

- [60] 3GPP TS 24.577: "Aircraft-to-Everything (A2X) services in 5G System (5GS) protocol aspects; Stage 3".
- [61] 3GPP TS 24.578: "Aircraft-to-Everything (A2X) services in 5G System (5GS); UE policies".
- [62] 3GPP TS 24.514: "Ranging based services and sidelink positioning in 5G system (5GS); Stage 3".
- [63] 3GPP TS 23.586: "Architectural Enhancements to support Ranging based services and Sidelink Positioning".
- [64] 3GPP TS 24.572: "User Plane Location Services (LCS) Protocols And Procedures; Stage 3".
- [65] 3GPP TS 24.575: "5G System; Multicast/Broadcast UE pre-configuration Management Object (MO)".
- [66] IETF RFC 4291: "IP Version 6 Addressing Architecture".
- [67] 3GPP TS 38.305: "Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN".
- [68] 3GPP TS 23.271: "Functional stage 2 description of Location Services (LCS)".
- [69] 3GPP TS 26.522: "5G Real-time Media Transport Protocol Configurations".
- [70] IETF RFC 8285: "A General Mechanism for RTP Header Extensions".

3 Definitions and abbreviations

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 establishment of signalling connection using W-CP protocol stack 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 on 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, then the HPLMN S-NSSAIs are applicable without any further mapping in the PLMN whose PLMN code is derived from the IMSI, regardless of whether or not this PLMN is included in the EHPLMN list.

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 PLMN whose PLMN code is derived from the IMSI, if the EHPLMN list is available and not empty, regardless of whether or not the PLMN code derived from the IMSI is included in the EHPLMN list; or

- 3) the subscribed SNPN;
- b) any S-NSSAI provided as mapped S-NSSAI for the configured NSSAI or allowed NSSAI or partially 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 PLMN whose PLMN code is derived from the IMSI, if the EHPLMN list is available and not empty, regardless of whether or not the PLMN code derived from the IMSI is included in the EHPLMN list; or
 - 3) 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.

Home country: The country of the HPLMN (see 3GPP TS 23.122 [5] for the definition of country).

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.

MBSR-UE: a UE that is operating as a MBSR and supporting UE NAS functionalities specified in this specification.

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;
- b2) S-NSSAI location validity information for the configured NSSAI for a PLMN or an SNPN;
- b3) S-NSSAI time validity 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;
 - 6) mapped S-NSSAI(s) for the rejected NSSAI for the maximum number of UEs reached;
 - 7) alternative NSSAI for a PLMN or an SNPN; and
 - 8) on-demand NSSAI for a PLMN or an SNPN; and
- j) for 3GPP access type:
 - 1) NSAG information for the configured NSSAI for a PLMN or an SNPN;
 - 2) partially allowed NSSAI for a PLMN or an SNPN;
 - 3) mapped S-NSSAI(s) for the partially allowed NSSAI for a PLMN or an SNPN;
 - 4) partially rejected NSSAI for a PLMN or an SNPN; and
 - 5) mapped S-NSSAI(s) for the partially rejected NSSAI for a PLMN or an SNPN;

NG-RAN cell: A cell with NG-RAN access technology or satellite NG-RAN access technology.

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.

Non-satellite NG-RAN cell: A cell with NG-RAN access technology.

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.

On-demand NSSAI: A list of on-demand S-NSSAI(s) and optionally slice deregistration inactivity timer per on-demand S-NSSAI.

On-demand S-NSSAI: An S-NSSAI included in the configured NSSAI that the UE supporting network slice usage control is allowed to request only when this S-NSSAI is used by the UE to establish a PDU session for user data transmission.

Partially rejected NSSAI: Indicating the S-NSSAI(s) is rejected by the network in some TA(s) but not all TAs of the registration area. Each S-NSSAI in the partially rejected NSSAI is associated with a list of TAs where the S-NSSAI is rejected.

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, the partially allowed NSSAI, the partially rejected NSSAI, the rejected NSSAI for the current registration area, the pending 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.

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.

Satellite NG-RAN cell: A cell with satellite NG-RAN access technology.

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: A UE that is registered for 5GS services with the control plane CIOT 5GS optimization accepted by the network.

User Plane Positioning Connection Management Information (UPP-CMI): The messages defined in clause 6 of 3GPP TS 24.572 [64] that is utilized to manage the user plane connection between the UE and the LMF for LCS-UPP.

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.

UE policy section identifier: A UE policy section identifier (UPSI) is an identifier of a UE policy section, which is composed of the MCC and MNC of:

- the PLMN ID of a PLMN of the PCF which provides the UE policy section, and a UE policy section code (UPSC), assigned by the PCF in that PLMN; or
- the PLMN ID part of an SNPN of the PCF which provides the UE policy section, and a UPSC, assigned by the PCF in that SNPN.

