TM Forum Specification

Usage Consumption API Conformance Profile

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INTRODUCTION

The following document is the REST API Conformance for the Usage Consumption API.

This API covers the consumption follow up function providing ongoing information about usages related to any subscribed communication products (voice, data, TV,…) without having to wait the invoice production. This information may concern usages charged on a bucket supervised or not and so the remaining credits on the bucket. It allows customers or users to be informed on usages done and remaining credits on the buckets that they consume under their purchased offers and options.

A bucket is a quantity of units (time, volume, currency or events) available via a subscribed offer or option and that can be consumed during a validity period. A bucket has at least one balance valid at a given point. This balance is decremented by usage charged on the bucket and incremented by credit operations (like top-up operations for example). At a given point, this balance defines the remaining allowed usage quantity for a given period, corresponding to the initial allowed usage quantity minus consumed usage quantity.

The bucket has also consumption counters which give measures about the usage quantity consumed on the bucket. These counters can be detailed by device or by user for example when a bucket is shared between several devices or several users.

The usage consumption API allow to view at a given point the balance and the consumption counters of the various buckets (SMS, Voice, Data for example) that one or more user(s) consume with each of his devices, according to the purchased offers and options.

UsageConsumption API MANDATORY AND OPTIONAL RESOURCES

Resource Name	Mandatory or Optional	Comments
UsageConsumptionReport	M	

UsageConsumptionReport resource MANDATORY AND OPTIONAL ATTRIBUTES

Attribute Name		Mandatory or Optional	Comments
id		O	Only required if the server stores reports for future individual resource requests
href		O	Only required if the server stores reports for future individual resource requests
name		M	
description		O	
effectiveDate		M	
bucket		M	Array of structures including at least one entity
	id	M	
	name	O	
	usageType	O	
	isShared	O	If not included indicates not

Attribute Name			Mandatory or Optional	Comments
				shared
	product		M	
		id	M	
		href	O	
		name	O	
		publicIdentifier	O	
		user	O	
		id	M if user included	
		name	O	
		role	O	
	bucketBalance		M if bucketCounter not included	Mandatory if bucketCounter not included Array of structures including at least one entity
		unit	M if bucketBalance included	
		remainingValue	M if bucketBalance included	
		remainingValueLabel	O	
		validFor	O	
		startDateTime	M if validFor included	
		endDateTime	O	
	bucketCounter		M if bucketBalance not included	Mandatory if bucketBalance not included

Attribute Name			Mandatory or Optional	Comments
				Array of structures including at least one entity
		countertype	O	
		level	O	
		unit	M if bucketCounter included	
		value	M if bucketCounter included	
		valueLabel	O	
		validFor	O	
			startDateTime	M if validFor included	
			endDateTime	O	
relatedParty			O	Array of structures
	id		M If relatedParty included	
	name		O	
	role		O	

API OPERATIONS CONFORMANCE

For every single resource use the following templates and define what operations are optional and what operations are mandatory.

Usage Consumption MANDATORY AND OPTIONAL OPERATIONS

Uniform API Operation	Mandatory/Optional	Comments
GET	M	GET must be used to retrieve a representation of a resource
POST	NA	POST must be used to create a new resource
PUT	NA	PUT must be used to completely update a resource identified by its resource URI
PATCH (JSON-PATH)	NA	PATCH must be used to partially update a resource
DELETE	NA	DELETE must be used to remove a resource

API GET FILTERING OPERATION CONFORMANCE

Definitions

Filtered Search: A filtered search can be applied using query parameters in order to obtain only the resource entities 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.:?name=<value> &owner.id=<value>)

Filtered Response Data (Response Attribute selection): In order to apply a filter and limit the number of attributes included in the response, the GET request can include the "?fields=" query parameter. Several elements can be applied to the filter. In that case, a logical AND is applied to combine the values (e.g.:?fields=name, description will provide in the response only the values assigned to attributes name and description). Attribute selection capabilities are the same for collections retrieval and individual resource queries

