**3GPP TSG- Meeting #**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
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| *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:*** | Charging Id Handling 5GC interworking with EPC | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GIEPC\_CH | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | For 5GC interworking with EPC, the PDU session is assigned with a Charging Id by the PGW-C+SMF, and the SGW is provided with a Charging Id per bearer: it is not clear on how the different Charging Ids are handled by the PGW-C+SMF. | | | | | | | | |
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| ***Summary of change:*** | | Introduce the description of handling of per bearer charging Id in the PGW-C+SMF for interworking with EPC.  Consider the possibility for multiple QoS Flows to be mapped to the default bearer or to one dedicated bearer, per TS 23.502 clause 4.11.1.1 following Note:  NOTE 1: Based on operator policies, an SMF can map all non-GBR QoS flows to default EPS bearer in which case it requests only one EBI for all the non-GBR QoS flows. Alternatively, an SMF can also map one non-GBR QoS flow to one dedicated EPS bearer in which case it requests a dedicated EBI for non-GBR QoS flow that should be mapped to dedicated EPS bearer. In between these two extreme cases, the SMF can also map more than one (but not all) non-GBR QoS Flow to the same EPS bearer (either default EPS bearer or dedicated EPS bearer).  Update the Figure 5.2.2.11.3.1 to correct the step 4&7 (create instead of update) | | | | | | | | |
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| ***Consequences if not approved:*** | | Settlement between Operators is not possible | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.1.4, 5.2.2.11.2, 5.2.2.11.3 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |

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| **First change** |

### 5.1.4 Charging Identifier

Charging identifier is created to allow correlation of charging information.

For the SMF the charging identifier is assigned per PDU session including the case of I-SMF insertion. At each PDU session establishment, i.e. assignment of a new PDU session id, a new PDU session specific SMF Charging Identifier is generated at the first SMF that processes the PDU session initiating request. This SMF Charging Identifier shall be unique within the SMF and is then used in all subsequent messages for that PDU session. The Charging Identifier shall be used throughout the PDU session’s lifetime once assigned. In case of inter-system changes or handovers of PDU session, the Charging Identifier is preserved as long as the PDU session Identifier is preserved.

For EPS handover 5GS in Home routed scenario, the Charging Identifier for the PDU session will be generated by PGW-C+SMF in HPLMN and transferred to the SMF in VPLMN, if the V-SMF has already generated the Charging Identifier, the value shall be replaced by Home Provided Charging Id generated by H-SMF.

For 5GS interworking with EPS, an "EPS bearer Charging Id" is assigned by the PGW-C+SMF to each dedicated EPS bearer QoS Flow(s). For the default bearer QoS Flow(s), the "EPS bearer Charging Id" is the "Charging Id" assigned to the PDU session.

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| **Next change** |

##### 5.2.2.11.2 5GS to EPS handover using N26 interface

The following figure 5.2.2.11.2.1 describes a PDU session charging handover from 5GS to EPS when N26 is supported, based on figure 4.11.1.2.1.1 TS 23.502 [201] description:

Figure 5.2.2.11.2.1: PDU session charging: 5GS to EPS handover using N26

0. A PDU session is established in 5GS with multiple QoS Flows. A "Charging Id" was assigned to the PDU session.

0ch. A charging session between the PGW-C+SMF and CHF exists for this PDU session.

10c. PDU session update response to AMF.

10ch-a. This step occurs if steps 10a-c occurred. All counts are closed and a Charging Data Request [Update] is sent to CHF, if required by "Handover start" trigger. New counts and time stamps for all active service data flows are started in the PGW-C+SMF.

10ch-b. The CHF updates CDR for this PDU session.

10ch-c. The CHF acknowledges by sending Charging Data Response [Update] to the PGW-C+SMF.

16. User Plane path switch for the default bearer and the dedicated GBR bearers between the UE and PGW-U+UPF via SGW. The "Charging Id" assigned to the PDU session is supplied as the "Charging Id" for the default bearer QoS Flow(s). The "EPS bearer Charging Id" assigned to the dedicated EPS bearer QoS Flow(s), is supplied as the "Charging Id" for that dedicated EPS bearer.

16ch-a. All counts are closed and a Charging Data Request [Update] is sent to CHF, if required by "RAT type change" trigger. New counts and time stamps for all active service data flows are started in the PGW-C+SMF.

16ch-b. The CHF updates CDR for this PDU session.

16ch-c. The CHF acknowledges by sending Charging Data Response [Update] to the PGW-C+SMF.

19. Dedicated bearer activation procedure for non-GBR QoS flows initiated by PGW-C+SMF.

19ch. Needed counts are started on start of service data flows of corresponding non-GBR Qos Flows.

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| **Next change** |

##### 5.2.2.11.3 EPS to 5GS handover using N26 interface

The following figures 5.2.2.11.3.1 and 5.2.2.11.3.2 describe a PDU session charging handover from EPS to 5GS when N26 is supported, based on figures 4.11.1.2.2.2.1 and 4.11.1.2.2.3.1 TS 23.502 [201] description:



Figure 5.2.2.11.3.1: PDU session charging: EPS to 5GS handover using N26 - preparation

0. If the UE supports 5G and the PDU session is not restricted to interworking with 5GS by user subscription, the PGW-C+SMF is aware that 5GS interworking is supported. A PDU session is established in EPC with default bearer and dedicated bearers. Association between the EPS bearer and the corresponding 5G QoS Rules is stored by the PGW-C+SMF.

0ch. A charging session between the PGW-C+SMF and CHF exists for this PDU session with multiple QoS Flows associated to the default bearer and dedicated bearers. The set of QoS Flow(s) associated to the default bearer are assigned with the "Charging Id" of the PDU session. The set of QoS Flow(s) associated to a dedicated bearer are assigned with the "EPS bearer Charging Id" of that dedicated bearer.



Figure 5.2.2.11.3.2: PDU session charging: EPS to 5GS handover using N26 - execution

10ch-a. All counts are closed and a Charging Data Request [Update] is sent to CHF, if required by "RAT type change" trigger. New counts and time stamps for all active service data flows are started in the PGW-C+SMF.

10ch-b. The CHF updates CDR for this PDU session.

10ch-c. The CHF acknowledges by sending Charging Data Response[Update] to the PGW-C+SMF.

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| **End of changes** |