|  |  |
| --- | --- |
| CHANGE REQUEST | |
| Meeting ID:\* | TDE 50 |
| Source:\* | Bob Flynn (Exacta GSS); bob.flynn@exactagss.com |
| Date:\* | 2021-05-11 |
| Reason for Change/s:\* | Charging Test Purposes |
| CR against: Release\* | Rel-3 |
| CR against: WI\* | Active <Work Item number>  MNT maintenance / < Work Item number(optional)>  Is this a mirror CR? Yes  No  mirror CR number: (Note to Rapporteur - use latest agreed revision)  STE Small Technical Enhancements / < Work Item number (optional)>  Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0018 v4.0.0 |
| Clauses \* |  |
| Type of change: \* | Editorial change  Bug Fix or Correction  Change to existing feature or functionality  New feature or functionality  Only ONE of the above shall be ticked |
| Other TS/TR(s) impacted | None |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES  NO  This CR may break backwards compatibility with the last approved version of the TS? YES  NO |
| Template Version: January 2019 (do not modify) | |

**oneM2M Notice**

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# Introduction

This contribution attempts to create new test Charging.

There are currently 4 test objectives defined related to event based charging:

|  |  |
| --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/001 |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType event is TIMERBASED in the stat collection configuration |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/002 |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is TIMERBASED in the stat collection configuration |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/003 |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is STORAGEBASED in the stat collection configuration |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/004 |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is DataOperation in the stat collection configuration |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 |

These test purposes are derived primarily from TS-0001 [1], clause 10.2.11, clause 9.6.24.

Note: Clause 10.2.11.1 is **informative**.

# 

### 10.2.11 Service Charging and Accounting Procedures

#### 10.2.11.1 Service event-based statistics collection for applications

This clause is informative and provides a use case example to explain how the Infrastructure Node provides statistics for AEs using the *<statsConfig>* and *<statsCollect>* resources as defined in clauses 9.6.23, 9.6.24.and 9.6.25.

Figure 10.2.11.1-1 shows an example of service layer event-based charging based on the Infrastructure Node.

Step 1-2: A statistics collection resource called *<statsConfigSCA1>* was created at the IN-CSE by a billing application. Note that the *<statsConfig>* can also be provisioned. In this use case, the *<statsConfigSCA1>* has the *<eventConfigSCA1>* sub-resource. For this specific use case, the *<eventConfigSCA1>* can be set as following: The *eventID* attribute is set with a unique ID to differentiate from other chargeable events. The *eventType* attribute defines what event will trigger the generation of service statistics collection record and is set to "Data Operation" for this case. *eventStart* and *eventEnd* attributes apply to timer based event so they will not be included in this event. *operationType* attribute will be "RETRIEVE". *dataSize* attribute does not apply so it is not included.

Step 3-5: In this example, AE1 already registered to IN-CSE. IN-CSE can make the statistics collection configuration accessible by AE. Based on the *<statsConfigSCA1>,* AE1 creates a statistics collection trigger for itself, stored in <*statsCollectAE1>.* AE1 will fill in the information for the collection rule. For example, it fills the *collectingEntityID* attribute with the AE-ID of AE1, and the *collectedEntityID* attribute empty, which means to collect for any entities. *status* attribute is set to "Active". The *statModel* is *event-based*. The *eventID* is set with the same ID value as the *eventID* in the *<eventConfigSCA1>.* This event collection trigger can be stored in the *<eventConfigSCA1>* resource at the IN-CSE and IN-CSE will assign a unique ID in attribute *statsCollectID*.

Step 6-8: When the configured event happens, i.e. when AE2 performed a RETRIEVE operation to the data stored by AE1 at IN-CSE, the event is recorded by IN-CSE. IN-CSE generates a service statistics collection record and sends it to AE1. AE1 can choose to use such information for statistics or billing. Transfer of the statistics is out of scope of the present document.

Step 9: The AE of billing application can update or retrieve the charging policies and collection scenarios that it has the access control privilege.



Figure 10.2.11.1-1: Event-based Statistics Collection for Applications

#### 10.2.11.2 Create *<statsConfig>*

This procedure shall be used for the Originator to establish a set of configurations for statistics collection at the Receiver.

The configurations shall be stored at the *<statsConfig>* resource and each instance of the *<statsConfig>* resource shall represent a specific configuration.

The Originator shall be an AE that wants to set up the statistics collection configurations.

The Receiver shall be an IN-CSE.

Table 10.2.11.2-1: *<statsConfig>* CREATE

|  |  |
| --- | --- |
| *<statsConfig>* CREATE | |
| Information in Request message | ***From:*** Identifier of the AE that initiates the Request  ***To:*** The address of the *<CSEBase>* where the *<statsConfig>* resource is intended to be Created.  ***Content:*** The representation of the *<statsConfig>* resource for which the attributes are described in clause 9.6.23  Other information in the Request message is defined according to clause 10.1.2 |
| Processing at Originator before sending Request | The Originator shall request to Create a new *<statsConfig>* resource by addressing to the *<CSEBase>* resource of a Hosting CSE. The Originator shall be an AE |
| Processing at Receiver | According to clause 10.1.2 |
| Information in Response message | According to clause 10.1.2 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.2 |

#### 10.2.11.3 Retrieve *<statsConfig>*

The RETRIEVE procedure shall be used for the Originator to retrieve the existing *<statsConfig>* resource from the Receiver.

The Originator shall be an AE that is allowed to retrieve configuration information available for AEs within an IN-CSE.

The Receiver shall be the IN- CSE containing the *<statsConfig>* resource.