Filtering in UsageConsumptionReport resource

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection First Level	Response Attribute Selection N Level
id	NA	NA	M	NA
href	NA	NA	M	NA
name	O	NA	M	NA
description	NA	NA	M	NA
effectiveDate	NA	NA	M	NA
bucket	NA	O	M	O
bucket.product	NA	O (id) (name) (publicIdentifier) (user)	M	NA

Attribute name	Filtered search First Level	Filtered search N Level	Response Attribute Selection First Level	Response Attribute Selection N Level
bucket.bucketBalance	NA	NA	M	NA
bucket.bucketCounter	NA	O (validFor)	M	NA
relatedParty	NA	O (id) (name) (role)	M	NA

GET /usageManagement/v1/usageConsumptionReport

Filtered Search: A filtered search can be applied using the following filtering criteria

- bucket.bucketCounter.validFor.startDateTime: to obtain the reports where the usage was measured from a given moment in time

- bucket. bucketCounter.validFor.endDateTime: to obtain the reports where the usage was measured until a given moment in time

- bucket.product.id: to obtain the reports for a given product identified by id

- bucket.product.name: to obtain the reports for a given product identified by name

- bucket.publicIdentifier: to obtain the reports for a given product identified by public id

- bucket.user.id: to obtain the reports for a given user identified by id

- bucket.user.name: to obtain the reports for a given user identified by name

- relatedParty.id: to obtain the reports related to a given party identified by id

- relatedParty.name: to obtain the reports related to a given party identified by name

- relatedParty.role: to obtain the reports related to a given party with a given role

Filtered Response Data: A filtered response can be requested for the following attributes using the "?fields=" query parameter

- Any of the attributes in the first level of Usage Consumption Report resource definition

- Any of the attributes in the second level of Usage Consumption Report resource definition under bucket (bucket.product, bucket.product.user, bucket.bucketBalance, bucket.bucketCounter)

GET /usageManagement/v1/usageConsumptionReport/{usageConsumptionReportId}

Filtered Response Data: A filtered response can be requested for the following attributes using the "?fields=" query parameter

- Any of the attributes in the first level of Usage Consumption Report resource definition

- Any of the attributes in the second level of Usage Consumption Report resource definition under bucket (bucket.product, bucket.product.user, bucket.bucketBalance, bucket.bucketCounter)

API CONFORMANCE TEST SCENARIOS

This section describes the test scenarios required for the basic CONNECT certification of Usage Consumption API.

Test Cases must be executed in the order defined for each resource because the result from one of the scenarios will be input for the next one.

Requests must be addressed to the endpoint provided for certification, specifically they must be addressed to the URI defined by the concatenation of the {apiRoot} and the specific resource, where the {apiRoot} is defined as **{serverRoot}/usageManagement/v1**, being {serverRoot} the certification endpoint

Usage Consumption Report resource TEST CASES

Nominal Scenarios

TC_UsageReport_N1 – Request usage reports

- Register the following definition of usage reports in the server environment to simulate usage in the current month (validity period between first and last day of the current month)

```
usageReport = ur001

    name = report1

    user = u1

    product_Id = p111

        bucket_Id=b111

            type of bucket = data

            measurement period = first to last day of the month

            usage in measured period = 3 MB

            balance till the end of the month = 2 MB


    usageReport = ur002

        name = report2

        user = u1

        product_Id = p222

            bucket_Id=b222

                type of bucket = voice
```

```
                  measurement period = first to last day of the month

                  usage in measured period = 500 minutes

                  balance till the end of the month = 300 minutes



usageReport = ur003

     name = report3

     user = u2

     product_Id = p333

          bucket_Id=b331

                  type of bucket = sms

                  measurement period = first to last day of the month

                  usage in measured period = 150 message

                  balance in the period = 149 messages



     product_Id = p222

          bucket_Id=b332

                  type of bucket = national voice

                  measurement period = first to last day of the month

                  usage in measured period = 500 minutes

                  balance till the end of the month = 340 minutes
```

