**3GPP TSG-CT WG1 Meeting #127-eC1-207536**

**Electronic meeting, 13-20 November 2020 *was C1-207264***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **2883** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *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:*** | AN Release triggered by CAG information Update | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2020-11-19 |
|  |  | | | |  | |  | | |  |
| ***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 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:*** | | As the following text of sub-clause 5.4.4.3 in TS 24.501 specified, UE shall enter the 5GMM-REGISTERED.LIMITED-SERVICE or 5GMM-DEREGISTERED.PLMN-SEARCH if the CAG information list of UE satisfies the following cases:  *a) If the UE receives the CONFIGURATION UPDATE COMMAND message via a CAG cell, the entry for the current PLMN in the received "CAG information list" does not include any of the CAG-ID(s) supported by the current CAG cell, and:*  *1) the entry for the current PLMN in the received "CAG information list" does not include an "indication that the UE is only allowed to access 5GS via CAG cells", then the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] or 3GPP TS 36.304 [25C] with the updated "CAG information list"; or*  *2) the entry for the current PLMN in the received "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells" and:*  *i) if the entry for the current PLMN in the received "CAG information list" includes one or more CAG-IDs, the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] with the updated "CAG information list"; or*  *ii) if the entry for the current PLMN in the received "CAG information list" does not include any CAG-ID and:*  *A) the UE does not have an emergency PDU session, then the UE shall enter the state 5GMM-DEREGISTERED.PLMN-SEARCH and shall apply the PLMN selection process defined in 3GPP TS 23.122 [6] with the updated "CAG information list"; or*  *B) the UE has an emergency PDU session, then the UE shall perform a local release of all PDU sessions associated with 3GPP access except for the emergency PDU session; or*  *b) If the UE receives the CONFIGURATION UPDATE COMMAND message via a non-CAG cell and the entry for the current PLMN in the received "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells" and:*  *1) if the "allowed CAG list" for the current PLMN in the received "CAG information list" includes one or more CAG-IDs, the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] with the updated "CAG information list"; or*  *2) if the entry for the current PLMN in the received "CAG information list" does not include any CAG-ID and:*  *i) the UE does not have an emergency PDU session, then the UE shall enter the state 5GMM-DEREGISTERED.PLMN-SEARCH and shall apply the PLMN selection process defined in 3GPP TS 23.122 [6] with the updated "CAG information list"; or*  *ii) the UE has an emergency PDU session, then the UE shall perform a local release of all PDU sessions associated with 3GPP access except for the emergency PDU session.*  If the NW does not release the NAS connection (or UE doesn’t receive the release command), UE cannot perform PLMN/cell selection as expected. Hence It is proposed to start T3540 for above cases. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Clarify that UE shall start T3540 if it receives a CUC with updated CAG information list IE | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UE cannot perform PLMN/cell selection as expected | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.1.3, 10.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\* start of 1st change\*\*\*\*\*

#### 5.3.1.3 Release of the N1 NAS signalling connection

The signalling procedure for the release of the N1 NAS signalling connection is initiated by the network.

In N1 mode, upon indication from lower layers that the access stratum connection has been released, the UE shall enter 5GMM-IDLE mode and consider the N1 NAS signalling connection released.

If the UE in 3GPP access is configured for eCall only mode as specified in 3GPP TS 31.102 [22] then:

- if the N1 NAS signalling connection that was released had been established for eCall over IMS, the UE shall start timer T3444; and

- if the N1 NAS signalling connection that was released had been established for a call to an HPLMN designated non-emergency MSISDN or URI for test or terminal reconfiguration service, the UE shall start timer T3445.

The UE shall start the timer T3447 if not already running when the N1 NAS signalling connection is released as specified in subclause 5.3.17.