Table 10.2.11.3-1: *<statsConfig>* RETRIEVE

|  |  |
| --- | --- |
| *<statsConfig>* RETRIEVE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsConfig>* resource or its attribute to be retrieved |
| Processing at Originator before sending Request | The Originator shall request to obtain *<statsConfig>* resource information by using the RETRIEVE operation. The request shall address the specific *<statsConfig>* resource or its attributes of a Hosting CSE. The Originator shall be an AE |
| Processing at Receiver | According to clause 10.1.3 |
| Information in Response message | According to clause 10.1.3 |
| Processing at Originator after receiving Response | According to clause 10.1.3 |
| Exceptions | According to clause 10.1.3 |

#### 10.2.11.4 Update *<statsConfig>*

This procedure shall be used for updating *<statsConfig>* resource.

An UPDATE procedure on the *<statsConfig>* resource is used for the Originator to update charging related policies at the Receiver.

The Originator shall be the AE that created the *<statsConfig>* resource. The same AE shall be able to update the resource.

The Receiver shall be a CSE containing the *<statsConfig>* resource.

Table 10.2.11.4-1: *<statsConfig>* UPDATE

|  |  |
| --- | --- |
| *<statsConfig>* UPDATE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsConfig>* resource to be updated  ***Content*:** the Originator provides the attributes of *<statsConfig>* to be updated |
| Processing at Originator before sending Request | According to clause 10.1.4 |
| Processing at Receiver | According to clause 10.1.4 |
| Information in Response message | According to clause 10.1.4 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.4 |

#### 10.2.11.5 Delete *<statsConfig>*

This procedure shall be used for deleting *<statsConfig>* resource.

The Originator shall be the AE that created the *<statsConfig>* resource.

The Receiver shall be a CSE containing the *<statsConfig>* resource.

Table 10.2.11.5-1: *<statsConfig>* DELETE

|  |  |
| --- | --- |
| *<statsConfig>* DELETE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsConfig>* resource to be deleted |
| Processing at Originator before sending Request | According to clause 10.1.5 |
| Processing at Receiver | According to clause 10.1.5 |
| Information in Response message | According to clause 10.1.5 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.5 |

#### 10.2.11.6 Create *<eventConfig>*

This procedure shall be used to create *<eventConfig>* resource.

Table 10.2.11.6-1: *<eventConfig>* CREATE

|  |  |
| --- | --- |
| *<eventConfig>* CREATE | |
| Information in Request message | ***From:*** Identifier of the AE that initiates the Request  ***To:*** The address of the *<statsConfig>* resource where the *<eventConfig>* sub‑resource is intended to be Created  ***Content*:** The representation of the *<eventConfig>* resource for which the attributes are described in clause 9.6.24  Other information in the Request message is defined according to clause 10.1.2 |
| Processing at Originator before sending Request | The Originator shall be an AE. The Originator shall request to Create a new *<eventConfig>* resource by addressing to the *<statsConfig>* resource of a Hosting CSE |
| Processing at Receiver | The Receiver shall be an IN-CSE:   * The Receiver shall check if the *eventID* is unique, and if not, provides a new value * The Receiver shall verify that the *eventEnd* time is greater than the *eventStart* time if these two attributes are present * The Receiver shall verify that the *dataSize* attribute is present and contains a value greater than zero if the *eventType* is set to "Storage based" |
| Information in Response message | According to clause 10.1.2 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.2 |

#### 10.2.11.7 Retrieve *<eventConfig>*

The RETRIEVE procedure shall be used for the Originator to retrieve the existing *<eventConfig>* resource from the Receiver.

The Originator shall be an AE that is allowed to retrieve configuration information available for AEs within an IN-CSE.

The Receiver shall be the IN-CSE containing the *<eventConfig>* resource.

Table 10.2.11.7-1: *<eventConfig>* RETRIEVE

|  |  |
| --- | --- |
| *<eventConfig>* RETRIEVE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<eventConfig>* resource or its attributes to be retrieved. |
| Processing at Originator before sending Request | The Originator shall request to obtain *<eventConfig>* resource information by using the RETRIEVE operation. The request shall address the specific *<eventConfig>* resource or its attributes of a Hosting CSE. The Originator shall be an AE |
| Processing at Receiver | According to clause 10.1.3 |
| Information in Response message | According to clause 10.1.3 |
| Processing at Originator after receiving Response | According to clause 10.1.3 |
| Exceptions | According to clause 10.1.3 |

#### 10.2.11.8 Update *<eventConfig>*

This procedure shall be used for updating an existing *<eventConfig>* resource.

The Originator shall be the AE that created the *<eventConfig>* resource. The same AE shall be able to update the resource.

The Receiver shall be the IN-CSE containing the *<eventConfig>* resource.

Table 10.2.11.8-1: *<eventConfig>* UPDATE

|  |  |
| --- | --- |
| *<eventConfig>* UPDATE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<eventConfig>* resource to be updated  ***Content*:** The Originator provides the attributes of *<eventConfig>* to be updated  The Originator can update attributes under *<eventConfig>* to update event-based configuration for statistics collection |
| Processing at Originator before sending Request | According to clause 10.1.4 |
| Processing at Receiver | According to clause 10.1.4 |
| Information in Response message | According to clause 10.1.4 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.4 |

#### 10.2.11.9 Delete *<eventConfig>*

This procedure shall be used for deleting *<eventConfig>* resource.

The Originator shall be the AE that created the *<eventConfig>* resource.

The Receiver shall be the IN-CSE containing the *<eventConfig>* resource.

Table 10.2.11.9-1: *<eventConfig>* DELETE

|  |  |
| --- | --- |
| *<eventConfig>* DELETE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<eventConfig>* resource to be deleted |
| Processing at Originator before sending Request | According to clause 10.1.5 |
| Processing at Receiver | According to clause 10.1.5 |
| Information in Response message | According to clause 10.1.5 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.5 |

#### 10.2.11.10 Create *<statsCollect>*

This procedure shall be used for the Originator to establish collection scenarios at the Receiver.

