**3GPP TSG-CT WG3 Meeting #134C3-242624**

**Changsha, China, 15 - 19 April, 2024 (revision of C3-242256)**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.552** | **CR** | **0093** | **rev** | **1** | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network | **X** |

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| ***Title:*** | Corrections on collecting data from UPF for DN Performance Analytics | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UPEAS | | | | |  | ***Date:*** | | | 2024-04-01 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | How to collect the data from the UPF to generate the analytics was defined in Rel-18. In TS 23.502 clause 4.15.4.5.1 and TS 29.564 clause 5.2.1.3.2 have defined for QoS Monitoring, the interaction between SMF and UPF is over PFCP. Hence, NOTE 1 in clause 5.7.16 needs to be removed and the data collection from the UPF needs to be specified. | | | | | | | | |
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| ***Summary of change:*** | | Update the procedure of DN Performance Analytics. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete and incorrect specification which will cause misunderstanding. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1, 2, 5.7.16 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

# 1 Scope

The present document specifies detailed call flows of Network Data Analytics over the Nnwdaf, Nsmf, Npcf, Nnsacf, Namf, Nnrf, Nnssf, Nnef, Naf, Ndccf, Nadrf, Nmfaf, Nudm, Nupf and Ngmlc service-based interfaces and their relationship with the flow level signalling in 5G system.

NOTE: The call flows depicted in this Technical Specification do not cover all traffic cases.

The stage 2 definition and procedures of Network Data Analytics are contained in 3GPP TS 23.288 [2] and 3GPP TS 23.502 [3]. The 5G System Architecture is defined in 3GPP TS 23.501 [4].

Detailed definitions of the involved services are provided in 3GPP TS 29.520 [5], 3GPP TS 29.508 [6], 3GPP TS 29.523 [7], 3GPP TS 29.554 [8], 3GPP TS 29.521 [9], 3GPP TS 29.522 [10], 3GPP TS 29.591 [11], 3GPP TS 29.517 [12], 3GPP TS 29.574 [15], 3GPP TS 29.575 [16], 3GPP TS 29.576 [17], 3GPP TS 29.503 [22], 3GPP TS 29.510 [23], 3GPP TS 29.507 [24], 3GPP TS 29.512 [25], 3GPP TS 29.564 [40], 3GPP TS 29.515 [41] and 3GPP TS 29.244 [45].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition of the 5G System are specified in 3GPP TS 29.500 [13] and 3GPP TS 29.501 [14].

\*\*\* 2nd 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 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

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

[4] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[5] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[6] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[7] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[8] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".

[9] 3GPP TS 29.521: "5G System; Binding Support Management Service; Stage 3".

[10] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[11] 3GPP TS 29.591: "5G System; Network Exposure Function Southbound Services; Stage 3".

[12] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".

[13] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[14] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[15] 3GPP TS 29.574: "5G System; Data Collection Coordination Services; Stage 3".

[16] 3GPP TS 29.575: "5G System; Analytics Data Repository Services; Stage 3".

[17] 3GPP TS 29.576: "5G System; Messaging Framework Adaptor Services; Stage 3".

[18] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[19] 3GPP TS 28.532: "Management and orchestration; Generic management services".

[20] 3GPP TS 29.536: "5G System: Network Slice Admission Control Services; Stage 3".

[21] 3GPP TS 29.531: "5G System: Network Slice Selection Services; Stage 3".

[22] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[23] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[24] 3GPP TS 29.507: "5G System; Access and Mobility Policy Control Service; Stage 3".

[25] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[26] 3GPP TS 29.510: "5G System: Network function repository services; Stage 3".

[27] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[28] 3GPP TS 28.533: "Management and orchestration; Architecture framework".

[29] 3GPP TS 37.320: " Radio measurement collection for Minimization of Drive Tests (MDT); Overall description".

[30] 3GPP TS 28.554: " Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[31] 3GPP TS 28.550: "Management and orchestration; Performance assurance".

[32] Void.

[33] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[34] 3GPP TS 36.331: "Radio Resource Control (RRC); Protocol specification".

[35] 3GPP TS 38.215: "NR; Physical layer measurements".

[36] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[37] 3GPP TS 28.545: "Management and orchestration; Fault Supervision (FS)".

[38] 3GPP TS 28.104: "Management and orchestration; Management Data Analytics (MDA)".

[39] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".

[40] 3GPP TS 29.564: "5G System; User Plane Function Services; Stage 3".

[41] 3GPP TS 29.515: "5G System; Gateway Mobile Location Services; Stage 3".

