**3GPP TSG-CT WG1 Meeting #136-eC1-22abcd**

**E-Meeting, 12th – 20th May 2022 (was C1-223440)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **4270** | **rev** | **1** | **Current version:** | **17.6.1** |  |
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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:*** | Maximum number of associated MBS sessions | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2022-05-04 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | A response to the CT1 LS (C1-216247), in which SA2 is asked about the maximum number of associated PDU sessions, has been received in C1-22abcd (S2-2203050). After collecting feedback from other WGs, SA2 concluded that a maximum shall be set to 16 or 32 assiciated MBS sessions per PDU session. Given that SA6 requests “as many as possible” to be supported and there is no reason for the protocol to be more restrictive than necessary, a maximum of 32 associated MBS sessions is proposed for NAS. | | | | | | | | |
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| ***Summary of change:*** | | Notes informing of maximum number of associated MBS sessions are added.  Related Editor’s notes are deleted  Definition of MBS containers are updated to reflect the maximum number of associated MBS sessions | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Remaining Editor’s Notes  No maximum number of associated MBS sessions is specified which can result in interoperability issues between UE an network | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.4.1.2, 6.4.2.2, 9.11.4.30, 9.11.4.31 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

#### 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.

If the UE requests to establish a new PDU session associated with multicast sessions and the UE at the same time intends to join one or more MBS multicast sessions, the UE should include the Requested MBS container IE in the PDU SESSION ESTABLISHMENT REQUEST message. In that case, the UE shall set the MBS operation to "Join MBS session" and include the MBS session information(s) and shall set the Type of MBS session ID for each of the MBS session information to either "Temporary Mobile Group Identity (TMGI)" or "Source specific IP multicast address" depending on the type of the MBS session ID available in the UE. Then the remaining values of each of the MBS session information shall be set as following:

a) if the Type of MBS session ID is set to "Temporary Mobile Group Identity (TMGI)", the UE shall set the MBS session ID to the TMGI; or

b) if the Type of MBS session ID is set to "Source specific IP multicast address for IPv4" or " Source specific IP multicast address for IPv6", the UE shall set the Source IP address information and the Destination IP address information to the corresponding values.

NOTE 4: The UE obtains the details of the MBS session ID(s) i.e. TMGI, Source IP address information and Destination IP address information as a pre-configuration in the UE or during the MBS service announcement, which is out of scope of this specification.

NOTE 5: NAS supports a maximum number of 32 MBS sessions associated to a PDU session.

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 6: 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 7: 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 is 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 8: 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 APMQF bit to "Access performance measurements per QoS flow 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 parameter in the Extended protocol configuration options IE of 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 and optionally, if the UE wishes to indicate which security protocol type(s) are supported by the UE, it may include the DNS server security protocol support.

NOTE 9: 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 10: 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;

- 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 shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall include the ECS configuration information provisioning support indicator.

If the UE supports receiving DNS server addresses in protocol configuration options, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and in the Extended protocol configuration options IE:

a) if the UE requests to establish a PDU session of "IPv4" or "IPv4v6" PDU session type, the UE shall include the DNS server IPv4 address request; and

b) if the UE requests to establish a PDU session of "IPv6" or "IPv4v6" PDU session type, the UE shall include the DNS server IPv6 address request.

If the UE supporting UAS services requests to establish a PDU session for C2 communication, the UE shall include the Service-level-AA container IE in the PDU SESSION ESTABLISHMENT REQUEST message. In the Service-level-AA container IE, the UE shall include:

a) the service-level device ID with the value set to the CAA-level UAV ID of the UE; and

b) if available, the service-level-AA payload with the value set to the C2 authorization payload and the service-level-AA payload type with the value set to "C2 authorization payload".

NOTE 10: The C2 authorization payload in the service-level-AA payload can include the pairing information and the flight authorization information.

If the UE supports the EAS rediscovery, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall include the EAS rediscovery support indication in the Extended protocol configuration options IE.

If the UE needs to include a PDU session pair ID based on the matching URSP rule or UE local configuration, the UE shall include the PDU session pair ID IE in the PDU SESSION ESTABLISHMENT REQUEST message. If the UE needs to include an RSN based on the matching URSP rule or UE local configuration, the UE shall include the RSN IE in the PDU SESSION ESTABLISHMENT REQUEST message.

If the UE is not registered for onboarding services in SNPN and needs PVS information, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and include the PVS information request in the Extended protocol configuration options IE.

