**3GPP TSG-CT WG1 Meeting #130-eC1-21XXXX**

**Electronic meeting, 20-28 May 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.193** | **CR** | **0048** | **rev** | **1** | **Current version:** | **17.0.1** |  |
|  | | | | | | | | |
| *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:*** | Measurement performance per QoS flow | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Lenovo, Motorola Mobility | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ATSSS\_Ph2 | | | | |  | ***Date:*** | | | 2021-05-13 |
|  |  | | | |  | |  | | |  |
| ***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 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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Stage 2 has recently defined access performance measurements based on target QoS flow used by the service data flow (SDF) traffic, if the UE is capable of it. This is an addition to what which has been used i.e. default QoS flow. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added requirements to describe the behavior of the UE and the UPF about when to perform the access performance measurements based on target QoS flow or default QoS flow.  Added a new indicator for the measurement assistance information that the UE performs the measurements based on target QoS flow.  Added SMF providing the UE by the MAI, a QoS flow list for the access performance measurements per target QoS flow. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage 3 has not been implemented for the new feature based on target QoS flow. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4, 6.1.5.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.501 ... CR #2720 | | |
| ***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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## 4.4 Support of access performance measurements

A performance measurement function (PMF) in the ATSSS capable UE and a PMF in the UPF can perform access performance measurements to decide how to distribute traffic over 3GPP access and non-3GPP access. The access performance measurements can be performed by using the QoS flow of default QoS rule. The access performance measuremets can also be performed by using the QoS flow of non-default QoS rule, that is used by the service data flow (SDF) traffic, if the UE is capable of performing the measurements by using the QoS flow(s) of non-default QoS rule.

An ATSSS capable UE receives measurement assistance information from the SMF during the PDU session establishment procedure for an MA PDU session as described in clause 5.32.5 of 3GPP TS 23.501 [2]. The measurement assistance information (MAI) can contain the addressing information of the PMF in the UPF, as well as an indicator on whether access availability/unavailability reports need to be sent to the network. If the UE is capable UE of performing the measurements by using the QoS flow(s) of non-default QoS rule, the MAI can contain an indicator that the UE is to perform access performance messaurements by using the QoS flow(s) of non-default QoS rule. For this purpose, the MAI includes also a QoS flow list. The encoding of the measurement assistance information is specified in clause 6.1.5.

An ATSSS capable UE that supports the MPTCP steering functionality can use the measurements available at the MPTCP layer.

The following PMF protocol messages can be exchanged between the PMF in the UE and the PMF in the UPF:

a) messages for RTT measurements, only applicable for the ATSSS-LL steering functionality; or

b) messages for reporting access availability/unavailability by the UE to the UPF.

An ATSSS capable UE does not apply the ATSSS rules to the PMF protocol messages.

The performance measurement function protocol procedures are specified in clause 5. 4.3 and 5.4.4 including the procedures for:

a) UE-initiated RTT measurement; and

b) Network-initiated RTT measurement.

The access availability/unavailability procedures are specified in clause 5.4.5.

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#### 6.1.5.2 Encoding of measurement assistance information

The measurement assistance information contains addressing information for the PMF in the UPF and is encoded as shown in figure 6.1.5.2-1 and figure 6.1.5.2-2 and table 6.1.5.2-1 and table 6.1.5.2-2.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PMF IP address type | | | | | | | | octet a+1 |
| PMF IP address | | | | | | | | octet a+2  octet b-5 |
| PMF 3GPP port | | | | | | | | octet b-4  octet b-3 |
| PMF non-3GPP port | | | | | | | | octet b-2  octet b-1 |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | Non-defaultQoS rule | AARI | octet b |
| QoS flow list | | | | | | | | octet b+1\*  octet c\* |

Figure 6.1.5.2-1: ATSSS parameter contents including one PMF IP address information

