**3GPP TSG-CT WG1 Meeting #131-eC1-21xxxy**

**Electronic meeting, 19-27 August 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | 3522 | **rev** | **1** | **Current version:** | **17.3.1** |  |
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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:*** | Multiple round-trip of AA messages duringUUAA-SM | | | | | | | | | |
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| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ID\_UAS | | | | |  | ***Date:*** | | | 2021-07-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17)* | |
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| ***Reason for change:*** | | During the UUAA-SM procedure, the UE and the USS need to exchange the payload for authentication/authorization multiple round-trip. It is performed during PDU session establishment procedure.  PDU session authentication command and PDU session authentication complete message cannot be used as it madates EAP method for authentication. Service-level AA procedure is for UUAA procedure, and the UUAA procedure will not use EAP method as clarified in S2-2103730. Hence new SM messages for non-EAP method can be future proof for any other AA procedures which does not require EAP method.  It is proposed to add new SM NAS message for service-level AA procedure as follows:  - Service-level authentication command  - Service-level authentication complete  Note that the result of service-level AA procedure is included in the PDU session establishment accept message.  As Service-level-AA procedure is performed during the PDU session establishment procedure, above new procedure requires transaction management (i.e., PTI). | | | | | | | | |
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| ***Summary of change:*** | | Adding new procedure: service-level authentication and authorization procedure with two new SM NAS messages 1) service-level AA command, 2) service-level AA complete. | | | | | | | | |
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| ***Consequences if not approved:*** | | UUAA procedure cannot be supported during the PDU session establishment procedure. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.1A (new), 6.3.1A.1 (new), 6.3.1A.2 (new) 6.3.1A.3(new), 6.3.1A.4(new), 6.3.1A.5(new) 6.4.1.2, 6.4.1.4.1, 8.3.3.1, 8.3.3.X, 8.3.X(new), 8.3.Y(new), 9.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

### \*\*\*\*\* 1st change \*\*\*\*\*

### 6.3.1A Service-level authentication and authorization procedure

#### 6.3.1A.1 General

The purpose of the service-level authentication and authorization procedure is to enable the DN requiring authentication protocol other than EAP:

a) to authenticate the upper layers of the UE, when establishing the PDU session;

b) to authorize the upper layers of the UE, when establishing the PDU session;

c) both of the above; or

d) to re-authenticate the upper layers of the UE after establishment of the PDU session.

NOTE 1: For the DN requiring EAP method, PDU session authentication and authorization procedure is used as specified in the clause 6.3.1.

The service-level authentication and authorization procedure is used for UUAA as specified in TS 23.256 [6AB].

NOTE 2: The authentication protocol for UUAA is out of scope of 3GPP in this release of specification.

The service-level authentication and authorization procedure can be performed only during or after the UE-requested PDU session procedure establishing a non-emergency PDU session. The service-level authentication and authorization procedure shall not be performed during or after the UE-requested PDU session establishment procedure establishing an emergency PDU session.

If the service-level authentication and authorization procedure is performed during the UE-requested PDU session establishment procedure:

c) and the service-level AA procedure of the UE completes successfully, the service-level AA response is transported from the network to the UE as a part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT ACCEPT message.

d) and the service-level AA procedure of the UE completes unsuccessfully, the service-level AA response is transported from the network to the UE as a part of the UE-requested PDU session establishment procedure in the PDU SESSION ESTABLISHMENT REJECT message.

There can be several rounds of exchange of a service-level AA payload for the service to complete the service-level authentication and authorization of the request for a PDU session (see example in figure 6.3.1A.1-1)



Figure 6.3.1A.1-1: Service-level authentication and authorization procedure

#### 6.3.1A.2 Service-level authentication and authorization procedure initiation

In order to initiate the service-level authentication and authorization procedure, the SMF shall create a SERVICE-LEVEL AUTHENTICATION COMMAND message.

The SMF shall set the PTI IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message to "No procedure transaction identity assigned".

The SMF shall set the Service-level AA payload IE in the Service-level AA container IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message to the Service-level AA payload provided by the DN via the NEF.

NOTE: In case of UUAA, the service-level AA payload is provided by the DN via the UAS-NF.

The SMF shall send the SERVICE-LEVEL AUTHENTICATION COMMAND message, and the SMF shall start timer T3xyz (see example in figure 6.3.1A.1-1).

Editor's Note: T3xyz will be further specified.

Upon receipt of a SERVICE-LEVEL AUTHENTICATION COMMAND message and a PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, the UE passes to the upper layers the Service-level AA payload received in the Service-level AA container IE of the SERVICE-LEVEL AUTHENTICATION COMMAND message. Apart from this action, the service-level authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

#### 6.3.1A.3 Service-level authentication and authorization procedure accepted by the UE

When the upper layers provide a Service-level AA payload, the UE shall create a SERVICE-LEVEL AUTHENTICATION COMPLETE message and set the Service-level AA payload IE of the Service-level AA container to the Service-level AA payload received from the upper layer.

The UE shall transport the SERVICE-LEVEL AUTHENTICATION COMPLETE message and the PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5. Apart from this action, the service-level authentication and authorization procedure initiated by the DN is transparent to the 5GSM layer of the UE.

Upon receipt of a SERVICE-LEVEL AUTHENTICATION COMPLETE message, the SMF shall stop timer T3xyz and provides the Service-level AA payload received in the Service-level AA container IE of the SERVICE-LEVEL AUTHENTICATION COMPLETE message to the DN.

#### 6.3.1A.4 Abnormal cases on the network side

Editor's Note: Abnormal case is FFS

#### 6.3.1A.5 Abnormal cases in the UE

### Editor's Note: Abnormal case is FFS.\*\*\*\*\* 2nd change \*\*\*\*\*

#### 6.4.1.2 UE-requested PDU session establishment procedure initiation

In order to initiate the UE-requested PDU session establishment procedure, the UE shall create a PDU SESSION ESTABLISHMENT REQUEST message.

