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

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

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **3251** | **rev** | **3** | **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:***  | C2 pairing authorization at PDU session modification |
|  |  |
| ***Source to WG:*** | Lenovo, Motorola Mobility, Qualcomm Incorporated, Interdigital |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ID\_UAS |  | ***Date:*** | 2021-08-19 |
|  |  |  |  |  |
| ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | C2 authorization when the UE modifies a PDU session is defined in TS 23.256. Stage 3 implementation is currently missing.Moreover, SA3 agreed to send security information in a transparent container between USS/UTM and UE during PDU or PDN Session establishment/modification procedure. |
|  |  |
| ***Summary of change:*** | Adding UAV requirements when modifying PDU session.Adding the C2 aviation container IE to to PDU SESSION MODIFICATION REQUEST message.Adding the C2 aviation container IE to to PDU SESSION MODIFICATION COMMAND message. |
|  |  |
| ***Consequences if not approved:*** | Stage 3 of a feature is not implemented. |
|  |  |
| ***Clauses affected:*** | 6.3.2.2, 6.4.2.2, 8.3.7.1, 8.3.7.XX(new), 8.3.9.1, 8.3.9.XX(new) |
|  |  |
|  | **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:*** |  |

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#### 6.3.2.2 Network-requested PDU session modification procedure initiation

In order to initiate the network-requested PDU session modification procedure, the SMF shall create a PDU SESSION MODIFICATION COMMAND message.

If the authorized QoS rules of the PDU session is modified or is marked as to be synchronised with the UE, the SMF shall set the Authorized QoS rules IE of the PDU SESSION MODIFICATION COMMAND message to the authorized QoS rules of the PDU session. The SMF shall ensure that the number of the packet filters used in the authorized QoS rules of the PDU Session does not exceed the maximum number of packet filters supported by the UE for the PDU session. The SMF may bind service data flows for which the UE has requested traffic segregation to a dedicated QoS flow for the PDU session, if possible. Otherwise the SMF may bind the service data flows to an existing QoS flow. The SMF shall use only one dedicated QoS flow for traffic segregation. If the UE has requested traffic segregation for multiple service data flows with different QoS handling, the SMF shall bind all these service data flows to a single QoS flow. If the SMF allows traffic segregation for service data flows in a QoS rule, then the SMF shall create a new authorized QoS rule for these service data flows and shall delete packet filters corresponding to these service data flows from the other authorized QoS rules.

If the authorized QoS flow descriptions of the PDU session is modified or is marked as to be synchronised with the UE, the SMF shall set the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message to the authorized QoS flow descriptions of the PDU session.

If SMF creates a new authorized QoS rule for a new QoS flow, then SMF shall include the authorized QoS flow description for that QoS flow in the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message, if:

a) the newly created authorized QoS rules is for a new GBR QoS flow;

b) the QFI of the new QoS flow is not the same as the 5QI of the QoS flow identified by the QFI; or

c) the new QoS flow can be mapped to an EPS bearer as specified in subclause 4.11.1 of 3GPP TS 23.502 [9].

If the session-AMBR of the PDU session is modified, the SMF shall set the selected Session-AMBR IE of the PDU SESSION MODIFICATION COMMAND message to the session-AMBR of the PDU session.

If interworking with EPS is supported for the PDU session and if the mapped EPS bearer contexts of the PDU session is modified, the SMF shall set the Mapped EPS bearer contexts IE of the PDU SESSION MODIFICATION COMMAND message to the mapped EPS bearer contexts of the PDU session. If the association between a QoS flow and the mapped EPS bearer context is changed, the SMF shall set the EPS bearer identity parameter in Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message to the new EPS bearer identity associated with the QoS flow.

If the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure and the PDU SESSION MODIFICATION REQUEST message includes a 5GSM capability IE, the SMF shall:

a) if the RQoS bit is set to:

1) "Reflective QoS supported", consider that the UE supports reflective QoS for this PDU session; or

2) "Reflective QoS not supported", consider that the UE does not support reflective QoS for this PDU session; and;

b) if the MH6-PDU bit is set to:

1) "Multi-homed IPv6 PDU session supported", consider that this PDU session is supported to use multiple IPv6 prefixes; or

2) "Multi-homed IPv6 PDU session not supported", consider that this PDU session is not supported to use multiple IPv6 prefixes.

