**3GPP TSG-SA5 Meeting #145-e *S5-225268***

**e-meeting, 15 - 24 August 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.254** | **CR** | **0023** | **rev** | **1** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Missing operation and identifier in NEF charging information | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-08-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The charging of northbound API usage depends on the operation used e.g., it’s a difference between a change or setting compared to reading the same. The subscriber identifier is according to table 6.2a.1.2.1.1 is used to identify the AF, this means that if SUPI is used instead of GPSI for addressing the UE there is no information element specified for this.  The use and description and content of the charging data request and response messages doesn’t match tables 7.1 and 7.2 of TS 32.290. The Tables in clause 7 of TS 32.290 describes all information elements that can be used for the SBI, and if some aren’t used or used in a specific way this needs to be described in the service specific TSs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Addition of API operation and internal individual identifier.  Addition of description for all information elements in TS 32.290. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The charging for exposure cannot be based on the SUPI or the operation used by the AF, and the usage of information elements from TS 32.290 are undefined. | | | | | | | | |
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| ***Clauses affected:*** | | 6.2a.1.2.1, 6.2a.1.2.2, 6.3.1.3, 6.3.1.4.1, 6.3.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | | **X** |  | O&M Specifications | | | | TS 32.291 CR 0391  TS 32.298 CR 0896 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | First revision S5-223094. | | | | | | | | |

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| **First change** |

##### 6.2a.1.2.1 Charging Data Request message

Table 6.2a.1.2.1.1 illustrates the basic structure of a Charging Data Request message from table 7.1 in TS 32.290 [57] as used for NEF converged charging. If the description of information elements within an information element is the same as in table 7.1 in TS 32.290 [57], these are left out of the table.

Table 6.2a.1.2.1.1: Charging Data Request message contents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Information Element** | | **Category** | | **Description** | |
| Session Identifier | | OC | | Described in TS 32.290 [57] | |
| Subscriber Identifier | | OM | | Described in TS 32.290 [57], and holds the identifier of the AF | |
| NF Consumer Identification | | M | | Described in TS 32.290 [57] | |
| Charging Identifier | | OM | | Described in TS 32.290 [57] | |
| Invocation Timestamp | | M | | Described in TS 32.290 [57] | |
| Invocation Sequence Number | | M | | Described in TS 32.290 [57] | |
| Retransmission Indicator | | - | | This field is not applicable. | |
| One-time Event | | OC | | Described in TS 32.290 [57] | |
| One-time Event Type | | OC | | Described in TS 32.290 [57] | |
| Notify URI | | OC | | Described in TS 32.290 [57] | |
| Supported Features | | OC | | Described in TS 32.290 [57] | |
| Triggers | | - | | This field is not applicable. | |
| Multiple Unit Usage | | OC | | This field is present when the number of units is beyond one i.e., more than one API invocation, notification, or volume requested or reported. | |
| Rating Group | | M | | Described in TS 32.290 [57] | |
| Requested Unit | | OC | | Described in TS 32.290 [57] | |
| Time | | - | | This field is not applicable. | |
| Total Volume | | OC | | Described in TS 32.290 [57] | |
| Uplink Volume | | OC | | Described in TS 32.290 [57] | |
| Downlink Volume | | OC | | Described in TS 32.290 [57] | |
| Service Specific Units | | OC | | This field is present when the number of requested units is beyond one i.e., more than one API invocation or notification. | |
| Used Unit Container | | OC | | Described in TS 32.290 [57] | |
| Service Identifier | | - | | This field is not applicable. | |
| Quota management Indicator | | OC | | Described in TS 32.290 [57] | |
| Triggers | | - | | This field is not applicable. | |
| Trigger Timestamp | | - | | This field is not applicable. | |
| Time | | - | | This field is not applicable. | |
| Total Volume | | OC | | Described in TS 32.290 [57] | |
| Uplink Volume | | OC | | Described in TS 32.290 [57] | |
| Downlink Volume | | OC | | Described in TS 32.290 [57] | |
| Service Specific Unit | | OC | | This field is present when the number of used units is beyond one i.e., more than one API invocation, notification. | |
| Event Time Stamps | | OC | | This field holds the timestamps of the more than one API invocation or notification reported in the Service Specific Units. | |
| Local Sequence Number | | OM | | Described in TS 32.290 [57] | |
| NEF API Charging Information | | OM | | This field holds the NEF API specific information described in clause 6.3.1.4 | |

