**3GPP TSG-CT WG1 Meeting #123-eC1-202xxx**

**Electronic meeting, 16-24 April 2020 *revision of C1-201051***

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **1912** | **rev** | **3** | **Current version:** | **16.4.0** |  |
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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:***  | Deleting Editors note regarding indefinite wait at the UE for NSSAA completion |
|  |  |
| ***Source to WG:*** | ZTE |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** |  eNS |  | ***Date:*** | 2020-02-20 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | Editor's Note: How to secure that a UE does not wait indefinitely for completion of the network slice-specific authentication and authorization is FFS.The editor’s note was added because a similar Editor’s note is added in the stage 2 spec.Addtionally when this Editor’s note is added, it was being discussed whether the NAS TRANSPORT message or a new NAS message is defined for the NSSAA procedure. After long discussion, it was concluded that the new NAS message is defined. And a timer is also started when the AMF sends the network slice-specific authentication command message to the UE. When the timer expires and no response from the UE, then the AMF will reattempt the message delivery.In the subclause 29.561, subclause 16.1.2*If Access-Reject or no response is received, the AUSF or AAA-P shall reject the network slice specific authentication procedure with a suitable cause code.*In the TS29.500, since the SBI interface is based on the HTTP over the TCP and the AMF anyhow receives the response from the other NF even the status code is “4xx” or ‘5xx’, then the AMF can consider that the NSSAA procedure has failed. After the AMF received the failure indication from other NF, then the AMF can consider this S-NSSAI as rejected S-NSSAI and inform this information to the UE in the rejected NSSAI.In the subclause 6.2 of TS 23.527, the a NF can detect the other NF failure via NRF using the heart-beat. So the AMF can know whether the other NF has failed.Since all S-NSSAIs in the pending NSSAI will be either in the rejected NSSAI or in the allowed NSSAI in the CONFIGURATION UPDATE COMMAND message, the UE does not wait indefinitely for completion of the network slice-specific authentication and authorizationThere is no new mechanism to secure that a UE does not wait indefinitely for completion of NSSAA procedure. Therefore the corresponding editors note can be removed. |
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| ***Summary of change:*** | The Editors note is deleted and an informative note is added to clarify that the AMF can consider the NSSA procedure failure when the status code set to “4xx” or “5xx”. |
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| ***Consequences if not approved:*** | The Editors note is remained. |
|  |  |
| ***Clauses affected:*** | 2, 4.6.2.4, 5.5.1.2.4, 5.5.1.3.4 |
|  |  |
|  | **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:*** |  |

\*\*\*\*\* First change \*\*\*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[1A] 3GPP TS 22.011: "Service accessibility".

[2] 3GPP TS 22.101: "Service aspects; Service principles".

[3] 3GPP TS 22.261: "Service requirements for the 5G system; Stage 1".

[4] 3GPP TS 23.003: "Numbering, addressing and identification".

[4A] 3GPP TS 23.040: "Technical realization of Short Message Service (SMS)".

[5] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".

[6] 3GPP TS 23.167: "IP Multimedia Subsystem (IMS) emergency sessions".

[6A] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC); Stage 2".

[6B] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[6C] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".

[6D] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS)".

[7] 3GPP TS 23.401: "GPRS enhancements for E-UTRAN access".

[8] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[9] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[10] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[10A] 3GPP TS 23.527: "5G System; Restoration Procedures".

[11] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[12] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[13] 3GPP TS 24.011: "Point-to-Point Short Message Service (SMS) support on mobile radio interface".

[13A] 3GPP TS 24.080: "Mobile radio interface layer 3 Supplementary services specification; Formats and coding".

[13B] 3GPP TS 24.193: "Access Traffic Steering, Switching and Splitting; Stage 3".

[14] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[14A] 3GPP TS 24.250: "Protocol for Reliable Data Service; Stage 3".

[15] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".

[16] 3GPP TS 24.302: "Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3"

[17] 3GPP TS 24.368: "Non-Access Stratum (NAS) configuration Management Object (MO)".

[18] 3GPP TS 24.502: "Access to the 3GPP 5G System (5GS) via non-3GPP access networks; Stage 3".

[19] 3GPP TS 24.526: "UE policies for 5G System (5GS); Stage 3".

[19A] 3GPP TS 24.535: "Device-Side Time-Sensitive Networking (TSN) Translator (DS-TT) to Network-Side TSN Translator (NW-TT) protocol aspects; Stage 3".

[19B] 3GPP TS 24.587: "Vehicle-to-Everything (V2X) services in 5G System (5GS); Protocol aspects; Stage 3"

[19C] 3GPP TS 24.588: "Vehicle-to-Everything (V2X) services in 5G System (5GS); User Equipment (UE) policies; Stage 3"

[19D] 3GPP TS 24.5xy: "Time-Sensitive Networking (TSN) Application Function (AF) to Device-Side TSN Translator (DS-TT) and Network-Side TSN Translator (NW-TT) protocol aspects; Stage 3".

[20] 3GPP TS 24.623: "Extensive Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services".

[x] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[20A] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".

[21] 3GPP TS 29.525: "5G System; UE Policy Control Service; Stage 3".

[22] 3GPP TS 31.102: "Characteristics of the Universal Subscriber Identity Module (USIM) application".

[22A] 3GPP TS 31.111: "USIM Application Toolkit (USAT)".

[22B] 3GPP TS 31.115: "Secured packet structure for (Universal) Subscriber Identity Module (U)SIM Toolkit applications".

[23] 3GPP TS 33.102: "3G security; Security architecture".

[23A] 3GPP TS 33.401: "3GPP System Architecture Evolution; Security architecture".

[24] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[25] 3GPP TS 36.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[25A] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

[25B] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description".

[25C] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode".

[25D] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".

[25E] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".

[26] 3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".

[27] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[28] 3GPP TS 38.304: "New Generation Radio Access Network; User Equipment (UE) procedures in Idle mode".

[29] 3GPP TS 38.323: "Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification".

[30] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol Specification".

[31] 3GPP TS 38.413: "NG Radio Access Network (NG-RAN); NG Application Protocol (NGAP)".

[31A] IEEE Std 802.3™-2018: "Ethernet".

[32] IETF RFC 768: "User Datagram Protocol".

[33] IETF RFC 793: "Transmission Control Protocol."

[33A] IETF RFC 3095: "RObust Header Compression (ROHC): Framework and four profiles: RTP, UDP, ESP and uncompressed".

[33B] IETF RFC 3315: "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)".

[33C] IETF RFC 3633: "IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6".

[34] IETF RFC 3748: "Extensible Authentication Protocol (EAP)".

[34A] IETF RFC 3843: "RObust Header Compression (ROHC): A Compression Profile for IP".

[35] IETF RFC 3736: "Stateless Dynamic Host Configuration Protocol (DHCP) Service for IPv6"

[35A] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[36] IETF RFC 4191: "Default Router Preferences and More-Specific Routes".

[37] IETF RFC 7542: "The Network Access Identifier".

[38] IETF RFC 4303: "IP Encapsulating Security Payload (ESP)".

[38A] IETF RFC 4815: "RObust Header Compression (ROHC): Corrections and Clarifications to RFC 3095".

[38B] IETF RFC 4861: "Neighbor Discovery for IP version 6 (IPv6)".

[39] IETF RFC 4862: "IPv6 Stateless Address Autoconfiguration".

[39A] IETF RFC 5225: "RObust Header Compression (ROHC) Version 2: Profiles for RTP, UDP, IP, ESP and UDP Lite".

[39B] IETF RFC 5795: "The RObust Header Compression (ROHC) Framework".

[40] IETF RFC 5448: "Improved Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA')".

[40A] IETF RFC 6603: "Prefix Exclude Option for DHCPv6-based Prefix Delegation".

[40B] IETF RFC 6846: "RObust Header Compression (ROHC): A Profile for TCP/IP (ROHC-TCP)".

[41] IETF RFC 7296: "Internet Key Exchange Protocol Version 2 (IKEv2)".

[42] ITU-T Recommendation E.212: "The international identification plan for public networks and subscriptions", 2016-09-23.

[43] IEEE Std 802-2014: "IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture" (30 June 2014).

[43A] IEEE Std 802.1AS-Rev/D7.3, August 2018: "IEEE Standard for Local and metropolitan area networks--Timing and Synchronization for Time-Sensitive Applications".

[43B] IEEE 1588™-2008: "IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems".

[43C] Void.

[43D] Void.

[43E] Void.

[44] Void.

[45] Void.

[46] Void.

[47] Void.

[48] IEEE "Guidelines for Use of Extended Unique Identifier (EUI), Organizationally Unique Identifier (OUI), and Company ID (CID)".

[49] BBF TR-069: "CPE WAN Management Protocol".

[50] BBF TR-369: "User Services Platform (USP)".

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

#### 4.6.2.4 Network slice-specific authentication and authorization

The UE and network may support network slice-specific authentication and authorization.

A serving PLMN shall perform network slice-specific authentication and authorization for the S-NSSAI(s) of the HPLMN which are subject to it based on subscription information. The UE shall indicate whether it supports network slice-specific authentication and authorization in the 5GMM Capability IE in the registration procedure.

The upper layer stores an association between each S-NSSAI and its corresponding credentials for the network slice-specific authentication and authorization.

NOTE 1: The credentials for network slice-specific authentication and authorization and how to provision them in the upper layer are out of the scope of 3GPP.

The network slice-specific authentication and authorization procedure shall not be performed unless:

a) the primary authentication and key agreement procedure as specified in the subclause 5.4.1 has successfully been completed; and

b) the initial registration procedure or the mobility and periodic registration update procedure has been completed.

The AMF informs the UE about S-NSSAI(s) subject to network slice-specific authentication and authorization in the pending NSSAI. The AMF handles allowed NSSAI, pending NSSAI, rejected NSSAI, and 5GS registration result in the REGISTRATION ACCEPT message according to subclauses 5.5.1.2.4 and 5.5.1.3.4.

To perform network slice-specific authentication and authorization for an S-NSSAI, the AMF invokes an EAP- based network slice-specific authorization procedure for the S-NSSAI (see subclause 5.4.7, 3GPP TS 33.501 [24] and 3GPP TS 23.502 [9]).

The AMF updates the allowed NSSAI and the rejected NSSAI using the generic UE configuration update procedure as specified in the subclause 5.4.4 after the network slice-specific authentication and authorization procedure is completed.

The network slice-specific authentication and authorization procedure can be invoked or revoked by an AMF for a UE supporting network slice-specific authentication and authorization at any time. After the network performs the network slice-specific re-authentication and re-authorization procedure:

a) if network slice-specific authentication and authorization for some but not all S-NSSAIs in the allowed NSSAI fails, the AMF updates the allowed NSSAI and the rejected NSSAI accordingly using the generic UE configuration update procedure as specified in the subclause 5.4.4 and release all PDU session associated with the S-NSSAI for which network slice-specific re-authentication and re-authorization fails; or

b) if network slice-specific authentication and authorization fails or revoked for all S-NSSAIs in the allowed NSSAI and the pending NSSAI, then AMF performs the network-initiated de-registration procedure and includes the rejected NSSAI in the DEREGISTRATION REQUEST message as specified in the subclause 5.5.2.3 except when the UE has an emergency PDU session established or the UE is establishing an emergency PDU session. In this case the AMF shall send CONFIGURATION UPDATE COMMAND containing rejected NSSAI and release all PDU session associated with the S-NSSAI for which network slice-specific re-authentication and re-authorization fails. After the emergency PDU session is released, the AMF performs the network-initiated de-registration procedure as specified in the subclause 5.5.2.3.

