**3GPP TSG-SA5 Meeting #156 *S5-244766***

**Maastricht, Netherlands, 19th Aug 2024 - 23rd Aug 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.558** | **CR** | **0021** | **rev** | **1** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *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 | **X** | Core Network | **X** |

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| ***Title:*** | Rel-19 CR TS 28.558 Add Distribution of UL/DL GTP packet delay between PSA UPF and NG-RAN for UE level measurements | | | | | | | | | |
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| ***Source to WG:*** | ZTE Corporation | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | PM\_KPI\_5G\_Ph4 | | | | |  | ***Date:*** | | | 2024-08-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | This contribution is to add distribution of UL/DL GTP packet delay between PSA UPF and NG-RAN for UE level measurements which can help enhance end-to-end data volume transfer time analytics conducted by NWDAF | | | | | | | | |
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| ***Summary of change:*** | | Add distribution of UL/DL GTP packet delay between PSA UPF and NG-RAN for UE level measurements. | | | | | | | | |
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| ***Consequences if not approved:*** | | Measurements may be not enough to support analytics conducted by NWDAF | | | | | | | | |
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| ***Clauses affected:*** | | 6.2.2.1.x, 6.2.2.1.y | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |

**Start of change**

##### 6.2.2.1.x Distribution of UL packet delay between PSA UPF and NG-RAN for a QoS flow

a) This measurement provides the distribution of UL packet delay between PSA UPF and NG-RAN for a QoS flow. This measurement is only applicable in the case the PSA UPF and NG-RAN are time synchronised.

b) DER (n=1).

c) The measurement is obtained by the following method:

The UPF performs the per QoS Flow per UE QoS monitoring according to the QoS monitoring request received from SMF during PDU Session Establishment or Modification procedure (see TS 23.501 [2]). The QoS monitoring can be initiated on SMF by management system via QFQoSMonitoringControl MOI (see TS 28.541 [3]), or by PCF via QoS Monitoring policy included in the PCC rule provisioning (see TS 23.503 [4]). PSA UPF creates and sends the monitoring packets to the RAN according to QoS monitoring request received from the SMF.

For each received GTP PDU monitoring response packet (packet i) for QoS monitoring, the PSA UPF records the following time stamps and information (see TS 23.501 [2] and TS 38.415 [5]):

- T3 received in the GTP-U header of the monitoring response packet indicating the local time that the monitoring response packet was sent by the NG-RAN;

- T4 indicating the local time at which the monitoring response packet was received by the PSA UPF.

The PSA UPF 1) takes the following calculation for each GTP PDU monitoring response packets for the S-NSSAI and the QoS flow received in the granularity period, and 2) increments the corresponding bin by 1 for the S-NSSAI and the QoS flow, where the result of 1) falls into a delay range:

d) Each measurement is an integer representing the number of GTP PDUs measured with the delay within the range of the bin.

e) GTP.DelayUlPsaUpfNgranDist\_Bin,

GTP.DelayUlPsaUpfNgranDist\_*SNSSAI*\_Bin,

GTP.DelayUlPsaUpfNgranDist\_*QFI*\_Bin, or

GTP.DelayUlPsaUpfNgranDist\_*SNSSAI*\_*QFI*\_Bin.  
Where Bin indicates a delay range which is vendor specific, *SNSSAI* identifies the S-NSSAI, and *QFI* identifies the QoS flow.

f) EP\_N3 (contained by UPFFunction);   
EP\_N9 (contained by UPFFunction).

g) N4 Session Identifier.

h) One usage of this measurement is to support the end-to-end data volume transfer time analytics conducted by NWDAF (see TS [23.288](https://www.3gpp.org/dynareport/23288.htm" \t "_blank) [7]).

##### 6.2.2.1.y Distribution of DL packet delay between PSA UPF and NG-RAN for a QoS flow

a) This measurement provides the distribution of DL packet delay between PSA UPF and NG-RAN for a QoS flow. This measurement is only applicable in the case the PSA UPF and NG-RAN are time synchronised.

b) DER (n=1).

c) The measurement is obtained by the following method:

The UPF performs the per QoS Flow per UE QoS monitoring according to the QoS monitoring request received from SMF during PDU Session Establishment or Modification procedure (see TS 23.501 [2]). The QoS monitoring can be initiated on SMF by management system via QFQoSMonitoringControl MOI (see TS 28.541 [3]), or by PCF via QoS Monitoring policy included in the PCC rule provisioning (see TS 23.503 [4]). PSA UPF creates and sends the monitoring packets to the RAN according to QoS monitoring request received from the SMF.

For each GTP PDU monitoring response packet (packet i) for QoS monitoring, the PSA UPF records the following time stamps and information (see TS 23.501 [2] and TS 38.415 [5]):

- T1 received in the GTP-U header of the monitoring response packet in the “DL Sending Time Stamp Repeated” part of UL PDU Session Information (PDU Type 1) Format as defined in 38.415 [5] indicating the local time that the DL GTP PDU was sent by the PSA UPF;

- T2 received in the GTP-U header of the monitoring response packet in the “DL Received Time Stamp” part of UL PDU Session Information (PDU Type 1) Format as defined in 38.415 [5] indicating the local time that the DL GTP PDU was received by the NG-RAN;

The PSA UPF 1) takes the following calculation for each GTP PDU monitoring response packets for for the S-NSSAI and the QoS flow received in the granularity period, and 2) increments the corresponding bin by 1 for the S-NSSAI and the QoS flow, where the result of 1) falls into a delay range:

d) Each measurement is an integer representing the number of GTP PDUs measured with the delay within the range of the bin.

e) GTP.DelayDlPsaUpfNgranDist\_*SNSSAI*\_*QFI*\_Bin,

GTP.DelayDlPsaUpfNgranDist\_*SNSSAI*\_*QFI*\_Bin,

GTP.DelayDlPsaUpfNgranDist\_*SNSSAI*\_*QFI*\_Bin, or

GTP.DelayDlPsaUpfNgranDist\_*SNSSAI*\_*QFI*\_Bin.  
Where Bin indicates a delay range which is vendor specific, *SNSSAI* identifies the S-NSSAI, and *QFI* identifies the QoS flow.

f) EP\_N3 (contained by UPFFunction);   
EP\_N9 (contained by UPFFunction).

g) N4 Session Identifier.

h) One usage of this measurement is to support the end-to-end data volume transfer time analytics conducted by NWDAF (see TS [23.288](https://www.3gpp.org/dynareport/23288.htm" \t "_blank) [7]).

**End of change**