usage), currency code, taxes and amounts related information (tax included amount, tax excluded amount, tax rate), identifier and type of the concerned service
- **Settlement Note Advice**
 - o The settlement is about transferring money receiving by a partner to another partner. The settlement is notified to the partner with a settlement note advice containing details in settlement lines.
 - o Main settlement note advice attributes are its identifier, Creation date, description, due date, , taxes and amounts related information (tax included amount, tax excluded amount, tax rate, etc.), currency code, settlement method, receiver and issuer, settlement note Item related to a product information (identifier, description, quantity, taxes and amounts related information, product information)
- **Customer Billing Cycle Specification**
 - o A detailed description of when to initiate a billing cycle and the various sub steps of a billing cycle.
- **Customer Bill Format**
 - o A detailed description of the way in which a customer’s bill is presented.
- **Customer Bill Presentation Media**
 - o A means of communicating a CustomerBill, supported by the associated bill format. For example, post mail, email, web page.

Billing API performs the following operations on the above mentioned resources

- **On billing account**
 - o Retrieval of a billing account or a collection of billing accounts
 - o Partial update of a billing account
 - o Creation of a billing account
 - o Notification of billing account state change
- **On Bill Item (Applied Customer Billing Charge)**

Billing Management API REST Specification

- Creation of a bill item
- Retrieval of a bill item or a collection of bill items
- **On Settlement note advice**
 - Retrieval of a settlement note advice or a collection of settlement note advices
 - Notification of a settlement note advice
- **On Customer Billing Cycle Specification**
 - Retrieval of a customer billing cycle specification
 - Creation of a customer billing cycle specification
 - Deletion of a customer billing cycle specification
- **On Customer Bill Format**
 - Retrieval of a customer bill format
 - Creation of a customer bill format
 - Deletion of a customer bill format
- **On Customer Bill Presentation Media**
 - Retrieval of a customer bill presentation media
 - Creation of a customer bill presentation media
 - Deletion of a customer bill presentation media

SAMPLE USE CASES

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

RESOURCE MODEL

Managed Entity and Task Resource Models

JSON based representation of the managed entities and tasks.

BILLINGACCOUNT RESOURCE

A BillingAccount is a detailed description of a customer's bill structure.

JSON representation of a BillingAccount

```
{
  "id": "65",
  "href": "http://serverlocation:port/billingManagement/billingAccount/65",
  "ratingType": "postpaid",
  "name": "my personal Billing Account",
  "state": "Active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23.0Z"
  },
  "customerAccount": {
    "id": "15",
    "href": "http://serverlocation:port/customerManagement/customerAccount/15",
    "name": "Customer Account xxx"
  },
  "customerBillingCycleSpecification": {
    "id": "26",
    "href":
"http://serverlocation:port/billingManagement/customerBillingCycleSpecification/26",
    "name": "Monthly billing on the 15"
  },
  "customerBillFormat": {
    "id": "23",
    "href": "http://serverlocation:port/billingManagement/customerBillFormat/23",
    "name": "Detailed invoice"
  },
  "customerBillPresentationMedia": {
    "id": "25",
    "href":
"http://serverlocation:port/billingManagement/customerBillPresentationMedia/25",
    "name": "Electronic invoice"
  },
  "currency": {
    "currencyCode": "EUR"
  },
  "billingAccountBalance": [
    {
      "type": "ReceivableBalance",
      "amount": 52.3,
      "validFor": {
        "startDateTime": "2013-04-19T16:42:23.0Z",
        "endDateTime": "2013-06-19T00:00:00.0Z"
      },
      "status": "Due"
    }
  ]
}
```

```

    }
  ],
  "relatedParty": [
    {
      "id": "1",
      "href": "http://serverlocation:port/partyManagement/partyRole/1",
      "role": "bill receiver"
    },
    {
      "id": "5",
      "href": "http://serverlocation:port/partyManagement/partyRole/5",
      "role": "bill responsible"
    }
  ],
  "paymentMean": {
    "id": "45",
    "href": "http://serverlocation:port/customerManagement/paymentMean/45",
    "name": "my favourite payment mean"
  }
}

```

CUSTOMER BILLING CYCLE SPECIFICATION RESOURCE

```

{
  "id": "26",
  "href":
"http://serverlocation:port/billingManagement/customerBillingCycleSpecification/26",
  "name": "Monthly billing on the 15",
  "billingDateShift": 15,
  "frequency": "monthly"
}

```

CUSTOMER BILL FORMAT RESOURCE

```

{
  "id": "23",
  "href": "http://serverlocation:port/billingManagement/customerBillFormat/23",
  "name": "Detailed invoice"
}

```

CUSTOMER BILL PRESENTATION MEDIA RESOURCE

```

{
  "id": "25",
  "href": "http://serverlocation:port/billingManagement/customerBillPresentationMedia/25",
  "name": "Electronic invoice"
}

```

Field Descriptions :

BillingAccount: A detailed description of a customer's bill structure.

Field	Description
id	Unique identifier of the billing account
href	Reference of the billing account
name	A short descriptive name
ratingType	Rating type (prepaid, postpaid) of the billing account
state	Used to track the lifecycle state
validFor.	The period for which the billing account is valid

BillingAccountBalance: Balance of the Billing Account.

Field	Description
type	Type of the balance
amount	Balance amount
validFor	Balance validity period
status	Balance status

CustomerAccount: An arrangement that a customer has with an enterprise that provides products to the customer (SID definition to be reviewed?).

Field	Description
id	Unique identifier of the customer account
href	Reference of the customer account
name	A short descriptive name

CustomerBillingCycleSpecification: A detailed description of when to initiate a billing cycle and the various sub steps of a billing cycle.

Field	Description
id	Unique identifier of the customer billing cycle specification
billingDateShift	An offset of a billing date. The offset is expressed as number of days with regard to the start of the billing period.
frequency	Frequency of the billing cycle (monthly for instance)
href	Reference of the customer billing cycle specification
name	A short descriptive name

CustomerBillFormat: A detailed description of the way in which a customer's bill is presented.

Field	Description
id	Unique identifier of the customer bill format
href	Reference of the customer bill format
name	A short descriptive name

CustomerBillPresentationMedia: A means of communicating a CustomerBill, supported by the associated bill format. For example, post mail, email, web page.

Field	Description
id	Unique identifier of the customer bill presentation media
href	Reference of the customer bill presentation media
name	A short descriptive name

Currency: A base / value business entity used to represent currency.

Field	Description
currencyCode	A string used as a code for specifying the currency associated to the given amounts. The ISO4217 norm uses 3 letters to define the currency (for example USD for US dollar or EUR for Euro)

PaymentMean: defines a specific mean of payment (e.g. direct debit with all details associated).

Field	Description
id	Unique identifier of the payment mean
href	Reference of the payment mean
name	Name of the payment mean

RelatedParty: Defines party or partyRole linked to a specific entity.