If authorization is revoked for an S-NSSAI that is in the current allowed NSSAI for an access type, the AMF shall:

a) provide a new allowed NSSAI, excluding the S-NSSAI(s) for which the authorization is revoked; and

b) provide a new reject NSSAI for the failed or revoked NSSAA, including the S-NSSAI for which the authorization is revoked, with the reject cause "S-NSSAI is not available due to the failed or revoked network slice-specific authentication and authorization";

to the UE using the generic UE configuration update procedure as specified in the subclause 5.4.4 and release all PDU sessions associated with the S-NSSAI for which the authorization is revoked for this access type.

NOTE 2: If the AMF receives the HTTP code set to "4xx" or "5xx" as specified in 3GPP TS 29.500 [x] or the AMF detects that the AUSF failure as specified in 3GPP TS 23.527 [10A] during the NSSAA procedure for an S-NSSAI, then the AMF can consider the NSSAA procedure has failed for this S-NSSAI.

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

##### 5.5.1.2.4 Initial registration accepted by the network

During a registration procedure with 5GS registration type IE set to "emergency registration", the AMF shall not check for mobility and access restrictions, regional restrictions or subscription restrictions, or CAG restrictionswhen processing the REGISTRATION REQUEST message.

If the initial registration request is accepted by the network, the AMF shall send a REGISTRATION ACCEPT message to the UE.

For each of the information elements: 5GMM capability, S1 UE network capability, and UE security capability, the AMF shall store all octets received from the UE in the REGISTRATION REQUEST message, up to the maximum length defined for the respective information element.

NOTE 1: This information is forwarded to the new AMF during inter-AMF handover or to the new MME during inter-system handover to S1 mode.

The AMF shall assign and include a TAI list as a registration area the UE is registered to in the REGISTRATION ACCEPT message. The AMF shall not assign a TAI list containing both tracking areas in NB-N1 mode and tracking areas not in NB-N1 mode. The UE, upon receiving a REGISTRATION ACCEPT message, shall delete its old TAI list and store the received TAI list. If the REGISTRATION REQUEST message was received over non-3GPP access, the AMF shall include only the N3GPP TAI in the TAI list.

NOTE 2: The N3GPP TAI is operator-specific.

NOTE 3: When assigning the TAI list, the AMF can take into account the eNodeB's capability of support of CIoT 5GS optimization.

The AMF may include service area restrictions in the Service area list IE in the REGISTRATION ACCEPT message. The UE, upon receiving a REGISTRATION ACCEPT message with the service area restrictions shall act as described in subclause 5.3.5.

The AMF may also include a list of equivalent PLMNs in the REGISTRATION ACCEPT message. Each entry in the list contains a PLMN code (MCC+MNC). The UE shall store the list as provided by the network, and if the initial registration procedure is not for emergency services, the UE shall remove from the list any PLMN code that is already in the list of "forbidden PLMNs". In addition, the UE shall add to the stored list the PLMN code of the registered PLMN that sent the list. The UE shall replace the stored list on each receipt of the REGISTRATION ACCEPT message. If the REGISTRATION ACCEPT message does not contain a list, then the UE shall delete the stored list.

If the initial registration procedure is not for emergency services, and if the PLMN identity of the registered PLMN is a member of the list of "forbidden PLMNs", any such PLMN identity shall be deleted from the corresponding list(s).

If the Service area list IE is not included in the REGISTRATION ACCEPT message, any tracking area in the registered PLMN and its equivalent PLMN(s) in the registration area is considered as an allowed tracking area as described in subclause 5.3.5.

If the REGISTRATION REQUEST message contains the LADN indication IE, based on the LADN indication IE, UE subscription information, UE location and local configuration about LADN and:

- if the LADN indication IE includes requested LADN DNNs, the UE subscribed DNN list includes the requested LADN DNNs or the wildcard DNN, and the LADN service area of the requested LADN DNN has an intersection with the current registration area, the AMF shall determine the requested LADN DNNs included in the LADN indication IE as LADN DNNs for the UE;

- if no requested LADN DNNs included in the LADN indication IE and the wildcard DNN is included in the UE subscribed DNN list, the AMF shall determine the LADN DNN(s) configured in the AMF whose LADN service area has an intersection with the current registration area as LADN DNNs for the UE; or

- if no requested LADN DNNs included in the LADN indication IE and the wildcard DNN is not included in the UE subscribed DNN list, the AMF shall determine the LADN DNN(s) included in the UE subscribed DNN list whose LADN service area has an intersection with the current registration area as LADN DNNs for the UE.

If the LADN indication IE is not included in the REGISTRATION REQUEST message, the AMF shall determine the LADN DNN(s) included in the UE subscribed DNN list whose service area has an intersection with the current registration area as LADN DNNs for the UE, except for the wildcard DNN included in the UE subscribed DNN list.

If the UE supports WUS assistance information IE and the AMF supports and accepts the use of WUS assistance information for the UE, then the AMF shall determine the negotiated UE paging probability information for the UE, store it in the 5GMM context of the UE, and include it in the Negotiated WUS assistance information IE in the REGISTRATION ACCEPT message. The AMF may consider the UE paging probability information received in the Requested WUS assistance information IE when determining the negotiated UE paging probability information for the UE.

NOTE 4: Besides the UE paging probability information requested by the UE, the AMF can take local configuration or previous statistical information for the UE into account when determining the negotiated UE paging probability information for the UE.

The AMF shall include the LADN information which consists of the determined LADN DNNs for the UE and LADN service area(s) available in the current registration area in the LADN information IE of the REGISTRATION ACCEPT message.

The UE, upon receiving the REGISTRATION ACCEPT message with the LADN information, shall store the received LADN information. If there exists one or more LADN DNNs which are included in the LADN indication IE of the REGISTRATION REQUEST message and are not included in the LADN information IE of the REGISTRATION ACCEPT message, the UE considers such LADN DNNs as not available in the current registration area.

The 5G-GUTI reallocation shall be part of the initial registration procedure. During the initial registration procedure, if the AMF has not allocated a new 5G-GUTI by the generic UE configuration update procedure, the AMF shall include in the REGISTRATION ACCEPT message the new assigned 5G-GUTI together with the assigned TAI list.

If the UE has set the CAG bit to "CAG supported" in the 5GMM capability IE of the REGISTRATION REQUEST message and the AMF needs to update the "CAG information list" stored in the UE, the AMF shall include the CAG information list IE in the REGISTRATION ACCEPT message.

If a 5G-GUTI or the SOR transparent container IE is included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the Operator-defined access category definitions IE, the Extended emergency number list IE or the CAG information list IE are included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the UE is not in NB-N1 mode and the UE has set the RACS bit to "RACS supported" in the 5GMM Capability IE of the REGISTRATION REQUEST message, the AMF may include a UE radio capability ID IE or a UE radio capability ID deletion indication IE in the REGISTRATION ACCEPT message. If the UE radio capability ID IE or the UE radio capability ID deletion indication IE is included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

The AMF shall include the MICO indication IE in the REGISTRATION ACCEPT message only if the MICO indication IE was included in the REGISTRATION REQUEST message, the AMF supports and accepts the use of MICO mode. If the AMF supports and accepts the use of MICO mode, the AMF may indicate "all PLMN registration area allocated" in the MICO indication IE in the REGISTRATION ACCEPT message. If "all PLMN registration area allocated" is indicated in the MICO indication IE, the AMF shall not assign and include the TAI list in the REGISTRATION ACCEPT message. If the REGISTRATION ACCEPT message included an MICO indication IE indicating "all PLMN registration area allocated", the UE shall treat all TAIs in the current PLMN as a registration area and delete its old TAI list. If "strictly periodic registration timer indication" is indicated in the MICO indication IE in the REGISTRATION REQUEST, the AMF may indicate "strictly periodic registration timer supported" in the MICO indication IE in the REGISTRATION ACCEPT message.

The AMF shall include an active time value in the T3324 IE in the REGISTRATION ACCEPT message if the UE requested an active time value in the REGISTRATION REQUEST message and the AMF accepts the use of MICO mode and the use of active time.

The AMF shall include the T3512 value IE in the REGISTRATION ACCEPT message only if the REGISTRATION REQUEST message was sent over the 3GPP access.

The AMF shall include the non-3GPP de-registration timer value IE in the REGISTRATION ACCEPT message only if the REGISTRATION REQUEST message was sent for the non-3GPP access.

If the UE requests "control plane CIoT 5GS optimization" in the 5GS update type IE, indicates support of control plane CIoT 5GS optimization in the 5GMM capability IE and the AMF decides to accept the requested CIoT 5GS optimization and the registration request, the AMF shall indicate "control plane CIoT 5GS optimization supported" in the 5GS network feature support IE of the REGISTRATION ACCEPT message.

The AMF may include the T3447 value IE set to the service gap time value in the REGISTRATION ACCEPT message if:

- the UE has indicated support for service gap control in the REGISTRATION REQUEST message; and

- a service gap time value is available in the 5GMM context.

If there is a running T3447 timer in the AMF and the Follow-on request indicator is set to "Follow-on request pending" in the REGISTRATION REQUEST message, the AMF shall ignore the flag and proceed as if the flag was not received except for the following cases:

a) the UE is configured for high priority access in the selected PLMN; or

b) the 5GS registration type IE in the REGISTRATION REQUEST message is set to "emergency registration".

If the UE has indicated support for the control plane CIoT 5GS optimizations, and the AMF decides to activate the congestion control for transport of user data via the control plane, then the AMF shall include the T3448 value IE in the REGISTRATION ACCEPT message.

If:

- the UE in NB-N1 mode is using control plane CIoT 5GS optimization; and

- the network is configured to provide the truncated 5G-S-TMSI configuration for control plane CIoT 5GS optimizations;

the AMF shall include the Truncated 5G-S-TMSI configuration IE in the REGISTRATION ACCEPT message and set the "Truncated AMF Set ID value" and the "Truncated AMF Pointer value" in the Truncated 5G-S-TMSI configuration IE based on network policies.

Upon receipt of the REGISTRATION ACCEPT message, the UE shall reset the registration attempt counter, enter state 5GMM-REGISTERED and set the 5GS update status to 5U1 UPDATED.

If the UE receives the REGISTRATION ACCEPT message from a PLMN, then the UE shall reset the PLMN-specific attempt counter for that PLMN for the specific access type for which the message was received. The UE shall also reset the PLMN-specific N1 mode attempt counter for that PLMN for the specific access type for which the message was received. If the message was received via 3GPP access, the UE shall reset the counter for "SIM/USIM considered invalid for GPRS services" events and the counter for "SIM/USIM considered invalid for non-GPRS services" events, if any. If the message was received via non-3GPP access, the UE shall reset the counter for "SIM/USIM considered invalid for 5GS services over non-3GPP" events.

If the UE receives the REGISTRATION ACCEPT message from an SNPN, then the UE shall reset the SNPN-specific attempt counter for the current SNPN for the specific access type for which the message was received. If the message was received via 3GPP access, the UE shall reset the counter for "the entry for the current SNPN considered invalid for 3GPP access" events. If the message was received via non-3GPP access, the UE shall reset the counter for "the entry for the current SNPN considered invalid for non-3GPP access" events.

If the REGISTRATION ACCEPT message included a T3512 value IE, the UE shall use the value in the T3512 value IE as periodic registration update timer (T3512).