To allow the network to release the N1 NAS signalling connection, the UE:

a) shall start the timer T3540 if the UE receives any of the 5GMM cause values #7, #11, #12, #13, #15, #27, #31, #62, #72, #73, #74, #75, #76;

b) shall start the timer T3540 for a UE in 3GPP access if:

1) the UE receives a REGISTRATION ACCEPT message which does not include a Pending NSSAI IE or UE radio capability ID deletion indication IE;

2) the UE has set the Follow-on request indicator to "No follow-on request pending" in the REGISTRATION REQUEST message;

3) the UE has not included the Uplink data status IE in the REGISTRATION REQUEST message, or the UE has included the Uplink data status IE in the REGISTRATION REQUEST message but the REGISTRATION ACCEPT message indicates that no user-plane resources of any PDU sessions are to be re-established;

4) the UE has not included the Allowed PDU session status IE or has included the Allowed PDU session status IE indicating there is no PDU session(s) for which the UE allowed the user-plane resource to be re-established over 3GPP access in the REGISTRATION REQUEST message, or the UE has included the Allowed PDU session status IE in the REGISTRATION REQUEST message but the REGISTRATION ACCEPT message does not indicate that any user-plane resources of any PDU sessions are to be re-established;

5) the registration procedure has been initiated in 5GMM-IDLE mode;

6) the user-plane resources for PDU sessions have not been set up; and

7) the UE does not have to request resources for V2X communication over PC5 reference point (see 3GPP TS 23.287 [6C]);

NOTE 1: The lower layers indicate when the user-plane resources for PDU sessions are successfully established or released.

c) shall start the timer T3540 if the UE receives a REGISTRATION REJECT message indicating:

the 5GMM cause value #9 or #10;

d) shall start the timer T3540 if the UE receives a SERVICE REJECT message indicating:

the 5GMM cause value #9, #10 or #28;

e) shall start the timer T3540 if:

1) the UE receives a CONFIGURATION UPDATE COMMAND message containing the Configuration update indication IE with the Registration bit set to "registration requested" and with:

i) either new allowed NSSAI information or new configured NSSAI information or both included;

ii) the network slicing subscription change indication; or

iii) no other parameters;

2) the user-plane resources for PDU sessions have not been set up; and

3) no emergency PDU session has been established;

f) shall start the timer T3540 if:

1) the UE receives a SERVICE ACCEPT message;

2) the UE did not set the Service type IE to "signalling" or "high priority access", the UE has not included the Uplink data status IE in the SERVICE REQUEST message, or the UE has included the Uplink data status IE in the SERVICE REQUEST message but the SERVICE ACCEPT message indicates that no user-plane resources of any PDU sessions are to be re-established;

3) the UE has not included the Allowed PDU session status IE or has included the Allowed PDU session status IE indicating there is no PDU session(s) for which the UE allowed the user-plane resource to be re-established over 3GPP access in the SERVICE ACCEPT message, or the UE has included the Allowed PDU session status IE in the SERVICE REQUEST message but the SERVICE ACCEPT message does not indicate that any user-plane resources of any PDU sessions are to be re-established;

4) the service request procedure has been initiated in 5GMM-IDLE mode;

5) the user-plane resources for PDU sessions have not been set up; and

6) the UE does not have to request resources for V2X communication over PC5 reference point (see 3GPP TS 23.287 [6C]);

NOTE 2: The lower layers indicate when the user-plane resources for PDU sessions are successfully established or released.

g) may start the timer T3540 if the UE receives any of the 5GMM cause values #3 or #6 or if it receives an AUTHENTICATION REJECT message; or

X) shall start the timer T3540 upon completion of the configuration update procedure if the UE does not have an emergency PDU session and:

1) the UE received a CONFIGURATION UPDATE COMMAND message while camping on a CAG cell and the entry for the current PLMN in the received "CAG information list" does not include any of the CAG-ID(s) supported by the current CAG cell; or

2) the UE received a CONFIGURATION UPDATE COMMAND message while camping on a non-CAG cell and the entry for the current PLMN in the received "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells".

Upon expiry of T3540,

- in cases a), b), f), g) and X), the UE shall locally release the established N1 NAS signalling connection;

- in cases c) and d) the UE shall locally release the established N1 NAS signalling connection and the UE shall initiate the registration procedure as described in subclause 5.5.1.3.5 or  5.6.1.5; or

- in case e), the UE shall locally release the established N1 NAS signalling connection and perform a new registration procedure as specified in subclause 5.5.1.3.2.

