**3GPP TSG-WG SA2 Meeting #161S2-2402925r01**

**February 26 – March 1st, 2024, Athens, Greece**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **1074** | **rev** | **-** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Core Network | **X** |

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| ***Title:*** | Add KPI and references. Removal of Input Data general Note for the end-to-end data volume transfer time analytics | | | | | | | | | |
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| ***Source to WG:*** | Verizon, Samsung | | | | | | | | | |
| ***Source to TSG:*** | S2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AIMLsys | | | | |  | ***Date:*** | | | 2024-02-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | LS reply [(S5-241086](https://www.3gpp.org/ftp/tsg_sa/WG5_TM/TSGS5_153/Docs/S5-241086.zip)) [S2-2401869](https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_161_Athens_2024-02/Docs/S2-2401869.zip) from SA5 to SA2’s prior LS ([S2-2313635](https://www.3gpp.org/ftp/Meetings_3GPP_SYNC/SA2/Inbox/S2-2313635.zip)) indicates that support for UE level measurements at the per UE per slice per QoS level granularity can be found in the new TS 28.558 specification located [here.](https://www.3gpp.org/ftp/Email_Discussions/SA5/Email_approvals/S5%E2%80%91241065d2.zip)  Based on LS reply (S5-241086) and the KPIs defined in [TS 28.558](https://www.3gpp.org/ftp/Email_Discussions/SA5/Email_approvals/S5%E2%80%91241065d2.zip), the following general NOTE in TS 23.288 § 6.18.2 for the end-to-end data volume transfer time analytics:  Note: The inclusion of the following OAM inputs: per UE RAN part delay and per UE Average UL/DL packet dela between UPF and UE, is subject to SA WG5 work.  Can be removed and the relevant references to the per specific UE measurements in TS 23.558 are to be added to table 6.18.2-1: “Input data from OAM related to E2E data volume transfer time”. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added SA5 provided per UE measurements KPI and references to the relevant per UE measurements clauses in TS 28.558. These added references are in addition to the already captured average input data across all UEs for the end-to-end data volume transfer time analytics. Accordingly removed general Note 1 from clause 6.18.2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Description and references to the required per UE input data, collected from OAM for the end-to-end data volume transfer time analytics, is not complete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2 and 6.18.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

# 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 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[5] Void.

[6] 3GPP TS 28.532: "Management and orchestration; Generic management services".

[7] 3GPP TS 28.550: "Management and orchestration; Performance Assurance".

[8] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[9] 3GPP TS 28.545: "Management and orchestration; Fault Supervision (FS)".

[10] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[11] ITU‑T Recommendation P.1203.3: "Parametric bitstream-based quality assessment of progressive download and adaptive audiovisual streaming services over reliable transport - Quality integration module".

[12] 3GPP TS 38.215: "NR; Physical layer measurements".

[13] Void.

[14] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[15] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[16] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[17] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes".

[18] 3GPP TS 29.510: "5G System; Network function repository services; Stage 3".

[19] 3GPP TS 28.533: "Management and orchestration; Architecture framework".

[20] 3GPP TS 37.320: "Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; stage 2".

[21] 3GPP TS 28.201: "Charging management; Network slice performance and analytics charging in the 5G System (5GS); stage 2".

[22] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[23] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[24] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[25] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[26] 3GPP TS 29.503: "Unified Data Management Services; Stage 3".

[27] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[28] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".

[29] 3GPP TS 26.118: "Virtual Reality (VR) profiles for streaming applications".

[30] 3GPP TS 26.346: "Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".

[31] 3GPP TS 26.512: "5G Media Streaming (5GMS); Protocols".

[32] 3GPP TS 26.531: "Data Collection and Reporting; General Description and Architecture".

[33] 3GPP TS 22.261: "Service requirements for the 5G system; Stage 1".

[34] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[35] 3GPP TS 22.071: "Technical Specification Group Systems Aspects; Location Services (LCS)".

[36] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[37] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[38] GSMA TS.06: "IMEI Allocation and Approval Process".

[39] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[40] ITU‑T Y.1540: "Internet protocol data communication service - IP packet transfer and availability performance parameters".

[41] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRMs). Integration Reference Point (IRP): Information Service (IS)".

[42] 3GPP TS 32.422: "Subscriber and equipment trace: Trace control and configuration management".

[43] 3GPP TS 26.532: "Data Collection and Reporting; Protocols and Formats".

[44] 3GPP TS 38.455: "NG-RAN; NR Positioning Protocol A (NRPPa)".

[45] 3GPP TS 28.104: "Management and orchestration; Management Data Analytics (MDA)".

[46] 3GPP TS 28.537: "Management and orchestration; Management capabilities".

[47] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[48] 3GPP TS 29.515: "Gateway Mobile Location Services; Stage 3".

[xx] 3GPP TS 28.558: “User Equipment (UE) level measurements for 5G system”.

\* \* \* 2nd Change \* \* \* \*

### 6.18.2 Input Data

The NWDAF supporting analytics on E2E data volume transfer time shall be able to collect information from AF, OAM and 5GC NFs.

The information collected by the NWDAF from the OAM is defined in the Table 6.18.2-1, from relevant 5GC NFs (i.e. UPF, SMF, AMF) is defined in Table 6.18.2-2 and from AF is defined in Table 6.18.2-3.

