**SA WG2 Meeting #S2-154 S2-2210978**

**Toulouse, France, Nov 14 - 18, 2022**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **23.503** | **CR** | **0788** | **rev** | **1** | **Current version:** | **17.6.0** |  |
|  |
| *For* ***HE******LP*** *on using this form: comprehensive instructions can be found at 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:***  | Policy control for dynamic satellite backhaul |
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| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | S2 |
|  |  |
| ***Work item code:*** | 5GSATB |  | ***Date:*** | 202-10-31 |
|  |  |  |  |  |
| ***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 canbe found in 3GPP TR 21.900. | *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)* |
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| ***Reason for change:*** | Due to dynamic satellite network topology and distinguished transmission capabilities provided by different type of satellites, the delay of the backhaul may be impacted. Therefore, the Policy/QoS control need to be enhanced. |
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| ***Summary of change:*** | 1. Add the general description in the clause of Policy control  |
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| ***Consequences if not approved:*** | Policy/QoS control can not support the dynamic satellite backhaul. |
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| ***Clauses affected:*** | 6.1.3.6, 6.3.1 |
| ***“*** |  |
|  | **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:*** |  |

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

#### 6.1.3.6 Policy control

QoS control refers to the authorization and enforcement of the maximum QoS that is authorized for a service data flow, for a QoS Flow or for the PDU Session. A service data flow may be either of IP type or of Ethernet type. PDU Sessions may be of IP type or Ethernet type or unstructured.

The PCF, in a dynamic PCC Rule, associates a service data flow template to an authorized QoS that is provided in a PCC Rule to the SMF. The PCF may also activate a pre-defined PCC Rule that contains that association.

The authorized QoS for a service data flow template shall include a 5QI and the ARP. For a 5QI of GBR or Delay-critical GBR resource type, the authorized QoS shall also include the MBR, GBR and may include the QoS Notification Control parameter (for notifications when authorized GFBR can no longer ( or can again) be fulfilled). For 5QI of Non-GBR resource type, the authorized QoS may include the MBR and the Reflective QoS Control parameter. The 5QI value can be standardized (i.e. referring to QoS characteristics as defined in clause 5.7.3 of TS 23.501 [2]), pre-configured (i.e. referring to QoS characteristics configured in the RAN) or dynamically assigned (i.e. referring to QoS characteristics provided by the PCF as Explicitly signalled QoS Characteristics in the PDU Session related policy information described in clause 6.4).

NOTE 1: Further details, special cases and additional parameters are described in clause 6.3.1.

QoS control also refers to the authorization and enforcement of the Session-AMBR and default 5QI/ARP combination. The PCF may provide the Authorized Session-AMBR and the Authorized default 5QI and ARP combination as part of the PDU Session information for the PDU Session to the SMF. The Authorized Session-AMBR and Authorized default 5QI/ARP values takes precedence over other values locally configured or received at the SMF.

In home routed roaming, the H-SMF may provide the QoS constraints received from the VPLMN (defined in clause 4.3.2.2.2 of TS 23.502 [3]) to the H-PCF. The H-PCF ensures that the Authorized Session-AMBR value does not exceed the Session-AMBR value provided by the VPLMN and the Authorized default 5QI/ARP contains a 5QI and ARP value supported by the VPLMN. If no QoS constraints are provided the H-PCF considers that no QoS constraints apply unless operator policies define any. The PCF shall also consider the QoS constraints for the setting of the Subsequent Authorized default 5QI/ARP and Subsequent Authorized Session-AMBR.

For policy control, the AF interacts with the PCF and the PCF interacts with the SMF as instructed by the AF. For certain events related to policy control, the AF shall be able to give instructions to the PCF to act on its own, i.e. based on the service information currently available. The following events are subject to instructions from the AF:

- The authorization of the service based on incomplete service information;

NOTE 2: The QoS authorization based on incomplete service information is required for e.g. IMS session setup scenarios with available resources on originating side and a need for resource reservation on terminating side.

- The immediate authorization of the service;

- The gate control (i.e. whether there is a common gate handling per AF session or an individual gate handling per AF session component required);

- The forwarding of QoS Flow level information or events (see clause 6.1.3.18).

The UE and the AF shall provide all available flow description information (e.g. source and destination IP address and port numbers and the protocol information) to enable the binding functionality and the generation or selection of the service data flow filter(s) in the PCC rules. The AF may also provide a ToS (IPv4) or TC (IPv6) value that is set by the application as part of the flow description information. The PCF generates a PCC Rule with service data flow filter(s) (either as IP Packet Filter set as defined in clause 5.7.6.2 of TS 23.501 [2] or as Ethernet Packet Filter set as defined in clause 5.7.6.3 of TS 23.501 [2]) derived from the flow description information.

NOTE 3: A ToS/TC value can be useful when another packet filter attribute is needed to differentiate between packet flows. For example, packet flows encapsulated and encrypted by a tunnelling protocol can be differentiated by the ToS/TC value of the outer header if appropriately set by the application. To use ToS/TC for service data flow detection, network configuration needs to ensure there is no ToS/TC re-marking applied along the path from the application to the PSA UPF and the specific ToS/TC values are managed properly to avoid potential collision with other usage (e.g., paging policy differentiation).

If SMF indicates that a PDU session is carried over NR satellite access or satellite backhaul, the PCF may take this information into account for the policy decision, e.g. together with any delay requirements provided by the AF.

When SMF indicates that the dynamic satellite backhaul is used to serve the PDU session, the PCF may request the SMF to report the the packet delay over satellite backhaul and take the packet delay into account for the policy decision. The PCF may provide QoS monitoring rule for the packet delay measurement.

Editor’s Note: whether the QoS monitoring rule also indicates to measure RAN part delay in this case is FFS.

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