**3GPP TSG-CT WG1 Meeting #124-eC1-20zzzz**

**Electronic meeting, 2-10 June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **2388** | **rev** | **1** | **Current version:** | **16.4.1** |  |
|  | | | | | | | | |
| *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:*** | SNPN services via a PLMN over 3GPP access | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2020-05-12 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
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| ***Reason for change:*** | | As specified in sub 4.14.2 as below:  "*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.*"  Hence, in this release of TS 24.501, the term "access SNPN services via a PLMN" can be only applied when the UE is accessing the PLMN using 3GPP access.  To avoid unnecessary mis-interpretation, it is better to have a term definition for "access SNPN services via a PLMN" to clearly indicate that the UE is accessing PLMN using 3GPP access". | | | | | | | | |
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| ***Summary of change:*** | | It proposes to have a term definition for "access SNPN services via a PLMN" to clearly indicate that the UE is accessing PLMN using 3GPP access". | | | | | | | | |
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| ***Consequences if not approved:*** | | Mis-interpretation may be made by the term "access SNPN services via a PLMN". | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 4.5.2A, 4.14.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First 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 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 it has 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-EA1-3 and 5G-EA4-7 used in the present document corresponds to the term NEA, NEA0, NEA1-3 and NEA4-7 defined in 3GPP TS 33.501 [24].

**5G-IA:** 5GS integrity algorithms. The term 5G-IA, 5G-IA0, 128-5G-IA1-3 and 5G-IA4-7 used in the present document corresponds to the term NIA, NIA0, NIA1-3 and NIA4-7 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 for trusted non-3GPP access used by the N5CW;

- 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 corresponds to the TWIF's start of acting on behalf of the N5CW. 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 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 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].

**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 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.

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

**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.

**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.

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

**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 which was 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.

**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.

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

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

**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.

**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;

b) configured NSSAI for a PLMN or an SNPN;

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

d) pending NSSAI; and

e) for each access type:

1) allowed NSSAI for a PLMN or an SNPN; and

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

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

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

**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 a 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 transiting 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, or an emergency PDU session where there is a radio bearer associated with that PDU session.

NOTE 2: 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 emergency services:** A UE is considered as "registered for emergency services" when it has successfully completed initial registration for emergency services.

**Registered PLMN**: The PLMN on which the UE is registered. 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, SNPN or rejected NSSAI for the current registration area or rejected NSSAI for the failed or revoked NSSAA.

NOTE 3: Rejected NSSAI only contains a set of S-NSSAI(s) associated with a PLMN identity or SNPN identity for the current PLMN or SNPN.

**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 "rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization".

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

NOTE 4: 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.

**Routing indicator:** Routing Indicator is an identifier assigned by the UE's home network operator to be used together with the Home Network Identifier for routing network signalling. Routing Indicator is provisioned in the USIM. The term Routing indicator used in the present document corresponds to the term Routing ID 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.

**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 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].

**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).

**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.

**UE-DS-TT residence time:** The time taken within the UE and DS-TT to forward a packet between the UE and the DS-TT port.

**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;

- 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.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.261 [2] apply:

**Non-public network**

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**

**Global Line Identifier (GLI)**

**Global Cable Identifier (GCI)**

**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**

**Country**

**EHPLMN**

**HPLMN**

**Selected PLMN**

**Shared network**

**SNPN identity**

**Steering of Roaming (SOR)**

**Steering of Roaming information**

**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**

**AMF region**

**AMF set**

**Closed access group**

**Configured NSSAI**

**Local area data network**

**Network identifier (NID)**

**Network slice**

**NG-RAN**

**Non-allowed area**

**PDU session**

**PDU session type**

**Pending NSSAI**

**Requested NSSAI**

**Routing ID**

**Service data flow**

**Service Gap Control**

**Serving PLMN rate control**

**Small data rate control status**

**SNPN access mode**

**SNPN enabled UE**

**Stand-alone Non-Public Network**

**Time Sensitive Communication**

**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**

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**

**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**

**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**

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**

### 4.5.2A Determination of the access identities and access category associated with a request for access for UEs operating in SNPN access mode

When the UE needs to initiate an access attempt in one of the events listed in subclause 4.5.1, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

The set of the access identities applicable for the request is determined by the UE in the following way:

a) for each of the access identities 1, 2, 11, 12, 13, 14 and 15 in table 4.5.2A.1, the UE shall check whether the access identity is applicable in the selected SNPN, if a new SNPN is selected, or otherwise if it is applicable in the RSNPN; and

b) if none of the above access identities is applicable, then access identity 0 is applicable.