If the REGISTRATION ACCEPT message include a T3324 value IE, the UE shall use the value in the T3324 value IE as active timer (T3324).

If the REGISTRATION ACCEPT message included a non-3GPP de-registration timer value IE, the UE shall use the value in non-3GPP de-registration timer value IE as non-3GPP de-registration timer.

If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI. The UE shall provide the 5G-GUTI to the lower layer of 3GPP access if the REGISTRATION ACCEPT message is sent over the non-3GPP access, and the UE is in 5GMM-REGISTERED in both 3GPP access and non-3GPP access in the same PLMN.

If the REGISTRATION ACCEPT message contains the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed", or contains a configured NSSAI IE with a new configured NSSAI for the current PLMN and optionally the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the successful update of the network slicing information.

If the REGISTRATION ACCEPT message contains the CAG information list IE and the UE had set the CAG bit to "CAG supported" in the 5GMM capability IE of the REGISTRATION REQUEST message, the UE shall delete any stored "CAG information list" and, if the value part of the CAG information list IE is non-empty, shall store the "CAG information list" received in the CAG information list IE as specified in annex C.

If the REGISTRATION ACCEPT message contains the Operator-defined access category definitions IE, the Extended emergency number list IE or the CAG information list IE , the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge reception of the operator-defined access category definitions, the extended local emergency numbers list or the "CAG information list".

If the REGISTRATION ACCEPT message contains the UE radio capability ID IE or the UE radio capability ID deletion indication IE, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge reception of the UE radio capability ID IE or the UE radio capability ID deletion indication IE.

Upon receiving a REGISTRATION COMPLETE message, the AMF shall stop timer T3550 and change to state 5GMM-REGISTERED. The 5G-GUTI, if sent in the REGISTRATION ACCEPT message, shall be considered as valid, and the UE radio capability ID, if sent in the REGISTRATION ACCEPT, shall be considered as valid.

If the 5GS update type IE was included in the REGISTRATION REQUEST message with the SMS requested bit set to "SMS over NAS supported", and SMSF selection is successful, then the AMF shall send the REGISTRATION ACCEPT message after the SMSF has confirmed that the activation of the SMS service was successful. When sending the REGISTRATION ACCEPT message, the AMF shall:

a) set the SMS allowed bit of the 5GS registration result IE to "SMS over NAS allowed" in the REGISTRATION ACCEPT message, if the UE has set the SMS requested bit of the 5GS registration type IE to "SMS over NAS supported" in the REGISTRATION REQUEST message and the network allows the use of SMS over NAS for the UE; and

b) store the SMSF address and the value of the SMS allowed bit of the 5GS registration result IE in the UE 5GMM context and consider the UE available for SMS over NAS.

If:

a) the SMSF selection in the AMF is not successful;

b) the SMS activation via the SMSF is not successful;

c) the AMF does not allow the use of SMS over NAS;

d) the SMS requested bit of the 5GS update type IE was set to "SMS over NAS not supported" in the REGISTRATION REQUEST message; or

e) the 5GS update type IE was not included in the REGISTRATION REQUEST message;

then the AMF shall set the SMS allowed bit of the 5GS registration result IE to "SMS over NAS not allowed" in the REGISTRATION ACCEPT message.

When the UE receives the REGISTRATION ACCEPT message, if the UE is also registered over another access to the same PLMN, the UE considers the value indicated by the SMS allowed bit of the 5GS registration result IE as applicable for both accesses over which the UE is registered.

The AMF shall include the 5GS registration result IE in the REGISTRATION ACCEPT message. If the 5GS registration result IE value indicates:

a) "3GPP access", the UE:

- shall consider itself as being registered to 3GPP access only; and

- if in 5GMM-REGISTERED state over non-3GPP access and on the same PLMN as 3GPP access, shall enter state 5GMM-DEREGISTERED.ATTEMPTING-REGISTRATION over non-3GPP access and set the 5GS update status to 5U2 NOT UPDATED over non-3GPP access;

b) "Non-3GPP access", the UE:

- shall consider itself as being registered to non-3GPP access only; and

- if in the 5GMM-REGISTERED state over 3GPP access and is on the same PLMN as non-3GPP access, shall enter the state 5GMM-DEREGISTERED.ATTEMPTING-REGISTRATION over 3GPP access and set the 5GS update status to 5U2 NOT UPDATED over 3GPP access; or

c) "3GPP access and Non-3GPP access", the UE shall consider itself as being registered to both 3GPP access and non-3GPP access.

The AMF shall include the allowed NSSAI for the current PLMN and shall include the mapped S-NSSAI(s) for the allowed NSSAI contained in the requested NSSAI from the UE if available, in the REGISTRATION ACCEPT message if the UE included the requested NSSAI in the REGISTRATION REQUEST message and the AMF allows one or more S-NSSAIs in the requested NSSAI.

The AMF may also include rejected NSSAI in the REGISTRATION ACCEPT message. Rejected NSSAI contains S-NSSAI(s) which was included in the requested NSSAI but rejected by the network associated with rejection cause(s).

If the UE indicated the support for network slice-specific authentication and authorization, and:

a) if the Requested NSSAI IE only includes the S-NSSAI(s):

1) which are subject to network slice-specific authentication and authorization; and

2) for which the network slice-specific authentication and authorization procedure has not been initiated;

the AMF shall in the REGISTRATION ACCEPT message include:

1) the "NSSAA to be performed" indicator in the 5GS registration result IE set to indicate whether network slice-specific authentication and authorization procedure will be performed by the network; and

2) pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed; or

b) if the Requested NSSAI IE includes one or more S-NSSAIs subject to network slice-specific authentication and authorization, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the S-NSSAI(s) or the mapped S-NSSAI(s), if any:

i) which are not subject to network slice-specific authentication and authorization and are allowed by the AMF; or

ii) for which the network slice-specific authentication and authorization has been successfully performed; and

2) optionally, the rejected NSSAI due to the failed or revoked NSSAA; and

3) pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed, if any.

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message areallowed ; and

b) all subscribed S-NSSAIs marked as default are subject to network slice-specific authentication and authorization;

the AMF shall in the REGISTRATION ACCEPT message include:

a) the "NSSAA to be performed" indicator in the 5GS registration result IE to indicate whether network slice-specific authentication and authorization procedure will be performed by the network; and

b) pending NSSAI containing one or more subscribed S-NSSAIs marked as default for which network slice-specific authentication and authorization will be performed.

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed; and

b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;

the AMF shall in the REGISTRATION ACCEPT message include:

a) pending NSSAI containing one or more subscribed S-NSSAIs marked as default which are subject to network slice-specific authentication and authorization, if any; and

b) allowed NSSAI containing one or more subscribed S-NSSAIs marked as default which are not subject to network slice-specific authentication and authorization.

The AMF may include a new configured NSSAI for the current PLMN in the REGISTRATION ACCEPT message if:

a) the REGISTRATION REQUEST message did not include the requested NSSAI;

b) the REGISTRATION REQUEST message included the requested NSSAI containing an S-NSSAI that is not valid in the serving PLMN;

c) the REGISTRATION REQUEST message included the requested NSSAI containing S-NSSAI(s) with incorrect mapped S-NSSAI(s); or

d) the REGISTRATION REQUEST message included the Network slicing indication IE with the Default configured NSSAI indication bit set to "Requested NSSAI created from default configured NSSAI".

If a new configured NSSAI for the current PLMN is included in the REGISTRATION ACCEPT message, the AMF shall also include the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN if available in the REGISTRATION ACCEPT message. In this case the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the UE requests ciphering keys for ciphered broadcast assistance data in the REGISTRATION REQUEST message and the AMF has valid ciphering key data applicable to the UE's subscription and current tracking area, then the AMF shall include the ciphering key data in the Ciphering key data IE of the REGISTRATION ACCEPT message.

The AMF shall include the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed" in the REGISTRATION ACCEPT message if the UDM has indicated that the subscription data for network slicing has changed. In this case the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

The UE receiving the pending NSSAI in the REGISTRATION ACCEPT message shall store the S-NSSAI in the pending NSSAI as specified in subclause 4.6.2.2.

The UE receiving the rejected NSSAI in the REGISTRATION ACCEPT message takes the following actions based on the rejection cause in the rejected S-NSSAI(s):

"S-NSSAI not available in the current PLMN or SNPN"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current PLMN as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI(s) in the current PLMN until switching off the UE, the UICC containing the USIM is removed, the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated, or the rejected S-NSSAI(s) are removed or deleted as described in subclause 4.6.2.2.

"S-NSSAI not available in the current registration area"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI(s) in the current registration area until switching off the UE, the UE moving out of the current registration area, the UICC containing the USIM is removed, the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated, or the rejected S-NSSAI(s) are removed or deleted as described in subclause 4.6.2.2.

"S-NSSAI not available due to the failed or revoked network slice-specific authentication and authorization"

 The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI due to the failed or revoked NSSAA as specified in subclause 4.6.2.2.

If the UE set the NSSAA bit in the 5GMM capability IE to "Network slice-specific authentication and authorization not supported", and:

a) if the Requested NSSAI IE only includes the S-NSSAI(s) subject to network slice-specific authentication and authorization and one or more subscribed S-NSSAIs (containing one or more S-NSSAIs each of which may be associated with a new S-NSSAI) marked as default are available, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the subscribed S-NSSAIs marked as default S-NSSAI(s); and

2) the rejected NSSAI containing the S-NSSAI(s) subject to network slice specific authentication and authorization with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN"; or

b) if the Requested NSSAI IE includes one or more S-NSSAIs subject to network slice-specific authentication and authorization, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the S-NSSAI(s) or the mapped S-NSSAI(s) which are not subject to network slice-specific authentication and authorization; and

2) the rejected NSSAI containing:

i) the S-NSSAI(s) subject to network slice specific authentication and authorization with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN"; and

ii) the S-NSSAI(s) which was included in the requested NSSAI but rejected by the network associated with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN" or the rejection cause indicating "S-NSSAI not available in the current registration area", if any.

If the UE does not indicate support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message; or

b) none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed;

and one or more subscribed S-NSSAIs (containing one or more S-NSSAIs each of which may be associated with a new S-NSSAI) marked as default which are not subject to network slice-specific authentication and authorization are available, the AMF shall put the subscribed S-NSSAIs marked as default S-NSSAIs in the allowed NSSAI of the REGISTRATION ACCEPT message. The AMF shall determine a registration area such that all S-NSSAIs of the allowed NSSAI are available in the registration area.

If the REGISTRATION ACCEPT message contains the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed", the UE shall delete the network slicing information for each and every PLMN except for the current PLMN as specified in subclause 4.6.2.2.

If the REGISTRATION ACCEPT message contains the allowed NSSAI, then the UE shall store the included allowed NSSAI together with the PLMN identity of the registered PLMN and the registration area as specified in subclause 4.6.2.2.

If the REGISTRATION ACCEPT message contains a configured NSSAI IE with a new configured NSSAI for the current PLMN and optionally the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN, the UE shall store the contents of the configured NSSAI IE as specified in subclause 4.6.2.2.

If the REGISTRATION ACCEPT message:

a) includes the 5GS "NSSAA to be performed" indicator in the 5GS registration result IE;

b) includes a pending NSSAI; and

c) does not include an allowed NSSAI;

the UE shall not initiate a 5GSM procedure except for emergency services or high priority access until the UE receives an allowed NSSAI.