Field	Description
id	Unique identifier of related party
href	Reference of the relatedParty, could be a party reference or a partyRole reference
role	Role of the related party

UML models:

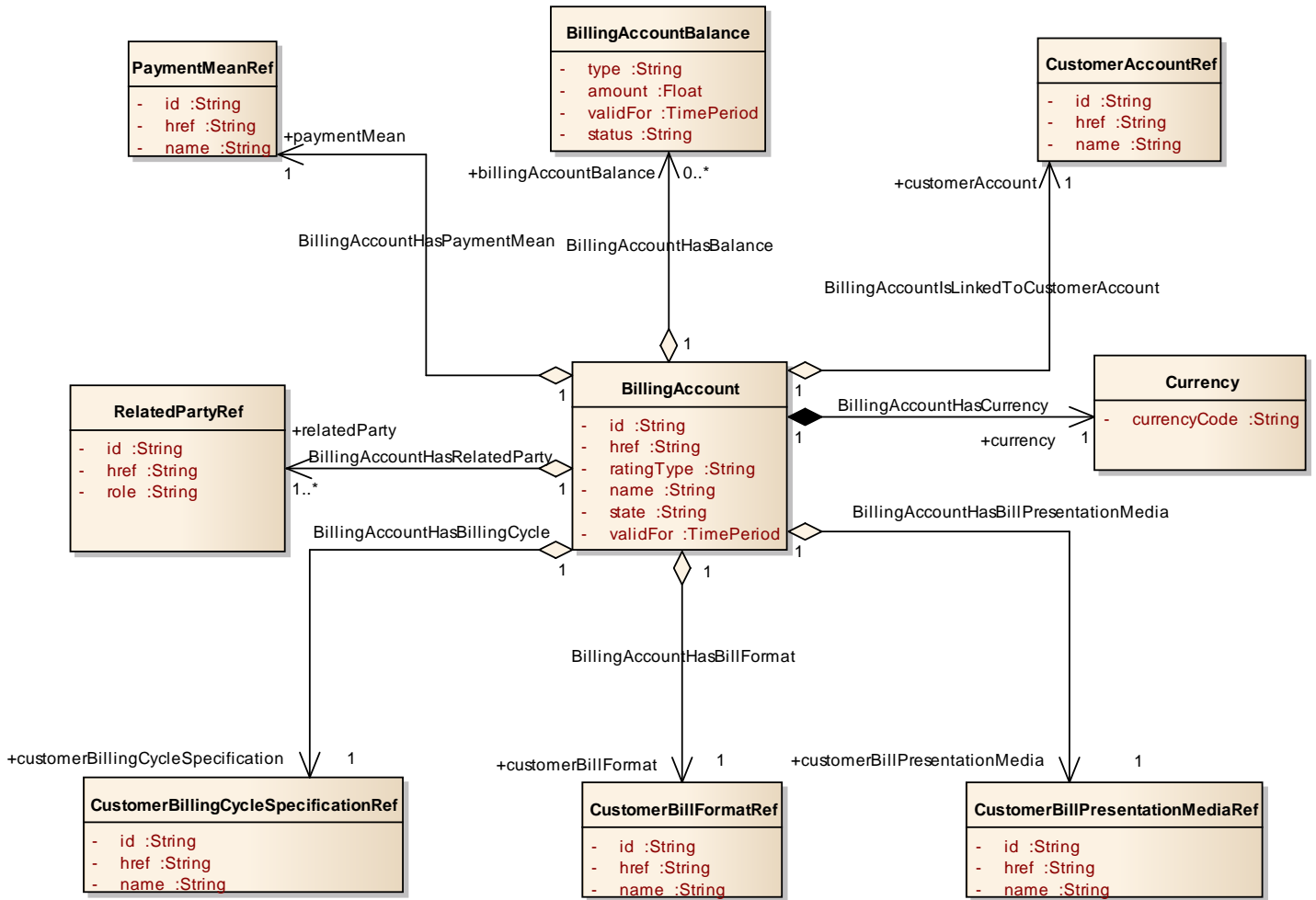


Figure 1 – BillingAccount resource model

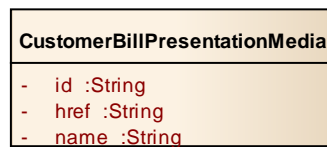


Figure 2 – CustomerBillPresentationMedia resource model

CustomerBillingCycleSpecification
<ul style="list-style-type: none"> - id :String - href :String - name :String - billingDateShift :integer - frequency :String

Figure 3 CustomerBillingCycleSpecification resource model

CustomerBillFormat
<ul style="list-style-type: none"> - id :String - href :String - name :String

Figure 4 CustomerBillFormat resource model

APPLIED CUSTOMER BILLING CHARGE RESOURCE

```

{
  "id": "25",
  "href": "http://serverlocation:port/BillingManagement/appliedCustomerBillingCharge/25",
  "date": "2013-04-19T16:42:23.0Z",
  "description": "Partner Premium monthly fee",
  "type": "Recurring",
  "currencyCode": "USD",
  "taxIncludedAmount": 2.4,
  "taxExcludedAmount": 2,
  "appliedCustomerBillingTaxRate": [
    {
      "amount": 0.4,
      "taxCategory": "VAT"
    }
  ],
  "serviceId": [
    {
      "id": "0601020304",
      "type": "Mobile number"
    }
  ],
  "productSpecification": [
    {
      "name": "Partner Premium",
      "productNumber": "P001"
    }
  ],
  "period": [
    {
      "startPeriod": "2013-10-01T00:00:00.0Z",
      "endPeriod": "2013-10-31T00:00:00.0Z"
    }
  ]
}

```

```

    }
  ]
}

```

Tax rate should be further defined by experts.

Field Descriptions :

AppliedCustomerBillingCharge: An amount, usually of money, for which a person or an organization is financially liable.

Field	Description
id	Unique identifier of the applied customer billing charge
href	Reference of the applied customer billing charge
date	Creation date of the applied customer billing charge
description	Additional data to be displayed on the customer bill for this applied customer billing charge
type	Type of the applied customer billing charge (recurring, one time or usage) necessary to find the category of the invoice where the charge has to be displayed
currencyCode	A string used as a code for specifying the currency associated to the given amounts. The ISO4217 norm uses 3 letters to define the currency (for example USD for US dollar or EUR for Euro)
taxIncludedAmount	All taxes included amount to be charged on the customer bill (expressed in the given currency)
taxExcludedAmount	Tax excluded amount to be charged on the customer bill (expressed in the given currency)

AppliedCustomerBillingTaxRate: An amount of money levied on the price of a product by a legislative body.

Field	Description
amount	Tax amount
taxCategory	A categorization of the tax rate

Period: defines the period of a recurring charge

Field	Description
startPeriod	Start date of the period
endPeriod	End date of the period

ProductSpecification: A detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to Customers or other Parties playing a PartyRole.

