**3GPP TSG-CT WG1 Meeting #125-eC1-205279**

**Electronic meeting, 20-28 August 2020 *was C1-204988***

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **24.501** | **CR** | **2539** | **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 |  |

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| ***Title:***  | Infinite De-registration attempt |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
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| ***Work item code:*** | 5GProtoc16 |  | ***Date:*** | 2020-08-13 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *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-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:*** | According to the following text quoted from sub-clause 5.5.2.2.1 of TS 24.501 specified, UE will start T3521 after sending out DEREGISTRATION REQUEST message.*If the de-registration request is not due to switch off and the UE is in the state 5GMM-REGISTERED or 5GMM-REGISTERED-INITIATED, timer T3521 shall be started in the UE after the DEREGISTRATION REQUEST message has been sent. The UE shall enter the state 5GMM-DEREGISTERED-INITIATED.*Furthermore, according to the following text quoted from sub-clause 5.5.2.2.6 of TS 24.501 specified, UE will stop T3521 if the transmission of DEREGISTRATION REQUEST message is failed.*h) Transmission failure of DEREGISTRATION REQUEST message indication without TAI change from lower layers.* *The UE shall restart the de-registration procedure.**….**For the cases a, f, g, h and i:**- Timer T3521 shall be stopped if still running.*Based on the above two points, UE may infinitely restart the de-registration procedure when the link condition is not good and the DEREGISTRATION REQUEST message couldn’t be sent out successfully, see below.1. UE send out DEREGISTRATION REQUEST message;-- start T3521
2. Transmission failure of DEREGISTRATION REQUEST message;-- stop T3521
3. Restart the de-registration procedure;-- go to 1), restart T3521

In fact UE no need to restart T3521 when retransmit the de-regstration reuqest message, then even in the worst case, the UE can enter the 5GMM-NULL or 5GMM-DEREGISTERED state at the fifth expiry of timer T3521, rather than infinitely restart the de-regitsation procedure. |
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| ***Summary of change:*** | Update the condition of stop T3521 |
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| ***Consequences if not approved:*** | Infinitelty restart the de-registation procedure |
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| ***Clauses affected:*** | 5.5.2.2.6 |
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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:*** |  |

\*\*\*\*\* start of change\*\*\*\*\*

##### 5.5.2.2.6 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Lower layer failure or release of the N1 NAS signalling connection before reception of DEREGISTRATION ACCEPT message.

 The de-registration procedure shall be aborted and the UE proceeds as follows:

1) if the de-registration procedure was performed due to disabling of 5GS services, the UE shall enter the 5GMM-NULL state; or

2) if the de-registration type "normal de-registration" was requested for reasons other than disabling of 5GS services, the UE shall enter the 5GMM-DEREGISTERED state.

b) The lower layers indicate that the access attempt is barred.

 The UE shall not start the de-registration signalling procedure. The UE stays in the current serving cell and applies the normal cell reselection process. Receipt of the access barred indication shall not trigger the selection of a different core network type (EPC or 5GCN).

 The UE may perform a local de-registration either immediately or after an implementation-dependent time.

 The de-registration signalling procedure is started, if still needed, when the lower layers indicate that the barring is alleviated for the access category with which the access attempt was associated.

ba) The lower layers indicate that access barring is applicable for all access categories except categories 0 and 2 and the access category with which the access attempt was associated is other than 0 and 2.

 If the DEREGISTRATION REQUEST message has not been sent, the UE shall proceed as specified for case b. If the DEREGISTRATION REQUEST message has been sent, the UE shall proceed as specified for case a.

c) T3521 timeout.

 On the first four expiries of the timer, the UE shall retransmit the DEREGISTRATION REQUEST message and shall reset and restart timer T3521. On the fifth expiry of timer T3521, the de-registration procedure shall be aborted and the UE proceeds as follows:

1) if the de-registration procedure was performed due to disabling of 5GS services, the UE shall enter the 5GMM-NULL state; or

2) if the de-registration type "normal de-registration" was requested for reasons other than disabling of 5GS services, the UE shall enter the 5GMM-DEREGISTERED state.

d) De-registration procedure collision.

 De-registration containing de-registration type "switch off":

- If the UE receives a DEREGISTRATION REQUEST message before the UE-initiated de-registration procedure has been completed, this message shall be ignored and the UE-initiated de-registration procedure shall continue.

 Otherwise:

- If the UE receives a DEREGISTRATION REQUEST message before the UE-initiated de-registration procedure has been completed, it shall treat the message as specified in subclause 5.5.2.3.2 with the following modification:

- If the DEREGISTRATION REQUEST message received by the UE contains de-registration type "re-registration required", and the UE-initiated de-registration procedure is with de-registration type "normal de-registration", the UE need not initiate the registration procedure for initial registration.

e) De-registration and 5GMM common procedure collision.

 De-registration containing de-registration type "switch off":

- If the UE receives a message used in a 5GMM common procedure before the de-registration procedure has been completed, this message shall be ignored and the de-registration procedure shall continue.

 Otherwise:

- If the UE receives a message used in a 5GMM common procedure before the de-registration procedure has been completed, both the 5GMM common procedure and the de-registration procedure shall continue.

f) Change of cell into a new tracking area.

 If a cell change into a new tracking area that is not in the stored TAI list occurs before the UE-initiated de-registration procedure is completed, the de-registration procedure shall be aborted and re-initiated after successfully performing a registration procedure for mobility or periodic update used for mobility (i.e. the 5GS registration type IE set to "mobility registration updating" in the REGISTRATION REQUEST message). If the de-registration procedure was initiated due to removal of the USIM or the UE is to be switched off, the UE shall abort the de-registration procedure and enter the state 5GMM-DEREGISTERED.

g) Transmission failure of DEREGISTRATION REQUEST message indication with TAI change from lower layers.

 If the current TAI is not in the TAI list, the de-registration procedure shall be aborted and re-initiated after successfully performing a registration procedure for mobility or periodic update. If the de-registration procedure was initiated due to removal of the USIM or the UE is to be switched off, the UE shall abort the de-registration procedure and enter the state 5GMM-DEREGISTERED.

 If the current TAI is still part of the TAI list, the UE shall restart the de-registration procedure.

h) Transmission failure of DEREGISTRATION REQUEST message indication without TAI change from lower layers.

 The UE shall restart the de-registration procedure.

i) The lower layers indicate that the RRC connection has been suspended.

 De-registration containing de-registration type "switch off":

- The UE may perform a local de-registration either immediately or after an implementation-dependent time.

 Otherwise:

- The UE shall wait for an implementation-dependent time and shall restart the de-registration procedure, if still needed, upon expiration of the implementation-dependent time.

For the cases a, f, g and i:

- Timer T3521 shall be stopped if still running.

\*\*\*\*\* end of change\*\*\*\*\*