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:

Access Technology
CAG selection
CAG-ID authorized based on "Allowed CAG list"

Country
EHPLMN
HPLMN
Onboarding services in SNPN
UE determined PLMN with disaster condition
Registered SNPN
Selected PLMN
Selected SNPN
Shared network
SNPN identity
Steering of roaming SNPN selection information (SOR-SNPN-SI)
Steering of roaming SNPN selection information for localized services in SNPN (SOR-SNPN-SI-LS)
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
5G VN Group
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
Mobile Base Station Relay
N3QAI
Network identifier (NID)
Network slice
Network slice area of service
NG-RAN
Non-allowed area
Onboarding Standalone Non-Public Network
Partially allowed NSSAI

PDU connectivity service
PDU session
PDU session type
PDU set
PEGC
PEMC
Pending NSSAI
PIN
PIN direct communication
PIN indirect communication
PIN-DN communication
PINE
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
VPLMN specific (VPS) URSP

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****KAMF****KASME****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****Direct C2 communication**

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:

PLMN generic (PG) URSP**Non-subscribed SNPN signalled URSP****VPLMN specific (VPS) URSP of the RPLMN**

VPLMN specific (VPS) URSP of the equivalent PLMN of the RPLMN

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

A2X

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.514 [62] apply:

RSLPP

A2XP

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.316 [6D] apply:

Authenticable Non-3GPP (AUN3) device

Non-Authenticable Non-3GPP (NAUN3) device

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.586 [63] apply:

SL Positioning Server UE

For the purposes of the present document, the following terms and definitions given in 3GPP TS 38.300 [27] apply:

NCR-MT

For the purposes of the present document, the following terms and definitions given in 3GPP TS 24.572 [64] apply:

LCS-UPP

3.2 Abbreviations

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

4G-GUTI	4G-Globally Unique Temporary Identifier
5GCN	5G Core Network
5G-GUTI	5G-Globally Unique Temporary Identifier
5GMM	5GS Mobility Management
5G-RG	5G Residential Gateway
5G-BRG	5G Broadband Residential Gateway
5G-CRG	5G Cable Residential Gateway
5GS	5G System
5GSM	5GS Session Management
5G-S-TMSI	5G S-Temporary Mobile Subscription Identifier
5G-TMSI	5G Temporary Mobile Subscription Identifier
5QI	5G QoS Identifier
ABBA	Anti-Bidding down Between Architectures
ACS	Auto-Configuration Server
AKA	Authentication and Key Agreement
AKMA	Authentication and Key Management for Applications
A-KID	AKMA Key Identifier
A-TID	AKMA Temporary Identifier
AMBR	Aggregate Maximum Bit Rate
AMF	Access and Mobility Management Function
ANDSP	Access Network Discovery and Selection Policy
APN	Access Point Name
AS	Access stratum
ATSSS	Access Traffic Steering, Switching and Splitting
AUN3	Authenticable Non-3GPP
AUSF	Authentication Server Function
AVC	Advanced Video Coding
CAG	Closed access group
CGI	Cell Global Identity

CHAP	Challenge Handshake Authentication Protocol
DDX	Downlink Data Expected
DEI	Drop Eligible Indicator
DL	Downlink
DN	Data Network
DNN	Data Network Name
DNS	Domain Name System
DS-TT	Device-Side TSN Translator
eDRX	Extended DRX cycle
ePDG	Evolved Packet Data Gateway
EUI	Extended Unique Identifier
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
EAC	Early Admission Control
EAP-AKA'	Improved Extensible Authentication Protocol method for 3rd generation Authentication and Key Agreement
EAS	Edge Application Server
EASDF	Edge Application Server Discovery Function
ECIES	Elliptic Curve Integrated Encryption Scheme
ECS	Edge Configuration Server
ECSP	Edge Computing Service Provider
EDC	Edge DNS Client
EEC	Edge Enabler Client
EPD	Extended Protocol Discriminator
EMM	EPS Mobility Management
EPC	Evolved Packet Core Network
EPS	Evolved Packet System
EPS-UPIP	User-plane integrity protection in EPS
ESM	EPS Session Management
FN-RG	Fixed Network RG
FN-BRG	Fixed Network Broadband RG
FN-CRG	Fixed Network Cable RG
FQDN	Fully Qualified Domain Name
Gbps	Gigabits per second
GEO	Geostationary Orbit
GFBR	Guaranteed Flow Bit Rate
GUAMI	Globally Unique AMF Identifier
HEVC	High Efficiency Video Coding
IAB	Integrated access and backhaul
IMEI	International Mobile station Equipment Identity
IMEISV	International Mobile station Equipment Identity and Software Version number
IMSI	International Mobile Subscriber Identity
IP-CAN	IP-Connectivity Access Network
KSI	Key Set Identifier
LADN	Local Area Data Network
LCS	LoCation Services
LCS-UPP	Location Services User Plane Protocol
LEO	Low Earth Orbit
LMF	Location Management Function
LPP	LTE Positioning Protocol
MAC	Message Authentication Code
MA PDU	Multi-Access PDU
MBS	Multicast/Broadcast Services
MBSR	Mobile Base Station Relay
Mbps	Megabits per second
MCS	Mission Critical Service
MEO	Medium Earth Orbit
MFBR	Maximum Flow Bit Rate
MICO	Mobile Initiated Connection Only
MINT	Minimization of Service Interruption
MPS	Multimedia Priority Service
MSK	MBS Service Key
MTK	MBS Traffic Key