The collection scenarios are stored at the *<statsCollect>* resource. Multiple collection scenarios can be created based on one instance of *<statsConfig>.*

The Receiver shall be an IN-CSE. The Receiver shall validate whether the Originator has proper permissions for creating a *<statsCollect>* resource. Upon successful validation, create a new *<statsCollect>* resource with the provided attributes. The IN-CSE shall also create a unique *statsCollectID*.

Table 10.2.11.10-1: *<statsCollect>* CREATE

|  |  |
| --- | --- |
| *<statsCollect>* CREATE | |
| Information in Request message | ***From*:** Identifier of the AE that initiates the Request  ***To*:** The Address of the *<CSEBase>* where the *<statsCollect>* resource is intended to be Created  ***Content*:** Contain the resource representation of *<statsCollect>*  Other information in the Request message is defined according to clause 10.1.2 |
| Processing at Originator before sending Request | The Originator shall be an AE that wants to set up the collection scenarios to an IN‑CSE. The Originator shall request to Create a new *<statsCollect>* resource by addressing to the *<CSEBase>* resource of a Hosting CSE  The Originator shall populate the attributes for the *<statsCollect>* resource as defined in clause 9.6.25, except for *statsCollectID* |
| Processing at Receiver | In addition to procedures defined in clause 10.1.2, the Receiver shall perform the following specific operations:   * Create *statsCollectID* which shall be unique in the same service provider domain * Once a *<statsCollect>* resource instance is created and the *status* is "ACTIVE", the IN-CSE shall generate service statistics collection records when the conditions defined by the *<statsCollect>* are met |
| Information in Response message | According to clause 10.1.2 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.2 |

#### 10.2.11.11 Retrieve *<statsCollect>*

The RETRIEVE procedure shall be used for the Originator to retrieve the existing *<statsCollect>* resource from the Receiver.

The Originator shall be an AE that is allowed to retrieve the collection scenario information from the IN-CSE.

The Receiver shall be the IN- CSE containing the *<statsCollect>* resource.

Table 10.2.11.11-1: *<statsCollect>* RETRIEVE

|  |  |
| --- | --- |
| *<statsCollect>* RETRIEVE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsCollect>* resource or its attribute to be retrieved |
| Processing at Originator before sending Request | The Originator shall request to obtain *<statsCollect>* resource information by using the RETRIEVE operation. The request shall address the specific *<statsCollect>* resource or its attributes of a Hosting CSE. The Originator shall be an AE |
| Processing at Receiver | According to clause 10.1.3 |
| Information in Response message | According to clause 10.1.3 |
| Processing at Originator after receiving Response | According to clause 10.1.3 |
| Exceptions | According to clause 10.1.3 |

#### 10.2.11.12 Update *<statsCollect>*

An UPDATE procedure on the *<statsCollect>* resource shall be used for the Originator to update chargeable scenarios at the Receiver.

The Originator shall be the AE that created the *<statsCollect>* resource. The same AE shall be able to update the resource.

The Receiver shall be the IN-CSE containing the *<statsCollect>* resource.

Table 10.2.11.12-1: *<statsCollect>* UPDATE

|  |  |
| --- | --- |
| *<statsCollect>* UPDATE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsCollect>* resource to be updated  ***Content*:** the Originator provides the attributes of *<statsCollect>* to be updated |
| Processing at Originator before sending Request | According to clause 10.1.4 |
| Processing at Receiver | According to clause 10.1.4 |
| Information in Response message | According to clause 10.1.4 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.4 |

#### 10.2.11.13 Delete *<statsCollect>*

This procedure shall be used for deleting *<statsCollect>* resource.

The Originator shall be the AE that created the *<statsCollect>* resource.

The Receiver shall be a CSE containing the *<statsCollect>* resource.

Table10.2.11.13-1: *<statsCollect>* DELETE

|  |  |
| --- | --- |
| <statsCollect> DELETE | |
| Information in Request message | ***From*:** ID of the Originator  ***To*:** Address of the *<statsCollect>* resource to be deleted |
| Processing at Originator before sending Request | According to clause 10.1.5 |
| Processing at Receiver | According to clause 10.1.5 |
| Information in Response message | According to clause 10.1.5 |
| Processing at Originator after receiving Response | None |
| Exceptions | According to clause 10.1.5 |

#### 10.2.11.14 Service Statistics Collection Record

When the Service Statistics Collection is supported, the Information Elements shall be generated according to table 10.2.11.14-1.

The contents of each Service statistics collection record are decided by the specific collection scenario that triggered the information recording.

Transfer of the Statistics Collection Records over the Mch reference point is not defined in the present document.

Table 10.2.11.14-1: Information Elements for Service Statistics Collection Record

|  |  |  |
| --- | --- | --- |
| Information Element | Mandatory/ optional | Description |
| *statsCollectID* | M | It is the unique ID that identifies a specific statistics collection scenario, which triggers information recording for a specific event. |
| *collectingEntityID* | M | This is the unique ID of the entity that collects the statistics. It can be an AE-ID, M2M-User-ID or CSE-ID. |
| *collectedEntityID* | M | This is the unique ID of the entity whose service layer operation statistics are being collected. It can be an AE-ID, M2M-User-ID or CSE-ID. |
| *event* | O | This indicates a specific event type in each record, such as timer based, data operation, storage triggering. It is only present if the *statModel* is "event based". |
| *eventStart* | O | The start time for the recording the M2M event record. |
| *eventEnd* | O | The end time for the recording the M2M event record. |
| *transactionType* | O | Specifies the detailed type of a transaction, such as CREATE, RETRIEVE, etc. |
| *dataSize* | O | Storage Memory in Kbytes, where applicable, to store data associated events with container related operations. |
| *Vendor Specific Information* | O | Defines Vendor specific information. |

# 12 Information Recording

## 12.1 M2M Infrastructure Node (IN) Information Recording

### 12.1.0 Overview

Various informational elements have to be recorded by the M2M infrastructure nodes for a variety of reasons including but not limited to statistics, charging, maintenance, diagnostics, etc.