If the UE supports the EDC, the UE shall include the Extended protocol configuration options IE in the PDU SESSION ESTABLISHMENT REQUEST message and shall include the EDC support indicator in the Extended protocol configuration options IE.

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 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 SMF receives the onboarding indication from the AMF, the SMF shall consider that the PDU session is established for onboarding services in SNPN.

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.

If requested by the upper layers the UE supporting UAS services initiates request to establish a PDU session for UAS services, the UE shall include the service-level device ID in the Service-level-AA container IE of the PDU SESSION ESTABLISHMENT REQUEST message and set the value to the CAA-level UAV ID. The UE may include the service-level-AA server address in the Service-level-AA container IE of the PDU SESSION ESTABLISHMENT REQUEST message and set the value to the USS address, if it is configured in the UE, and the UE may include the service-level-AA payload type, service-level-AA payload in the Service-level-AA container IE of the PDU SESSION ESTABLISHMENT REQUEST message and set the value to "UUAA payload" and the UUAA payload respectively, if it is provided by the upper layer.

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, and

a) the service-level authentication and authorization by the external DN is required due to local policy;

b) there is a valid user's subscription information for the requested DNN or for the requested DNN and S-NSSAI; and

c) 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,

then 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.

The UE supporting UAS services shall not request a PDU session establishment procedure to 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) for which the UE has requested a service level authentication and authorization procedure which is ongoing.

If the PDU SESSION ESTABLISHMENT REQUEST message includes the PDU session pair ID IE, the RSN IE, or both, the SMF shall operate as specified in clause 5.33.2 of 3GPP TS 23.501 [8].

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

#### 6.4.2.2 UE-requested PDU session modification procedure initiation

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

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

The UE shall not perform the UE-requested PDU session modification procedure for an emergency PDU session, except for a procedure initiated according to subclause 6.4.2.1, item e) only, and for the error cases described in subclause 6.4.1.3 and subclause 6.3.2.3.

The UE shall not perform the UE-requested PDU session modification procedure for a PDU session for LADN when the UE is located outside the LADN service area except for indicating a change of 3GPP PS data off UE status.

If the UE requests a specific QoS handling and the PDU session is not associated with the control plane only indication, the UE shall include the Requested QoS rules IE indicating requested QoS rules or the Requested QoS flow descriptions IE indicating requested QoS flow descriptions or both for the specific QoS handling. The Requested QoS rules IE includes the packet filters which describe the service data flows requested by the UE. The specific QoS parameters requested by the UE are specified in the Requested QoS flow descriptions IE. If the UE requests the network to bind specific service data flows to a dedicated QoS flow, the UE shall create a new QoS rule by setting the rule operation code to "Create new QoS rule" and shall set the segregation bit to "Segregation requested" for the corresponding QoS rule in the Requested QoS rules IE. The UE shall set the QRI values to "no QoS rule identifier assigned" in the Requested QoS rules IE, if the QoS rules are newly created; otherwise, the UE shall set the QRI values to those of the existing QoS rules for which the specific QoS handling applies. The UE shall set the QFI values to "no QoS flow identifier assigned" in the Requested QoS flow descriptions IE, if the QoS flow descriptions are newly created; otherwise, the UE shall set the QFI values to the QFIs of the existing QoS flow descriptions for which the specific QoS handling applies. The UE shall not request to create more than one QoS flow in a UE-requested PDU session modification procedure. If the SMF receives a PDU SESSION MODIFICATION REQUEST message with a Requested QoS rules IE containing more than one QoS rule with the rule operation code set to "Create new QoS rule", the SMF shall assign the same QFI to all the QoS rules which are created.

If the UE requests to join or leave one or more MBS multicast sessions associated with a PDU session, the UE shall include the Requested MBS container IE in the PDU SESSION MODIFICATION REQUEST message and shall set the MBS operation to "Join MBS session" for the join case or to "Leave MBS session" for the leave case. The UE shall include the MBS session information(s) and shall set the Type of MBS session ID for each of the MBS session information to either "Temporary Mobile Group Identity (TMGI)" or "Source specific IP multicast address" depending on the type of the MBS session ID available in the UE. Then the remaining values of each of the MBS session informations shall be set as following:

a) if the Type of MBS session ID is set to "Temporary Mobile Group Identity (TMGI)", the UE shall set the MBS session ID to the TMGI; or

b) if the Type of MBS session ID is set to "Source specific IP multicast address for IPv4" or " Source specific IP multicast address for IPv6", the UE shall set the Source IP address information and the Destination IP address information to the corresponding values.