If the UE included S1 mode supported indication in the REGISTRATION REQUEST message, the AMF supporting interworking with EPS shall set the IWK N26 bit to either:

a) "interworking without N26 interface not supported" if the AMF supports N26 interface ; or

b) "interworking without N26 interface supported" if the AMF does not support N26 interface

in the 5GS network feature support IE in the REGISTRATION ACCEPT message.

The UE supporting S1 mode shall operate in the mode for interworking with EPS as follows:

a) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface not supported", the UE shall operate in single-registration mode;

b) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface supported" and the UE supports dual-registration mode, the UE may operate in dual-registration mode; or

NOTE 4: The registration mode used by the UE is implementation dependent.

c) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface supported" and the UE only supports single-registration mode, the UE shall operate in single-registration mode.

The UE shall treat the received interworking without N26 interface indicator for interworking with EPS as valid in the entire PLMN and its equivalent PLMN(s).

The network informs the UE about the support of specific features, such as IMS voice over PS session, location services (5G-LCS), emergency services, emergency services fallback and ATSSS, in the 5GS network feature support information element. In a UE with IMS voice over PS session capability, the IMS voice over PS session indicator, the Emergency services support indicator, and the Emergency services fallback indicator shall be provided to the upper layers. The upper layers take the IMS voice over PS session indicator into account when selecting the access domain for voice sessions or calls. In a UE with LCS capability, location services indicator (5G-LCS) shall be provided to the upper layers. When initiating an emergency call, the upper layers also take the IMS voice over PS session indicator, the Emergency services support indicator, and the Emergency services fallback indicator into account for the access domain selection. In a UE with the capability for ATSSS, the network support for ATSSS shall be provided to the upper layers.

The AMF shall set the EMF bit in the 5GS network feature support IE to:

a) "Emergency services fallback supported in NR connected to 5GCN and E-UTRA connected to 5GCN" if the network supports the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN or an E-UTRA cell connected to 5GCN;

b) "Emergency services fallback supported in NR connected to 5GCN only" if the network supports the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN and does not support the emergency services fallback procedure when the UE is in an E-UTRA cell connected to 5GCN;

c) "Emergency services fallback supported in E-UTRA connected to 5GCN only" if the network supports the emergency services fallback procedure when the UE is in an E-UTRA cell connected to 5GCN and does not support the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN; or

d) "Emergency services fallback not supported" if network does not support the emergency services fallback procedure when the UE is in any cell connected to 5GCN.

NOTE 5: If the emergency services are supported in neither the EPS nor the 5GS homogeneously, based on operator policy, the AMF will set the EMF bit in the 5GS network feature support IE to "Emergency services fallback not supported".

NOTE 6: Even though the AMF's support of emergency services fallback is indicated per RAT, the UE's support of emergency services fallback is not per RAT, i.e. the UE's support of emergency services fallback is the same for both NR connected to 5GCN and E-UTRA connected to 5GCN.

If the UE is not operating in SNPN access mode:

a) the network informs the UE that the use of access identity 1 is valid in the RPLMN or equivalent PLMN by setting the MPS indicator bit of the 5GS network feature support IE to "Access identity 1 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MPS indicator bit in the REGISTRATION ACCEPT message based on the MPS priority information in the user's subscription context obtained from the UDM;

b) upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2, in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode.

c) the network informs the UE that the use of access identity 2 is valid in the RPLMN or equivalent PLMN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MCS indicator bit in the REGISTRATION ACCEPT message based on the MCS priority information in the user's subscription context obtained from the UDM; and

d) upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2, in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode.

If the UE is operating in SNPN access mode:

a) the network informs the UE that the use of access identity 1 is valid in the RSNPN by setting the MPS indicator bit of the 5GS network feature support IE to "Access identity 1 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MPS indicator bit in the REGISTRATION ACCEPT message based on the MPS priority information in the user's subscription context obtained from the UDM;

b) upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2A, in all NG-RAN of the registered SNPN. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects another SNPN. Access identity 1 is only applicable while the UE is in N1 mode.

c) the network informs the UE that the use of access identity 2 is valid in the RSNPN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MCS indicator bit in the REGISTRATION ACCEPT message based on the MCS priority information in the user's subscription context obtained from the UDM; and

d) upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2A, in all NG-RAN of the registered SNPN. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects another SNPN. Access identity 2 is only applicable while the UE is in N1 mode.

If the UE indicates support for restriction on use of enhanced coverage in the REGISTRATION REQUEST message and the AMF decides to restrict the use of enhanced coverage for the UE, then the AMF shall set the RestrictEC bit to "Use of enhanced coverage is restricted" in the 5GS network feature support IE in the REGISTRATION ACCEPT message.

If the UE has set the Follow-on request indicator to "Follow-on request pending" in the REGISTRATION REQUEST message, or the network has downlink signalling pending, the AMF shall not immediately release the NAS signalling connection after the completion of the registration procedure.

If the UE is authorized to use V2X communication over PC5 reference point based on:

a) at least one of the following bits in the 5GMM capability IE of the REGISTRATION REQUEST message set by the UE, or already stored in the 5GMM context in the AMF during the previous registration procedure as follows:

1) the V2XCEPC5 bit to "V2X communication over E-UTRA-PC5 supported"; or

2) the V2XCNPC5 bit to "V2X communication over NR-PC5 supported"; and

b) the user's subscription context obtained from the UDM as defined in 3GPP TS 23.287 [6C];

the AMF should not immediately release the NAS signalling connection after the completion of the registration procedure.

If the Requested DRX parameters IE was included in the REGISTRATION REQUEST message, the AMF shall include the Negotiated DRX parameters IE in the REGISTRATION ACCEPT message. The AMF may set the Negotiated DRX parameters IE based on the received Requested DRX parameters IE and operator policy if available.

The AMF shall include the Negotiated extended DRX parameters IE in the REGISTRATION ACCEPT message only if the Requested extended DRX parameters IE was included in the REGISTRATION REQUEST message, and the AMF supports and accepts the use of eDRX. The AMF may set the Negotiated extended DRX parameters IE based on the received Requested extended DRX parameters IE, operator policy, and the user's subscription context obtained from the UDM if available.

If:

a) the UE's USIM is configured with indication that the UE is to receive the SOR transparent container IE, the SOR transparent container IE is not included in the REGISTRATION ACCEPT message or the SOR transparent container IE does not successfully pass the integrity check (see 3GPP TS 33.501 [24]); and

b) if the UE attempts obtaining service on another PLMNs as specified in 3GPP TS 23.122 [5] annex C;

then the UE shall locally release the established N1 NAS signalling connection after sending a REGISTRATION COMPLETE message.

If the REGISTRATION ACCEPT message includes the SOR transparent container IE and the SOR transparent container IE successfully passes the integrity check (see 3GPP TS 33.501 [24]):

a) the UE shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; and

b) if the registration procedure is performed over 3GPP access and the UE attempts obtaining service on another PLMNs as specified in 3GPP TS 23.122 [5] annex C, then the UE may locally release the established N1 NAS signalling connection after sending a REGISTRATION COMPLETE message. Otherwise the UE shall send a REGISTRATION COMPLETE message and not release the current N1 NAS signalling connection locally. If an acknowledgement is requested in the SOR transparent container IE of the REGISTRATION ACCEPT message, the UE acknowledgement is included in the SOR transparent container IE of the REGISTRATION COMPLETE message.

If the SOR transparent container IE successfully passes the integrity check (see 3GPP TS 33.501 [24]), indicates list of preferred PLMN/access technology combinations is provided and the list type indicates:

a) "PLMN ID and access technology list", then the ME shall replace the highest priority entries in the "Operator Controlled PLMN Selector with Access Technology" list stored in the ME and shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; or

b) "secured packet", then the ME shall behave as if a SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of SOR transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A] and the ME shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C.

If required by operator policy, the AMF shall include the NSSAI inclusion mode IE in the REGISTRATION ACCEPT message (see table 4.6.2.3.1 of subclause 4.6.2.3). Upon receipt of the REGISTRATION ACCEPT message:

a) if the message includes the NSSAI inclusion mode IE, the UE shall operate in the NSSAI inclusion mode indicated in the NSSAI inclusion mode IE over the current access within the current PLMN and its equivalent PLMN(s), if any, in the current registration area; or

b) otherwise if:

1) the UE has NSSAI inclusion mode for the current PLMN and access type stored in the UE, the UE shall operate in the stored NSSAI inclusion mode; or

2) the UE does not have NSSAI inclusion mode for the current PLMN and the access type stored in the UE and if the UE is performing the registration procedure over:

i) 3GPP access, the UE shall operate in NSSAI inclusion mode D in the current PLMN and the current access type; or

ii) non-3GPP access, the UE shall operate in NSSAI inclusion mode C in the current PLMN and the current access type.

The AMF may include operator-defined access category definitions in the REGISTRATION ACCEPT message.

If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

If the UE has indicated support for service gap control in the REGISTRATION REQUEST message and:

- the REGISTRATION ACCEPT message contains the T3447 value IE, then the UE shall store the new T3447 value, erase any previous stored T3447 value if exists and use the new T3447 value with the timer T3447 next time it is started; or

- the REGISTRATION ACCEPT message does not contain the T3447 value IE, then the UE shall erase any previous stored T3447 value if exists and stop the timer T3447 if running.

If the T3448 value IE is present in the received REGISTRATION ACCEPT message and the value indicates that this timer is neither zero nor deactivated, the UE shall:

a) stop timer T3448 if it is running; and

b) start timer T3448 with the value provided in the T3448 value IE.

If the UE is using 5GS services with control plane CIoT 5GS optimization, the T3448 value IE is present in the REGISTRATION ACCEPT message and the value indicates that this timer is either zero or deactivated, the UE shall ignore the T3448 value IE and proceed as if the T3448 value IE was not present.

If the REGISTRATION ACCEPT message contains the Truncated 5G-S-TMSI configuration IE, then the UE shall store the included truncated 5G-S-TMSI configuration.

NOTE 7: The UE provides the truncated 5G-S-TMSI configuration to the lower layers.

If the UE is not in NB-N1 mode, the UE has set the RACS bit to "RACS supported" in the 5GMM Capability IE of the REGISTRATION REQUEST message and the REGISTRATION ACCEPT message includes:

a) a UE radio capability ID deletion indication IE set to "Network-assigned UE radio capability IDs deletion requested", the UE shall delete any network-assigned UE radio capability IDs associated with the RPLMN or RSNPN stored at the UE, then the UE shall, after the completion of the ongoing registration procedure, initiate a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3.2; and

b) a UE radio capability ID IE, the UE shall store the UE radio capability ID as specified in annex C.

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

##### 5.5.1.3.4 Mobility and periodic registration update accepted by the network

If the registration update request has been accepted by the network, the AMF shall send a REGISTRATION ACCEPT message to the UE.

If timer T3513 is running in the AMF, the AMF shall stop timer T3513 if a paging request was sent with the access type indicating non-3GPP and the REGISTRATION REQUEST message includes the Allowed PDU session status IE.

If timer T3565 is running in the AMF, the AMF shall stop timer T3565 when a REGISTRATION REQUEST message is received.

For each of the information elements: 5GMM capability, S1 UE network capability, and UE security capability, the AMF shall store all octets received from the UE in the REGISTRATION REQUEST message, up to the maximum length defined for the respective information element.

NOTE 1: This information is forwarded to the new AMF during inter-AMF handover or to the new MME during inter-system handover to S1 mode.

