**3GPP TSG-SA5 Meeting #141-eS5-221127rev1**

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

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **32.255** | **CR** | **0363** | **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 home-routed roaming procedure |
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| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***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 home-routed roaming procedure related to 5GS CIoT in TS 32.255. |
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| ***Summary of change:*** | This tdoc is to update home-routed roaming procedure 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:*** | 5.2.2.12.2 |
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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** |

##### 5.2.2.12.2 PDU session establishment

The following figure 5.2.2.12.2.1 describes a PDU session charging establishment in roaming Home routed scenario based on figure 4.3.2.2.2.1 TS 23.502 [201] description:

Figure 5.2.2.12.2.1: PDU session charging: establishment roaming Home Routed

1-3a. UE initiates a new PDU session. V-SMF and H-SMF selection by the AMF.

3ch-a. The UE is identified as a roamer (PLMN ID of the received SUPI is different from VPLMN PLMN ID), the CHF is selected accordingly.

3ch-b. A Charging Data Request [Initial] is sent to CHF, indicating "in-bound roamer".

If receive 5GS CIoT optimization indicators, the V-SMF may provide charging information related to 5GS CIoT to CHF..

3ch-c. The CHF opens a CDR (indicating "in-bound roamer")

3ch-d. The CHF acknowledges by sending Charging Data Response[Initial] to the SMF and optionally supplies a "Roaming Charging Profile" to the V-SMF which overrides the default one.

 10. UPF selection.

11. If dynamic PCC is deployed, SM policy association modification.

11ch-a. Based on UE is identified as roaming in a different PLMN, the CHF is selected accordingly.

11ch-b. A Charging Data Request [Initial] is sent to CHF, indicating "out-bound roamer", with the "Roaming Charging Profile" received from the VPLMN.

11ch-c. The CHF opens a CDR (indicating "out-bound roamer").

11ch-d. The CHF acknowledges by sending Charging Data Response[Initial] to the H-SMF and supplies the HPLMN selected "Roaming Charging Profile" (either the same as the one received from VPLMN, either its own selected) to the H-SMF.

If receive 5GS CIoT optimization indicators, the V-SMF may provide charging information related to 5GS CIoT to CHF.

[12a-b]. The SMF initiates an N4 Session Establishment procedure with the selected UPF.

12ch. Counts per QFI are started.

13. Nsmf\_PDUSession\_Create Response from H-SMF to V-SMF

13ch-a. Based on "received PDU session conditions" trigger, a Charging Data Request [Update] is sent to CHF with charging information received from H-SMF, which includes the HPLMN selected "Roaming Charging Profile" and counts per QFI are started.

13ch-b. The CHF updates the CDR.

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

19a-b. N4 session modification.

19ch-a. Counts per rejected QFI(s) are closed. A Charging Data Request [Update] is sent to CHF to report if needed.

19ch-b. The CHF updates the CDR.

19ch-c. The CHF acknowledges by sending Charging Data Response[Update] to the V-SMF.

23. Nsmf\_PDUSession\_UpdateRequest from V-SMF to H-SMF. The rejected QFI(s) are notified to H-SMF.

23ch-a. Counts per rejected QFI(s) are closed. A Charging Data Request [Update] is sent to CHF to report if needed.

23ch-b. The CHF updates the CDR.

23ch-c. The CHF acknowledges by sending Charging Data Response[Update] to the H-SMF.

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| **End of changes** |