If the SMF considers that reflective QoS is supported for QoS flows belonging to this PDU session, the SMF may include the RQ timer IE set to an RQ timer value in the PDU SESSION MODIFICATION COMMAND message.

If a port management information container needs to be delivered (see 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9]) and the UE has set the TPMIC bit to "Transport of port management information container supported" in the 5GSM capability IE, the SMF shall include a Port management information container IE in the PDU SESSION MODIFICATION COMMAND message.

For a PDN connection established when in S1 mode, upon the first inter-system change from S1 mode to N1 mode, if the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure, the PDU session type is "IPv4", "IPv6", "IPv4v6" or "Ethernet" and the PDU SESSION MODIFICATION REQUEST message includes a Maximum number of supported packet filters IE, the SMF shall consider this number as the maximum number of packet filters that can be supported by the UE for this PDU session. Otherwise the SMF considers that the UE supports 16 packet filters for this PDU session.

For a PDN connection established when in S1 mode, upon the first inter-system change from S1 mode to N1 mode, if the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure, the SMF shall consider that 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 are valid for the lifetime of the PDU session.

For a PDN connection established when in S1 mode, upon the first inter-system change from S1 mode to N1 mode, if the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure and the SMF determines, based on local policies or configurations in the SMF and the Always-on PDU session requested IE in the PDU SESSION MODIFICATION REQUEST message (if available), that either:

a) the requested PDU session needs to be an always-on PDU session, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message and shall set the value to "Always-on PDU session required"; or

b) the requested PDU session shall not be an always-on PDU session and:

i) if the UE included the Always-on PDU session requested IE, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message and shall set the value to "Always-on PDU session not allowed"; or

ii) if the UE did not include the Always-on PDU session requested IE, the SMF shall not include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message.

For a PDN connection established when in S1 mode, upon the first inter-system change from S1 mode to N1 mode, if the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure and the UE indicates support for ECS configuration information provisioning in the Extended protocol configuration options IE of the PDU SESSION MODIFICATION REQUEST message, then the SMF may include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION COMMAND message with at least one of ECS IPv4 Address, ECS IPv6 Address and ECS FQDN included and may include an ECS provider identifier parameter container.

NOTE 1: If an ECS provider identifier is included, then the IP address(es) and/or FQDN(s) are associated with the ECS provider identifier.

Editor's note: Whether additional parameters are needed for ECS configuration information provisioning, e.g. ECS ID, is FFS.

If a QoS flow for URLLC is created in a PDU session and the SMF has not provided the Always-on PDU session indication IE with the value set to "Always-on PDU session required" in the UE-requested PDU session establishment procedure or a network-requested PDU session modification procedure for the PDU session, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message and shall set the value to "Always-on PDU session required".

If the value of the RQ timer is set to "deactivated" or has a value of zero, the UE considers that RQoS is not applied for this PDU session and remove the derived QoS rule(s) associated with the PDU session, if any.

If the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure, the SMF shall set the PTI IE of the PDU SESSION MODIFICATION COMMAND message to the PTI of the PDU SESSION MODIFICATION REQUEST message received as part of the UE-requested PDU session modification procedure.

If the network-requested PDU session modification procedure is not triggered by a UE-requested PDU session modification procedure, the SMF shall set the PTI IE of the PDU SESSION MODIFICATION COMMAND message to "No procedure transaction identity assigned".

If the selected SSC mode of the PDU session is "SSC mode 3" and the SMF requests the relocation of SSC mode 3 PDU session anchor with multiple PDU sessions as specified in 3GPP TS 23.502 [9], the SMF shall include 5GSM cause #39 "reactivation requested" , in the PDU SESSION MODIFICATION COMMAND message, and may include the PDU session address lifetime in a PDU session address lifetime PCO parameter in the Extended protocol configuration options IE of the PDU SESSION MODIFICATION COMMAND message.

The SMF shall send the PDU SESSION MODIFICATION COMMAND message, and the SMF shall start timer T3591 (see example in figure 6.3.2.2.1).

NOTE 2: If the SMF requests the relocation of SSC mode 3 PDU session anchor with multiple PDU sessions as specified in 3GPP TS 23.502 [9], the reallocation requested indication indicating whether the SMF is to be reallocated or the SMF is to be reused is provided to the AMF.