This clause describes a framework for recording the necessary information by infrastructure nodes.

### 12.1.1 Information Recording Triggers

Triggers have to be configured in the IN node by the M2M service provider to initiate information recording.

The M2M infrastructure nodes shall be able to initiate recording based on any of the following triggers:

* A request received by the M2M IN over the Mcc reference point.
* A request received by the M2M IN over the Mca reference point.
* A request initiated by the M2M IN over any reference point.
* Timer- based triggers for non- request based information recording. This trigger is used only when the memory size of a container over a period of time is required.

More than one trigger can be simultaneously configured.

The recording triggers may also be configurable, for example, as follows:

* On a per CSE basis, or a group of CSEs for requests originating/arriving from/at the M2M IN.
* On a per AE basis or a group of AEs.
* The default behaviour is that no CSEs/AEs are configured.

### 12.1.2 M2M Recorded Information Elements

#### 12.1.2.1 Unit of Recording

A unit of recording refers to a number of informational elements recorded by the IN and that can be used as a basis for additional post-processing for a specific purpose such as generating Charging Data Records (CDRs), statistics, etc. In that respect, each unit of recording can be thought of as an M2M information record. The actual informational elements that make up a recording unit shall be described later.

For request-based triggers, as defined in clause 12.1.1, the unit of recording shall include a request and its response.

A unit of recording shall be referred to as an M2M Event Record. This shall apply to all recording triggers as defined in clause 12.1.1.

#### 12.1.2.2 Information Elements within an M2M Event Record

The information elements within an M2M event record are defined in table 12.1.2.2-1.

Every M2M event record shall be tagged to depict its content according to the following classification:

* Data related procedures: represent procedures associated with data storage or retrieval from the M2M IN (e.g. Container related procedures).
* Control related procedures: represent all procedures that are not associated with data storage/retrieval from the M2M IN with the exclusion of group and device management related procedures (e.g. subscription procedures, registration).
* Group related procedures: represent procedures that handle groups. The group name may be derived from the target resource in these cases.
* Device Management Procedures.
* Occupancy based trigger for recording the occupancy as described in clause 12.1.1.

Table 12.1.2.2-1: Information Elements within an M2M Event Record

| Information Element | For request based triggers  Mandatory / optional | For timer based triggers  Mandatory / optional | Description |
| --- | --- | --- | --- |
| *M2M Service Subscription Identifier* | M | M | The M2M Service Subscription Identifier associated with the request. This is inserted by the IN (see clause 12.1.3) |
| *Application Entity ID* | CM (when applicable) | NA | The M2M Application Entity ID if applicable |
| *External ID* | CM (when Applicable) | NA | The external ID to communicate over **Mcn** where applicable |
| *Receiver* | M | NA | Receiver of an M2M request (can be any M2M Node) |
| *Originator* | M | NA | Originator of the M2M request (can be any M2M Node) |
| *Hosting CSE-ID* | O | NA | The hosting CSE-ID for the request in case the receiver is not the host, where applicable |
| *Target ID* | M | NA | The target URL for the M2M request if available. Alternatively can be the target resource identifier |
| *Protocol Type* | O | NA | Used Protocol Binding (e.g. HTTP, CoAP, MQTT) |
| *Request Operation* | O | NA | Request Operation as defined in clause 8.1.2 |
| *Request Headers size* | O | NA | Number of bytes for the headers in the Request (All Request parameters of the used protocol per the Protocol Type information element) |
| *Request Body size* | O | NA | Number of bytes of the body transported in the Request if applicable |
| *Response Headers size* | O | NA | Number of bytes for the headers in the Response (All Response parameters of the used protocol per the Protocol Type information element) |
| *Response Body size* | O | NA | Number of bytes of the body transported in the Response if applicable |
| *Response Status Code* | O | NA |  |
| *Time Stamp* | M | M | Time of recording the M2M event |
| *M2M-Event-Record-Tag* | M | M | A Tag for the M2M event record for classification purposes. This tag is inserted by the IN and is M2M SP specific |
| *Control Memory Size* | O | NA | Storage Memory (in bytes), where applicable, to store control related information associated with the M2M event record(excludes data storage associated with container related operations) |
| *Data Memory Size* | O | NA | Storage Memory (in bytes), where applicable, to store data associated with container related operations |
| *Access Network Identifier* | O | O | Identifier of the access network associated with the M2M event record. |
| *Additional Information* | O |  | Vendor specific information |
| *Occupancy* | NA | M | Overall size (in Bytes) of the containers generated by a set of AEs identified by the M2M Service Subscription Identifier |
| *Group Name* | CM | NA | The Group name (not necessarily unique) shall be included by the IN-CSE in the case where the fanning operations initiated by the M2M IN-CSE |
| *maxNrOfMembers* | O | NA | Maximum number of members of the group for Create and Update operation |
| *currentNrOfMembers* | O | NA | Current number of members in a group. The request shall be logged and information elements shall be recorded from the request before processing it or sending it out. After obtaining corresponding response, *currentNrOfMembers* shall be updated with the values from the response |
| *Subgroup Name* | CM | NA | Subgroup name (not necessarily unique) shall be included i in the case when the IN-CSE initiates a fanning operation. |
| *M2M-Node-Id* | M | NA | The node Id for the node generating the Accounting-Record-Number for the Diameter ACR. This shall be set to the CSE-ID for the IN-CSE node |

The choice for the mandatory elements is motivated by the need to include all M2M identifiers within an M2M event record so that it is possible to support multiple charging scenarios.

