**3GPP TSG-CT WG1 Meeting #141eC1-232363**

**Online 17– 21 April 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
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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:*** | Emergency call handling during SNPN on boarding | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc18 | | | | |  | ***Date:*** | | | 2023-04-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | TS 24.501:  Currently we have below text, but how UE should handle emergency call when it is registered for onboarding services in an SNPN is not clear:   1. ***Registered for onboarding services in SNPN****: A UE is considered as "registered for onboarding services in SNPN" when it has successfully completed initial registration for onboarding services in SNPN. While registered for onboarding services in SNPN, services other than the onboarding services are not available.*   Onboarding SNPN may support emergency service but since UE is registered for onboarding it UE cannot trigger emergency service as per current spec. Thus it’s clarified that emergency service can be initiated by aborting onboarding service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Clarified how emergency services should be handled when registered for onboarding service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not clear how to handle emergency service when registered for onboarding in SNPN. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 4.14.2, 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 change \*\*\*\*\*

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**5GMM-IDLE mode:** In this specification, if the term is used standalone, a UE in 5GMM-IDLE mode means the UE can be either in 5GMM-IDLE mode over 3GPP access or in 5GMM-IDLE mode over non-3GPP access.

**5GMM-CONNECTED mode:** In this specification, if the term is used standalone, a UE in 5GMM-CONNECTED mode means the UE can be either in 5GMM-CONNECTED mode over 3GPP access or in 5GMM-CONNECTED mode over non-3GPP access.

**5GMM-IDLE mode over 3GPP access:** A UE is in 5GMM-IDLE mode over 3GPP access when no N1 NAS signalling connection between the UE and network over 3GPP access exists. The term 5GMM-IDLE mode over 3GPP access used in the present document corresponds to the term CM-IDLE state for 3GPP access used in 3GPP TS 23.501 [8].

**5GMM-CONNECTED mode over 3GPP access:** A UE is in 5GMM-CONNECTED mode over 3GPP access when an N1 NAS signalling connection between the UE and network over 3GPP access exists. The term 5GMM-CONNECTED mode over 3GPP access used in the present document corresponds to the term CM-CONNECTED state for 3GPP access used in 3GPP TS 23.501 [8].

**5GMM-IDLE mode over non-3GPP access:** A UE is in 5GMM-IDLE mode over non-3GPP access when no N1 NAS signalling connection between the UE and network over non-3GPP access exists. The term 5GMM-IDLE mode over non-3GPP access used in the present document corresponds to the term CM-IDLE state for non-3GPP access used in 3GPP TS 23.501 [8].

**5GMM-CONNECTED mode over non-3GPP access:** A UE is in 5GMM-CONNECTED mode over non-3GPP access when an N1 NAS signalling connection between the UE and network over non-3GPP access exists. The term 5GMM-CONNECTED mode over non-3GPP access used in the present document corresponds to the term CM-CONNECTED state for non-3GPP access used in 3GPP TS 23.501 [8].

**5GS services:** Services provided by PS domain. Within the context of this specification, 5GS services is used as a synonym for EPS services.

**5G-EA:** 5GS encryption algorithms. The term 5G-EA, 5G-EA0, 128-5G-EA1, 128-5G-EA2, 128-5G-EA3, 5G-EA4, 5G-EA5, 5G-EA6 and 5G-EA7 used in the present document corresponds to the term NEA, NEA0, 128-NEA1, 128-NEA2, 128-NEA3, NEA4, NEA5, NEA6 and NEA7 defined in 3GPP TS 33.501 [24].

**5G-IA:** 5GS integrity algorithms. The term 5G-IA, 5G-IA0, 128-5G-IA1, 128-5G-IA2, 128-5G-IA3, 5G-IA4, 5G-IA5, 5G-IA6 and 5G-IA7 used in the present document corresponds to the term NIA, NIA0, 128-NIA1, 128-NIA2, 128-NIA3, NIA4, NIA5, NIA6 and NIA7 defined in 3GPP TS 33.501 [24].

**Access stratum connection:** A peer to peer access stratum connection:

- between the UE and the NG-RAN for 3GPP access;

- between the UE and the N3IWF for untrusted non-3GPP access;

- between the UE and the TNGF for trusted non-3GPP access used by the UE;

- within the TWIF acting on behalf of the N5CW device for trusted non-3GPP access used by the N5CW device;

- between the 5G-RG and the W-AGF for wireline access used by the 5G-RG;

- within the W-AGF acting on behalf of the FN-RG for wireline access used by the FN-RG; or

- within the W-AGF acting on behalf of the N5GC device for wireline access used by the N5GC device.

The access stratum connection for 3GPP access corresponds to an RRC connection via the Uu reference point. The creation of the access stratum connection for untrusted non-3GPP access corresponds to the completion of the IKE\_SA\_INIT exchange (see IETF RFC 7296 [41]) via the NWu reference point. The creation of the access stratum connection for trusted non-3GPP access used by the UE corresponds to the UE reception of an EAP-request/5G-start via NWt reference point (see 3GPP TS 23.502 [9]). The creation of the access stratum connection for trusted non-3GPP access used by the N5CW device corresponds to the TWIF's start of acting on behalf of the N5CW device. The creation of the access stratum connection for wireline access used by the 5G-RG corresponds to the 5G-RG reception of an EAP-request/5G-packet over the W-CP EAP connection via the Y4 reference point (see 3GPP TS 23.316 [6D]). The creation of the access stratum connection for wireline access used by the FN-RG corresponds to the W-AGF's start of acting on behalf of the FN-RG. The creation of the access stratum connection for wireline access used by the N5GC device corresponds to the W-AGF's start of acting on behalf of the N5GC device.

**Access to SNPN services via a PLMN/To access SNPN services via a PLMN:** A UE is accessing SNPN services via a PLMN when the UE is connecting to the 5GCN of the SNPN using the 3GPP access of the PLMN.