The 5G-GUTI reallocation shall be part of the registration procedure for mobility registration update. The 5G-GUTI reallocation should be part of the registration procedure for periodic registration update. During the registration procedure for mobility registration update, if the AMF has not allocated a new 5G-GUTI by the generic UE configuration update procedure, the AMF shall include in the REGISTRATION ACCEPT message the new assigned 5G-GUTI.

If the UE has set the CAG bit to "CAG supported" in the 5GMM capability IE of the REGISTRATION REQUEST message and the AMF needs to update the "CAG information list" stored in the UE, the AMF shall include the CAG information list IE in the REGISTRATION ACCEPT message.

If a 5G-GUTI or the SOR transparent container IE is included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the Operator-defined access category definitions IE or the Extended emergency number list IE or the CAG information list IE are included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the UE is not in NB-N1 mode and the UE has set the RACS bit to "RACS supported" in the 5GMM Capability IE of the REGISTRATION REQUEST message, the AMF may include a UE radio capability ID IE or a UE radio capability ID deletion indication IE in the REGISTRATION ACCEPT message. If the UE radio capability ID IE or the UE radio capability ID deletion indication IE is included in the REGISTRATION ACCCEPT message, the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

The AMF may include a new TAI list for the UE in the REGISTRATION ACCEPT message. The new TAI list shall not contain both tracking areas in NB-N1 mode and tracking areas not in NB-N1 mode. The UE, upon receiving a REGISTRATION ACCEPT message, shall delete its old TAI list and store the received TAI list. If there is no TAI list received, the UE shall consider the old TAI list as valid.

NOTE 2: When assigning the TAI list, the AMF can take into account the eNodeB's capability of support of CIoT 5GS optimization.

The AMF may also include a list of equivalent PLMNs in the REGISTRATION ACCEPT message. Each entry in the list contains a PLMN code (MCC+MNC). The UE shall store the list as provided by the network, and if there is no emergency PDU session established, the UE shall remove from the list any PLMN code that is already in the list of "forbidden PLMNs". If the UE is not registered for emergency services and there is an emergency PDU session established, the UE shall remove from the list of equivalent PLMNs any PLMN code present in the "forbidden PLMNs list" when the emergency PDU session is released. In addition, the UE shall add to the stored list the PLMN code of the registered PLMN that sent the list. The UE shall replace the stored list on each receipt of the REGISTRATION ACCEPT message. If the REGISTRATION ACCEPT message does not contain a list, then the UE shall delete the stored list.

If the UE is not registered for emergency services, and if the PLMN identity of the registered PLMN is a member of the list of "forbidden PLMNs", any such PLMN identity shall be deleted from the corresponding list(s).

The AMF may include new service area restrictions in the Service area list IE in the REGISTRATION ACCEPT message. The UE, upon receiving a REGISTRATION ACCEPT message with new service area restrictions shall act as described in subclause 5.3.5.

If the Service area list IE is not included in the REGISTRATION ACCEPT message, any tracking area in the registered PLMN and its equivalent PLMN(s) in the registration area is considered as an allowed tracking area as described in subclause 5.3.5.

The AMF shall include the MICO indication IE in the REGISTRATION ACCEPT message only if the MICO indication IE was included in the REGISTRATION REQUEST message, the AMF supports and accepts the use of MICO mode. If the AMF supports and accepts the use of MICO mode, the AMF may indicate "all PLMN registration area allocated" in the MICO indication IE in the REGISTRATION ACCEPT message. If "all PLMN registration area allocated" is indicated in the MICO indication IE, the AMF shall not assign and include the TAI list in the REGISTRATION ACCEPT message. If the REGISTRATION ACCEPT message includes an MICO indication IE indicating "all PLMN registration area allocated", the UE shall treat all TAIs in the current PLMN as a registration area and delete its old TAI list. If "strictly periodic registration timer supported" is indicated in the MICO indication IE in the REGISTRATION REQUEST message, the AMF may indicate "strictly periodic registration timer supported" in the MICO indication IE and may include the T3512 value IE in the REGISTRATION ACCEPT message. If the timer value received in T3512 IE is different from the already stored value of the timer T3512 and the timer T3512 is running, the UE shall restart T3512 with the new value received in the T3512 value IE.

The AMF shall include an active time value in the T3324 IE in the REGISTRATION ACCEPT message if the UE requested an active time value in the REGISTRATION REQUEST message and the AMF accepts the use of MICO mode and the use of active time.

If the UE does not include MICO indication IE in the REGISTRATION REQUEST message, then the AMF shall disable MICO mode if it was already enabled.

The AMF may include the T3512 value IE in the REGISTRATION ACCEPT message only if the REGISTRATION REQUEST message was sent over the 3GPP access.

The AMF may include the non-3GPP de-registration timer value IE in the REGISTRATION ACCEPT message only if the REGISTRATION REQUEST message was sent for the non-3GPP access.

If the UE requests "control plane CIoT 5GS optimization" in the 5GS update type IE, indicates support of control plane CIoT 5GS optimization in the 5GMM capability IE and the AMF decides to accept the requested CIoT 5GS optimization and the registration request, the AMF shall indicate "control plane CIoT 5GS optimization supported" in the 5GS network feature support IE of the REGISTRATION ACCEPT message.

If the UE has indicated support for the control plane CIoT 5GS optimizations, and the AMF decides to activate the congestion control for transport of user data via the control plane, then the AMF shall include the T3448 value IE in the REGISTRATION ACCEPT message.

If the AMF decides to deactivate the congestion control for transport of user data via the control plane, then the AMF shall delete the stored control plane data back-off time for the UE and the AMF shall not include timer T3448 value IE in the REGISTRATION ACCEPT message.

If:

- the UE in NB-N1 mode is using control plane CIoT 5GS optimization; and

- the network is configured to provide the truncated 5G-S-TMSI configuration for control plane CIoT 5GS optimizations;

the AMF shall include the Truncated 5G-S-TMSI configuration IE in the REGISTRATION ACCEPT message and set the "Truncated AMF Set ID value" and the "Truncated AMF Pointer value" in the Truncated 5G-S-TMSI configuration IE based on network policies.

For inter-system change from S1 mode to N1 mode in 5GMM-IDLE mode, if the UE has included a ngKSI indicating a current 5G NAS security context in the REGISTRATION REQUEST message by which the REGISTRATION REQUEST message is integrity protected, the AMF shall take one of the following actions:

a) if the AMF retrieves the current 5G NAS security context as indicated by the ngKSI and 5G-GUTI sent by the UE, the AMF shall integrity check the REGISTRATION REQUEST message using the current 5G NAS security context and integrity protect the REGISTRATION ACCEPT message using the current 5G NAS security context;

b) if the AMF cannot retrieve the current 5G NAS security context as indicated by the ngKSI and 5G-GUTI sent by the UE, the AMF shall treat the REGISTRATION REQUEST message fails the integrity check and take actions as specified in subclause 4.4.4.3; or

c) if the UE has not included an Additional GUTI IE, the AMF may treat the REGISTRATION REQUEST message as in the previous item, i.e. as if it cannot retrieve the current 5G NAS security context.

NOTE 3: The handling described above at failure to retrieve the current 5G NAS security context or if no Additional GUTI IE was provided does not preclude the option for the AMF to perform a primary authentication and key agreement procedure and create a new native 5G NAS security context.

Editor's note: The integrity check at the AMF for inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode is FFS.

Upon receipt of the REGISTRATION ACCEPT message, the UE shall reset the registration attempt counter and service request attempt counter, enter state 5GMM-REGISTERED and set the 5GS update status to 5U1 UPDATED.

If the UE receives the REGISTRATION ACCEPT message from a PLMN, then the UE shall reset the PLMN-specific attempt counter for that PLMN for the specific access type for which the message was received. The UE shall also reset the PLMN-specific N1 mode attempt counter for that PLMN for the specific access type for which the message was received. If the message was received via 3GPP access, the UE shall reset the counter for "SIM/USIM considered invalid for GPRS services" events and the counter for "SIM/USIM considered invalid for non-GPRS services", if any. If the message was received via non-3GPP access, the UE shall reset the counter for "SIM/USIM considered invalid for 5GS services over non-3GPP" events.

If the UE receives the REGISTRATION ACCEPT message from an SNPN, then the UE shall reset the SNPN-specific attempt counter for the current SNPN for the specific access type for which the message was received. If the message was received via 3GPP access, the UE shall reset the counter for "the entry for the current SNPN considered invalid for 3GPP access" events. If the message was received via non-3GPP access, the UE shall reset the counter for "the entry for the current SNPN considered invalid for non-3GPP access" events.

If the REGISTRATION ACCEPT message included a T3512 value IE, the UE shall use the value in T3512 value IE as periodic registration update timer (T3512). If the T3512 value IE is not included, the UE shall use the value currently stored, e.g. from a prior REGISTRATION ACCEPT message.

If the REGISTRATION ACCEPT message include a T3324 value IE, the UE shall use the value in the T3324 value IE as active time timer (T3324). If the REGISTRATION ACCEPT message does not include a T3324 value IE, UE shall not start the timer T3324 until a new value is received from the network.

If the REGISTRATION ACCEPT message included a non-3GPP de-registration timer value IE, the UE shall use the value in non-3GPP de-registration timer value IE as non-3GPP de-registration timer. If non-3GPP de-registration timer value IE is not included, the UE shall use the value currently stored, e.g. from a prior REGISTRATION ACCEPT message. If non-3GPP de-registration timer value IE is not included and there is no stored non-3GPP de-registration timer value in the UE, the UE shall use the default value of the non-3GPP de-registration timer.

If the REGISTRATION ACCEPT message contains a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI. The UE shall provide the 5G-GUTI to the lower layer of 3GPP access if the REGISTRATION ACCEPT message is sent over the non-3GPP access, and the UE is in 5GMM-REGISTERED in both 3GPP access and non-3GPP access in the same PLMN.

If the REGISTRATION ACCEPT message contains the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed", or contains a configured NSSAI IE with a new configured NSSAI for the current PLMN and optionally the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the successful update of the network slicing information.

If the REGISTRATION ACCEPT message contains the CAG information list IE and the UE had set the CAG bit to "CAG supported" in the 5GMM capability IE of the REGISTRATION REQUEST message, the UE shall delete any stored "CAG information list" and, if the value part of the CAG information list IE is non-empty, shall store the "CAG information list" received in the CAG information list IE as specified in annex C.

If the REGISTRATION ACCEPT message contains the Operator-defined access category definitions IE or the Extended emergency number list IE or the CAG information list IE, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge reception of the operator-defined access category definitions or the extended local emergency numbers list or the CAG information list IE.

If the REGISTRATION ACCEPT message contains the UE radio capability ID IE or the UE radio capability ID deletion indication IE, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge reception of the UE radio capability ID IE or the UE radio capability ID deletion indication IE.

If the T3448 value IE is present in the received REGISTRATION ACCEPT message and the value indicates that this timer is neither zero nor deactivated, the UE shall:

a) stop timer T3448 if it is running; and

b) start timer T3448 with the value provided in the T3448 value IE.

If the UE is using 5GS services with control plane CIoT 5GS optimization, the T3448 value IE is present in the REGISTRATION ACCEPT message and the value indicates that this timer is either zero or deactivated, the UE shall ignore the T3448 value IE and proceed as if the T3448 value IE was not present.

If the UE in 5GMM-IDLE mode initiated the registration procedure for mobility and periodic registration update and the REGISTRATION ACCEPT message does not include the T3448 value IE and if timer T3448 is running, then the UE shall stop timer T3448.

