**3GPP TSG-SA5 Meeting #155 *S5-243319 d1***

Jeju, South Korea, 27 - 31 May 2024 was S5-242639

**Source: China Telecom, Nokia**

**Title: Add solution for management enhancement to support analytics exposure in roaming case**

**Document for: Approval**

**Agenda Item: 6.19.18**

# 1 Decision/action requested

***The group is asked to discuss and agree on the proposal.***

# 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.)*

<Examples of references, please delete when you have inserted your actual references:

[1] 3GPP TR 28.877: "Study on Enhancement of the management aspects related to Network Data Analytics Functions (NWDAF) Phase 2".

# 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 requirements needs to be studied [1]:

***REQ-NWDAF-RE-AE-01：****the 3GPP management system should be able to reflect whether the NWDAF supports roaming exchange capability and to indicate whether it exclusively supports Nnwdaf\_RoamingAnalytics when the NWDAF supports roaming exchange.*

A possible solution considering the configuration to support analytics exposure in roaming case is proposed in this contribution.

# 4 Detailed proposal

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| **Start of 1st Change** |

4.1 Use case #1: Management enhancement to support the analytics exposure in roaming case

4.1.1 Description

As described in TS 23.288 [1], an NWDAF registered with roaming exchange capability (RE-NWDAF) may be discovered and used (by other NWDAFs) as an entry point between PLMNs to exchange analytics. The home roaming exchange NWDAF (H-RE-NWDAF) or visitor roaming exchange NWDAF (V-RE-NWDAF) needs to provide the Nnwdaf\_RoamingAnalytics to exchange analytics. NWDAFs, with and without “roaming exchange capability”, exhibit different behaviours. The NWDAF with “roaming exchange capability” necessitates extra interactions with NWDAFs from other operators. To better configure and identify this capability, it is necessary to provide information on whether one or more NWDAFs with roaming exchange capability are deployed within the PLMN.

Besides, based on TS 23.288 [1], RE-NWDAF is also able to act as an entry point for Nnwdaf\_roamingData to collect and exchange data between H-PLMN and V-PLMN. However, with consideration of data security and privacy, operators may only want to provide Nnwdaf\_RoamingAnalytics without exchanging data across different PLMNs. Therefore, operators need to configure that the RE-NWDAF supports Nnwdaf\_RoamingAnalytics exclusively. However, the NWDAFFunction IOC defined in [2] cannot reflect this feature in roaming case.

In TS 23.288 [1], four service operations are specified under “NWDAF Roaming Analytics” that enables the consumer to request or to subscribe or to unsubscribe for roaming analytics generated by the RE-NWDAF. These service operations include the following:

• *Nnwdaf\_RoamingAnalytics\_Subscribe* service operation

• *Nnwdaf\_RoamingAnalytics\_Unsubscribe* service operation

• *Nnwdaf\_RoamingAnalytics\_Notify* service operation

• *Nnwdaf\_RoamingAnalytics\_Request* service operation

The number of roaming analytics subscriptions, requests, notifications and responses are some of the basic statistic information to monitor the performance of RE-NWDAF. These basic measurements can be used to derive the other performance of RE-NWDAF such as roaming analytics service successful and/or failed rate, etc. With these measurements, operators can analyze and evaluate the performance of the RE-NWDAF. Operators can use these measurements to take management actions for configuration, resource allocation, load balance and placement purposes.

4.1.2 Potential requirements

**REQ-NWDAF-RE-AE-01：**the 3GPP management system should be able to reflect whether the NWDAF supports roaming exchange capability and to indicate whether it exclusively supports Nnwdaf\_RoamingAnalytics when the NWDAF supports roaming exchange.

**REQ-NWDAF-RE-AE-02:**The 3GPP management system should have the capability to measure the number of roaming analytics service subscriptions, and requests received by an RE-NWDAF.

**REQ-NWDAF-RE-AE-03:**The 3GPP management system should have the capability to measure the number of roaming analytics service notifications, and responses generated by an RE-NWDAF.

**REQ-NWDAF-RE-AE-04:**The 3GPP management system should have the capability to measure the number of failed and successful roaming analytics service subscriptions.

**REQ-NWDAF-RE-AE-05:** The 3GPP management system should have the capability to measure the time consumed by the RE-NWDAF to provide roaming analytics service information.

4.1.3 Possible solutions

4.1.3.X Possible solution #X: NWDAFFunction IOC enhancement to support analytics exposure in roaming case4.1.3.X.1 Introduction

This potential solution is proposed to meet the requirement of **REQ-NWDAF-RE-AE-01** considering management enhancement to support analytics exposure in roaming case.

4.1.3.X.2 Description

We propose a potential solution to enhance the NWDAFFunction IOC, enabling it to reflect the differences on the NWDAF roaming exchange capability aspect in multiple NWDAF deployments. This enhancement would provide a more accurate representation of NWDAF instances and their respective capabilities, thereby facilitating more effective management.

The proposed attribute indicating the "roaming exchange capability" of NWDAF is defined in NWDAFFunction IOC (by enhancing the NwdafCapability datatype) as follows:

Attribute name: roamingExchange;

Documentation: It represents the "roaming exchange capability" identifier, which indicates whether the NWDAF has the "roaming exchange capability" and whether it exclusively supports *Nnwdaf\_RoamingAnalytics* when the NWDAF supports roaming exchange.

Allowed Values: The allowed value can be "0\_0", "1\_0" and "1\_1", where "0\_0" indicates the NWDAF does not support the roaming exchange capability, "1\_0" indicates that the NWDAF has the "roaming exchange capability" and it exclusively supports *Nnwdaf\_RoamingAnalytics*, and "1\_1" indicates the NWDAF has the "roaming exchange capability" and it supports both *Nnwdaf\_RoamingAnalytics* and *Nnwdaf\_RoamingData* services.