If the control plane CIoT 5GS optimization is enabled for a PDU session and the IP header compression configuration IE was included in the PDU SESSION ESTABLISHMENT REQUEST message or the PDU SESSION MODIFICATION REQUEST message, and the SMF supports control plane CIoT 5GS optimization and IP header compression for control plane CIoT 5GS optimization, the SMF may include the IP header compression configuration IE in the PDU SESSION MODIFICATION COMMAND message to re-negotiate IP header compression configuration associated to the PDU session.

If the control plane CIoT 5GS optimization is enabled for a PDU session and the Ethernet header compression configuration IE was included in the PDU SESSION ESTABLISHMENT REQUEST message or the PDU SESSION MODIFICATION REQUEST message, and the SMF supports control plane CIoT 5GS optimization and Ethernet header compression for control plane CIoT 5GS optimization, the SMF may include the Ethernet header compression configuration IE in the PDU SESSION MODIFICATION COMMAND message to re-configure Ethernet header compression configuration associated with the PDU session.

If the network-requested PDU session modification procedure is triggered by a UE supporting UAS services, requested PDU session modification procedure with the PDU SESSION MODIFICATION REQUEST message included C2 aviation container IE and the request was accepted by the network, the SMF shall send the PDU SESSION MODIFICATION COMMAND message by including the C2 aviation container IE which:

- shall contain C2 authorization result;

- may contain C2 session security information;

- may contain new CAA-level UAV ID; and

- may contain flight authorization information.

The UE shall replace the CAA-level UAV ID with the new CAA-level UAV ID, if it is included in the C2 aviation container IE included in the PDU SESSION MODIFICATION COMMAND message.

If the SMF needs to provide new ECS configuration information to the UE and the UE has indicated support for ECS configuration information provisioning in the PDU SESSION ESTABLISHMENT REQUEST or the PDU SESSION MODIFICATION REQUEST, then the SMF may include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION COMMAND message with at least one of ECS IPv4 Address, ECS IPv6 Address and ECS FQDN included and may include an ECS provider identifier.

NOTE 3: If an ECS provider identifier is included, then the IP address(es) and/or FQDN(s) are associated with the ECS provider identifier.

Editor's note: Whether additional parameters are needed for ECS configuration information provisioning, e.g. ECS ID, is FFS.



Figure 6.3.2.2.1: Network-requested PDU session modification procedure

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#### 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.

For a PDN connection established when in S1 mode, after the first 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, and:

a) the UE is performing the PDU session modification procedure to indicate the support of reflective QoS, 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, 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: 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 the first 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, and:

a) the UE is performing the PDU session modification procedure to indicate the support of Multi-homed IPv6 PDU session, 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, 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 the first 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, and the UE supports more than 16 packet filters for this PDU session, 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 the first 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 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 the first 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 requests the PDU session to be an always-on PDU session in the 5GS, 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 C2 aviation container IE in the PDU SESSION MODIFICATION REQUEST message, when requesting to modify an established PDU session for the UAV operation of C2 communication. The C2 aviation container IE:

- shall contain CAA-level UAV ID of the UE;

- if available, shall contain the identification information of UAV-C to pair; and

- may contain the flight authorization information.

Editor's note: Whether the identification information of UAV-C to pair is mandatory or optional if it is available is FFS.

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

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 allowed" in the MA PDU session information IE and set the request type to "modification request" in the UL NAS TRANSPORT message.

NOTE 2: 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 target QoS bit to "Non-default QoS rule 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

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#### 8.3.7.1 Message definition

The PDU SESSION MODIFICATION REQUEST message is sent by the UE to the SMF to request a modification of a PDU session. See table 8.3.7.1.1.

