**3GPP TSG-CT WG1 Meeting #134-eC1-22xxxx**

**E-Meeting, 17th – 25th February 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **4117** | **rev** | **1** | **Current version:** | **17.5.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Authorized QoS flow provided by network | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc17 | | | | |  | ***Date:*** | | | 2022-02-10 |
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| ***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 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)* | |
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| ***Reason for change:*** | | About providing the authorized QoS flow description for a new QoS flow, it was specified in TS 24.501 sub 6.3.2.2:  "*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]."*  Based on above conditon b), it can be interpreted that when b) is NOT met, i.e. the QFI of the new QoS flow is the same as the 5QI of the QoS flow identified by the QFI, then the SMFneeds not include the **whole** authorized QoS flow description for that new QoS flow in the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message. This is actually not true.  Based on following text in both SA2 and CT1, one can see that when the QFI of a new QoS flow is the same as the 5QI of the QoS flow identified by the QFI, then 5QI is an **optional** parameter and needs not be included in the authorized QoS flow description for that new QoS flow in the Authorized QoS flow descriptions IE. In this case, the UE can use its QFI as 5QI. However, this does not say that due to 5QI = QFI, the **whole** authorized QoS flow description for that new QoS flow in the Authorized QoS flow descriptions IE is not provided to the UE. All in all, providing authorized QoS flow description by the SMF has nothing to do with “QFI of QoS flow = 5QI of QoS flow”or not as they are totally decoupled. Hence above conditon b) needs to be removed to avoid unnecessary misunderstanding.  In TS 23.501:  "*For Non-GBR QoS Flows, and when standardized 5QIs or pre-configured 5QIs are used and when the 5QI is within the range of the QFI (i.e. a value less than 64), the 5QI value may be used as the QFI of the QoS Flow*"  In TS 24.501:  "*Each QoS flow description contains:*  *a)   a QoS flow identifier (QFI);*  *c)   5QI, if the QFI is not the same as the 5QI of the QoS flow identified by the QFI; and*" | | | | | | | | |
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| ***Summary of change:*** | | It proposes to remove the incorrect condition for providing the authorized QoS flow description for a new QoS flow in the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message.  It proposes to add a note to indicate that in other cases than listed conditions under which the SMF shall proivde the authorized QoS flow description, it is up to the SMF implementation to include the authorized QoS flow description of the new QoS flow for the new authorized QoS rule. | | | | | | | | |
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| ***Consequences if not approved:*** | | When the QFI of the new QoS flow is the same as the 5QI of the QoS flow identified by the QFI, then the SMF will not include the whole authorized QoS flow description for that new QoS flow in the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message, which results in there is no QoS flow to be associated to a new authorized QoS rule. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

#### 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 new QoS flow can be mapped to an EPS bearer as specified in subclause 4.11.1 of 3GPP TS 23.502 [9]; or

c) the new QoS flow is established for the PDU session used for relaying, as specified in subclause 5.6.2.1 of 3GPP TS 23.304 [6E].

NOTE 0: In cases other than above listed cases, it is up to the SMF implementation to include the authorized QoS flow description of the new QoS flow for the new authorized QoS rule in the Authorized QoS flow descriptions IE of the PDU SESSION MODIFICATION COMMAND message.

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:

1) 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

2) 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.

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 triggered by a UE-requested PDU session modification procedure and the UE has included the Requested MBS container IE in the PDU SESSION MODIFICATION REQUEST message with the MBS operation set to "Join MBS session", the SMF:

a) shall include the TMGI for the MBS session IDs that the UE is allowed to join, if any, in the Received MBS container IE, shall set the MBS Decision to "MBS join is accepted" for each of those Received MBS information and may include the MBS start time to indicate the time when the MBS session starts;

b) shall include the TMGI for MBS session IDs that the UE is rejected to join, if any, in the Received MBS container IE, shall set the MBS Decision to "MBS join is rejected" for each of those Received MBS information, shall set the Rejection cause for each of those Received MBS information with the reason of rejection and, if the Rejection cause is set to "MBS session has not started or will not start soon", may include an MBS back-off timer value; and

c) may include in the Received MBS container IE the MBS service area for each MBS session and include in it the MBS TAI list, the NR CGI list or both, that identify the service area(s) for the local MBS service;

in the PDU SESSION MODIFICATION COMMAND message. If the UE has set the Type of MBS session ID to "Source specific IP multicast address" in the Requested MBS container IE for certain MBS session(s) in the PDU SESSION MODIFICATION REQUEST message, the SMF shall include the Source IP address information and Destination IP address information in the Received MBS information together with the TMGI for each of those MBS sessions.

NOTE 1: Including the Source IP address information and Destination IP address information in the Received MBS information in that case is to allow the UE to perform the mapping between the requested MBS session ID and the provided TMGI.