NOTE 1: The UE obtains the details of the MBS session ID(s) i.e. TMGI, Source IP address information and Destination IP address information as a pre-configuration in the UE or during the MBS service announcement which is out of scope of this specification.

NOTE 2: NAS supports a maximum number of 32 MBS sessions associated to a PDU session.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, if the UE is a UE operating in single-registration mode in a network supporting N26 interface, the PDU session is of "IPv4", "IPv6", "IPv4v6", or "Ethernet" PDU session type, the PDU session is not associated with the control plane only indication:

a) the UE is performing the PDU session modification procedure to indicate the support of reflective QoS and the UE has not previously successfully performed the UE-requested PDU session modification to provide this indication, the UE shall set the RQoS bit to "Reflective QoS supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message; or

b) the UE is performing the PDU session modification procedure to indicate that reflective QoS is not supported and the UE has not previously successfully performed the UE-requested PDU session modification to provide this indication, the UE shall set the RQoS bit to "Reflective QoS not supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message.

If the UE is performing the PDU session modification procedure to revoke the previously indicated support of reflective QoS and the PDU session is not associated with the control plane only indication, the UE shall set the RQoS bit to "Reflective QoS not supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message. The UE shall not indicate support for reflective QoS for this PDU Session for the remaining lifetime of the PDU Session.

NOTE 3: The determination to revoke the usage of reflective QoS by the UE for a PDU session is implementation dependent.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, if the UE is a UE operating in single-registration mode in a network supporting N26 interface, the PDU session is of "IPv6" or "IPv4v6" PDU session type, the PDU session is not associated with the control plane only indication:

a) the UE is performing the PDU session modification procedure to indicate the support of Multi-homed IPv6 PDU session and the UE has not previously successfully performed the UE-requested PDU session modification to provide this indication, the UE shall set the MH6-PDU bit to "Multi-homed IPv6 PDU session supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message; or

b) the UE is performing the PDU session modification procedure to indicate that Multi-homed IPv6 PDU session is not supported and the UE has not previously successfully performed the UE-requested PDU session modification to provide this indication, the UE shall set the MH6-PDU bit to "Multi-homed IPv6 PDU session not supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, if the UE is a UE operating in single-registration mode in a network supporting N26 interface, the PDU session is of "IPv4", "IPv6", "IPv4v6", or "Ethernet" PDU session type, the PDU session is not associated with the control plane only indication, the UE supports more than 16 packet filters for this PDU session, and the UE has not previously successfully performed the UE-requested PDU session modification to provide this indication, the UE shall indicate the maximum number of packet filters supported for the PDU session in the Maximum number of supported packet filters IE of the PDU SESSION MODIFICATION REQUEST message.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, if the UE is a UE operating in single-registration mode in a network supporting N26 interface, the PDU session is not associated with the control plane only indication, and the UE has not previously successfully performed the UE-requested PDU session modification to include the Integrity protection maximum data rate IE in the PDU SESSION MODIFICATION REQUEST message, the UE shall include the Integrity protection maximum data rate IE in the PDU SESSION MODIFICATION REQUEST message.

If the UE is performing the PDU session modification procedure

a) to request the deletion of a non-default QoS rule due to errors in QoS operations or packet filters;

b) to request the deletion of a QoS flow description due to errors in QoS operations; or

c) to request the deletion of a mapped EPS bearer context due to errors in mapped EPS bearer operation, TFT operation or packet filters,

the UE shall include the 5GSM cause IE in the PDU SESSION MODIFICATION REQUEST message as described in subclauses 6.3.2.3, 6.3.2.4 and 6.4.1.3.

When the UE-requested PDU session modification procedure is used to indicate a change of 3GPP PS data off UE status for a PDU session, the UE shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION REQUEST message and setting the 3GPP PS data off UE status.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, if the UE is a UE operating in single-registration mode in a network supporting N26 interface, the PDU session is not associated with the control plane only indication, the UE requests the PDU session to be an always-on PDU session in the 5GS and the UE has not previously successfully performed the UE-requested PDU session modification to request this, 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 MODIFICATION REQUEST message.

If a port management information container needs to be delivered (see 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9]), the UE shall include a Port management information container IE in the PDU SESSION MODIFICATION REQUEST message.

To request re-negotiation of IP header compression configuration, the UE shall include the IP header compression configuration IE in the PDU SESSION MODIFICATION REQUEST message if the network indicated "Control plane CIoT 5GS optimization supported" and "IP header compression for control plane CIoT 5GS optimization supported" in the 5GS network support feature support IE.