In case a),

- upon receiving a request from the upper layers to perform emergency service fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall stop timer T3540 and shall locally release the N1 NAS signalling connection, before proceeding as specified in subclause 5.5.1.

In case b) and f),

- upon an indication from the lower layers that the user-plane resources for PDU sessions are set up, the UE shall stop timer T3540 and may send uplink signalling via the existing N1 NAS signalling connection or user data via user plane. If the uplink signalling is associated with emergency services fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall stop timer T3540 and send the uplink signalling via the existing N1 NAS signalling connection;

- upon receipt of a DEREGISTRATION REQUEST message, the UE shall stop timer T3540 and respond to the network-initiated de-registration request via the existing N1 NAS signalling connection as specified in subclause 5.5.2.3;

- upon receipt of a message of a network-initiated 5GMM common procedure, the UE shall stop timer T3540 and respond to the network-initiated 5GMM common procedure via the existing N1 NAS signalling connection as specified in subclause 5.4;

- if there is no user-plane resources established for PDU sessions, upon receiving a request from the upper layers to perform emergency service fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall stop timer T3540 and shall locally release the N1 NAS signalling connection, before proceeding as specified in subclause 5.6.1;

- if there is no user-plane resources established for PDU sessions, upon receiving a request from the upper layers to perform services other than emergency service fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall wait for the local release of the established N1 NAS signalling connection upon expiry of timer T3540 or wait for timer T3540 being stopped, before initiating NAS signalling; or

- upon receipt of a DL NAS TRANSPORT message, the UE shall stop timer T3540 and may send uplink signalling via the existing N1 NAS signalling connection.

In case c) and d),

- upon an indication from the lower layers that the access stratum connection has been released, the UE shall stop timer T3540 and perform a new registration procedure as specified in subclause 5.5.1.3.5 or 5.6.1.5.

- upon receiving a request from the upper layers to perform emergency service fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall stop timer T3540 and shall locally release the N1 NAS signalling connection, before proceeding as specified in subclause 5.5.1.

In case e),

- upon an indication from the lower layers that the access stratum connection has been released, the UE shall stop timer T3540 and perform a new registration procedure as specified in subclause 5.5.1.3.2.

- upon an indication from the lower layers that the user-plane resources for PDU sessions are set up, the UE shall stop timer T3540 and may send user data via user plane.

NOTE 3: In this case, the new registration procedure is performed when the UE moves to the 5GMM-IDLE mode.

- upon receiving a request from the upper layers to perform emergency service fallback only for a UE in 3GPP access or establishing an emergency PDU session, the UE shall stop timer T3540 and shall locally release the N1 NAS signalling connection, before proceeding as specified in subclause 5.5.1.

If the UE had set the Follow-on request indicator to "Follow-on request pending" in the REGISTRATION REQUEST message due to pending uplink signalling but cannot send the pending signalling due to network not supporting the feature as indicated in the REGISTRATION ACCEPT message (for example UE set the "Follow-on request pending" to send SMS over NAS but AMF notified "SMS over NAS not allowed") and if there is no further pending data or signalling and user plane resources have not been set up, the UE may locally release the established N1 NAS signalling connection upon completion of the registration procedure.

\*\*\*\*\* end of 1st change\*\*\*\*\*

\*\*\*\*\* start of 2nd change\*\*\*\*\*

## 10.2 Timers of 5GS mobility management

Timers of 5GS mobility management are shown in table 10.2.1 and table 10.2.2

NOTE: Timers T3346 and T3245 are defined in 3GPP TS 24.008 [12]. Timers T3444, T3445, T3447 and T3448 are defined in 3GPP TS 24.301 [15].