NOTE 0: When IMS voice is available over either 3GPP access or non-3GPP access, the "voice centric" UE in 5GMM-REGISTERED state will receive a request from upper layers to establish the PDU session for IMS signalling, if the conditions for performing an initial registration with IMS indicated in 3GPP TS 24.229 [14] subclause U.3.1.2 are satisfied.

If the UE requests to establish a new PDU session, the UE shall allocate a PDU session ID which is not currently being used by another PDU session over either 3GPP access or non-3GPP access. If the N5CW device supports 3GPP access and requests to establish a new PDU session via 3GPP access, the N5CW device shall refrain from allocating "PDU session identity value 15". If the TWIF acting on behalf of the N5CW device requests to establish a new PDU session, the TWIF acting on behalf of the N5CW device shall allocate the "PDU session identity value 15".

The UE shall allocate a PTI value currently not used and shall set the PTI IE of the PDU SESSION ESTABLISHMENT REQUEST message to the allocated PTI value.

If the UE is registered for emergency services over the current access, the UE shall not request establishing a non-emergency PDU session over the current access. If the UE is registered for emergency services over the current access it shall not request establishing an emergency PDU session over the non-current access except if the request is for transferring the emergency PDU session to the non-current access. Before transferring an emergency PDU session from non-3GPP access to 3GPP access, or before transferring a PDN connection for emergency bearer services from untrusted non-3GPP access connected to EPC to 3GPP access, the UE shall check whether emergency services are supported in the NG-RAN cell (either an NR cell or an E-UTRA cell) on which the UE is camping.

NOTE 1: Transfer of an existing emergency PDU session or PDN connection for emergency bearer services between 3GPP access and non-3GPP access is needed e.g. if the UE determines that the current access is no longer available.

If the UE requests to establish a new emergency PDU session, the UE shall include the PDU session type IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall set the IE to the IP version capability as specified in subclause 6.2.4.2.

If the UE requests to establish a new non-emergency PDU session with a DN, the UE shall include the PDU session type IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall set the IE to one of the following values: the IP version capability as specified in subclause 6.2.4.2, "Ethernet" or "Unstructured" based on the URSP rules or based on UE local configuration (see 3GPP TS 24.526 [19]).

NOTE 2: When the UE initiates the UE-requested PDU session establishment procedure to transfer an existing non-IP PDN connection in the EPS to the 5GS, the UE can use locally available information associated with the PDN connection to select the PDU session type between "Ethernet" and "Unstructured".

If the UE requests to establish a new non-emergency PDU session with a DN and the UE requests an SSC mode, the UE shall set the SSC mode IE of the PDU SESSION ESTABLISHMENT REQUEST message to the SSC mode. If the UE requests to establish a PDU session of "IPv4", "IPv6" or "IPv4v6" PDU session type, the UE shall either omit the SSC mode IE or set the SSC mode IE to "SSC mode 1", "SSC mode 2", or "SSC mode 3". If the UE requests to establish a PDU session of "Ethernet" or "Unstructured" PDU session type, the UE shall either omit the SSC mode IE or set the SSC mode IE to "SSC mode 1" or "SSC mode 2". If the UE requests transfer of an existing PDN connection in the EPS to the 5GS or the UE requests transfer of an existing PDN connection in an untrusted non-3GPP access connected to the EPC to the 5GS, the UE shall set the SSC mode IE to "SSC mode 1".

If the UE requests to establish a new emergency PDU session, the UE shall set the SSC mode IE of the PDU SESSION ESTABLISHMENT REQUEST message to "SSC mode 1".

If the UE requests to establish a new PDU session with a DN, the UE may include the SM PDU DN request container IE with a DN-specific identity of the UE complying with network access identifier (NAI) format as specified in IETF RFC 7542 [37].

NOTE 3: The UE can avoid including both the SM PDU DN request container IE and the extended protocol configuration options IE with PAP/CHAP protocol identifiers in the PDU SESSION ESTABLISHMENT REQUEST message. The way to achieve this is implementation dependent.

The UE should set the RQoS bit to "Reflective QoS supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message if the UE supports reflective QoS and:

a) the UE requests to establish a new PDU session of "IPv4", "IPv6", "IPv4v6" or "Ethernet" PDU session type;

b) the UE requests to transfer an existing PDN connection in the EPS of "IPv4", "IPv6", "IPv4v6" or "Ethernet" PDN type or of "Non-IP" PDN type mapping to "Ethernet" PDU session type, to the 5GS; or

c) the UE requests to transfer an existing PDN connection in an untrusted non-3GPP access connected to the EPC of "IPv4", "IPv6" or "IPv4v6" PDN type to the 5GS.

NOTE 4: The determination to not request the usage of reflective QoS by the UE for a PDU session is implementation dependent.

The UE shall indicate the maximum number of packet filters that can be supported for the PDU session in the Maximum number of supported packet filters IE of the PDU SESSION ESTABLISHMENT REQUEST message if:

a) the UE requests to establish a new PDU session of "IPv4", "IPv6", "IPv4v6", or "Ethernet" PDU session type, and the UE can support more than 16 packet filters for this PDU session;

b) the UE requests to transfer an existing PDN connection in the EPS of "IPv4", "IPv6", "IPv4v6", or "Ethernet" PDN type or of "Non-IP" PDN type mapping to "Ethernet" PDU session type, to the 5GS and the UE can support more than 16 packet filters for this PDU session; or

c) the UE requests to transfer an existing PDN connection in an untrusted non-3GPP access connected to the EPC of "IPv4", "IPv6" or "IPv4v6" PDN type to the 5GS and the UE can support more than 16 packet filters for this PDU session.