NOTE 2: In SNPN, TMGI is used together with NID to identify an MBS Session.

If:

a) the SMF wants to remove joined UE from one or more MBS sessions; or

b) the network-requested PDU session modification procedure is triggered by a UE-requested PDU session modification procedure and the UE has included the Requested MBS container IE in the PDU SESSION MODIFICATION REQUEST message with the MBS operation set to "Leave MBS session",

the SMF shall include the MBS session IDs that the UE is removed from, if any, in the Received MBS container IE in the PDU SESSION MODIFICATION COMMAND message and shall set the MBS Decision to "Remove UE from MBS session" for each of those Received MBS information. The SMF may include the updated MBS service area in each of the Received MBS information, if any.

If the SMF wants to update the MBS service area of an MBS session that the UE has joined, the SMF shall include the corresponding MBS session ID and the updated MBS service area in the Received MBS container IE in the PDU SESSION MODIFICATION COMMAND message, and shall set the MBS Decision to "MBS service area update" in the Received MBS information.

If the network needs to update ATSSS parameters (see subclause 5.2.4 of 3GPP TS 24.193 [13B]), the SMF shall include the ATSSS container IE with the updates of ATSSS parameters in the PDU SESSION MODIFICATION COMMAND message.

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 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 3: 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 which is associated with C2 communication of the UAS services, is triggered by a UE-requested PDU session modification procedure, the PDU SESSION MODIFICATION REQUEST message includes Service-level-AA container IE and the request is accepted by the network, the SMF shall send the PDU SESSION MODIFICATION COMMAND message by including the Service-level-AA container IE. The Service-level-AA container IE:

a) includes C2 authorization result;

b) can include C2 session security information; and

c) can include the service-level device ID set to a new CAA-level UAV ID.

If the service-level AA procedure is triggered for the established PDU session for UAS services with re-authentication purpose, and the SMF is informed by the UAS NF that UUAA-SM is successful, the SMF shall transmit a PDU SESSION MODIFICATION COMMAND message to the UE, where the PDU SESSION MODIFICATION COMMAND message:

a) shall include a service-level-AA response in the service-level-AA container, with the value of the service-level-AA result, set to "Service level authentication and authorization was successful";

b) may include the service-level device ID with the value set to the CAA-level UAV ID if received from the UAS-NF; and

c) may include the service-level-AA payload with the value set to the UUAA authorization payload if received from the UAS-NF.

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 message or 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. A spatial validity condition where the ECS configuration information is applicable may be included by the SMF along with a ECS IPv4 Address, a ECS IPv6 Address, or a ECS FQDN respectively.

NOTE 4: If an ECS provider identifier is included, then the IP address(es) and/or FQDN(s) are associated with the ECS provider identifier.

If the SMF needs to provide DNS server address(es) to the UE and the UE has provided the DNS server IPv4 address request, the DNS server IPv6 address request or both of them, in the PDU SESSION ESTABLISHMENT REQUEST message or a PDU SESSION MODIFICATION REQUEST message, then the SMF shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION COMMAND message with one or more DNS server IPv4 address(es), one or more DNS server IPv6 address(es) or both of them.

If the SMF needs to trigger EAS rediscovery and the UE has indicated support of the EAS rediscovery in the PDU SESSION ESTABLISHMENT REQUEST message or the PDU SESSION MODIFICATION REQUEST message, then the SMF shall include the Extended protocol configuration options IE in the PDU SESSION MODIFICATION COMMAND message:

a) with the EAS rediscovery indication without indicated impact; or

b) with the following:

1) one or more EAS rediscovery indication(s) with impacted EAS IPv4 address range, if the UE supports EAS rediscovery indication(s) with impacted EAS IPv4 address range;

2) one or more EAS rediscovery indication(s) with impacted EAS IPv6 address range, if the UE supports EAS rediscovery indication(s) with impacted EAS IPv6 address range;

3) one or more EAS rediscovery indication(s) with impacted EAS FQDN, if the UE supports EAS rediscovery indication(s) with impacted EAS FQDN; or

4) any combination of the above.

When UE has requested P-CSCF IPv6 address or P-CSCF IPv4 address and the SMF has provided P-CSCF address(es) during the PDU session establishment procedure, if the network-requested PDU session modification procedure is triggered for P-CSCF restoration, the SMF shall include the P-CSCF IP address(es) in the Extended protocol configuration options IE in the PDU SESSION MODIFICATION COMMAND message as specified in subclause 5.8.2.2 of 3GPP TS 23.380 [54].



Figure 6.3.2.2.1: Network-requested PDU session modification procedure

\* \* \* End of Change \* \* \* \*