Table 10.2.1: Timers of 5GS mobility management – UE side

| TIMER NUM. | TIMER VALUE | STATE | CAUSE OF START | NORMAL STOP | ON  EXPIRY |
| --- | --- | --- | --- | --- | --- |
| T3502 | Default 12 min.  NOTE 1 | 5GMM-DEREGISTERED 5GMM-REGISTERED | At registration failure and the attempt counter is equal to 5 | Transmission of REGISTRATION REQUEST message | Initiation of the registration procedure, if still required |
| T3510 | 15s  NOTE 7  NOTE 8  In WB-N1/CE mode, 85s | 5GMM-REGISTERED-INITIATED | Transmission of REGISTRATION REQUEST message | REGISTRATION ACCEPT message received or REGISTRATION REJECT message received | Start T3511 or T3502 as specified in subclause 5.5.1.2.7 if T3510 expired during registration procedure for initial registration.  Start T3511 or T3502 as specified in subclause 5.5.1.3.7 if T3510 expired during the registration procedure for mobility and periodic registration update |
| T3511 | 10s | 5GMM-DEREGISTERED.ATTEMPTING-REGISTRATION  5GMM-REGISTERED.ATTEMPTING-REGISTRATION-UPDATE  5GMM-REGISTERED.NORMAL-SERVICE | At registration failure due to lower layer failure, T3510 timeout or registration rejected with other 5GMM cause values than those treated in subclause 5.5.1.2.5 for initial registration or subclause 5.5.1.3.5 for mobility and periodic registration | Transmission of REGISTRATION REQUEST message  5GMM-CONNECTED mode entered (NOTE 5) | Retransmission of the REGISTRATION REQUEST, if still required |
| T3512 | Default 54 min  NOTE 1  NOTE 2 | 5GMM-REGISTERED | In 5GMM-REGISTERED, when 5GMM-CONNECTED mode is left and if the NW does not indicate support for strictly periodic registration timer as specified in subclause 5.3.7.  If the network indicates support for strictly periodic registration timer, T3512 is started after the successful completion of registration update procedure. T3512 is restarted if it expires in 5GMM-CONNECTED mode as specified in subclause 5.3.7. | When entering state 5GMM-DEREGISTERED  When entering 5GMM-CONNECTED mode if the NW does not indicate support for strictly periodic registration timer as specified in subclause 5.3.7. | In 5GMM-IDLE mode, Initiation of the periodic registration procedure if the UE is not registered for emergency services.  In 5GMM-CONNECTED mode, restart the timer T3512.  Locally deregister if the UE is registered for emergency services |
| T3516 | 30s  NOTE 7  NOTE 8  In WB-N1/CE mode, 48s | 5GMM-REGISTERED-INITIATED  5GMM-REGISTERED  5GMM-DEREGISTERED-INITIATED  5GMM-SERVICE-REQUEST-INITIATED | RAND and RES\* stored as a result of an 5G authentication challenge | SECURITY MODE COMMAND received  SERVICE REJECT received  REGISTRATION ACCEPT received  AUTHENTICATION REJECT received  AUTHENTICATION FAILURE sent  5GMM-DEREGISTERED, 5GMM-NULL or  5GMM-IDLE mode entered | Delete the stored RAND and RES\* |
| T3517 | 15s  NOTE 7  NOTE 8  In WB-N1/CE mode, 61s | 5GMM-SERVICE-REQUEST-INITIATED | Transmission of SERVICE REQUEST message, or CONTROL PLANE SERVICE REQUEST message | (a) Indication from the lower layers that the UE has changed to S1 mode or E-UTRA connected to 5GCN for case h) in subclause 5.6.1.1; or  (b) SERVICE ACCEPT message received, or  SERVICE REJECT message received for cases other than h) in subclause 5.6.1.1  see subclause 5.6.1.4.2 | Abort the procedure |
| T3519 | 60s  NOTE 7  NOTE 8  In WB-N1/CE mode, 90s | 5GMM-REGISTERED-INITIATED  5GMM-REGISTERED  5GMM-DEREGISTERED-INITIATED  5GMM-SERVICE-REQUEST-INITIATED (NOTE 6) | Transmission of IDENTITY RESPONSE message, REGISTRATION REQUEST message, or DEREGISTRATION REQUEST message with freshly generated SUCI | REGISTRATION ACCEPT message with new 5G-GUTI received  CONFIGURATION UPDATE COMMAND message with new 5G-GUTI received DEREGISTRATION ACCEPT message | Delete stored SUCI |
| T3520 | 15s  NOTE 7  NOTE 8  In WB-N1/CE mode, 33s | 5GMM-REGISTERED-INITIATED  5GMM-REGISTERED  5GMM-DEREGISTERED-INITIATED  5GMM-SERVICE-REQUEST-INITIATED | Transmission of AUTHENTICATION FAILURE message with any of the 5GMM cause #20, #21, #26 or #71  Transmission of AUTHENTICATION RESPONSE message with an EAP-response message after detection of an error as described in subclause 5.4.1.2.2.4 | AUTHENTICATION REQUEST message received or AUTHENTICATION REJECT message received  or  SECURITY MODE COMMAND message received  when entering 5GMM-IDLE mode  indication of transmission failure of AUTHENTICATION FAILURE message from lower layers | On first expiry during a 5G AKA based primary authentication and key agreement procedure, the UE should consider the network as false and follow item g of subclause 5.4.1.3.7, if the UE is not registered for emergency services.  