To request re-negotiation of Ethernet header compression configuration, the UE shall include the Ethernet header compression configuration IE in the PDU SESSION MODIFICATION REQUEST message if the network indicated "Control plane CIoT 5GS optimization supported" and "Ethernet header compression for control plane CIoT 5GS optimization supported" in the 5GS network support feature support IE.

After an inter-system change from S1 mode to N1 mode, if:

a) the UE is operating in single-registration mode in the network supporting N26 interface;

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

c) 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

d) 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 initiate the PDU session modification procedure to negotiate the IP header compression configuration and include the IP header compression configuration IE in the PDU SESSION MODIFICATION REQUEST message.

The UE shall include the Service-level-AA container IE in the PDU SESSION MODIFICATION REQUEST message, when requesting to modify an established PDU session for C2 communication. In the Service-level-AA container IE, the UE shall include:

a) the service-level device ID with the value set to the CAA-level UAV ID of the UE; and

b) if available, the service-level-AA payload with the value set to the C2 authorization payload and the service-level-AA payload type with the value set to "C2 authorization payload".

NOTE 4: The C2 authorization payload in the service-level-AA payload can include the pairing information and the flight authorization information.

After an inter-system change from S1 mode to N1 mode, if:

a) the UE is operating in single-registration mode in a network that supports N26 interface;

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

c) 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

d) 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 initiate the PDU session modification procedure to negotiate the Ethernet header compression configuration and include the Ethernet header compression configuration IE in the PDU SESSION MODIFICATION REQUEST message.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, and if the UE is a UE operating in single-registration mode in a network supporting N26 interface, and the UE supports provisioning of ECS configuration information to the EEC in the UE and the UE has not previously successfully performed the UE-requested PDU session modification to include the ECS configuration information provisioning support indicator, the UE shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION REQUEST message and shall include the ECS configuration information provisioning support indicator.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, and if the UE is a UE operating in single-registration mode in a network supporting N26 interface, and the UE supports receiving DNS server addresses in protocol configuration options and the UE has not previously successfully performed the UE-requested PDU session modification to indicate this support, the UE shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION REQUEST message and:

a) if the PDU session is of "IPv4" or "IPv4v6" PDU session type, the UE shall include the DNS server IPv4 address request; and

b) if the PDU session is of "IPv6" or "IPv4v6" PDU session type, the UE shall include the DNS server IPv6 address request.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, and if the UE is a UE operating in single-registration mode in a network supporting N26 interface, and the UE supports the EAS rediscovery and the UE has not previously successfully performed the UE-requested PDU session modification to indicate this support, the UE shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION REQUEST message and shall include the EAS rediscovery support indication in the Extended protocol configuration options IE.

For a PDN connection established when in S1 mode, after an inter-system change from S1 mode to N1 mode, and if the UE is a UE operating in single-registration mode in a network supporting N26 interface, and the UE supports the EDC, then the UE shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION REQUEST message and shall include the EDC support indicator in the Extended protocol configuration options IE.

The UE shall transport:

a) the PDU SESSION MODIFICATION REQUEST message;

b) the PDU session ID; and

c) if the UE-requested PDU session modification:

1) is not initiated to indicate a change of 3GPP PS data off UE status associated to a PDU session, then the request type set to "modification request"; and

2) is initiated to indicate a change of 3GPP PS data off UE status associated to a PDU session, then without transporting the request type;

using the NAS transport procedure as specified in subclause 5.4.5, and the UE shall start timer T3581 (see example in figure 6.4.2.2.1).

For a PDN connection established when in S1 mode and not associated with the control plane only indication, after inter-system change from S1 mode to N1 mode, if the UE is registered in a network supporting the ATSSS,

a) the UE may request to modify a PDU session to an MA PDU session; or

b) the UE may allow the network to upgrade the PDU session to an MA PDU session. In order for the UE to allow the network to upgrade the PDU session to an MA PDU session, the UE shall set "MA PDU session network upgrade is allowed" in the MA PDU session information IE and set the request type to "modification request" in the UL NAS TRANSPORT message.

NOTE 4: If the 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).

In case the UE executes case a) or b):

1) 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 MODIFICATION REQUEST message;

2) 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 MODIFICATION REQUEST message;

3) 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 MODIFICATION REQUEST message; and

4) 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 APMQF bit to "Access performance measurements per QoS flow supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message.