For all non-mandatory elements, the M2M IN shall be configurable by the M2M service provider to select any additional desired information to be recorded in addition to the mandatory elements.

### 12.1.3 Identities Associations in Support of Recorded Information

To enable the M2M IN to record the necessary information, as described above, the following associations shall be maintained by the M2M service provider:

* The CSE-ID (for all M2M Nodes in the M2M framework) and the allocated M2M Service Subscription Identifier.
* The AE-ID and the allocated M2M Service Subscription Identifier.

For established associations, as described above, the M2M IN shall derive the appropriate M2M Service Subscription Identifier for insertion in the M2M record event.

## 12.2 Offline Charging

### 12.2.1 Architecture

Figure 12.2.1-1 depicts the charging architecture. Charging information, in the form of charging data records (CDRs), shall be derived from recorded information, and transferred to a Charging Server. As such, it is essential that all information required for charging shall be first selected for recording. There shall be a 1 to 1 mapping between a M2M Event Record and a CDR.

The Charging Function (CHF included within the SCA CSF) embedded within the M2M IN is responsible for interaction with the Charging Server using the Mch reference point.

Billing aspects are out of scope.



Figure 12.2.1-1: Offline Charging Architecture

Communication flows which transfer CDRs generated by the IN to an external charging server cross the Mch reference point. The Mch reference point may be mapped to reference points of other specifications. E.g. for a 3GPP Underlying Network, the Mch reference point maps to the Rf reference point enabling a 3GPP charging server to be used for oneM2M CDRs.

### 12.2.2 Filtering of Recorded Information for Offline Charging

Recorded information is the basis for offline charging. To fulfil the needs of different billing systems not all recorded information is required in all cases. Hence, the M2M Charging Function shall be configurable to only select the desired information from the recorded information for transfer to the Charging Server. This configuration shall support selecting the desired information based on the following capabilities:

* On a per CSE basis, or a group of CSEs, for requests originating/arriving from/at the IN. This applies to all M2M Nodes within the M2M framework.
* On a per AE basis or a group of AEs.
* The default behaviour is that no CSEs/AEs are configured.

The charging function shall ensure that information selected for transfer to the charging server has also been selected for recording before a configuration is deemed acceptable for execution.

### 12.2.3 Examples of Charging Scenarios

#### 12.2.3.0 Overview

Charging scenarios refer to scenarios for which an M2M entity can be billed if the scenario is deemed billable by the M2M service provider. Some charging scenarios may require single CDR. Other scenarios may require multiple CDRs, and suitable correlation information shall have to be identified to select the CDRs for the charging scenario in this case.

The following clause lists some potential charging scenarios as examples only. Each scenario shall require the appropriate configuration of the CHF, and for that matter the M2M recording functions, to ensure that all pertinent data is available.

#### 12.2.3.1 Example Charging Scenario 1 - Data Storage Resource Consumption

In this scenario, the M2M entity that stores application data, using container procedures for that purpose, will be billed, for storage resources within the M2M IN, until such time as the resources are deleted. This scenario will require correlation between multiple CDRs to identify the entity that stored the data, the entity that deleted the same data, and the duration and amount of storage.

#### 12.2.3.2 Example Charging Scenario 2 - Data transfer

In this scenario, the M2M entity that retrieves/stores container data will be billed for the amount of transferred data.

#### 12.2.3.3 Example Charging Scenario 3 - Connectivity

This scenario is relevant for an M2M entity that contacts the M2M IN frequently to transfer small amounts of data for storage. In this scenario, the M2M entity will be charged for the connectivity as opposed to the stored amount of data. The same applies to an M2M entity that also contacts frequently the M2M IN to retrieve stored data.

### 12.2.4 Definition of Charging Information

#### 12.2.4.0 Overview

Charging information in the form of CDR is essentially a subset of the information elements within the M2M event records recorded by the M2M IN for transmission over the Mch reference point.

#### 12.2.4.1 Triggers for Charging Information

The charging function within the M2M IN shall initiate transmission of CDRs if configured for that purpose in accordance with clause 12.2.2.

#### 12.2.4.2 Charging Messages over Mch Reference Point

The Mch shall be used in case the CDRs are to be transferred to an external Charging Server. It is assumed that the Mch is equivalent to the Rf reference point as defined in [**Error! Reference source not found.**] and [**Error! Reference source not found.**].

Hence, every CDR shall be transferred in a single message, namely Accounting-Request and that elicits a response, namely Accounting-Answer.

The following table describes the use of these messages for offline charging.

Table 12.2.4.2-1: Offline charging messages reference table

|  |  |  |  |
| --- | --- | --- | --- |
| Request-Name | Source | Destination | Abbreviation |
| Accounting-Request | M2M IN | Charging Server | ACR |
| Accounting-Answer | Charging Server | M2M IN | ACA |

#### 12.2.4.3 Structure of the Accounting Message Formats

##### 12.2.4.3.1 Accounting-Request Message

Table 12.2.4.3.1-1 illustrates the basic structure of an ACR message generated from the M2M IN for offline charging in accordance with [**Error! Reference source not found.**], [**Error! Reference source not found.**], [**Error! Reference source not found.**] and [**Error! Reference source not found.**].

