**3GPP TSG- Meeting # *rev1***

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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| *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 |  |

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| ***Title:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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](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-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:*** | Number of Active UEs measurements are missing |
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| ***Summary of change:*** | Those measurements added are defined in RAN L2 measurements specification TS 38.314. The following measurement have been added:* Number of Active UEs in the DL per cell
* Max number of Active UEs in the DL per cell
* Number of Active UEs in the UL per cell
* Max number of Active UEs in the UL per cell

And a UC description has been added in A.x |
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| ***Consequences if not approved:*** | Information around the number of Active UE is missing |
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| ***Clauses affected:*** | 2, 5.1.1.x.(new), 5.1.1.x.1(new), 5.1.1.x.2(new), 5.1.1.x.3(new), 5.1.1.x.4(new), A.x(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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **1st modified section** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 32.401: "Telecommunication management; Performance Management (PM); Concept and requirements".

[3] 3GPP TS 32.404: "Performance Management (PM); Performance measurements - Definitions and template".

[4] 3GPP TS 23.501: "System Architecture for the 5G System".

[5] IETF RFC 5136: "Defining Network Capacity".

[6] 3GPP TS 38.473: "NG-RAN; F1 Application Protocol (F1AP)".

[7] 3GPP TS 23.502: "Procedures for the 5G System".

[8] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[9] 3GPP TS 32.425: "Performance Management (PM); Performance measurements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN)".

[10] 3GPP TS 32.451: "Key Performance Indicators (KPI) for Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Requirements".

[11] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[12] Void.

[13] 3GPP TS 38.423: "NG-RAN; Xn Application Protocol (XnAP)".[14] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".

[15] Void.

[16] 3GPP TS 29.244: "Technical Specification Group Core Network and Terminals; Interface between the Control Plane and the User Plane Nodes; Stage 3".

[17] ETSI GS NFV-IFA027 v2.4.1: "Network Functions Virtualisation (NFV); Management and Orchestration; Performance Measurements Specification".

[18] Void.

[19] 3GPP TS 38.214: "NR; Physical layer procedures for data".

[20] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[21] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[22] 3GPP TS 29.413: "Application of the NG Application Protocol (NGAP) to non-3GPP access".

[23] 3GPP TS 29.122: "Technical Specification Group Core Network and Terminals; T8 reference point for Northbound APIs".

[24] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[25] ETSI ES 202 336-12 V1.2.1: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[26] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[27] 3GPP TS 29.274: "Evolved General Packet Radio Service (GPRS); Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[28] 3GPP TS 29.510: "5G System; Network function repository services; Stage 3".

[x] 3GPP TS 38.314: "NR; Layer 2 Measurements”.

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| **Next modified section** |

##### 5.1.1.x Number of Active UEs

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| **Next modified section** |

##### 5.1.1.x.1 Number of Active UEs in the DL per cell

a) This measurement provides the mean number of active DRBs for UEs in an NRCellDU. The measurement is optionally split into subcounters per QoS level (mapped 5QI or/and QCI in NR option 3) and subcounters per S-NSSAI.

b) DER (n=1)

c) This measurement is defined according to measurement “Mean number of Active UEs in the DL per QoS level per cell” in TS 38.413 [x]. Separate counters are optionally maintained for each mapped 5QI (or/and QCI for option 3) and for each S-NSSAI.

d) The number of measurements is equal to one. If the optional QoS level measurement is perfomed, the number of measurements is equal to the number of mapped 5QIs (or/and number of QCI for option 3), and the number of S-NSSAIs.

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

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this measurement is for performance assurance within integrity area (user plane connection quality).

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| **Next modified section** |

##### 5.1.1.x.2 Max number of Active UEs in the DL per cell

a) This measurement provides the max number of active DRBs for UEs in an NRCellDU. The measurement is optionally split into subcounters per QoS level (mapped 5QI or/and QCI in NR option 3) and subcounters per S-NSSAI.

b) DER (n=1)

c) This measurement is defined according to measurement “Max number of Active UEs in the DL per QoS level per cell” in TS 38.413 [x]. Separate counters are optionally maintained for each mapped 5QI (or/and QCI for option 3) and for each S-NSSAI.

d) The number of measurements is equal to one. If the optional QoS level measurement is perfomed, the number of measurements is equal to the number of mapped 5QIs (or/and number of QCI for option 3), and the number of S-NSSAIs.

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

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this measurement is for performance assurance within integrity area (user plane connection quality).

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| **Next modified section** |

##### 5.1.1.x.3 Number of Active UEs in the UL per cell

a) This measurement provides the mean number of active DRBs for UEs in an NRCellDU. The measurement is optionally split into subcounters per QoS level (mapped 5QI or/and QCI in NR option 3) and subcounters per S-NSSAI.

b) DER (n=1)

c) This measurement is defined according to measurement “Mean number of Active UEs in the UL per QoS level per cell” in TS 38.413 [x]. Separate counters are optionally maintained for each mapped 5QI (or/and QCI for option 3) and for each S-NSSAI.

d) The number of measurements is equal to one. If the optional QoS level measurement is perfomed, the number of measurements is equal to the number of mapped 5QIs (or/and number of QCI for option 3), and the number of S-NSSAIs.

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

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this measurement is for performance assurance within integrity area (user plane connection quality).

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| **Next modified section** |

##### 5.1.1.x.4 Max number of Active UEs in the UL per cell

a) This measurement provides the max number of active DRBs for UEs in an NRCellDU. The measurement is optionally split into subcounters per QoS level (mapped 5QI or/and QCI in NR option 3) and subcounters per S-NSSAI.

b) DER (n=1)

c) This measurement is defined according to in RAN specification [x], measurement “Max number of Active UEs in the UL per QoS level per cell” in TS 38.413 [x]. Separate counters are optionally maintained for each mapped 5QI (or/and QCI for option 3) and for each S-NSSAI.

d) The number of measurements is equal to one. If the optional QoS level measurement is perfomed, the number of measurements is equal to the number of mapped 5QIs (or/and number of QCI for option 3), and the number of S-NSSAIs.

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

f) NRCellDU.

g) Valid for packet switched traffic.

h) 5GS.

i) One usage of this measurement is for performance assurance within integrity area (user plane connection quality).

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| **Next modified section** |

A.x Monitoring of the Number of active UEs in NG-RAN

The number of the active UEs per direction in each cell is a valuable measurement for operators to know how many DRBs are running with buffered data per cell and QoS or S-NSSAI basis. This kind of information can help operators to tune the admission control parameters for the cell and to estimate load in neighbour cells, to ensure that the UEs admitted achieve the target QoS and that capacity is not over-estimated when distributing load between cells and gNBs.

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| **End of modified section** |