**3GPP TSG-CT WG1 Meeting #133-eC1-216720**

**E-meeting, 11-19 November 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **24.501** | **CR** | **3734** | **rev** | **-** | **Current version:** | **17.4.1** |  |
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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:***  | Collision handling of UE-requested PDU session establishment procedure and network-requested PDU session modification procedure |
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| ***Source to WG:*** | MediaTek Inc. |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5GProtoc17 |  | ***Date:*** | 2021-11-02 |
|  |  |  |  |  |
| ***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 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:*** | 1. The PDU session establishment procedure can be used to:
* establish a new PDU session;
* perform handover of an existing PDU session; or
* establish user plane resources on the second access for an MA PDU session

Regarding the 2nd and 3rd use cases, collision between UE-requested PDU session establishment procedure and network-requested PDU session modification procedure can happen. However, the handling of the collision is not specified.1. In the discussion of agreed CR C1-213675 (TS 24.501 CR#3291) it is agreed to cover the emergency PDU session handover scenario. The corresponding statement needs to be aligned, i.e., remove “non-emergency” from the following statement:

*if the PDU SESSION ESTABLISHMENT REQUEST message was sent with request type set to "existing PDU session" or "existing emergency PDU session" in order for the handover of an existing* ***non-emergency*** *PDU session between 3GPP access and non-3GPP access* |
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| ***Summary of change:*** | 1. Define the collision handling of UE-requested PDU session establishment procedure and network-requested PDU session modification procedure.
	1. For PDU session handover scenario, as defined in C1-207174 (TS 24.501 CR#2634) the UE shall locally delete any QoS rules and/or flow descriptions stored for the PDU session before processing the new IEs provided in the PDU SESSION ESTABLISHMENTACCEPT message, it is proposed to abort the PDU session modification procedure for handling.
	2. For MA PDU session second access scenario, as defined in C1-206633 (TS 24.501 CR#2666), the UE only delete the QoS flow/mapped EPS bearer context when they are provided in the provided in the PDU SESSION ESTABLISHMENTACCEPT message, therefore, both procedures need to be proceeded.
2. Clarify that the collision handling between establishment procedure and release procedure covers the emergency PDU session handover scenario.
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| ***Consequences if not approved:*** | 1. Collision handling of UE-requested PDU session establishment procedure and network-requested PDU session modification procedure is not specified.
2. Conflicting requirements exist in the specification.
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| ***Clauses affected:*** | 6.3.2.5, 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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\* Next change \*\*\*\*\*

#### 6.3.2.5 Abnormal cases on the network side

The following abnormal cases can be identified:

a) Expiry of timer T3591.

 On the first expiry of the timer T3591, the SMF shall resend the PDU SESSION MODIFICATION COMMAND message and shall reset and restart timer T3591. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3591, the SMF shall abort the procedure and enter the state PDU SESSION ACTIVE.

 The SMF may continue to use the previous configuration of the PDU session or initiate the network-requested PDU session release procedure. If the SMF decides to continue to use the previous configuration of the PDU session and

i) the Authorized QoS rules IE is included in the PDU SESSION MODIFICATION COMMAND message, the SMF may mark the corresponding authorized QoS rule(s) of the PDU session as to be synchronised with the UE; and

ii) the Authorized QoS flow descriptions IE is included in the PDU SESSION MODIFICATION COMMAND message, the SMF may mark the corresponding authorized QoS flow description(s) of the PDU session as to be synchronised with the UE.

b) Void.

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

 If the SMF receives a PDU SESSION RELEASE REQUEST message during the network-requested PDU session modification procedure, and the PDU session indicated in the PDU SESSION RELEASE REQUEST message is the PDU session that the SMF had requested to modify, the SMF shall abort the PDU session modification procedure and proceed with the UE-requested PDU session release procedure.

d) Collision of UE-requested PDU session modification procedure and network-requested PDU session modification procedure.

 If the network receives a PDU SESSION MODIFICATION REQUEST message during the network-requested PDU session modification procedure, and the PDU session indicated in the PDU SESSION MODIFICATION REQUEST message is the PDU session that the network had requested to modify, the network shall ignore the PDU SESSION MODIFICATION REQUEST message received in the state PDU SESSION MODIFICATION PENDING. The network shall proceed with the network-requested PDU session modification procedure as if no PDU SESSION MODIFICATION REQUEST message was received from the UE.

e) 5G access network cannot forward the message.

 If the SMF determines based on content of the n2SmInfo attribute specified in 3GPP TS 29.502 [20A] that the DL NAS TRANSPORT message carrying the PDU SESSION MODIFICATION COMMAND message was not forwarded to the UE by the 5G access network, then the SMF shall abort the procedure and enter the state PDU SESSION ACTIVE.

f) 5G access network cannot forward the message due to handover.

 If the SMF determines based on content of the n2SmInfo attribute specified in 3GPP TS 29.502 [20A] that the DL NAS TRANSPORT message carrying the PDU SESSION MODIFICATION COMMAND message was not forwarded to the UE by the 5G access network due to handover, then the SMF shall abort the procedure and enter the state PDU SESSION ACTIVE.

 The SMF may re-initiate, up to a pre-configured number of times, the network-requested PDU session modification procedure when the SMF detects that the handover is completed successfully or has failed or at the expiry of the configured guard timer as specified in 3GPP TS 23.502 [9].

g) Collision of re-establishment of the user-plane resources and network-requested PDU session modification procedure for the same PDU session.