Table 4.5.2A.1: Access identities

|  |  |
| --- | --- |
| Access Identity number | UE configuration |
| 0 | UE is not configured with any parameters from this table |
| 1 (NOTE 1) | UE is configured for multimedia priority service (MPS). |
| 2 (NOTE 2) | UE is configured for mission critical service (MCS). |
| 3-10 | Reserved for future use |
| 11 (NOTE 3) | Access Class 11 is configured in the UE. |
| 12 (NOTE 3) | Access Class 12 is configured in the UE. |
| 13 (NOTE 3) | Access Class 13 is configured in the UE. |
| 14 (NOTE 3) | Access Class 14 is configured in the UE. |
| 15 (NOTE 3) | Access Class 15 is configured in the UE. |
| NOTE 1: Access identity 1 is valid when: - the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) indicates the UE is configured for access identity 1 in the selected SNPN, if a new SNPN is selected, or RSNPN; or - the UE receives the 5GS network feature support IE with the MPS indicator bit set to "Access identity 1 valid" from the RSNPN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 2: Access identity 2 is used by UEs configured for MCS and is valid when: - the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) indicates the UE is configured for access identity 2 in the selected SNPN, if a new SNPN is selected, or RSNPN; or - the UE receives the 5GS network feature support IE with the MCS indicator bit set to "Access identity 2 valid" from the RSNPN as described in subclause 5.5.1.2.4 and subclause 5.5.1.3.4.  NOTE 3: Access identities 11 to 15 are valid if indicated as configured for the UE in the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) in the selected SNPN, if a new SNPN is selected, or RSNPN. | |

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access identity 1 in the SNPN. When the contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) do not indicate the UE is configured for access identity 1 for the SNPN, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access identity 2 in the SNPN. When the contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) do not indicate the UE is configured for access identity 2 for the SNPN, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The contents of the unified access control configuration in the "list of subscriber data" stored in the ME (see 3GPP TS 23.122 [5]) and the rules specified in table 4.5.2A.1 are used to determine the applicability of access classes 11 to 15 in the SNPN.

In order to determine the access category applicable for the access attempt, the NAS shall check the rules in table 4.5.2A.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see subclause 4.5.3).

NOTE: The case when an access attempt matches more than one rule includes the case when multiple events trigger an access attempt at the same time.

