**3GPP TSG-SA WG2 Meeting #157  *S2-2306734***

**Berlin, May 22 – 26, 2023 (*revision of*** ***S2-2304410*)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.288** | **CR** | **0754** | **rev** | **1** | **Current version:** | **18.1.0** |  |
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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 |  | Core Network | **x** |

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| ***Title:*** | Clarification on data collection frequency mode in TS 23.288 | | | | | | | | | |
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| ***Source to WG:*** | China Mobile | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNA\_Ph3 | | | | |  | ***Date:*** | | | 2023-04-06 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The text above this EN needs to be aligned with what we agreed for TS 23.502 in approved S2-2306089 CR4003 in SA2#156E, and the corresponding EN is removed. | | | | | | | | |
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| ***Summary of change:*** | | The text above this EN is aligned with S2-2306089 CR4003, and the corresponding EN is removed. | | | | | | | | |
| ***--*** | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not clear for exact NWDAF requirements regarding the Non-fixed data collection. | | | | | | | | |
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| ***Clauses affected:*** | | 6.2.1 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS23.502 CR4003 | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR’s revision history:*** | |  | | | | | | | | |

## **FIRST CHANGE**

### 6.2.1 General

The Data Collection feature permits NWDAF to retrieve data from various sources (e.g. NF such as AMF, SMF, PCF, NSACF and AF; OAM), as a basis of the computation of network analytics.

All available data encompass:

- OAM global NF data,

- Data available in NFs, e.g. behaviour data related to individual UEs or UE groups (e.g. UE reachability) and pre-computed metrics covering UE populations (e.g. number of UEs present in a geographical area), per spatial and temporal dimensions (e.g. per region for a period of time),

- NF data available in the 5GC (e.g. NRF),

- Data available in AF.

When DCCF, ADRF, MFAF or NWDAF hosting DCCF or ADRF are present in the network, the data collection also follows the principles described in clause 6.2.6.

The NWDAF shall use at least one of the following services:

- the Generic management services as defined in TS 28.532 [6], the Performance Management services as defined in TS 28.550 [7] or the Fault Supervision services as defined in TS 28.545 [9], offered by OAM in order to collect OAM global NF data.

- the Exposure services offered by NFs in order to retrieve data and other non-OAM pre-computed metrics available in the NFs.

- Other NF services in order to collect NF data (e.g. NRF)

- DCCF data management service to retrieve data using DCCF.

The NWDAF shall obtain the proper information to perform data collection for a UE, a group of UEs or any UE:

- For an Analytics ID, NWDAF is configured with the corresponding NF Type(s) and/or event ID(s) and/or OAM measurement types.

- NWDAF shall determine which NF instance(s) of the relevant NF type(s) are serving the UE, the group of UEs or any UE, taking into account the S-NSSAI(s) and area of interest as defined in clause 7.1.3 of TS 23.501 [2].

- NWDAF invokes Nnf\_EventExposure\_Subscribe services to collect data from the determined NF instance(s) and/or triggers the procedure in clause 6.2.3.2 to subscribe to OAM services to collect the OAM measurement.

The NWDAF performs data collection from an AF directly as defined in clause 6.2.2.2 or via NEF as defined in clause 6.2.2.3. According to the data collection request, the AF may further perform data collection from UE (see clause 6.4.2 and clauses 6.5.2-6.5.4) as defined in clause 6.2.8.

The NWDAF shall be able to discover the events supported by a NF.

Data collection procedures enables the NWDAF to efficiently obtain the appropriate data with the appropriate granularity.

When a request or subscription for statistics or predictions is received, the NWDAF may not possess the necessary data to perform the service, including:

- Data on the monitoring period in the past, which is necessary for the provision of statistics and predictions matching the Analytics target period.

- Data on longer monitoring periods in the past, which is necessary for model training.

Therefore, in order to optimize the service quality, the NWDAF may undertake the following actions:

- The NWDAF may return a confidence parameter as stated in clause 6.1.3 expressing the confidence in the prediction produced. Prediction may be returned with zero confidence as described below. This confidence is likely to grow in the case of subscriptions.

- The value of the confidence depends on the level or urgency expressed by the parameter "preferred level of accuracy" as listed in clause 6.1.3, the parameter "time when analytics information is needed" as listed in clause 6.1.3 and the availability of data. If no sufficient data is collected to provide an estimation for the preferred level of accuracy before the time deadline, the service shall return a zero confidence. Otherwise, the NWDAF may wait until enough data is collected before providing a response or a first notification.

- In order to be prepared for future requests on analytics from NFs/OAM, the NWDAF, upon operator configuration, may collect data on its own initiative, e.g. on samples of UEs and retain the data collected in the data storage.

NOTE 1: The NWDAF can send an error response to the analytics consumer to indicate that statistics are unavailable if the NWDAF was not prepared for future requests and did not collect data on its own initiative.

The volume and maximum duration of data storage is also subject to operator configuration.

The NWDAF may decide to reduce the amount of data collected to reduce signalling load, by either prioritizing requests received from analytics consumers, or reducing the extent (e.g. duration, scope) of data collection, or modifying the sampling ratios. When using sampling ratio, the NWDAF may, depending on the analytics required and based on local configuration, provide additional partitioning criteria to the NFs to allow for a better UEs representation and to request that the NFs first partition the UEs before applying sampling ratio (see Event Reporting Information as specified in TS 23.502 [3]). The NWDAF may provide one or multiple partitioning criteria in its request for data collection from NFs.

In order to optimize the performance and accuracy of data collection and reporting, and reduce the impact on data producers, the NWDAF may request subscriptions to the NFs with the variable reporting periodicity parameter. Depending on the condition provided as part of this parameter, different reporting periodicity are used. The condition may be the load of the NF, the network quality, etc.

The NWDAF may skip data collection phase when the NWDAF already has enough information to provide requested analytics.

The data which NWDAF may collect is listed for each analytics in input data clause and is decided by the NWDAF.

NOTE 2: NWDAF can skip data collection phase for some specific input data per the requested analytics e.g. when some of the data is already available at NWDAF for the requested analytics, or when NWDAF considers that some of the data is not needed at all to provide the requested analytics as per the analytics consumer request (e.g. based on preferred level of accuracy or based on the time when analytics are needed).

Event exposure subscriptions for data collection from the AMF and the SMF may need to survive after the removal of UE context in the AMF including event exposure subscriptions, or upon the creation of new UE context in AMF or SMF. In order for event exposure subscriptions in AMF and SMF to be (re)created in these cases, the NWDAF may subscribe to the events in AMF and/or SMF via UDM for a UE or group of UEs, as specified in clause 4.15.4.4 of TS 23.502 [3].

In hierarchical interactions among NWDAFs, without standalone DCCF, or co-located DCCF, the efficiency of data collection can be achieved by inter-NWDAF instance cooperation among NWDAF instances on different levels of the hierarchy. An efficient data collection means that the same data required for the same Analytics ID or different Analytics IDs should not be collected multiple times by the different NWDAFs of the hierarchy.

## **END of CHANGES**