Field	Description
productNumber	An identification number assigned to uniquely identify the specification
Name	The name of the product specification

ServiceId: defines the identifier of the service

Field	Description
id	Identifier of the service
type	Type of the service identifier (e.g. mobile number)

UML models:

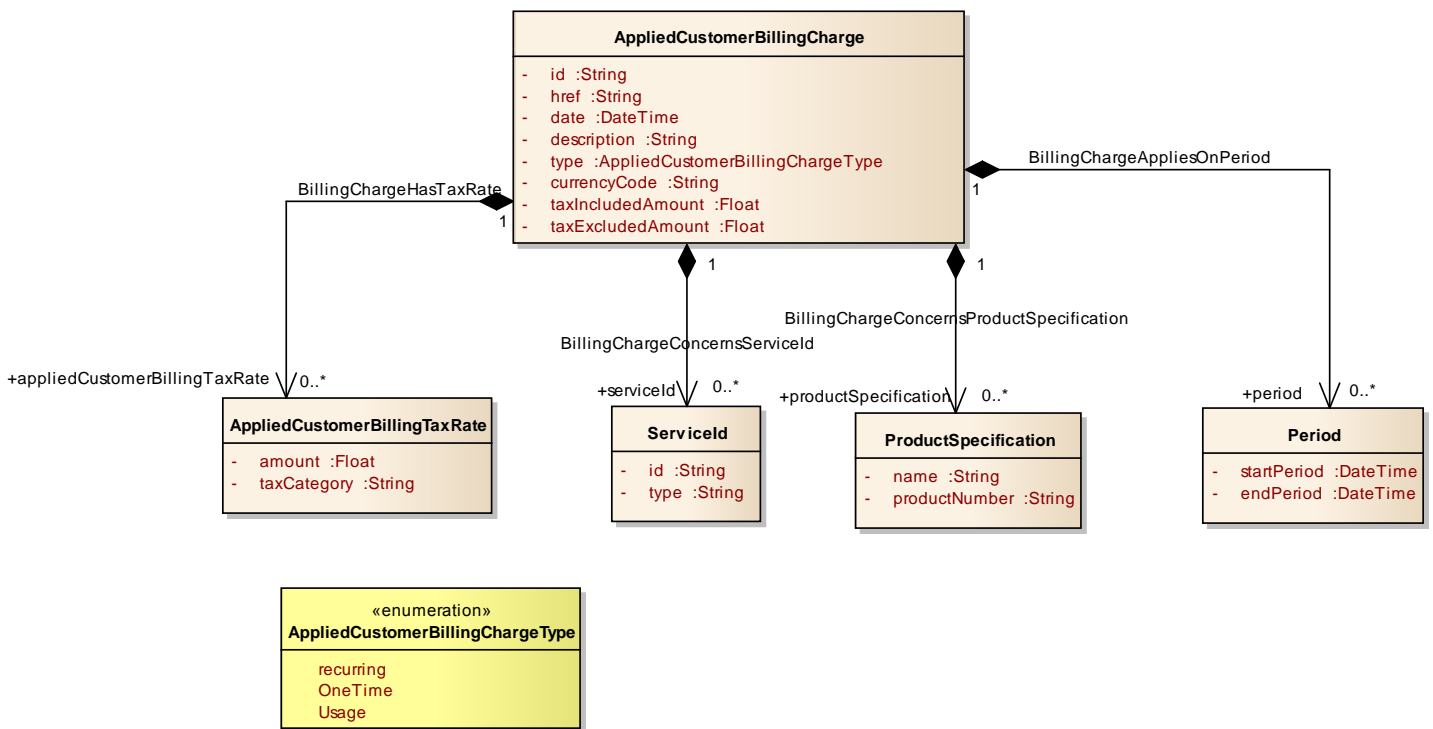


Figure 5 AppliedCustomerBillingCharge (Bill Item) resource model

SETTLEMENT NOTE ADVICE RESOURCE

```

{
  "id": "26",
  "href": "http://serverlocation:port/BillingManagement/settlementNoteAdvice/26",
  "date": "2013-04-19T16:42:23.0Z",
  "description": "Settlement note â€œ From 2013/10/01 to 2013/10/31",
  "paymentDueDate": "2013-04-19T16:42:23.0Z",
  "taxDate": "2013-04-19T16:42:23.0Z",
  "currencyCode": "EUR",
  "taxExcludedAmount": 89933.25,
  "taxIncludedAmount": 107560.16,
  "taxItem": [
    {
      "taxCategory": "VAT",
      "taxRate": 19.6,
      "taxAmount": 17626.91
    }
  ]
}
  
```



```

    }
  ],
  "settlementMethod": {
    "code": "NET",
    "label": "Netting"
  },
  "receiver": {
    "id": "63796",
    "href": "http://serverlocation:port/PartyManagement/partyRole/63796",
    "taxRegistration": {
      "number": "FR12345678912"
    }
  },
  "issuer": {
    "id": "0800",
    "href": "http://serverlocation:port/PartyManagement/partyRole/0800",
    "taxRegistration": {
      "number": "FR98765432178"
    }
  },
  "settlementNoteImage": {
    "imageFormat": "pdf",
    "imageSize": 130,
    "imageFileName": "BungiornoFrance-2013October-1234",
    "imageFileURL":
"http://serverlocation:port/SettlementNoteImage/RQAAAABAAAAAAALryCQAbAAAAAAxAF8ASQBuAHMAdABhAGwAb"
  },
  "settlementNoteItem": [
    {
      "itemNumber": "1",
      "itemId": "0815",
      "itemLabel": "Achats Gamifive",
      "quantity": 34873,
      "taxExcludedUnitPrice": 1.463,
      "taxExcludedAmount": 51019.2,
      "taxIncludedAmount": 61018.96,
      "taxItem": [
        {
          "taxCategory": "VAT",
          "taxRate": 19.6,
          "taxAmount": 9999.76
        }
      ],
      "period": {
        "startPeriod": "2013-10-01T00:00:00.0Z",
        "endPeriod": "2013-10-31T00:00:00.0Z"
      },
      "productSpecification": {
        "name": "Gamifive",
        "productNumber": "17060"
      }
    },
    {
      "itemNumber": "2",
      "itemId": "0816",
      "itemLabel": "Achats iGirls TV",
      "quantity": 19001,

```

```
    "taxExcludedUnitPrice": 2.048,  
    "taxExcludedAmount": 38914.05,  
    "taxIncludedAmount": 46541.2,  
    "period": {  
      "startPeriod": "2013-10-01T00:00:00.0Z",  
      "endPeriod": "2013-10-31T00:00:00.0Z"  
    },  
    "productSpecification": {  
      "name": "iGirls TV",  
      "productNumber": "17063"  
    }  
  }  
]  
}
```

Field Descriptions :

SettlementNoteAdvice: The settlement is about transferring money receiving by a CSP to a partner. The settlement is notified to the partner with a settlement note advice containing details in settlement lines.

Field	Description
id	A unique identifier for the settlement note advice
date	Creation date of the settlement note advice
description	A free description text
href	Reference of the settlement note advice
paymentDueDate	Date at which the due amount should have been paid to the partner
taxDate	Date of the tax
currencyCode	A string used as a code for specifying the currency associated to the given amounts. The ISO4217 norm uses 3 letters to define the currency (for example USD for US dollar or EUR for Euro)
taxExcludedAmount	All taxes excluded amount (expressed in the given currency)
taxIncludedAmount	All taxes included amount (expressed in the given currency)

TaxItem: A tax item is created for each tax rate and tax type used in the settlement note.