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| **Second change** |

##### 6.2a.1.2.2 Charging Data Response message

Table 6.2a.1.2.2.1 illustrates the basic structure of a Charging Data Response message from table 7.2 in TS 32.290 [57] as used for NEF converged charging. If the description of information elements within an information element is the same as in table 7.1 in TS 32.290 [57], these are left out of the table.

Table 6.2a.1.2.2.1: Charging Data Response message content

|  |  |  |
| --- | --- | --- |
| **Information Element** | **Category** | **Description** |
| Session Identifier | OC | Described in TS 32.290 [57] |
| Invocation Timestamp | M | Described in TS 32.290 [57] |
| Invocation Result | OC | Described in TS 32.290 [57] |
| Invocation Sequence Number | M | Described in TS 32.290 [57] |
| Session Failover | OC | Described in TS 32.290 [57] |
| Supported Features | OC | Described in TS 32.290 [57] |
| Triggers | - | This field is not applicable. |
| Multiple Unit Information | OC | This field is present when the number of units is beyond one i.e., more than one API invocation, notification, or volume granted. |
| Result Code | OC | Described in TS 32.290 [57] |
| Rating Group | OM | Described in TS 32.290 [57] |
| Granted Unit | OC | Described in TS 32.290 [57] |
| Tariff Time Change | - | This field is not applicable. |
| Time | - | This field is not applicable. |
| Total Volume | - | This field is not applicable. |
| Uplink Volume | - | This field is not applicable. |
| Downlink Volume | - | This field is not applicable. |
| Service Specific Units | OC | This field is present when the number of granted units is beyond one i.e., more than one API invocation, notification. |
| Validity Time | OC | Described in TS 32.290 [57] |
| Final Unit Indication | - | This field is not applicable. |
| Time Quota Threshold | - | This field is not applicable. |
| Volume Quota Threshold | - | This field is not applicable. |
| Unit Quota Threshold | - | This field is not applicable. |
| Quota Holding Time | - | This field is not applicable. |
| Triggers | - | This field is not applicable. |

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| **Third change** |

#### 6.3.1.3 Supported features

The Supported features information that is used for Exposure Function API charging is based on the information defined for the supported features mechanism specified in clause 6.5.10 of TS 32.299 [50].

The following table defines the features applicable for the feature lists with a Feature-List-ID of 1.

Table 6.3.1.3.1: Features of Feature-List-ID 1 used in Exposure Function API charging

|  |  |  |  |
| --- | --- | --- | --- |
| Feature bit | Feature | Description | Online/Offline |
| 0 | NAPS-CH | This feature indicates the support Exposure Function API charging. | Both |
| Feature bit: The order number of the bit within the Feature-List AVP where the least significant bit is assigned number "0".  Feature: A short name that can be used to refer to the bit and to the feature e.g., "EPS".  Feature in this table is always mandatory since it relates to the charging functionality of a network feature.  Description: A clear textual description of the feature. | | | |

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| **Fourth change** |

##### 6.3.1.4.1 Definition of the NEF API Charging Information

Network Exposure Function API specific charging information is provided within the NEF API Charging Information. The detailed structure of the NEF API Charging Information can be found in table 6.3.1.4.1.