Table 6.1.5.2-1: PMF IP address type

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMF IP address type (octet a+1) is set as follows:  Bits | | | | | | | | | | |
| 8 | 7 | | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
| 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 1 |  | IPv4 |
| 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 0 |  | IPv6 |
| 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 1 |  | IPv4IPv6 |
| All other values are spare. | | | | | | | | | | |
|  | | | | | | | | | | |
| If the PMF IP address type indicates IPv4, then the PMF IP address field contains an IPv4 address in 4 octets. | | | | | | | | | | |
|  | | | | | | | | | | |
| If the PMF IP address type indicates IPv6, then the PMF IP address field contains an IPv6 address in 16 octets. | | | | | | | | | | |
|  | | | | | | | | | | |
| If the PMF IP address type indicates IPv4IPv6, then the PMF IP address field contains two IP addresses. The first PMF IP address is an IPv4 address in 4 octets and the second PMF IP address is an IPv6 address in 16 octets. | | | | | | | | | | |
|  | | | | | | | | | | |
| PMF 3GPP port (octets b-4 – b-3) is allocated port number associated with the 3GPP access network. | | | | | | | | | | |
|  | | | | | | | | | | |
| PMF non-3GPP port (octets b-2 – b-1) is allocated port number associated with the non-3GPP access network. | | | | | | | | | | |
|  | | | | | | | | | | |
| AARI (access availability reporting indicator) (octet b, bit 1) is set as follows:  Bit | | | | | | | | | | |
| **1** | |  | | | | | | | | |
| 0 | | Do not report the access availability | | | | | | | | |
| 1 | | Report the access availability | | | | | | | | |
|  | | | | | | | | | | |
| Non-default QoS rule (octet b, bit 2) is set as follows:  Bit | | | | | | | | | | |
| **1** | |  | | | | | | | | |
| 0 | | Do not perform access performance measurements using non default QoS rule. | | | | | | | | |
| 1 | | Perform access performance measurements using non-default QoS rule. | | | | | | | | |
|  | | | | | | | | | | |
| QoS flow list is according to figure 6.1.5.2-3 and table 6.1.5.2-3. | | | | | | | | | | |
|  | | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PMF 3GPP MAC address | | | | | | | | octet a+1  octet a+6 |
| PMF non-3GPP MAC address | | | | | | | | octet a+7  octet a+12 |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | Non-defaultQoS rule | AARI | octet a+13 |
| QoS flow list | | | | | | | | octet a+14\*  octet b\* |

Figure 6.1.5.2-2: ATSSS parameter contents including one PMF MAC address information

Table 6.1.5.2-2: PMF MAC address type

|  |  |
| --- | --- |
| PMF 3GPP MAC address contains a 6 octets MAC address associated with the 3GPP access network. | |
|  | |
| PMF non-3GPP MAC address contains a 6 octets MAC address associated with the non-3GPP access network. | |
|  | |
| AARI (access availability reporting indicator) (octet a+13, bit 1) is set as follows:  Bit | |
| **1** |  |
| 0 | Do not report the access availability |
| 1 | Report the access availability |
|  | |
| Non-default QoS rule (octet b, bit 2) is set as follows:  Bit | |
| **1** |  |
| 0 | Do not perform access performance measurements using non default QoS rule. |
| 1 | Perform access performance measurements using non-default QoS rule. |
|  | |
| QoS flow list is according to figure 6.1.5.2-3 and table 6.1.5.2-3. | |
|  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| QoS flow IEI | | | | | | | | octet 1 |
| Length of QoS flow contents | | | | | | | | octet 2 |
| QoS flow parameter 1 | | | | | | | | octet 3 |
| … | | | | | | | |  |
| QoS flow parameter n | | | | | | | | octet n\*+2 |

Figure 6.1.5.2-3: QoS flow information element

Table 6.1.5.2-3: PMF MAC address type

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| QoS flow parameter field contains the binary representation of 5G QoS identifier (5QI) that is one octet in length and is defined in 3GPP TS 23.501 [2]. | | | | | | | | | |
|  | | | | | | | | | |
| Bits | | | | | | | | | |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | Reserved |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | 5QI 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | 5QI 2 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | 5QI 3 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | 5QI 4 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | 5QI 5 |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |  | 5QI 6 |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |  | 5QI 7 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  | 5QI 8 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |  | 5QI 9 |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |  |  |
| to Spare | | | | | | | | | |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |  | 5QI 65 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | 5QI 66 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | 5QI 67 |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |  | Spare |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | 5QI 69 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  | 5QI 70 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |  | 5QI 71 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |  | 5QI 72 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |  | 5QI 73 |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |  | 5QI 74 |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |  | 5QI 75 |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |  | 5QI 76 |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |  |  |
| to Spare | | | | | | | | | |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |  |  |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |  | 5QI 79 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | 5QI 80 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | Spare |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |  | 5QI 82 |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |  | 5QI 83 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |  | 5QI 84 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | 5QI 85 |
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |  | 5QI 86 |
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  |  |
| to Spare | | | | | | | | | |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |  |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
| to Operator-specific 5QIs | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |  |  |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  | Reserved |
|  | | | | | | | | | |

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