Field	Description
taxCategory	Tax category (for example VAT)
taxRate	Tax rate
taxAmount	Tax amount

SettlementMethod: is the way in which the CSP provides the payment.

Field	Description
Code	Code of the settlement method
label	A word, term or phrase by which a settlement method is known and distinguished from other settlement method

Receiver: PartyRole who will receive the settlement note.

Field	Description
id	Identifier of the receiver
href	Reference of the receiver

Issuer: PartyRole who will issue the settlement note.

Field	Description
id	Identifier of the issuer
href	Reference of the issuer

TaxRegistration: The CSP and the partner could be registered with a tax number in a tax registration system.

Field	Description
number	Tax registration number

SettlementNoteImage: is the image of the settlement note.

Field	Description
imageFormat	The format of the settlement note image (Csv, pdf, xls, txt...)
imageSize	The size of the settlement note image (in bytes)
imageFileName	The name of the file in which the settlement note image is saved
imageFileURL	The URL of the settlement note image

SettlementNoteItem: concerns a product identified by its catalogue reference. It could also follow a period delimited by a start and an end date.

Field	Description
itemNumber	Unique number assigned to the settlement note item
itemId	Unique identifier of the settlement note item
itemLabel	A free description text for the settlement note item
quantity	Quantity
taxExcludedUnitPrice	Tax excluded unit price to be applied on the given quantity
taxExcludedAmount	Tax excluded amount equal to quantity * taxExcludedUnitPrice
taxIncludedAmount	All taxes included amount equal to taxExcludedAmount + taxAmount

Period: defines the period of a recurring charge

Field	Description
startPeriod	Start date of the period
endPeriod	End date of the period

ProductSpecification: A detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to Customers or other Parties playing a PartyRole.

Field	Description
productNumber	An identification number assigned to uniquely identify the specification
Name	The name of the product specification

UML models

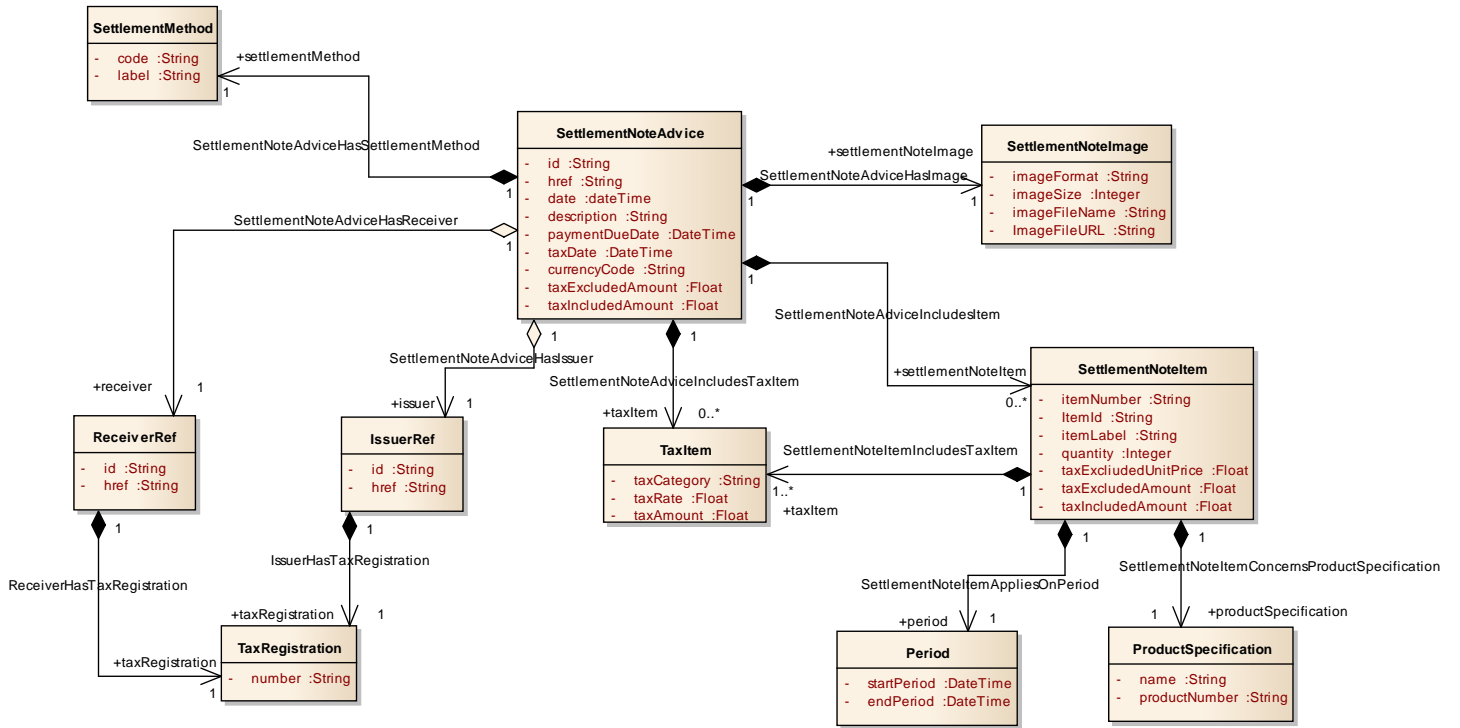


Figure 6 – SettlementNoteAdvice resource model

BillingAccount lifecycle:

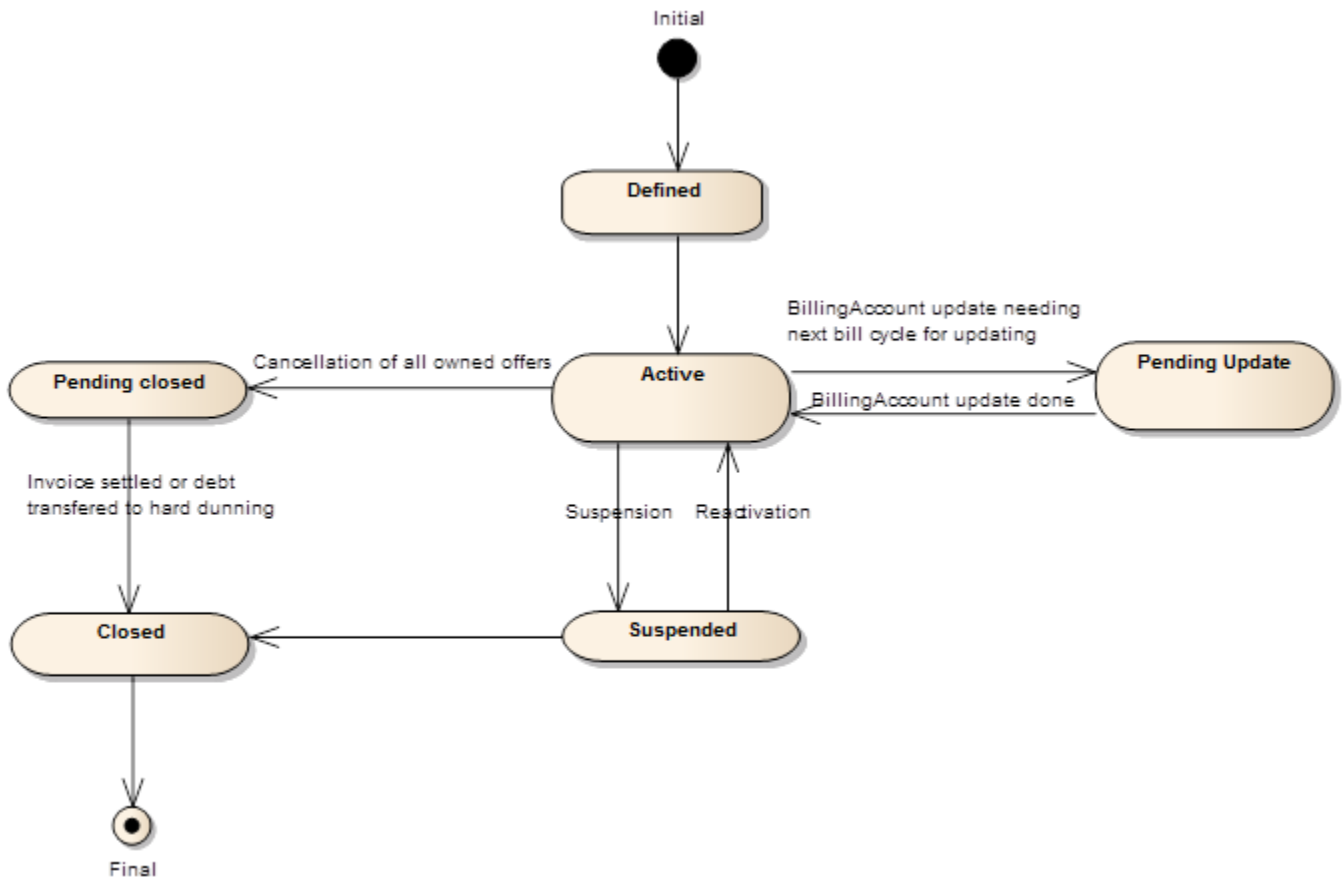


Figure 7 : Billing Account States

State definitions:

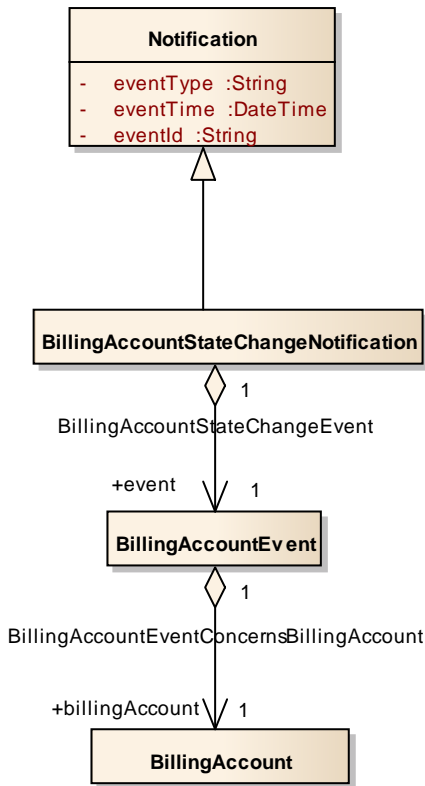
- Defined / created: billing account has been created but no related invoice can be produced
- Active: The billing account is active and related invoices are produced
- Pending update : billing account update is planned and will be effective for next billing cycle
- Suspended : billing account has been suspended on customer request or for other reasons (bad debts, etc.)
- Pending closed: the billing account will be closed when the last invoice will have been produced
- Closed : the billing account is closed and can not be changed to another state.

Notification Resource Models

Two notification event types are defined:

1. BillingAccountStateChangeNotification
2. SettlementNoteAdviceNotification

Billing Account State Change Notification UML Diagram:



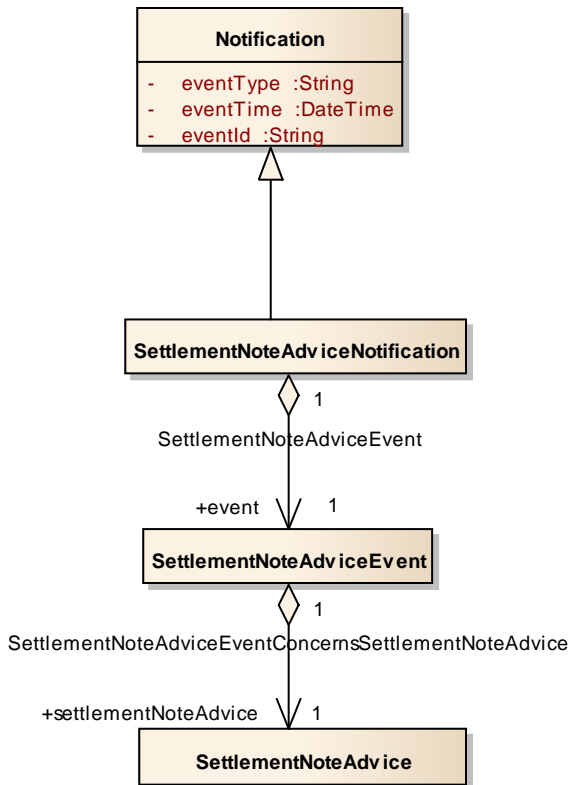
BILLINGACCOUNT STATE CHANGE NOTIFICATION

```

{
  "eventType": "BillingAccountStateChangeNotification",
  "eventTime": "2014-09-27T05:46:25.0Z",
  "eventId": "13048231",
  "event":
  {
    "billingAccount":
    {
      "id": "43",
      Following a whole representation of the BillingAccount with all its attributes
      See BillingAccount Resource.
    }
  }
}

```

Settlement Note Advice Notification UML Diagram:



SETTLEMENTNOTEADVICE NOTIFICATION

```

{
  "eventType": "SettlementNoteAdviceNotification",
  "eventTime": "2014-09-27T05:46:25.0Z",
  "eventId": "108345",
  "event":
  {
    "settlementNoteAdvice":
    {
      "id": "456",
      Following a whole representation of the SettlementNoteAdvice with all its attributes
      See SettlementNoteAdvice Resource.
    }
  }
}
  
```


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
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
Execute an Action on an Entity	POST on TASK Resource	POST must be used to execute Task Resources
Other Request Methods	POST on TASK Resource	GET and POST must not be used to tunnel other request methods.

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

Notifications are also described in a subsequent section.

GET API/BILLINGMANAGEMENT/ BILLINGACCOUNT /{ID}

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve BillingAccount (s) in a BillingAccount repository
- Filtering is enabled for all attributes
- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

We mandate L0 (equality) filtering in every specification as per REST Guidelines.

Example: Retrieve BillingAccount 65.