The UE shall include the Integrity protection maximum data rate IE in the PDU SESSION ESTABLISHMENT REQUEST message to indicate the maximum data rate per UE for user-plane integrity protection supported by the UE for uplink and the maximum data rate per UE for user-plane integrity protection supported by the UE for downlink.

The UE shall set the MH6-PDU bit to "Multi-homed IPv6 PDU session supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message if the UE supports multi-homed IPv6 PDU session and:

a) the UE requests to establish a new PDU session of "IPv6" or "IPv4v6" PDU session type; or.

b) the UE requests to transfer an existing PDN connection of "IPv6" or "IPv4v6" PDN type in the EPS or in an untrusted non-3GPP access connected to the EPC to the 5GS.

The UE shall set the EPT-S1 bit to "Ethernet PDN type in S1 mode supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message if the UE supports Ethernet PDN type in S1 mode and requests "Ethernet" PDU session type.

If the UE requests to establish a new PDU session as an always-on PDU session (e.g. because the PDU session is for time synchronization or TSC), the UE shall include the Always-on PDU session requested IE and set the value of the IE to "Always-on PDU session requested" in the PDU SESSION ESTABLISHMENT REQUEST message.

NOTE 5: Determining whether a PDU session is for time synchronization or TSC is UE implementation dependent.

If the UE has an emergency PDU session, the UE shall not perform the UE-requested PDU session establishment procedure to establish another emergency PDU session. The UE may perform the UE-requested PDU session establishment procedure to transfer an existing emergency PDU session or an existing PDN connection for emergency services.

If:

a) the UE requests to perform handover of an existing PDU session between 3GPP access and non-3GPP access;

b) the UE requests to perform transfer an existing PDN connection in the EPS to the 5GS; or

c) the UE requests to perform transfer an existing PDN connection in an untrusted non-3GPP access connected to the EPC to the 5GS;

the UE shall:

a) set the PDU session ID in the PDU SESSION ESTABLISHMENT REQUEST message and in the UL NAS TRANSPORT message to the stored PDU session ID corresponding to the PDN connection; and

b) set the S-NSSAI in the UL NAS TRANSPORT message to the stored S-NSSAI associated with the PDU session ID of a non-emergency PDU session. The UE shall not request to perform handover of an existing non-emergency PDU session between 3GPP access and non-3GPP access if the S-NSSAI is not included in the allowed NSSAI for the target access.

If the N5CW device supports 3GPP access and requests to perform handover of an existing PDU session from non-3GPP access to 3GPP access, the N5CW device shall set the PDU session ID in the PDU SESSION ESTABLISHMENT REQUEST message and in the UL NAS TRANSPORT message to "PDU session identity value 15".

If the UE is registered to a network which supports ATSSS and the UE requests to establish a new PDU session the UE may allow the network to upgrade the requested PDU session to an MA PDU session. In order to allow the network to upgrade the requested PDU session to an MA PDU session, the UE shall set "MA PDU session network upgrade allowed" in the MA PDU session information IE and shall set the request type to "initial request" in the UL NAS TRANSPORT message. If the UE is registered to a network which does not support ATSSS, the UE shall not perform the procedure to allow the network to upgrade the requested PDU session to an MA PDU session.

If the UE is registered to a network which supports ATSSS, the UE may request to establish an MA PDU session. If the UE requests to establish an MA PDU session, the UE shall set the request type to "MA PDU request" in the UL NAS TRANSPORT message. If the UE is registered to a network which does not support ATSSS, the UE shall not request to establish an MA PDU session.

When the UE is registered over both 3GPP access and non-3GPP access in the same PLMN and the UE requests to establish a new MA PDU session, the UE may provide an S-NSSAI in the UL NAS TRANSPORT message only if the S-NSSAI is included in the allowed NSSAIs of both accesses.

NOTE 6: If the UE requested DNN corresponds to an LADN DNN, the AMF does not forward the MA PDU session information IE to the SMF but sends the message back to the UE to inform of the unhandled request (see subclause 5.4.5.2.5).

If the UE is registered to a network which supports ATSSS and the UE has already an MA PDU session established over one access, the UE may perform the UE-requested PDU session establishment procedure to establish user-plane resources over the other access for the MA PDU session as specified in subclause 4.22 of 3GPP TS 23.502 [9] and the S-NSSAI associated with the MA PDU session is included in the allowed NSSAI of the other access. If the UE establishes user-plane resources over the other access for the MA PDU session, the UE shall:

a) set the request type to "MA PDU request" in the UL NAS TRANSPORT message;

b) set the PDU session ID to the stored PDU session ID corresponding to the established MA PDU session in the PDU SESSION ESTABLISHMENT REQUEST message and in the UL NAS TRANSPORT message; and

c) set the S-NSSAI in the UL NAS TRANSPORT message to the stored S-NSSAI associated with the PDU session ID.

If the UE requests to establish a new MA PDU session or if the UE requests to establish a new PDU session and the UE allows the network to upgrade the requested PDU session to an MA PDU session:

a) if the UE supports ATSSS Low-Layer functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "ATSSS Low-Layer functionality with any steering mode supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message;

b) if the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with only active-standby steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "MPTCP functionality with any steering mode and ATSSS-LL functionality with only active-standby steering mode supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message;

c) if the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message; and

d) if a performance measurement function in the UE can perform access performance measurements using the QoS flow of the non-default QoS rule as specified in subclause 5.32.5 of 3GPP TS 23.501 [8], the UE shall set the target QoS bit to "Non-default QoS rule supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message.