Table 4.5.2A.2: Mapping table for access categories

|  |  |  |  |
| --- | --- | --- | --- |
| Rule # | Type of access attempt | Requirements to be met | Access Category |
| 1 | Response to paging or NOTIFICATION over non-3GPP access (NOTE 11);  5GMM connection management procedure initiated for the purpose of transporting an LPP message without an ongoing 5GC-MO-LR procedure;  Access attempt to handover of MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | Access attempt is for MT access, or handover of ongoing MMTEL voice call, MMTEL video call or SMSoIP from non-3GPP access | 0 (= MT\_acc) |
| 2 | Emergency | UE is attempting access for an emergency session (NOTE 1, NOTE 2) | 2 (= emergency) |
| 3 | Access attempt for operator-defined access category | UE stores operator-defined access category definitions valid in the SNPN as specified in subclause 4.5.3, and access attempt is matching criteria of an operator-defined access category definition | 32-63  (= based on operator classification) |
| 4 | Access attempt for delay tolerant service | (a) UE is configured for NAS signalling low priority or UE supporting S1 mode is configured for EAB (see the "ExtendedAccessBarring" leaf of NAS configuration MO in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22]) where "EAB override" does not apply, and  (b) the UE received one of the categories a, b or c as part of the parameters for unified access control in the broadcast system information, and the UE is a member of the broadcasted category in the selected SNPN or RSNPN  (NOTE 3, NOTE 5, NOTE 6, NOTE 7, NOTE 8) | 1 (= delay tolerant) |
| 4.1 | MO IMS registration related signalling | Access attempt is for MO IMS registration related signalling (e.g. IMS initial registration, re-registration, subscription refresh)  or for NAS signalling connection recovery during ongoing procedure for MO IMS registration related signalling (NOTE 2a) | 9 (= MO IMS registration related signalling) |
| 5 | MO MMTel voice call | Access attempt is for MO MMTel voice call  or for NAS signalling connection recovery during ongoing MO MMTel voice call (NOTE 2) | 4 (= MO MMTel voice) |
| 6 | MO MMTel video call | Access attempt is for MO MMTel video call  or for NAS signalling connection recovery during ongoing MO MMTel video call (NOTE 2) | 5 (= MO MMTel video) |
| 7 | MO SMS over NAS or MO SMSoIP | Access attempt is for MO SMS over NAS (NOTE 4) or MO SMS over SMSoIP transfer  or for NAS signalling connection recovery during ongoing MO SMS or SMSoIP transfer (NOTE 2) | 6 (= MO SMS and SMSoIP) |
| 8 | UE NAS initiated 5GMM specific procedures | Access attempt is for MO signalling | 3 (= MO\_sig) |
| 8.1 | Mobile originated location request | Access attempt is for mobile originated location request (NOTE 9) | 3 (= MO\_sig) |
| 8.2 | Mobile originated signalling transaction towards the PCF | Access attempt is for mobile originated signalling transaction towards the PCF (NOTE 10) | 3 (= MO\_sig) |
| 9 | UE NAS initiated 5GMM connection management procedure or 5GMM NAS transport procedure | Access attempt is for MO data | 7 (= MO\_data) |
| 10 | An uplink user data packet is to be sent for a PDU session with suspended user-plane resources | No further requirement is to be met | 7 (= MO\_data) |
| NOTE 1: In this release of the specification, there is no support for establishing an emergency session in an SNPN.  NOTE 2: Access for the purpose of NAS signalling connection recovery during an ongoing service as defined in subclause 4.5.5, or for the purpose of NAS signalling connection establishment following fallback indication from lower layers during an ongoing service as defined in subclause 4.5.5, is mapped to the access category of the ongoing service in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 2a: Access for the purpose of NAS signalling connection recovery during an ongoing MO IMS registration related signalling as defined in subclause 4.5.5, or for the purpose of NAS signalling connection establishment following fallback indication from lower layers during an ongoing MO IMS registration related signalling as defined in subclause 4.5.5, is mapped to the access category of the MO IMS registration related signalling in order to derive an RRC establishment cause, but barring checks will be skipped for this access attempt.  NOTE 3: If the UE selects a new SNPN, then the selected SNPN is used to check the membership; otherwise the UE uses the RSNPN.  NOTE 4: This includes the 5GMM connection management procedures triggered by the UE-initiated NAS transport procedure for transporting the MO SMS.  NOTE 5: The UE configured for NAS signalling low priority is not supported in this release of specification. If a UE supporting both S1 mode and N1 mode is configured for NAS signalling low priority in S1 mode as specified in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22], the UE shall ignore the configuration for NAS signalling low priority when in N1 mode.  NOTE 6: If the access category applicable for the access attempt is 1, then the UE shall additionally determine a second access category from the range 3 to 7. If more than one access category matches, the access category of the lowest rule number shall be chosen. The UE shall use the second access category only to derive an RRC establishment cause for the access attempt.  NOTE 7: "EAB override" does not apply, if the UE is not configured to allow overriding EAB (see the "Override\_ExtendedAccessBarring" leaf of NAS configuration MO in 3GPP TS 24.368 [17] or 3GPP TS 31.102 [22]), or if NAS has not received an indication from the upper layers to override EAB and the UE does not have a PDU session that was established with EAB override.  NOTE 8: For the definition of categories a, b and c associated with access category 1, see 3GPP TS 22.261 [3]. The categories associated with access category 1 are distinct from the categories a, b and c associated with EAB (see 3GPP TS 22.011 [1A]).  NOTE 9: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated location  request; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing 5GC-MO-LR procedure.  NOTE 10: This includes: a) the UE-initiated NAS transport procedure for transporting a mobile originated signalling  transaction towards the PCF; b) the 5GMM connection management procedure triggered by a) above; and c) NAS signalling connection recovery during an ongoing UE triggered V2X policy provisioning  procedure.  NOTE 11: The term "non-3GPP access" refers to the case when the UE is accessing SNPN services via a PLMN. | | | |

Editor's note [WI: Vertical\_LAN, CR#1938]: It needs to be verified if NB-IoT (MO exception data) is also applicable for SNPN.

\* \* \* Next Change \* \* \* \*

### 4.14.2 Stand-alone non-public network

If the UE is not SNPN enabled, the UE is always considered to be not operating in SNPN access mode. If the UE is SNPN enabled, the UE can operate in SNPN access mode. Details of activation and deactivation of SNPN access 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 mode (see 3GPP TS 23.122 [5] for further details on the SNPN selection);

b) a "permanently forbidden SNPNs" list and a "temporarily forbidden SNPNs" list are managed by a UE operating in SNPN access mode instead of forbidden PLMN lists;

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

d) emergency services are not supported in SNPN access mode;

e) CAG is not supported in SNPN access 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;

Editor's note [WI: Vertical\_LAN, CR#1286]: It is FFS whether 5GMM cause value # 72 "Non-3GPP access to 5GCN not allowed" is supported in an SNPN.

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 (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 and 5GMM parameter for non-3GPP access. When accessing PLMN services via a SNPN, access to 5GCN of the PLMN is performed using 5GMM procedures for non-3GPP access and 5GMM parameter for 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;

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

j) equivalent SNPN is not supported;

k) neither the default configured NSSAI nor the network slicing indication is supported in SNPNs;

l) roaming is not supported in SNPN access mode; and

m) handover between SNPNs is not supported.

\* \* \* End of Change \* \* \* \*