Table 12.2.4.3.1-1: Accounting-Request (ACR) message contents

| Informational Element | Category | Description |
| --- | --- | --- |
| *Session-Id* | M | This field identifies the operation session. The usage of this field is left to the M2M SP. |
| *Origin-Host* | M | This field contains the identification of the source point of the operation and the realm of the operation Originator. |
| *Origin-Realm* | M | This field contains the realm of the operation Originator. |
| *Destination-Realm* | M | This field contains the realm of the operator domain. The realm will be addressed with the domain address of the corresponding public URI. |
| *Accounting-Record-Type* | M | This field defines the transfer type: This field shall always set to event based charging. |
| *Accounting-Record-Number* | M | This field contains the sequence number of the transferred messages. |
| *Acct-Application-Id* | OC | Advertises support for accounting for M2M. |
| *Origin-State-Id* | Oc | This is a monotonically increasing value that is advanced whenever a Diameter entity restarts with loss of previous state, for example upon reboot. |
| *Event-Timestamp* | O | Defines the time when the event occurred. |
| *Destination-Host* | Oc | This is the intended destination for the message |
| *Proxy-Info* | OC | Includes host information about a proxy that added information during routing of the message. |
| *Route-Record* | OC | This field contains an identifier inserted by a relaying or proxying charging node to identify the node it received the message from. |
| *Service-Context-Id* | M | This field identifies the M2M domain. |
| *Service-Information* | M | This is a grouped field that holds the M2M specific parameters. |
| *Subscription-Id* | M | Identifies the M2M Service Subscription Identifier. |
| *M2M Information* | M | This parameter holds the M2M informational element specified in table 12.1.2.2 with the exception of the M2M Service Subscription Identifier. |
| *Proprietaryinformation* | O | This is for proprietary information. |
| OC This is a parameter that, if provisioned by the service provider to be present, shall be included in the CDRs when the required conditions are met. In other words, an OC parameter that is configured to be present is a conditional parameter. | | |

##### 12.2.4.3.2 Accounting-Answer Message

Table 12.2.4.3.2-1 illustrates the basic structure of an ACA message generated by the charging server as a response to an ACR message.

Table 12.2.4.3.2-1: Accounting-Answer (ACA) message contents

| Information element | Category | Description |
| --- | --- | --- |
| *Session-Id* | M | Same as table 12.2.4.3.1-1 |
| *Origin-Host* | M | Same as table 12.2.4.3.1-1 |
| *Origin-Realm* | M | Same as table 12.2.4.3.1-1 |
| *Accounting-Record-Type* | M | Same as table 12.2.4.3.1-1 |
| *Accounting-Record-Number* | M | Same as table 12.2.4.3.1-1 |
| *Acct-Application-Id* | OC | Same as table 12.2.4.3.1-1 |
| *Origin-State-Id* | OC | This is a monotonically increasing value that is advanced whenever a Diameter entity restarts with loss of previous state, for example upon reboot |
| *Event-Timestamp* | O | Same as table 12.2.4.3.1-1 |
| *Proxy-Info* | OC | Same as table 12.2.4.3.1-1 |
| *Proprietary Information* | O | Same as table 12.3.4.3.1-1 |
| *Result-Code* | M | Indicates whether a particular request was completed successfully or whether an error occurred |
| OC This is a parameter that, if provisioned by the operator to be present, shall be included in the CDRs when the required conditions are met. In other words, an OC parameter that is configured to be present is a conditional parameter. | | |

|  |  |
| --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/005 |
| **Test objective** | Check that the IUT does not accept *eventEnd* time less than *eventStart* time |
| **Reference** | TS-0001 [1], clause 10.2.11.6, clause 9.6.24, TS004 [2], clause 7.4.24.2 |

|  |  |
| --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/006 |
| **Test objective** | Check that the IUT verifies *dataSize* attribute when *eventType* is set to “Storage based” |
| **Reference** | TS-0001 [1], clause 10.2.11.6, clause 9.6.24, TS004 [2], clause 7.4.24.2 |

|  |  |
| --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/007 |
| **Test objective** | Check that the IUT generates statistic collection records when multiple <statsCollect> resources are defined |
| **Reference** | TS-0001 [1], clause 10.2.11.10, clause 9.6.24, clause 9.6.25, TS004 [2], clause 7.4.24.2 |

|  |  |
| --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/008 |
| **Test objective** | Check that the IUT sends a CDR in an Accounting-Request message when sending to an external charging service |
| **Reference** | TS-0001 [1], clause 12.2.4.2, clause 9.6.24, clause 9.6.25, TS004 [2], clause 7.4.24.2 |

### -----------------------Start of new text 1-------------------------------------------

##### 7.2.2.17.1 Event Based Charging (EBC)

TP/oneM2M/CSE/SCA/EBC/001

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/001 | |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is TIMERBASED in the stat collection configuration | |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE,PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child** eventConfigresource **containing**  eventType attribute **set to** TIMERBASED **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID  **and** the AE **having** privileges to perform Create operation  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record } | IUT 🡨 AE­­ |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **Statistic collection**representation  **}** | AE 🡨 IUT |
| NOTE: Content value is not specified. | | |

TP/oneM2M/CSE/SCA/EBC/002

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/002 | |
| **Test objective** | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is TIMERBASED in the stat collection configuration | |
| **Reference** | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child** eventConfigresource **containing**  eventType attribute **set to** TIMERBASED **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID  **and** the AE **having** privileges to perform Update operation  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record  } | IUT 🡨 AE |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **statistic collection**representation  **}** | AE 🡨 IUT |
| NOTE: Content value is not specified. | | |

TP/oneM2M/CSE/SCA/EBC/003

|  |  |  |  |
| --- | --- | --- | --- |
| **TP Id** | | TP/oneM2M/CSE/SCA/EBC/003 | |
| **Test objective** | | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is STORAGEBASED in the stat collection configuration | |
| **Reference** | | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 | |
| **Config Id** | | CF01 | |
| **Parent Release** | | Release 4 | |
| **PICS Selection** | | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child**eventConfig resource **containing**  eventType attribute **set to** STORAGEBASED **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID  **and** the AE **having** privileges to perform Create operation  **}** | | |
| **Expected behaviour** | **Test events** | | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record  } | | IUT 🡨 AE |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **statistic collection**resource representation  **}** | | AE 🡨 IUT |
| NOTE: Content value is not specified. | | | |