MUSIM	Multi-USIM
N3IWF	Non-3GPP Inter-Working Function
N3QAI	Non-3GPP QoS Assistance Information
N5CW	Non-5G-Capable over WLAN
N5GC	Non-5G Capable
NAI	Network Access Identifier
NAUN3	Non-Authenticable Non-3GPP
NITZ	Network Identity and Time Zone
ngKSI	Key Set Identifier for Next Generation Radio Access Network
NPN	Non-public network
NR	New Radio
NSAC	Network Slice Admission Control
NSACF	Network Slice Admission Control Function
NSAG	Network slice AS group
NS-AoS	Network slice area of service
NSSAA	Network slice-specific authentication and authorization
NSSAAF	Network Slice-Specific and SNPN authentication and authorization Function
NSSAI	Network Slice Selection Assistance Information
NSSRG	Network Slice Simultaneous Registration Group
ON-SPN	Onboarding Standalone Non-Public Network
OS	Operating System
OS Id	OS Identity
PAP	Password Authentication Protocol
PCO	Protocol Configuration Option
PCP	Priority Code Point
PEI	Permanent Equipment Identifier
PEIPS	Paging Early Indication with Paging Subgrouping
PEGC	PIN Element with Gateway Capability
PEMC	PIN Element with Management Capability
PIN	Personal IoT Network
PINE	PIN Element
PMF	Performance Measurement Function
PNI-NPN	Public Network Integrated Non-Public Network
ProSe	Proximity based Services
ProSeP	5G ProSe policy
PG	PLMN Generic
PTI	Procedure Transaction Identity
PTP	Precision Time Protocol
PVS	Provisioning Server
QFI	QoS Flow Identifier
QoS	Quality of Service
QRI	QoS Rule Identifier
RACS	Radio Capability Signalling Optimisation
(R)AN	(Radio) Access Network
RFSP	RAT Frequency Selection Priority
RG	Residential Gateway
RPLMN	Registered PLMN
RQA	Reflective QoS Attribute
RQI	Reflective QoS Indication
RSC	Relay Service Code
RSN	Redundancy Sequence Number
RSNPN	Registered SNPN
RTT	Round Trip Time
S-NSSAI	Single NSSAI
SA	Security Association
SDF	Service Data Flow
SDNAEPC	Secondary DN authentication and authorization over EPC
SDT	Small Data Transmission
SMF	Session Management Function
SGC	Service Gap Control
SLPP	SideLink Positioning Protocol
SNN	Serving Network Name

SNPN	Stand-alone Non-Public Network
SOR	Steering of Roaming
SOR-CMCI	Steering of Roaming Connected Mode Control Information
SRTP	Secure Real-time Transport Protocol
SUCI	Subscription Concealed Identifier
SUPI	Subscription Permanent Identifier
TA	Tracking Area
TAC	Tracking Area Code
TAI	Tracking Area Identity
Tbps	Terabits per second
TMGI	Temporary Mobile Group Identity
TNAN	Trusted Non-3GPP Access Network
TNGF	Trusted Non-3GPP Gateway Function
TSC	Time Sensitive Communication
TSCTSF	Time Sensitive Communication and Time Synchronization Function
TWIF	Trusted WLAN Interworking Function
TSN	Time-Sensitive Networking
UAS	Uncrewed Aerial System
UAV	Uncrewed Aerial Vehicle
UAV-C	Uncrewed Aerial Vehicle-Controller
UDM	Unified Data Management
UL	Uplink
UPDS	UE policy delivery service
UPF	User Plane Function
UP-PRUK	User Plane ProSe Remote User Key
UPP-CMI	User Plane Positioning Connection Management Information
UPSC	UE Policy Section Code
UPSI	UE Policy Section Identifier
URN	Uniform Resource Name
URSP	UE Route Selection Policy
USS	UAS Service Supplier
UUAA	USS UAV Authorization/Authentication
V2X	Vehicle-to-Everything
V2XP	V2X policy
VID	VLAN Identifier
VPS	VPLMN Specific
W-AGF	Wireline Access Gateway Function
WLAN	Wireless Local Area Network
WUS	Wake-up signal