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

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

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.913** | **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. In this implementation, already existing authorized QoS flow descriptions as described in TS24.501 has been employed as the QoS flow list.  Corrected a reference (outside the scope of the intention for this CR). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage 3 has not been implemented for the new feature based on target QoS flow. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4, 5.4.1,6.1.5.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

---------------------------------- NEXT CHANGE -----------------------------------

## 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 performed on the QoS flow of default QoS rule. The access performance measuremets can also be performed on the QoS flow(s) of non-default QoS rule which are indicated in the MAI by the network, if the UE is capable of performing the measurements based on theQoS 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 indicator on whether access availability/unavailability reports need to be sent to the network. If the UE is capable UE of performing the measurements on the QoS flow(s) of non-default QoS rule, the MAI can also contain an indicator that the UE is to perform access performance messaurements on the QoS flow(s) of non-default QoS rule and the MAI therefore includesthe QoS flow list. The encoding of the measurement assistance information is specified in clause 6.1.5.

Editor's note: It is FFS and waits SA2 conclusion on how to send PMF message over the target QoS flow. For transmitting the PMF messages over the target QoS Flow, different alternatives have been identified, e.g. (a) using different PMF addresses/ports for each QoS Flow, or (b) using the same PMF address/port for all QoS Flows and include QFI in the PMF message header.

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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### 5.4.1 General

Performance measurement function protocol (PMFP) procedures are performed between a performance measurement function (PMF) in a UE and a PMF in the UPF.

The following UE-initiated PMFP procedures are specified:

a) UE-initiated RTT measurement procedure; and

b) access availability or unavailability report procedure.

The following UPF-initiated PMFP procedures are specified:

a) UPF-initiated RTT measurement procedure.

The UE-initiated PMFP procedures and the UPF-initiated PMFP procedures can be performed in an MA PDU session only when the measurement assistance information is provided to the UE during establishment of the MA PDU session.

PMFP messages are transported based on the default QoS or the target QoS. As defined in 3GPP TS 23.501 [2], if the measurement assistance information indicates performing the access performance measuremets based on target QoS flow, used by the SDF traffic and provides the UE a target QoS flow list for that purpose, then:

- the UE shall perform the access performance measurements based on target QoS flow;or

- otherwise, the UE shall perform the access performance measurements based on the default QoS flow.

The procedure for the UPF is also defined in 3GPP TS 23.501 [2], if the SMF indicates performing the access performance measuremets based on target QoS flow, used by the SDF traffic and provides the UPF a target QoS flow list for that purpose, then:

- the UPF shall perform the access performance measurements based on target QoS flow; or

- otherwise, the UPF shall perfomr the access performance measurements based on the default QoS flow.

PMFP messages are transported in an IP packet or an Ethernet frame according to clause 5.3.2.

PMFP messages transported between the UE and the UPF (and vice versa) are protected using the security mechanisms protecting the user data packets transported over NG-RAN or non-3GPP access connected to the 5GCN and over the N3 and N9 reference points, specified in 3GPP TS 33.501 [14]. A PMFP-specific security mechanism is not specified.

NOTE: Even though transport of PMFP messages between the UE and the UPF is protected, a compromised UE can send false or incorrect PMFP messages.

PMFP is a standard L3 protocol according to 3GPP TS 24.007 [13], PMFP messages are standard L3 messages according to 3GPP TS 24.007 [13] and error behaviour specified for L3 protocol in according to 3GPP TS 24.007 [13] applies for PMFP.

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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 | Target QoS | AARI | octet b |
| Target 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 | | | | | | | | |
|  | | | | | | | | | | |
| Target QoS (octet b, bit 2) is set as follows:  Bit | | | | | | | | | | |
| **1** | |  | | | | | | | | |
| 0 | | Do not perform access performance measurements based on target QoS flow | | | | | | | | |
| 1 | | Perform access performance measurements based on target QoS flow | | | | | | | | |
|  | | | | | | | | | | |
| Target QoS flow list is according to QoS flow descriptions as defined in subclause 9.11.4.12 of 3GPP TS 24.501 [6]. | | | | | | | | | | |
|  | | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | Target QoS | AARI | octet a+13 |
| Target 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 |
|  | |
| Target QoS (octet b, bit 2) is set as follows:  Bit | |
| **1** |  |
| 0 | Do not perform access performance measurements based on target QoS flow |
| 1 | Perform access performance measurements based on target QoS flow |
|  | |
| Target QoS flow list is according to QoS flow descriptions as defined in subclause 9.11.4.12 of 3GPP TS 24.501 [6] without the first octet respresenting QoS flow descriptions IEI. | |
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