REQUEST
GET /billingManagement/billingAccount/65 Accept: application/json
RESPONSE
<pre>{ "id": "65", "href": "http://serverlocation:port/billingManagement/billingAccount/65", "ratingType": "postpaid", "name": "my personal Billing Account", "state": "Active", "validFor": { "startDateTime": "2013-04-19T16:42:23.0Z" }, "customerAccount": { "id": "15", "href": "http://serverlocation:port/customerManagement/customerAccount/15", "name": "Customer Account xxx" }, "customerBillingCycleSpecification": { "id": "26",</pre>

```
    "href":
"http://serverlocation:port/billingManagement/customerBillingCycleSpecification/26",
    "name": "Monthly billing on the 15"
  },
  "customerBillFormat": {
    "id": "23",
    "href": "http://serverlocation:port/billingManagement/customerBillFormat/23",
    "name": "Detailed invoice"
  },
  "customerBillPresentationMedia": {
    "id": "25",
    "href":
"http://serverlocation:port/billingManagement/customerBillPresentationMedia/25",
    "name": "Electronic invoice"
  },
  "currency": {
    "currencyCode": "EUR"
  },
  "billingAccountBalance": [
    {
      "type": "ReceivableBalance",
      "amount": 52.3,
      "validFor": {
        "startDateTime": "2013-04-19T16:42:23.0Z",
        "endDateTime": "2013-06-19T00:00:00.0Z"
      },
      "status": "Due"
    }
  ],
  "relatedParty": [
    {
      "id": "1",
      "href": "http://serverlocation:port/partyManagement/partyRole/1",
      "role": "bill receiver"
    },
    {
      "id": "5",
      "href": "http://serverlocation:port/partyManagement/partyRole/5",
      "role": "bill responsible"
    }
  ]
}
```

```

    }
  ],
  "paymentMean": {
    "id": "45",
    "href": "http://serverlocation:port/customerManagement/paymentMean/45",
    "name": "my favourite payment mean"
  }
}

```

PUT API/BILLINGMANAGEMENT/BILLINGACCOUNT/{ID}

No put operation for BillingAccount

PATCH API/BILLINGMANAGEMENT/ BILLINGACCOUNT /{ID}

This Uniform Contract operation is used to partially update the representation of a managed entity or a task.

Description :

- Provide an overall description of the Operation
- Describe the input representation of the <resource> instance.
- Describe if the resource represents a managed entity or a task.
- Describe the structure of the identifier.

Behavior :

- What status and exception codes are returned.
- Returns HTTP/1.1 status code 201 if the request was successful.
- Any other special return and/or exception codes.

Attribute name	Patchable	error
RatingType	No	
Name	Y	
Valid for: startDateTime	Y	
Valid for:endDateTime	Y	After the start date

CustomerAccount.id	Y	Should exist
CustomerBillingCycleSpecification.id	Y	
CustomerBillFormat.id	Y	
CustomerBillPresentationMedia.id	Y	
Currency code	Y	
PaymentMean.id	Y	
RelatedParty.id	Y	Bill receiver is mandatory
State	Y	Transition state should be valid (need further work in financial entities)
BillingAccountBalance	N	

No additional complex rules for patching attributes.

Example : Update BillingAccount 65 : change of customer bill presentation media.

REQUEST
PATCH billingManagement/billingAccount/65 Content-type: application/json <pre>{ "customerBillPresentationMedia": { "id": "78", "href": http://serverlocation:port/billingManagement/customerBillPresentationMedia/78" } }</pre>
RESPONSE

```

201
Content-Type: application/json
{
  "customerBillPresentationMedia": {
    "id": "78",
    "href": "http://serverlocation:port/billingManagement/customerBillPresentationMedia/78",
    "name": "Paper invoice"
  }
}

```

POST API/BILLING MANAGEMENT/BILLINGACCOUNT

This operation is used to create a BillingAccount.

Pre-conditions:

We assume that the customer and the customer account have been already defined. The bill receiver contact also exists.

All reference data have been already defined.

Description :

- Provides an overall description of the Operation
- Describes the input representation of the <resource> instance.
- Describes if the resource represents a managed entity or a task.
- Describes the structure of the identifier.

Mandatory attributes are :

Attribute name	Mandatory	Default	error
RatingType	N	Postpaid	
Name	N	Customer name	
Valid for: startDateTime	N	Today	Valid date not earlier than one bill cycle in the past
Valid for: endDateTime	N		After the

			start date
CustomerAccount.id	Y		Should exist (see precondition)
CustomerBillingCycleSpecification.id	N	Bill issuer choice	
CustomerBillFormat.id	N	Standard invoice	
CustomerBillPresentationMedia.id	N	Electronic invoice	
Currency code	N	National currency	
PaymentMean	N	Customer choice	
RelatedParty.id	Y		Bill receiver is mandatory (see precondition)
BillingAccountBalance.id	N		

Additional rules

Rule name	Rule
POST Preconditions	Customer account must have been created previously Party role must exist

Behavior :

- Standard POST behavior

Example : creation of a BillingAccount

REQUEST

POST billingManagement/billingAccount

Content-type: application/json

```
{
  "ratingType": "postpaid",
  "name": "my personal Billing Account",
  "state": "active",
  "validFor": {
    "startDateTime": "2013-04-19T16:42:23.0Z"
  },
  "customerAccount": {
    "id": "45",
    "href": "http://serverlocation:port/customerManagement/customerAccount/15",
    "name": "Customer Account xxx"
  },
  "customerBillingCycleSpecification": {
    "id": "26",
    "href":
"http://serverlocation:port/billingManagement/customerBillingCycleSpecification/26",
    "name": "Monthly billing on the 15"
  },
  "customerBillFormat": {
    "id": "23",
    "href": "http://serverlocation:port/billingManagement/customerBillFormat/23",
    "name": "Detailed invoice"
  },
  "customerBillPresentationMedia": {
    "id": "25",
    "href":
"http://serverlocation:port/billingManagement/customerBillPresentationMedia/25",
    "name": "Electronic invoice"
  },
  "currency": {
    "currencyCode": "EUR"
  },
  "billingAccountBalance": [
    {
      "type": "ReceivableBalance",
      "amount": 52.3,

```



```

        "validFor": {
            "startDateTime": "2013-04-19T16:42:23.0Z",
            "endDateTime": "2013-06-19T00:00:00.0Z"
        },
        "status": "Due"
    }
],
"relatedParty": [
    {
        "id": "1",
        "href": "http://serverlocation:port/partyManagement/partyRole/1",
        "role": "bill receiver"
    },
    {
        "id": "5",
        "href": "http://serverlocation:port/partyManagement/partyRole/5",
        "role": "bill responsible"
    }
],
"paymentMean": {
    "id": "45",
    "href": "http://serverlocation:port/customerManagement/paymentMean/45",
    "name": "my favourite payment mean"
}
}

```

RESPONSE

```

201
Content-Type: application/json
{
    "id": "65",
    "href": "http://serverlocation:port/billingManagement/billingAccount/65",
    "ratingType": "postpaid",
    "name": "my personal Billing Account",
    "state": "Active",
    "validFor": {
        "startDateTime": "2013-04-19T16:42:23.0Z"
    },
}