On first expiry during a 5G AKA based primary authentication and key agreement procedure, the UE will follow subclause 5.4.1.3.7 under "For items c, d, e and f:", if the UE is registered for emergency services.  On first expiry during an EAP based primary authentication and key agreement procedure, the UE should consider the network as false and follow item e of subclause 5.4.1.2.4.5, if the UE is not registered for emergency services.  On first expiry during an EAP based primary authentication and key agreement procedure, the UE will follow subclause 5.4.1.2.4.5 under "For item e:", if the UE is registered for emergency services |
| T3521 | 15s  NOTE 7  NOTE 8  In WB-N1/CE mode, 45s | 5GMM-DEREGISTERED-INITIATED | Transmission of DEREGISTRATION REQUEST message when de-registration procedure is not due to a "switch off" | DEREGISTRATION ACCEPT message received | Retransmission of DEREGISTRATION REQUEST message |
| T3525 | Default 60s  NOTE 3  NOTE 7  NOTE 8  In WB-N1/CE mode, default 120s | 5GMM-REGISTERED.NORMAL-SERVICE | T3517 expires and service request attempt counter is greater than or equal to 5 | When entering state other than 5GMM-REGISTERED.NORMAL-SERVICE state,  or  UE camped on a new PLMN other than the PLMN on which timer started,  or  User-plane resources established with the network | The UE may initiate service request procedure |
| T3540 | 10s | 5GMM-DEREGISTERED  5GMM-REGISTERED | REGISTRATION REJECT message or DEREGISTRATION REQUEST message received with any of the 5GMM cause #3, #6, #7, #11, #12, #13, #15, #27, #31, #62, #72, #73, #74, #75 or #76  SERVICE REJECT message received with any of the 5GMM cause #3, #6, #7, #11, #12, #13, #15, #27, #72, #73, #74, #75 or #76.  REGISTRATION ACCEPT message received as described in subclause 5.3.1.3 case b)  SERVICE ACCEPT message received as described in subclause 5.3.1.3 case f)  AUTHENTICATION REJECT message received | N1 NAS signalling connection released  PDU sessions have been set up | Release the NAS signalling connection for the cases a), b), f) and g) as described in subclause 5.3.1.3 |
| 5GMM-REGISTERED | CONFIGURATION UPDATE COMMAND message received as described in subclause 5.3.1.3 case e) and X) | N1 NAS signalling connection released | Release the NAS signalling connection for the case e) and perform a new registration procedure as described in subclause 5.5.1.3.2  Locally release the NAS signalling connection for the case X) as described in subclause 5.3.1.3 |
| 5GMM-DEREGISTERED  5GMM-DEREGISTERED.NORMAL-SERVICE  5GMM-REGISTERED.NON-ALLOWED-SERVICE | REGISTRATION REJECT message received with the 5GMM cause #9 or #10  SERVICE REJECT message received with the 5GMM cause #9, #10 or #28 | Release the NAS signalling connection for the cases c) and d) as described in subclause 5.3.1.3 and initiation of the registration procedure as specified in subclause 5.5.1.2.2 or 5.5.1.3.2 |
| Non-3GPP de-registration timer | Default 54 min.  NOTE 1  NOTE 2  NOTE 4 | All 5GMM state over non-3GPP access except 5GMM-DEREGISTERED over non-3GPP access | Entering 5GMM-IDLE mode over non-3GPP access | N1 NAS signalling connection over non-3GPP access established or when entering state 5GMM-DEREGISTERED over non-3GPP access | Implicitly de-register the UE for non-3GPP access on 1st expiry |
| NOTE 1: The value of this timer is provided by the network operator during the registration procedure.  NOTE 2: The default value of this timer is used if the network does not indicate a value in the REGISTRATION ACCEPT message and the UE does not have a stored value for this timer.  NOTE 3: The value of this timer is UE implementation specific, with a minimum value of 60 seconds if not in NB-N1 mode and if not in WB-N1/CE mode.  NOTE 4: If the T3346 value received in the mobility management messages is greater than the value of the non-3GPP de-registration timer, the UE sets the non-3GPP de-registration timer value to be 4 minutes greater than the value of timer T3346.  NOTE 5: The conditions for which this applies are described in subclause 5.5.1.3.7.  NOTE 6: The conditions for which this applies to the 5GMM-SERVICE-REQUEST-INITIATED state are described in subclause 5.4.1.3.7 case c) and case d).  NOTE 7: In NB-N1 mode, the timer value shall be calculated as described in subclause 4.17.  NOTE 8: In WB-N1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-N1/CE mode (see subclause 4.19). | | | | | |