If the UE requests to establish a new MA PDU session and the UE supports to establish a PDN connection as the user plane resource of an MA PDU session, the UE shall include the ATSSS request PCO parameter in the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If the UE is registered to a network which does not support ATSSS and the UE has already an MA PDU session established over one access, the UE shall not attempt to establish user-plane resources for the MA PDU session over the network which does not support ATSSS as specified in subclause 4.22 of 3GPP TS 23.502 [9].

If the UE supports 3GPP PS data off, except for the transfer of a PDU session from non-3GPP access to 3GPP access and except for the establishment of user plane resources on the other access for the MA PDU session, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and include the 3GPP PS data off UE status. The UE behaves as described in subclause 6.2.10.

If the UE supports Reliable Data Service, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and include the Reliable Data Service request indicator. The UE behaves as described in subclause 6.2.15.

If the UE supports DNS over (D)TLS (see 3GPP TS 33.501 [24]), the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and include DNS server security information indicator.

NOTE 7: Support of DNS over (D)TLS is based on the informative requirements as specified in 3GPP TS 33.501 [24].

If:

a) the PDU session type value of the PDU session type IE is set to "IPv4", "IPv6" or "IPv4v6";

b) the UE indicates "Control plane CIoT 5GS optimization supported" and "IP header compression for control plane CIoT 5GS optimization supported" in the 5GMM capability IE of the REGISTRATION REQUEST message; and

c) the network indicates "Control plane CIoT 5GS optimization supported" and "IP header compression for control plane CIoT 5GS optimization supported" in the 5GS network support feature IE of the REGISTRATION ACCEPT message;

the UE shall include the IP header compression configuration IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If:

a) the PDU session type value of the PDU session type IE is set to "Ethernet";

b) the UE indicates "Control plane CIoT 5GS optimization supported" and "Ethernet header compression for control plane CIoT 5GS optimization supported" in the 5GMM capability IE of the REGISTRATION REQUEST message; and

c) the network indicates "Control plane CIoT 5GS optimization supported" and "Ethernet header compression for control plane CIoT 5GS optimization supported" in the 5GS network support feature IE of the REGISTRATION ACCEPT message;

the UE shall include the Ethernet header compression configuration IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If the UE supports transfer of port management information containers, the UE shall:

a) set the TPMIC bit to "Transfer of port management information containers supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message;

b) if the UE requests to establish a PDU session of "Ethernet" PDU session type , include the DS-TT Ethernet port MAC address IE in the PDU SESSION ESTABLISHMENT REQUEST message and set its contents to the MAC address of the DS-TT Ethernet port used for the PDU session;

c) if the UE-DS-TT residence time is available at the UE, include the UE-DS-TT residence time IE and set its contents to the UE-DS-TT residence time; and

d) if a Port management information container is provided by the DS-TT, include the Port management information container IE in the PDU SESSION ESTABLISHMENT REQUEST message.

NOTE 8: Only SSC mode 1 is supported for a PDU session which is for time synchronization or TSC.

If the UE supporting S1 mode supports receiving QoS rules with the length of two octets or QoS flow descriptions with the length of two octets via the Extended protocol configuration options IE, the UE shall include the QoS rules with the length of two octets support indicator or the QoS flow descriptions with the length of two octets support indicator, respectively, in the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If:

- the UE is operating in single-registration mode and has received the interworking without N26 interface indicator set to "interworking without N26 interface not supported" from the network;

- the UE supports local IP address in traffic flow aggregate description and TFT filter in S1 mode; and

- the PDU session Type requested is different from "Unstructured".

the UE shall indicate the support of local address in TFT in S1 mode in the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If the W-AGF acting on behalf of the FN-RG requests to establish a PDU session of "IPv6" or "IPv4v6" PDU session type, the W-AGF acting on behalf of the FN-RG may include in the PDU SESSION ESTABLISHMENT REQUEST message the Suggested interface identifier IE with the PDU session type value field set to "IPv6" and containing the interface identifier for the IPv6 link local address associated with the PDU session suggested to be allocated to the FN-RG.

If the UE supports provisioning of ECS configuration information to the EEC in the UE, then the UE may include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall include the ECS configuration information provisioning support indicator.

The UE shall transport:

a) the PDU SESSION ESTABLISHMENT REQUEST message;

b) the PDU session ID of the PDU session being established, being handed over, being transferred, or been established as an MA PDU session;

c) if the request type is set to:

1) "initial request" or "MA PDU request" and the UE determined to establish a new PDU session or an MA PDU session based on either a URSP rule including one or more S-NSSAIs in the URSP (see subclause 6.2.9) or UE local configuration, according to subclause 4.2.2 of 3GPP TS 24.526 [19]:

i) in case of a non-roaming scenario, an S-NSSAI in the allowed NSSAI which corresponds to one of the S-NSSAI(s) in the matching URSP rule, if any, or else to the S-NSSAI(s) in the UE local configuration or in the default URSP rule, if any, according to the conditions given in subclause 4.2.2 of 3GPP TS 24.526 [19]; or

ii) in case of a roaming scenario:

A) one of the mapped S-NSSAI(s) which corresponds to one of the S-NSSAI(s) in the matching URSP rule, if any, or else to the S-NSSAI(s) in the UE local configuration or in the default URSP rule, if any, according to the conditions given in subclause 4.2.2 of 3GPP TS 24.526 [19]; and

B) the S-NSSAI in the allowed NSSAI associated with the S-NSSAI in A); or

2) "existing PDU session", an S-NSSAI, which is an S-NSSAI associated with the PDU session and (if available in roaming scenarios) a mapped S-NSSAI, with exception when S-NSSAI is not provided by the network in subclause 6.1.4.2;

d) if the request type is set to:

1) "initial request" or "MA PDU request" and the UE determined to establish a new PDU session or an MA PDU session based on either a URSP rule including one or more DNNs in the URSP (see subclause 6.2.9) or UE local configuration, according to subclause 4.2.2 of 3GPP TS 24.526 [19], a DNN which corresponds to one of the DNN(s) in the matching URSP rule, if any, or else to the DNN(s) in the UE local configuration or in the default URSP rule, if any, according to the conditions given in subclause 4.2.2 of 3GPP TS 24.526 [19]; or

2) "existing PDU session", a DNN which is a DNN associated with the PDU session;

e) the request type which is set to:

1) "initial request", if the UE is not registered for emergency services and the UE requests to establish a new non-emergency PDU session;

2) "existing PDU session", if the UE is not registered for emergency services and the UE requests:

i) handover of an existing non-emergency PDU session between 3GPP access and non-3GPP access;

ii) transfer of an existing PDN connection for non-emergency bearer services in the EPS to the 5GS; or

iii) transfer of an existing PDN connection for non-emergency bearer services in an untrusted non-3GPP access connected to the EPC to the 5GS;

3) "initial emergency request", if the UE requests to establish a new emergency PDU session;

4) "existing emergency PDU session", if the UE requests:

i) handover of an existing emergency PDU session between 3GPP access and non-3GPP access;

ii) transfer of an existing PDN connection for emergency bearer services in the EPS to the 5GS; or

iii) transfer of an existing PDN connection for emergency bearer services in an untrusted non-3GPP access connected to the EPC to the 5GS; or

5) "MA PDU request", if:

i) the UE requests to establish an MA PDU session;

ii) the UE requests to establish user plane resources over other access of an MA PDU session established over one access only; or

iii) the UE performs inter-system change from S1 mode to N1 mode according to subclause 4.8.2.3.1 and requests transfer of a PDN connection which is a user plane resource of an MA PDU session; and

f) the old PDU session ID which is the PDU session ID of the existing PDU session, if the UE initiates the UE-requested PDU session establishment procedure upon receiving the PDU SESSION MODIFICATION COMMAND messages with the 5GSM cause IE set to #39 "reactivation requested";

using the NAS transport procedure as specified in subclause 5.4.5, and the UE shall start timer T3580 (see example in figure 6.4.1.2.1).

For bullet c) 1), if the matching URSP rule does not have an associated S-NSSAI, or if the UE does not have any matching URSP rule and there is no S-NSSAI in the UE local configuration or in the default URSP rule, the UE shall not provide any S-NSSAI in a PDU session establishment procedure.

For bullet d) 1), if the matching URSP rule does not have an associated DNN, or if the UE does not have any matching URSP rule and there is no DNN in the UE local configuration or in the default URSP rule and:

a) if the UE requests a connectivity to the default DNN for the S-NSSAI and the requested connectivity requires PAP/CHAP, the UE should provide a DNN in a PDU session establishment procedure; or

b) otherwise, the UE shall not provide any DNN in a PDU session establishment procedure.

If the request type is set to "initial emergency request" or "existing emergency PDU session" or the UE is registered for onboarding services in SNPN, neither DNN nor S-NSSAI is transported by the UE using the NAS transport procedure as specified in subclause 5.4.5.



Figure 6.4.1.2.1: UE-requested PDU session establishment procedure

Upon receipt of a PDU SESSION ESTABLISHMENT REQUEST message, a PDU session ID, optionally an S-NSSAI associated with (if available in roaming scenarios) a mapped S-NSSAI, optionally a DNN determined by the AMF, optionally a DNN selected by the network (if different from the DNN determined by the AMF), the request type, and optionally an old PDU session ID, the SMF checks whether connectivity with the requested DN can be established. If the requested DNN is not included, the SMF shall use the default DNN.

If the PDU session being established is a non-emergency PDU session, the request type is not set to "existing PDU session" and the PDU session authentication and authorization by the external DN is required due to local policy, the SMF shall check whether the PDU SESSION ESTABLISHMENT REQUEST message includes the SM PDU DN request container IE or the Service-level AA container IE.

If the PDU session being established is a non-emergency PDU session, the request type is not set to "existing PDU session", the SM PDU DN request container IE is included in the PDU SESSION ESTABLISHMENT REQUEST message, the PDU session authentication and authorization by the external DN is required due to local policy and user's subscription data, and:

a) the information for the PDU session authentication and authorization by the external DN in the SM PDU DN request container IE is compliant with the local policy and user's subscription data, the SMF shall proceed with the EAP Authentication procedure specified in 3GPP TS 33.501 [24] and refrain from accepting or rejecting the PDU SESSION ESTABLISHMENT REQUEST message until the EAP Authentication procedure finalizes; or

b) the information for the PDU session authentication and authorization by the external DN in the SM PDU DN request container IE is not compliant with the local policy and user's subscription data, the SMF shall consider it as an abnormal case and proceed as specified in subclause 6.4.1.7.

If the PDU session being established is a non-emergency PDU session, the request type is not set to "existing PDU session", the Service-level AA container IE is included in the PDU SESSION ESTABLISHMENT REQUEST message, the service-level authentication and authorization by the external DN is required due to local policy and user's subscription data, and:

a) the information for the service-level authentication and authorization by the external DN in the Service-level AA container IE includes CAA-level UAV ID, the SMF shall proceed with the UUAA-SM procedure as specified in 3GPP TS 23.256 [6AB] and refrain from accepting or rejecting the PDU SESSION ESTABLISHMENT REQUEST message until the Service-level authentication and authorization procedure is completed.