Figure 6.4.2.2.1: UE-requested PDU session modification procedure

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

#### 9.11.4.30 Requested MBS container

The purpose of the Requested MBS container information element is for UE to request to join or leave one or more MBS sessions.

The Requested MBS container information element is coded as shown in figure 9.11.4.30.1, figure 9.11.4.30.2, figure 9.11.4.30.3, figure 9.11.4.30.4 and table 9.11.4.30.1.

The Requested MBS container information element can contain a maximum of 32 MBS session information parameters.

The Requested MBS container is a type 6 information element with a minimum length of 8 octets and a maximum length of 65538 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Requested MBS container IEI | | | | | | | | octet 1 |
| Length of Requested MBS container contents | | | | | | | | octet 2  octet 3 |
| MBS session information 1 | | | | | | | | octet 4  octet i |
| MBS session information 2 | | | | | | | | octet i+1\*  octet l\* |
| … | | | | | | | | octet l+1\*  octet m\* |
| MBS session information p | | | | | | | | octet m+1\*  octet n\* |

Figure 9.11.4.30.1: Requested MBS container information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | | 6 | 5 | | 4 | | | 3 | 2 | | 1 |  |
| 0 | 0 | 0 | | | 0 | | MBS operation | | | | Type of MBS session ID | | octet 4 |
| spare | | | | | | | |  | | |  |
| MBS session ID | | | | | | | | | | | | | octet 5  octet i |

Figure 9.11.4.30.2: MBS session information

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| TMGI | | | | | | | | octet 5 |
| octet i |

Figure 9.11.4.30.3: MBS session ID for Type of MBS session ID = "Temporary Mobile Group Identity (TMGI)"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Source IP address information | | | | | | | | octet 5  octet v |
| Destination IP address information | | | | | | | | Octet v+1  Octet i |

Figure 9.11.4.30.4: MBS session ID for Type of MBS session ID = "Source specific IP multicast address for IPv4" or "Source specific IP multicast address for IPv6"

**Table 9.11.4.30.1: Requested MBS container information element**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type of MBS session ID (bits 1 to 2 of octet 4) | | | | | |
| Bits | | | | | |
| **2** | | **1** |  |  | |
| 0 | | 1 |  | Temporary Mobile Group Identity (TMGI) | |
| 1 | | 0 |  | Source specific IP multicast address for IPv4 | |
| 1 | | 1 |  | Source specific IP multicast address for IPv6 | |
| All other values are reserved. | | | | | |
|  | | | | | |
| MBS operation (bits 3 to 4 of octet 4) | | | | | |
| Bits | | | | | |
| **4** | **3** | |  | |  |
| 0 | 1 | |  | | Join MBS session |
| 1 | 0 | |  | | Leave MBS session |
| All other values are reserved. | | | | | |
|  | | | | | |
| Bits 5 to 8 of octet 4 are spare and shall be coded as zero. | | | | | |
|  | | | | | |
| If Type of MBS session ID is set to "Temporary Mobile Group Identity (TMGI)", the MBS session ID contains the TMGI (octet 5 to i) and is coded as described in subclause 10.5.6.13 in 3GPP TS 24.008 [12] starting from octet 2. | | | | | |
|  | | | | | |
| If Type of MBS session ID is set to "Source specific IP multicast address for IPv4" or " Source specific IP multicast address for IPv6", the MBS session ID contains the Source IP address information and the Destination IP address information. | | | | | |
|  | | | | | |
| Source IP address information (octet 5 to v) | | | | | |
| This field contains the IP unicast address used as source address in IP packets for identifying the source of the multicast service. | | | | | |
|  | | | | | |
| If the type of MBS session ID indicates "Source specific IP multicast address for IPv4", the Source IP address information in octet 5 to octet 8 contains an IPv4 address. If the type of MBS session ID indicates "Source specific IP multicast address for IPv6", the Source IP address information in octet 5 to octet 20 contains an IPv6 address. | | | | | |
|  | | | | | |
| Destination IP address information (octet v+1 to i) | | | | | |
| This field contains the IP multicast address used as destination address in related IP packets for identifying a multicast service associated with the source. | | | | | |
|  | | | | | |
| If the type of MBS session ID indicates "Source specific IP multicast address for IPv4", the Destination IP address information in octet v+1 to octet v+4 contains an IPv4 address. If the type of MBS session ID indicates "Source specific IP multicast address for IPv6", the Source IP address information in octet v+1 to octet v+16 contains an IPv6 address. | | | | | |
|  | | | | | |

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

#### 9.11.4.31 Received MBS container

The purpose of the Received MBS container information element is to indicate to the UE the information of the MBS sessions that the network accepts or rejects the UE to join, the information of the MBS sessions that the UE is removed from, or the information of the updated MBS service area.