TP/oneM2M/CSE/SCA/EBC/004

|  |  |  |  |
| --- | --- | --- | --- |
| **TP Id** | | TP/oneM2M/CSE/SCA/EBC/004 | |
| **Test objective** | | Check that the IUT successfully generates the statistics collection record and send to target AE once the IUT receives an event collection trigger from AE when the eventType attribute is DataOperation in the stat collection configuration | |
| **Reference** | | TS-0001 [1], clause 10.2.11, clause 9.6.24, TS004 [2], clause 7.4.24 | |
| **Config Id** | | CF01 | |
| **Parent Release** | | Release 4 | |
| **PICS Selection** | | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child**eventConfig resource **containing**  eventType attribute **set to** DataOperation **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID  **and** the AE **having** privileges to perform Create operation  **}** | | |
| **Expected behaviour** | **Test events** | | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record  } | | IUT 🡨 AE |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **statistic collection**resource representation  **}** | | AE 🡨 IUT |
| NOTE: Content value is not specified. | | | |

### -----------------------End of change 1-------------------------------------------

### -----------------------Start of new text 2-------------------------------------------

Table 7.1.4-: Mnemonics for PICS reference

|  |  |  |  |
| --- | --- | --- | --- |
| Mnemonic | | PICS item | |
| PICS\_AE | | TS-0017 [4], clause A.5.1.1/1 | |
| PICS\_CSE | | TS-0017 [4], clause A.5.1.1/2 | |
| PICS\_ASN\_CSE | | TS-0017 [4], clause A.5.1.2/1 | |
| PICS\_ADN | | TS-0017 [4], clause A.5.1.2/7 | |
| PICS\_IN\_CSE | | TS-0017 [4], clause A.5.1.2/3 | |
| PICS\_MN\_CSE | | TS-0017 [4], clause A.5.1.2/2 | |
| PICS\_STRUCTURED\_CSE\_RELATIVE\_RESOURCE\_ID\_FORMAT | | TS-0017 [4], clause A.5.2.1/2 | |
| PICS\_UNSTRUCTURED\_CSE\_RELATIVE\_RESOURCE\_ID\_FORMAT | | TS-0017 [4], clause A.5.2.1/1 | |
| PICS\_SP\_RELATIVE\_RESOURCE\_ID | | TS-0017 [4], clause A.5.2.1 | |
| PICS\_ABSOLUTE\_RESOURCE\_ID | | TS-0017 [4], clause A.5.2.1 | |
| PICS\_ACP\_SUPPORT | | TS-0017 [4], clause A.5.3.1/10 | |
| PICS\_CB\_CST | | TS-0017 [4], clause A.5.7.1/3 | |
| PICS\_CB\_NL | | TS-0017 [4], clause A.5.7.1/4 | |
| PICS\_CSR\_RN | | TS-0017 [4], clause A.5.7.2/10 | |
| PICS\_CSR\_ET | | TS-0017 [4], clause A.5.7.2/11 | |
| PICS\_CSR\_LBL | | TS-0017 [4], clause A.5.7.2/2 | |
| PICS\_CSR\_POA | | TS-0017 [4], clause A.5.7.2/6 | |
| PICS\_CSR\_NL | | TS-0017 [4], clause A.5.7.2/9 | |
| PICS\_CSR\_CST | | TS-0017 [4], clause A.5.7.2/5 | |
| PICS\_CSR\_RR | | TS-0017 [4], clause A.5.7.2/12 | |
| PICS\_AE\_LBL | | TS-0017 [4], clause A.5.7.3/2 | |
| PICS\_AE\_APN | | TS-0017 [4], clause A.5.7.3/5 | |
| PICS\_AE\_POA | | TS-0017 [4], clause A.5.7.3/6 | |
| PICS\_AE\_NL | | TS-0017 [4], clause A.5.7.3/8 | |
| PICS\_AE\_CSZ | | TS-0017 [4], clause A.5.7.3/9 | |
| PICS\_CNT\_ACPI | | TS-0017 [4], clause A.5.7.5/1 | |
| PICS\_CNT\_MNI | | TS-0017 [4], clause A.5.7.5/6 | |
| PICS\_CNT\_MBS | | TS-0017 [4], clause A.5.7.5/7 | |
| PICS\_CNT\_MIA | | TS-0017 [4], clause A.5.7.5/8 | |
| PICS\_CNT\_OR | | TS-0017 [4], clause A.5.7.5/10 | |
| PICS\_CNT\_LI | | TS-0017 [4], clause A.5.7.5/9 | |
| PICS\_CNT\_RN | | TS-0017 [4], clause A.5.7.5/11 | |
| PICS\_CNT\_ET | | TS-0017 [4], clause A.5.7.5/12 | |
| PICS\_CNT\_LBL | | TS-0017 [4], clause A.5.7.5/2 | |
| PICS\_CNT\_CR | | TS-0017 [4], clause A.5.7.5/5 | |
| PICS\_CIN\_CNF | | TS-0017 [4], clause A.5.7.6/5 | |
| PICS\_CIN\_RN | | TS-0017 [4], clause A.5.7.6/7 | |
| PICS\_CIN\_ET | | TS-0017 [4], clause A.5.7.6/8 | |
| PICS\_CIN\_LBL | | TS-0017 [4], clause A.5.7.6/1 | |
| PICS\_CIN\_CR | | TS-0017 [4], clause A.5.7.6/4 | |
| PICS\_ACP\_LBL | | TS-0017 [4], clause A.5.7.4/1 | |
| PICS\_SUB\_ACPI | | TS-0017 [4], clause A.5.7.7/2 | |
| PICS\_SUB\_LBL | | TS-0017 [4], clause A.5.7.7/1 | |
| PICS\_SUB\_ENC | | TS-0017 [4], clause A.5.7.7/3 | |
| PICS\_SUB\_EXC | | TS-0017 [4], clause A.5.7.7/4 | |
| PICS\_SUB\_GPI | | TS-0017 [4], clause A.5.7.7/5 | |
| PICS\_SUB\_NFU | | TS-0017 [4], clause A.5.7.7/6 | |
| PICS\_SUB\_BN | | TS-0017 [4], clause A.5.7.7/7 | |
| PICS\_SUB\_RL | | TS-0017 [4], clause A.5.7.7/8 | |
| PICS\_SUB\_PN | | TS-0017 [4], clause A.5.7.7/10 | |
| PICS\_SUB\_NSP | | TS-0017 [4], clause A.5.7.7/11 | |
| PICS\_SUB\_LN | | TS-0017 [4], clause A.5.7.7/12 | |
| PICS\_SUB\_NCT | | TS-0017 [4], clause A.5.7.7/13 | |
| PICS\_SUB\_NEC | | TS-0017 [4], clause A.5.7.7/14 | |
| PICS\_SUB\_CR | | TS-0017 [4], clause A.5.7.7/15 | |
| PICS\_SUB\_SU | | TS-0017 [4], clause A.5.7.7/16 | |
| PICS\_GRP\_LBL | | TS-0017 [4], clause A.5.7.8/2 | |
| PICS\_GRP\_ACPI | | TS-0017 [4], clause A.5.7.8/1 | |
| PICS\_GRP\_MACP | | TS-0017 [4], clause A.5.7.8/6 | |
| PICS\_GRP\_GN | | TS-0017 [4], clause A.5.7.8/9 | |
| PICS\_SCA | | TS-0017[4], clause A.5.6 | |
| PICS\_AE | | TS-0017 [4], clause A.5.1.1/1 | |
| PICS\_CSE | | TS-0017 [4], clause A.5.1.1/2 | |
| PICS\_ASN\_CSE | | TS-0017 [4], clause A.5.1.2/1 | |
| PICS\_ADN | | TS-0017 [4], clause A.5.1.2/7 | |
| PICS\_IN\_CSE | | TS-0017 [4], clause A.5.1.2/3 | |
| PICS\_MN\_CSE | | TS-0017 [4], clause A.5.1.2/2 | |