If the PDU session being established is a non-emergency PDU session, the request type is not set to "existing PDU session", the SM PDU DN request container IE is not included in the PDU SESSION ESTABLISHMENT REQUEST message and the PDU session authentication and authorization by the external DN is required due to local policy and user's subscription data, the SMF shall proceed with the EAP Authentication procedure specified in 3GPP TS 33.501 [24] and refrain from accepting or rejecting the PDU SESSION ESTABLISHMENT REQUEST message until the EAP Authentication procedure finalizes.

If the SMF receives the old PDU session ID from the AMF and a PDU session exists for the old PDU session ID, the SMF shall consider that the request for the relocation of SSC mode 3 PDU session anchor with multiple PDU sessions as specified in 3GPP TS 23.502 [9] is accepted by the UE.

If the UE has set the TPMIC bit to "Transfer of port management information containers supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message and has included a DS-TT Ethernet port MAC address IE (if the PDU session type is "Ethernet"), the Port management information container IE, and, optionally, the UE-DS-TT residence time IE in the PDU SESSION ESTABLISHMENT REQUEST message, the SMF shall operate as specified in 3GPP TS 23.502 [9] subclause 4.3.2.2.1.

### \*\*\*\*\* 3rd change \*\*\*\*\*

#### 6.4.1.4 UE-requested PDU session establishment procedure not accepted by the network

##### 6.4.1.4.1 General

If the connectivity with the requested DN is rejected by the network, the SMF shall create a PDU SESSION ESTABLISHMENT REJECT message.

The SMF shall set the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message to indicate the reason for rejecting the PDU session establishment.

The 5GSM cause IE typically indicates one of the following SM cause values:

#8 operator determined barring;

#26 insufficient resources;

#27 missing or unknown DNN;

#28 unknown PDU session type;

#29 user authentication or authorization failed;

#31 request rejected, unspecified;

#32 service option not supported;

#33 requested service option not subscribed;

#35 PTI already in use;

#38 network failure;

#39 reactivation requested;

#46 out of LADN service area;

#50 PDU session type IPv4 only allowed;

#51 PDU session type IPv6 only allowed;

#54 PDU session does not exist;

#57: PDU session type IPv4v6 only allowed;

#58: PDU session type Unstructured only allowed;

#61: PDU session type Ethernet only allowed;

#67 insufficient resources for specific slice and DNN;

#68 not supported SSC mode;

#69 insufficient resources for specific slice;

#70 missing or unknown DNN in a slice;

#82 maximum data rate per UE for user-plane integrity protection is too low; or

#95 – 111 protocol errors.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "IPv6", and the subscription, the SMF configuration, or both, are limited to IPv4 only for the requested DNN, the SMF shall include the 5GSM cause value #50 "PDU session type IPv4 only allowed" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "IPv6", and the subscription, the SMF configuration, or both, support none of "IPv4" and "IPv6" PDU session types for the requested DNN, the SMF shall include the 5GSM cause value #28 "unknown PDU session type" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "IPv4", and the subscription, the SMF configuration, or both, are limited to IPv6 only for the requested DNN, the SMF shall include the 5GSM cause value #51 "PDU session type IPv6 only allowed" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "IPv4", and the subscription, the SMF configuration, or both, support none of "IPv4" and "IPv6" PDU session types for the requested DNN, the SMF shall include the 5GSM cause value #28 "unknown PDU session type" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "IPv4v6", and the subscription, the SMF configuration, or both, support none of "IPv4v6", "IPv4" and "IPv6" PDU session types for the requested DNN, the SMF shall include the 5GSM cause value #28 "unknown PDU session type" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message includes a PDU session type IE set to "Unstructured" or "Ethernet", and the subscription, the SMF configuration, or both, do not support the PDU session type for the requested DNN, the SMF shall include the 5GSM cause value #28 "unknown PDU session type" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message is to establish an MA PDU session and includes a PDU session type IE set to "Unstructured", and the SMF configuration does not support the PDU session type, the SMF shall include the 5GSM cause value #28 "unknown PDU session type" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message contains the SSC mode IE indicating an SSC mode not supported by the subscription, the SMF configuration, or both of them, and the SMF decides to rejects the PDU session establishment, the SMF shall include the 5GSM cause value #68 "not supported SSC mode" in the 5GSM cause IE and the SSC modes allowed by SMF in the Allowed SSC mode IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the PDU SESSION ESTABLISHMENT REQUEST message is to establish an MA PDU session and MA PDU session is not allowed due to operator policy and subscription, and the SMF decides to reject the PDU session establishment, the SMF shall include the 5GSM cause value #33 "requested service option not subscribed" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

In 3GPP access, if the operator's configuration requires user-plane integrity protection for the PDU session and, the maximum data rate per UE for user-plane integrity protection supported by the UE for uplink or the maximum data rate per UE for user-plane integrity protection supported by the UE for downlink, or both, are lower than required by the operator's configuration, the SMF shall include the 5GSM cause value #82 "maximum data rate per UE for user-plane integrity protection is too low" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the UE requests a PDU session establishment for an LADN when the UE is located outside of the LADN service area, the SMF shall include the 5GSM cause value #46 "out of LADN service area" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

If the DN authentication of the UE was performed with the PDU session authentication and authorization procedure and completed unsuccessfully, the SMF shall include the 5GSM cause value #29 "user authentication or authorization failed" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message and shall set the EAP message IE of the PDU SESSION ESTABLISHMENT REJECT message to an EAP-failure message as specified in IETF RFC 3748 [34], provided by the DN.

If the DN authentication of the UE was performed with the service-level authentication and authorization procedure and completed unsuccessfully, the SMF shall include the 5GSM cause value #29 "user authentication or authorization failed" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message and shall include the service-level AA response provided by DN in the service-level AA container IE of the PDU SESSION ESTABLISHMENT REJECT message.