**Aggregate maximum bit rate:** The maximum bit rate that limits the aggregate bit rate of a set of non-GBR bearers of a UE. Definition derived from 3GPP TS 23.501 [8].

**Alternative NSSAI:** A list of mapping information between the S-NSSAI to be replaced and the alternative S-NSSAI.

**Always-on PDU session:** A PDU session for which user-plane resources have to be established during every transition from 5GMM-IDLE mode to 5GMM-CONNECTED mode. A UE requests a PDU session to be established as an always-on PDU session based on indication from upper layers and the network decides whether a PDU session is established as an always-on PDU session.

NOTE 1: How the upper layers in the UE are configured to provide an indication is outside the scope of the present document.

**Applicable UE radio capability ID for the current UE radio configuration in the selected network:** The UE has an applicable UE radio capability ID for the current UE radio configuration in the selected network if:

a) the UE supports RACS; and

b) the UE has:

1) a stored network-assigned UE radio capability ID which is associated with the PLMN ID or SNPN identity of the serving network and which maps to the set of radio capabilities currently enabled at the UE; or

2) a manufacturer-assigned UE radio capability ID which maps to the set of radio capabilities currently enabled at the UE.

**CAG cell:** A cell in which only members of the CAG can get normal service. Depending on local regulation, the CAG cell can provide emergency services and emergency services fallback also to subscribers who are not members of the CAG.

**CAG-ID:** A CAG-ID is a unique identifier within the scope of one PLMN defined in 3GPP TS 23.003 [4] which identifies a Closed Access Group (CAG) in the PLMN associated with a cell or group of cells to which access is restricted to members of the CAG.

**CAG restrictions:** Restrictions applied to a UE in accessing a PLMN's 5GCN via:

a) a non-CAG cell if the entry for the PLMN in the UE's "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells"; or

b) a CAG cell if none of the CAG-ID(s) supported by the CAG cell is authorized based on the "allowed CAG list" for the PLMN in the UE's "CAG information list".

The CAG restrictions are not applied in a PLMN when a UE accesses the PLMN due to emergency services or emergency services fallback.

**Cleartext IEs:** Information elements that can be sent without confidentiality protection in initial NAS messages as specified in subclause 4.4.6.

**Configuration of SNPN subscription parameters in PLMN via the user plane:** Configuration of a UE in a PLMN with one or more entries of the "list of subscriber data” via the user plane.

**Control plane CIoT 5GS optimization:** Signalling optimizations to enable efficient transport of user data (IP, Ethernet, Unstructured or SMS) over control plane via the AMF including optional header compression of IP data and Ethernet data.

**Current TAI:** A TAI of a selected PLMN broadcast in the cell on which the UE is camping. If the cell is a satellite NG-RAN cell broadcasting multiple TACs of the selected PLMN, the UE NAS layer selects the current TAI from these multiple TACs of the selected PLMN as specified in subclause 4.23.5.

NOTE 2: For the purpose of this definition, the selected PLMN can either be the registered PLMN or a PLMN selected according to PLMN selection rules as specified in 3GPP TS 23.122 [5].

**DNN determined by the AMF:** If no DNN requested by the UE is provided, a DNN determined by the AMF based subscription information or local policy. Otherwise DNN determined by the AMF is the DNN requested by the UE.

**DNN requested by the UE:** A DNN explicitly requested by the UE and included in a NAS request message.

**DNN selected by the network:** If DNN replacement applies, a DNN selected and indicated to the AMF by PCF. Otherwise DNN selected by the network is the DNN determined by the AMF.

**Default S-NSSAI**: An S-NSSAI in the subscribed S-NSSAIs marked as default.

**Globally-unique SNPN identity:** An SNPN identity with an NID whose assignment mode is not set to 1 (see 3GPP TS 23.003 [4]).

**HPLMN S-NSSAI**: An S-NSSAI applicable in the HPLMN without any further mapping by the network. If the UE has an EHPLMN list which is not empty, and the HPLMN code derived from the IMSI is included in the EHPLMN list, then the HPLMN S-NSSAIs are applicable without any further mapping in the HPLMN derived from the IMSI. If the HPLMN code derived from the IMSI is not included in the EHPLMN list, then the HPLMN S-NSSAIs are applicable without any further mapping in the highest priority EHPLMN.

The UE considers as HPLMN S-NSSAIs at least the following S-NSSAIs:

a) any S-NSSAI included in the configured NSSAI or allowed NSSAI for a PLMN or SNPN if it is provided by

1) the HPLMN, if the EHPLMN list is not present or is empty;

2) the EHPLMN whose PLMN code is derived from the IMSI;

3) the highest priority EHPLMN, if an EHPLMN list is available and not empty and the HPLMN code derived from the IMSI is not included in the EHPLMN list; or

4) the subscribed SNPN;

b) any S-NSSAI provided as mapped S-NSSAI for the configured NSSAI or allowed NSSAI for a PLMN or SNPN;

c) any S-NSSAI associated with a PDU session if there is no mapped S-NSSAI associated with the PDU session and the UE is

1) in the HPLMN, if the EHPLMN list is not present or is empty;

2) the EHPLMN whose PLMN code is derived from the IMSI;

3) the highest priority EHPLMN, if any is available and the HPLMN code derived from the IMSI is not included in the EHPLMN list; or

4) in the subscribed SNPN; and

d) any mapped S-NSSAI associated with a PDU session.

NOTE 3: The above list is not intended to be complete. E.g., also in case of PLMN the S-NSSAIs included in URSP rules or in the signalling messages for network slice-specific authentication and authorization are HPLMN S-NSSAIs.

**User plane CIoT 5GS optimization:** Signalling optimizations to enable efficient transport of user data (IP, Ethernet or Unstructured) over the user plane.

**UE supporting CIoT 5GS optimizations:** A UE that supports control plane CIoT 5GS optimization or user plane CIoT 5GS optimization and one or more other CIoT 5GS optimizations when the UE is in N1 mode.