- Send a **GET** message to **{apiRoot}/usageConsumptionReport**

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The body of the response includes three UsageConsumptionReport resources with IDs set to ur001, ur002 & ur003, the same identifiers as originally registered in the server

    - The response message includes all mandatory parameters and the values originally registered in the server

```
[ {

  "id": "ur001",

  "href": "https://host:port/usageManagement/usageConsumptionReport/ur001",

  "name": "report 1",

  "effectiveDate": <any valid date>,

   "bucket": [

    {

      "id": "b111",

      "usageType": "data",

      },

      "product": {

        "id": "p111",

         "user": {

             "id": "u1"

          }

       },

      "bucketBalance": [

        {

            "unit":"MB",

            "remainingValue": 2.0,

            "validFor": {

                "startDateTime": <date when report is requested>,

                "endDateTime": <last day of current month>

         }

      ],

      "bucketCounter": [

        {

            "unit":"MB",
```

```
            "value": 3.0,

            "validFor": {

                "startDateTime": <first day of current month>,

                "endDateTime": <date when report is requested>

        }

    ]

  ]

},

{

"id": "ur002",

"href": "https://host:port/usageManagement/usageConsumptionReport/ur002",

"name": "report 2",

"effectiveDate": <any valid date>,

 "bucket": [

  {

    "id": "b222",

    "usageType": "voice",

    },

    "product": {

      "id": "p222",

       "user": {

          "id": "u1"

        }

      },

    "bucketBalance": [

      {

          "unit":"minutes",

          "remainingValue": 300.0,

          "validFor": {
```

```
                    "startDateTime": <date when report is requested>,

                    "endDateTime": <last day of current month>

              }

         ],

        "bucketCounter": [

          {

               "unit":"minutes",

               "value": 500.0,

               "validFor": {

                   "startDateTime": <first day of current month>,

                   "endDateTime": <date when report is requested>

              }

          ]

        }

      ]

    };

  "id": "ur003",

    "href": "https://host:port/usageManagement/usageConsumptionReport/ur003",

    "name": "report 3",

    "effectiveDate": <any valid date>,

     "bucket": [

      {

         "id": "b331",

         "usageType": "data",

         "product": {

           "id": "p333",

            "user": {

                "id": "u2"

              }
```

```
        },
        "bucketBalance": [

            {
                    "unit":"messages",

                    "remainingValue": 149.0,

                    "validFor": {

                        "startDateTime": <date when report is requested>,

                        "endDateTime": <last day of current month>

                }

            }

        ],

        "bucketCounter": [

            {
                    "unit":"messages",

                    "value": 150.0,

                     "validFor": {

                        "startDateTime": <first day of current month>,

                        "endDateTime": <date when report is requested>

                    }

                }

        ]

},

{

    "id": "b332",

    "usageType": "voice",

    "product": {

        "id": "p222",

         "user": {

                "id": "u2"
```

```
                }
              },
              "bucketBalance": [
                {
                    "unit":"minutes",

                    "remainingValue": 340.0,

                    "validFor": {

                       "startDateTime": <date when report is requested>,

                       "endDateTime": <last day of current month>

                    }

                }
              ],
              "bucketCounter": [
                {
                    "unit":"minutes",

                    "value": 500.0,

                     "validFor": {

                        "startDateTime": <first day of current month>,

                        "endDateTime": <date when report is requested>

                     }

                }
              ]
            }
          ]
        }
      ]
```

TC_UsageReport_N2 – Request usage report for specific user

- Send a **GET** message to **{apiRoot}/usageConsumptionReport?relatedParty.id=u1**

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The body of the response includes two UsageConsumptionReport resources with IDs set to ur001 & ur002, the same identifiers as originally registered in the server

