**3GPP TSG-CT WG3 Meeting #131C3-235327**

**Chicago, USA, 13 - 17 November, 2023 (revision of C3-235abc)**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.513** | **CR** | **0513** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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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:*** | Update the QoS flow binding procedure | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | XRM | | | | |  | ***Date:*** | | | 2023-10-26 |
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| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | The handle of the PCC rule containing the Traffic Parameter Information, PDU Set Control Information and Data Burst Handling Information is missing in the QoS flow binding procedure. | | | | | | | | |
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| ***Summary of change:*** | | Update the QoS flow binding procedure to add the description for the handle of the PCC rule containing Traffic Parameter Information, PDU Set Control Information and Data Burst Handling Information. | | | | | | | | |
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| ***Consequences if not approved:*** | | The handle of the PCC rule containing Traffic Parameter Information, PDU Set Control Information and Data Burst Handling Information is not clear. | | | | | | | | |
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| ***Clauses affected:*** | | 6.4 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 23.503 CR 1104 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

## 6.4 QoS flow binding

The QoS flow binding is the association of the PCC rule to a QoS flow, identified by the QFI, within a PDU session.

The QoS flow binding function resides in the SMF. The binding is performed using the following binding parameters:

- 5QI;

- ARP;

- QNC (if available in the PCC rule);

- Priority Level (if available in the PCC rule);

- Averaging Window (if available in the PCC rule); and

- Maximum Data Burst Volume (if available in the PCC rule).

The selected QoS flow shall have the same above binding parameters as the one indicated by the PCC rule. The set of 5G QoS parameters assigned by the PCF to the service data flow is the main input for QFI allocation.

The SMF shall bind a PCC rule to the default QoS flow as follows:

- For a non-GBR default QoS flow, the PCC rule(s) bound to the default QoS flow contains values of the non-GBR type 5QI, ARP, and if received, 5QI priority Level, that are identical to the corresponding values within the "authDefQos" attribute of the enforced session rule.

- For a GBR or delay critical GBR default QoS flow, the PCC rule bound to the default QoS flow contains a reference to a QoS data decision with the "defQosFlowIndication" attribute set to true and the authorized default QoS within the "authDefQos" attribute of the enforced session rule contains values of the GBR type or delay critical GBR type 5QI, ARP, GBR, MBR, and if available, 5QI priority Level, averaging window and maximum data burst volume.

When the QoS data decision which the PCC rule refers to include the "defQosFlowIndication" attribute set to true as defined in clause 4.2.6.2.10 of 3GPP TS 29.512 [9], the SMF shall bind the PCC rule to the default QoS flow as long as the "defQosFlowIndication" attribute set to true.

If the "defQosFlowIndication" attribute has not been received before during the lifetime of the PCC rule or the "defQosFlowIndication" attribute has been received but set to false (as defined in clause 4.2.6.2.10 of 3GPP TS 29.512 [9]), the SMF shall evaluate whether a QoS flow with the same binding parameters combination exists. If a QoS flow with the same binding parameters combination exists, the SMF binds the PCC rule to the existing QoS flow, or based on local policies, or the below mentioned conditions (which QoS Flow binding shall ensure), require the establishment of a new QoS flow. If no QoS flow exists, the SMF creates a new QoS flow, derives the QoS parameters for a new QoS flow, using authorized QoS in the PCC rule, and binds the PCC rule to the QoS flow.

NOTE 1: For non-GBR QoS flows, and when standardized 5QIs or pre-configured 5QIs are used, the 5QI value can be used as the QFI of the QoS flow. However, the pre-configured 5QI values cannot be used when the UE is roaming.

NOTE 2: For an unstructured PDU session, there is maximum one QoS flow.

NOTE 3: For PCC rules containing a delay critical GBR 5QI value, the SMF can bind PCC Rules with the same binding parameters to different QoS Flows to ensure that the GFBR of the QoS Flow can be achieved with the Maximum Data Burst Volume of the QoS Flow.

The PCF shall supply the PCC rules to be installed, modified, or removed to the SMF. The SMF shall evaluate whether it is possible to use one of the existing QoS flows or not, and if applicable.

If the PCF has previously indicated to the SMF that a PCC rule shall be bound to the default QoS flow by including the "defQosFlowIndication" attribute set to true within the QoS data decision which the PCC rule refers to, but the PCF updates the QoS data decision by including the "defQosFlowIndication" attribute set to false as defined in clause 4.2.6.2.10 of 3GPP TS 29.512 [9], the SMF shall create the binding between service data flow(s) and the QoS flow which have the same binding parameters.