Table 10.2.2: Timers of 5GS mobility management – AMF side

| TIMER NUM. | | TIMER VALUE | | STATE | | CAUSE OF START | | NORMAL STOP | | ON  EXPIRY | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T3513  NOTE 7  NOTE 9 | | NOTE 4 | | 5GMM-REGISTERED | | Paging procedure initiated | | Paging procedure completed as specified in subclause 5.6.2.2.1 | | Network dependent | |
| T3522  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 24s | | 5GMM-DEREGISTERED-INITIATED | | Transmission of DEREGISTRATION REQUEST message | | DEREGISTRATION ACCEPT message received | | Retransmission of DEREGISTRATION REQUEST message | |
| T3550  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 18s | | 5GMM-COMMON-PROCEDURE-INITIATED | | Transmission of REGISTRATION ACCEPT message as specified in subclause 5.5.1.2.4 and 5.5.1.3.4 | | REGISTRATION COMPLETE message received | | Retransmission of REGISTRATION ACCEPT message | |
| T3555  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 24s | | 5GMM-REGISTERED | | Transmission of CONFIGURATION UPDATE COMMAND message with "acknowledgement requested" set in the Acknowldgement bit of the Configuration update indication IE | | CONFIGURATION UPDATE COMPLETE message received | | Retransmission of CONFIGURATION UPDATE COMMAND message | |
| T3560  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 24s | | 5GMM-COMMON-PROCEDURE-INITIATED | | Transmission of AUTHENTICATION REQUEST message  Transmission of SECURITY MODE COMMAND message | | AUTHENTICATION RESPONSE message received  AUTHENTICATION FAILURE message received  SECURITY MODE COMPLETE message received  SECURITY MODE REJECT message received | | Retransmission of AUTHENTICATION REQUEST message or SECURITY MODE COMMAND message | |
| T3565  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 24s | | 5GMM-REGISTERED | | Transmission of NOTIFICATION message | | SERVICE REQUEST message received  NOTIFICATION RESPONSE message received  REGISTRATION REQUEST  Message received  DEREGISTRATION REQUEST message received  NGAP UE context resume request message as specified in 3GPP TS 38.413 [31] received | | Retransmission of NOTIFICATION message | |
| T3570  NOTE 6  NOTE 8 | | 6s  In WB-N1/CE mode, 24s | | 5GMM-COMMON-PROCEDURE-INITIATED | | Transmission of IDENTITY REQUEST message | | IDENTITY RESPONSE message received | | Retransmission of IDENTITY REQUEST message | |
| T3575 | | 15s | | 5GMM-REGISTERED | | Transmission of NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND message | | NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE message received | | Retransmission of NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND message | |
| Active timer | | TBD | | All except 5GMM-DEREGISTERED | | Entering 5GMM-IDLE mode after indicating MICO mode activation to the UE with an active timer value. | | N1 NAS signalling  connection established | | Activate MICO mode for the UE. | |
| Implicit de-registration timer | | NOTE 2 | | All except 5GMM-DEREGISTERED | | The mobile reachable timer expires while the network is in 5GMM-IDLE mode  Entering 5GMM-IDLE mode over 3GPP access if the MICO mode is activated and strictly periodic monitoring timer is not running  The strictly periodic monitoring timer expires while the network is in 5GMM-IDLE mode | | N1 NAS signalling connection established | | Implicitly de-register the UE on 1st expiry | |