**Registered for 5GS services with control plane CIoT 5GS optimization:** A UE supporting CIoT 5GS optimizations is registered for 5GS services, and control plane CIoT 5GS optimization along with one or more other CIoT 5GS optimizations have been accepted by the network.

**Registered** **for 5GS services with user plane CIoT 5GS optimization:** A UE supporting CIoT 5GS optimizations is registered for 5GS services, and user plane CIoT 5GS optimization along with one or more other CIoT 5GS optimizations have been accepted by the network.

**Registered** **for 5GS services with CIoT 5GS optimization:** A UE is registered for 5GS services with control plane CIoT 5GS optimization or registered for 5GS services with user plane CIoT 5GS optimization.

**DNN based congestion control:** Type of congestion control at session management level that is applied to reject session management requests from UEs or release PDU sessions when the associated DNN is congested. DNN based congestion control can be activated at the SMF over session management level and also activated at the AMF over mobility management level.

**Emergency PDU session:** A PDU session established with the request type "initial emergency request" or "existing emergency PDU session".

**General NAS level congestion control:** Type of congestion control at mobility management level that is applied at a general overload or congestion situation in the network, e.g. lack of processing resources.

**Initial NAS message:** A NAS message is considered as an initial NAS message, if this NAS message can trigger the establishment of an N1 NAS signalling connection. For instance, the REGISTRATION REQUEST message is an initial NAS message.

**Initial registration for emergency services:** A registration performed with 5GS registration type "emergency registration" in the REGISTRATION REQUEST message.

**Initial registration for onboarding services in SNPN:** A registration performed with 5GS registration type "SNPN onboarding registration" in the REGISTRATION REQUEST message.

**Initial registration for disaster roaming services:** A registration performed with 5GS registration type "disaster roaming initial registration" in the REGISTRATION REQUEST message.

**Last visited registered TAI:** A TAI which is contained in the registration area that the UE registered to the network and which identifies the tracking area last visited by the UE. If the cell is a satellite NG-RAN cell broadcasting multiple TAIs, a TAI which is contained in the registration area that the UE registered to the network and last selected by the UE as the current TAI.

**Mapped 5G-GUTI:** A 5G-GUTI which is mapped from a 4G-GUTI previously allocated by an MME. Mapping rules are defined in 3GPP TS 23.003 [4].

**Mapped S-NSSAI:** An S-NSSAI in the subscribed S-NSSAIs for the HPLMN or the subscribed SNPN, to which an S-NSSAI of the registered PLMN (in case of a roaming scenario) or the registered non-subscribed SNPN is mapped.

**Mobility registration for disaster roaming services:** A registration performed with 5GS registration type "disaster roaming mobility registration updating" in the REGISTRATION REQUEST message.

**MUSIM UE:** A UE with multiple valid USIMs, capable of initiating and maintaining simultaneous separate registration states over 3GPP access with PLMN(s) using identities and credentials associated with those USIMs and supporting one or more of the N1 NAS signalling connection release, the paging indication for voice services, the reject paging request, the paging restriction and the paging timing collision control (see 3GPP TS 23.501 [8]).

**N1 mode:** A mode of a UE allowing access to the 5G core network via the 5G access network.

**Native 5G-GUTI:** A 5G-GUTI previously allocated by an AMF.

**Non 5G capable over WLAN (N5CW) device:** A device that is not capable to operate as a UE supporting NAS signalling with the 5GCN over a WLAN access network. However, this device may be capable to operate as a UE supporting NAS signalling with 5GCN using the N1 reference point as specified in this specification over 3GPP access. An N5CW device may be allowed to access the 5GCN via trusted WLAN access network (TWAN) that supports a trusted WLAN interworking function (TWIF) as specified in 3GPP TS 24.502 [18].

**Non-CAG Cell:** An NR cell which does not broadcast any Closed Access Group identity or an E-UTRA cell connected to 5GCN.

**Non-equivalent PLMN**: A PLMN which is not an equivalent PLMN.

**Non-equivalent SNPN**: An SNPN which is not an equivalent SNPN.

**Non-globally-unique SNPN identity:** An SNPN identity with an NID whose assignment mode is set to 1 (see 3GPP TS 23.003 [4]).

**In NB-N1 mode:** Indicates this paragraph applies only to a system which operates in NB-N1 mode. For a multi-access system this case applies if the current serving radio access network provides access to network services via E-UTRA connected to 5GCN by NB-IoT (see 3GPP TS 36.300 [25B], 3GPP TS 36.331 [25A], 3GPP TS 36.306 [25D]).

**In WB-N1 mode:** Indicates this paragraph applies only to a system which operates in WB-N1 mode. For a multi-access system this case applies if the system operates in N1 mode with E-UTRA connected to 5GCN, but not in NB-N1 mode.

**In WB-N1/CE mode:** Indicates this paragraph applies only when a UE, which is a CE mode B capable UE (see 3GPP TS 36.306 [25D]), is operating in CE mode A or B in WB-N1 mode.

**Initial small data rate control parameters:** Parameters that, if received by the UE during the establishment of a PDU session, are used as initial parameters to limit the allowed data for the PDU session according to small data rate control after establishment of a PDU session as described in subclause 6.2.13. At expiry of the associated validity period, the initial small data rate control parameters are no longer valid and the small data rate control parameters apply.

**Initial small data rate control parameters for exception data:** Parameters corresponding to initial small data rate control parameters for small data rate control of exception data.

**N1 NAS signalling connection:** A peer to peer N1 mode connection between UE and AMF. An N1 NAS signalling connection is either the concatenation of an RRC connection via the Uu reference point and an NG connection via the N2 reference point for 3GPP access, or the concatenation of an IPsec tunnel via the NWu reference point and an NG connection via the N2 reference point for non-3GPP access.

**N5CW device supporting 3GPP access:** An N5CW device which supports acting as a UE in 3GPP access (i.e. which supports NAS over 3GPP access).

**N6 PDU session:** A PDU session established between the UE and the User Plane Function (UPF) for transmitting the UE's IP data, Ethernet data or Unstructured data related to a specific application.