Upon receiving a REGISTRATION COMPLETE message, the AMF shall stop timer T3550 and change to state 5GMM-REGISTERED. The 5G-GUTI, if sent in the REGISTRATION ACCEPT message, shall be considered as valid, and the UE radio capability ID, if sent in the REGISTRATION ACCEPT message, shall be considered as valid.

If the 5GS update type IE was included in the REGISTRATION REQUEST message with the SMS requested bit set to "SMS over NAS supported" and:

a) the SMSF address is stored in the UE 5GMM context and:

1) the UE is considered available for SMS over NAS; or

2) the UE is considered not available for SMS over NAS and the SMSF has confirmed that the activation of the SMS service is successful; or

b) the SMSF address is not stored in the UE 5GMM context, the SMSF selection is successful and the SMSF has confirmed that the activation of the SMS service is successful;

then the AMF shall set the SMS allowed bit of the 5GS registration result IE in the REGISTRATION ACCEPT message as specified in subclause 5.5.1.2.4. If the UE 5GMM context does not contain an SMSF address or the UE is not considered available for SMS over NAS, then the AMF shall:

a) store the SMSF address in the UE 5GMM context if not stored already; and

b) store the value of the SMS allowed bit of the 5GS registration result IE in the UE 5GMM context and consider the UE available for SMS over NAS.

If SMSF selection in the AMF or SMS activation via the SMSF is not successful, or the AMF does not allow the use of SMS over NAS, then the AMF shall set the SMS allowed bit of the 5GS registration result IE to "SMS over NAS not allowed" in the REGISTRATION ACCEPT message.

If the 5GS update type IE was included in the REGISTRATION REQUEST message with the SMS requested bit set to "SMS over NAS not supported" or the 5GS update type IE was not included in the REGISTRATION REQUEST message, then the AMF shall:

a) mark the 5GMM context to indicate that the UE is not available for SMS over NAS; and

NOTE 4: The AMF can notify the SMSF that the UE is deregistered from SMS over NAS based on local configuration.

b) set the SMS allowed bit of the 5GS registration result IE to "SMS over NAS not allowed" in the REGISTRATION ACCEPT message.

When the UE receives the REGISTRATION ACCEPT message, if the UE is also registered over another access to the same PLMN, the UE considers the value indicated by the SMS allowed bit of the 5GS registration result IE as applicable for both accesses over which the UE is registered.

If the 5GS update type IE was included in the REGISTRATION REQUEST message with the NG-RAN-RCU bit set to "NG-RAN radio capability update needed", the AMF shall delete the stored UE radio capability information for NG-RAN or the UE radio capability ID, if any.

The AMF shall include the 5GS registration result IE in the REGISTRATION ACCEPT message. If the 5GS registration result IE value indicates:

a) "3GPP access", the UE:

- shall consider itself as being registered to 3GPP access only; and

- if in 5GMM-REGISTERED state over non-3GPP access and on the same PLMN as 3GPP access, shall enter state 5GMM-DEREGISTERED.ATTEMPTING-REGISTRATION over non-3GPP access and set the 5GS update status to 5U2 NOT UPDATED over non-3GPP access;

b) "Non-3GPP access", the UE:

- shall consider itself as being registered to non-3GPP access only; and

- if in the 5GMM-REGISTERED state over 3GPP access and is on the same PLMN as non-3GPP access, shall enter the state 5GMM-DEREGISTERED.ATTEMPTING-REGISTRATION over 3GPP access and set the 5GS update status to 5U2 NOT UPDATED over 3GPP access; or

c) "3GPP access and Non-3GPP access", the UE shall consider itself as being registered to both 3GPP access and non-3GPP access.

If the UE is not currently registered for emergency services and the 5GS registration result IE value in the REGISTRATION ACCEPT message is set to "Registered for emergency services", the UE shall consider itself registered for emergency services and shall release locally PDU session(s) not associated with emergency services, if any.

The AMF shall include the allowed NSSAI for the current PLMN and shall include the mapped S-NSSAI(s) for the allowed NSSAI contained in the requested NSSAI (i.e. Requested NSSAI IE or Requested mapped NSSAI IE) from the UE if available, in the REGISTRATION ACCEPT message if the UE included the requested NSSAI in the REGISTRATION REQUEST message and the AMF allows one or more S-NSSAIs for the current PLMN in the Requested NSSAI IE or one or more mapped S-NSSAIs in the Requested NSSAI IE or Requested mapped NSSAI IE. The S-NSSAI associated with each of the active PDN connections for which interworking to 5GS is supported, shall be included in the allowed NSSAI if the UE included the UE status IE with the EMM registration status set to "UE is in EMM-REGISTERED state" in the REGISTRATION REQUEST message and the AMF supports N26 interface.

The AMF may also include rejected NSSAI in the REGISTRATION ACCEPT message. Rejected NSSAI contains S-NSSAI(s) which was included in the requested NSSAI but rejected by the network associated with rejection cause(s).

If the UE indicated the support for network slice-specific authentication and authorization, and:

a) if the Requested NSSAI IE only includes the S-NSSAI(s):

1) which are subject to network slice-specific authentication and authorization; and

2) for which the network slice-specific authentication and authorization procedure has not been initiated;

the AMF shall in the REGISTRATION ACCEPT message include:

1) the "NSSAA to be performed" indicator in the 5GS registration result IE set to indicate whether network slice-specific authentication and authorization procedure will be performed by the network; and

2) pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed; or

b) if the Requested NSSAI IE includes one or more S-NSSAIs subject to network slice-specific authentication and authorization, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the S-NSSAI(s) or the mapped S-NSSAI(s), if any:

i) which are not subject to network slice-specific authentication and authorization and are allowed by the AMF; or

ii) for which the network slice-specific authentication and authorization has been successfully performed; and

2) optionally, the rejected NSSAI due to the failed or revoked NSSAA; and

3) pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed, if any.

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed; and

b) all subscribed S-NSSAIs marked as default are subject to network slice-specific authentication and authorization;

the AMF shall in the REGISTRATION ACCEPT message include:

a) the "NSSAA to be performed" indicator in the 5GS registration result IE to indicate whether network slice-specific authentication and authorization procedure will be performed by the network; and

b) pending NSSAI containing one or more subscribed S-NSSAIs marked as default for which network slice-specific authentication and authorization will be performed.

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed; and

b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;

the AMF shall in the REGISTRATION ACCEPT message include:

a) pending NSSAI containing one or more subscribed S-NSSAIs marked as default which are subject to network slice-specific authentication and authorization, if any; and

b) allowed NSSAI containing one or more subscribed S-NSSAIs marked as default which are not subject to network slice-specific authentication and authorization.

The AMF may include a new configured NSSAI for the current PLMN in the REGISTRATION ACCEPT message if:

a) the REGISTRATION REQUEST message did not include a requested NSSAI;

b) the REGISTRATION REQUEST message included a requested NSSAI containing an S-NSSAI that is not valid in the serving PLMN;

c) the REGISTRATION REQUEST message included a requested NSSAI containing an S-NSSAI with incorrect mapping information to an S-NSSAI of the HPLMN;

d) the REGISTRATION REQUEST message included the Network slicing indication IE with the Default configured NSSAI indication bit set to "Requested NSSAI created from default configured NSSAI"; or

e) the REGISTRATION REQUEST message included the requested mapped NSSAI.

If a new configured NSSAI for the current PLMN is included, the AMF shall also include the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN if available in the REGISTRATION ACCEPT message. In this case the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

The AMF shall include the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed" in the REGISTRATION ACCEPT message if the UDM has indicated that the subscription data for network slicing has changed. In this case the AMF shall start timer T3550 and enter state 5GMM-COMMON-PROCEDURE-INITIATED as described in subclause 5.1.3.2.3.3.

If the S-NSSAI(s) associated with the existing PDU session(s) of the UE is not included in the requested NSSAI of the REGISTRATION REQUEST message, the AMF shall perform a local release of the PDU session(s) associated with the S-NSSAI(s) and shall request the SMF to perform a local release of those PDU session(s).

The UE receiving the pending NSSAI in the REGISTRATION ACCEPT message shall store the S-NSSAI.

The UE receiving the rejected NSSAI in the REGISTRATION ACCEPT message takes the following actions based on the rejection cause in the rejected S-NSSAI(s):

"S-NSSAI not available in the current PLMN or SNPN"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current PLMN as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI(s) in the current PLMN until switching off the UE, the UICC containing the USIM is removed, the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated, or the rejected S-NSSAI(s) are removed or deleted as described in subclause 4.6.2.2.

"S-NSSAI not available in the current registration area"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI(s) in the current registration area until switching off the UE, the UE moving out of the current registration area, the UICC containing the USIM is removed, the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated, or the rejected S-NSSAI(s) are removed or deleted as described in subclause 4.6.2.2.

"S-NSSAI not available due to the failed or revoked network slice-specific authentication and authorization"

 The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI due to the failed or revoked NSSAA as specified in subclause 4.6.2.2.

If the UE set the NSSAA bit in the 5GMM capability IE to "Network slice-specific authentication and authorization not supported", and:

a) if the Requested NSSAI IE only includes the S-NSSAI(s) subject to network slice-specific authentication and authorization and one or more subscribed S-NSSAIs (containing one or more S-NSSAIs each of which may be associated with a new S-NSSAI) marked as default are available, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the subscribed S-NSSAIs marked as default S-NSSAI(s); and

2) the rejected NSSAI containing the S-NSSAI(s) subject to network slice specific authentication and authorization with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN"; or

b) if the Requested NSSAI IE includes one or more S-NSSAIs subject to network slice-specific authentication and authorization, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the S-NSSAI(s) or the mapped S-NSSAI(s) which are not subject to network slice-specific authentication and authorization; and

2) the rejected NSSAI containing:

i) the S-NSSAI(s) subject to network slice specific authentication and authorization with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN"; and

ii) the S-NSSAI(s) which was included in the requested NSSAI but rejected by the network associated with the rejection cause indicating "S-NSSAI not available in the current PLMN or SNPN" or the rejection cause indicating "S-NSSAI not available in the current registration area", if any.

For a REGISTRATION REQUEST message with a 5GS registration type IE indicating "mobility registration updating", if the UE does not indicate support for network slice-specific authentication and authorization, and:

a) the UE is not in NB-N1 mode; and

b) if:

1) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message; or

2) none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed;

and one or more subscribed S-NSSAIs marked as default which are not subject to network slice-specific authentication and authorization are available, the AMF shall put the subscribed S-NSSAIs marked as default S-NSSAIs in the allowed NSSAI of the REGISTRATION ACCEPT message. The AMF shall determine a registration area such that all S-NSSAIs of the allowed NSSAI are available in the registration area.

During a registration procedure for mobility and periodic registration update for which the 5GS registration type IE indicates:

a) "periodic registration updating"; or

b) "mobility registration updating" and the UE is in NB-N1 mode;

the AMF may provide a new allowed NSSAI to the UE in the REGISTRATION ACCEPT message.

If the REGISTRATION ACCEPT message contains the Network slicing indication IE with the Network slicing subscription change indication set to "Network slicing subscription changed", the UE shall delete the network slicing information for each and every PLMN except for the current PLMN as specified in subclause 4.6.2.2.

If the REGISTRATION ACCEPT message contains the allowed NSSAI, then the UE shall store the included allowed NSSAI together with the PLMN identity of the registered PLMN and the registration area as specified in subclause 4.6.2.2.