[42] 3GPP TS 28.622: "Generic Network Resource Model (NRM)Integration Reference Point (IRP); Information Service (IS)".

[43] 3GPP TS 32.422: "Subscriber and equipment trace; Trace control and configuration management".

[44] 3GPP TS 28.537: "Management and orchestration; Management capabilities".

[45] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes".

\*\*\* 3rd Change \*\*\*

### 5.7.16 DN Performance Analytics

This procedure is used by the NF to obtain DN performance analytics, which is calculated by the NWDAF based on the information collected from the AMF, SMF, AF, UPF and/or OAM. If the NF is an AF which is untrusted, the AF will request analytics via the NEF as described in clause 5.2.3.2.



Figure 5.7.16-1: Procedure for DN Performance Analytics

1a. In order to obtain the DN performance analytics, the NF may invoke Nnwdaf\_AnalyticsInfo\_Request service operation as described in clause 5.2.3.1.

1b-1c. In order to obtain the DN performance analytics, the NF may invoke Nnwdaf\_EventsSubscription\_Subscribe service operation as described in clause 5.2.2.1.

2a-2b. The NWDAF may invoke Namf\_EventExposure\_Subscribe service operation as described in clause 5.3.2.2.2 of 3GPP TS 29.518 [18] to retrieve the UE location information and SUPI(s) from AMF. The AMF responds to the NWDAF an HTTP "201 Created" response.

3a-3b. If step 2a and step 2b are performed, the AMF may invoke Namf\_EventExposure\_Notify service operation as described in 3GPP TS 29.518 [18] clause 5.3.2.4. The NWDAF responds to the AMF an HTTP "204 No Content" response.

4a-4b. The NWDAF may invoke Nsmf\_EventExposure\_Subscribe service operation by sending an HTTP POST request targeting the resource "SMF Notification Subscriptions" to request DNN, S-NSSAI, application ID, UPF info, DNAI, IP filter information and QFI. The SMF responds to the NWDAF an HTTP "201 Created" response.

5a-5b. If step 4a and step 4b are performed, the SMF may invoke Nsmf\_EventExposure\_Notify service operation by sending an HTTP POST request to the NWDAF identified by the notification URI received in step 4a. The NWDAF responds to the SMF an HTTP "204 No Content" response.

6a-6b. To collect QoS flow bit rate, QoS flow packet delay, packet transmission and packet retransmission information from UPF, after step 5 was performed, the SMF may subscribe to the UPF on behalf of the NWDAF via N4 Session Reporting Rule as described in clause 5.2.8 of 3GPP TS 29.244 [45].

7a-7b. The UPF invokes Nupf\_EventExposure\_Notify service operation by sending an HTTP POST request to the NWDAF identified by the notification URI received in step 6a. The NWDAF responds to the UPF an HTTP "204 No Content" response.7c. The NWDAF may collect performance data from AF as described in clause 5.7.7 from step 6a to step 9d.

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8. The NWDAF may collect Reference Signal Received Power and Reference Signal Received Quality as specified in clause 5.5 of TS 38.331 [33] and clause 5.5.5 of TS 36.331 [34], Signal-to-noise and interference ratio as specified in clause 5.1 of TS 38.215 [35], the mapping information between cell ID and frequency and Cell Energy Saving State data as specified in clauses 3.1 and 6.2 of TS 28.310 [36] from OAM.

9. The NWDAF calculates the DN performance analytics based on the data collected from AMF, SMF, AF, UPF and/or OAM.

10a. If step 1a is performed, the NWDAF responds to the Nnwdaf\_AnalyticsInfo\_Request service operation as described in clause 5.2.3.1.

10b-10c. If step 1b and step 1c are performed, the NWDAF may invoke Nnwdaf\_EventsSusbcription\_Notify service operation as described in clause 5.2.2.1.

11a-11b. The same as step 3a and step 3b.

12a-12b. The same as step 5a and step 5b.

13. The same as step 6.

14. The same as step 9.

15a-15b. The same as step 10b and step 10c.

NOTE 1: For details of N4 Session Reporting Report refer to 3GPP TS 29.244 [45].

NOTE 2: For details of Nsmf\_EventExposure\_Subscribe/Notify service operations refer to 3GPP TS 29.508 [6].

NOTE 3: For details of Nnwdaf\_EventsSubscription\_Subscribe/Unsubscribe/Notify or Nnwdaf\_AnalyticsInfo\_Request service operations refer to 3GPP TS 29.520 [5].

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