The Received MBS container information element is coded as shown in figure 9.11.4.31.1, figure 9.11.4.31.2, figure 9.11.4.31.3, figure 9.11.4.31.4, figure 9.11.4.31.5, figure 9.11.4.31.6, figure 9.11.4.31.7, figure 9.11.4.31.8, figure 9.11.4.31.9, figure 9.11.4.31.10 and table 9.11.4.31.1.

The Received MBS container information element can contain a maximum of 32 MBS session information parameters.

The Received MBS container is a type 6 information element with a minimum length of 9 octets and a maximum length of 65538 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Received MBS container IEI | | | | | | | | octet 1 |
| Length of Received MBS container contents | | | | | | | | octet 2  octet 3 |
| Received MBS information 1 | | | | | | | | octet 4  octet i |
| Received MBS information 2 | | | | | | | | octet i+1\*  octet l\* |
| … | | | | | | | | octet l+1\*  octet m\* |
| Received MBS information p | | | | | | | | octet m+1\*  octet n\* |

Figure 9.11.4.31.1: Received MBS container information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | | 6 | | 5 | 4 | | | 3 | 2 | 1 | |  |
| Rejection cause | | | | | MSAI | | | MD | | | | | octet 4 | |
| 0 | | 0 | | 0 | 0 | | MSCI | MTI | | | | IPAE | octet 5 | |
| spare | | | | | | |  |  | |
| TMGI | | | | | | | | | | | | | octet 6  octet j | |
| Source IP address information | | | | | | | | | | | | | octet j+1\*  octet v\* | |
| Destination IP address information | | | | | | | | | | | | | octet v+1\*  octet k\* | |
| MBS service area | | | | | | | | | | | | | octet k+1\*  octet s\* | |
| MBS timers | | | | | | | | | | | | | octet s+1\*  octet i\* | |
| MBS security container | | | | | | | | | | | | | octet i+1\*  octet e\* | |

Figure 9.11.4.31.2: Received MBS information

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MBS TAI list | | | | | | | | octet k+1\*  octet i\* |

Figure 9.11.4.31.3: MBS service area for MBS service area indication = "MBS service area included as MBS TAI list"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| NR CGI list | | | | | | | | octet k+1\*  octet i\* |

Figure 9.11.4.31.4: MBS service area for MBS service area indication = "MBS service area included as NR CGI list"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MBS TAI list | | | | | | | | octet k+1\*  octet y\* |
| NR CGI list | | | | | | | | octet y+1\*  octet i\* |

Figure 9.11.4.31.5: MBS service area for MBS service area indication = "MBS service area included as MBS TAI list and NR CGI list"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of NR CGI list contents | | | | | | | | octet k+1\* |
| NR CGI 1 | | | | | | | | octet k+2\*  octet k+9\* |
| NR CGI 2 | | | | | | | | octet k+10\*  octet k+17\* |
| … | | | | | | | | octet k+18\*  octet c\* |
| NR CGI w | | | | | | | | octet c+1\*  octet s\* |

Figure 9.11.4.31.6: NR CGI list

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| NR Cell ID | | | | | | | | octet k+1\* |
| octet k+5\* |
| MCC digit 2 | | | | MCC digit 1 | | | | octet k+6\* |
| MNC digit 3 | | | | MCC digit 3 | | | | octet k+7\* |
| MNC digit 2 | | | | MNC digit 1 | | | | octet k+8\* |

Figure 9.11.4.31.7: NR CGI

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| MBS start time | | | | | | | | | octet s+1\*  octet s+6\* | |

Figure 9.11.4.31.8: MBS timers for MBS timer indication = "MBS start time"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| MBS back-off timer | | | | | | | | | octet s+1\* | |

Figure 9.11.4.31.9: MBS timers for MBS timer indication = "MBS back-off timer"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MSK ID | | | | | | | | octet i+1\*  octet i+4\* |
| MSK | | | | | | | | octet i+5\*  octet i+20\* |
| MTK ID | | | | | | | | octet i+21\*  octet i+22\* |
| Encrypted MTK | | | | | | | | octet i+23\*  octet i+38\* |