    - The response message includes all mandatory parameters and the values originally registered in the server

```
[
   "id": "ur001",

   "href": "https://host:port/usageManagement/usageConsumptionReport/ur001",

   "name": "report 1",

   "effectiveDate": <any valid date>,

   "bucket": [

     {

       "id": "b111",

       "usageType": "data",

       },

       "product": {

         "id": "p111",

          "user": {

             "id": "u1"

           }

        },

        "bucketBalance": [

         {

             "unit":"MB",

             "remainingValue": 2.0,

             "validFor": {
```

```
                        "startDateTime": <date when report is requested>,

                        "endDateTime": <last day of current month>

            }

        ],

        "bucketCounter": [

            {

                "unit":"MB",

                "value": 3.0,

                "validFor": {

                    "startDateTime": <first day of current month>,

                    "endDateTime": <date when report is requested>

                }

            }

        ]

    }

},

{

"id": "ur002",

"href": "https://host:port/usageManagement/usageConsumptionReport/ur002",

"name": "report 2",

"effectiveDate": <any valid date>,

 "bucket": [

    {

        "id": "b222",

        "usageType": "voice",

    },

    "product": {

        "id": "p222",

        "user": {

            "id": "u1"
```

```
                    }
                },
            "bucketBalance": [
              {
                    "unit":"minutes",

                    "remainingValue": 300.0,

                    "validFor": {

                        "startDateTime": <date when report is requested>,

                        "endDateTime": <last day of current month>

                }

            ],

            "bucketCounter": [

              {

                    "unit":"minutes",

                    "value": 500.0,

                    "validFor": {

                        "startDateTime": <first day of current month>,

                        "endDateTime": <date when report is requested>

                }

            ]

        }

    ]

}

]
```

- Send a **GET** message to **{apiRoot}/usageConsumptionReport?relatedParty.id=u2**

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

- The body of the response includes one UsageConsumptionReport resource with ID set to ur003, the same identifier as originally registered in the server

- The response message includes all mandatory parameters and the values originally registered in the server

```
[
{
"id": "ur003",
   "href": "https://host:port/usageManagement/usageConsumptionReport/ur003",
   "name": "report 3",
   "effectiveDate": <any valid date>,
    "bucket": [
      {
         "id": "b331",
         "usageType": "data",
         "product": {
            "id": "p333",
             "user": {
                  "id": "u2"
               }
         },
         "bucketBalance": [
           {
                "unit":"messages",
                "remainingValue": 149.0,
                "validFor": {
                    "startDateTime": <date when report is requested>,
                    "endDateTime": <last day of current month>
                }
```

```
            }
        ],
        "bucketCounter": [
            {
                "unit":"messages",
                "value": 150.0,
                "validFor": {
                    "startDateTime": <first day of current month>,
                    "endDateTime": <date when report is requested>
                }
            }
        ]
    },
    {
        "id": "b332",
        "usageType": "voice",
        "product": {
            "id": "p222",
            "user": {
                "id": "u2"
            }
        },
        "bucketBalance": [
            {
                "unit":"minutes",
                "remainingValue": 340.0,
                "validFor": {
                    "startDateTime": <date when report is requested>,
                    "endDateTime": <last day of current month>
```

```
                            }

                        }

                    ],

                    "bucketCounter": [

                        {

                            "unit":"minutes",

                            "value": 500.0,

                            "validFor": {

                                "startDateTime": <first day of current month>,

                                "endDateTime": <date when report is requested>

                            }

                        }

                    ]

                }

            ]
```

TC_UsageReport_N3 – Request usage report for specific product

- Send a **GET** message to **{apiRoot}/usageConsumptionReport?bucket.product.id=p333**

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The body of the response includes one UsageConsumptionReport resource with ID set to ur003 including at least the usage information regarding product p333, the same identifier as originally registered in the server