If the PCC rule is corresponding to the QoS rule requested by the UE as defined in clause 4.2.4.17 of 3GPP TS 29.512 [9] and a Segregation bit is set as defined in Table 9.11.4.13.1 of 3GPP TS 24.501 [33] in the request from the UE, the SMF should abide by the UE request and bind the PCC rule on a distinct and dedicated QoS Flow e.g. even if an existing QoS Flow can support the requested QoS, but is still allowed to proceed instead with binding the selected SDF(s) on an existing QoS Flow.

Whenever the binding parameters of a PCC rule changes, the existing binding of this PCC rule shall be re-evaluated, i.e. the QoS flow binding procedure, is performed. The re-evaluation may, for a PCC rule, result in a new binding with another QoS flow. If the PCF requests the same change of the binding parameter value(s) for all PCC rules that are bound to the same QoS Flow, the SMF should not re-evaluate the binding of these PCC rules and instead, modify the QoS parameter value(s) of the QoS Flow accordingly.

NOTE 4: A QoS change of the default 5QI/ARP values doesn't cause the QoS flow rebinding for PCC rules previously bound to the QoS flow associated with the default QoS rule, with the "defQosFlowIndication" attribute set to true.

If the PCC rule is removed, the SMF shall remove the association of the PCC rule to the QoS flow. If the last PCC rule that is bound to a QoS Flow is removed, the SMF shall delete the QoS Flow.

When a QoS flow is removed the SMF shall report to the PCF that the PCC rules bound to the corresponding QoS flow are removed.

The QoS Flow binding shall also ensure that:

- If a dynamic value for the Core Network Packet Delay Budget (defined in 3GPP TS 23.501 [2], clause 5.7.3.4) is used, PCC rules with the same above binding parameters but different PDU Session anchors (i.e. the corresponding service data flows which have different CN PDBs) shall not be bound to the same QoS Flow.

NOTE 5: Different PDU Session anchors can exist if multiple RouteToLocation instances are included within the traffic control decision referred by the PCC rules.

NOTE 6: In PIN scenarios (defined in 3GPP TS 23.501 [2], clause 5.44.3.4) the SMF can increase the dynamic CN PDB based on the requested non-3GPP delay budget for specific GBR QoS flows based on operator policy and implementation. This change however does not impact the QoS Flow binding.

- A PCC rule including TSCAI information is bound to a new QoS flow and no other PCC rule shall be bound to this same QoS flow. Whenever the TSC Assistance container of an existing PCC rule is changed, the binding of this PCC rule shall not be re-evaluated.

- For MA PDU Session, the QoS flow binding shall also ensure that the PCC rules for GBR or delay critical GBR service data flows allowed on different access are not bound to the same QoS flow even if the PCC rules contain the same binding parameters.

NOTE 7: For MA PDU Session, the GBR or delay critical GBR resource for a service data flow is allocated only in one access.

- When the PCF provisions a PCC rule with Alternative QoS parameter Set(s), the PCC rule is bound to a new QoS Flow and no other PCC rule is bound to this QoS Flow.

- When the PCF provisions a PCC rule with QoS Monitoring Policy, the PCC rule is bound to a new QoS flow and no other PCC rule is bound to this QoS flow.

NOTE 8: The binding of PCC rule with QoS Monitoring policy to a new QoS flow is only applicable to the Per QoS Flow per UE QoS Monitoring (as described in TS 23.501 [2] clause 5.33.3.2).

- The SMF should not bind PCC rule(s) with the indication of service data flow(s) supporting ECN marking for L4S within the "l4sInd" attribute and the PCC rule(s) with service data flow(s) not supporting ECN marking for L4S to the same QoS flow.

NOTE 9: The SMF can also, based on local configuration, bind a PCC Rule that does not include the explicit indication of ECN marking for L4S to a new QoS flow that supports ECN marking for L4S.

- When the PCF provisions a PCC rule with Traffic Parameter Information, the PCC rule is bound to a new QoS Flow and no other PCC rule is bound to this QoS Flow.

- When the PCF provisions a PCC rule with PDU Set Control Information, the PCC rule is bound to a new QoS Flow and no other PCC rule is bound to this QoS Flow. Whenever the PDU Set Control Information of an existing PCC rule changed, the binding of this PCC rule shall not be re-evaluated.

- When the PCF provisions a PCC rule with Data Burst Handling Information, the PCC rule is bound to a new QoS flow and no other PCC rule is bound to this QoS flow.

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