Figure 9.11.4.31.12: MBS security container

**Table 9.11.4.31.1: Received MBS container information element**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MBS decision (MD) (bits 1 oto 3 of octet 4) | | | | | | | | | |
| The MD indicates the network decision of the join requested by the UE, the network requests to remove the UE from the MBS session or the network request to update the MBS service area of MBS session. | | | | | | | | | |
| Bits | | | | | | | | | |
| **3** | | **2** | | | **1** | | |  | |
| 0 | | 0 | | | 1 | | | MBS service area update | |
| 0 | | 1 | | | 0 | | | MBS join is accepted | |
| 0 | | 1 | | | 1 | | | MBS join is rejected | |
| 1 | | 0 | | | 0 | | | Remove UE from MBS session | |
| All other values are unused in this version of the specification and interpreted as 000 if received. | | | | | | | | | |
|  | | | | | | | | | |
| If MD is set to "MBS join is rejected" or “Remove UE from MBS session”, bits 6 to 8 of octet 4 shall contain the Rejection cause which indicates the reason of rejecting the MBS join request or the reason of removing the UE from MBS session, respectively, otherwise bits 6 to 8 of octet 4 are spare and shall be coded as zero. | | | | | | | | | |
|  | | | | | | | | | |
| MBS service area indication (MSAI) (bits 4 and 5 of octet 4) | | | | | | | | | |
| The MSAI indicates whether the MBS service area is included in the IE or not. | | | | | | | | | |
| Bits | | | | | | | | | |
| **5** | | **5** | | | **5** | | | **5** | |
| 0 | | 0 | | | 0 | | | 0 | |
| 0 | | 0 | | | 0 | | | 0 | |
| 1 | | 1 | | | 1 | | | 1 | |
| 1 | | 1 | | | 1 | | | 1 | |
|  | | | | | | | | | |
| Rejection cause (bits 6 to 8 of octet 4) | | | | | | | | | |
| The Rejection cause indicates the reason of rejecting the join request or the reason of removing the UE from the MBS session. | | | | | | | | | |
| Bits | | | | | | | | | |
| **8** | | | **7** | **6** | | |  | |  |
| 0 | | | 0 | 0 | | |  | | No additional information provided |
| 0 | | | 0 | 1 | | |  | | Insufficient resources |
| 0 | | | 1 | 0 | | |  | | User is not authorized to use MBS service |
| 0 | | | 1 | 1 | | |  | | MBS session has not started or will not start soon |
| 1 | | | 0 | 0 | | |  | | User is outside of local MBS service area |
| 1 | | | 0 | 1 | | |  | | Session context not found |
| 1 | | | 1 | 0 | | |  | | MBS session is released |
| All other values are unused in this version of the specification and interpreted as 000 if received. | | | | | | | | | |
|  | | | | | | | | | |
| IP address existence (IPAE) (bit1 of octet 5) | | | | | | | | | |
| The IPAE indicates whether the Source IP address information and Destination IP address information are included in the IE or not. | | | | | | | | | |
| Bit | | | | | | | | | |
| **1** |  | | | | |  | | | |
| 0 |  | | | | | Source and destination IP address information not included | | | |
| 1 |  | | | | | Source and destination IP address information included | | | |
|  | | | | | | | | | |
| If IPAE is set to "Source and destination IP address information included", Source IP address information and Destination IP address information shall be included in the IE, otherwise Source IP address information and Destination IP address information shall not be included in the IE. | | | | | | | | | |
|  | | | | | | | | | |
| MBS timer indication (MTI) (bits 2 and 3 of octet 5) | | | | | | | | | |
| The MTI indicates whether there is MBS timer included in the IE or not. | | | | | | | | | |
| Bit | | | | | | | | | |
| **3** | **2** | | | | |  | | | |
| 0 | 0 | | | | | No MBS timers included | | | |
| 0 | 1 | | | | | MBS start time included | | | |
| 1 | 0 | | | | | MBS back-off timer included | | | |
| All other values are unused in this version of the specification and interpreted as 00 if received | | | | | | | | | |
|  | | | | | | | | | |
| MBS security container indication (MSCI) (bit 4 of octet 5) | | | | | | | | | |
| The MSCI indicates whether the MBS security container is included in the IE or not | | | | | | | | | |
| Bit | | | | | | | | | |
| **4** | | | | | | | | | |
| 0 | MBS security container not included | | | | | | | | |
| 1 | MBS security container included | | | | | | | | |
