**3GPP TSG-CT WG1 Meeting #126-e****C1-206493**

**Electronic meeting, 15-23 October 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **24.501** | **CR** | **2610** | **rev** | **1** | **Current version:** | **17.0.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Clarification for CP only PDU session |
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| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5GProtoc17 |  | ***Date:*** | 2020-09-25 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)* |
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| ***Reason for change:*** | Only the following purpose of the UE-requested PDU session modification procedure is applicable to the CP only PDU session:- to enable the UE to request modification of a PDU session;- to indicate a change of 3GPP PS data off UE status for a PDU session;- to indicate to the network the UE's 5GSM capability for Ethernet PDN type in S1 mode; - to re-negotiate header compression configuration associated to a PDU session using control plane CIoT 5GS optimization. |
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| ***Summary of change:*** | Clarify the purpose of the UE-requested PDU session modification procedure for the CP only PDU session. |
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| ***Consequences if not approved:*** | Unnecessary signaling of UE-requested PDU session modification procedure for a CP only PDU session. |
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| ***Clauses affected:*** | 6.4.2.1, 6.4.2.2 |
|  |  |
|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\*\* FIRST CHANGE \*\*\*\*\*\*

#### 6.4.2.1 General

The purpose of the UE-requested PDU session modification procedure is:

a) to enable the UE to request modification of a PDU session;

b) to indicate a change of 3GPP PS data off UE status for a PDU session;

c) to revoke the previously indicated support for reflective QoS;

d) to request specific QoS handling and segregation of service data flows;

e) to indicate to the network the relevant 5GSM parameters and capabilities (e.g. the UE's 5GSM capabilities, whether the UE supports more than 16 packet filters, the maximum data rate per UE for user-plane integrity protection supported by the UE for uplink, the maximum data rate per UE for user-plane integrity protection supported by the UE for downlink and whether the UE requests the PDU session to be an always-on PDU session in the 5GS) 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;

f) to delete one or more mapped EPS bearer contexts;

g) to convey a port management information container; or

h) to re-negotiate header compression configuration associated to a PDU session using control plane CIoT 5GS optimization.

NOTE: The case c), d), e), f) and g) do not apply to PDU sessions associated with the control plane only indication.

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 (see subclause 6.2.10), the UE shall initiate the UE-requested PDU session modification procedure even if the UE is outside the LADN service area or the timer T3396, T3584, T3585 or the back-off timer is running or is deactivated.

If the UE needs to revoke the previously indicated support for reflective QoS for a PDU session and timer T3396, T3584, T3585 or the back-off timer is running or is deactivated, the UE shall not initiate the UE-requested PDU session modification procedure and shall instead initiate the UE-requested PDU session release procedure.

If the UE needs to initiate the UE-requested PDU session modification procedure to indicate to the network the relevant 5GSM parameters and capabilities (e.g. the UE's 5GSM capabilities, whether the UE supports more than 16 packet filters, the maximum data rate per UE for user-plane integrity protection supported by the UE for uplink, the maximum data rate per UE for user-plane integrity protection supported by the UE for downlink and whether the UE requests the PDU session to be an always-on PDU session in the 5GS) for a PDN connection established when in S1 mode, after the first inter-system change from S1 mode to N1 mode, the UE is a UE operating in single-registration mode in the network supporting N26 interface and timer T3396, T3584, T3585 or the back-off timer is running, the UE shall initiate the UE-requested PDU session modification procedure after expiry of timer T3396, T3584 or T3585 or after expiry of the back-off timer.

\*\*\*\*\*\* 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 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 and 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.

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.

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.

In case 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; and

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.



Figure 6.4.2.2.1: UE-requested PDU session modification procedure

\*\*\*\*\*\* END CHANGE \*\*\*\*\*\*