Message type: PDU SESSION MODIFICATION REQUEST

Significance: dual

Direction: UE to network

Table 8.3.7.1.1: PDU SESSION MODIFICATION REQUEST message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity9.6 | M | V | 1 |
|  | PDU SESSION MODIFICATION REQUEST message identity | Message type9.7 | M | V | 1 |
| 28 | 5GSM capability | 5GSM capability9.11.4.1 | O | TLV | 3-15 |
| 59 | 5GSM cause | 5GSM cause9.11.4.2 | O | TV | 2 |
| 55 | Maximum number of supported packet filters | Maximum number of supported packet filters9.11.4.9 | O | TV | 3 |
| B- | Always-on PDU session requested | Always-on PDU session requested9.11.4.4 | O | TV | 1 |
| 13 | Integrity protection maximum data rate | Integrity protection maximum data rate9.11.4.7 | O | TV | 3 |
| 7A | Requested QoS rules | QoS rules9.11.4.13 | O | TLV-E | 7-65538 |
| 79 | Requested QoS flow descriptions | QoS flow descriptions9.11.4.12 | O | TLV-E | 6-65538 |
| 75 | Mapped EPS bearer contexts | Mapped EPS bearer contexts9.11.4.8 | O | TLV-E | 7-65538 |
| 7B | Extended protocol configuration options | Extended protocol configuration options9.11.4.6 | O | TLV-E | 4-65538 |
| 74 | Port management information container | Port management information container9.11.4.27 | O | TLV-E | 4-65538 |
| 66 | IP header compression configuration | Header compression configuration9.11.4.24 | O | TLV | 5-257 |
| 1F | Ethernet header compression configuration | Ethernet header compression configuration9.11.4.28 | O | TLV | 3 |
| XX | C2 aviation container | C2 aviation container9.11.4.x | O | TLV-E | 2-m |

NOTE: It is possible for UEs compliant with version 15.2.1 or earlier versions of this specification to send the Mapped EPS bearer contexts IE with IEI of value "7F" for this message.

--------------------------------------- Next Change -------------------------------------

#### 8.3.7.XX C2 aviation container

The UE shall use C2 aviation payload information element to include:

- CAA-level UAV ID;

- if available, identification information of UAV-C to pair; and

- optionally, flight authorization information,

when requesting to modify a PDU session for the UAV operation of C2 communication.

--------------------------------------- Next Change -------------------------------------

#### 8.3.9.1 Message definition

The PDU SESSION MODIFICATION COMMAND message is sent by the SMF to the UE to indicate a modification of a PDU session. See table 8.3.9.1.1

Message type: PDU SESSION MODIFICATION COMMAND

Significance: dual

Direction: network to UE

Table 8.3.9.1.1: PDU SESSION MODIFICATION COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | PDU session ID | PDU session identity9.4 | M | V | 1 |
|  | PTI | Procedure transaction identity9.6 | M | V | 1 |
|  | PDU SESSION MODIFICATION COMMAND message identity | Message type9.7 | M | V | 1 |
| 59 | 5GSM cause | 5GSM cause9.11.4.2 | O | TV | 2 |
| 2A | Session AMBR | Session-AMBR9.11.4.14 | O | TLV | 8 |
| 56 | RQ timer value | GPRS timer9.11.2.3 | O | TV | 2 |
| 8- | Always-on PDU session indication | Always-on PDU session indication9.11.4.3 | O | TV | 1 |
| 7A | Authorized QoS rules | QoS rules9.11.4.13 | O | TLV-E | 7-65538 |
| 75 | Mapped EPS bearer contexts | Mapped EPS bearer contexts9.11.4.8 | O | TLV-E | 7-65538 |
| 79 | Authorized QoS flow descriptions | QoS flow descriptions9.11.4.12 | O | TLV-E | 6-65538 |
| 7B | Extended protocol configuration options | Extended protocol configuration options9.11.4.6 | O | TLV-E | 4-65538 |
| 77 | ATSSS container | ATSSS container9.11.4.22 | O | TLV-E | 3-65538 |
| 66 | IP header compression configuration | IP header compression configuration9.11.4.24 | O | TLV | 5-257 |
| 74 | Port management information container | Port management information container9.11.4.27 | O | TLV-E | 4-65538 |
| 1E | Serving PLMN rate control | Serving PLMN rate control9.11.4.20 | O | TLV | 4 |
| 1F | Ethernet header compression configuration | Ethernet header compression configuration9.11.4.28 | O | TLV | 3 |
| XX | C2 aviation container | C2 aviation container9.11.4.x | O | TLV-E | 2-m |

NOTE: It is possible for networks compliant with version 15.2.1 or earlier versions of this specification to send the Mapped EPS bearer contexts IE with IEI of value "7F" for this message.

--------------------------------------- Next Change -------------------------------------

#### 8.3.9.XX C2 aviation container

The network shall use C2 aviation container information element to include:

- C2 authorization result;

- C2 session security information;

- new CAA-level UAV ID; and

- flight authorization information,

when accepting to modify an established PDU session for the UAV operation of C2 communication.

--------------------------------------- End of Change -------------------------------------