With respect to each of the PDU session(s) active in the UE, if the allowed NSSAI contains neither:

a) an S-NSSAI matching to the S-NSSAI of the PDU session; nor

b) a mapped S-NSSAI matching to the mapped S-NSSAI of the PDU session;

the UE shall perform a local release of all such PDU sessions except for an emergency PDU session, if any.

For each of the PDU session(s) active in the UE, if the allowed NSSAI contains a mapped S-NSSAI matching to the mapped S-NSSAI of the PDU session, the UE shall locally update the S-NSSAI associated with the PDU session to the corresponding S-NSSAI received in the allowed NSSAI.

If the REGISTRATION ACCEPT message contains a configured NSSAI IE with a new configured NSSAI for the current PLMN and optionally the mapped S-NSSAI(s) for the configured NSSAI for the current PLMN, the UE shall store the contents of the configured NSSAI IE as specified in subclause 4.6.2.2.

If the REGISTRATION ACCEPT message:

a) includes the 5GS "NSSAA to be performed" indicator in the 5GS registration result IE;

b) includes a pending NSSAI; and

c) does not include an allowed NSSAI;

the UE:

a) shall not perform the registration procedure for mobility and registration update with the Uplink data status IE except for emergency services or for high priority access;

b) shall not initiate a service request procedure except for emergency services, high priority access or for responding to paging or notification over non-3GPP access;

c) shall not initiate a 5GSM procedure except for emergency services, high priority access, indicating a change of 3GPP PS data off UE status, or to request the release of a PDU session; and

d) shall not initiate the NAS transport procedure to send a CIoT user data container except for sending user data that is related to an exceptional event.

until the UE receives an allowed NSSAI.

During a registration procedure for mobility and periodic registration update for which the 5GS registration type IE indicates:

a) "periodic registration updating"; or

b) "mobility registration updating" and the UE is in NB-N1 mode;

if the REGISTRATION ACCEPT message does not contain an allowed NSSAI, the UE considers the previously received allowed NSSAI as valid.

If the Uplink data status IE is included in the REGISTRATION REQUEST message:

a) if the AMF determines that the UE is in non-allowed area or is not in allowed area, and the PDU session(s) indicated by the Uplink data status IE is non-emergency PDU session(s) or the UE is not configured for high priority access in selected PLMN, the AMF shall include the PDU session reactivation result IE in the REGISTRATION ACCEPT message indicating that user-plane resources for the corresponding PDU session(s) cannot be re-established, and shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #28 "Restricted service area";

b) otherwise, the AMF shall:

1) indicate the SMF to re-establish the user-plane resources for the corresponding PDU session;

2) include PDU session reactivation result IE in the REGISTRATION ACCEPT message to indicate the user-plane resources re-establishment result of the PDU sessions for which the UE requested to re-establish the user-plane resources; and

3) determine the UE presence in LADN service area and forward the UE presence in LADN service area towards the SMF, if the corresponding PDU session is a PDU session for LADN.

If the Uplink data status IE is not included in the REGISTRATION REQUEST message and the REGISTRATION REQUEST message is sent for the trigger d) in subclause 5.5.1.3.2, the AMF may indicate the SMF to re-establish the user-plane resources for the PDU sessions.

If a PDU session status IE is included in the REGISTRATION REQUEST message, the AMF shall:

a) perform a local release of all those PDU session which are in 5GSM state PDU SESSION ACTIVE on the AMF side associated with the access type the REGISTRATION REQUEST message is sent over, but are indicated by the UE as being in 5GSM state PDU SESSION INACTIVE; and

b) include a PDU session status IE in the REGISTRATION ACCEPT message to indicate which PDU sessions associated with the access type the REGISTRATION REQUEST message is sent over are active in the AMF.

If the Allowed PDU session status IE is included in the REGISTRATION REQUEST message, the AMF shall:

a) for a 5GSM message from each SMF that has indicated pending downlink signalling only, forward the received 5GSM message via 3GPP access to the UE after the REGISTRATION ACCEPT message is sent;

b) for each SMF that has indicated pending downlink data only:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE; and

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE.

c) for each SMF that have indicated pending downlink signalling and data:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE;

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE; and

3) discard the received 5GSM message for PDU session(s) associated with non-3GPP access; and

d) include the PDU session reactivation result IE in the REGISTRATION ACCEPT message to indicate the successfully re-established user-plane resources for the corresponding PDU sessions, if any.

If the PDU session reactivation result IE is included in the REGISTRATION ACCEPT message indicating that the user-plane resources have been successfully reactivated for a PDU session that was requested by the UE in the Allowed PDU session status IE, the UE considers the corresponding PDU session to be associated with the 3GPP access. If the user-plane resources of a PDU session have been successfully reactivated over the 3GPP access, the AMF and SMF update the associated access type of the corresponding PDU session.

If an EPS bearer context status IE is included in the REGISTRATION REQUEST message, the AMF handles the received EPS bearer context status IE as specified in 3GPP TS 23.502 [9].

If the EPS bearer context status information is generated for the UE during the inter-system change from S1 mode to N1 mode as specified in 3GPP TS 23.502 [9] and the AMF supports N26 interface, the AMF shall include an EPS bearer context status IE in the REGISTRATION ACCEPT message to indicate the UE which mapped EPS bearer contexts are active in the network.

If the user-plane resources cannot be established for a PDU session, the AMF shall include the PDU session reactivation result IE in the REGISTRATION ACCEPT message indicating that user-plane resources for the corresponding PDU session cannot be re-established, and:

a) if the user-plane resources cannot be established because the SMF indicated to the AMF that the UE is located out of the LADN service area (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #43 "LADN not available";

b) if the user-plane resources cannot be established because the SMF indicated to the AMF that only prioritized services are allowed (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #28 "restricted service area"

c) if the user-plane resources cannot be established because the SMF indicated to the AMF that the resource is not available in the UPF (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #92 "insufficient user-plane resources for the PDU session"; or

d) otherwise, the AMF may include the PDU session reactivation result error cause IE to indicate the cause of failure to re-establish the user-plane resources.

NOTE 5: It is up to UE implementation when to re-send a request for user-plane re-establishment for the associated PDU session after receiving a PDU session reactivation result error cause IE with a 5GMM cause set to #92 "insufficient user-plane resources for the PDU session".

If the AMF needs to initiate PDU session status synchronization the AMF shall include a PDU session status IE in the REGISTRATION ACCEPT message to indicate the UE which PDU sessions are active in the AMF.

The AMF may include the LADN information IE in the REGISTRATION ACCEPT message as described in subclause 5.5.1.2.4. The UE, upon receiving the REGISTRATION ACCEPT message with the LADN information IE, shall delete its old LADN information (if any) and store the received new LADN information.

If the AMF does not include the LADN information IE in the REGISTATION ACCEPT message during registration procedure for mobility and registration update, the UE shall delete its old LADN information.

If the PDU session status IE is included in the REGISTRATION ACCEPT message, the UE shall perform a local release of all those PDU sessions associated with the access type the REGISTRATION ACCEPT message is sent over which are in 5GSM state PDU SESSION ACTIVE on the UE side, but are indicated by the AMF as being in 5GSM state PDU SESSION INACTIVE.

If:

a) the UE included a PDU session status IE in the REGISTRATION REQUEST message;

b) the UE is operating in the single-registration mode;

c) the UE is performing inter-system change from S1 mode to N1 mode in 5GMM-IDLE mode; and

d) the UE has received the IWK N26 bit set to "interworking without N26 interface supported";

the UE shall ignore the PDU session status IE if received in the REGISTRATION ACCEPT message.

If the EPS bearer context status IE is included in the REGISTRATION ACCEPT message, the UE shall locally delete all those QoS flow descriptions and all associated QoS rules, if any, which are associated with inactive EPS bearer contexts as indicated by the AMF in the EPS bearer context status IE.

If the UE included S1 mode supported indication in the REGISTRATION REQUEST message, the AMF supporting inter-system change with EPS shall set the IWK N26 bit to either:

a) "interworking without N26 interface not supported" if the AMF supports N26 interface; or

b) "interworking without N26 interface supported" if the AMF does not support N26 interface

in the 5GS network feature support IE in the REGISTRATION ACCEPT message.

The UE supporting S1 mode shall operate in the mode for inter-system interworking with EPS as follows:

a) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface not supported", the UE shall operate in single-registration mode;

b) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface supported" and the UE supports dual-registration mode, the UE may operate in dual-registration mode; or

NOTE 6: The registration mode used by the UE is implementation dependent.

c) if the IWK N26 bit in the 5GS network feature support IE is set to "interworking without N26 interface supported" and the UE only supports single-registration mode, the UE shall operate in single-registration mode.

The UE shall treat the received interworking without N26 interface indicator for inter-system change with EPS as valid in the entire PLMN and its equivalent PLMN(s).

The network informs the UE about the support of specific features, such as IMS voice over PS session, location services (5G-LCS), emergency services, emergency services fallback and ATSSS, in the 5GS network feature support information element. In a UE with IMS voice over PS session capability, the IMS voice over PS session indicator, Emergency services support indicator and Emergency services fallback indicator shall be provided to the upper layers. The upper layers take the IMS voice over PS session indicator into account when selecting the access domain for voice sessions or calls. When initiating an emergency call, the upper layers take the IMS voice over PS session indicator, Emergency services support indicator and Emergency services fallback indicator into account for the access domain selection. When the UE determines via the IMS voice over PS session indicator that the network does not support IMS voice over PS sessions in N1 mode, then the UE shall not perform a local release of any persistent PDU session if the AMF does not indicate that the PDU session is in 5GSM state PDU SESSION INACTIVE via the PDU session status IE. When the UE determines via the Emergency services support indicator that the network does not support emergency services in N1 mode, then the UE shall not perform a local release of any emergency PDU session if user-plane resources associated with that emergency PDU session are established if the AMF does not indicate that the PDU session is in 5GSM state PDU SESSION INACTIVE via the PDU session status IE. In a UE with LCS capability, location services indicators (5G-LCS) shall be provided to the upper layers. In a UE with the capability for ATSSS, the network support for ATSSS shall be provided to the upper layers.

The AMF shall set the EMF bit in the 5GS network feature support IE to:

a) "Emergency services fallback supported in NR connected to 5GCN and E-UTRA connected to 5GCN" if the network supports the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN or an E-UTRA cell connected to 5GCN;

b) "Emergency services fallback supported in NR connected to 5GCN only" if the network supports the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN and does not support the emergency services fallback procedure when the UE is in an E-UTRA cell connected to 5GCN;

c) "Emergency services fallback supported in E-UTRA connected to 5GCN only" if the network supports the emergency services fallback procedure when the UE is in an E-UTRA cell connected to 5GCN and does not support the emergency services fallback procedure when the UE is in an NR cell connected to 5GCN; or

d) "Emergency services fallback not supported" if network does not support the emergency services fallback procedure when the UE is in any cell connected to 5GCN.

NOTE 7: If the emergency services are supported in neither the EPS nor the 5GS homogeneously, based on operator policy, the AMF will set the EMF bit in the 5GS network feature support IE to "Emergency services fallback not supported".

NOTE 8: Even though the AMF's support of emergency services fallback is indicated per RAT, the UE's support of emergency services fallback is not per RAT, i.e. the UE's support of emergency services fallback is the same for both NR connected to 5GCN and E-UTRA connected to 5GCN.