Table 6.3.1.4.1: Structure of the NEF API Charging Information

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| External Individual Identifier | OC | This parameter holds the external Identifier of the individual UE e.g., the GPSI. |
| Internal Individual Identifier | OC | This parameter holds the internal Identifier of the individual UE e.g., the SUPI. |
| External Group Identifier | OC | This parameter holds the external identifier for a group of individual UE(s). |
| Internal Group Identifier | OC | The internal Identifier identifying a group of individual UE(s). |
| API Direction | M | This field holds the direction to indicate if it is an API invocation from an AF or notification to an AF. |
| API Target Network Function | OC | This field holds the identifier of the network function that either is the destination of the API invocation or triggers the notification. |
| API Result Code | OC | This parameter holds the result of API Invocation. |
| API Name | M | This field holds the name of the API invoked. |
| API Operation | OC | This field holds the service operation e.g., Get, Subscribe, Update. |
| API Reference | OC | This field holds the reference to the definition of the format of the API invocation, this can be a URI or refence to the standard where it's specified |
| API Content | OC | This field holds the actual content of the API invocation, in the format described by the API Reference |

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| **Fifth change** |

### 6.3.4 Detailed message format for converged charging

The Operation types are listed in the following order: I [Initial] / U (Update)/T [Termination]/E [event]. Therefore, when all Operation types are possible it is marked as IUTE. If only some Operation types are allowed for a node, only the appropriate letters are used (e.g. IUT or E) as indicated in the table heading. The omission of an Operation type for a particular field is marked with "-" (e.g. I-E). Also, when an entire field is not allowed in a node the entire cell is marked as "-".

Table 6.3.4.1 illustrates the basic structure of the supported fields in the Charging Data Request for exposure function API online charging.

Table 6.3.4.1: Supported fields in Charging Data Request message

| Information Element | Node Type | NEF |
| --- | --- | --- |
| Supported Operation Types | IUTE |
| Session Identifier | | I-TE |
| Subscriber Identifier | | I-TE |
| NF Consumer Identification | | I-TE |
| Charging Identifier | | I-TE |
| Invocation Timestamp | | I-TE |
| Invocation Sequence Number | | I-TE |
| Retransmission Indicator | | - |
| One-time Event | | ---E |
| One-time Event Type | | ---E |
| Notify URI | | I--- |
| Supported Features | | I--E |
| Service Specification Information | | I-TE |
| Triggers | | I-TE |
| Multiple Unit Usage | | I-TE |
| Rating Group | | I-TE |
| Requested Unit | | I--- |
| Used Unit Container | | --TE |
| NEF API Charging Information | | |
| External Individual Identifier | | I-TE |
| Internal Individual Identifier | | I-TE |
| External Group Identifier | | I-TE |
| Internal Group Identifier | | I-TE |
| API Direction | | I-TE |
| API Target Network Function | | I-TE |
| API Result Code | | I-TE |
| API Name | | I-TE |
| API Operation | | I-TE |
| API Reference | | I-TE |
| API Content | | I-TE |

Table 6.3.4.2 illustrates the basic structure of the supported fields in the Charging Data Response for exposure function API converged charging.

Table 6.3.4.2: Supported fields in *Charging Data Response* Message

| Information Element | Node Type | NEF |
| --- | --- | --- |
| Supported Operation Types | IUTE |
| Session Identifier | | I-TE |
| Invocation Timestamp | | I-TE |
| Invocation Result | | I-TE |
| Invocation Sequence Number | | I-TE |
| Session Failover | | I--- |
| Supported Features | | I--E |
| Triggers | | I-TE |
| Multiple Unit Information | | I--E |
| Result Code | | I--E |
| Rating Group | | I--E |
| Granted Unit | | I--- |
| Validity Time | | I--- |
| Final Unit Indication | | - |
| Time Quota Threshold | | - |
| Volume Quota Threshold | | - |
| Unit Quota Threshold | | - |
| Quota Holding Time | | - |
| Triggers | | - |

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| **End of changes** |