**3GPP TSG-SA5 Meeting # *155 S5-243054***

Jeju, South Korea, 27 - 31 May 2024

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.255** | **CR** | **0540** | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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:*** | Rel-18 CR 32.255 Correction roaming architecture decision | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | CHRACHF | | | | |  | ***Date:*** | | | 2024-05-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | There are two charging architectures specified for the LBO roaming case and one or both architectures in figure 4.2.6 and figure 4.2.6a of TS 32.255 may be supported for local breakout roaming. SMF and V-CHF determines which architecture should be selected for a roaming UE based on operator agreement.  To apply N107 or N47, the decision logic can be made by the SMF. It can avoid a scenario where SMF makes decision on N47 and V-CHF makes decision on N107. The SMF can base the decision on wherever the CHF supports INTER\_CHF from the supported feature in the NRF.  When SMF decides to apply N107 in the LBO PDU Session Establishment procedure, SMF may want V-CHF to setup N107 charging Session to H-CHF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce new attribute to enable SMF to request V-CHF or MNO CHF to setup N107 charging session to H-CHF or MVNO CHF, and an attribute to allow the CHF to report if N107 has been setup. | | | | | | | | |
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| ***Consequences if not approved:*** | | May lead to interoperability issues if both N47 and N107 were to be used at the same time. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.1.6 and 6.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of S5-242798 | | | | | | | | |

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| **First change** |

6.2.1.6 Definition of Inter-CHF information

Specific charging information used for information when the V-CHF have a connection to the H-CHF.

The detailed structure of the Inter-CHF Information can be found in table 6.2.1.6.1.

**Table 6.2.1.4.1: Structure of Inter-CHF Information**

|  |  |  |
| --- | --- | --- |
| **Information Element** | **Category** | **Description** |
| Remote CHF resource | OC | This field holds the reference the Charging Data resource in the CHF not directly connected to the NF (i.e., H-CHF) e.g., the resource URI (NOTE 1). |
| Original NF Consumer Id | OC | This field holds information on the NF triggering the request i.e., SMF (NOTE 2). |
| NOTE 1: The Remote CHF resource is included in the response to the original NF if inter-CHF communication has been used.  NOTE 2: The Original NF Consumer Id is included in the request from the original NF if inter-CHF is expected to be used. | | |

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| **Second change** |

6.2.2 Detailed message format for converged charging

The following clause specifies per Operation Type the charging data that are sent by SMF for 5G data connectivity converged charging or offline only 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 (i.e. IUT or E) as indicated in the table heading. The omission of an Operation Type for a particular field is marked with "-" (i.e. IU-E). Also, when an entire field is not allowed in a node the entire cell is marked as "-".

Table 6.2.2.1 defines the basic structure of the supported fields in the *Charging Data* Request message for 5G data connectivity converged charging or offline only charging.