Based on the local policy and user's subscription data, if a PDU session is being established with the request type set to "existing PDU session" and the SMF determines the UE has:

a) moved between a tracking area in NB-N1 mode and a tracking area in WB-N1 mode;

b) moved between a tracking area in NB-S1 mode and a tracking area in WB-N1 mode; or

c) moved between a tracking area in WB-S1 mode and a tracking area in NB-N1 mode,

the SMF may reject the PDU SESSION ESTABLISHMENT REQUEST message and:

a) include the 5GSM cause value #39 "reactivation requested" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message; or

b) include a 5GSM cause value other than #39 "reactivation requested" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

NOTE 1: The included 5GSM cause value is up to the network implementation.

If the PDU session cannot be established due to resource unavailability in the UPF, the SMF shall include the 5GSM cause value #26 "insufficient resources" in the 5GSM cause IE of the PDU SESSION ESTABLISHMENT REJECT message.

The network may include a Back-off timer value IE in the PDU SESSION ESTABLISHMENT REJECT message.

If the 5GSM cause value is #26 "insufficient resources", #67 "insufficient resources for specific slice and DNN", or #69 "insufficient resources for specific slice" and the PDU SESSION ESTABLISHMENT REQUEST message was received from a UE configured for high priority access in selected PLMN or the request type provided during the PDU session establishment is set to "initial emergency request" or "existing emergency PDU session", the network shall not include a Back-off timer value IE.

If the 5GSM cause value is #29 "user authentication or authorization failed ", the network should include a Back-off timer value IE.

If the Back-off timer value IE is included and the 5GSM cause value is different from #26 "insufficient resources", #28 "unknown PDU session type", #46 "out of LADN service area", "#50 "PDU session type IPv4 only allowed", #51 "PDU session type IPv6 only allowed", #54 "PDU session does not exist", #57 "PDU session type IPv4v6 only allowed", #58 "PDU session type Unstructured only allowed", #61 "PDU session type Ethernet only allowed", #67 "insufficient resources for specific slice and DNN", #68 "not supported SSC mode", and #69 "insufficient resources for specific slice", the network may include the Re-attempt indicator IE to indicate whether the UE is allowed to attempt a PDN connectivity procedure in the PLMN for the same DNN in S1 mode, and whether another attempt in S1 mode or in N1 mode is allowed in an equivalent PLMN.

If the 5GSM cause value is #50 "PDU session type IPv4 only allowed", #51 "PDU session type IPv6 only allowed", #57 "PDU session type IPv4v6 only allowed", #58 "PDU session type Unstructured only allowed", or #61 "PDU session type Ethernet only allowed", the network may include the Re-attempt indicator IE without Back-off timer value IE to indicate whether the UE is allowed to attempt a PDU session establishment procedure in an equivalent PLMN in N1 mode using the same PDU session type for the same DNN (or no DNN, if no DNN was indicated by the UE) and the same S-NSSAI (or no S-NSSAI, if no S-NSSAI was indicated by the UE).

The SMF shall send the PDU SESSION ESTABLISHMENT REJECT message.

Upon receipt of a PDU SESSION ESTABLISHMENT REJECT message and a PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, the UE shall stop timer T3580 shall release the allocated PTI value and shall consider that the PDU session was not established.

If the PDU SESSION ESTABLISHMENT REQUEST message was sent with request type set to "initial emergency request" or "existing emergency PDU session" and the UE receives a PDU SESSION ESTABLISHMENT REJECT message, then the UE may:

a) inform the upper layers of the failure of the procedure; or

NOTE 2: This can result in the upper layers requesting another emergency call attempt using domain selection as specified in 3GPP TS 23.167 [6].

b) de-register locally, if not de-registered already, attempt initial registration for emergency services.

If the PDU SESSION ESTABLISHMENT REJECT message includes 5GSM cause #39 "reactivation requested" and the PDU session is being transferred from EPS to 5GS and established with the request type set to "existing PDU session", the UE should re-initiate the UE-requested PDU session establishment procedure as specified in subclause 6.4.1 for:

a) the PDU session type associated with the transferred PDU session;

b) the SSC mode associated with the transferred PDU session;

c) the DNN associated with the transferred PDU session; and

d) the S-NSSAI associated with (if available in roaming scenarios) a mapped S-NSSAI if provided in the UE-requested PDU session establishment procedure of the transferred PDU session.

### \*\*\*\*\* 4th change \*\*\*\*\*

### 8.3.3 PDU session establishment reject

#### 8.3.3.1 Message definition

The PDU SESSION ESTABLISHMENT REJECT message is sent by the SMF to the UE in response to PDU SESSION ESTABLISHMENT REQUEST message and indicates unsuccessful establishment of a PDU session. See table 8.3.3.1.1.

Message type: PDU SESSION ESTABLISHMENT REJECT

Significance: dual

Direction: network to UE

Table 8.3.3.1.1: PDU SESSION ESTABLISHMENT REJECT message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator  9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity  9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity  9.6 | M | V | 1 |
|  | PDU SESSION ESTABLISHMENT REJECT message identity | Message type  9.7 | M | V | 1 |
|  | 5GSM cause | 5GSM cause  9.11.4.2 | M | V | 1 |
| 37 | Back-off timer value | GPRS timer 3  9.11.2.5 | O | TLV | 3 |
| F- | Allowed SSC mode | Allowed SSC mode  9.11.4.5 | O | TV | 1 |
| 78 | EAP message | EAP message  9.11.2.2 | O | TLV-E | 7-1503 |
| 61 | 5GSM congestion re-attempt indicator | 5GSM congestion re-attempt indicator  9.11.4.21 | O | TLV | 3 |
| 7B | Extended protocol configuration options | Extended protocol configuration options  9.11.4.6 | O | TLV-E | 4-65538 |
| 1D | Re-attempt indicator | Re-attempt indicator  9.11.4.17 | O | TLV | 3 |
| xx | Service-level AA container | Service-level AA container  9.11.2.10 | O | TLV-E | 6-n |

### \*\*\*\*\* 5th change \*\*\*\*\*

#### 8.3.3.X Service-level AA container

The network may include this IE if the 5GSM cause is #29 "user authentication or authorization failed" and the service-level authentication and authorization procedure has completed unsuccessfully. The network shall include the service-level AA response if provided by the DN in the service-level AA container.