 If the SMF receives an indication from the AMF to re-establish the user-plane resources during the network-requested PDU session modification procedure for the same PDU session, the network shall abort the network-requested PDU session modification procedure and proceed with re-establishment of the user-plane resources for the PDU session as specified in 3GPP TS 29.502 [20A] subclause 5.2.2.3.2.2.

NOTE: After the completion of re-establishment of the user-plane resources for the PDU session, the SMF can re-initiate the network-requested PDU session modification procedure for the PDU session.

y) Collision of UE-requested PDU session establishment procedure and network-requested PDU session modification procedure.

 If the network receives a PDU SESSION ESTABLISHMENT REQUEST message with request type set to "existing PDU session" or "existing emergency PDU session" during the network-requested PDU session modification procedure, and the PDU session ID indicated in the PDU SESSION ESTABLISHMENT REQUEST message is the PDU session that the network had requested to modify, the network shall abort the network-requested PDU session modification procedure and proceed with the UE-requested PDU session establishment procedure.

\*\*\*\*\* Next 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.

 If the UE sent the PDU SESSION ESTABLISHMENT REQUEST message in order to perform a handover of an existing emergency PDU session between 3GPP access and non-3GPP access, the UE shall consider that the emergency PDU session is associated with the source access type.

- 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. If the UE sent the PDU SESSION ESTABLISHMENT REQUEST message in order to perform a 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.

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 to perform a handover of an existing 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. If the UE sent the PDU SESSION ESTABLISHMENT REQUEST message in order to perform a handover of an existing PDU session between 3GPP access and non-3GPP access, the UE shall consider that the PDU session is associated with the source access type.

b2) Upon receiving an indication that the 5GSM message was not forwarded because the UE is registered to a PLMN via a satellite NG-RAN cell that is not allowed to operate at the present UE location 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. The UE shall not trigger the PDU session establishment procedure until the UE is deregistered from the PLMN.

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:

i) if the UE-requested PDU session establishment procedure was to request the establishment of user plane resources on the second access for an MA PDU session established on a first access and the Access type IE is not included in PDU SESSION RELEASE COMMAND or the Access type IE included in PDU SESSION RELEASE COMMAND indicates the first access, the UE shall proceed with the network-requested PDU session release procedure, abort the UE-requested PDU session establishment procedure, stop timer T3580, release the allocated PTI and enter the state PROCEDURE TRANSACTION INACTIVE;

ii) if the PDU SESSION ESTABLISHMENT REQUEST message was sent with request type set to "existing PDU session" or "existing emergency PDU session" in order to perform a handover of an existing PDU session between 3GPP access and non-3GPP access, the UE shall abort the PDU session establishment procedure and proceed with the network-requested PDU session release procedure; or

iii) otherwise, the UE shall ignore the PDU SESSION RELEASE COMMAND message and proceed with the UE-requested PDU session establishment procedure.

d) 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.

e) For an MA PDU session established on a single access, upon receipt of a PDU SESSION ESTABLISHMENT ACCEPT message over the other access, if any value of the selected PDU session type, selected SSC mode, 5GSM cause, PDU address, S-NSSAI, DNN IEs in the PDU SESSION ESTABLISHMENT ACCEPT message is different from the corresponding stored value, the UE shall perform a local release of the MA PDU session, and perform the registration procedure for mobility and periodic registration update with a REGISTRATION REQUEST message including the PDU session status IE over both accesses.

f) Collision of UE-requested PDU session establishment procedure initiated to perform handover of an existing PDU session from non-3GPP access to 3GPP access and a notification from the network with access type indicating non-3GPP access.

 If the UE receives a notification from the network with access type indicating non-3GPP access after sending a PDU SESSION ESTABLISHMENT REQUEST message to perform handover of an existing PDU session from non-3GPP access to 3GPP access, the UE shall abort the PDU session establishment procedure, stop timer T3580, proceed with the service request procedure to perform handover of existing PDU session(s) from non-3GPP access to 3GPP access.

g) Collision of UE-requested PDU session establishment procedure and N1 NAS signalling connection release

 The UE may immediately retransmit the PDU SESSION ESTABLISHMENT REQUEST message and stop, reset and restart timer T3580, if the following conditions apply:

1) The original UE-requested PDU session establishment procedure was initiated over an existing N1 NAS signalling connection;

2) the previous transmission of the PDU SESSION ESTABLISHMENT REQUEST message was not initiated due to timer T3580 expiry; and

3) no 5GSM message related to the PDU session (e.g. PDU SESSION ESTABLISHMENT REJECT or PDU SESSION AUTHENTICATION COMMAND message) or indication that the 5GSM message was not forwarded (see item b) and b1)) was received after the PDU SESSION ESTABLISHMENT REQUEST message was transmitted.

x) Collision of UE-requested PDU session establishment procedure and network-requested PDU session modification procedure

 If the UE receives a PDU SESSION MODIFICATION COMMAND message after sending a PDU SESSION ESTABLISHMENT REQUEST message to the network, and the PDU session ID in the PDU SESSION MODIFICATION COMMAND message is the same as the PDU session ID in the PDU SESSION ESTABLISHMENT REQUEST message:

i) if the UE-requested PDU session establishment procedure was to request the establishment of user plane resources on the second access for an MA PDU session established on a first access, the UE shall proceed with both the UE-requested PDU session establishment procedure and the network-requested PDU session modification procedure; or

ii) if the PDU SESSION ESTABLISHMENT REQUEST message was sent with request type set to "existing PDU session" or "existing emergency PDU session" in order to perform a handover of an existing PDU session between 3GPP access and non-3GPP access, the UE shall proceed with the UE-requested PDU session establishment procedure and abort the network-requested PDU session modification procedure.