|  | | | | | | | | | |
| TMGI (octets 6 to j) | | | | | | | | | |
| The TMGI is coded as described in subclause 10.5.6.13 in 3GPP TS 24.008 [12] starting from octet 2. | | | | | | | | | |
|  | | | | | | | | | |
| Bits 5 to 8 of octet 5 are spare and shall be coded as zero. | | | | | | | | | |
|  | | | | | | | | | |
| Source IP address information (octet j+1 to v) | | | | | | | | | |
| This field contains the IP unicast address used as source address in IP packets for identifying the source of the multicast service. The value of this field is copied from the corresponding source IP address information in the requested MBS container. | | | | | | | | | |
|  | | | | | | | | | |
| Destination IP address information (octet v+1 to k) | | | | | | | | | |
| This field contains the IP multicast address used as destination address in related IP packets for identifying a multicast service associated with the source. The value of this field is copied from the corresponding destination IP address information in the requested MBS container. | | | | | | | | | |
|  | | | | | | | | | |
| MBS service area (octet k+1 to s) | | | | | | | | | |
| The MBS service area contains the MBS TAI list, the NR CGI list or both, that identifies the service area(s) for a local MBS service. | | | | | | | | | |
|  | | | | | | | | | |
| MBS TAI list (octet k+1 to s) | | | | | | | | | |
| The MBS TAI list is coded as octet 2 and above of the 5GS tracking area identity list IE defined in subclause 9.11.3.9. | | | | | | | | | |
|  | | | | | | | | | |
| NR CGI (octet k+2 to k+9) | | | | | | | | | |
| The NR CGI globally identifies an NR cell. It contains the NR Cell ID and the PLMN ID of that cell. | | | | | | | | | |
|  | | | | | | | | | |
| NR Cell ID (octet k+2 to k+6) | | | | | | | | | |
| The NR Cell ID consists of 36 bits identifying an NR Cell ID as specified in subclause 9.3.1.7 of 3GPP TS 38.413 [31], in hexadecimal representation. Bit 8 of octet y+1 is the most significant bit and bit 5 of octet y+5 is the least significant bit. Bits 1 to 4 of octet y+5 are spare and shall be coded as zero. | | | | | | | | | |
| MCC, Mobile country code (octet k+6 and bits 1 to 4 octet k+7)  The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A. | | | | | | | | | |
|  | | | | | | | | | |
| MNC, Mobile network code (bits 5 to 8 of octet k+7 and octet k+8)  The coding of this field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, bits 5 to 8 of octet k+7 shall be coded as "1111". | | | | | | | | | |
|  | | | | | | | | | |
| The contents of the MCC and MNC digits are coded as octets 6 to 8 of the Temporary mobile group identity IE in figure 10.5.154 of 3GPP TS 24.008 [12]. | | | | | | | | | |
|  | | | | | | | | | |
| MBS start time (octets s+1 to s+6) | | | | | | | | | |
| The MBS start time is coded as described in subclause 10.5.3.9 in 3GPP TS 24.008 [12] starting from octet 2 till octet 7. | | | | | | | | | |
|  | | | | | | | | | |
| MBS back-off timer (octet s+1) | | | | | | | | | |
| The MBS back-off timer is coded as octet 3 described in subclause 10.5.7.4a in 3GPP TS 24.008 [12]. | | | | | | | | | |
|  | | | | | | | | | |
| MBS Service Key Identifier (MSK ID) (octets i+1 to i+4) | | | | | | | | | |
| The MSK ID is 4 bytes long and is defined in 3GPP TS 33.246 [57]. | | | | | | | | | |
|  | | | | | | | | | |
| MBS Service Key (MSK) (octets i+5 to i+20) | | | | | | | | | |
| The MSK is 16 bytes long and is defined in 3GPP TS 33.246 [57]. | | | | | | | | | |
|  | | | | | | | | | |
| MBS Traffic Key Identifier (MTK ID) (octets i+21 to i+22) | | | | | | | | | |
| The MTK ID is 2 bytes long and is defined in 3GPP TS 33.246 [57]. | | | | | | | | | |
|  | | | | | | | | | |
| Encrypted MBS Traffic Key (Encrypted MTK) (octets i+23 to i+38) | | | | | | | | | |
| The Encrypted MTK is 16 bytes long and contains the encrypted version of MTK using MSK as defined in 3GPP TS 33.246 [57]. | | | | | | | | | |
|  | | | | | | | | | |
| NOTE: The IPAE bit is not expected to be set to "Source and destination IP address information included" when the MBS decision (MD) indicates "Remove UE from MBS session". | | | | | | | | | |

\* \* \* End of Changes \* \* \* \*