**NEF PDU session:** A PDU session established between the UE and the Network Exposure Function (NEF) for transmitting the UE's Unstructured data related to a specific application.

**Network slicing information:** information stored at the UE consisting of one or more of the following:

a) default configured NSSAI for PLMN or SNPN;

b) configured NSSAI for a PLMN or an SNPN;

b1) NSSRG information for the configured NSSAI for a PLMN or an SNPN;

c) mapped S-NSSAI(s) for the configured NSSAI for a PLMN or an SNPN;

d) pending NSSAI for a PLMN or an SNPN;

e) mapped S-NSSAI(s) for the pending NSSAI for a PLMN or an SNPN;

f) rejected NSSAI for the current PLMN or SNPN;

g) mapped S-NSSAI(s) for the rejected NSSAI for the current PLMN or an SNPN;

h) rejected NSSAI for the failed or revoked NSSAA;

i) for each access type:

1) allowed NSSAI for a PLMN or an SNPN;

2) mapped S-NSSAI(s) for the allowed NSSAI for a PLMN;

3) rejected NSSAI for the current registration area;

4) mapped S-NSSAI(s) for the rejected NSSAI for the current registration area;

5) rejected NSSAI for the maximum number of UEs reached; and

6) mapped S-NSSAI(s) for the rejected NSSAI for the maximum number of UEs reached; and

j) for 3GPP access type:

1) NSAG information for the configured NSSAI for a PLMN or an SNPN.

**NITZ information: Network Identity and Time Zone (NITZ) information includes full name for network, short name for network, local time zone, universal time and local time zone, network daylight saving time.**

**Non-cleartext IEs:** Information elements that are not cleartext IEs.

**Non-emergency PDU session:** Any PDU session which is not an emergency PDU session.

**Onboarding SUCI:** SUCI derived from onboarding SUPI.

**Onboarding SUPI:** SUPI with the SUPI format "network specific identifier" containing a network specific identifier or with the SUPI format "IMSI" containing an IMSI, derived by a UE in SNPN access operation mode, from default UE credentials for primary authentication and used to identify the UE during initial registration for onboarding services in SNPN and while registered for onboarding services in SNPN.

**PDU address:** An IP address assigned to the UE by the packet data network.

**PDU session for LADN:** A PDU session with a DNN associated with an LADN or a PDU session with a DNN and an S-NSSAI associated with an LADN..

**PDU session with suspended user-plane resources:** A PDU session for which user-plane resources were established or re-established, and for which data radio bearers were suspended when transition to 5GMM-CONNECTED mode with RRC inactive indication.

**Persistent PDU session:** either a non-emergency PDU session contains a GBR QoS flow with QoS equivalent to QoS of teleservice 11 and where there is a radio bearer associated with that PDU session over 3GPP access, or an emergency PDU session where there is a radio bearer associated with that PDU session over 3GPP access.

NOTE 4: An example of a persistent PDU session is a non-emergency PDU session with 5QI = 1 where there is a radio bearer associated with that context.

**Procedure transaction identity:** An identity which is dynamically allocated by the UE for the UE-requested 5GSM procedures or allocated by the UE or the PCF for the UE policy delivery procedures. The procedure transaction identity is released when the procedure is completed but it should not be released immediately.

**RAT frequency selection priority index:** A parameter provided by the AMF to the NG-RAN via the N2 reference point. The AMF selects an RFSP index for a particular UE based on the subscribed RFSP index, the locally configured operator's policies, the allowed NSSAI and the UE context information, including the UE's usage setting, if received during the registration procedure. Definition derived from 3GPP TS 23.501 [8].

**Registered for disaster roaming services:** A UE is considered as "registered for disaster roaming services" when it has successfully completed initial registration or mobility registration for disaster roaming services.

**Registered for emergency services:** A UE is considered as "registered for emergency services" when it has successfully completed initial registration for emergency services.

**Registered for onboarding services in SNPN:** A UE is considered as "registered for onboarding services in SNPN" when it has successfully completed initial registration for onboarding services in SNPN. While registered for onboarding services in SNPN, services other than the onboarding services are not available except for emergency services.

**Registered PLMN**: The PLMN on which the UE performed the last successful registration. The identity of the registered PLMN (MCC and MNC) is provided to the UE within the GUAMI field of the 5G-GUTI.

**Rejected NSSAI:** Rejected NSSAI for the current PLMN or SNPN, rejected NSSAI for the current registration area, rejected NSSAI for the failed or revoked NSSAA or rejected NSSAI for the maximum number of UEs reached.

NOTE 5: Rejected NSSAI for the current PLMN or SNPN, rejected NSSAI for the current registration area or rejected NSSAI for the maximum number of UEs reached contains a set of S-NSSAI(s) associated with a PLMN identity or SNPN identity for the current PLMN or SNPN and in roaming scenarios also contains a set of mapped S-NSSAI(s) if available. Rejected NSSAI for the failed or revoked NSSAA only contains a set of S-NSSAI(s) associated with a PLMN identity or SNPN identity for the HPLMN or RSNPN.

**Rejected NSSAI for the current PLMN or SNPN:** A set of S-NSSAI(s) which was included in the requested NSSAI by the UE and is sent by the AMF with the rejection cause "S-NSSAI not available in the current PLMN or SNPN".

**Rejected NSSAI for the current registration area:** A set of S-NSSAI(s) which was included in the requested NSSAI by the UE and is sent by the AMF with the rejection cause "S-NSSAI not available in the current registration area".

**Rejected NSSAI for the failed or revoked NSSAA**: A set of S-NSSAI(s) which is sent by the AMF with the rejection cause "S-NSSAI not available due to the failed or revoked network slice-specific authentication and authorization".

**Rejected NSSAI for the maximum number of UEs reached**: A set of S-NSSAI(s) which was included in the requested NSSAI by the UE and is sent by the AMF with the rejection cause "S-NSSAI not available due to maximum number of UEs reached".