| Mobile reachable timer | | NOTE 1 | | All except 5GMM-DEREGISTERED | | Entering 5GMM-IDLE mode | | N1 NAS signalling connection established | | Network dependent, but typically paging is halted on 1st expiry, and start implicit de-registration timer, if the UE is not registered for emergency services.  Implicitly de-register the UE which is registered for emergency services | |
| Non-3GPP implicit de-registration timer | | NOTE 3 | | All except 5GMM-DEREGISTERED | | Entering 5GMM-IDLE mode over non-3GPP access | | N1 NAS signalling connection over non-3GPP access established | | Implicitly de-register the UE for non-3GPP access on 1s expiry | |
| Strictly periodic monitoring timer | | NOTE 5 | | All except 5GMM-DEREGISTERED | | At the successful completion of registration update procedure if strictly periodic registration timer indication is supported as specified in subclause 5.3.7. | | Entering 5GMM-DEREGISTERED. | | In 5GMM-IDLE mode, start implicit de-registration timer as specified in subclause 5.3.7.  In 5GMM-CONNECTED mode, Strictly periodic monitoring timer is started again as specified in subclause 5.3.7. | |
| NOTE 1: The default value of this timer is 4 minutes greater than the value of timer T3512. If the UE is registered for emergency services, the value of this timer is set equal to the value of timer T3512. If the T3346 value provided in the mobility management messages is greater than the value of the timer T3512, the AMF sets the mobile reachable timer and the implicit de-registration timer such that the sum of the timer values is greater than the value of timer T3346.  NOTE 2: The value of this timer is network dependent. If MICO is activated, the default value of this timer is 4 minutes greater than the value of timer T3512.  NOTE 3: The value of this timer is network dependent. The default value of this timer is 4 minutes greater than the non-3GPP de-registration timer. If the T3346 value provided in the mobility management messages is greater than the value of the non-3GPP de-registration timer, the AMF sets the non-3GPP implicit de-registration timer value to be 8 minutes greater than the value of timer T3346.  NOTE 4: The value of this timer is network dependent.  NOTE 5: The value of this timer is the same as the value of timer T3512.  NOTE 6: In NB-N1 mode, the timer value shall be calculated as described in subclause 4.17.  NOTE 7: In NB-N1 mode, the timer value shall be calculated by using an NAS timer value which is network dependent.  NOTE 8: In WB-N1 mode, if the UE supports CE mode B and operates in either CE mode A or CE mode B, then the timer value is as described in this table for the case of WB-N1/CE mode (see subclause 4.19).  NOTE 9: In WB-N1 mode, if the UE supports CE mode B, then the timer value shall be calculated by using an NAS timer value which value is network dependent. | | | | | | | | | | | |

\*\*\*\*\* end of 2nd change\*\*\*\*\*