**3GPP TSG-SA5 Meeting #162 *S5-253899***

Goteborg, Sweden, 25 - 29 August 2025

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.558** | **CR** | **0037** | **rev** | **1** | **Current version:** | **19.4.0** |  |
|  | | | | | | | | |
| *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 drop rate measurement for split and non-split architecture | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | PM\_KPI\_5G\_Ph3 | | | | |  | ***Date:*** | | | 2025-08-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***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:*** | | According to RAN3 LS (**R3-253816**), SA5 is required to check the feasibility of defining the packet delay and packet loss measurement (including UL PDCP SDU Loss Rate and DL PDCP SDU Drop Rate in gNB-CU-UP) per-UE granularity and ask SA5 to carry out specification work accordingly.  Based on the TS 28.558 definition, the packet delay related measurements have already defined in clause 6.3.1.1, the UL PDCP SDU Loss Rate measurement in split gNB deployment have been already defined in clause 6.3.1.3.  Therefore, we propose to add DL PDCP SDU Drop Rate in gNB-CU-UP measurement to support per UE level and add UL PDCP SDU Loss Rate measurement in non-split gNB to support per UE level. | | | | | | | | |
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| ***Summary of change:*** | | Add drop rate measurement definition for split and non-split architecture.  Add Loss Rate measurement definition for non-split architecture. | | | | | | | | |
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| ***Consequences if not approved:*** | | The per-UE level for drop rate can not be implemented. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.1.x(new), 6.3.1.x.y1(new), 6.3.1.x.y1.1(new), 6.3.1.x.y2(new), 6.3.1.x.y2.1(new), 6.3.1.y(new), 6.3.1.y.1(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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***

#### 6.3.1.x UE Packet Drop Rate

6.3.1.x.y1 Measurements valid for non-split gNB deployment scenario

6.3.1.x.y1.1 DL PDCP SDU Drop Rate in gNB

a) This measurement provides the fraction of PDCP SDU packets which are dropped on the downlink, due to high traffic load, traffic management etc in the gNB. Only user-plane traffic (DTCH) is considered. A dropped packet is one whose context is removed from the gNB without any part of it having been transmitted on the Xn-U or X2-U interface. The measurement is optionally split into subcounters per QoS level (mapped 5QI or QCI in EN-DC), and subcounters per supported S-NSSAI.

b) SI.

c) This measurement is obtained as: 1000000\*Number of dropped DL PDCP SDU packets whose contexts are removed from the gNB without any part of it having been transmitted on the Xn-U or X2-U interface, of a data radio bearer, divided by Number of DL PDCP SDU packets for data radio bearers that have entered PDCP-SAP after being decoded from GTP-U packets. Separate counters are optionally maintained for mapped 5QI (or QCI for EN-DC) and per supported S-NSSAI.

d) Each measurement is an integer value representing the drop rate multiplied by 1E6. The number of measurements is equal to one. If the optional QoS and S-NSSAI level measurement are performed, the measurements are equal to the number of mapped 5QIs and the number of supported S-NSSAIs.

e) The measurement name has the form DRB.PdcpPacketDropRateDlUe and optionally DRB.PdcpPacketDropRateDlUe.*QOS*   
where *QOS* identifies the target quality of service class, and DRB.PdcpPacketDropRateDlUe.*SNSSAI* where *SNSSAI* identifies the S-NSSAI.

f) NRCellCU.

g) N/A.

h) One usage of this measurement is to support performance evaluation.

6.3.1.x.y2 Measurements valid for split gNB deployment scenario

6.3.1.x.y2.1 DL PDCP SDU Drop Rate in gNB-CU-UP

a) This measurement provides the fraction of PDCP SDU packets which are dropped on the downlink, due to high traffic load, traffic management etc in the gNB-CU-UP. Only user-plane traffic (DTCH) is considered. A dropped packet is one whose context is removed from the gNB-CU-UP without any part of it having been transmitted on the F1-U or Xn-U or X2-U interface. The measurement is optionally split into subcounters per QoS level (mapped 5QI or QCI in EN-DC), and subcounters per supported S-NSSAI.

NOTE: this measurement may include packets that were supposed to be sent via the eUtran air interface if using NR split bearer option 3, 4 or 7.

b) SI.

c) This measurement is obtained as: 1000000\*Number of dropped DL PDCP SDU packets whose contexts are removed from the gNB-CU-UP without any part of it having been transmitted on the F1-U or Xn-U or X2-U interface, of a data radio bearer, divided by Number of DL PDCP SDU packets for data radio bearers that have entered PDCP-SAP after being decoded from GTP-U packets. Separate counters are optionally maintained for mapped 5QI (or QCI for EN-DC) and per supported S-NSSAI.

d) Each measurement is an integer value representing the drop rate multiplied by 1E6. The number of measurements is equal to one. If the optional QoS and S-NSSAI level measurement are performed, the measurements are equal to the number of mapped 5QIs and the number of supported S-NSSAIs.

e) The measurement name has the form DRB.PdcpPacketDropRateDlUe and optionally DRB.PdcpPacketDropRateDlUe.*QOS*   
where *QOS* identifies the target quality of service class, and DRB.PdcpPacketDropRateDlUe.*SNSSAI* where *SNSSAI* identifies the S-NSSAI.

f) GNBCUUPFunction.

NRCellCU.

g) N/A.

h) One usage of this measurement is to support performance evaluation.

***Next change***

6.3.1.y Packet loss for non-split gNB deployment scenario

6.3.1.y.1 UL PDCP SDU Loss Rate

a) This measurement provides the fraction of PDCP SDU packets which are not successfully received at gNB. It is a measure of the UL packet loss including any packet losses in the air interface. Only user-plane traffic (DTCH) and only PDCP SDUs that have entered PDCP (and given a PDCP sequence number) are considered. The measurement is optionally split into subcounters per QoS level (mapped 5QI or QCI in EN-DC architecture [16]), and subcounters per supported S-NSSAI. This measurement is also referred to as UL M7 in TS 37.320 [9].

b) SI

c) This measurement is obtained as: 1,000,000\* Number of missing UL PDCP sequence numbers, representing packets that are not delivered to higher layers, of a data radio bearer, divided by Total number of UL PDCP sequence numbers (also including missing sequence numbers) of a bearer, starting from the sequence number of the first packet delivered by UE PDCP to gNB until the sequence number of the last packet. If transmission of a packet might continue in another cell, it shall not be included in this count. Separate counters are optionally maintained for mapped 5QI (or QCI for EN-DC architecture [16]) and per supported S-NSSAI.

d) Each measurement is an integer value representing the loss rate multiplied by 1E6. The number of measurements is equal to one. If the optional QoS and S-NSSAI level measurements are performed, the measurements are equal to the number of mapped 5QIs and the number of supported S-NSSAIs.

e) The measurement name has the form DRB.PacketLossRateUlUe, and optionally  
DRB.PacketLossRateUlUe.*QoS* where *QoS* identifies the target quality of service class, and DRB.PacketLossRateUlUe.*SNSSAI* where *SNSSAI* identifies the S-NSSAI.

f) NRCellCU

g) N/A

h) One usage of this measurement is to support performance evaluation.

***End of change***