**Local release:** Release of a PDU session without peer-to-peer signalling between the network and the UE.

NOTE 6: Local release can include communication among network entities.

**Removal of eCall only mode restriction:** All the limitations as described in 3GPP TS 22.101 [2] for the eCall only mode do not apply any more.

**SNPN access operation mode**: A UE operating in SNPN access operation mode only selects SNPNs. This includes the case when the UE is accessing an SNPN over 3GPP access, the case when the UE is accessing an SNPN over non-3GPP access and the case where the UE is accessing SNPN services via a PLMN

NOTE 7: In this release of specification, the term "SNPN access operation mode" is the same as the term "SNPN access mode" used in 3GPP TS 23.501 [8].

**S-NSSAI** **based congestion control:** Type of congestion control at session management level that is applied to reject session management requests from UEs or release PDU sessions when the associated S-NSSAI and optionally the associated DNN are congested. S-NSSAI based congestion control can be activated at the SMF over session management level and also activated at the AMF over mobility management level.

**Satellite NG-RAN RAT type:** In case of satellite NG-RAN access, RAT types are used to distinguish different types of satellite NG-RAN access, as defined in 3GPP TS 38.413 [31]. In this version of the specification, the defined satellite NG-RAN RAT types are "NR(LEO)", "NR(MEO)" and "NR(GEO)".

**Selected core network type information:** A type of core network (EPC or 5GCN) selected by the UE NAS layer in case of an E-UTRA cell connected to both EPC and 5GCN.

**UE supporting UAS services:** A UE which supports an aerial vehicle, such as a drone, with an onboard or built-in USIM and is able to perform UE NAS functionalities specified in this specification. Upper layers of the UE supporting UAS services are responsible for UAS related procedures, such as UUAA and C2 authorization, for which the NAS layer of the UE supporting UAS services performs the necessary NAS procedures.

**UE configured for high priority access in selected PLMN:** A UE configured with one or more access identities equal to 1, 2, or 11-15 applicable in the selected PLMN as specified in subclause 4.5.2. Definition derived from 3GPP TS 22.261 [3].

**UE operating in single-registration mode in a network supporting N26 interface:** A UE, supporting both N1 mode and S1 mode. During the last attach, tracking area update (see 3GPP TS 24.301 [15]) or registration procedures, the UE has received either a 5GS network feature support IE with IWK N26 bit set to "interworking without N26 interface not supported" or an EPS network feature support IE with IWK N26 bit set to "interworking without N26 interface not supported".

**UE using 5GS services with control plane CIoT 5GS optimization:** AUE that is registered for 5GS services with the control plane CIOT 5GS optimization accepted by the network.

**User-plane resources:** Resources established between the UE and the UPF. The user-plane resources consist of one of the following:

- user plane radio bearers via the Uu reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for 3GPP access;

- IPsec tunnels via the NWu reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for untrusted non-3GPP access;

- IPsec tunnels via the NWt reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for trusted non-3GPP access used by the UE;

- a layer-2 connection via the Yt reference point, a layer-2 or layer-3 connection via the Yw reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for trusted non-3GPP access used by the N5CW device;

- W-UP resources via Y4 reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for wireline access used by the 5G-RG; and

- L-W-UP resources via Y5 reference point, a tunnel via the N3 reference point and a tunnel via the N9 reference point (if any) for wireline access used by the FN-RG.

**W-AGF acting on behalf of the N5GC device:** A W-AGF that enables an N5GC device behind a 5G-CRG or an FN-CRG to connect to the 5G Core.

**UE configured for high priority access in selected SNPN:** A UE configured with one or more access identities equal to 1, 2, or 11-15 applicable in the selected SNPN as specified in subclause 4.5.2A.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.261 [3] apply:

**Non-public network**

**Disaster Roaming**

**satellite NG-RAN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.003 [4] apply:

**5G-GUTI**

**5G-S-TMSI**

**5G-TMSI**

**Global Line Identifier (GLI)**

**Global Cable Identifier (GCI)**

**GUAMI**

**IMEI**

**IMEISV**

**IMSI**

**PEI**

**SUPI**

**SUCI**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.122 [5] apply:

**CAG selection**

**CAG-ID authorized based on "Allowed CAG list"**

**Country**

**EHPLMN**

**HPLMN**

**Onboarding services in SNPN**

**Registered SNPN**

**Selected PLMN**

**Selected SNPN**

**Shared network**

**SNPN identity**

**Steering of Roaming (SOR)**

**Steering of roaming connected mode control information (SOR-CMCI)**

**Steering of Roaming information**

**Subscribed SNPN**

**Suitable cell**

**VPLMN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.167 [6] apply:

**eCall over IMS**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.216 [6A] apply:

**SRVCC**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.401 [7] apply:

**eCall only mode**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.501 [8] apply:

**5G access network**

**5G core network**

**5G QoS flow**

**5G QoS identifier**

**5G-RG**

**5G-BRG**

**5G-CRG**

**5G System**

**Allowed area**

**Allowed NSSAI**

**Alternative S-NSSAI**

**AMF region**

**AMF set**

**Closed access group**

**Configured NSSAI**

**Credentials Holder (CH)**

**Default Credentials Server (DCS)**

**Group ID for Network Selection (GIN)**

**IAB-node**

**Local area data network**

**N3QAI**

**Network identifier (NID)**

**Network slice**

**NG-RAN**

**Non-allowed area**

**Onboarding Standalone Non-Public Network**

**PDU connectivity service**

**PDU session**

**PDU session type**

**PEGC**

**PEMC**

**Pending NSSAI**

**PIN**

**PINE**

**PINE-to-PINE direct communication**

**PINE-to-PINE indirect communication**

**Requested NSSAI**

**Routing Indicator**

**Service data flow**

**Service Gap Control**

**Serving PLMN rate control**

**Small data rate control status**

**SNPN-enabled UE**

**Stand-alone Non-Public Network**

**Time Sensitive Communication**

**Time Sensitive Communication and Time Synchronization Function**

**UE-DS-TT residence time**

**UE-Slice-MBR**

**UE presence in LADN service area**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.503 [10] apply:

**UE local configuration**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.008 [12] apply:

**GMM**

**MM**

**A/Gb mode**

**Iu mode**

**GPRS**

**Non-GPRS**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.301 [15] apply:

**CIoT EPS optimization**

**Control plane CIoT EPS optimization**

**EENLV**

**EMM**

**EMM-DEREGISTERED**

**EMM-DEREGISTERED-INITIATED**

**EMM-IDLE mode**

**EMM-NULL**

**EMM-REGISTERED**

**EMM-REGISTERED-INITIATED**

**EMM-SERVICE-REQUEST-INITIATED**

**EMM-TRACKING-AREA-UPDATING-INITIATED**

**EPS**

**EPS security context**

**EPS services**

**Lower layer failure**

**Megabit**

**Message header**

**NAS signalling connection recovery**

**Native GUTI**

**NB-S1 mode**

**Non-EPS services**

**S1 mode**

**User plane CIoT EPS optimization**

**WB-S1 mode**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 33.501 [24] apply:

**5G security context**

**5G NAS security context**

**ABBA**

**Current 5G NAS security context**

**Default UE credentials for primary authentication**

**Default UE credentials for secondary authentication**

**Full native 5G NAS security context**

**K'**AME

**K**AMF

**K**ASME

**Mapped 5G NAS security context**

**Mapped security context**

**Native 5G NAS security context**

**NCC**

**Non-current 5G NAS security context**

**Partial native 5G NAS security context**

**RES\***

For the purposes of the present document, the following terms and definitions given in 3GPP TS 38.413 [31] apply:

**NG connection**

**User Location Information**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.587 [19B] apply:

**E-UTRA-PC5**

**NR-PC5**

**V2X**

For the purposes of the present document, the following terms and its definitions given in 3GPP TS 23.256 [6AB] apply:

**3GPP UAV ID**

**CAA (Civil Aviation Administration)-Level UAV Identity**

**Command and Control (C2) Communication**

**UAV controller (UAV-C)**

**UAS Services**

**UAS Service Supplier (USS)**

**Uncrewed Aerial System (UAS)**

**USS communication**

**UUAA**

**UUAA-MM**

**UUAA-SM**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.554 [19E] apply:

**5G ProSe**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.548 [10A] apply:

**Edge Application Server**

**Edge DNS Client**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.526 [19] apply:

**Non-subscribed SNPN signalled URSP**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.577 [60] apply:

**A2X**

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

### 4.14.2 Stand-alone non-public network (SNPN)

If the UE is not SNPN enabled, the UE is always considered to be not operating in SNPN access operation mode. If the UE is SNPN enabled, the UE can operate in SNPN access operation mode. Details of activation and deactivation of SNPN access operation mode at the SNPN-enabled UE are up to UE implementation.

The functions and procedures of NAS described in the present document are applicable to an SNPN and an SNPN-enabled UE unless indicated otherwise. The key differences brought by the SNPN to the NAS layer are as follows:

a) instead of the PLMN selection process, the SNPN selection process is performed by a UE operating in SNPN access operation mode (see 3GPP TS 23.122 [5] and 3GPP TS 24.502 [18] for further details on the SNPN selection);

b) a "permanently forbidden SNPNs" list and a "temporarily forbidden SNPNs" list are managed per access type independently (i.e. 3GPP access or non-3GPP access) and, if the UE supports access to an SNPN using credentials from a credentials holder, equivalent SNPNs or both, per entry of the "list of subscriber data" or, if the UE supports access to an SNPN using credentials from a credentials holder, per the PLMN subscription, by a UE operating in SNPN access operation mode instead of forbidden PLMN lists. If the UE supports onboarding services in SNPN, an additional "permanently forbidden SNPNs" list for onboarding services and an additional "temporarily forbidden SNPNs" list for onboarding services are managed.These lists shall be maintined across activation and deactivation of SNPN access operation mode;

Editor's note: It is FFS how the UE will handle these lists on T3245 expiry when UE is not operating in SNPN access operation mode.

c) inter-system change to and from S1 mode is not supported;

d) void;

e) CAG is not supported in SNPN access operation mode;

f) with respect to the 5GMM cause values:

1) 5GMM cause values #74 "Temporarily not authorized for this SNPN" and #75 "Permanently not authorized for this SNPN" are supported whereas these 5GMM cause values cannot be used in a PLMN; and

2) 5GMM cause values #11 "PLMN not allowed", #31 "Redirection to EPC required", #73 "Serving network not authorized", and #76 "Not authorized for this CAG or authorized for CAG cells only" are not supported whereas these 5GMM cause values can be used in a PLMN;

NOTE 1: The network does not send 5GMM cause value #13 to the UE operating in SNPN access operation mode in this release of specification.

g) a list of "5GS forbidden tracking areas for roaming" and a list of "5GS forbidden tracking areas for regional provision of service" are managed per SNPN and, if the UE supports access to an SNPN using credentials from a credentials holder, equivalent SNPNs or both, entry of the "list of subscriber data" or, if the UE supports access to an SNPN using credentials from a credentials holder,PLMN subscription (see 3GPP TS 23.122 [5]);

h) when accessing SNPN services via a PLMN using 3GPP access, access to 5GCN of the SNPN is performed using 5GMM procedures for non-3GPP access, 5GMM parameters for non-3GPP access, the UE is performing access to SNPN over non-3GPP access and the UE is not operating in SNPN access operation mode over 3GPP access. When accessing PLMN services via a SNPN using 3GPP access, access to 5GCN of the PLMN is performed using 5GMM procedures for non-3GPP access, 5GMM parameters for non-3GPP access, the UE is not performing access to SNPN over non-3GPP access, and the UE is operating in SNPN access operation mode over 3GPP access. From the UE's NAS perspective, accessing PLMN services via an SNPN and accessing SNPN services via a PLMN are treated as untrusted non-3GPP access. If the UE is accessing the PLMN using non-3GPP access, the access to 5GCN of the SNPN via PLMN is not specified in this release of the specification .