### -----------------------End of change 2-------------------------------------------

### -----------------------Start of new text 3-------------------------------------------

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/005 | |
| **Test objective** | Check that the IUT does not accept *eventEnd* time less than *eventStart* time | |
| **Reference** | TS-0001 [1], clause 10.2.11.6, clause 9.6.24, TS004 [2], clause 7.4.24.2 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource  **and** the AE **having** privileges to perform Create operation  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **receives** a valid CREATE request **containing**  eventConfig resource **containing**  eventEnd time **less than** eventStart time } | IUT 🡨 AE­­ |
| **then {**  the IUT **sends** a valid Response **containing**  Response Status Code **set to** 4000 (BAD\_REQUEST)**}** | AE 🡨 IUT |
|  | | |

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/006 | |
| **Test objective** | Check that the IUT verifies *dataSize* attribute when *eventType* is set to “Storage based” | |
| **Reference** | TS-0001 [1], clause 10.2.11.6, clause 9.6.24, TS004 [2], clause 7.4.24.2 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE,PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource  **and** the AE **having** privileges to perform Create operation  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **receives** a valid CREATE request **containing**  eventConfig resource **containing**  eventType **set to** STORAGEBASED **and**  dataSize attribute **not set** } | IUT 🡨 AE­­ |
| **then {**  the IUT **sends** a valid Response **containing**  Response Status Code **set to** 4000 (BAD\_REQUEST)**}** | AE 🡨 IUT |
|  | | |

TP/oneM2M/CSE/SCA/EBC/007

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/007 | |
| **Test objective** | Check that the IUT generates statistic collection records when multiple <statsCollect> resources are defined | |
| **Reference** | TS-0001 [1], clause 10.2.11.10, clause 9.6.24, clause 9.6.25, TS004 [2], clause 7.4.24.2 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child** eventConfigresource **containing**  eventType attribute **set to** TIMERBASED **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID **and**  collectingEntity attribute **set to** AE  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID **and**  collectingEntity attribute **set to** AE  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record  } | IUT 🡨 AE |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **statistic collection**representation1 **and**  **statistic collection**representation2  **}** | AE 🡨 IUT |
| NOTE: Content value is not specified. | | |

TP/oneM2M/CSE/SCA/EBC/008

|  |  |  |
| --- | --- | --- |
| **TP Id** | TP/oneM2M/CSE/SCA/EBC/008 | |
| **Test objective** | Check that the IUT sends a CDR in an Accounting-Request message when sending to an external charging service | |
| **Reference** | TS-0001 [1], clause 12.2.4.2, clause 9.6.24, clause 9.6.25, TS004 [2], clause 7.4.24.2 | |
| **Config Id** | CF01 | |
| **Parent Release** | Release 4 | |
| **PICS Selection** | PICS\_CSE, PICS\_SCA | |
| **Initial conditions** | **with {**  the IUT **being** in the "initial state"  **and** the IUT **having registered** an AE  **and** the IUT **having a** statsConfigresource **containing**  **a child** eventConfigresource **containing**  eventType attribute **set to** TIMERBASED **and**  eventID attribute **having value** EVENT\_ID  **and** the IUT **having a** statsCollect resource **containing**  eventID attribute **set to** EVENT\_ID  **and** the charging messages are sent to an external Charging Server  **}** | |
| **Expected behaviour** | **Test events** | **Direction** |
| **when {**  the IUT **is triggered to send** statistic collection record  } | IUT 🡨 AE |
| **then {**  the IUT **sends** a valid Notify Request **containing**  Content (see note) **containing**  **statistic collection**representation  **}** | AE 🡨 IUT |
|  | | |

### -----------------------End of change 3-------------------------------------------