```

```
"customerAccount": {
  "id": "15",
  "href": "http://serverlocation:port/customerManagement/customerAccount/15",
  "name": "Customer Account xxx"
},
"customerBillingCycleSpecification": {
  "id": "26",
  "href":
"http://serverlocation:port/billingManagement/customerBillingCycleSpecification/26",
  "name": "Monthly billing on the 15"
},
"customerBillFormat": {
  "id": "23",
  "href": "http://serverlocation:port/billingManagement/customerBillFormat/23",
  "name": "Detailed invoice"
},
"customerBillPresentationMedia": {
  "id": "25",
  "href":
"http://serverlocation:port/billingManagement/customerBillPresentationMedia/25",
  "name": "Electronic invoice"
},
"currency": {
  "currencyCode": "EUR"
},
"billingAccountBalance": [
  {
    "type": "ReceivableBalance",
    "amount": 52.3,
    "validFor": {
      "startDateTime": "2013-04-19T16:42:23.0Z",
      "endDateTime": "2013-06-19T00:00:00.0Z"
    },
    "status": "Due"
  }
],
"relatedParty": [
  {
    "id": "1",
```

```

        "href": "http://serverlocation:port/partyManagement/partyRole/1",
        "role": "bill receiver"
    },
    {
        "id": "5",
        "href": "http://serverlocation:port/partyManagement/partyRole/5",
        "role": "bill responsible"
    }
],
"paymentMean": {
    "id": "45",
    "href": "http://serverlocation:port/customerManagement/paymentMean/45",
    "name": "my favourite payment mean"
}
}

```

DELETE API/BILLINGMANAGEMENT/BILLINGACCOUNT/{ID}

No delete operation for the BillingAccount.

REQUEST
RESPONSE

POST API/BILLING MANAGEMENT/APPLIEDCUSTOMERBILLINGCHARGE

This operation is used to create applied customer billing charges..

Note: Adjustment needs another API to cover invoice adjustment and charge adjustment.

Pre-conditions:

Description :

- Provides an overall description of the Operation
- Describes the input representation of the <resource> instance.
- Describes if the resource represents a managed entity or a task.
- Describes the structure of the identifier.

Mandatory attributes are :

Attribute name	Mandatory	Default	error
date	N	Today	
description	N		
type	Y		Recurring, non recurring, usage, ...
currencyCode	Y		
taxIncludedAmount	N		
taxExcludedAmount	Y		
taxRate.amount	N		
service.id	Y		400 if service.id is invalid
service.idType	N		
productSpecification.name	Y		
productSpecification.productNumber	N		
period.startPeriod	N		Only mandatory for recurring charge
period.endPeriod	N		Only mandatory for recurring charge

Additional rules

Rule name	Rule
POST Preconditions	Service must have been created previously productSpecification must have been created previously

Behavior :

- Standard POST behavior

Example : creation of applied customer billing charge

REQUEST
POST billingManagement/appliedCustomerBillingCharge Content-type: application/json <pre> { "date": "2013-04-19T16:42:23.0Z", "description": "Partner Premium monthly fee", "type": "recurring", "currencyCode": "USD", "taxIncludedAmount": 2.4, "taxExcludedAmount": 2, "appliedCustomerBillingTaxRate": [{ "amount": 0.4, "taxCategory": "VAT" }], "serviceId": [{ "id": "0601020304", "type": "Mobile number" }], "productSpecification": [{ "name": "Partner Premium", </pre>

```

        "productNumber": "P001"
    }
],
"period": [
    {
        "startPeriod": "2013-10-01T00:00:00.0Z",
        "endPeriod": "2013-10-31T00:00:00.0Z"
    }
]
}

```

RESPONSE

```

201
Content-Type: application/json
{
    "id": "25",
    "href": "http://serverlocation:port/BillingManagement/appliedCustomerBillingChange/25",
    "date": "2013-04-19T16:42:23.0Z",
    "description": "Partner Premium monthly fee",
    "type": "recurring",
    "currencyCode": "USD",
    "taxIncludedAmount": 2.4,
    "taxExcludedAmount": 2,
    "appliedCustomerBillingTaxRate": [
        {
            "amount": 0.4,
            "taxCategory": "VAT"
        }
    ],
    "serviceId": [
        {
            "id": "0601020304",
            "type": "Mobile number"
        }
    ],
    "productSpecification": [
        {

```

```

        "name": "Partner Premium",
        "productNumber": "P001"
    }
],
"period": [
    {
        "startPeriod": "2013-10-01T00:00:00.0Z",
        "endPeriod": "2013-10-31T00:00:00.0Z"
    }
]
}

```

GET API/BILLING MANAGEMENT/APPLIEDCUSTOMERBILLINGCHARGE

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve AppliedCustomerBillingCharge (s) in a repository
- Filtering is enabled for all attributes
- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

Behavior :

- Standard GET behavior

We mandate L0 (equality) filtering in every specification as per REST Guidelines

Example: retrieval of applied customer billing charges

REQUEST

GET billingManagement/appliedCustomerBillingCharge?service.id=0601020304
Content-type: application/json

RESPONSE

```
{
  "id": "25",
  "href": "http://serverlocation:port/BillingManagement/appliedCustomerBillingCharge/25",
  "date": "2013-04-19T16:42:23.0Z",
  "description": "Partner Premium monthly fee",
  "type": "recurring",
  "currencyCode": "USD",
  "taxIncludedAmount": 2.4,
  "taxExcludedAmount": 2,
  "appliedCustomerBillingTaxRate": [
    {
      "amount": 0.4,
      "taxCategory": "VAT"
    }
  ],
  "serviceId": [
    {
      "id": "0601020304",
      "type": "Mobile number"
    }
  ],
  "productSpecification": [
    {
      "name": "Partner Premium",
      "productNumber": "P001"
    }
  ],
  "period": [
    {
      "startPeriod": "2013-10-01T00:00:00.0Z",
      "endPeriod": "2013-10-31T00:00:00.0Z"
    }
  ]
}
```

DELETE API/BILLINGMANAGEMENT/ APPLIEDCUSTOMERBILLINGCHARGE /{ID}

No delete operation for the AppliedCustomerBillingCharge

REQUEST
RESPONSE

PATCH API/BILLINGMANAGEMENT/ APPLIEDCUSTOMERBILLINGCHARGE /{ID}

No patch operation for the AppliedCustomerBillingCharge

REQUEST
RESPONSE

PUT API/BILLINGMANAGEMENT/ APPLIEDCUSTOMERBILLINGCHARGE /{ID}

No put operation for the AppliedCustomerBillingCharge

REQUEST
RESPONSE

GET API/BILLINGMANAGEMENT/SETTLEMENTNOTEADVICE /{ID}

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve SettlementNoteAdvice (s) in a repository
- Filtering is enabled for all attributes

- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

Behavior :

- Standard GET behavior

We mandate L0 (equality) filtering in every specification as per REST Guidelines

Example: get a settlement note advice

REQUEST
GET billingManagement/settlementNoteAdvice?id=26 Content-type: application/json

