TM Forum Specification

Customer Bill Management API Conformance Profile

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Notice

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INTRODUCTION - API DESCRIPTION

The following document is the Conformance Profile of the REST API for customer bill management. It includes the model definition as well as all available operations. Products subscribed by a customer are rated at different prices depending on product offering prices and prices rules and additional terms and conditions determined by the customer.

The rating process takes product usages and applies rates to them. The billing process applies additional charges (recurring charges, one time charges), discounts and taxes to products then aggregate applied rates into bills sent to customers. The bill, ultimate goal of a billing process, can be created as a result of a cycle run (done by batch in general) or by the result of others events such as a customer request or an account termination (done in real-time).

This API allows to find and retrieve one or several customer bills (also called invoices) produced for a customer. A customer bill is an electronic or paper document produced at the end of the billing process. The customer bill gathers and displays different items (applied customer billing rates generated during the rating and billing processes) to be charged to a customer. It represents a total amount due for all the products during the billing period and all significant information like dates, bill reference... The API model support the needs for the three basic billing types : postpaid periodical bill, postpaid real-time bill and prepaid real-time bill.

This API provides also operations to find and retrieve the details of applied customer billing rates presented on a customer bill. Finally, this API allows to request in real-time a customer bill creation and to manage this request.

RESOURCE MODEL CONFORMANCE

API MANDATORY RESOURCES

The following table indicates the mandatory resources for this API.

Resource Name	Comment
CustomerBill	
CustomerBillOnDemand	
AppliedCustomerBillingRate	

General Notes on Resource Attribute Conformance

There are three situations that could occur for an attribute:

- o Mandatory attribute,
- o Mandatory attribute if the optional parent attribute is present,
- o Non-mandatory/Optional attribute. Those are all the other attributes not mentioned in the following subsections. Please refer to the corresponding API REST Specification for more details.

- The tables in the subsections below indicate which attributes are mandatory including mandatory when an optional parent is present.
- Where a resource is an input into an API (e.g. POST, PATCH), Mandatory means that the attribute value must be supplied by the API consumer in the input (and must not be blank or null).
- Where a resource is an output from an API (e.g. GET, POST), Mandatory means that the attribute value must be supplied by the API provider in the output (and must not be blank or null).
- For a sub-resource that is not an array, Mandatory (cardinality 1..1) means that the sub-resource must be present, while Optional (cardinality 0..1) means that the sub-resource may be absent. Mandatory and Optional on the sub-resource attributes apply to the sub-resource if present.
- For a sub-resource that is an array, Mandatory (cardinality 1..*) means that at least one sub-resource must be present in the array, while Optional (cardinality 0..*) means that the array may be absent. Mandatory and Optional on the sub-resource attributes apply to each of the sub-resources if present.

In this table are listed all mandatory attributes. A mandatory attribute MUST be retrieved in resource representation when no attribute selection is used (e.g. GET /../{id}) without any attribute selection

When an attribute is listed with an indentation (in second column) it means this attribute is mandatory if root (parent) attribute is present.

CustomerBill Resource Mandatory Attributes

Mandatory attribute when parent is present		Rule
href		M
id		M
billDocument		M Array of AttachmentRefOrValue
	id	M
billDocument.size (if present)		
	amount	M
	units	M
billCycle (if present)		
	id	M
billingAccount (if present)		One or both of billingAccount or financialAccount must be present
	id	M
financialAccount (if present)		One or both of billingAccount or financialAccount must be present
	id	M
paymentMethod (if present)		
	id	M
amountDue (if present)		
	unit	M
	value	M
relatedParty (if present)		Array of RelatedParty The role attribute is not mandatory because the id could be a partyRole id.

Mandatory attribute when parent is present	Rule
	In this case @referredType must indicate the partyRole (example User, Customer, etc.). If the id is a Party id then a role must be provided.
@referredType	M
id	M
remainingAmount (if present)	See conditions for Money at amountDue
taxItem (if present)	Array of TaxItem
taxAmount	M See conditions for Money at amountDue
appliedPayment (if present)	Array of AppliedPayment
payment	M
appliedPayment.payment	M
id	M
appliedAmount	M See conditions for Money at amountDue

CustomerBillOnDemand Resource Mandatory Attributes

Mandatory attribute when parent is present	Rule
href	M
id	M
billingAccount (if present)	One or both of billingAccount or relatedParty must be present.
id	M
customerBill (if present)	