Table 6.18.2-1: Input data from OAM related to E2E data volume transfer time

|  |  |  |
| --- | --- | --- |
| Information | Source | Description |
| RAN part delay for DL and UL | OAM | Average packet transmission delay through the RAN part to the UE per 5QI and per S-NSSAI as specified in clauses 6.3.1.2.1 and 6.3.1.7.1 of TS 28.554 [10] and per UE level per supported S-NSSAI and per QoS level in clauses 6.3.1.1.1 and 6.3.1.1.6 of TS 28.558 [xx]. |
| Timestamp | OAM | A time stamp associated with the collected information. |
| RAN Throughput for DL and UL | OAM  (see NOTE 1) | The per UE measurement of the throughput for DL and UL as specified in clauses 5.2.1.1 and 5.4.1.1 of TS 37.320 [20]. |
| RAN Packet delay for DL and UL | OAM  (see NOTE 1) | The per UE measurement of the packet delay for DL and UL, including per DRB per UE packet delay as specified in clause 5.4.1.1 of TS 37.320 [20]. |
| RAN Packet loss rate for DL and UL | OAM  (see NOTE 1) | The per UE measurement of the packet loss rate for DL and UL, including per DRB per UE packet loss rate as specified in clause 5.4.1.1 of TS 37.320 [20] and packet loss rate per UE per QoS level and per supported S-NSSAI in clauses 6.3.1.2.1 and 6.3.1.3.1 of TS 28.558[xx]. |
| Average UL/DL packet delay between PSA UPF and UE | OAM | The average of UL/DL packet delay between PSA UPF and UE per S-NSSAI as specified in clauses 5.4.9.1.1 and 5.4.9.2.1 of TS 28.552 [8] and per UE level per supported S-NSSAI and per QoS level in clauses 6.2.2.1.1 and 6.2.2.1.3 of TS 28.558 [xx]. |
| Average UL/DL Packet delay between PSA UPF and RAN | OAM | The per UE level per supported S-NSSAI and per QoS level of the average UL/DL packet delay between PSA UPF and RAN as specified in clauses 6.2.2.1.4 and 6.2.2.1.5 of TS 28.558 [xx]. |
| Average DL/UL UE throughput in gNB | OAM | Average DL/UL UE throughput in the gNB per QoS level (mapped 5QI) and per S-NSSAI as specified in clauses 5.1.1.3.1 and 5.1.1.3.3 of TS 28.552 [8] and per UE per supported S-NSSAI and per QoS level clauses 6.3.1.4.1 and 6.3.1.4.2 of TS 28.558 [xx]. |
| NOTE 1: Per UE measurement for a specific UE from OAM (via MDT), is as specified in clause 6.2.3.1. in TS 37.230 [20] | | |

NWDAF subscribes to the input data from OAM as defined in the Table 6.18.2-1 by using the services provided by OAM as described in clause 6.2.3.

NOTE 1: Whether the UE(s) is supporting a Slice or not can be checked by retrieving the registered AMF details from UDM or by asking AMF about what Slice is used by the UE(s) at the current registration (Alternatively, if NSACF is deployed, NSACF can provide a report on what slices are used by the UE(s)).

NOTE 2: User consent checking from UDM can apply to these analytics.

Table 6.18.2-2: Service Data from 5GC NFs for E2E data volume transfer time analytics

|  |  |  |
| --- | --- | --- |
| Information | Source | Description |
| Timestamp | 5GC NF | A time stamp associated with the collected information. |
| UE location | AMF, LCS (NOTE 1) | Location of the UE(s) needs to be collected from AMF if the application needs to be started at the same time. If the AoI indicated by the AF is a finer granularity area than the Cell level, the current location of the UE(s) needs to be collected from GMLC instead. |
| UE ID | AMF | (list of) SUPI(s). |
| 5QI | SMF | A reference to 5G QoS characteristics. |
| QoS flow Packet Delay | SMF, UPF | The observed Packet delay for UL/DL/round trip directions between UE and PSA\_UPF. |
| RAT Type | SMF | The RAT types the UE camps on. |
| Access Type | SMF | The list of Access Type(s) used for the PDU Session. |
| NOTE 1: The procedure to collect location data using LCS is described in clause 6.2.12. | | |

Table 6.18.2-3: Service Data from AF for E2E data volume transfer time analytics

|  |  |  |
| --- | --- | --- |
| Information | Source | Description |
| Timestamp | AF | Timestamp of the collected information. |
| Application ID | AF | Identifier of the application at the AF. |
| UE ID(s) | AF | Internal or External UE IDs (i.e. SUPI or GPSI, respectively). |
| Transmitted UL/DL data volume | AF | The volume of the transmitted UL/DL data. |
| UL/DL transmission time duration | AF | The time duration (start and end time) needed for sending the volume of UL/DL data. |
| Application Server Instance information | AF | The IP address/FQDN of the Application Server. |

NOTE 3: How to derive the time delay for sending a specific data volume between UPF and AF on N6 interface is out of scope of the present specification.

For calculation of the E2E data volume transfer time, the NWDAF uses mainly the Data Volume DL/UL provided by the analytics consumer (see clause 6.18.1) and the Average DL/UL UE throughput in gNB of the NG-RAN serving the UE or in the AoI (if an AoI is provided by the analytics consumer). Per UE input parameters if available may also be taken into account by the NWDAF.

\* \* \* End of Changes \* \* \* \*