**Table 6.2.2.1: Supported fields in *Charging Data Request* message**

| **Information Element** | | | **Functionality of SMF** | **FBC** | | | **QBC** | | | **FBC** | | | **QBC** | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Charging Service** | **Converged Charging** | | | **Converged Charging** | | | **Offline Only Charging** | | | **Offline Only Charging** | | |
| **Supported Operation Types** | **I/U/T/E** | | | **I/U/T/E** | | | **I/U/T/E** | | | **I/U/T/E** | | |
| Session Identifier | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| Subscriber Identifier | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| NF Consumer Identification | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Invocation Timestamp | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Invocation Sequence Number | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Retransmission Indicator | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Notify URI | | | | IU- | | | IU- | | | IU- | | | IU- | | |
| Supported Features | | | | IU- | | | IU- | | | - | | | - | | |
| Service Specification Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Triggers | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| Multiple Unit Usage | | | | IUT- | | | - | | | IUT- | | | - | | |
| Rating Group | | | | IUT- | | | - | | | IUT- | | | - | | |
| Requested Unit | | | | IU-- | | | - | | | - | | | - | | |
| Used Unit Container | | | | -UT- | | | - | | | -UT- | | | - | | |
| Triggers | | | | -UT- | | | - | | | -UT- | | | - | | |
| PDU Container Information | | | | -UT- | | | - | | | -UT- | | | - | | |
| UPF ID | | | | IUT- | | | - | | | IUT- | | | - | | |
| PDU Session Charging Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Charging Id | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| SMF Charging Id | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Home Provided Charging Id | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| SMF Home Provided Charging Id | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| User Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| User Location Info | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| IMS Session Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| MA PDU Non 3GPP User Location Info | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| User Location Time | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| MA PDU Non 3GPP User Location Time | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| UE Time Zone | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Presence Reporting Area Information | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| PDU Session Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| PDU Session ID | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Network Slice Instance Identifier | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| PDU Type | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| PDU Address | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| SSC Mode | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| MA PDU session information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| SUPI PLMN ID | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Serving Network Function ID | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Serving CN PLMN ID | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| RAT Type | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| MA PDU Non 3GPP RAT Type | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Data Network Name Identifier | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| DNN Selection Mode | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Authorized QoS Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Subscribed QoS Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Authorized Session-AMBR | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Subscribed Session-AMBR | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| PDU session start Time | | | | I--- | | | I--- | | | I--- | | | I--- | | |
| PDU session stop Time | | | | --T- | | | --T- | | | --T- | | | --T- | | |
| Diagnostics | | | | --T- | | | --T- | | | --T- | | | --T- | | |
| Enhanced Diagnostics | | | | --T- | | | --T- | | | --T- | | | --T- | | |
| Charging Characteristics | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Charging Characteristics Selection Mode | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| 3GPP PS Data Off Status | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| Session Stop Indicator | | | | --T- | | | --T- | | | --T- | | | --T- | | |
| Redundant Transmission Type | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| PDU Session Pair ID | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| 5G LAN Type Service | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| SNPN Information | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| 5GS Bridge Information | | | | IUT- | | | - | | | - | | | - | | |
| 5G Multicast Service | | | | IUT- | | | IUT- | | | IUT- | | | IUT- | | |
| 5G Satellite Access Indicator | | | | IUT- | | | IUT- | | | - | | | | - | | | |
| Satellite backhaul Information | | | | IUT- | | | IUT- | | | - | | | - | | |
| Unit Count Inactivity Timer | | | | IU-- | | | - | | | IU-- | | | - | | |
| RAN Secondary RAT Usage Report | | | | -UT- | | | -UT- | | | -UT- | | | -UT- | | |
| Roaming QBC information | | | | - | | | IUT- | | | - | | | IUT- | | |
| Multiple QFI container | | | | - | | | IUT- | | | - | | | IUT- | | |
| UPF ID | | | | - | | | IUT- | | | - | | | IUT- | | |
| Roaming Charging Profile | | | | - | | | IU-- | | | - | | | IU-- | | |
| Inter-CHF Information | | | | IUT- | | | IUT- | | | - | | | - | | |
| Remote CHF resource | | | | -UT- | | | -UT- | | | - | | | - | | |
| Original NF Consumer Id | | | | IUT- | | | IUT- | | | - | | | - | | |

Table 6.2.2.2 defines the basic structure of the supported fields in the *Charging Data* Response message for 5G data connectivity converged charging or offline only charging.

