**3GPP TSG-SA5 Meeting #155 *S5-243323d1***

Jeju, South Korea, 27 - 31 May 2024 revision of S5-242694

**Source: China Telecom**

**Title: Potential solutions for measuring NWDAF data collection efficiency on the transmission aspect**

**Document for: Approval**

**Agenda Item: 6.19.18**

# 1 Decision/action requested

***In this box give a very clear / short /concise statement of what is wanted.***

# 2 References

*(Reference - in list form - should be made to previous related SA5/3GPP/etc. documents.)*

*(For changes against a draft TS/TR, a pseudo CR - a.k.a. pCR - will be provided using this Tdoc template. In this case, the number, name and version of the draft TS/TR used as base must be provided and the version must be the latest available version of the draft TS/TR.)*

 [1] 3GPP TS 23.288 Architecture enhancements for 5G System (5GS) to support network data analytics services

# 3 Rationale

*(With bullet points, describe the reasons for the proposed action.
The objectives of the proposal should be clearly stated.
Rejected alternative solutions should be mentioned if this aids understanding).*

*(For pseudo CR, the reason for change(s) and summary of change(s) must be clearly explained.)*

It is agreed in SA5#154 that the potential solutions with respect to the following requirement need to be studied:

***REQ-NWDAF-PM-DCE-1****: the 3GPP management system shall have a capability to provide the efficiency of the data collection of NWDAF from one specific data source considering, for example, the amount of data collected and the overhead of the data collection procedures.*

In this contribution, a potential solution measuring the NWDAF data collection efficiency on the transmission aspect is proposed.

# 4 Detailed proposal

*(For pseudo CR, include the complete clause(s) or subclause(s) of the latest draft TS/TR to be modified, with clear clause and sub-clause headings included and* ***all modifications shown with revision marks****, unambiguously showing where the changes shall be made or inserted in the draft TS/TR. It is not sufficient to just state, for example, “add the following text to the draft TS/TR…”.)*

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| **1st Change All New Text** |

### 4.2.3 Potential solutions

#### 4.2.3.X Potential solution #X :Efficiency of Data Collection from NFs performed by NWDAF

##### 4.2.3.X.1 Introduction

This potential solution is proposed to measure the NWDAF data collection efficiency on the transmission aspect. It meets the requirement of **REQ-NWDAF-PM-DCE-1** and considers the cases where Data Collection from NFs is performed by NWDAF.

##### 4.2.3.X.2 Description

When NWDAF performs Data Collection from NFs, the NWDAF will subscribe/unsubscribe at any 5GC NF to be notified for data on a set of events[1].

According to the clause 6.2.2.1 in [1], the Data Collection from NFs is based on the services of AMF, SMF, UDM, PCF, NRF, NSACF, UPF and AF (possibly via NEF):

- Event Exposure Service offered by each NF.

- other NF services (e.g. Nnrf\_NFDiscovery and Nnrf\_NFManagement in NRF)

The list of NF Services consumed by NWDAF for data collection is provided in table 6.2.2.1-1 in [1]. And the NF service producers are the data source.

For each of the NF service producers listed in table 6.2.2.1-1 in [1], the data can be provided to a NWDAF by the notification corresponding to the subscription of Event Exposure Service or by the response corresponding to the request to the other services offered by the data source NF. The amount of data collected by NWDAF from each notification and/or response varies. The number of these notifications and/or responses received by NWDAF is proportional to the overhead of NWDAF performing data collection from NFs in the 5GC.

For a given time length of observation, the average amount of data collected from NFs per service notification and response can be measured. This measurement shows the relationship between total amount of data collected by NWDAF performing Data Collection from NFs and the corresponding transmission overhead. It reflects the efficiency on the transmission aspect of NWDAF performing Data Collection from NFs.

More specifically, the measurement can be provided with different granularities:

**Efficiency of NWDAF Data Collection from one type of NF:** For a given time length of observation, the measurement is provided by averaging the total amount of data collected from every instance of one specific type of NF with the total number of the notification and the response corresponding to the subscription and request, respectively, used by NWDAF to collect data from these NF instances. This measurement reflects the efficiency on the transmission aspect of one NWDAF performing data collection from that one specific type of NF.