Emergency services are not supported in an SNPN when a UE accesses SNPN services via a PLMN;

i) when registered to an SNPN, the UE shall use only the UE policies provided by the registered SNPN;

j) inclusion of a TAI of an SNPN other than the registered SNPN, into the registration area is not supported. The AMF of an SNPN shall only include into the registration area one or more TAIs of the registered SNPN;

j1) inclusion of a TAI of an SNPN other than the registered SNPN, into the LADN service area is not supported. The AMF of an SNPN shall only include one or more TAIs of the registered SNPN into the LADN service area;

j2) inclusion of a TAI of an SNPN other than the registered SNPN, into the allowed area or the non-allowed area, of the 3GPP access service area restrictions is not supported. The AMF of an SNPN shall include only one or more TAIs of the registered SNPN into the allowed area or the non-allowed area, of the 3GPP access service area restrictions;k) void;

l) void;

m) UE mobility between SNPNs in 5GMM-CONNECTED mode is supported when the SNPNs are equivalent SNPNs. UE mobility between SNPNs in 5GMM-IDLE mode is supported when the UE supports access to an SNPN using credentials from a credentials holder or when the SNPNs are equivalent SNPNs. UE mobility between an SNPN and a PLMN is not supported;

n) CIoT 5GS optimizations are not supported;

o) void;

p) when registering or registered to an SNPN, the UE shall handle the 5GS mobile identity as described in subclause 5.5.1.2.2;

q) when registering or registered to an SNPN, the UE shall only consider:

1) a last visited registered TAI visited in the same SNPN as an available last visited registered TAI; or

2) a last visited registered TAI visited using the same entry of the "list of subscriber data" or the same PLMN subscription as an available last visited registered TAI, if the UE supports access to an SNPN using credentials from a credentials holder, equivalent SNPNs or both;

NOTE 2: If the last visited registered TAI is assigned by an SNPN other than the current SNPN, the serving AMF can determine the SNPN assigning the last visited registered TAI using the NID provided by the UE.

r) emergency service fallback is not supported;

s) when registering or registered for onboarding services in SNPN, the UE shall not provide the requested NSSAI to the network;

s1) when performing initial registration for onboarding services in SNPN, the UE shall set the 5GS registration type value to "SNPN onboarding registration";

t) when registering or registered for onboarding services in SNPN, the AMF shall not provide the configured NSSAI, the allowed NSSAI or the rejected NSSAI to the UE, shall use the S-NSSAI included in the AMF onboarding configuration data for onboarding services in SNPN and shall not perform NSSAA procedure for S-NSSAI used for onboarding services in SNPN;

u) the UE can access an SNPN indicating that onboarding is allowed using default UE credentials for primary authentication in order for the UE to be configured with one or more entries of the "list of subscriber data";

x) eCall over IMS is not supported in SNPN access operation mode and the UE ignores any USIM configuration for eCall only mode;

y) when registering or registered for onboarding services in SNPN, the AMF shall store in the 5GMM context of the UE an indication that the UE is registered for onboarding services in SNPN;

z) a UE with multiple valid entries of "list of subscriber data", or one or more valid USIMs and one or more valid entries of "list of subscriber data", capable of initiating and maintaining simultaneous separate registration states over 3GPP access with PLMN(s) or SNPN(s), using identities and credentials associated with those entries of "list of subscriber data", or USIMs and entries of "list of subscriber data", and supporting one or more of the N1 NAS signalling connection release, the paging indication for voice services, the reject paging request, the paging restriction and the paging timing collision control may use procedures defined for MUSIM UE, even if the UE does not include multiple valid USIMs;

za) when the UE is registering or registered for onboarding services in SNPN, the network slice admission control is not performed;

NOTE 3: If the network determines that the UE cannot register to the onboarding SNPN due to lack of resources for the network slice used for onboarding, the AMF can reject the UE with 5GMM cause #22 "congestion".

zb) when the UE is registered for onboarding services in SNPN, the AMF shall stop the implementation specific timer for onboarding services when the UE performs initial registration for emergency services in the onboarding SNPN; and

NOTE 5: If the onboarding SNPN supports emergency services, the UE can use implementation specific means to place the emergency call. For example the UE can perform de-registration locally and initiate a registration procedure for initial registration for emergency services.

NOTE 6: If the onboarding SNPN does not support emergency services, the procedures specified in 3GPP TS 23.167 [6] and 3GPP TS 23.122 [5] are used to determine how to place the emergency call.

v) proximity based services (5G ProSe as specified in 3GPP TS 24.554 [19E]) are not supported.