Mandatory attribute when parent is present		Rule
	href	M customerBill is an endpoint of this API
	id	M
relatedParty (if present)		One or both of billingAccount or relatedParty must be present. The role attribute is not mandatory because the id could be a partyRole id. In this case @referredType must indicate the partyRole (example User, Customer, etc.). If the id is a Party id then a role must be provided.
	@referredType	M
	id	M

AppliedCustomerBillingRate Resource Mandatory Attributes

Mandatory attribute when parent is present		Rule
href		M
id		M
isBilled		M
billingAccount (if present)		Mandatory if the AppliedCustomerBillingRate is not yet issued in a bill
	id	M
product (if present)		
	id	M
bill (if present)		
	href	M customerBill is an endpoint of this API

Mandatory attribute when parent is present		Rule
	id	M
taxExcludedAmount (if present)		
	unit	M
	value	M
taxIncludedAmount (if present)		See conditions for Money at taxExcludedAmount
appliedTax (if present)		Array of AppliedBillingTaxRate
	taxAmount	M See conditions for Money at taxExcludedAmount
characteristic (if present)		Array of Characteristic
	name	M
	value	M
characteristic.characteristicRelationship (if present)		Array of CharacteristicRelationship
	id	M

API OPERATIONS CONFORMANCE

For every single resource the following tables includes mandatory operations.

CustomerBill Mandatory Operations

The following table indicates which ones are mandatory for the CustomerBill resource:

Uniform API Operation
GET
PATCH

CustomerBillOnDemand Mandatory Operations

The following table indicates which ones are mandatory for the CustomerBillOnDemand resource:

Uniform API Operation
GET
POST

AppliedCustomerBillingRate Mandatory Operations

The following table indicates which ones are mandatory for the AppliedCustomerBillingRate resource:

Uniform API Operation
GET

API GET OPERATION CONFORMANCE

All the GET operations in this API share the same status code pattern.

GET	Mandatory/Optional
Response Status Code 200 if successful	M
Response Status Code 404 if not found	M

Definitions for Filter

The following definitions apply to all the GET operations:

- Filtered Search: A filtered search can be applied using query parameters to obtain only the resources that meet the criteria defined by the filtering parameters included in the query request. Several elements can be applied to the filtered search. In that case logic, a logical AND is applied to combine the criteria (e.g.:?severity=<value>&status=<value>).
- Attribute selection (Limiting Response Data): In order to limit which attributes are included in the response, the GET request can include the ?fields= query parameter. Only those attributes whose names are supplied in this parameter will be returned. Attribute selection capabilities are the same for collections retrieval and individual resource queries.
- Level: The filtering and attribute selection can apply to the top level properties (attributes) and subproperties. The tables below show which attributes need to be supported in top-level or contained resources.

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

This operation list or find CustomerBill entities

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

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

This operation retrieves a CustomerBill entity. Attribute selection is enabled for all first level attributes.

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

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

This operation list or find CustomerBillOnDemand entities

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

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

This operation retrieves a CustomerBillOnDemand entity. Attribute selection is enabled for all first level attributes.

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

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

This operation list or find AppliedCustomerBillingRate entities

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

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

This operation retrieves a AppliedCustomerBillingRate entity. Attribute selection is enabled for all first level attributes.

Attribute selection is mandatory for all first level attributes except for the href attribute.

Filtering on sub-resources is optional for all compliance levels

API POST OPERATION CONFORMANCE

All the POST operations in this API share the same status code pattern.

POST	Mandatory/Optional
Status Code 201 if resource created	M

POST /customerBillOnDemand

This operation creates a CustomerBillOnDemand entity.

The following table provides the list of mandatory attributes when creating an instance of the CustomerBillOnDemand resource, including any possible rule, conditions and applicable default values.

Mandatory Attributes	Rule
billingAccount	M (if relatedParty is not present)
relatedParty	M (if billingAccount is not present)

API PATCH OPERATION CONFORMANCE

All the PATCH operations in this API share the same status code pattern.

The mandatory application context is JSON Merge.

PATCH	Mandatory/Optional
Status Code 200 if resource modified	M

PATCH /customerBill/{id}

This operation updates partially a CustomerBill entity.

Patchable Attributes	Rule
state	

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Release History

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Pre-production	31-Jul-2020	Lucius Gruber Deutsche Telekom	Updated based on schema-library and Design Guideline v4 patterns
Production	23-Sep-2020	Adrienne Walcott	Updated to reflect TM Forum Approved Status

Version History

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4.0.0	31-Jul-2020	Alan Pope	Final edits prior to publication