**3GPP TSG-CT WG1 Meeting #125-eC1-205300**

**Electronic meeting, 20-28 August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **2505** | **rev** | **1** | **Current version:** | **16.5.1** |  |
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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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Handling of 5GSM procedures when fallback is triggered | | | | | | | | | |
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| ***Source to WG:*** | LG Electronics | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc17 | | | | |  | ***Date:*** | | | 2020-08-13 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. Clarification on VoWiFi fallback  In RAN#88E meeting, RP-200795 was approved to align with SA2 CR S2-1912644 which added new procedure to transfer PDU session used for IMS voice from non-3GPP access to 5GS.  According to RP-200795, when the UE requested to handover an existing PDU session from non-3GPP access to 3GPP access, the NG-RAN may reject the establishment of PDU session due to the trigger EPS fallback or RAT fallback. However the UE and SMF behaviours are not clear for this scenario in TS 24.501.  After UE sends the PDU session establishment request message, the UE will wait for the completion or failure of the procedure. But when RAT fallback or EPS fallback is occurred, UE shall wait until the retransmission timer is over and then sends another request message as per current specification. But since this scenario covers the IMS voice case, this latency is unnecessary and inefficient. So it would be better to abort the current procedure when the fallback is initiated (e.g. RRCRelease message including redirectedCarrierInfo indicating redirection to eutra) and then re-initiate the PDU session establishment request procedure when the fallback is completed.  After SMF receives n2SmInfo containing reject message with cause “IMS voice EPS fallback or RAT fallback triggered” from NG-RAN, there’s no reason to keep the current procedure and wait until the EPS fallback or RAT fallback is finished. So it is proposed to abort ongoing procedure when the SMF detects EPS fallback or RAT fallback.  Then the UE can re-initiate handover an existing PDU session over non-3GPP access to 3GPP access. According to the connected CN type, the UE can send either PDN CONNECTIVITY REQUEST message or PDU SESSION ESTABLISHMENT REQUEST message to request handover of VoWiFi PDU Session. | | | | | | | | |
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| ***Summary of change:*** | | 1. During the PDU session establishment procedure for performing handover an existing PDU session over non-3GPP access to 3GPP access, the SMF abort the procedure, while the UE abort the procedure and re-initiate ther procedure after the completion of fallback. | | | | | | | | |
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| ***Consequences if not approved:*** | | It is not clear for the UE and the SMF when the 5GSM procedure triggers a RAT fallback or EPS fallback. | | | | | | | | |
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| ***Clauses affected:*** | | 6.4.1.6 | | | | | | | | |
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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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | Changes in revision 1  - Release and WI code are updated to Rel-17 and 5GProtoc17 repectively.  - Abnormal cases in the UE for PDU session establishment procedure are updated that  > the added case is generalized for intersystem change from N1 to S1 mode triggered by RAN, not only the EPS fallback case  > RAT fallback case is removed  > UE behavior is now just aborting the procedure, and it is up to the upper layer whether to re-initiate the procedure or not.  - Changes for the abnormal cases in the network for PDU session establishment procedure are removed, as per comment that the existing behavior can cover this scenario.  - Changes for the abnormal cases in the network for PDU session modification procedure are removed. | | | | | | | | |

\*\*\*\*\* First change \*\*\*\*\*

#### 6.4.1.6 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Expiry of timer T3580

The UE shall, on the first expiry of the timer T3580:

- if the PDU SESSION ESTABLISHMENT REQUEST message was sent with request type set to "initial emergency request" or "existing emergency PDU session", then the UE may:

a) inform the upper layers of the failure of the procedure; or

NOTE 1: This can result in the upper layers requesting another emergency call attempt using domain selection as specified in 3GPP TS 23.167 [6].

b) de-register locally, if not de-registered already, attempt initial registration for emergency services.

- otherwise, retransmit the PDU SESSION ESTABLISHMENT REQUEST message and the PDU session information which was transported together with the initial transmission of the PDU SESSION ESTABLISHMENT REQUEST message and shall reset and start timer T3580, if still needed. This retransmission can be repeated up to four times, i.e. on the fifth expiry of timer T3580, the UE shall abort the procedure, release the allocated PTI and enter the state PROCEDURE TRANSACTION INACTIVE.

b) Upon receiving an indication that the 5GSM message was not forwarded due to routing failure along with a PDU SESSION ESTABLISHMENT REQUEST message with the PDU session ID IE set to the same value as the PDU session ID that was sent by the UE, the UE shall stop timer T3580 and shall abort the procedure. If the UE sent the PDU SESSION ESTABLISHMENT REQUEST message in order for the handover of an existing non-emergency PDU session between 3GPP access and non-3GPP access, the UE shall consider that the PDU session is associated with the source access type.

b1) Upon receiving an indication that the 5GSM message was not forwarded due to service area restrictions along with a PDU SESSION ESTABLISHMENT REQUEST message with the PDU session ID IE set to the same value as the PDU session ID that was sent by the UE, the UE shall stop timer T3580 and shall abort the procedure.

c) Collision of UE-requested PDU session establishment procedure and network-requested PDU session release procedure.

If the UE receives a PDU SESSION RELEASE COMMAND message after sending a PDU SESSION ESTABLISHMENT REQUEST message to the network, and the PDU session ID in the PDU SESSION RELEASE COMMAND message is the same as the PDU session ID in the PDU SESSION ESTABLISHMENT REQUEST message, the UE shall ignore the PDU SESSION RELEASE COMMAND message and proceed with the UE-requested PDU session establishment procedure.

x) Inter-system change from N1 mode to S1 mode triggered during UE-requested PDU session establishment procedure.

If the UE-requested PDU session establishment procedure is triggered for handover of an existing PDU session from non-3GPP access to 3GPP access, and the inter-system change from N1 mode to S1 mode is triggered by the NG-RAN and the UE did not receive response to PDU session establishment request, then the UE shall abort the procedure, stop timer T3580, and notify the upper layer of the handover failure.

NOTE 2: This can result in the upper layer requesting re-initiation of handover from non-3GPP access to 3GPP access after the inter-system change is completed, if still required.

\*\*\*\*\* End change \*\*\*\*\*