\*\*\*\*\* Next 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 T3324, T3346, T3245 and T3247 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  For access via a satellite NG-RAN cell, 27s  NOTE 12 | 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 or 5GMM-REGISTERED.NON-ALLOWED-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 message, 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 For access via a satellite NG-RAN cell, 35s  NOTE 12 | 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 message received  SERVICE REJECT message received  REGISTRATION ACCEPT message received  AUTHENTICATION REJECT message received  AUTHENTICATION FAILURE message sent  5GMM-DEREGISTERED, 5GMM-NULL or  5GMM-IDLE mode entered | Delete the stored RAND and RES\* |
| T3517 | (a) 5s for case h) in subclause 5.6.1.1; or  (b) 15s for cases other than h) in subclause 5.6.1.1  NOTE 7  NOTE 8  NOTE 10  In WB-N1/CE mode, 61s For access via a satellite NG-RAN cell, 27s  NOTE 12 | 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 For access via a satellite NG-RAN cell, 65s | 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 For access via a satellite NG-RAN cell, 20s  NOTE 12 | 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 For access via a satellite NG-RAN cell, 27s  NOTE 12 | 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  For access via a satellite NG-RAN cell, default 72s  NOTE 12 | 5GMM-REGISTERED.NORMAL-SERVICE or 5GMM-REGISTERED.NON-ALLOWED-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 5GMM-REGISTERED.NON-ALLOWED-SERVICE,  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  NOTE 7 (applicable to case f) in subclause 5.3.1.3)  NOTE 8  In WB-N1/CE mode, 34s (applicable to case f) in subclause 5.3.1.3)  NOTE 11  For access via a satellite NG-RAN cell, default 22s (applicable to case f) in subclause 5.3.1.3)  NOTE 12 | 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) and case h)  SERVICE ACCEPT message received as described in subclause 5.3.1.3 case f)  AUTHENTICATION REJECT message received  DEREGISTRATION ACCEPT message received as described in subclause 5.3.1.3 case k) | N1 NAS signalling connection released  PDU sessions have been set up except for the case the UE has set Request type to "NAS signalling connection release" in the UE request type IE in the REGISTRATION REQUEST message as described in subclause 5.3.1.3 case b)  Other use cases see subclause 5.3.1.3 | 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 h)  SERVICE ACCEPT message received as described in subclause 5.3.1.3 case i) | N1 NAS signalling connection released Other use cases see subclause 5.3.1.3 | Release the NAS signalling connection for the case e) and perform a new registration procedure as described in subclause 5.5.1.3.2  Release the NAS signalling connection for the case h) and i) 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 |
| T3526 | NOTE 9 | 5GMM-DEREGISTERED 5GMM-REGISTERED | Rejected S-NSSAI with rejection cause "S-NSSAI not available due to maximum number of UEs reached" received. | Associated S-NSSAI in the rejected NSSAI for the maximum number of UEs reached as specified in subclause 4.6.2.2 deleted. | Remove the S-NSSAI in the rejected NSSAI for the maximum number of UEs reached associated with the T3526 timer. |
| T3527 | 15s | 5GMM-REGISTERED.NORMAL-SERVICE | Transmission of RELAY KEY REQUEST message  Transmission of RELAY AUTHENTICATION RESPONSE message | RELAY KEY REJECT message received or  RELAY AUTHENTICATION REQUEST message received or  RELAY KEY ACCEPT message received | Retransmission of RELAY KEY REQUEST message |
| 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).  NOTE 9: The value of this timer is provided by the network operator during the registration procedure or the generic UE configuration update procedure along with the rejected S-NSSAI with rejection cause "S-NSSAI not available due to maximum number of UEs reached". The default value of this timer is implementation specific with a minimum value of 12 minutes and used if the network does not provide a value in the REGISTRATION ACCEPT message, the REGISTRATION REJECT message, or the CONFIGURATION UPDATE COMMAND message along with the rejected S-NSSAI with rejection cause "S-NSSAI not available due to maximum number of UEs reached".  NOTE 10: Based on implementation, the timer may be set to a value between 250ms and 15s when the MUSIM UE indicates "NAS signalling connection release" in the UE request type IE of the SERVICE REQUEST message or CONTROL PLANE SERVICE REQUEST message.  NOTE 11: Based on implementation, the timer may be set to a value between 250ms and 10s when the MUSIM UE not in NB-N1 mode or WB-N1 mode indicated "NAS signalling connection release" or "Rejection of paging" in the UE request type IE of the SERVICE REQUEST message or CONTROL PLANE SERVICE REQUEST message; or indicated "NAS signalling connection release" in the UE request type IE of the REGISTRATION REQUEST message.  NOTE 12: In satellite NG-RAN access, this value shall be selected when satellite NG-RAN RAT type is NR(MEO) or NR(GEO). | | | | | |

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  For access via a satellite NG-RAN cell, 11s  NOTE 12 | | 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  For access via a satellite NG-RAN cell, 11s  NOTE 12 | | 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  For access via a satellite NG-RAN cell, 11s  NOTE 12 | | 5GMM-REGISTERED | | Transmission of CONFIGURATION UPDATE COMMAND message with "acknowledgement requested" set in the Acknowledgement 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  For access via a satellite NG-RAN cell, 11s | | 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 For access via a satellite NG-RAN cell, 11s  NOTE 12 | | 5GMM-REGISTERED | | Transmission of NOTIFICATION message | | SERVICE REQUEST message received  CONTROL PLANE 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  For access via a satellite NG-RAN cell, 11s  NOTE 12 | | 5GMM-COMMON-PROCEDURE-INITIATED | | Transmission of IDENTITY REQUEST message | | IDENTITY RESPONSE message received | | Retransmission of IDENTITY REQUEST message | |
| T3575  NOTE 6  NOTE 8 | | 15s  In WB-N1/CE mode, 60s  For access via a satellite NG-RAN cell, 27s  NOTE 12 | | 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 | | NOTE 10 | | 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. | |
| Implementation specific timer for onboarding services | | NOTE 11 | | 5GMM-REGISTERED | | At the successful completion of initial registration for onboarding services in SNPN or initial registration for the UE which the subscription is only for configuration of SNPN subscription parameters in PLMN via the user plane or successful completion of registration procedure for mobility and periodic registration update if the implementation specific timer for onboarding services is not running and:  - the UE is registered for onboarding services in SNPN; or  - the UE's subscription only allows for configuration of SNPN subscription parameters in PLMN via the user plane. | | DEREGISTRATION REQUEST message received.  REGISTRATION REQUEST message with 5GS registration type IE set to "emergency registration" received. | | Network-initiated de-registration procedure performed | |
| 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.  NOTE 10: If the AMF includes timer T3324 in the REGISTRATION ACCEPT message and if the UE is not registered for emergency services, the value of this timer is equal to the value of timer T3324.  NOTE 11: The value of this timer needs to be large enough to allow a UE to complete the configuration of one or more entries of the "list of subscriber data" and considering that configuration of SNPN subscription parameters in PLMN via the user plane or onboarding services in SNPN involves third party entities outside of the operator's network.  NOTE 12: In satellite NG-RAN access, this value shall be selected when satellite NG-RAN RAT type is NR(MEO) or NR(GEO). | | | | | | | | | | | |

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