### \*\*\*\*\* 6th change \*\*\*\*\*

### 8.3.X Service-level authentication command

#### 8.3.X.1 Message definition

The SERVICE-LEVEL AUTHENTICATION COMMAND message is sent by the SMF to the UE for Service-level authentication and authorization procedure. See table 8.3.X.1.1.

Message type: SERVICE-LEVEL AUTHENTICATION COMMAND

Significance: dual

Direction: network to UE

Table 8.3.X.1.1: SERVICE-LEVEL AUTHENTICATION COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator  9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity  9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity  9.6 | M | V | 1 |
|  | SERVICE-LEVEL AUTHENTICATION COMMAND message identity | Message type  9.7 | M | V | 1 |
|  | Service-level AA container | Service-level AA container  9.11.2.10 | M | LV-E | 5-n |

### \*\*\*\*\* 7th change \*\*\*\*\*

### 8.3.Y Service-level authentication complete

#### 8.3.Y.1 Message definition

The SERVICE-LEVEL AUTHENTICATION COMPLETE message is sent by the UE to the SMF in response to the SERVICE-LEVEL AUTHENTICATION COMMAND message and indicates acceptance of the SERVICE-LEVEL AUTHENTICATION COMMAND message. See table 8.3.Y.1.1.

Message type: SERVICE-LEVEL AUTHENTICATION COMPLETE

Significance: dual

Direction: UE to network

Table 8.3.Y.1.1: PDU SESSION AUTHENTICATION COMPLETE message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator  9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity  9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity  9.6 | M | V | 1 |
|  | SERVICE-LEVEL AUTHENTICATION COMPLETE message identity | Message type  9.7 | M | V | 1 |
|  | Service-level AA container | Service-level AA container  9.11.2.10 | M | LV-E | 5-n |

### \*\*\*\*\* 8th change \*\*\*\*\*

## 9.7 Message type

The Message type IE and its use are defined in 3GPP TS 24.007 [11]. Tables 9.7.1 and 9.7.2 define the value part of the message type IE used in the 5GS mobility management protocol and 5GS session management protocol.

Table 9.7.1: Message types for 5GS mobility management

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits | | | | | | | | | | | | | | | |  | |  | |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |  | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| 0 | | 1 | | - | | - | | - | | - | | - | | - | |  | | 5GS mobility management messages | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | |  | | Registration request | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | | 0 | |  | | Registration accept | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | | 1 | |  | | Registration complete | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | | 0 | |  | | Registration reject | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | | 1 | |  | | Deregistration request (UE originating) | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 1 | | 0 | |  | | Deregistration accept (UE originating) | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 1 | | 1 | |  | | Deregistration request (UE terminated) | |
| 0 | | 1 | | 0 | | 0 | | 1 | | 0 | | 0 | | 0 | |  | | Deregistration accept (UE terminated) | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 0 | | 0 | |  | | Service request | |
| 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 0 | | 1 | |  | | Service reject | |
| 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 1 | | 0 | |  | | Service accept | |
| 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 1 | | 1 | |  | | Control plane service request | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | |  | | Network slice-specific authentication command | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | |  | | Network slice-specific authentication complete | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 1 | | 0 | |  | | Network slice-specific authentication result | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 0 | | 0 | |  | | Configuration update command | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 0 | | 1 | |  | | Configuration update complete | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 1 | | 0 | |  | | Authentication request | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 1 | | 1 | |  | | Authentication response | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 0 | | 0 | |  | | Authentication reject | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 0 | | 1 | |  | | Authentication failure | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 1 | | 0 | |  | | Authentication result | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 1 | | 1 | |  | | Identity request | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 0 | | 0 | |  | | Identity response | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 0 | | 1 | |  | | Security mode command | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 1 | | 0 | |  | | Security mode complete | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 1 | | 1 | |  | | Security mode reject | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 0 | | 0 | |  | | 5GMM status | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 0 | | 1 | |  | | Notification | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 1 | | 0 | |  | | Notification response | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 1 | | 1 | |  | | UL NAS transport | |
| 0 | | 1 | | 1 | | 0 | | 1 | | 0 | | 0 | | 0 | |  | | DL NAS transport | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |

Table 9.7.2: Message types for 5GS session management

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits | | | | | | | |  |  |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | - | - | - | - | - | - |  | 5GS session management messages |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |  | PDU session establishment request |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | PDU session establishment accept |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | PDU session establishment reject |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | PDU session authentication command |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  | PDU session authentication complete |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |  | PDU session authentication result |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |  | PDU session modification request |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |  | PDU session modification reject |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |  | PDU session modification command |
| 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |  | PDU session modification complete |
| 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |  | PDU session modification command reject |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | PDU session release request |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |  | PDU session release reject |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |  | PDU session release command |
| 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |  | PDU session release complete |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |  | 5GSM status |
|  |  |  |  |  |  |  |  |  |  |
| 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |  | Service-level authentication command |
| 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |  | Service-level authentication complete |
|  |  |  |  |  |  |  |  |  |  |

### \*\*\*\*\* End of change \*\*\*\*\*