**Table 6.2.2.2: Supported fields in *Charging Data Response* message**

| **Information Element** | | **Functionality of SMF** | **FBC** | | **QBC** | | **FBC** | | **QBC** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Charging Service** | **Converged Charging** | | **Converged Charging** | | **Offline Only Charging** | | **Offline Only Charging** | |
| **Supported Operation Types** | **I/U/T/E** | | **I/U/T/E** | | **I/U/T/E** | | **I/U/T/E** | |
| Session Identifier | | | I--- | | I--- | | I--- | | I--- | |
| Invocation Timestamp | | | IUT- | | IUT- | | IUT- | | IUT- | |
| Invocation Result | | | IUT- | | IUT- | | IUT- | | IUT- | |
| Invocation Sequence Number | | | IUT- | | IUT- | | IUT- | | IUT- | |
| Session Failover | | | IU-- | | IUT- | | IU-- | | IUT- | |
| Supported Features | | | IU-- | | IU-- | | - | | - | |
| Triggers | | | IU-- | | IU-- | | IU-- | | IU-- | |
| Multiple Unit information | | | IU-- | | - | | IU-- | | - | |
| Result Code | | | IU-- | | - | | IU-- | | - | |
| Rating Group | | | IU-- | | - | | IU-- | | - | |
| UPF ID | | | IU-- | | - | | IU-- | | - | |
| Granted Unit | | | IU-- | | - | | - | | - | |
| Validity Time | | | IU-- | | - | | - | | - | |
| Final Unit Indication | | | IU-- | | - | | - | | - | |
| Time Quota Threshold | | | IU-- | | - | | - | | - | |
| Volume Quota Threshold | | | IU-- | | - | | - | | - | |
| Unit Quota Threshold | | | IU-- | | - | | - | | - | |
| Quota Holding Time | | | IU-- | | - | | - | | - | |
| Triggers | | | IU-- | | - | | IU-- | | - | |
| PDU Session Charging Information | | | IU-- | | IU-- | | IU-- | | IU-- | |
| Charging Id | | | - | | - | | - | | - | |
| SMF Charging Id | | | - | | - | | - | | - | |
| Home Provided Charging Id | | | - | | - | | - | | - | |
| SMF Home Provided Charging Id | | | - | | - | | - | | - | |
| User Information | | | - | | - | | - | | - | |
| User Location Info | | | - | | - | | - | | - | |
| IMS Session Information | | | - | | - | | - | | - | |
| MA PDU Non 3GPP User Location info | | | - | | - | | - | | - | |
| User Location Time | | | - | | - | | - | | - | |
| MA PDU Non 3GPP User Location Time | | | - | | - | | - | | - | |
| UE Time Zone | | | - | | - | | - | | - | |
| Presence Reporting Area Information | | | IU-- | | IU-- | | IU-- | | IU-- | |
| PDU Session Information | | | - | | - | | - | | - | |
| PDU Session ID | | | - | | - | | - | | - | |
| Network Slice Instance Identifier | | | - | | - | | - | | - | |
| PDU Type | | | - | | - | | - | | - | |
| PDU Address | | | - | | - | | - | | - | |
| SSC Mode | | | - | | - | | - | | - | |
| MA PDU session information | | | - | | - | | - | | - | |
| SUPI PLMN ID | | | - | | - | | - | | - | |
| Serving Network Function ID | | | - | | - | | - | | - | |
| Serving CN PLMN ID | | | - | | - | | - | | - | |
| RAT Type | | | - | | - | | - | | - | |
| MA PDU Non 3GPP RAT Type | | | - | | - | | - | | - | |
| Data Network Name Identifier | | | - | | - | | - | | - | |
| DNN Selection Mode | | | - | | - | | - | | - | |
| Authorized QoS Information | | | - | | - | | - | | - | |
| Subscribed QoS Information | | | - | | - | | - | | - | |
| Authorized Session-AMBR | | | - | | - | | - | | - | |
| Subscribed Session-AMBR | | | - | | - | | - | | - | |
| PDU session start Time | | | - | | - | | - | | - | |
| PDU session stop Time | | | - | | - | | - | | - | |
| Diagnostics | | | - | | - | | - | | - | |
| Enhanced Diagnostics | | | - | | - | | - | | - | |
| Charging Characteristics | | | - | | - | | - | | - | |
| Charging Characteristics Selection Mode | | | - | | - | | - | | - | |
| 3GPP PS Data Off Status | | | - | | - | | - | | - | |
| Session Stop Indicator | | | - | | - | | - | | - | |
| Redundant Transmission Type | | | - | | - | | - | | - | |
| PDU Session Pair ID | | | - | | - | | - | | - | |
| 5G LAN Type Service | | | - | | - | | - | | - | |
| SNPN Information | | | - | | - | | - | | - | |
| 5GS TSN Bridge Information | | | - | | - | | - | | - | |
| 5G Multicast Service | | | - | | - | | - | | - | |
| Unit Count Inactivity Timer | | | IU-- | | - | | - | | - | |
| RAN Secondary RAT Usage Report | | | - | | - | | - | | - | |
| Roaming QBC information | | | - | | IU-- | | - | | IU-- | |
| Multiple QFI container | | | - | | - | | - | | - | |
| UPF ID | | | - | | - | | - | | - | |
| Roaming Charging Profile | | | - | | IU-- | | - | | IU-- | |
| Inter-CHF Information | | | IUT- | | IUT- | | - | | - | |
| Remote CHF resource | | | IUT- | | IUT- | | - | | - | |
| Original NF Consumer Id | | | - | | - | | - | | - | |

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| **End of changes** |