RESPONSE
Status:200 Content-Type: application/json Last-Modified:11/28/13 13:30:30 <pre> { "id": "26", "href": "http://serverlocation:port/BillingManagement/settlementNoteAdvice/26", "date": "2013-04-19T16:42:23.0Z", "description": "Settlement note â€œ From 2013/10/01 to 2013/10/31", "paymentDueDate": "2013-04-19T16:42:23.0Z", "taxDate": "2013-04-19T16:42:23.0Z", "currencyCode": "EUR", "taxExcludedAmount": 89933.25, "taxIncludedAmount": 107560.16, "taxItem": [{ "taxCategory": "VAT", "taxRate": 19.6, "taxAmount": 17626.91 }] } </pre>

```

],
"settlementMethod": {
  "code": "NET",
  "label": "Netting"
},
"receiver": {
  "id": "63796",
  "href": "http://serverlocation:port/PartyManagement/partyRole/63796",
  "taxRegistration": {
    "number": "FR12345678912"
  }
},
"issuer": {
  "id": "0800",
  "href": "http://serverlocation:port/PartyManagement/partyRole/0800",
  "taxRegistration": {
    "number": "FR98765432178"
  }
},
"settlementNoteImage": {
  "imageFormat": "pdf",
  "imageSize": 130,
  "imageFileName": "BungiornoFrance-2013October-1234",
  "imageFileURL":
"http://serverlocation:port/SettlementNoteImage/RQAAAABAAAAAALryCQAbAAAAAAxAF8ASQBuaAHMAdABhAGwA
b"
},
"settlementNoteItem": [
  {
    "itemNumber": "1",
    "itemId": "0815",
    "itemLabel": "Achats Gamifive",
    "quantity": 34873,
    "taxExcludedUnitPrice": 1.463,
    "taxExcludedAmount": 51019.2,
    "taxIncludedAmount": 61018.96,
    "taxItem": [
      {
        "taxCategory": "VAT",

```

```

        "taxRate": 19.6,
        "taxAmount": 9999.76
    }
],
"period": {
    "startPeriod": "2013-10-01T00:00:00.0Z",
    "endPeriod": "2013-10-31T00:00:00.0Z"
},
"productSpecification": {
    "name": "Gamifive",
    "productNumber": "17060"
}
},
{
    "itemNumber": "2",
    "itemId": "0816",
    "itemLabel": "Achats iGirls TV",
    "quantity": 19001,
    "taxExcludedUnitPrice": 2.048,
    "taxExcludedAmount": 38914.05,
    "taxIncludedAmount": 46541.2,
    "period": {
        "startPeriod": "2013-10-01T00:00:00.0Z",
        "endPeriod": "2013-10-31T00:00:00.0Z"
    },
    "productSpecification": {
        "name": "iGirls TV",
        "productNumber": "17063"
    }
}
]
}

```

DELETE API/BILLINGMANAGEMENT/ SETTLEMENT NOTE ADVICE /{ID}

No delete operation for the SettlementNoteAdvice

REQUEST

RESPONSE

PATCH API/BILLINGMANAGEMENT/ SETTLEMENT NOTE ADVICE /{ID}

No patch operation for the SettlementNoteAdvice

REQUEST
RESPONSE

PUT API/BILLINGMANAGEMENT/ SETTLEMENT NOTE ADVICE /{ID}

No put operation for the SettlementNoteAdvice

REQUEST
RESPONSE

POST API/BILLINGMANAGEMENT/ SETTLEMENT NOTE ADVICE /{ID}

No post operation for the SettlementNoteAdvice

REQUEST

RESPONSE

GET API/BILLING MANAGEMENT/ CUSTOMER BILLING CYCLE SPECIFICATION

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve CustomerBillingCycleSpecification (s) in a repository
- Filtering is enabled for all attributes
- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

Behavior :

- Standard GET behavior

We mandate L0 (equality) filtering in every specification as per REST Guidelines

Example: CustomerBillingCycleSpecification retrieval

REQUEST
GET billingManagement/customerBillingCycleSpecification/26 Content-type: application/json

RESPONSE
Status:200 Content-Type: application/json Last-Modified:11/28/13 13:30:30 <pre>{ "id": "26", "href": "http://serverlocation:port/billingManagement/customerbillingCycleSpecification/26", "name": "Monthly billing on the 15",</pre>

```

    "billingDateShift": 15,
    "frequency": "monthly"
}

```

GET API/BILLING MANAGEMENT/ CUSTOMER BILL FORMAT

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve CustomerBillFormat (s) in a repository
- Filtering is enabled for all attributes
- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

Behavior :

- Standard GET behavior

We mandate L0 (equality) filtering in every specification as per REST Guidelines

Example: CustomerBillFormat retrieval

REQUEST
GET billingManagement/customerBillFormat/26 Content-type: application/json

RESPONSE
Status:200 Content-Type: application/json Last-Modified:11/28/13 13:30:30 <pre> { "id": "26", "href": "http://serverlocation:port/billingManagement/customerBillFormat/26", "name": "Detailed invoice" } </pre>

GET API/BILLING MANAGEMENT/ CUSTOMER BILL PRESENTATION MEDIA

Note that collections can be retrieved via GET /API/<RESOURCE> with no {ID}

Description :

- Operation to retrieve CustomerBillPresentationMedia (s) in a repository
- Filtering is enabled for all attributes
- Attribute selection is enabled for all attributes
- The resource is either a managed entity (query by id) or a collection (query with criteria)
- The resource identifier is a http uri

Behavior :

- Standard behavior and response codes for GET operations

Behavior :

- Standard GET behavior

We mandate L0 (equality) filtering in every specification as per REST Guidelines

Example: CustomerBillPresentationMedia retrieval

REQUEST

```
GET billingManagement/customerBillPresentationMedia/26
Content-type: application/json
```

RESPONSE

```
Status:200
Content-Type: application/json
Last-Modified:11/28/13 13:30:30
{
  "id": "26",
  "href": "http://serverlocation:port/billingManagement/customerBillPresentationMedia/26",
  "name": "Electronic invoice"
}
```


API NOTIFICATION TEMPLATES

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.

No notification mechanism for appliedCustomerBillingCharge

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.

REQUEST
POST /api/hub Accept: application/json <pre>{"callback": "http://in.listener.com"}</pre>
RESPONSE
201 Content-Type: application/json Location: /api/hub/42 <pre>{"id": "42", "callback": "http://in.listener.com", "query": null}</pre>

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.

REQUEST
DELETE /api/hub/{id} Accept: application/json
RESPONSE
204

Example see TMF REST Design Guidelines.

RELEASE HISTORY

Release Number	Date	Release led by:	Description
Release 1.0	04/15/2013	Pierre Gauthier TM Forum pgauthier@tmforum.org	First Release of Draft Version of the Document.
Release 1.1			Updated for use in the Paris Spec Jam – and rebranded.

CONTRIBUTORS TO DOCUMENT

Veronique Mauneau	Orange
Johannes Minnaar	Ericsson
Steve Bouch	BT
George Glass	BT
Jean-Luc Tymen	Orange
Christian Koerner	Infonova
Milan Patel	Huawei
Josh Salomon	Amdocs
Pierre Gauthier	TM Forum
John Morey	Ciena
Cliff C Faurer	AMKB Cloud