**3GPP TSG-SA5 Meeting #141-eS5-221126rev1**

**e-meeting, 17 - 26 January 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **32.255** | **CR** | **0362** | **rev** | **1** | **Current version:** | **17.4.0** |  |
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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:***  | Add charging enhancements of 5GS CIoT in EPC interworking procedure |
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| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | 5G\_CIoT\_CH |  | ***Date:*** | 2022-01-07 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***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 canbe 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)* |
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| ***Reason for change:*** | This tdoc is to update EPC interworking procedures related to 5GS CIoT in TS 32.255. |
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| ***Summary of change:*** | This tdoc is to update EPC interworking procedures related to 5GS CIoT in TS 32.255. |
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| ***Consequences if not approved:*** | The 5GS CIoT related steps and description are not covered in TS 32.255. |
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| ***Clauses affected:*** | 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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **Start of changes** |

##### 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. If receives Small Data Rate Control change during 5GS to EPS handover, the PGW-C+SMF may provide Small Data Rate Control change to CHF.

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.

##### 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.

As described in clause 4.11.1.2.2 of TS 23.502 [x] the PGW-C+SMF may receive APN Rate Control Status enabled during interworking with EPC for this PDU Session, the PGW-C+SMF interacts with CHF as following:

13ch-a. All counts are closed and a Charging Data Request [Update] is sent to CHF, if required by "RAT type change" trigger. The APN Rate Control Change may be provided by PGW-C+SMF in charging information if received.

13ch-b. The CHF updates CDR for this PDU session.

13ch-c. The CHF acknowledges by sending Charging Data Response [Update] to the PGW-C+SMF.

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| **End of changes** |