If the UE is not operating in SNPN access mode:

a) the network informs the UE that the use of access identity 1 is valid in the RPLMN or equivalent PLMN by setting the MPS indicator bit of the 5GS network feature support IE to "Access identity 1 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MPS indicator bit in the REGISTRATION ACCEPT message based on the MPS priority information in the user's subscription context obtained from the UDM;

b) upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2, in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode;

c) during ongoing active PDU sessions that were set up relying on the MPS indicator bit being set to "Access identity 1 valid", if the network indicates in a registration update that the MPS indicator bit is reset to "Access identity 1 not valid", then the UE shall no longer act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2 unless the USIM contains a valid configuration for access identity 1 in RPLMN or equivalent PLMN. In the UE, the ongoing active PDU sessions are not affected by the change of the MPS indicator bit;

d) the network informs the UE that the use of access identity 2 is valid in the RPLMN or equivalent PLMN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MCS indicator bit in the REGISTRATION ACCEPT message based on the MCS priority information in the user's subscription context obtained from the UDM;

e) upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2, in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode; and

f) during ongoing active PDU sessions that were set up relying on the MCS indicator bit being set to "Access identity 2 valid", if the network indicates in a registration update that the MCS indicator bit is reset to "Access identity 2 not valid", then the UE shall no longer act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2 unless the USIM contains a valid configuration for access identity 2 in RPLMN or equivalent PLMN. In the UE, the ongoing active PDU sessions are not affected by the change of the MCS indicator bit.

If the UE indicates support for restriction on use of enhanced coverage in the REGISTRATION REQUEST message and the AMF decides to restrict the use of enhanced coverage for the UE, then the AMF shall set the RestrictEC bit to "Use of enhanced coverage is restricted" in the 5GS network feature support IE in the REGISTRATION ACCEPT message.

If the UE is operating in SNPN access mode:

a) the network informs the UE that the use of access identity 1 is valid in the RSNPN by setting the MPS indicator bit of the 5GS network feature support IE to "Access identity 1 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MPS indicator bit in the REGISTRATION ACCEPT message based on the MPS priority information in the user's subscription context obtained from the UDM;

b) upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2A, in all NG-RAN of the registered SNPN. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects another SNPN. Access identity 1 is only applicable while the UE is in N1 mode;

c) during ongoing active PDU sessions that were set up relying on the MPS indicator bit being set to "Access identity 1 valid", if the network indicates in a registration update that the MPS indicator bit is reset to "Access identity 1 not valid", then the UE shall no longer act as a UE with access identity 1 configured for MPS as described in subclause 4.5.2A unless 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 RSNPN. In the UE, the ongoing active PDU sessions are not affected by the change of the MPS indicator bit;

d) the network informs the UE that the use of access identity 2 is valid in the RSNPN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message. Based on operator policy, the AMF sets the MCS indicator bit in the REGISTRATION ACCEPT message based on the MCS priority information in the user's subscription context obtained from the UDM;

e) upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2A, in all NG-RAN of the registered SNPN. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects another SNPN. Access identity 2 is only applicable while the UE is in N1 mode; and

f) during ongoing active PDU sessions that were set up relying on the MCS indicator bit being set to "Access identity 2 valid", if the network indicates in a registration update that the MCS indicator bit is reset to "Access identity 2 not valid", then the UE shall no longer act as a UE with access identity 2 configured for MCS as described in subclause 4.5.2A unless 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 RSNPN. In the UE, the ongoing active PDU sessions are not affected by the change of the MCS indicator bit.

If the UE has set the Follow-on request indicator to "Follow-on request pending" in the REGISTRATION REQUEST message, or the network has downlink signalling pending, the AMF shall not immediately release the NAS signalling connection after the completion of the registration procedure.

If the UE is authorized to use V2X communication over PC5 reference point based on:

a) at least one of the following bits in the 5GMM capability IE of the REGISTRATION REQUEST message set by the UE, or already stored in the 5GMM context in the AMF during the previous registration procedure as follows:

1) the V2XCEPC5 bit to "V2X communication over E-UTRA-PC5 supported"; or

2) the V2XCNPC5 bit to "V2X communication over NR-PC5 supported"; and

b) the user's subscription context obtained from the UDM as defined in 3GPP TS 23.287 [6C];

the AMF should not immediately release the NAS signalling connection after the completion of the registration procedure.

If the Requested DRX parameters IE was included in the REGISTRATION REQUEST message, the AMF shall include the Negotiated DRX parameters IE in the REGISTRATION ACCEPT message. The AMF may set the Negotiated DRX parameters IE based on the received Requested DRX parameters IE and operator policy if available.

The AMF shall include the Negotiated extended DRX parameters IE in the REGISTRATION ACCEPT message only if the Requested extended DRX parameters IE was included in the REGISTRATION REQUEST message, and the AMF supports and accepts the use of eDRX. The AMF may set the Negotiated extended DRX parameters IE based on the received Requested extended DRX parameters IE, operator policy, and the user's subscription context obtained from the UDM if available.

If the UE included in the REGISTRATION REQUEST message the UE status information IE with the EMM registration status set to "UE is in EMM-REGISTERED state" and the AMF does not support N26 interface, the AMF shall operate as described in subclause 5.5.1.2.4.

If the UE has indicated support for service gap control in the REGISTRATION REQUEST message, a service gap time value is available in the 5GMM context, the AMF may include the T3447 value IE set to the service gap time value in the REGISTRATION ACCEPT message.

If the UE requests ciphering keys for ciphered broadcast assistance data in the REGISTRATION REQUEST message and the AMF has valid ciphering key data applicable to the UE's subscription and current tracking area, then the AMF shall include the ciphering key data in the Ciphering key data IE of the REGISTRATION ACCEPT message.

If the UE supports WUS assistance information and the AMF supports and accepts the use of WUS assistance information for the UE, then the AMF shall determine the negotiated UE paging probability information for the UE, store it in the 5GMM context of the UE, and include it in the Negotiated WUS assistance information IE in the REGISTRATION ACCEPT message. The AMF may consider the UE paging probability information received in the Requested WUS assistance information IE when determining the negotiated UE paging probability information for the UE.

NOTE 9: Besides the UE paging probability information requested by the UE, the AMF can take local configuration or previous statistical information for the UE into account when determining the negotiated UE paging probability information for the UE.

If due to regional subscription restrictions or access restrictions the UE is not allowed to access the TA or due to CAG restrictions the UE is not allowed access the cell, but the UE has an emergency PDU session established, the AMF may accept the REGISTRATION REQUEST message and indicate to the SMF to perform a local release of all non-emergency PDU sessions (associated with 3GPP access if it is due to CAG restrictions) and informs the UE via the PDU session status IE in the REGISTRATION ACCEPT message. The AMF shall not indicate to the SMF to release the emergency PDU session. The network shall behave as if the UE is registered for emergency services.

If the REGISTRATION ACCEPT message includes the PDU session reactivation result error cause IE with the 5GMM cause set to #28 "Restricted service area", the UE shall enter the state 5GMM-REGISTERED.NON-ALLOWED-SERVICE and behave as specified in subclause 5.3.5.

If the REGISTRATION ACCEPT message includes the SOR transparent container IE and:

a) the SOR transparent container IE does not successfully pass the integrity check (see 3GPP TS 33.501 [24]); and

b) if the UE attempts obtaining service on another PLMNs as specified in 3GPP TS 23.122 [5] annex C;

then the UE shall release locally the established NAS signalling connection after sending a REGISTRATION COMPLETE message.

If the REGISTRATION ACCEPT message includes the SOR transparent container IE and the SOR transparent container IE successfully passes the integrity check (see 3GPP TS 33.501 [24]):

a) the UE shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; and

b) if the registration procedure is performed over 3GPP access and the UE attempts obtaining service on another PLMNs as specified in 3GPP TS 23.122 [5] annex C then the UE may release locally the established NAS signalling connection after sending a REGISTRATION COMPLETE message. Otherwise the UE shall send a REGISTRATION COMPLETE message and not release the current N1 NAS signalling connection locally. If an acknowledgement is requested in the SOR transparent container IE of the REGISTRATION ACCEPT message, the UE acknowledgement is included in the SOR transparent container IE of the REGISTRATION COMPLETE message.

If the SOR transparent container IE successfully passes the integrity check (see 3GPP TS 33.501 [24]), indicates list of preferred PLMN/access technology combinations is provided and the list type indicates:

a) "PLMN ID and access technology list", then the ME shall replace the highest priority entries in the "Operator Controlled PLMN Selector with Access Technology" list stored in the ME and shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; or

b) "secured packet", then the ME shall behave as if a SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of SOR transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A] and the ME shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C.

If required by operator policy, the AMF shall include the NSSAI inclusion mode IE in the REGISTRATION ACCEPT message (see table 4.6.2.3.1 of subclause 4.6.2.3). Upon receipt of the REGISTRATION ACCEPT message:

a) if the message includes the NSSAI inclusion mode IE, the UE shall operate in the NSSAI inclusion mode indicated in the NSSAI inclusion mode IE over the current access within the current PLMN and its equivalent PLMN(s), if any, in the current registration area; or

b) otherwise if:

1) the UE has NSSAI inclusion mode for the current PLMN and access type stored in the UE, the UE shall operate in the stored NSSAI inclusion mode; or

2) the UE does not have NSSAI inclusion mode for the current PLMN and the access type stored in the UE and if the UE is performing the registration procedure over:

i) 3GPP access, the UE shall operate in NSSAI inclusion mode D in the current PLMN and the current access type; or

ii) non-3GPP access, the UE shall operate in NSSAI inclusion mode C in the current PLMN and the current access type.

The AMF may include operator-defined access category definitions in the REGISTRATION ACCEPT message.

If there is a running T3447 timer in the AMF and the Uplink data status IE is included or the Follow-on request indicator is set to "Follow-on request pending" in the REGISTRATION REQUEST message, the AMF shall ignore the Uplink data status IE or that the Follow-on request indicator is set to "Follow-on request pending" and proceed as if the Uplink data status IE was not received or the Follow-on request indicator was not set to "Follow-on request pending" except for the following case:

- the PDU session(s) indicated by the Uplink data status IE is emergency PDU session(s);

- the UE is configured for high priority access in selected PLMN;

- the REGISTRATION REQUEST message is as a paging response; or

- the UE is establishing an emergency PDU session or performing emergency services fallback.

If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

If the UE has indicated support for service gap control in the REGISTRATION REQUEST message and:

- the REGISTRATION ACCEPT message contains the T3447 value IE, then the UE shall store the new T3447 value, erase any previous stored T3447 value if exists and use the new T3447 value with the timer T3447 next time it is started; or

- the REGISTRATION ACCEPT message does not contain the T3447 value IE, then the UE shall erase any previous stored T3447 value if exists and stop the timer T3447 if running.

If the REGISTRATION ACCEPT message contains the Truncated 5G-S-TMSI configuration IE, then the UE shall store the included truncated 5G-S-TMSI configuration.

NOTE 10: The UE provides the truncated 5G-S-TMSI configuration to the lower layers.

If the UE is not in NB-N1 mode, the UE has set the RACS bit to "RACS supported" in the 5GMM Capability IE of the REGISTRATION REQUEST message, and the REGISTRATION ACCEPT message includes:

a) a UE radio capability ID deletion indication IE set to "Network-assigned UE radio capability IDs deletion requested", the UE shall delete any network-assigned UE radio capability IDs associated with the RPLMN or RSNPN stored at the UE, then the UE shall initiate a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3.2; and

b) a UE radio capability ID IE, the UE shall store the UE radio capability ID as specified in annex C.

\*\*\*\*\* End of changes \*\*\*\*\*