**Efficiency of NWDAF Data Collection from one specific NF instance:** For a given time length of observation, the measurement is provided by averaging the total amount of data collected from one instance of NF with the total number of notification and response corresponding to the subscription and request , respectively, used by NWDAF to perform Data Collection from NFs. Moreover, the notification and the response are received from one instance of NF. This measurement reflects the efficiency on the transmission aspect of one NWDAF performing data collection from a specific NF instance.

**Efficiency of NWDAF performing Data Collection from NFs:** For a given time length of observation, the measurement is provided by averaging the total amount of data collected from all data source NFs which are reached by one NWDAF with the total number of notification and response corresponding to the subscription and request , respectively, used by the NWDAF to perform Data Collection from NFs. This measurement reflects the overall efficiency on the transmission aspect of one NWDAF performing Data Collection from NFs in 5GC during the observation.

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| **2nd Change All New Text** |

#### 4.2.3.Y Potential solution #Y: Efficiency of data collection from DCCF/NWDAF hosting DCCF performed by NWDAF

##### 4.2.3.Y.1 Introduction

This potential solution is proposed to measure the NWDAF data collection efficiency in the transmission aspect. It meets the requirement of **REQ-NWDAF-PM-DCE-1** and considers the cases where data is collected from DCCF directly or from NWDAF hosting DCCF directly by NWDAF.

##### 4.2.3.Y.2 Description

The NWDAF data collection may be performed via DCCF, when DCCF is deployed or via NWDAF hosting DCCF. NWDAF may obtain data using Ndccf\_DataManagement\_Subscribe/Nnwdaf\_DataManagement\_Subscribe services operations directly from DCCF or NWDAF hosting DCCF. Therefore, in such cases, the DCCF or the NWDAF hosting DCCF can be considered as the source of NWDAF data collection.

NOTE: The case where NWDAF collects data via MFAF is not considered in this potential solution.

According to clause 6.2.6.3 and 6.2.6.2 in [1], the data can be provided to a NWDAF via DCCF/NWDAF hosting DCCF by the Ndccf\_DataManagement\_Notify/Nnwdaf\_DataManagement\_Notify corresponding to Ndccf\_DataManagement\_Subscribe/Nnwdaf\_DataManagement\_Subscribe directly.

Or as instructed by the DCCF/NWDAF hosting DCCF via Ndccf\_DataManagement\_Notify/Nnwdaf\_DataManagement\_Notify, the NWDAF obtains data by invoking the request and receiving response of Ndccf\_DataManagement\_Fetch/Nnwdaf\_DataManagement\_Fetch.

The amount of data collected by NWDAF from each notification and/or response from DCCF/NWDAF hosting DCCF varies. The number of these notification and/or response received by NWDAF is proportional to the overhead of NWDAF data collection via DCCF/NWDAF hosting DCCF directly.

For a given time length of observation, the average amount of data collected from the DCCF/NWDAF hosting DCCF per notification and response can be measured. This measurement shows the relationship between total amount of data collected by NWDAF via DCCF/NWDAF hosting DCCF directly and the corresponding transmission overhead. It reflects the efficiency on the transmission aspect of one NWDAF collecting data from DCCF/NWDAF hosting DCCF directly.

More specifically, the measurement can be provided with different granularities:

**Efficiency of NWDAF Data Collection from specific DCCF instance/NWDAF instance hosting DCCF:** For a given time length of observation, the measurement is provided by averaging the total amount of data collected from one instance of DCCF or NWDAF hosting DCCF with the total number of notification and response corresponding to the subscription and request, respectively, used by NWDAF to collect data from that one instance of DCCF or NWDAF hosting DCCF. This measurement reflects the efficiency on the transmission aspect of one NWDAF performing data collection from a one specific DCCF or NWDAF hosting DCCF.

**Efficiency of NWDAF performing Data Collection from all DCCFs/NWDAFs hosting DCCF:** For a given time length of observation and in case there are more than one DCCF and/or NWDAF hosting DCCF deployed, the measurement is provided by averaging the total amount of data collected from all DCCFs /NWDAFs hosting DCCF which are used by one NWDAF with the total number of notification and response corresponding to the subscription and request, respectively, used by the NWDAF to perform data collection from these DCCFs and/or NWDAF hosting DCCF. This measurement reflects the overall efficiency on the transmission aspect of one NWDAF performing data collection via DCCF and NWDAF hosting DCCF deployed in 5GC during the observation.