    - The response message includes all mandatory parameters and the values originally registered in the server

```
[

{

"id": "ur003",

    "href": "https://host:port/usageManagement/usageConsumptionReport/ur003",

    "name": "report 3",

    "effectiveDate": <any valid date>,

     "bucket": [

       {

          "id": "b331",

          "usageType": "data",

          "product": {

            "id": "p333",

             "user": {

                 "id": "u2"

               }

           },

          "bucketBalance": [

             {

                 "unit":"messages",

                 "remainingValue": 149.0,

                 "validFor": {

                    "startDateTime": <date when report is requested>,

                    "endDateTime": <last day of current month>

                }

              }

           ],

          "bucketCounter": [

             {

                 "unit":"messages",
```

```
            "value": 150.0,

             "validFor": {

                "startDateTime": <first day of current month>,

                "endDateTime": <date when report is requested>

            }

         }

       ]

     }

   }

]
```

TC_UsageReport_N4 – Request specific usage report

- Send a **GET** message to **{apiRoot}/usageConsumptionReport/ur002**

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK

  - The body of the response includes one UsageConsumptionReport resource with ID set to ur002, the same identifier as originally registered in the server

  - The response message includes all mandatory parameters and the values originally registered in the server

```
[ {

   "id": "ur002",

   "href": "https://host:port/usageManagement/usageConsumptionReport/ur002",

   "name": "report 2",

   "effectiveDate": <any valid date>,

   "bucket": [

    {

       "id": "b222",
```

```
        "usageType": "voice",

      },

      "product": {

        "id": "p222",

        "user": {

            "id": "u1"

          }

      },

      "bucketBalance": [

        {

            "unit":"minutes",

            "remainingValue": 300.0,

            "validFor": {

                "startDateTime": <date when report is requested>,

                "endDateTime": <last day of current month>

          }

        ],

        "bucketCounter": [

          {

            "unit":"minutes",

            "value": 500.0,

            "validFor": {

                "startDateTime": <first day of current month>,

                "endDateTime": <date when report is requested>

          }

        ]

      }

    ]

}]
```

TC_UsageReport_N5 – Filtered data response

- Send a **GET** message to **{apiRoot}/usageConsumptionReport/ur001?fields=id,bucket**

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK

    - The body of the response includes one UsageConsumptionReport resource with ID set to ur001, the same identifier as originally registered in the server

    - The response message includes all mandatory parameters and the values originally registered in the server

```
[ {

  "id": "ur001",

   "bucket": [

    {

      "id": "b111",

      "usageType": "data",

      },

      "product": {

        "id": "p111",

        "user": {

            "id": "u1"

         }

      },

      "bucketBalance": [

       {

            "unit":"MB",

            "remainingValue": 2.0,

            "validFor": {

                "startDateTime": <date when report is requested>,
```

```
                        "endDateTime": <last day of current month>

                   }

              ],

              "bucketCounter": [

                {

                     "unit":"MB",

                     "value": 3.0,

                     "validFor": {

                          "startDateTime": <first day of current month>,

                          "endDateTime": <date when report is requested>

                     }

                }

              ]

           ]

        }]
```

Error Scenarios

A GET request to retrieve a usage report for a product or user not defined will return a 200-OK with an empty array of Usage Consumption Reports resources.

TC_ UsageReport _E1 – Unknown user

- Send a **GET** message to **{apiRoot}/usageConsumptionReport?relatedParty.id=u000** where u000 does not match any of the identifiers previously creted in the server

- Wait for a response from the server with the following characteristics

  - Response Code 200-OK
  - Empty body

TC_ UsageReport _E1 – Unknown product

- Send a **GET** message to **{apiRoot}/usageConsumptionReport?bucket.product.id=p000** where p000 does not match any of the identifiers previously creted in the server

- Wait for a response from the server with the following characteristics

    - Response Code 200-OK
    - Empty body