**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **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:***  | Adding LMF as analytics data source |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | AIML\_CN |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | According to S2-2410995, the NWDAF may collect data from the LMF using the Nlmf\_DataExposure service, defined by S2-2410978. |
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| ***Summary of change:*** | Added LMF to the possible analytics data sources. |
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| ***Consequences if not approved:*** | Not fulfilled stage 2 requirement and not specified to retrieve data from LMF for analytics purposes. |
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| ***Clauses affected:*** | 1, 2, 4.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS/TR 23.288 CR 1253  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR 23.273 CR 0754  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\* First Change \*\*\*

1 Scope

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

NOTE 1: The call flows depicted in this Technical Specification do not cover all traffic cases.

NOTE 2: There is no data collected from the PCF by the NWDAF defined in this Release of the specification.

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 29.554 [8], 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], 3GPP TS 29.572 [47], and 3GPP TS 29.244 [45] for NF service-based interfaces, 3GPP TS 28.552 [27], 3GPP TS 28.532 [19], 3GPP TS 28.533 [28], 3GPP TS 28.550 [31] , 3GPP TS 28.554 [30], 3GPP TS 36.331 [34], 3GPP TS 37.320 [29], 3GPP TS 38.331 [33] and 3GPP TS 38.215 [35] for data collection from OAM.

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].

\*\*\* Next 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] Void.

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

[9] Void.

[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".

[46] 3GPP TS 28.558: "User Equipment (UE) level measurements for 5G system".

[47] 3GPP TS 29.572: "Location Management Services; Stage 3".

\*\*\* Next Change \*\*\*

4.2 Data Collection

As depicted in Figure 4.2-1, the 5G System architecture allows NWDAF to collect data from any 5GC NF (e.g. AMF, SMF), OAM and/or MDAF directly or via DCCF, DCCF together with ADRF and/or MFAF, or via NWDAF in non-roaming case. The roaming architecture for data collection is defined in clause 4.5.

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**Figure 4.2-1: Data Collection Architecture**

When DCCF, ADRF, MFAF or NWDAF hosting DCCF are present in the network, whether the NWDAF directly contacts the Data Source NF or goes via the DCCF, or NWDAF hosting DCCF is based on configuration of the NWDAF.

The Data Source NF may be AMF, SMF, UDM, UPF, GMLC, AF, NSACF, LMF, NRF, and/or NEF with the related data collection procedures described in clause 5.5. If the Data Source is OAM, the NWDAF may collect relevant management data from the services in the OAM as configured by the PLMN operator with NG RAN or 5GC performance measurements as defined in TS 28.552 [27] and 5G End to end KPIs as defined in TS 28.554 [30]. The NWDAF may use the OAM services e.g. generic performance assurance and fault supervision management services as defined in TS 28.532 [19], PM (Performance Management) services as defined in TS 28.550 [31] and/or FS (Fault Supervision) services as defined in TS 28.545 [37]. The procedure for data collection from OAM is defined in clause 6.2.3.2 of TS 23.288 [2]. The NWDAF may collect the analysis results from MDAF, e.g. service experience and energy saving state analysis and/or end-to-end latency analysis in TS 28.104 [38]. The procedure for analytics collection from MDAF is defined in clause 6.2.14.2 of TS 23.288 [2]. Before NWDAF requests analytics from the MDA Management Function, the NWDAF firstly discovers the MDAF via the MnS discovery service producer as defined in clause 5 of TS 28.537 [42].

For the specific analytics event, the applicable Data Source NF(s) and the related data collection procedures and scope are described in the corresponding analytics event subclause within clause 5.7.

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